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Research always looks to the future and this is particularly evident in long-term investments and projects. With this "Activity Report", we have taken the opportunity to present a number of our large-scale projects. One of these is the CHRIS health study, now entering its second phase, in which our researchers intend to review as many of the 13,400 original participants as possible, to deepen their understanding of widespread diseases with the aim of preventing them or improving their treatment.

Another is the permanent monitoring of the entire region's biodiversity conducted on behalf of the Autonomous Province of Bolzano with the purpose of providing important information on the relationship between climate, human activities and local flora and fauna. At the time of putting the finishing touches to this report, our editorial office is closed, our work partly suspended, stopped suddenly and unexpectedly by a viral pandemic that has affected us all in many ways. The effects have had far reaching implications extending from work to politics with scientific, psychological and technical repurcussions.

At the moment, medical issues are our main concern and the reason we are strengthening our cooperation with civil protection, health and rescue services. For example, the biological laminar flow hood for analysing samples under sterile conditions, normally used in the CHRIS study, has now been made available to the Local Health Authority for the diagnosis and testing of Covid-19. Our medical and biostatistical experts are monitoring the course of the pandemic and making recommendations for both public and private sector managers.

Rarely has the future been so uncertain, however one thing is sure: our research projects have not lost importance, they have become even more urgent. This is evident in many of the questions we have been asking this year: what is the best way to accelerate decarbonisation? How can we move from disposable to circular economy? How can we strengthen the resilience of communities in the face of traumatic events? How can we prepare for the climate crisis we are facing? Of course, the experiences of recent weeks have also raised many new issues that will need to be addressed in our work. If the pandemic has shown us anything, apart from our vulnerability, it is this: how much science and research are necessary for the well-being of our society.

Forschung erfolgt immer mit Blick in die Zukunft, und besonders deutlich wird dies in langfristigen Investitionen und Projekten. Gleich mehrere solcher weitreichenden Vorhaben stellen wir in diesem Bericht vor: So ist die Gesundheitsstudie CHRIS in die zweite Phase gestartet, in der die 13.400 Teilnehmerinnen und Teilnehmer der ersten Phase möglichst vollständig noch einmal untersucht werden sollen, um das Verständnis weit verbreiteter Krankheiten zu vertiefen – mit dem Ziel, ihren Ausbruch zu verhindern bzw. ihre Behandlung zu verbessern. Ein anderes Beispiel ist das permanente, flächendeckende Biodiversitäts-Monitoring, das wir im Auftrag der Autonomen Provinz Bozen durchführen und das wichtige Erkenntnisse zu den Zusammenhängen zwischen Klima, menschlicher Tätigkeiten und lokaler Flora und Fauna liefern wird.

Nun, bei Abschluss dieses Berichts, ruht diese Arbeit zum Teil, unvermittelt angehalten von einem Virus, dessen Auswirkungen uns jedoch umso mehr und auf vielfache Weise beschäftigen, von arbeitsrechtlichen, psychologischen und politischen bis zu naturwissenschaftlichen und technischen Fragen. In Vordergrund stehen im Augenblick die medizinischen Themen, die uns zu vertiefter Zusammenarbeit mit dem Sanitätsbetrieb, dem Zivilschutz und den Rettungseinrichtungen führen. So wurde zum Beispiel die sterile Laborwerkbank, mit der normalerweise CHRIS-Proben ausgewertet werden, dem Sanitätsbetrieb für Covid-19-Diagnosetests zur Verfügung gestellt, unsere Experten und Expertinnen in Medizin und Biostatistik verfolgen den Verlauf der Pandemie und geben Empfehlungen für die Verantwortlichen im öffentlichen und privaten Bereich.

Die Zukunft war selten so ungewiss, aber eines ist sicher: Unsere Forschungsvorhaben werden nicht an Bedeutung verlieren, ja noch dringlicher werden. Das gilt für viele Fragen, mit denen wir uns in diesem Jahr befassten: Auf welchem Weg kann die Dekarbonisierung am besten vorangetrieben werden? Wie schaffen wir es, von einer Wegwerf- auf eine Kreislaufwirtschaft umzusteigen? Wie lässt sich die Resilienz von Gemeinschaften angesichts dramatischer Ereignisse stärken und wie können wir uns auf die gößere Krise vorbereiten, die uns durch den Klimawandel bevorsteht?

Und natürlich haben die Erfahrungen der vergangenen Wochen auch viele neue Fragen aufgeworfen, denen wir in unserer Arbeit nachgehen wollen. Wenn uns die Corona-Krise, neben unserer Verletzlichkeit, etwas eindringlich vor Augen geführt hat, dann ist es dies: Wie notwendig Wissenschaft und Forschung für das Wohlergehen unserer Gesellschaft sind.

La ricerca rivolge sempre uno sguardo al futuro, e questo è particolarmente evidente negli investimenti e nei progetti a lungo termine. In questo "Rapporto attività" presentiamo proprio diversi progetti di ampio respiro. Per esempio, lo studio sulla salute CHRIS, che è entrato nella sua seconda fase: i nostri ricercatori intendono riesaminare quanti più possibile dei 13.400 partecipanti alla prima fase per approfondire la nostra comprensione delle malattie diffuse, con l'obiettivo di prevenirle o migliorarne il trattamento. Un altro esempio è il monitoraggio permanente della biodiversità su tutto il territorio che stiamo conducendo per conto della Provincia autonoma di Bolzano, monitoraggio che fornirà importanti informazioni sui rapporti tra clima, attività umane e flora e fauna locali.

Ora, nel momento in cui chiudiamo in redazione questo rapporto, il nostro lavoro è in parte sospeso, improvvisamente fermato da un virus e dalle ripercussioni di una pandemia che riguardano tutti noi sotto molti aspetti, da quelli lavorativi, psicologici e politici a quelli scientifici e tecnici. Al momento, le questioni mediche sono al primo posto nelle nostre menti. Per questo stiamo approfondendo la nostra collaborazione con i servizi sanitari, la protezione civile e i servizi di soccorso. Per esempio, la cappa biologica a flusso laminare per analizzare campioni in regime di sterilità, normalmente utilizzata nello studio CHRIS, è stata messa a disposizione dell'Azienda sanitaria per i test diagnostici di Covid-19. I nostri esperti in medicina e biostatistica stanno monitorando l'andamento della pandemia e formulando raccomandazioni per i responsabili del settore pubblico e privato.

Raramente il futuro è stato così incerto, ma una cosa è sicura: i nostri progetti di ricerca non perderanno di importanza, anzi diventeranno ancora più urgenti. Questo vale per molte delle domande che abbiamo affrontato quest'anno: qual è il modo migliore per far progredire la decarbonizzazione? Come possiamo passare da un'economia usa e getta a un'economia circolare? Come possiamo rafforzare la capacità di ripresa delle comunità di fronte a eventi drammatici? E come possiamo prepararci alla crisi che dobbiamo affrontare a causa dei cambiamenti climatici?

Naturalmente, le esperienze delle ultime settimane hanno sollevato anche molte nuove questioni che vogliamo affrontare nel nostro lavoro. Se la pandemia ci ha mostrato qualcosa, a parte la nostra vulnerabilità, è questo: quanto la scienza e la ricerca siano necessarie per il benessere della nostra società.

**Roberta Bottarin**

Vice Director / Vizedirektorin / Vicedirettrice

**Stephan Ortner**

Director / Direktor / Direttore

**Roland Psenner**

President / Präsident / Presidente



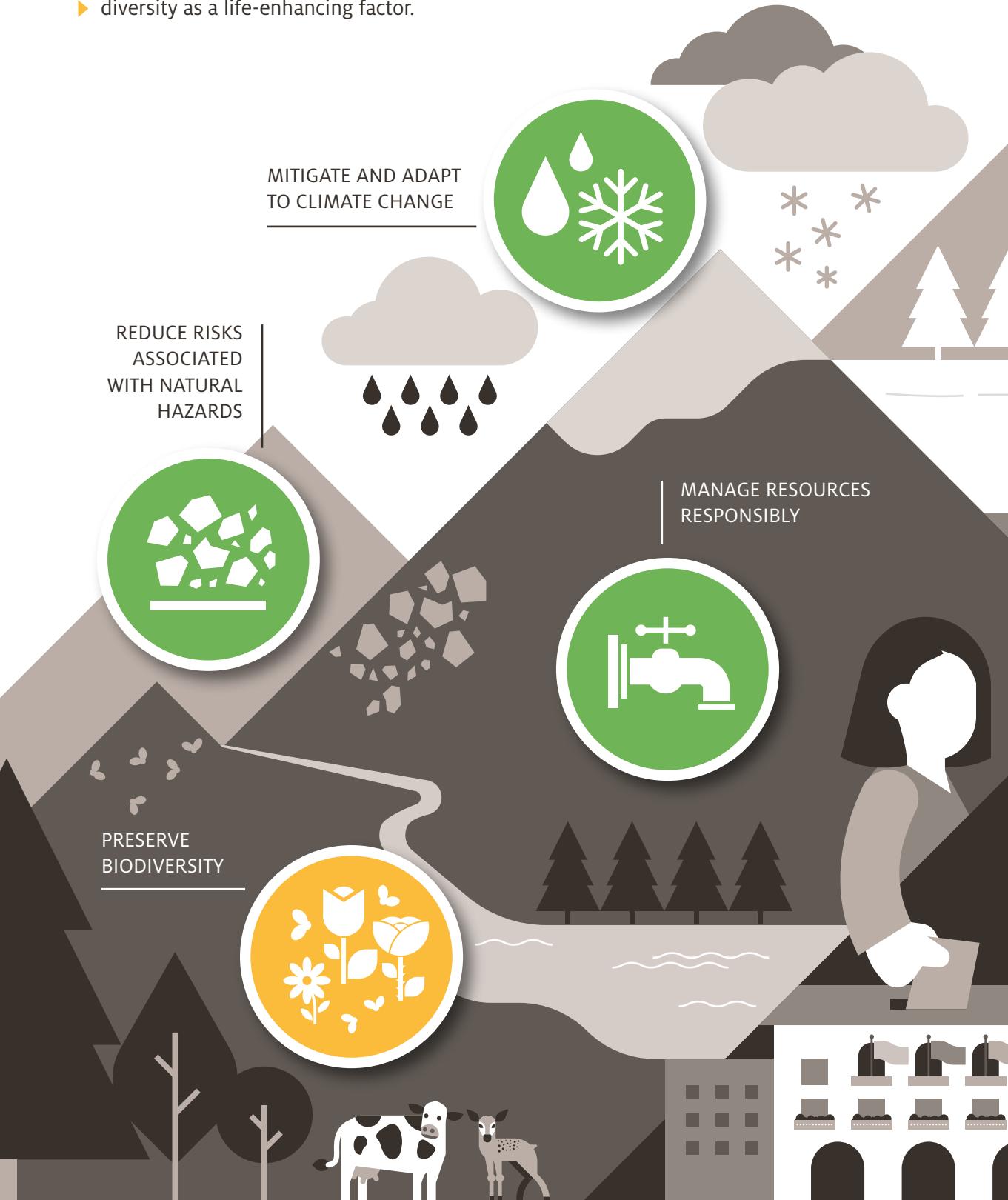


# RESEARCH

# Our Objectives

Our research is concerned with three major themes:

- ▶ regions fit for living in
- ▶ a healthy society
- ▶ diversity as a life-enhancing factor.



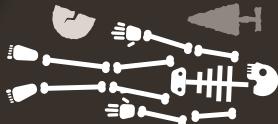
PREVENT ACCIDENTS  
AND OPTIMISE  
RESCUE OPERATIONS



UNDERSTAND  
AND PREVENT  
ILLNESSES  
TOWARDS  
PERSONALISED  
MEDICINE



UNDERSTAND BETTER  
THE DEVELOPMENT  
OF HUMANKIND



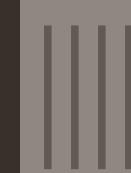
ENCOURAGE POLITICAL  
PARTICIPATION AND  
SOCIAL INTEGRATION



PROMOTE  
MULTILINGUALISM



TAKE ADVANTAGE OF THE OPPORTUNITIES  
CREATED BY THE DIGITAL TRANSFORMATION



# Tutto quello che il suolo racconta

**Ci sono la terra vera e propria e gli insetti che abitano tra le radici superficiali delle erbe da pascolo. E poi ancora ci sono il microbiota degli animali che brucano (e che si recupera dagli escrementi) e quello dei microorganismi che vivono nel terreno. Questi sono gli aspetti che analizzano entomologi, biologi ed ecologi di Eurac Research, Fondazione Edmund Mach e Università di Innsbruck per verificare gli effetti dei cambiamenti climatici sui pascoli alpini.**

**Area di test: la val di Mazia.**

In tutto sono quattro siti sparsi per la val di Mazia a 1000, 1500, 2000 e 2500 metri di quota. Lì si è chiusa la scorsa estate la prima campagna di campionamento e a giugno comincerà la prossima. Attrezzati di vanga e zaino i ricercatori raccolgono campioni da analizzare in laboratorio. Ogni team ha un obiettivo diverso: cubi di terreno, qualche grammo di fagioli di mucca, barattoli con insetti.

I nostri entomologi studiano in particolare il microbiota di alcuni microorganismi indicativi per valutare la salute dei pascoli. I lombrichi, per esempio, sono un elemento importante di questa catena ecologica. Poiché ingeriscono grandi quantità di suolo, quello che succede nei loro intestini è lo specchio di quello che cambia, a cascata, nei pascoli e nel clima.

Campioni di suolo di tre-quattro chili vengono trasportati nel laboratorio in Eurac Research e lì una macchina che si chiama apparato di Kempson fa uscire gli insetti. A quel punto viene estratto il DNA del microbiota. I risultati della ricerca saranno disponibili a inizi 2022.

## Was der Boden erzählt

Da ist einmal der Boden selbst und die Insekten, die zwischen den oberflächlichen Wurzeln der Weidegräser leben. Dazu kommt das Mikrobiom der Weidetiere – enthalten in den Exkrementen – und das der Mikroorganismen, die im Boden leben. All diese Aspekte analysieren Insektenkundler, Biologen und Ökologen von Eurac Research, der Fondazione Edmund Mach und der Universität Innsbruck, um die Auswirkungen des Klimawandels auf Almweiden zu bewerten. Untersuchungsgebiet ist das Matschertal.

## What the soil has to say

Entomologists, biologists and ecologists from Eurac Research, the Edmund Mach Foundation and the University of Innsbruck are analysing the soil itself, the insects that live among the superficial roots of the pasture grasses as well as the microbiota of the animals that graze (contained in their excrement) and that of the microorganisms that live in the ground in order to verify the effects of climate change on alpine pastures. Test area: the Mazia Valley.



# Satellitendaten für die Erforschung und den Erhalt von Ökosystemen nutzen

**Ökosysteme erfahren durch den Klimawandel und andere menschliche Einflüsse zunehmend Veränderungen. Gleichzeitig haben Fernerkundungstechnologien der Umweltbeobachtung ganz neue Möglichkeiten eröffnet. Das bislang größte EU-Projekt zur Ökosystemforschung, ECOPOTENTIAL, untersuchte, wie ein möglichst breites Spektrum wissenschaftlicher Daten genutzt werden kann, um Zustand und Wandel natürlicher Systeme in Schutzgebieten zu erfassen und Strategien für ihren Erhalt zu entwickeln. Eurac Research analysierte Habitate im Nationalpark Gran Paradiso.**

Anhand zweier Fallstudien zeigten die Forscher, dass Fernerkundung einen wertvollen Beitrag zu langfristigem Biodiversitätsmonitoring leisten kann. Für den Nationalpark Gran Paradiso im Aostatal führten die Forscher Datenreihen zum Vorkommen von Gämsen mit Satellitendaten zur Landoberfläche aus dem europäischen Erdbeobachtungsprogramm Copernicus zusammen – etwa zu Vegetation, Schneedeckung oder Hangneigung. Die so gewonnene Information stellten sie in Karten dar, aus denen abzulesen ist, wo im Parkgebiet sich die von den Tieren bevorzugten Lebensräume befinden. Diese Karten sind auch die Grundlage, um voraussichtliche Verlagerungen der Habitate auf Grund des Klimawandels aufzuzeigen. Für die Parkverantwortlichen ist dies ein wichtiges Hilfsmittel, um Strategien für einen verbesserten Naturschutz zu entwickeln. Die zweite Fallstudie befasste sich mit Veränderungen in der Verbreitung dreier Käferarten auf Grund des Klimawandels und der Frage, inwieweit man diese mit Satellitendaten erfassen kann.

## Dati satellitari per lo studio e la conservazione degli ecosistemi

Gli ecosistemi stanno subendo sempre più trasformazioni a causa dei cambiamenti climatici e degli effetti delle attività umane. Il telerilevamento offre nuove possibilità per il monitoraggio ambientale. Il progetto europeo ECOPOTENTIAL ha studiato come utilizzare la più ampia gamma possibile di dati scientifici per valutare lo stato e i cambiamenti dei sistemi naturali nelle aree protette e per sviluppare strategie per la loro conservazione. Eurac Research ha analizzato gli habitat del Parco nazionale del Gran Paradiso.

## Use satellite data for ecosystem research and conservation

Ecosystems are increasingly undergoing changes due to climate change and other human influences. At the same time, remote sensing technologies have opened up completely new possibilities for environmental monitoring. ECOPOTENTIAL, a major EU project, investigated how the broadest possible range of scientific data can be used to assess the status and changes in natural systems in protected areas in order to develop strategies for their conservation. Eurac Research analysed habitats in the Gran Paradiso National Park.



# Le chance della decarbonizzazione in Italia

**Per individuare scenari energetici in grado di accelerare la decarbonizzazione del Paese, Eurac Research ha utilizzato un avanzato modello matematico basato sull'andamento orario della produzione e dei consumi di energia elettrica, termica e dei trasporti in un intero anno. Il modello ha valutato migliaia di combinazioni energetiche e individuato le migliori in termini di costi e di emissioni di CO<sub>2</sub>.**

Il PNIEC (Piano nazionale integrato energia e clima) è il piano stilato dal governo italiano per ridurre del 40 per cento le emissioni di CO<sub>2</sub> rispetto al 1990, rispettando gli obiettivi europei. Secondo lo studio di Eurac Research, l'attuazione del PNIEC farà aumentare il costo annuale del sistema energetico italiano del 5,4 per cento. Il modello di ottimizzazione sviluppato dai ricercatori ha permesso di individuare un piano più virtuoso del PNIEC: si tratta di uno scenario avanzato per il 2030 in grado di ridurre le emissioni di CO<sub>2</sub> di un ulteriore 10 per cento, mantenendo invariata la spesa energetica. Questo scenario – basato su una forte spinta a mobilità elettrica, fonti rinnovabili ed efficienza energetica – permetterebbe di ridurre i costi legati all'importazione di combustibili fossili di oltre 7,3 miliardi all'anno rispetto alla situazione attuale. Queste risorse potrebbero poi essere investite nella produzione di energia rinnovabile in loco e soprattutto nell'efficientamento energetico degli edifici, creando posti di lavoro e sostenendo l'economia locale.

## Die Chancen der Dekarbonisierung

Auf welchem Weg kann die Dekarbonisierung Italiens am besten vorangetrieben werden? Um Kosten und Chancen sowie Emissionen verschiedener Szenarien zu bewerten, entwickelten die Forscher ein mathematisches Modell für die Simulation von Energiesystemen über den Verlauf eines ganzen Jahres und spielten damit tausende von Möglichkeiten durch, den Energiebedarf für Strom, Verkehr und Heizung zu decken.

## Decarbonisation opportunities

What is the best way to advance Italy's decarbonisation? In order to evaluate the costs, opportunities and emissions of various scenarios, our researchers have developed a mathematical model for simulating energy systems over the course of an entire year, playing through thousands of options for meeting energy needs for electricity, transport and heating.



# Turisti a basso impatto ambientale

**Potenziare l'infrastruttura per la mobilità turistica con biciclette e altri mezzi elettrici, rinnovare i servizi per ridurre le emissioni e aumentare l'uso delle rinnovabili. Sono queste le tre idee per diminuire l'impatto ambientale dei turisti che i ricercatori di Eurac Research stanno studiando e implementando nei territori dell'Alto Adige, del Canton Ticino e della provincia piemontese di Verbano-Cusio-Ossola.**

Il progetto MOBSTER prevede l'installazione di circa 70 infrastrutture di ricarica per veicoli e biciclette elettriche in prossimità di strutture ricettive in queste tre aree pilota. Saranno poi sviluppati alcuni prototipi di prodotti innovativi per migliorare l'offerta turistica, come un veicolo per la ricarica mobile, posti auto coperti con ricarica integrata e una stazione di ricarica elettrica per strutture in località montane. La superficie dei laghi nella zona di Verbania sarà solcata da battelli elettrici che trasporteranno i turisti da una sponda all'altra. I ricercatori stanno raccogliendo l'opinione di residenti e turisti tramite questionari. I risultati dell'indagine serviranno per compilare l'Atlante delle infrastrutture e del fabbisogno, che sarà disponibile sul sito del progetto nei primi mesi del 2021. Nel frattempo, i ricercatori hanno analizzato e catalogato le migliori pratiche per quanto riguarda la mobilità elettrica in questi territori, focalizzandosi in particolare sugli aspetti che, in modo diretto o indiretto, hanno un maggior impatto sul settore turistico: l'offerta di infrastruttura di ricarica pubblica e privata, gli itinerari e i pacchetti turistici dedicati ai possessori di veicoli elettrici, nonché le politiche di sostegno all'elettromobilità. Il report è disponibile su [progettomoobster.eu](http://progettomoobster.eu).

## Wie Touristen die Umwelt weniger belasten

Die Lade-Infrastruktur für E-Fahrräder und andere Elektrofahrzeuge in der Nähe von Touristenunterkünften verbessern, Dienstleistungen emissionsärmer gestalten, verstärkt erneuerbare Energien nutzen: Diese drei Strategien für einen nachhaltigeren Tourismus erproben und analysieren die Forscher von Eurac Research in Südtirol, dem Kanton Tessin und der piemontesischen Provinz Verbano-Cusio-Ossola.

## Lowering tourist's environmental impact

Strengthening the infrastructure for tourist mobility with bicycles and other electric vehicles, renewing services to reduce emissions and increasing the use of renewables are three strategies to reduce the environmental impact of tourists that our researchers are studying and implementing in South Tyrol, Canton Ticino and the Piedmontese province of Verbano-Cusio-Ossola.



# Un approccio innovativo per riqualificare il patrimonio edilizio provinciale

**Circa 300 edifici adibiti a uffici, scuole, palestre, biblioteche e numerosi tunnel: è questo il patrimonio immobiliare che la Provincia autonoma di Bolzano intende risanare nei prossimi anni. I nostri ricercatori affiancheranno i tecnici provinciali in questo progetto a partire dalla catalogazione del parco costruito e dei relativi consumi, per poi individuare le soluzioni ottimali di risanamento e contribuire alla elaborazione delle procedure di appalto.**

Eurac Research fa parte da diversi anni del gruppo di lavoro istituito dalla Provincia per gestire al meglio la riqualificazione delle sue strutture. I principali compiti dei nostri ricercatori sono la cura di un rapporto annuale sui consumi energetici, la definizione di protocolli di gestione ottimale degli edifici e lo sviluppo del software Cerplan finalizzato a pianificare gli interventi e gli investimenti necessari a trasformare l'intero parco edilizio.

A questa collaborazione si è aggiunta lo scorso anno una nuova attività: Eurac Research è consulente della Provincia in un'ampia riqualificazione edilizia, finanziata attraverso una partnership tra pubblico e privato. Per la prima volta l'amministrazione altoatesina si appoggia al Fondo europeo per l'efficienza energetica (eeef) per lo studio di un intervento integrato che avrà un forte impatto sull'economia locale e sull'ambiente. I nostri esperti stanno lavorando su un campione di 27 edifici pubblici, tra cui scuole e uffici, per definire i criteri tecnico-economici e le prestazioni attese dalla riqualificazione energetica da inserire nei bandi di gara.

## An innovative approach to redeveloping provincial building heritage

The Province of Bolzano intends to restore its real estate heritage of about 300 office buildings, schools, gyms, libraries and numerous tunnels in the coming years. Our researchers will work with the province's technicians, helping them to catalogue the buildings and their energy consumption in order to select the best renovation solutions and prepare optimal tendering procedures.

## Ein innovativer Ansatz, um den Gebäudebestand der Provinz zu sanieren

Rund 300 ihrer Gebäude – Schulen, Turnhallen, Bibliotheken – will die Provinz Bozen in den kommenden Jahren sanieren, dazu zahlreiche Tunnel. Unsere Forscher werden mit den Technikern der Provinz zusammenarbeiten und sie dabei unterstützen, die Gebäude und ihren Energieverbrauch zu katalogisieren, die jeweils beste Sanierungslösung zu wählen und die Ausschreibungsverfahren auszuarbeiten.



# Primo report sulla sostenibilità del turismo in Alto Adige

**Cosa comporta l'arrivo di 7,5 milioni di turisti ogni anno per la vita della popolazione altoatesina? Quali effetti ha il turismo sull'ambiente? Come fare per mantenere florido il settore turistico, limitando i suoi impatti? L'Osservatorio sul turismo sostenibile in Alto Adige, uno dei trenta della rete INSTO (International Network of Sustainable Tourism Observatories) dell'Organizzazione mondiale del turismo, gestito da Eurac Research e IDM, presenta un primo bilancio sulla sostenibilità del settore turistico in Alto Adige.**

L'attenzione per la sostenibilità cresce: le strutture ricettive offrono sempre più prodotti alimentari locali e biologici (+19,3 per cento di latte biologico distribuito da Hogast dal 2016 al 2018), aumentano le certificazioni volontarie come Klima Hotel ed Ecolabel e i turisti usano sempre di più le carte della mobilità per il trasporto pubblico (attivazioni più che quintuplicate tra il 2012 e il 2018). Si tratta di dati incoraggianti e promettenti per gli anni a venire, seppure ancora legati a iniziative di nicchia. Tra gli aspetti sui quali ancora investire: i turisti continuano a usare troppo l'automobile per raggiungere l'Alto Adige. Alcune destinazioni, come i passi dolomitici o il Lago di Braies, vivono picchi con una elevatissima concentrazione di visitatori e il consumo di acqua ed energia elettrica continua ad aumentare (+46 per cento di acqua e +59 per cento di energia elettrica tra il 2006 e il 2016 solo per l'innevamento programmato). Il report INSTO sull'Alto Adige è denso di informazioni che riguardano 12 ambiti tematici: dalla governance all'uso del suolo, passando per l'occupazione e la soddisfazione di residenti e ospiti.

## **Erster Bericht zur Nachhaltigkeit des Tourismus in Südtirol**

Was bedeutet es für das Leben der Bevölkerung, dass jährlich 7,5 Millionen Touristen nach Südtirol kommen? Welche Auswirkungen hat der Tourismus auf die Umwelt? Wie kann der Sektor negative Effekte möglichst reduzieren und dennoch weiterhin florieren? Die Beobachtungsstelle für nachhaltigen Tourismus in Südtirol, eines von bisher 30 in einem Netzwerk der Welttourismusorganisation (International Network of Sustainable Tourism Observatories - INSTO), hat seinen ersten Bericht vorgestellt. Die Beobachtungsstelle ist ein Gemeinschaftsprojekt von Eurac Research und IDM.

## **South Tyrol's first report on the sustainability of its tourism**

What does it mean for the life of the population when 7.5 million tourists come to South Tyrol every year? What impact does tourism have on the environment? How can the sector reduce negative effects as much as possible and still continue to flourish? The Observatory for Sustainable Tourism in South Tyrol, one of 30 in a network of the International Network of Sustainable Tourism Observatories (INSTO), has now presented its first report. The Observatory is a joint project of Eurac Research and IDM.



# Golf sostenibile a Glorenza

**Su incarico di IDM Alto Adige, l'Istituto per il management pubblico di Eurac Research ha condotto uno studio per valutare la sostenibilità di un campo da golf a Glorenza, in val Venosta. I ricercatori hanno considerato l'impatto della realizzazione del campo da diversi punti di vista: ecologico, economico e sociale. Per farlo hanno analizzato esempi di successo in Italia e all'estero e condotto interviste con amministratori pubblici, ambientalisti, operatori turistici e promotori dell'iniziativa.**

L'area prescelta per la realizzazione del campo è attualmente censita in catasto come terreno agricolo. Dal punto di vista ecologico trasformare questa area in un piccolo campo pratica a quattro buche garantisce una maggiore biodiversità. Gran parte della vegetazione può crescere in maniera spontanea e solo il cinque per cento della superficie, quella dei green, va trattata con prodotti biologici. Su questo punto i ricercatori hanno raccolto un parere positivo anche da parte delle associazioni ambientaliste. La sostenibilità economica del campo, invece, è più complessa da valutare. Il golf non è uno sport in espansione e soffre la concorrenza di altri sport dolci che si svolgono a contatto con la natura, come la e-bike. Secondo l'analisi dei ricercatori, il campo sarebbe sostenibile se riuscisse ad ampliare il proprio bacino di utenza, attrattando anche turisti. Dal punto di vista sociale, praticare golf favorirebbe il benessere psico-fisico degli anziani e il campo potrebbe essere utilizzato anche dalle scuole della valle.

## **Golf in Glurns: eine Nachhaltigkeitsstudie**

Im Auftrag von IDM Südtirol hat das Institut für Public Management einen möglichen Golfplatz in Glurns im Vinschgau unter dem Gesichtspunkt seiner ökologischen, ökonomischen und sozialen Nachhaltigkeit bewertet. Zu diesem Zweck analysierten die Forscher erfolgreiche Beispiele in Italien und im Ausland und führten Interviews mit Vertretern der öffentlichen Verwaltung, Umweltschützern, Tourismusunternehmern und Initiatoren des Projekts.

## **Sustainable golfing in Glorenza**

Eurac Research's Institute for Public Management conducted a study to assess the sustainability of a planned golf course in Glorenza in the Venosta Valley on behalf of IDM South Tyrol. The researchers considered the impact of the course's construction from the following points of view: ecological, economic and social. To this end, the researchers analysed successful examples in Italy and abroad and conducted interviews with representatives of the public administration, environmentalists, tourism providers and initiators of the project.



# Lokale Produkte, regionale Entwicklung

**Wo und wie Lebensmittel produziert werden, ist für Verbraucher zunehmend von Bedeutung: Kurze Transportwege, Bio-Anbau, umwelt- und tierfreundliche Herstellung verleihen Produkten zusätzlichen Wert. Für ländliche Regionen bedeutet dies eine große Chance. Damit sie bestmöglich genutzt wird, entwickelt das Projekt „100% Local“ im Rahmen der EU-Strategie für den Alpenraum aus den Erfahrungen erfolgreicher Initiativen übertragbare Geschäftsmodelle.**

Vorbild ist zum Beispiel das Schweizer Val Poschiavo: Milch, Fleisch, Getreide, Kräuter und Obst aus dem Tal werden direkt vor Ort zu Käse, Wurst, Pasta, Tee oder Saft verarbeitet, Gastbetriebe im Tal servieren die lokalen Spezialitäten – und ziehen damit wiederum jenen Typ Gast an, der zu einem nachhaltigen Tourismuskonzept passt; ein positiver Kreislauf kommt in Gang. Die Zusammenarbeit zwischen Landwirtschaft und Gastgewerbe, aber auch mit anderen Sektoren, etwa der Kultur, dem Handwerk oder der Energiewirtschaft, ist fundamental, damit der Ansatz „100% Local“ funktionieren kann. Doch wie sehen die Details solcher Vernetzungen aus? Wie klappt die Zusammenarbeit zwischen den Stakeholdern? Welche Voraussetzungen braucht es? Welche Rolle spielen Zertifikate und Marken? Mit diesen und anderen Fragen werden die Projektpartner unter Leitung von Eurac Research sich befassen. In fünf Untersuchungsgebieten – darunter auch der Obervinschgau – werden in Workshops Potenziale und Schwachstellen identifiziert und Lösungen entwickelt. Ziel ist ein Modell, das in verschiedenen Regionen an die lokalen Gegebenheiten angepasst und umgesetzt werden kann.

## Prodotti locali, sviluppo regionale

Sapere dove e come viene prodotto il cibo è sempre più importante per i consumatori: distanze brevi, agricoltura biologica, produzione ecologica e rispettosa degli animali aggiungono valore ai prodotti. Per le regioni rurali questa è una grande opportunità. Per sfruttarla al meglio, nell'ambito della strategia dell'Ue per la regione alpina, il progetto "100% Local" sta sviluppando modelli di business a partire da esperienze di successo che possano essere trasferite anche ad altre regioni.

## Local products, regional development

Where and how food is produced is increasingly important for consumers: short transport routes, organic farming, environmentally and animal friendly production can make products “valuable” and create many opportunities for rural communities. To make the best possible use of this opportunity, the “100% Local” project is developing transferable business models based on the experience of successful initiatives within the framework of the EU strategy for the Alpine region.



# Sanierung historischer Gebäude: Online verfügbarer Erfahrungsschatz

**Wert und Schönheit historischer Gebäude zweifelt kaum jemand an, trotzdem kommt es oft zum Abriss: Sanierung erscheint kompliziert, langwierig und teuer, das Ergebnis ungewiss. Hier setzt das alpenweite Projekt ATLAS an. Eine Online-Datenbank mit Beispielen gelungener Sanierungen zeigt, dass man traditionelle Architektur bewahren kann, ohne auf Komfort und Energieeffizienz zu verzichten. Bauherren finden hier Inspiration – und Entscheidungshilfe bis ins letzte technische Detail. Außerdem wird in einigen Gemeinden persönliche Sanierungsberatung erprobt.**

Im ansprechend gestalteten „Historic Building Energy Retrofit Atlas“ ([www.hiberatlas.com](http://www.hiberatlas.com)) können Bauherren und Architekten auf den gesammelten Erfahrungsschatz aus erfolgreichen Sanierungen zugreifen: Wie wurden ähnliche Gebäude saniert? Warum hat man sich genau für diese Lösung entschieden? Welche Materialien haben sich für welche Zwecke bewährt? Wie hat sich die Energieeffizienz durch einen Eingriff verbessert? In die Datenbank fließen auch die Ergebnisse langjähriger und andauernder Forschungsarbeit ein, etwa zu Methoden der Innendämmung, Verbesserungen der Fenster oder Gebäudelüftung. Das von Eurac Research koordinierte Interreg-Projekt will künftig auch verstärkt die Gemeinden einbeziehen – eine kostenlose persönliche Sanierungsberatung wird derzeit in Kurtatsch erprobt. Wer die Schönheit des Alten erhält, so der Grundgedanke, verdient Unterstützung.

## Ristrutturazione di edifici storici: disponibile online un patrimonio di esperienza

Tutti riconoscono il valore e la bellezza degli edifici storici, eppure spesso vengono demoliti. Ristrutturarli sembra difficile e costoso e il risultato incerto. Il progetto ATLAS, coordinato da Eurac Research, raccoglie online esempi di ristrutturazioni di successo per mostrare come l'architettura tradizionale possa essere preservata senza sacrificare né il comfort né l'efficienza energetica. La piattaforma offre ispirazione e dettagli tecnici ai proprietari degli edifici. Nei comuni, inoltre, si stanno sperimentando consulenze di risanamento ad hoc.

## Renovation of historic buildings:

### A wealth of experience, now available online

The importance and beauty of historic buildings is unquestionable, yet demolition is still common practice. A newly available online database with examples of successful renovations demonstrates how traditional architecture can be preserved without sacrificing comfort or energy efficiency. Now, building owners can find inspiration online and use the information provided to make informed decisions based on previous experiences. At the municipality level, tailored renovation advice is also being tested.



# PV IMPACT – Monitoring progress in the Photovoltaic sector

**The increasing importance of sustainability in Europe's future energy use has resulted in an upsurge of the use of Photovoltaics. In Italy the energy generated by photovoltaics needs to increase to about 25 percent of its total electricity demand by 2030. In order to guarantee support for new renewable technologies, a strategic implementation plan of investment in Research and Innovation has been developed for the Photovoltaic sector. The European Commission launched the 36-month PV IMPACT project last year, with the aim of monitoring the progress of the Plan's initiatives and the achievement of the targets. This is part of the SET (Strategic Energy Technology) Plan which aims to strengthen Europe's role in Renewable Energy.**

Photovoltaics are a central building block of future electricity generation and energy transition and Italy, along with 10 other countries within the European Union has instigated an initiative in order to oversee the improvement and innovation of technologies and the coordination of national research efforts. PV IMPACT brings together key stakeholders, investors and businesses to achieve these objectives through industrial, economic and technical-scientific projects. Enel Green Power, CNR, and Eurac Research have the role within PV IMPACT to create a platform at national level which organises technical-strategic meetings between companies and public and private laboratories to network and is currently sharing information on the project activities in Italy, and on the skills and facilities of their research and innovation laboratories. In particular, our experts are collecting data on public and private spending, the type of projects funded and the overall performance of photovoltaic technology in order for improvements in technology performance to be in line with the expectations set by the Implementation Plan.

## **Monitoraggio dei progressi nel settore fotovoltaico**

In Italia l'energia generata dal fotovoltaico dovrà coprire il 25 per cento del fabbisogno energetico nazionale entro il 2030. Lo scorso anno, la Commissione europea ha lanciato il progetto PV IMPACT della durata di 36 mesi. Il progetto ha lo scopo di monitorare lo stato di avanzamento del Piano strategico degli investimenti in ricerca e sviluppo. Questo fa parte del Piano SET (Strategic Energy Technology) che mira a rafforzare il ruolo dell'Europa nel settore delle energie rinnovabili.

## **Photovoltaik in Europa: Monitoring der Fortschritte**

In Italien soll Energie aus Photovoltaikanlagen bis 2030 25 Prozent des nationalen Energiebedarfs abdecken. Vergangenes Jahr startete die Europäische Kommission das dreijährige Projekt PV IMPACT, um die Fortschritte des strategischen Investitionsplans für Forschung und Entwicklung zu überwachen. Er ist Teil des SET-Plans (Strategic Energy Technology), der darauf abzielt, die Rolle Europas im Bereich der erneuerbaren Energien zu stärken.



# Wachstum neu denken

**Noch dominiert zwar die Ansicht, Wohlstand und Entwicklung seien nur durch anhaltendes Wachstum des Bruttoinlandprodukts zu erreichen, doch Klimawandel, Finanz- und Wirtschaftskrisen und politische Instabilität haben die negativen Folgen unseres Wirtschaftens ins Bewusstsein gerückt. Das Wachstumsdogma zu hinterfragen und Möglichkeiten einer Postwachstumsökonomie zu erörtern, war Ziel einer Konferenz mit Vertretern aus Wissenschaft, Politik und Wirtschaft. Die Debatte über alternative Gesellschafts- und Wirtschaftsformen wird im Oktober mit einer Tagung zur Digitalisierung fortgesetzt.**

Die Tagung „Wachstum neu denken“ behandelte das Thema zum einen aus globaler Perspektive – etwa mit Beiträgen von Henning Vöpel, Direktor des Hamburgischen Weltwirtschaftsinstituts, und Felix Ekardt, Leiter der Forschungsstelle Nachhaltigkeit und Klimapolitik in Leipzig und Berlin, – ging aber auch auf regionale Entwicklungen ein. So wurden etwa die Einstellungen Südtiroler Klein- und Mittelbetriebe zum Wachstumsdogma beleuchtet. Dieser zweite Teil der Tagung, gemeinsam mit dem Gründer- und Innovationszentrum BASIS Vinschgau Venosta in Schluderns organisiert, war zugleich die Premiere der Churburger Wirtschaftsgespräche 2.0, ein neues Format, in dem sie auch künftig stattfinden werden. Die nächste Ausgabe, im Oktober 2020, ist wieder als Teil einer zweitägigen internationalen Konferenz konzipiert. Diese wird sich mit der Frage befassen, welche Auswirkungen die Digitalisierung auf Demokratie und Wirtschaft hat.

## Ripensare la crescita

L'idea che prosperità e sviluppo possano essere raggiunti solo attraverso una crescita sostenuta del prodotto interno lordo continua a dominare, ma i cambiamenti climatici e le crisi finanziarie ed economiche hanno reso le persone consapevoli delle conseguenze negative di questo modello. Una conferenza con i rappresentanti del mondo scientifico, politico ed economico ha messo in discussione il dogma della crescita e discusso le possibilità di un'economia post-crescita. Il dibattito sulle forme alternative di società ed economia continuerà in ottobre con una conferenza sulla digitalizzazione.

## Rethinking growth

The idea that prosperity and development can only be achieved through sustained growth in gross domestic product continues to dominate, but climate change and financial and economic crises have made people aware of the negative consequences of this model. A conference with representatives of the scientific, political and economic world has questioned the dogma of growth and discussed the possibilities of a post-growth economy. The debate on alternative forms of society and economy will continue in October with a conference on digitalisation.



# Comunicare i rischi legati a pericoli naturali

**Per gestire in maniera ottimale i rischi legati ai pericoli naturali è necessario considerare la percezione del rischio della popolazione e fare leva su una comunicazione efficace tra tutti gli attori coinvolti. È questo lo scopo di RiKoST, un progetto Interreg Italia-Austria che in Alto Adige coinvolge da vicino otto comuni e prevede campagne di informazione nelle scuole e nelle piazze per accrescere la consapevolezza del rischio e creare un dialogo sull'argomento.**

Per prevenire i rischi legati ai pericoli naturali non basta potenziare gli argini dei fiumi o costruire dighe di contenimento, è necessario agire in un'ottica di governance, coinvolgere attivamente la popolazione e renderla consapevole dell'impatto potenzialmente catastrofico di certi eventi e processi. Per questo i ricercatori di Eurac Research, in collaborazione con l'Agenzia per la protezione civile della Provincia autonoma di Bolzano e con il governo regionale della Carinzia, stanno portando avanti delle azioni mirate: con l'aiuto di occhiali per la realtà virtuale mostrano a studenti e cittadini i piani delle zone di pericolo elaborati dall'amministrazione provinciale.

Osservando le mappe virtuali le persone capiscono quale pericolo naturale potrebbe colpire la zona in cui vivono e con quale intensità. Grazie a immagini tridimensionali, poi, possono fare esperienza diretta dell'impatto di eventi accaduti sul territorio. Queste attività di comunicazione del rischio "in tempo di pace", slegate da specifiche situazioni di emergenza, possono risultare fondamentali per una prevenzione efficace del rischio.

## Naturgefahren: Mit Risiken richtig umgehen

Beim bestmöglichen Umgang mit Naturgefahren spielen die Risikowahrnehmung in der Bevölkerung und die effiziente Kommunikation aller beteiligten Akteure eine zentrale Rolle. Beides zu verbessern ist Ziel des österreichisch-italienischen Interreg-Projekts RiKoST, an dem in Südtirol acht Gemeinden beteiligt sind. Vorgesehen sind Sensibilisierungskampagnen in Schulen und auf öffentlichen Plätzen, um das Risikobewusstsein zu steigern und die Auseinandersetzung mit dem Thema anzuregen.

## Managing risks related to natural hazards

To best manage risks from natural hazards, we need to understand what influences risk perception and how to communicate those risks and potential mitigation measures. This is the aim of RiKoST, an Interreg Italy-Austria project that, in South Tyrol, actively involves eight municipalities and foresees campaigns in schools and public spaces in order to increase risk awareness and create a debate on the subject.



# Investigation of the beneficial effects of modulation of autophagy in Parkinson's Disease

**Parkinson's disease (PD) is the most common neurodegenerative movement disorder and affects about 2-3% of the population over the age of 65. The etiology of PD is still undefined although studies of familial cases have provided hints for certain mechanisms involved in the disease. A pathological hallmark of PD is the presence of inclusions of the protein  $\alpha$ -synuclein (aSyn) also known as Lewy bodies. This project seeks to investigate mechanisms involved in the formation, maintenance and degradation of these inclusions.**

Several cellular processes are hypothesised to mediate these mechanisms, with a prominent attention directed towards autophagy, where the cells break down components and recycle old and unwanted materials. Additionally, several familial PD genes and genes associated to an increased risk of developing PD have a role in cellular degradation. Results obtained in a PD cell model confirm the importance of the autophagy/lysosome pathway and demonstrate that the genomic risk factor RIT2 can reduce the accumulation of pathological aSyn. Part of the study took place in Canada to investigate the effect of RIT2 in a PD mouse model, and demonstrated an ability to hinder aSyn-induced neurotoxicity. Our results suggest that the modulation of autophagy could constitute a new strategy to combat aSyn pathology, applicable to different types of Parkinson's disease.

## Parkinson: Zellprozesse in Zusammenhang mit charakteristischen Protein-Einschlüssen erforschen

Morbus Parkinson ist die häufigste neurodegenerative Bewegungsstörung, sie betrifft etwa zwei bis drei Prozent der Bevölkerung über 65. Ihre Ursache ist immer noch unklar, doch Studien zu erblich bedingten Fällen haben eventuell involvierte Krankheitsmechanismen erhellt. Ein zentrales pathologisches Merkmal sind Einschlüsse des Proteins Alpha-Synuclein in Gehirnzellen, die sogenannten Lewy-Körperchen. Ziel des Projekts ist ein besseres Verständnis der Mechanismen, die an Entstehung und Abbau dieser Einschlüsse beteiligt sind; insbesondere untersuchen die Forscher die Autophagozytose, eine Zellfunktion, die für das Recycling von Zellbestandteilen zuständig ist.

## Parkinson: processi cellulari e aggregati proteici

La malattia di Parkinson è il più comune disturbo neurodegenerativo del movimento e colpisce circa il due-tre per cento della popolazione di età superiore ai 65 anni. La sua eziologia è ancora indefinita, anche se studi di casi familiari hanno fornito indicazioni su alcuni meccanismi coinvolti nella malattia. Una caratteristica patologica del Parkinson è la presenza di accumuli della proteina  $\alpha$ -sinucleina (aSyn), che produrrebbero aggregazioni di cellule, noti anche come corpi di Lewy. Il progetto cerca di indagare i meccanismi coinvolti nei processi di formazione, mantenimento e degradazione di questi aggregati.



# Parkinson: Körpereigene Schutzmechanismen aufklären

**Bewegungsstörungen wie Parkinson hängen bei einem Teil der Krankheitsfälle mit Veränderungen in bestimmten Genen zusammen. Doch viele Menschen, die einzelne Mutationen tragen, die manchmal zur Erkrankung führen können, bleiben dennoch gesund: In ihren Zellen wirken also offenbar Schutzmechanismen. Diese Vorgänge zu erhellen, um daraus dereinst neue therapeutische Ansätze zu gewinnen, ist Ziel eines großen internationalen Forschungskonsortiums. Eurac Research untersucht in seinem Rahmen die Rolle des mitochondrialen Genoms.**

Mitochondrien sind Organellen innerhalb der Zelle, die die Zelle mit Energie versorgen. Die Zusammenhänge zwischen einem Funktionsverlust dieser Zellkraftwerke und der Parkisonerkrankung erforschen Wissenschaftler des Instituts für Biomedizin schon länger. Nun konzentrieren sie ihre Aufmerksamkeit auf das Erbgut in den Mitochondrien: Welche Merkmale beeinflussen hier die mitochondriale Funktion? Und wie interagieren sie mit krankmachenden Veränderungen des Gens „Parkin“? Inwieweit haben Eigenschaften des mitochondrialen Genoms Einfluss darauf, ob Träger einer einzelnen Veränderung im Parkin-Gen die Krankheit entwickeln oder nicht?

Die Daten, um diesen Fragen auf den Grund zu gehen, liefert die Bevölkerungsstudie CHRIS. An einigen hundert Proben von Mutationsträgern haben die Forscher das mitochondriale Genom schon sequenziert und analysiert. Die Studie ist eine von zehn in einem Großprojekt, das die Deutsche Forschungsgemeinschaft (DFG) finanziert; Partner sind unter anderem die Universitäten von Lübeck, Kiel und Luxemburg.

## **Parkinson: chiarire i meccanismi di protezione del corpo**

I disturbi del movimento come quelli provocati dal Parkinson sono legati, in alcuni casi, alle mutazioni di alcuni geni. Molte persone sono portatrici di mutazioni individuali che a volte possono provocare la malattia, ma rimangono comunque sane perché esistono meccanismi di protezione che entrano in azione nelle loro cellule. Un importante progetto di ricerca internazionale finanziato dalla Associazione tedesca per la ricerca (DFG) mira a far luce su questi processi per sviluppare nuovi approcci terapeutici. Eurac Research sta studiando il ruolo del genoma mitocondriale.

## **Parkinson's: Revealing the body's protection mechanisms**

Movement disorders such as Parkinson's are linked, in some cases, to mutations in certain genes. Many people are carriers of individual mutations that can sometimes lead to the disease, however they remain healthy because protective mechanisms come into action in their cells. A major international research project funded by the German Research Foundation (DFG) aims to shed light on these processes in order to develop new therapeutic approaches. Eurac Research is studying the role of the mitochondrial genome.



# Scuola di dottorato internazionale per studiare l'insufficienza renale

**L'insufficienza renale cronica colpisce oltre il cinque per cento della popolazione. La degenerazione del rene è un fatto irreversibile e al momento non esistono cure. Il nostro Istituto di biomedicina da tempo svolge ricerche per capire meglio come funzionano i reni. Nei prossimi anni, grazie a un grant europeo nella cornice del Marie-Curie Innovative Training Network 15 dottorandi si specializzeranno in questa tematica.**

L'obiettivo è di formare entro il 2023 quindici specialisti pronti a individuare soluzioni terapeutiche realistiche per l'insufficienza renale. Per questo il programma di formazione vede coinvolti sia centri di ricerca, pubblici e no profit, sia aziende farmaceutiche attive nel settore della genomica. Durante il percorso, che prevede un centro di riferimento e anche lunghi soggiorni in altre realtà, i dottorandi potranno così coniugare la parte teorica di più discipline, come epidemiologia, bioinformatica, statistica e biologia molecolare, e l'esperienza pratica in ospedale o azienda. La loro carriera potrà proseguire sia nel mondo della ricerca di base sia in quello produttivo.

A Parigi, alla Université de Paris, si trova il gruppo capofila, cui si aggiungono le università di Friburgo e Zurigo e il Leiden University Medical Center. In Italia, oltre a Eurac Research, partecipa l'Istituto Mario Negri di Bergamo.

Questo programma formativo si poggia sulla lunga esperienza del nostro gruppo di ricerca all'interno del consorzio CKDGen: grazie all'identificazione, finora, di 147 regioni genetiche associate alla funzione renale si sta componendo il più dettagliato catalogo della genetica del rene.

## Doktorandenschule zur Erforschung von Nierenversagen

Chronisches Nierenversagen betrifft über fünf Prozent der Bevölkerung. Die Verschlechterung der Nierenfunktion ist irreversibel, derzeit gibt es keine Behandlung. Unser Institut für Biomedizin führt schon seit Längerem Studien durch, um besser zu verstehen, wie die Nieren funktionieren. Dank einer EU-Förderung im Rahmen des Marie-Curie-Netzwerks für innovative Doktorandenausbildung werden sich in den kommenden Jahren 15 Doktoranden in diesem Bereich spezialisieren.

## International doctoral school to study renal failure

Chronic renal failure affects over five percent of the population. Kidney degeneration is irreversible and there is currently no treatment for it. Our Institute of Biomedicine has been conducting research over an extensive period of time to better understand the genetic and molecular basis of kidney function. In the coming years, thanks to a European grant in the framework of the Marie-Curie Innovative Training Network, 15 doctoral students will specialise in this subject.



# Südtiroler Gesundheitsstudie CHRIS: Zweite Phase ist gestartet

**Im Oktober 2019 ist die zweite Phase – die „Follow-up-Phase“ – der CHRIS-Studie im Vinschgau gestartet. Um langfristig beobachten zu können, wie sich der Gesundheitszustand der Teilnehmer entwickelt, werden Messungen aus der ersten Phase wiederholt. Doch werden auch Tests mit neuen Technologien durchgeführt, die vertiefende Erkenntnisse zur Gesundheit des Herzkreislauf-, Stoffwechsel- und neurologischen Systems liefern sollen, sowie zu Krebserkrankungen und Alterungsprozessen.**

Die CHRIS-Studie ist eine auf lange Zeit angelegte longitudinale Bevölkerungsstudie im Vinschgau, mit der die Forscher untersuchen, welche Faktoren und Verhaltensweisen zum Auftreten der häufigsten Erkrankungen führen und Krankheiten entgegenwirken. Die 13.393 Teilnehmer werden nach und nach im Laufe der kommenden Jahre zum zweiten Mal zu Untersuchungen in das CHRIS-Zentrum im Krankenhaus Schlanders eingeladen. Neu für die zweite Phase sind einige spezifische Tests wie beispielsweise die Untersuchung der Halsschlagader mithilfe von Ultraschall. Damit können die Forscher Ablagerungen erkennen, die Hinweise auf Alterungsprozesse – etwa auf eine mögliche Atherosklerose – geben können. Bei einigen Teilnehmern wird mithilfe eines speziellen Geräts die Netzhaut am Auge untersucht. Mit der nicht-invasiven Untersuchung lassen sich eventuelle Herzkreislauferkrankungen und Erkrankungen des zentralen Nervensystems frühzeitig erkennen. CHRIS ist die größte genetische Studie in Italien, die sich flächendeckend auf eine Region konzentriert. Die erhobenen Proben und Informationen aus der 2018 abgeschlossenen ersten Studienphase sind bereits jetzt eine wertvolle Ressource für Südtirol und für Forschungsprojekte weltweit. Die CHRIS-Biobank besteht aus über 800.000 Blut-, Urin- und DNA-Proben, verknüpft mit den dazugehörigen medizinisch relevanten Informationen

wie Alter, Krankengeschichte und Lebensumstände der Studienteilnehmer. In genetischen und epidemiologischen Studien forschen Wissenschaftler derzeit mithilfe der CHRIS-Daten zu chronischen Nierenerkrankungen, Parkinson, Fettleibigkeit, Herzfunktion, Schlafstörungen, Fettstoffwechsel oder dem Immunsystem.

## **Studio sulla salute in Alto Adige CHRIS: al via la seconda fase**

Nell'ottobre 2019 è iniziata la seconda fase – il "follow-up" – dello studio CHRIS in val Venosta. Per poter osservare l'evoluzione a lungo termine dello stato di salute dei partecipanti, verranno ripetute le misurazioni della prima fase. Verranno svolti anche test con nuove tecnologie per ottenere informazioni più approfondite sulla salute del sistema cardiovascolare, metabolico e neurologico, nonché sullo sviluppo di tumori e sul processo di invecchiamento.

## **Initiation of the second phase of CHRIS, a South Tyrolean health study**

In October 2019, the "follow-up phase" of the CHRIS trial in Venosta was initiated. In order to be able to observe the long-term development of the participants' state of health, measurements from the first phase are being repeated. In addition, tests with new technologies are also going to be undertaken, which should provide more in-depth insights into the health of the cardiovascular, metabolic and neurological systems, as well as cancer and aging processes.



# Blutplasma und Höhenakklimatisation

**Bei Aufstieg in die Höhe sinkt der Sauerstoffgehalt im arteriellen Blut. Der Körper passt sich an, indem er das Volumen des Blutplasmas reduziert: Dadurch steigt die Konzentration von Hämoglobin, das Blut transportiert mehr Sauerstoff. Für die Akklimatisation ist dieser Mechanismus zentral; wie er genau reguliert wird, ist jedoch unklar. Studien im Gelände, beeinflusst von zahlreichen Störfaktoren, erbrachten widersprüchliche Resultate. Im terraXcube konnten diese Störfaktoren ausgeschaltet und die Effekte der reduzierten Sauerstoffverfügbarkeit isoliert untersucht werden.**

Begeben Menschen sich in die Höhe, haben sie nicht nur weniger Sauerstoff zu Verfügung: Oft ändert sich auch ihre Ernährung und körperliche Aktivität, ihr Schlafrhythmus und die Menge Flüssigkeit, die sie trinken. Und die Luft, die sie atmen, hat zudem eine andere Temperatur und Feuchtigkeit. All diese Faktoren können Einfluss auf das Plasmavolumen haben. Welche Veränderungen allein die geringere Sauerstoffverfügbarkeit bewirkt, und welche Mechanismen diesen zugrunde liegen, untersuchte eine experimentelle Studie im terraXcube. Elf Probanden verbrachten zwei mal vier Tage in der Klimakammer, unter exakt gleichen Bedingungen bis auf die Variable Luftdruck: Einmal entsprach er der Höhe von Bozen, einmal einer Höhe von 3500 Metern. Die Forscher erfassten eine Vielzahl Parameter, die die Reduktion des Plasmavolumens, aber auch andere Körperreaktionen bei Höhenexposition erhellen können. Die Ergebnisse werden derzeit ausgewertet.

## Plasma sanguigno e acclimatamento in altitudine

Quando si sale in alta quota il contenuto di ossigeno nel sangue arterioso diminuisce. Il corpo si adatta riducendo il volume del plasma sanguigno: la concentrazione di emoglobina aumenta e il sangue trasporta più ossigeno. Questo meccanismo è fondamentale per l'acclimatamento, ma non è chiaro come sia regolato esattamente. Gli studi sul campo, influenzati da numerosi fattori di disturbo, hanno dato risultati contraddittori. Nel terraXcube questi fattori di disturbo possono essere eliminati per studiare senza interferenze gli effetti della disponibilità di ossigeno.

## Blood plasma and altitude acclimatisation

When ascending to high altitudes, oxygen content in the arterial blood decreases. The body adapts by reducing the volume of the blood plasma which increases the concentration of haemoglobin, so that the blood carries more oxygen. This mechanism is central to acclimatisation, but exactly how it is regulated remains unclear. Studies in the field, influenced by numerous confounding factors, yielded contradictory results. In the terraXcube, these confounding factors were eliminated so that the isolated effects of reduced oxygen availability could be investigated.



# Artificial acclimatisation: Simone Moro and Tamara Lunger case study

**The two world-renowned mountaineers underwent artificial acclimatisation within the terraXcube before an ambitious Himalayan dual-summit attempt on Gasherbrum I and II. Owing to the pair's extensive experience of high altitude and peak level of physical fitness, certain tests, including simulating the conditions of being on expedition close to 8000m were undertaken. Upon return, their de-acclimatisation was also monitored. Led by the researchers of the Institute of Mountain Emergency Medicine, this project has provided new insights to, and a better understanding of, physiological and neurocognitive impacts of multiple high-altitude exposures.**

In general, the body is well equipped to adjust and acclimatise to reduced oxygen levels (hypoxia), however controversy remains regarding the scientific basis of pre-acclimatisation strategies and the use of normobaric instead of hypobaric hypoxia. Without successful acclimatisation, above ~5000m, physical and neurocognitive performance can become progressively limited and the risk of serious high-altitude illnesses, can increase. For clinicians specialising in this area, it is paramount to identify the exact changes developing and effective strategies to acclimatise. Thanks to the terraXcube, a safe infrastructure exists, which enables replicable investigation of direct ascent to high altitude. As a result, Acclim19 became one of the first International research collaborations\* to be performed in the new facility. Both, strengthening existing collaborations and incorporating new investigative techniques: MRI, duplex ultrasound, neurocognitive testing, microcirculatory imaging and wearable health monitors.

## **Acclimatamento artificiale: studio con Simone Moro e Tamara Lunger**

I due alpinisti di fama mondiale sono stati sottoposti ad acclimatamento artificiale all'interno del terraXcube prima di tentare la salita alla vetta del Gasherbrum I e II. La grande esperienza di Moro e Lunger e le loro condizioni fisiche hanno permesso di svolgere test fisici simulando un'altitudine di quasi 8000 metri. Al rientro degli alpinisti è stato monitorato il de-acclimatamento. Le analisi svolte hanno fornito ai ricercatori di Eurac Research nuove informazioni sull'impatto fisiologico e neurocognitivo di esposizioni multiple ad alta quota.

## **Künstliche Akklimatisierung: Eine Fallstudie an Simone Moro und Tamara Lunger**

Vor ihrem ehrgeizigen Versuch, die beiden Himalaya-Gipfel Gasherbrum I und Gasherbrum II zu besteigen und zu überschreiten, unterzogen die beiden weltberühmten Extremalpinisten sich einer künstlichen Akklimatisierung im terraXcube. Die große Erfahrung und exzellente körperliche Verfassung der beiden erlaubte Tests in simulierten Höhen von fast 8000 Metern. Nach der Rückkehr von der Expedition wurde auch die De-Akklimatisierung überwacht. In der Studie konnten die Forscherinnen und Forscher ein genaueres Verständnis davon gewinnen, welche physiologischen und neurokognitiven Auswirkungen es hat, wenn Menschen mehrfach großen Höhen ausgesetzt sind.

\*Eurac Research, terraXcube, Eurac Research Institute of Mountain Emergency Medicine, unitn, Uki, MUI, UIBK, ULSS16 Padova, CNR and Zurich University



# Elisoccorso in quota senza ossigeno: un po' più faticoso, ma efficace

**Negli interventi fino a 5000 metri, le squadre di elisoccorso fanno più fatica, ma l'efficacia medica non sembra essere compromessa dalla quota. Lo dimostra un esperimento con circa 50 tra medici, tecnici, piloti e personale paramedico provenienti da Svizzera, Germania, Italia e Austria. Il team di medicina d'emergenza interviene così nella discussione sulla opportunità di far usare ossigeno supplementare sia ai piloti sia al resto del personale a bordo durante i voli tra i 3000 e 5000 metri, con la conseguente necessità di riorganizzare tutti i mezzi.**

Piccoli gruppi sono stati sottoposti a vari test a 200, 3000 e 5000 metri. Queste quote, raggiunte all'interno del terraXcube in ipossia ipobarica, corrispondono al limite massimo dei soccorsi sulle Alpi.

I partecipanti hanno compilato test neurocognitivi (originalmente disegnati per la Nasa) e hanno effettuato massaggi cardiaci su un manichino. Il manichino registrava la corretta posizione delle mani, la frequenza delle spinte e la loro profondità. Nel frattempo, i ricercatori monitoravano i partecipanti: frequenza respiratoria, saturazione e ritmo cardiaco.

"In generale non abbiamo visto differenze clinicamente importanti nella rianimazione a diverse quote, né della prestazione neurocognitiva né della prestazione fisica; le donne e i partecipanti più leggeri sembrano però più affaticati", spiega Anna Vögele, medico e corresponsabile dello studio. La grande novità è che, grazie all'uso della camera ipobarica, i partecipanti ignoravano la quota effettiva alla quale si trovavano. I ricercatori hanno così potuto analizzare i dati fisiologici puri, non condizionati dai fattori ambientali.

## Flugrettung in großen Höhen: auch ohne Sauerstoff effizient

Hubschrauber-Rettungseinsätze bis zu 5000 Meter Höhe sind für die Rettungsteams anstrengender, doch scheint die Höhe nicht die medizinische Effizienz zu beeinträchtigen. Dies zeigt ein Experiment mit rund 50 Ärzten, Technikern, Piloten und Sanitätern aus der Schweiz, Deutschland, Italien und Österreich. Die Ergebnisse sind besonders relevant, da derzeit diskutiert wird, ob Piloten und anderes Bordpersonal bei Rettungsflügen zwischen 3000 und 5000 Metern Sauerstoff verwenden sollten, was eine Neuorganisation der Einsätze erfordern würde.

## Air rescue at high altitudes: efficient even without oxygen

Helicopter rescue operations up to 5000m altitude are more strenuous for rescue teams, but the altitude does not seem to affect medical efficiency. This was demonstrated by an experiment with about 50 doctors, technicians, pilots and paramedics from Switzerland, Germany, Italy and Austria. The results are particularly relevant, as there is currently a debate as to whether pilots and other on-board personnel should use oxygen during rescue flights between 3000 and 5000m, which would require a reorganisation of procedures.



# Neue Technologien für Bergrettungseinsätze

**Für Bergrettungseinsätze in schwierigem Gelände können neue Sensor- und Funktechnologie oder Drohnen große Chancen bergen. Um geeignete Geräte und Anwendungen zu entwickeln und ihre Einsatzmöglichkeiten zu testen, arbeiten Technologie-Experten und Höhenmediziner von Eurac Research eng zusammen. Testgebiet ist die Bletterbach-Schlucht. Die Ergebnisse werden mit Bergrettungsdiensten in Tirol, Südtirol und Belluno ausgetauscht, um gemeinsam technologische Kompetenz aufzubauen und die grenzüberschreitende Kooperation zu stärken.**

In der Bletterbachschlucht ist es besonders schwierig, einen Verirrten oder Verletzten zu finden: Die 400 Meter tiefe und acht Kilometer lange, enge Schlucht ist schwer einsehbar, es gibt kein GPS-Signal, Handys haben keinen Empfang; zudem kommen jährlich über 6000 Besucher. Aus genau diesen Gründen eignet die Schlucht sich, um innovative Technologien auf die Probe zu stellen. Die Experten vom Center for Sensing Solutions entwickeln einen neuartigen Sensor- vergleichbar einem Lawinensuchgerät, doch mit etwa drei Mal größerer Reichweite –, der in Kombination mit einer Drohne eingesetzt werden soll. Die Idee ist, in jeden Besucherschutzhelm ein Signale aussendendes Gerät zu integrieren; im Falle eines Unfalls würde dann eine Drohne mit dem Suchgerät über der Schlucht kreisen, um den Vermissten zu orten. Den Prototyp und das Rettungsverfahren werden die Entwickler gemeinsam mit Höhenmedizinern, Bergrettungsteams und allen Projektpartnern im Herbst in der Bletterbachschlucht testen und bewerten.

## New technologies for mountain rescue operations

For mountain rescue operations in difficult terrain, new sensor and radio technology and drones can offer great opportunities. Eurac Research's technology experts and altitude physicians are working closely together to develop suitable devices and applications and testing their possible uses. The test area is the Bletterbach Gorge. The results will be exchanged with mountain rescue services in Tyrol, South Tyrol and Belluno in order to jointly develop technological competence and strengthen cross-border cooperation.

## Nuove tecnologie per il soccorso alpino

Per le operazioni di soccorso in montagna su terreni difficili, sensori, tecnologie radio e droni possono offrire grandi opportunità. Gli esperti di tecnologia e di medicina di montagna di Eurac Research lavorano a stretto contatto per sviluppare dispositivi e applicazioni e per testarne i possibili utilizzi. L'area di prova è la gola del Bletterbach. I risultati saranno condivisi con il soccorso alpino in Tirolo, Alto Adige e provincia di Belluno per sviluppare le competenze tecnologiche e rafforzare la cooperazione transfrontaliera.



# Antico Egitto: centinaia di tac per approfondire la storia delle imbalsamazioni

**In oltre tremila anni, i rituali di imbalsamazione, inclusi materiali e metodi, sono cambiati e varie domande sono ancora aperte. Per esempio, non sono chiari i passaggi da una tecnica all'altra, le differenze di trattamento tra donne e uomini e le usanze nelle varie aree geografiche. Per dare qualche risposta, i nostri antropologi analizzano oltre 200 tac effettuate sui resti umani del Museo Egizio (ME) a Torino e al Neues Museum di Berlino.**

Le fasciature non sono che un esempio: in principio i corpi venivano avvolti in pelli di capra o, più raramente, gazzella. Le bende di lino sono comparse attorno al 3150 a.C.; erano stoffe di recupero e talvolta venivano ricavate dalle vesti usate in vita dal defunto. In seguito, nel periodo romano, cioè tra il 30 a.C. e il 395 d.C., le bende venivano tessute apposta, in lino pregiato, e decorate con cura. Ma anche il modo in cui gli arti venivano bendati, la posizione dei corpi (per esempio le braccia incrociate sul petto o distese lungo i fianchi), come questi venivano eviscerati, la presenza o meno degli amuleti sono elementi che variano da un'epoca all'altra e anche in base alle aree geografiche. Nei prossimi mesi i nostri antropologi sfrutteranno la banca dati di tac a loro disposizione, circa 200 immagini raccolte tra i musei di Berlino e Torino, per ricostruire per esempio il sesso e l'età alla morte e per studiare in modo sistematico ogni caratteristica dell'imbalsamazione. Le loro considerazioni andranno a intrecciarsi agli studi degli egittologi.

## **Altes Ägypten: Computertomographien geben Einblick in die Geschichte der Einbalsamierung**

Über dreitausend Jahre wähnte die Praxis der Mumifizierung im alten Ägypten. Einbalsamierungsrituale einschließlich Materialien und Methoden veränderten sich, und viele Fragen dazu sind noch offen. Unklar ist etwa, inwieweit Männer und Frauen anders behandelt wurden, und wie Bräuche sich je nach Region unterschieden; auch die Übergänge von einer Technik zur anderen müssen erst erklärt werden. Um Antworten zu finden, analysieren unsere Anthropologen über 200 Computertomographien von Mumien des Ägyptischen Museums (ME) in Turin und des Neuen Museums in Berlin.

## **Ancient Egypt: shedding light on the history of embalming**

In ancient Egypt the practice of mummification lasted for more than three thousand years. Embalming rituals, including materials and methods, changed during the course of time and many questions still remain unanswered. It is unclear, for example, to what extent men and women were treated differently and how customs differed from region to region, in addition, the transitions from one technique to another have yet to be clarified. To find answers, our anthropologists are analysing over 200 computer tomographs of mummies from The Egyptian Museum (ME) in Turin and the Neues Museum in Berlin.



# Unser Lebensstil bedroht die Vielfalt der Darmflora

**Billionen Mikroorganismen leben am und im Menschen, die meisten im Darm. Doch der westliche Lebensstil lässt die Vielfalt dieser Besiedelung dramatisch schrumpfen. Forscher der Universität Trient und von Eurac Research zeigten dies für das Darmbakterium *Prevotella copri*: In fossilisierten Fäkalien aus Mexiko wiesen die Bozner Mumienexperten vier Varianten des Bakteriums nach, ebenso in Proben von Ötzi. Ähnliche Vielfalt fanden die Trentiner Forscher heute nur noch bei traditionellen Stammesgesellschaften – in der industrialisierten Welt ist das Bakterium fast ausgestorben.**

Nicola Segata und Adrian Tett von der Universität Trient suchten *Prevotella copri*, ein Bakterium, das bei der Aufspaltung komplexer pflanzlicher Nahrungsmittel hilft, in der Darmflora von 6500 Menschen aus der ganzen Welt. Während sie in Proben aus traditionellen Gemeinschaften etwa in Ghana und Tanzania vier Varianten identifizierten, fanden sie in den Proben aus Industriegesellschaften höchstens eine Variante; häufig war das Bakterium überhaupt nicht vorhanden. Dass diese Verarmung mit unserem Lebensstil zusammenhängt, untermauerte Mumienexperte Frank Maixner mit seinen Forscherkollegen: Mittels Analyse alter DNA wiesen sie sowohl in Fäkalien aus dem siebten Jahrhundert, gefunden in Mexiko, als auch in Magenmaterial Ötzis alle vier Varianten des Bakteriums nach. Für den Verlust an Vielfalt werden in der Forschung z.B. Antibiotika oder Nahrungszusatzstoffe verantwortlich gemacht; von Bedeutung ist er, weil ein verarmtes Mikrobiom uns offenbar anfälliger für viele Erkrankungen macht.

## **Our lifestyle threatens the diversity of the intestinal flora**

Trillions of microorganisms live on and in humans, most of them in the intestine. But the western lifestyle is dramatically reducing the diversity of this colonisation. Researchers from the University of Trento and Eurac Research have demonstrated this with the intestinal bacterium *Prevotella copri*: mummy experts from Bolzano identified four variants of the bacterium in fossilised faeces from Mexico as well as in samples from Ötzi. Today, researchers from Trento have only found similar diversity in traditional tribal societies - the bacterium is almost extinct in the industrialised world.

## **Il nostro stile di vita minaccia la diversità della flora intestinale**

Negli esseri umani vivono miliardi di microrganismi, la maggior parte nell'intestino. Lo stile di vita occidentale, però, sta riducendo drasticamente la diversità di questa colonizzazione. I ricercatori dell'Università di Trento e di Eurac Research lo hanno dimostrato analizzando il batterio intestinale *prevotella copri*: in feci fossilizzate provenienti dal Messico, gli esperti di mummie di Bolzano hanno identificato quattro varianti del batterio, così come nei campioni di Ötzi. Oggi, i ricercatori di Trento hanno trovato una simile diversità solo nelle società tribali tradizionali; il batterio è quasi estinto nel mondo industrializzato.



# A preservation assessment of the mummified human remains in Turin's Egyptian Museum

**The Egyptian Museum in Turin holds a unique collection of 116 mummified or skeletal human bodies or body parts. Over the last two years the collection was analysed by the "Mummy Conservation Project", with the aim of improving mummy conservation techniques. Fungi, bacteria and humidity drive the decay of mummies if they are not controlled and can endanger a cultural heritage of inestimable value. For this reason, the Egyptian Museum of Turin commissioned Eurac Research's experts to check all mummies for their state of preservation and to ensure the best possible conservation practices for them.**

After two years of intensive work at the Turin Museum and in our laboratories, the experts were able to reassure their clients that, stored at a humidity of between 25 and 65 percent, the 116 ancient human remains in the museum are currently safe. Although the mummy researchers discovered some spores and bacteria on the human remains, they were able to prove that there is no danger of proliferation due to suitable storage. Thanks to this analysis, our researchers were able to give the Egyptian Museum the assurance that the mummies are in a good condition of preservation. In addition to Eurac Research, the Turin State Office for Archaeology, Art and Landscape were also involved in the project, as well as physicians from the American Horus group, who are currently researching the spread of arteriosclerosis in ancient times. The first results of the analysis have now been published in the journal of the Egyptian Museum.

## **Verifica dello stato di conservazione di tutte le mummie del Museo Egizio a Torino**

Il Museo Egizio ha affidato agli esperti di Eurac Research lo studio dello stato di conservazione di tutte le mummie esposte o conservate a Torino. Dopo due anni di esami nel museo e nei laboratori di Bolzano, i ricercatori hanno potuto rassicurare i loro partner scientifici: con un grado di umidità relativa compreso tra il 25 e il 65 per cento, i 116 resti umani conservati nelle vetrine e negli archivi del Museo Egizio sono nell'intervallo di sicurezza e quindi in buona salute.

## **Mumien des Ägyptischen Museums in Turin auf Konservierungsstand hin überprüft**

Im Auftrag der Museumsleitung haben die Experten von Eurac Research sämtliche Mumien des Ägyptischen Museums von Turin auf ihren Konservierungszustand hin untersucht, um die bestmögliche Aufbewahrung sicherzustellen. Nach zwei Jahren intensiver Arbeit im Museum sowie in den Bozner Laboren des Instituts für Mumienforschung war das Ergebnis beruhigend: Aufbewahrt bei einer Luftfeuchtigkeit zwischen 25 und 65 Prozent, sind die 116 Mumien derzeit nicht gefährdet.



# Biodiversity Monitoring in South Tyrol

**Biodiversity encompasses the entire diversity of all life forms and is the basis of all ecosystem services. Intact ecosystems provide our food and are an economic resource for future generations. In this context, the establishment of a permanent biodiversity monitoring system for South Tyrol has become the focus of a long-term and comprehensive study led to provide important insights on the relationship between climate, human activities, local flora and fauna.**

From the 320 terrestrial study areas, the monitoring has been surveying the development of the entire South Tyrolean environment, including vineyards, orchards, meadows, forests and alpine environments. Zoologists and botanists from the research centre have been taking samples and collecting information to understand at what speed and where changes are most radical and how animal and plant species are reacting to them. The results will be useful in providing the scientific basis for policy decisions in areas such as spatial planning, agriculture and environmental protection. Particular attention is dedicated to species that are especially sensitive to environmental and land-use changes, this includes birds and vascular plants, groups of insects such as grasshoppers and butterflies and bats. The project Biodiversity Monitoring South Tyrol was launched on the initiative of the government of the Autonomous Province of Bolzano-Südtirol and samples and data collected will be transferred to project partner Museum of Nature South Tyrol, the central documentation site for South Tyrolean flora and fauna.

## **Monitoraggio della biodiversità in Alto Adige**

La biodiversità comprende la complessità di tutte le forme di vita ed è alla base dei servizi ecosistemici. Gli ecosistemi ci forniscono cibo e sono una risorsa economica per le generazioni future. Il sistema di monitoraggio permanente della biodiversità in Alto Adige è al centro di uno studio a lungo termine che punta a fornire importanti informazioni sul rapporto tra clima, attività umane, flora e fauna locale.

## **Biodiversitäts-Monitoring in Südtirol**

Biodiversität schließt die Vielfalt aller Lebensformen ein und ist die Grundlage aller Ökosystemleistungen. Intakte Ökosysteme versorgen uns mit Nahrung und bedeuten eine wirtschaftliche Ressource für künftige Generationen. Ein systematisches, permanentes Monitoring der Biodiversität in Südtirol steht im Zentrum einer umfassenden und langfristigen Studie, die wichtige Erkenntnisse zu den Zusammenhängen zwischen Klima, menschlicher Nutzung und lokaler Flora und Fauna liefert.



# Fischpopulationen und Gewässergüte im Alpenraum

**Welchen Einfluss haben Wasserchemie, hormonaktive Substanzen, Fischnahrung in Form kleiner wirbelloser Tiere, fischfressende Vögel, Fischerei und Umlandnutzung auf die Fischfauna? In einer großangelegten Studie in Süd-, Nord- und Osttirol haben Forscher diese Faktoren untersucht und miteinander kombiniert. Das vorläufige Fazit des Forscherteams: Treten an einem Gewässer mehrere Stressfaktoren gleichzeitig auf, wirken diese nicht nur in ihrer Summe, sondern es ergibt sich ein negativer Multiplikationseffekt auf das Gewässersystem.**

Die ersten Ergebnisse bestätigen, dass es in Gewässern in tieferen Lagen eine größere Anzahl und Vielfalt an Fischen gibt als in höher gelegenen Berggewässern. Je weniger die Gewässer vom Menschen beeinträchtigt sind, etwa durch Kläranlagen, Verbauungen oder Unterbrechungen, umso besser kann sich der natürliche Fischbestand entwickeln. Erstmals großflächig untersucht haben die Forscher, wie sich die Umlandnutzung auf den Fischbestand auswirkt – erste Auswertungen zeigen, dass sie einen erheblichen Einfluss hat. Allgemein gut ist die Wasserqualität der heimischen Gewässer: Chemische Substanzen wie Nitrat, Aluminium, Kupfer, Ammoniak liegen unter den gesetzlichen Grenzwerten. Das interdisziplinäre Forscherteam aus Landschaftsökologen, Gewässerökologen, Chemikern und Ornithologen arbeitet derzeit an der weiteren Auswertung der umfangreichen Datenmenge. Partner der Interreg-Studie sind die Universität Innsbruck und die Agentur Landesdomäne der Autonomen Provinz Bozen.

## Popolazioni ittiche e qualità dell'acqua nella regione alpina

Che influenza hanno sulla fauna ittica la chimica dell'acqua, gli interferenti endocrini, i piccoli invertebrati di cui si cibano i pesci, gli uccelli che a loro volta si nutrono di pesci, la pesca e l'uso del suolo? In uno studio su larga scala svolto in Alto Adige, Tirolo del Nord e Tirolo orientale, i ricercatori hanno analizzato questi fattori. Secondo i primi risultati, se in un corso d'acqua si verificano contemporaneamente diversi fattori di stress, il loro impatto non è dato solo dalla loro somma, ma la loro interazione ne amplifica gli effetti.

## Fish populations and water quality in the Alpine region

What influence do water chemistry, hormone-active substances, fish food in the form of small invertebrates, fish-eating birds, fishing and land use have on fish fauna? In a large-scale study in South, North and East Tyrol, researchers investigated and combined these factors. The research team's preliminary conclusion: if several stress factors occur simultaneously in a watercourse, their impact is not only the sum of these factors, but their interaction amplifies their effects.



# Living with wolves

**The wolf has returned to European landscapes in recent years and the number of wolves in the entire Alpine arc has been increasing continuously. This return has a major impact on living and working in the mountains and is part of a wide-ranging debate between local stakeholders, residents, livestock breeders and managers of these areas. Through raising public awareness and sharing research outcomes the project aims to increase the effectiveness of wolf conservation and to strengthen a sustainable co-existence of wolf and human activities.**

The project LIFE WOLFALPS EU (LWEU) aims to harmonise the economic activities of farmers and livestock breeders with wolf conservation in the Alps by monitoring wolf presence and distribution, analysing best management and protection measures, raising people's awareness and involving alpine stakeholders at all levels. The conservation and management of alpine wolf populations has to consider the ecological and socio-economic repercussions of their presence as well as the welfare of local inhabitants. It is necessary to establish a framework whereby social, economic and ecological impacts of the project can be monitored. LWEU aims to activate concrete, wolf-related management actions in order to protect alpine economic activities affected by wolf presence and to gain understanding of community attitude and needs through a series of surveys, workshops, field work and open conferences. The project also seeks to understand and quantify the potential market size for wolf-friendly ecotourism packages and wolf related products, assessing changes in employment for local communities.

## Leben mit dem Wolf

Der Wolf ist nach Europa zurückgekehrt: Die Zahl der Tiere nimmt stetig zu, auch im Alpenraum. Auf Leben und Arbeit in den Bergen hat diese Rückkehr starke Auswirkungen, die unter Bewohnern, Interessenvertretern, Viehzüchtern und Vertretern der Verwaltung heftig debattiert werden. Durch Sensibilisierung der Öffentlichkeit und den Austausch von Forschungsergebnissen will das Projekt dazu beitragen, Wölfe wirksam zu schützen und ein möglichst konfliktarmes Nebeneinander von Mensch und Wolf zu ermöglichen.

## Vivere con i lupi

Il lupo è tornato in Europa: il numero di animali è in costante aumento, anche nella regione alpina. Questo ritorno ha un forte impatto sulla vita e sul lavoro in montagna ed è oggetto di un acceso dibattito tra residenti, parti interessate, allevatori di bestiame e amministratori. Sensibilizzando l'opinione pubblica e diffondendo i risultati della ricerca, il progetto vuole contribuire a proteggere i lupi in modo efficace e a consentire la loro convivenza con l'uomo riducendo i conflitti.



# EUREKA! La UE in un blog

**In preparazione alle elezioni europee del maggio 2019, l'Istituto di studi federali comparati ha lanciato un blog per chiarire il funzionamento delle istituzioni europee e sensibilizzare sui temi più importanti per il futuro dell'Unione. In circa un anno è stato pubblicato un centinaio di articoli, la maggior parte in inglese, su temi che spaziano dai cambiamenti climatici ai diritti umani, con focus sui singoli paesi membri.**

Era nato come un progetto temporaneo con l'idea di accompagnare i lettori fino all'elezione del Parlamento europeo, ma la varietà degli argomenti da trattare ha spinto le ricercatrici che lo hanno promosso a proseguire. Ogni settimana un post approfondisce diversi aspetti legati all'Unione europea, alla vita delle persone che ci vivono, ai rapporti con altri paesi. Una rubrica è dedicata alla Carta dei diritti fondamentali dell'Unione europea: ogni post approfondisce uno dei 54 articoli che la compongono.

Il proposito del blog è quello di affrontare temi poco conosciuti, a volte curiosi, e di contribuire a creare un pubblico informato.

Gli articoli sono scritti in parte dai ricercatori dell'Istituto, ma soprattutto da esperti esterni. Spesso i post sono stati ripubblicati su altri blog e questo ha favorito il dibattito e lo scambio di idee tra autori e lettori. La particolarità di EUREKA! è quella di avere un taglio specifico sull'Unione europea, mentre altri blog sul tema del federalismo hanno un approccio più trasversale.

## EUREKA! Die EU in einem Blog

In Vorbereitung auf die Europawahlen im Mai 2019 lancierte das Institut für vergleichende Föderalismusforschung einen Blog, um die Funktionsweise der europäischen Institutionen zu erklären und die wichtigsten Themen für die Zukunft der Union ins Blickfeld zu rücken. Im Laufe eines Jahres erschienen – meist auf Englisch – gut hundert Beiträge, wobei das Themenspektrum von Klimawandel bis zu Menschenrechten reichte, mit besonderem Fokus auf den einzelnen Mitgliedstaaten.

## EUREKA! The EU in a blog

In preparation for the European elections in May 2019, the Institute for Comparative Federal Studies launched a blog to clarify the functioning of the European institutions and to raise awareness of the most important issues for the future of the Union. Over the course of a year or so, about a hundred articles have been published, most of them in English, on topics ranging from climate change to human rights, with a focus on individual member countries.



# Intergovernmental relation in divided societies

**Marie Skłodowska-Curie fellow Yonatan Fessha's project focuses on examining IGR in divided societies where territorial autonomies are used to manage communal tensions. It aims to identify intergovernmental institutions and processes to examine their relevance and effectiveness in promoting peaceful management of divided societies.**

The IGR-IDS project corresponds with Horizon 2020 and addresses the challenges of creating 'inclusive, innovative and reflective societies'. In South Tyrol, the development of autonomy and linguistic-cultural identity has long been a crucial issue. The project follows 3 phases. 1.Reviewing existing institutions and processes of IGR to provide a comparative observation of the various processes that are used to regulate interactions between different governmental levels. 2.Examining how identity politics shape the dynamics of IGR in order to show the conflict around the nature of the society the state seeks to regulate. 3.Comparative analysis of how institutions and processes of IGR have been used to help manage communal tensions. The objective is to identify and develop innovative integrative institutions and processes of IGR that can be used to manage divided societies. The inclusion of African federations is particularly important in illuminating the role of informal institutions and processes in managing communal tensions.

## **Intergouvernementale Beziehungen in gespaltenen Gesellschaften**

Territoriale Autonomie kann ein Mittel sein, Spannungen und Konflikte in gespaltenen Gesellschaften zu entschärfen. Der Marie Skłodowska-Curie Stipendiat Yonatan Fessha untersucht, inwieweit dabei verschiedene Institutionen und Prozesse intergouvernementaler Beziehungen zu einem friedlichen Zusammenleben beitragen. Ziel ist, besonders wirkungsvolle Instrumente zu identifizieren und innovative Instrumente zu entwickeln.

## **Relazioni intergovernative in società divise**

L'autonomia territoriale può essere un mezzo per disinnescare tensioni e conflitti in società divise. Yonatan Fessha, vincitore di una borsa di studio Marie Skłodowska-Curie, studia come le diverse istituzioni e il modo in cui si svolgono le relazioni intergovernative contribuiscano alla coesistenza pacifica. L'obiettivo è quello di individuare strumenti particolarmente efficaci e svilupparne di innovativi.



# Moldova: Aufbauhilfe für Gagausiens Autonomie

**Auf dem Papier ist es eine weitreichende Autonomie, die die Republik Moldau der Region Gagausien 1994 gewährte. Ihre Umsetzung verhindern die widersprüchliche Gesetzeslage und Konflikte zwischen staatlichen und regionalen Institutionen. Um dies zu ändern, arbeitet Eurac Research mit der finnischen „Crisis Management Initiative“ (CMI) an drei Zielen: Stakeholdern auf beiden Seiten die Wissensbasis für einen konstruktiven Dialog zu vermitteln; eine regionale Kultur-, Tourismus- und Bildungspolitik zu entwickeln; institutionelle Mechanismen zur Klärung von Kompetenzfragen zu etablieren.**

CMI, weltweit erfolgreich in der Konfliktlösung engagiert, arbeitete in Moldova schon früher mit Eurac Research zusammen. Das aktuelle Projekt finanziert Schweden. Zentral ist dabei der Kompetenzaufbau – nicht nur bei staatlichen und regionalen Regierungsvertretern und Abgeordneten, sondern auch bei Beamten, Professoren oder Journalisten. Im Herbst organisierte Eurac Research deshalb mit Universitäten eine mehrtägige Akademie sowie eine internationale Konferenz zu Dezentralisierung, Autonomie und Minderheitenrechten. Ein weiteres Ziel ist, die Politikfelder Kultur, Bildung und Tourismus auf regionaler Ebene aufzubauen – hierzu tragen auch die Regionalentwicklungsexperten von Eurac Research Fachkenntnis bei. Und drittens sollen Organismen und Mechanismen zur Klärung von Zuständigkeitsfragen etabliert werden, vergleichbar etwa der Sechser-Kommission. Südtirols Autonomie gilt in Gagausien generell als Vorbild, immer wieder gibt es auch institutionelle Kontakte.

[www.gagauziadialogue.md](http://www.gagauziadialogue.md)

## **Moldavia: sostenere l'autonomia della Gagauzia**

Sulla carta è un'ampia autonomia quella concessa dalla Moldavia alla regione della Gagauzia nel 1994. La sua attuazione però è ostacolata da una situazione giuridica contraddittoria e dai conflitti tra istituzioni statali e regionali. Per cambiare questa situazione, Eurac Research lavora con Crisis Management Initiative (CMI) su tre obiettivi: fornire agli attori di entrambe le parti una base di conoscenze per un dialogo costruttivo; sviluppare una politica culturale, turistica ed educativa a livello regionale; stabilire meccanismi istituzionali per chiarire le questioni di competenza.

## **Moldova: Supporting Gagauzia's autonomy**

On paper, the autonomy granted by Moldova to the Gagauzia region in 1994 is far reaching and is said to prevent the contradictory legal situation and conflicts between state and regional institutions. However, its implementation has been hampered by the contradictory legal situation and conflicts between state and regional institutions. To change this, Eurac Research is working with the Finnish Crisis Management Initiative (CMI) on three objectives: To provide stakeholders on both sides with the knowledge base for a constructive dialogue; to develop a regional cultural, tourism and education policy; to establish institutional mechanisms for clarifying competence issues.



# Kooperation mit Universitäten

**Gemeinsam mit der Donau-Universität Krems bietet Eurac Research ab 2020/21 erstmals einen Masterstudiengang zu „Föderalismus und Minderheitenstudien“ aus europäischer Perspektive an. Derzeit gibt es kein vergleichbares Masterprogramm in Europa. Dem Thema Minderheiten – konkret „Minderheiten in Europa im 21. Jahrhundert“ – ist auch das nächste Interdisziplinäre Doktorandenkolloquium (IDK) im Mai gewidmet, eine Kooperation mit vier Universitäten, die schon seit 2016 Bestand hat.**

Am IDK, finanziert durch Fördermittel der Autonomen Region Trentino-Südtirol an die deutschsprachige private Andrassy Universität Budapest (AUB), beteiligen sich neben der AUB und Eurac Research auch die Universitäten von Bozen, Trient und Innsbruck. Das zweitägige Kolloquium dient dem interdisziplinären und interregionalen wissenschaftlichen Austausch und findet in jedem Semester statt – das nächste Mal in Bozen.

Den neuen Masterstudiengang wird der Historiker Georg Grote von Eurac Research leiten. Er hatte in seiner Zeit am University College Dublin schon ein ähnliches Programm ins Leben gerufen und mit großem Zuspruch geleitet. Das Curriculum des Studiengangs in Bozen und Krems umfasst Module in Ethik, Rechts- und Politikwissenschaft, Geschichte, Diaspora- und Nationalismusstudien, Wirtschaft und Südtirolstudien. Der Partner Donau-Universität-Krems ist als Universität für Weiterbildung auf die Höherqualifizierung von Berufstätigen spezialisiert.

## **Collaborazione con le università**

Insieme all’Università del Danubio di Krems (Austria), a partire dal 2020/21 Eurac Research offrirà per la prima volta un master in “Federalismo e studi sulle minoranze” con una prospettiva europea. Attualmente non esiste un simile programma di master in Europa. Al tema delle minoranze – nello specifico “Le minoranze in Europa nel XXI secolo” – sarà dedicato anche il prossimo colloquio di dottorato interdisciplinare che si terrà a maggio, in collaborazione con quattro università che collaborano dal 2016.

## **Collaboration with universities**

For the first time from 2020/21, Eurac Research, together with the Danube University Krems (Austria), will offer a Master's degree in "Federalism and minority studies" from a European perspective. Currently, no such Master's programme exists in Europe. The topic of minorities - specifically "Minorities in Europe in the 21st Century" - will also be the subject of the next interdisciplinary doctoral colloquium to be held in May, in collaboration with four universities that have been working together since 2016.



# Religioni in Europa

**Il panorama religioso in Europa è sempre più diversificato, anche per l'arrivo di persone da paesi con tradizioni religiose molto diverse fra loro. Trovare un giusto equilibrio tra libertà di fede, tutela legale e convivenza è l'unica via per consolidare una società integrata. Sono più utili le misure che garantiscono le libertà individuali o gli strumenti che tutelano le minoranze religiose in quanto comunità? Si possono combinare questi approcci? Le nostre giuriste lavorano a un numero speciale della prestigiosa rivista *Religions*.**

Gli studiosi di diritto e i teologi propendono in genere per la libertà di religione individuale; gli esperti di diritti delle minoranze suggeriscono che le misure tradizionalmente applicate per la tutela delle minoranze linguistiche, per esempio quelle delle Nazioni Unite o la Convenzione quadro del Consiglio d'Europa per la protezione delle minoranze nazionali, possano e debbano essere applicate anche a quelle religiose. Circa venti autori internazionali, coordinati dalle nostre giuriste, ragionano su questo tema. Ripercorrono i quadri normativi, analizzano casi specifici, definiscono punti di forza e debolezze dei due approcci (libertà individuale per tutti e tutela dei gruppi minoritari) e verificano come possano essere combinati.

Alcuni contributi riguardano paesi extra-europei, per esempio il Sudafrica, l'America latina e l'India. Le loro esperienze nel gestire il pluralismo religioso potrebbero dare spunti, in termini di buone pratiche o di percorsi da evitare, all'Europa. Il numero speciale di *Religions* uscirà agli inizi del 2021.

## Religionen in Europa

Die religiöse Landschaft Europas wird immer vielfältiger, auch durch Zuwanderung aus Ländern mit unterschiedlichen religiösen Traditionen. Um den Zusammenhalt der Gesellschaft zu festigen, müssen Glaubensfreiheit, Rechtsschutz und Zusammenleben umsichtig austariert werden. Ist es wichtiger, individuelle Freiheiten zu gewährleisten, oder religiöse Minderheiten als Gemeinschaft zu schützen? Sind beide Ansätze vereinbar? Unsere Forscherinnen arbeiten an einer Sonderausgabe der renommierten Zeitschrift *Religions*.

## Religions in Europe

The religious landscape in Europe is increasingly more diverse, partly due to the arrival of people from countries with very different religious traditions. Finding the right balance between freedom of religion, legal protection and coexistence is the only way to consolidate an integrated society. Which is more useful then: measures to guarantee individual freedoms or instruments to protect religious minorities as communities? Can these approaches be combined? Our researchers are currently working on a special issue of the prestigious scientific journal *Religions*.





Dei coproliti, cioè delle feci fossilizzate, provenienti dal Messico e risalenti a mille anni fa sono stati analizzati dagli esperti dell'Istituto per lo studio delle mummie alla ricerca del batterio intestinale *prevotella copri*. In questi coproliti e nei campioni di Ötzi ne sono state identificate quattro varianti. Oggi, i ricercatori dell'Università di Trento hanno trovato una simile diversità solo nelle società tribali tradizionali; il batterio è quasi estinto nel mondo industrializzato. L'impoverimento della flora intestinale potrebbe essere connesso con la maggiore incidenza di patologie complesse.

Mithilfe hochmoderner Technologien können Forscher Mumien einen unermesslichen Schatz an Informationen entlocken, etwa zu jahrtausendealten Krankheitserregern – mit wertvollen Erkenntnissen auch für die moderne Medizin. Im Beisein von Landeshauptmann Arno Kompatscher wurden im September die neuen Labore des Instituts für Mumienforschung im NOI-Techpark eröffnet. Ebenfalls anwesend: eine Kindermumie aus Lateinamerika.





La tac rivela un bastone di legno per fissare la testa; braccia e gambe sono fasciate separatamente; le bende sono in lino pregiato, in parte tinto di rosso. Questi dettagli collocano in epoca romana la mummia egizia di Hathor-ta-scherit-net-Osiris, una mummia di donna tra i 30 e i 40 anni, ritrovata a Tebe nel 1800 e conservata al Neues Musuem di Berlino. I nostri antropologi usano le tac raccolte nei musei di Torino e Berlino per indagare i rituali di imbalsamazione.



È durata circa un mese la fase di acclimatazione nel terraXcube per gli alpinisti Tamara Lunger e Simone Moro, con picchi di quota simulata fino a oltre 7000 metri. La sveglia è suonata più volte alle 3 di mattina per effettuare risonanze magnetiche (con il supporto del CiMeC – Università di Trento), esami del sangue, ecografia polmonare e del nervo ottico, ECG ed ecografia cardiaca e misurazione della microcircolazione sublinguale. Il 18 dicembre Moro e Lunger sono partiti per il Pakistan, per tentare l'ascesa dei Gasherbrum I e II.





Für eine höhenmedizinische Studie verbrachten elf junge, gesunde Probanden zwei Mal vier Tage im terraXcube: Einmal entsprach der Luftdruck dem in Bozen, einmal einer Höhe von 3500 Metern. Die Wissenschaftler untersuchten die Reduktion des Blutplasmavolumens, einen für die Höhenakklimation zentralen Mechanismus. Wie er reguliert wird, ist bislang unklar, weil Studien im Gelände von vielen Störfaktoren beeinflusst werden.

Sind wir auf 200, 3000 oder 5000 Metern? Welche Höhe in der Klimakammer des terraXcube gerade simuliert wird, wissen die Studienteilnehmer nicht. Es sind Ärzte, Sanitäter, Piloten und Techniker der Flugrettung. Anhand verschiedener Untersuchungen, unter anderem neurokognitiver Tests, prüfen die Forscher, ob die Leistungsfähigkeit bei Hubschraubereinsätzen in großer Höhe und ohne Sauerstoff abnimmt. Ergebnis: Für die Teams ist es anstrengender, die medizinische Effizienz leidet jedoch nicht.





Ten years have passed since researchers at the Institute for the Alpine Environment set up their first measuring station in Val di Mazia. Since 2009, data on the climate, biodiversity and water resources of the valley has been constantly recorded without any interruptions. The open-air laboratory has changed a lot in recent years: together with the universities of Innsbruck and Bolzano, our experts have now installed one of the most highly condensed microclimatic measurement networks in Europe.

Im Mai startete das erste langfristige, flächendeckende Biodiversitäts-Monitoring für Südtirol. Ein dichtes Netz an Erhebungspunkten wird nun regelmäßig beprobt, mit besonderem Augenmerk auf Arten und Artengruppen, die sensibel auf Umwelt- und Landnutzungsänderungen reagieren. Gefäßpflanzen gehören dazu, Vögel, verschiedene Insektengruppen und Fledermäuse.

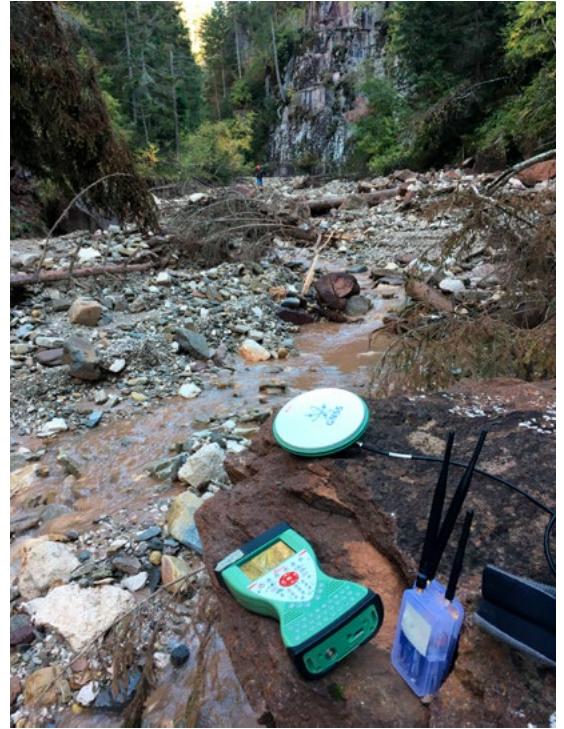




Basotho herdsmen use solar technology to charge their mobile phones. Dressed in traditional blankets, woolen hats or balaclavas and typical white or green rubber boots, here they are standing on the summit of Mont-Aux-Sources (3282 m NN) on the Drakensberg ridge that forms the border between Lesotho and South Africa. The Drakensberg mountains have long provided water and protection from natural hazards to the surrounding lowlands, yet they are currently suffering from the impacts of climate change,

out-migration and serious land degradation. Experts from the Center for Global Mountain Safeguard Research - GLOMOS - (a new programme, initiated in July 2019, connecting Eurac Research jointly with the United Nations University Institute for Environment and Human Security) have established a research collaboration with the University of the Free State (UFS) in South Africa, in particular with the Afromontane Research Unit (ARU) at the UFS QwaQwa campus, to support local scientists and decision makers. This is just

one of the first projects involving the Center for Global Mountain Safeguard Research. With continuous focus on applied research, GLOMOS is already actively engaged with a dense global network of representatives from academia, policy and practice to support the sustainable and climate resilient development of mountain regions worldwide. Acting as an official component of the UN system, GLOMOS specifically contributes to the implementation of global UN frameworks.



Eine Drohne mit integriertem Suchgerät, um Vermisste oder Verletzte zu orten: Für Rettungseinsätze in schwierigem Gelände haben Experten des Center for Sensing Solutions einen Prototyp entwickelt, den sie mit Höhenmedizinern in der Bletterbachschlucht testen. Die 400 Meter tiefe, acht Kilometer lange Schlucht eignet sich perfekt, um die neue Technologie auf die Probe zu stellen: Sie ist eng und schwer einsehbar, es gibt kein GPS-Signal, Handys haben keinen Empfang.



Die zweite Phase der CHRIS-Gesundheitsstudie von Eurac Research und dem Südtiroler Sanitätsbetrieb hat begonnen. Die Forscher hoffen, einen großen Teil der mehr als 13.000 Teilnehmer der ersten Phase noch einmal untersuchen zu können und so ihr Wissen über Alterungsprozesse sowie über Herz-Kreislauf-, Stoffwechsel-, Krebs- oder neurologische Erkrankungen zu vertiefen.

# Delegations visiting Ladin schools

**For many years, Eurac Research has been hosting visitors and delegations interested in the South Tyrolean Autonomy model, as it is one of the most successful cases of consociational conflict regulation in the world. With a variety of visitors ranging from representatives of international organisations to politicians, researchers and public officials, all with the goal of learning more about the history, legal basis, institutional arrangement and the long-term implications of South Tyrol's autonomy.**

Last year, Eurac Research had a high number of guests who came with the purpose of learning more about the Ladin school model. This was, in part, a result of the visit of Lamberto Zannier, the High Commissioner for National Minorities, who during his visit to South Tyrol was impressed by the potential of the Ladin school system. Owing to this, over the past year, guests from Moldova, Ukraine, Georgia, Kazakhstan and Estonia visited Eurac Research and the primary schools in Val Gardena, South Tyrol to gain insights to their school model, the Ladin language is taught, according art. 19 of the Autonomy Statute, in the Ladin Valleys in every school type and kindergarten. In addition to the Ladin language, school subjects are taught also in German and Italian. The successful Ladin school model, which gives equal importance to education in three languages (Ladin, German, Italian) seems suitable for the needs of other minorities in Europe and therefore is getting more and more attention.

## Delegazioni in visita alle scuole ladine

Da molti anni Eurac Research ospita visitatori e delegazioni interessate al modello di autonomia altoatesina. Rappresentanti da Moldavia, Ucraina, Georgia, Kazakistan ed Estonia hanno visitato le scuole primarie della val Gardena per capire come funziona il modello scolastico ladino. La scelta di dare pari importanza alle tre lingue provinciali potrebbe rispondere alle esigenze di altre minoranze in diverse zone del mondo.

## Delegationen besuchen ladinische Schulen

Seit vielen Jahren empfängt Eurac Research Besucher aus der ganzen Welt, die sich für das Modell der Südtiroler Autonomie interessieren. Im vergangenen Jahr besuchten Delegationen aus Moldawien, der Ukraine, Georgien, Kasachstan und Estland die Grundschulen in Gröden, um das ladinische Schulmodell kennenzulernen. Es räumt allen drei Landessprachen gleichen Stellenwert ein und könnte damit Vorbild auch für andere Minderheitenregionen sein.



# Migrazioni verso le aree montane e rurali

**Eurac Research guiderà un consorzio di 25 partner europei per misurare con un approccio scientifico l'impatto socio-economico delle migrazioni nelle aree rurali e montane. Nel progetto MATILDE i ricercatori mapperanno i flussi e la distribuzione dei migranti in Europa e analizzeranno diversi modelli di governance. Assieme all'analisi di 13 casi di studio, questo fornirà una solida base per elaborare raccomandazioni rivolte ad amministratori e politici a livello locale e nazionale.**

Negli ultimi anni si contano numerose esperienze positive di inclusione sociale ed economica dei migranti giunti in montagna sia per ragioni lavorative, sia come richiedenti asilo o rifugiati. In alcune regioni l'arrivo di cittadini stranieri ha contribuito ad accrescere le risorse economiche e a mantenere servizi di pubblica utilità come scuole, trasporti e uffici postali. L'obiettivo di MATILDE è elaborare metodi e strumenti per analizzare queste esperienze in modo scientifico e confrontare casi diversi sulla base di indicatori comuni. Si tratta di una prima esplorazione con l'obiettivo di definire se e come la presenza straniera interagisca con i processi di sviluppo locale in queste aree.

In 13 aree pilota i ricercatori svolgeranno attività legate a specifici aspetti dell'integrazione. In Alto Adige, Eurac Research e Caritas Bolzano-Bressanone si concentreranno sul tema dell'inclusione lavorativa e sociale, con particolare attenzione alla fascia più giovane (18-35 anni) e alle donne.

## **Migration in Bergregionen und ländlichen Gebieten**

Im großen europäischen Forschungsprojekt MATILDE untersuchen 25 Partner, koordiniert von Eurac Research, die spezifischen sozialen und gesellschaftlichen Auswirkungen von Migration in Bergregionen und ländlichen Gebieten. Die Forscher werden die Verteilung der Migrationsströme in Europa, verschiedene Governance-Modelle und 13 Fallstudien analysieren, um schließlich Empfehlungen an Politik und Verwaltung auszuarbeiten, sowohl auf lokaler wie nationaler Ebene.

## **Migration to rural and mountain areas**

Eurac Research will lead a consortium of 25 European partners to scientifically measure the socio-economic impact of migration in rural and mountain areas. The MATILDE project's researchers will map the flow and distribution of migrants in Europe and analyse different governance models. Together with the analysis of 13 case studies, this will provide a solid basis for developing recommendations for administrators and policy makers at local and national levels.



# Spending Reviews: eine Analyse der italienischen Erfahrung

**Der Begriff Spending Review meint die systematische Überprüfung aller Ausgaben der öffentlichen Hand, ob Finanzierungen, Förderungen oder Beiträge. Bringt eine Förderung den gewünschten Erfolg? Gibt es alternative Möglichkeiten, Bürger und Unternehmen zu unterstützen? Und vor allem: Kostet der Beitrag den Steuerzahler nicht mehr, als er bringt? Spending Reviews zeigen konkrete Einsparungsvorschläge auf. Etwa die Reduzierung der Dienstwagen für Politiker oder der Beratungsaufträge. Rund 300 Millionen Euro konnten damit in Italien zwischen 2014 und 2016 eingespart werden. Eine Analyse der italienischen Spending Reviews hat Eurac Research erstmals in einer deutschsprachigen Publikation veröffentlicht.**

Sieben Regierungen haben sich schon an Spending Reviews versucht, von Romano Prodi bis Giuseppe Conte. Mit ungleichem Erfolg. Ministerpräsident Renzi etwa finanzierte durch Einsparungen eine Rentenerhöhung und Steuersenkungen. Die Forscher analysieren, welche Faktoren zu besonderen Erfolgen führten und welche die Umsetzung der Maßnahmen jeweils bremsten. Die zentralstaatliche Struktur Italiens etwa war ein Vorteil, die instabilen Regierungsverhältnisse und bürokratische Mechanismen wirkten sich nachteilig aus.

„Am Ende geht es darum, die öffentlichen Budgets systematisch zu durchforsten und nicht einfach pauschal zu kürzen“, erklärt Public-Management-Experte Josef Bernhart. „Grundsätzlich will niemand Kürzungen im eigenen Bereich. Auch da gilt das Floriani-Prinzip: Heiliger Sankt Florian, verschon' mein Haus, zünd' andre an!“

## **Spending review: un'analisi dell'esperienza italiana**

Con il termine spending review si intende la revisione sistematica di tutta la spesa pubblica. Ad esempio, una sovvenzione porta il risultato desiderato? Oppure il contributo costa al cittadino-contribuente più di quanto porta? Le spending review offrono suggerimenti concreti per risparmiare, ad esempio riducendo il numero delle cosiddette "auto blu". In Italia, tra il 2014 e il 2016, sono stati risparmiati circa 300 milioni di euro. Eurac Research ha pubblicato per la prima volta in un volume in lingua tedesca un'analisi completa e sistematica delle spending review italiane.

## **Spending Reviews: an analysis of the Italian experience**

The term Spending Review refers to the systematic review of all public spending, whether financing, subsidies or contributions. Does a grant bring the desired success? Are there alternative ways to support citizens and businesses? And above all: do contributions cost the taxpayer more than they bring? Spending reviews show concrete suggestions for savings. For example, reducing the number of government cars saved around 300 million euros in Italy between 2014 and 2016. Eurac Research has published an analysis of the Italian Spending Reviews for the first time in a German language publication.



# The Future of Work

**The nature of work is transforming and the global competition for qualified and specialised workers increasing. An aging population, rapid technological changes and digitalisation are contributing factors to both higher competitiveness and the changing nature of work. The implication of this complex phenomenon is creating disparities at social and economic levels. This project analyses the global and regional reasons for these new developments and assesses how to attract qualified workers while addressing the skill shortages faced in society.**

Enterprises, organisations, regional and national labour markets are struggling to find workforce with which to develop and augment economies. How then to attract and retain talents? By collecting interviews with experts from the fields of sociology, politics, anthropology, economics, futurology, consulting and human resources and conducting a real time Delphi survey, the project contributes new knowledge about future developments to existing literature. These contributions are useful for national and local labour markets seeking to attract skilled workers. Moreover, the researchers created the "European Region's Talent Index" which allows the comparison of different European regions in order to identify the position of South Tyrol and thus to determine the strengths and weaknesses of its competitiveness in terms of talent attraction and retention. By focusing on the current and future situation in South Tyrol the project addresses skill shortages locally through the development of strategies to improve working conditions while seeking to enhance the attractiveness of local companies and the region with local stakeholders and the educational sector.

## Il futuro del lavoro

La natura del lavoro si sta trasformando e si compete a livello globale per assumere persone qualificate e specializzate. Questa tendenza è il risultato di diversi fattori, come invecchiamento della popolazione, rapidi cambiamenti tecnologici e digitalizzazione. La necessità di una forza lavoro adattabile produce disparità a livello sociale ed economico. I ricercatori analizzano le ragioni globali e regionali di questi nuovi sviluppi e studiano come attrarre forza lavoro qualificata.

## Die Zukunft der Arbeit

Das Wesen der Arbeit verändert sich und der globale Wettbewerb um (hoch)qualifizierte und spezialisierte Arbeitskräfte nimmt zu. Zu dieser Entwicklung tragen mehrere Faktoren bei, unter anderem eine alternde Bevölkerung, der rasche technologische Wandel und die Digitalisierung. Der Bedarf an qualifizierten Arbeitskräften führt zu sozialer und wirtschaftlicher Ungleichheit. Die Forscher analysieren globale und regionale Ursachen und Auswirkungen dieser neuen Entwicklungen und untersuchen, wie man dem Fachkräftemangel in der Gesellschaft entgegenwirken kann.



# Spracherwerb in der Mittelschule

**In der ersten Langzeitstudie an Südtiroler Mittelschulen nahmen Sprachwissenschaftler den Lernfortschritt von acht Klassen in Deutsch, Italienisch und Englisch drei Jahre lang unter die Lupe. Die Ergebnisse stellen manche verbreitete Vorannahme in Frage: In den untersuchten Klassen war zum Beispiel kein Zusammenhang zu erkennen zwischen dem Lernfortschritt der Klasse in den Schul- und Unterrichtssprachen und dem Anteil an Schülern mit anderer Erstsprache als Deutsch und Italienisch.**

Vier deutsch- und vier italienischsprachige Mittelschulen nahmen an der Studie teil, die in enger Zusammenarbeit mit den Bildungsinstitutionen erfolgte. Neben den Sprachkompetenzen wurden zahlreiche Faktoren erfasst, die den Spracherwerb beeinflussen können, etwa der sprachliche Hintergrund der Familie, Schreib- und Lesegewohnheiten, der Sprachgebrauch im Alltag oder Mediennutzung. Studien, die derart genau und über einen so langen Zeitraum den Lernfortschritt von Schulklassen erfassen, sind ausgesprochen selten, weil nur mit viel Unterstützung durch die Schule und Elternschaft möglich. Indem die Studie die Sprachkompetenzen nicht punktuell bewertet, sondern den Lernzuwachs der Schüler über die drei Schuljahre hinweg in den Mittelpunkt stellt, liefert sie auch neue Ansätze für die Bewertung schulischen Erfolgs. Die Studie war Teil des Projekts „Sprachenvielfalt macht Schule“, bei dem Eurac Research seit 2012 eng mit dem Südtiroler Schulwesen zusammenarbeitet, um die Mehrsprachigkeit an Südtirols Schulen zu erforschen und sprachliche Vielfalt als Ressource zu nutzen. [sms-project.eurac.edu](http://sms-project.eurac.edu)

## **Apprendimento linguistico nelle scuole secondarie**

Uno studio a lungo termine ha accompagnato otto classi attraverso la scuola secondaria di primo grado e ha esaminato i progressi nell'apprendimento di tedesco, italiano e inglese. I risultati mettono in discussione alcuni aspetti dati per assodati: ad esempio, non c'è relazione tra livello linguistico degli studenti e percentuale di alunni con madrelingua diversa da tedesco e italiano. Lo studio fa parte del progetto "A lezione con più lingue", in cui Eurac Research lavora a stretto contatto con il sistema scolastico altoatesino per la ricerca e la promozione del plurilinguismo nelle scuole.

## **Language learning in secondary schools**

A long-term study accompanied eight classes through secondary school and reviewed progress in learning German, Italian and English. The results call into question some common assumptions: for example, there is no relationship between the language level of the students and the percentage of pupils with a mother tongue other than German and Italian. The study is part of the "One School, many Languages" project, in which Eurac Research works closely with the South Tyrolean school system to research and promote multilingualism in schools.



# Uniformare le traduzioni giuridiche in Alto Adige

**Dal diritto di famiglia alla normativa sulla privacy sono tanti gli ambiti in cui la traduzione di un vocabolo può provocare incertezza. Per uniformare la terminologia giuridica, amministrativa e specialistica in uso in Alto Adige e renderla accessibile a un vasto pubblico attraverso la piattaforma online bistro (bistro.eurac.edu), Eurac Research e Ufficio Questioni linguistiche provinciale lavorano fianco a fianco. La collaborazione tra i due enti è stata recentemente rinnovata.**

Lingua e diritto sono mondi strettamente connessi. Attraverso la lingua il diritto si esprime e modifica la realtà con effetti sulla vita di ogni singolo individuo. Ad esempio, se un tempo la famiglia era solo quella fondata sul matrimonio, oggi lo stato italiano riconosce altre forme di convivenza, come le unioni civili. Ma come si dice unione civile in tedesco? “Quando un termine nuovo entra nell’ordinamento giuridico italiano verifichiamo quale termine esista in tedesco per riferirsi allo stesso concetto. Nel caso di unione civile si è adottato il termine *eingetragene Lebenspartnerschaft*, che in Germania designa l’istituto giuridico a cui si rifanno le unioni civili previste dall’ordinamento italiano”, spiega Natascha Ralli, linguista di Eurac Research. Non sempre la soluzione è così immediata. “Nei casi più difficili, facciamo un lavoro di squadra: Eurac Research fornisce supporto scientifico e gli esperti dell’amministrazione provinciale offrono consulenza tecnica”, spiega Annette Lenz, direttrice dell’Ufficio Questioni linguistiche provinciale.

## **Recht richtig und einheitlich übersetzen**

Vom Familienrecht zum Datenschutz: Übersetzungen können mehr Verwirrung stiften als Klarheit schaffen. Um in Südtirol eine eindeutige und einheitliche Verwaltungs- und Rechtsterminologie in deutscher Sprache zu gewährleisten und sie über das Online-Informationssystem bistro (bistro.eurac.edu) allgemein zugänglich zu machen, arbeiten Eurac Research und das Amt für Sprachangelegenheiten eng zusammen. Die Vereinbarung über diese Zusammenarbeit wurde kürzlich erneuert.

## **Creating uniformity in legal translations**

From family to privacy law, there are many areas where the translation of a word can cause uncertainty. In order to harmonise the legal, administrative and specialist terminology in use in South Tyrol and make it accessible to a wider audience via the online platform bistro (bistro.eurac.edu), Eurac Research and the Provincial Office for Language Issues have been working together and this collaboration has recently been renewed.



# Data mining in Corpus Linguistics

**The potential to exploit existing data resources has been one of the biggest drivers for research and innovation in recent years. More and more data is being collected which machines are increasingly able to process using methods from machine learning and artificial intelligence for data mining. In corpus linguistics (the empirical study of real-life language use), these data science methods could also be helpful for a more efficient data-driven analysis, allowing the repurposing of laboriously collected existing research data.**

By using methodologies developed for computer science and computational linguistics, the study evaluates the possibility of repurposing existing research data in corpus linguistics and gives a detailed overview of currently popular strategies for the analysis of textual data by comparing them to other related disciplines. By transferring these methods to application fields in corpus linguistics, for example the analysis of text quality or the investigation of age-specific language in social media, it empirically tests their potential and shortcomings. Although new methodologies have been developed in order to analyse data more efficiently, many of these techniques are still experimental, require an existing knowledge, technical skills and often depend on tools and resources that were originally only developed for the English language. As such, the project contributes to German linguistics by giving new insights to the aforementioned linguistic phenomena. Moreover, it reveals the challenges, added values and shortcomings posed by data mining on language corpora.

## **Data mining nei corpora linguistici**

Il potenziale di sfruttamento dei dati a nostra disposizione è stato uno dei maggiori stimoli alla ricerca e all'innovazione degli ultimi anni. La quantità di dati raccolti aumenta e cresce anche la capacità delle macchine di elaborarli utilizzando metodi di machine learning e intelligenza artificiale per il data mining. Nella lingistica dei corpora (lo studio empirico dell'uso del linguaggio nella vita reale), questi metodi potrebbero essere utili anche per un'analisi più efficiente dei dati. Ad esempio, si potrebbero sfruttare informazioni già raccolte dai ricercatori per svolgere nuove analisi.

## **Data Mining in Sprachkorpora**

Die Möglichkeit, vorhandene Datenressourcen auszuschöpfen, war in den vergangenen Jahren eine der stärksten Triebkräfte für Forschung und Innovation. Es werden immer mehr Daten gesammelt, die Maschinen mittels Methoden maschinellen Lernens und künstlicher Intelligenz für Data Mining auch zunehmend besser verarbeiten können. In der Korpuslinguistik - der empirischen Untersuchung des realen Sprachgebrauchs - können diese Methoden nicht nur effizientere datengestützte Analysen ermöglichen, sondern auch bestehende, mühsam erhobene Forschungsdaten für neue Untersuchungen nutzbar machen.



# Open source software for large scale mass spectrometry and metabolomics data analysis

**Large scale mass spectrometry research (metabolomics or proteomics) generates volumes of data that can no longer be held in memory for data processing. In a collaborative effort with developers around the world, software tools and methods are being developed which are efficient, scalable, well documented and maintained and enable an improved and accelerated analysis of large scale mass spectrometry data.**

Metabolomics is the large-scale study of metabolites, intermediates and products of cellular chemical processes. Due to higher resolution and performance of current mass spectrometry instruments, metabolomics data sets are becoming increasingly larger which makes their processing demanding, even for today's computers. In a collaborative effort with developers from UCLouvain (Belgium) and University Medicine Greifswald (Germany) several new software packages are being developed that provide a flexible high-performance infrastructure to represent metabolomics data. Data can be kept either in memory for fast processing or retrieved on-demand from the original raw data files, which results in a small memory footprint and enables analysis also of very large data sets. These efforts increase the visibility of Eurac Research in the fields of mass spectrometry and computational metabolomics and enable opportunities for potential future collaborations.

## **Neue Software-Werkzeuge für Massenspektrometrie-Daten**

Umfangreiche massenspektrometrische Analysen erzeugen so große Datenmengen, dass die Verarbeitung auch für heutige Computer zur Herausforderung wird. In einer internationalen Kollaboration entwickeln Experten eine flexible und leistungsstarke Software-Infrastruktur, die es erlaubt, auch sehr große Datensätze effizient und schnell zu prozessieren.

## **Nuovi software per i dati di spettrometria di massa**

Ampie analisi spettrometriche di massa generano una tale quantità di dati che la loro elaborazione sta diventando una sfida anche per i computer di oggi. Nell'ambito di una collaborazione internazionale, gli esperti stanno sviluppando un'infrastruttura software flessibile e potente che consente di elaborare in modo efficiente e rapido anche set di dati molto grandi.



# OpenEO – an IT framework for harmonising satellite data processing

**Data is getting increasingly bigger as such the processing and handling of it is becoming more and more of a challenge for today's computers. openEO has been developing an open API to connect R, Python, JavaScript and other clients to big Earth observation cloud back-ends in a simple and unified way.**

Forming part of the Copernicus programme, a series of Sentinel satellites have been launched with operational capabilities for observing the Earth across a whole measurement spectrum, due to the magnitude of the data collected owing to their advanced sensing concepts and spatio-temporal sampling systems, the data harvested is often too large to be downloaded locally for analysis and the organisation of said data becomes unnecessarily complicated, it therefore stands to reason that a solution to store the data in the cloud, on computer back-ends and to process, browse and download the resulting facts and figures there with a unified application programming interface (API) creates easier interfacing, analysis of algorithms and data management. The objective of the EU's H2020 openEO project which runs from October 2017 to September 2020 is to create a common open source interface that facilitates a standardised exchange between users and applications of Copernicus and other EO data.

## Ein IT-Framework zur Harmonisierung von Satelliten-datenprozessierung

Die neueste Generation von Erdbeobachtungssatelliten sammelt Daten in nie dagewesener Menge und Vielfalt, deren Verarbeitung für Computer zunehmend zur Herausforderung wird. Forschungsgruppen und andere Anwender weichen deshalb häufig auf Cloud-gestützte Systeme aus. Diese sind allerdings für einzelne Anwendungen maßgeschneidert, die Folge ist ein Mangel an Standardisierung. openEO, ein europäisches H2020-Projekt, will deshalb eine gemeinsame Open-Source-Schnittstelle schaffen, die den standardisierten Austausch zwischen Nutzern und Anwendungen von Erdbeobachtungsdaten ermöglicht.

## Una cornice informatica per armonizzare l'elaborazione dei dati satellitari

L'ultima generazione di satelliti per l'osservazione della Terra raccoglie una quantità e varietà di dati senza precedenti e la loro elaborazione sta diventando una sfida crescente per i computer. Ricercatori e altri utenti usano quindi spesso sistemi basati su cloud. Questi sistemi, però, sono realizzati su misura per singole applicazioni e non sono più standardizzati. openEO, un progetto europeo H2020, mira a creare un'interfaccia comune open source che permetta uno scambio standardizzato tra utenti e applicazioni.



# i-evAALution: Aging with autonomy through new Active and Assisted Living (AAL) technology

**In an aging society, providing living solutions for older people is imperative. The project i-evAALution uses an Information and Communication Technology (ICT) product bundle to encourage independent living in one's own home, while analysing acceptance and effects on life quality, psychosocial aspects and appraising marketability of the bundle.**

i-evAALution – funded by the European AAL Programme and the Italian Ministry for Education, Universities and Research (MIUR) – aims to develop an integrative technologies bundle comprising an emergency watch and button, tablet and smart home devices. In a pre-test phase, 13 usability experts and 14 older persons validated the bundle. Installation and training of the technologies as well as questionnaire testing were then undertaken in the private homes of 6 older participants. After some adaptations, a 12-month randomised controlled trial (RCT) with several phases was launched in South Tyrol in November 2019 with technology installations and baseline questionnaires administered to the first test persons and their family members. As of March 2020, 57 older adults have committed to participating. Recruitment into the trial has presented many challenges in that it has been difficult to inform enough potential participants about the project – some were sceptical of technologies in general, while others did not consider AAL technologies necessary for them at present. Nevertheless, valuable cooperations have been established with relevant stakeholders: the municipalities of Bolzano, Merano, Appiano, Lana, Aldino, different seniors' clubs, day care centres, facilities for accompanied / assisted living, as well as seniors' unions and end-user organisations like Katholischer Verband der Werktätigen (KWW) and Kolping.

## **Technologien für ein autonomes Leben im Alter**

In einer alternden Gesellschaft ist es unerlässlich, Lösungen zu finden, die älteren Menschen möglichst lange ein unabhängiges und sicheres Leben erlauben. Das Projekt i-evAALution unterstützt autonomes Wohnen durch ein Bündel von Informations- und Kommunikationstechnologien und analysiert die Akzeptanz von Seiten der Nutzer, die Auswirkungen auf die Lebensqualität, psychosoziale Aspekte und die Marktfähigkeit des Pakets.

## **Tecnologie per anziani autonomi**

In una società che invecchia, è essenziale trovare soluzioni che consentano alle persone anziane di vivere in modo indipendente e sicuro il più a lungo possibile. Il progetto i-evAALution supporta uno stile di vita autonomo attraverso un pacchetto di soluzioni ICT e analizza in che modo vengono recepite dall'utente, come incidono sulla sua qualità della vita, gli aspetti psicosociali e la commerciabilità del pacchetto.



# LoraWan: una rete ad ampio raggio per il NOI Techpark

**Nelle nostre case e nei nostri uffici usiamo reti wireless WiFi. Quando però occorre trasmettere dati a molti chilometri di distanza e non vogliamo usare fili serve una rete diversa, come LoraWan. Era già stata usata in alcuni progetti pilota, per esempio per monitorare con dei sensori quanto si riempiano i bidoni dell'immondizia in una città. Ora i nostri fisici e ingegneri l'hanno installata nell'area del NOI Techpark, a disposizione delle aziende per testare i loro sensori e servizi.**

Un'antenna issata sul tetto è sufficiente a dare copertura a un raggio di circa dieci chilometri; altre antenne garantiscono una copertura più capillare, anche all'interno degli edifici. La rete LoraWan installata al NOI Techpark è gratuita e vuole promuovere le sperimentazioni nell'ambito dell'Internet of things, sia all'interno del Center for Sensing Solutions sia in altre aziende con sede nel parco tecnologico. La rete LoraWan è uno dei vari protocolli di comunicazione wireless ad ampio raggio: è stata scelta perché è sganciata da provider che vincolano gli utenti ad acquistare servizi correlati, ma consente di mettere in rete sensori sviluppati autonomamente. Rispetto al WiFi, LoraWan permette di trasmettere solo piccole quantità di dati, ma di più non serve per i servizi che la sfruttano. Tra i progetti in corso: un sistema informativo sulle attrazioni turistiche (progetto Beacon), sensoristica per le facciate degli edifici, prototipi di irrigazione smart iper-connessi e un sistema di tracciamento degli strumenti di lavoro sui cantieri.  
(lorawan.beacon.bz.it)

## Ein Netzwerk mit hoher Reichweite für den NOI Techpark

In unseren Wohnungen und Büros verwenden wir WiFi-Drahtlosnetzwerke. Um jedoch Daten ohne Kabel über Distanzen von vielen Kilometern zu versenden, ist ein Netzwerk wie LoRaWan nötig. In einigen Pilotprojekten wird es schon eingesetzt, etwa, um mit Sensoren zu überprüfen, wie voll die Müllcontainer einer Stadt sind. Unsere Physiker und Ingenieure haben LoRaWan im Areal des NOI Techparks installiert, damit Firmen ihre Sensoren und Dienstleistungen testen können.

## LoraWan: a wide-area network for the NOI Techpark

We use WiFi wireless networks in our homes and offices. However, to send data without cables over distances of many kilometres, a network like LoRaWan is necessary. The network is already being used in some pilot projects, for example using sensors to check how full the district's bins are. Our physicists and engineers have now installed LoRaWan in the NOI Techpark area so that companies can use it to test their sensors and services.



# Droni a dura prova

**I campi di applicazione dei droni sono già numerosi e in futuro potrebbero esserlo ancora di più. C'è chi valuta la possibilità di impiegarli per monitorare i cambiamenti climatici in aree remote o per rifornire di beni di prima necessità abitati sperduti. Per verificare le prestazioni dei droni in ambienti estremi, i nostri ricercatori, in collaborazione con il Politecnico di Torino e il Politecnico di Milano, testano le singole componenti e le macchine intere nel terraXcube.**

Finora sono state eseguite quattro batterie di test, per un totale di decine di ore di prove. I tecnici si sono focalizzati su due aspetti. Da una parte hanno studiato gli effetti di tipo aerodinamico in condizioni climatiche estreme. Nell'ambiente perfettamente controllato e controllabile del terraXcube i tecnici hanno cambiato la pressione per simulare i cambi di quota e hanno variato la temperatura portandola agli estremi di -40 e +40°C.

Dall'altra parte hanno osservato cosa succede ai droni quando sul profilo delle ali si forma del ghiaccio e come questo influenza il loro comportamento.

Anche alcune aziende locali, per esempio MavTech, Soleon, UP, AltroDrones, FlyingBasket, sono interessate ai risultati del progetto – che saranno disponibili a fine 2020 – per migliorare le loro applicazioni. Il progetto, finanziato nella cornice del Fondo europeo per lo sviluppo regionale, è svolto in collaborazione con il Politecnico di Torino e il Politecnico di Milano.

## Project Dronex

The fields of application for drones are already numerous and in the future, there could be even more. The potential for drone activities could possibly extend to the monitoring of climate change in remote areas or supplying remotely inhabited areas with basic necessities. To verify the performance of drones in extreme environments, our researchers, in collaboration with Turin and Milan Polytechnic have been testing individual components and entire machines in the terraXcube.

## Drohnen im Härtetest

Die Einsatzgebiete von Drohnen sind schon heute zahlreich, und neue könnten dazukommen: das Monitoring klimatischer Veränderungen in unzugänglichen Gebieten zum Beispiel, oder die Versorgung abgelegener Siedlungen mit lebenswichtigen Gütern. Um die Leistung von Drohnen unter extremen Bedingungen zu bewerten, testen unsere Forscher in Zusammenarbeit mit den Technischen Hochschulen von Turin und Mailand einzelne Bestandteile sowie ganze Geräte im terraXcube.



# The Sensor System Technology Lab, the new Lab of the Centre for Sensing Solutions

**The Sensor System Technology Lab supports researchers, the South Tyrolean scientific network and the business sector. It provides technological infrastructure that can manage the entire data life-cycle. Since the lab was created last year, particular attention has been focused on the agri-food sector and digital innovation in agriculture with a Digital Innovation in Agri-food workshop which brought together various stakeholders to analyse and ensure the most advantageous practices for resource management and the governance of water for improving crop yields.**

Bringing together the expertise with the sensor laboratory, researchers and technicians develop tools and integrated solutions for the collection of information on the environment, cities, buildings and materials. In this ambit, last year the centre hosted two Master's students from PAUWES (the Pan African Institute of Water and Energy Sciences) to develop a prototype for a smart irrigation kit. The labs various data driven solutions also enable the detection and mapping of landslides, analysis of snow status and the comparison of past climate scenarios with current situations using Copernicus satellite data to demonstrate how water resources can be better managed and where stress in vegetation occurs. The information collected is stored and managed through a cutting-edge technological platform, mainly based on open source systems, making the information available to scientific communities and local and international companies. The Sensor System Technology Lab is a joint initiative of Eurac Research and unibz. The part of the lab run by the Centre for Sensing Solutions was set up in 2019.

## **Centro di competenza SST LAB**

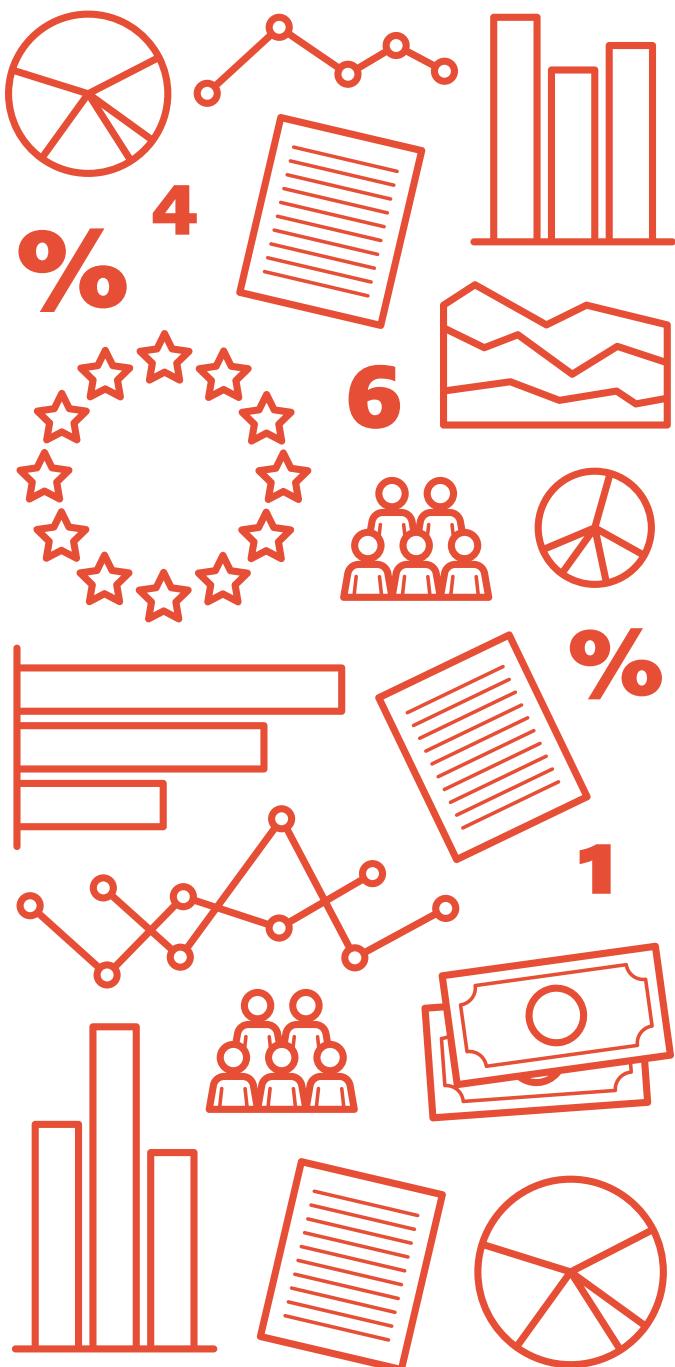
Il Sensor System Technology Lab supporta i ricercatori, la rete scientifica altoatesina e il settore economico. Fornisce un'infrastruttura tecnologica in grado di gestire l'intero ciclo di vita dei dati. Fin dalla nascita del laboratorio, lo scorso anno, particolare attenzione è stata rivolta al settore agroalimentare e all'innovazione digitale in agricoltura. In questo ambito è stato organizzato un workshop per ottimizzare la gestione delle risorse e dell'acqua e migliorare così la resa delle colture.

## **SST LAB – ein Kompetenzzentrum für Sensorik-Lösungen**

Das „Sensor System Technology Lab“ unterstützt Forscher und Forscherinnen, das wissenschaftliche Netzwerk in Südtirol und Unternehmen. Es bietet eine technologische Infrastruktur, die den gesamten Lebenszyklus von Forschungsdaten verwalten und bearbeiten kann. Seit der Einrichtung des Labors im vergangenen Jahr lag ein Schwerpunkt auf der digitalen Innovation im Agrar- und Lebensmittel sektor; im Workshop „Digital Innovation in Agri-Food“ analysierten Stakeholder gemeinsam, wie Ressourcenmanagement und Bewässerung optimiert werden können, um Ernteerträge nachhaltig zu verbessern.





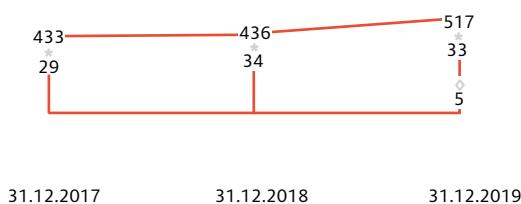


## FACTS & FIGURES



# Personnel . Personal . Personale

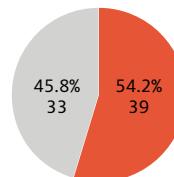
## Personnel . Personal . Personale



\*  
PhD students in the Grant Programme  
PhD-Studenten im Grant Programme  
Studenti PhD nel Grant Programme

◊  
Research grants  
Forschungsstipendien  
Assegni di ricerca

## PhD students PhD-Studenten Studenti PhD

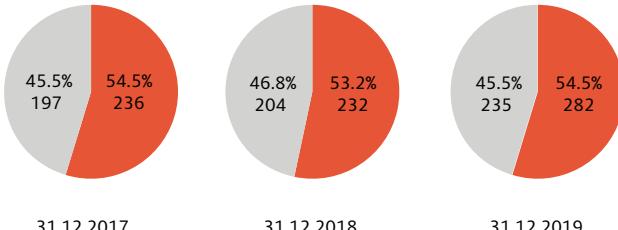


■ Regular contract  
Angestelltenvertrag  
Dipendenti

■ In the Grant Programme  
Im Grant Programme  
Nel Grant Programme

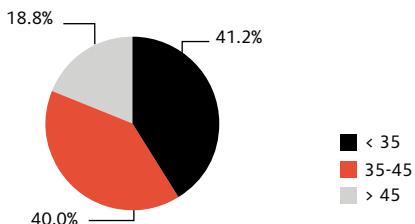
31.12.2019

## Personnel by gender . Personal nach Geschlecht . Personale per genere



■ Male  
Männer  
Uomini  
■ Female  
Frauen  
Donne

## Personnel by age Personal nach Altersgruppen Personale per fasce di età



31.12.2019

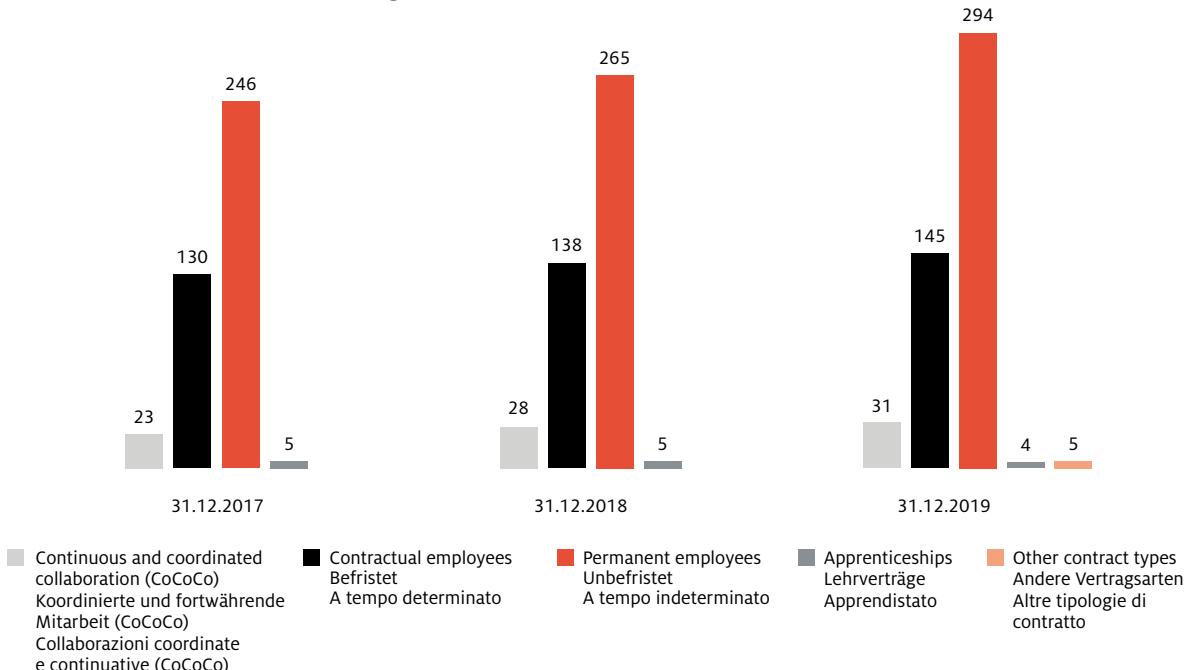
## Average age of employees Durchschnittsalter des Personals Età media del personale

**39**  
**37**

■ Male  
Männer  
Uomini  
■ Female  
Frauen  
Donne

31.12.2019

## Contracts (in numbers) . Verträge (in Zahlen) . Contratti (in numeri)



## Telework & Smartworking Telearbeit & Smartworking Telelavoro & Smartworking

**9.5 %** Telework

**26.9 %** Smartworking

31.12.2019

## Employees with part-time contracts (permanent and contract employee and apprenticeship contracts)

**Teilzeitangestellte**  
(befristete, unbefristete und Lehrverträge)

**Dipendenti impiegati part time**  
(con contratto a tempo determinato, indeterminato e di apprendistato)

**30.1%**

31.12.2019

## Personnel by nationality Personal nach Nationalität Personale per nazionalità



31.12.2019

## Resignations Freiwillig beendete Arbeitsverhältnisse Dimissioni volontarie

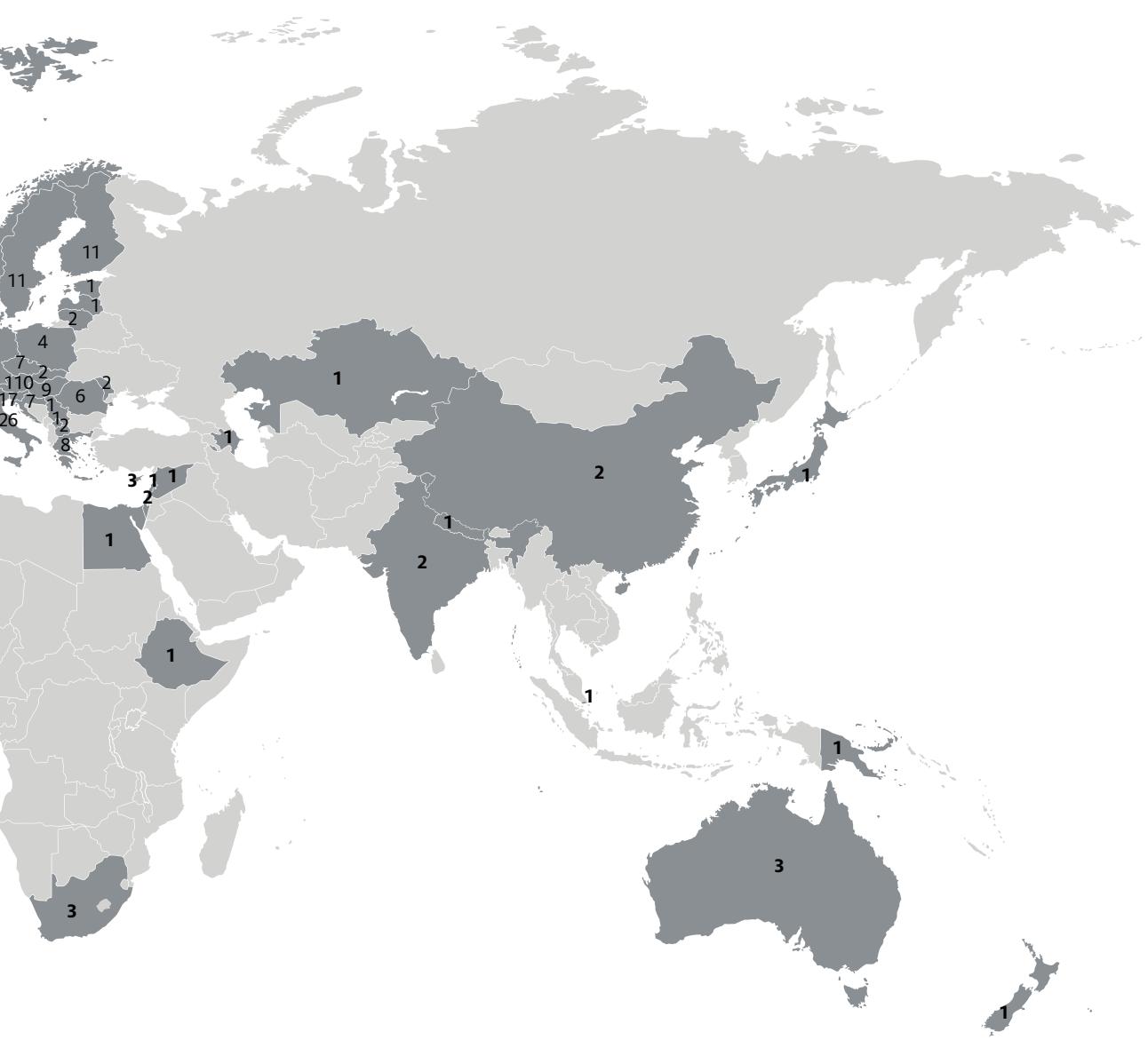
**28**

2019



## Partners







# Participation in EU research projects

Eurac Research stands out because it has achieved a correct balance between projects that deal with local issues and those of international impact. Partnering in international and European research projects is part of Eurac Research's mission and is supported by the Research Development Office.

Since 2010, Eurac Research has worked on 184 projects financed or co-financed through EU programmes and

carried out in cooperation with partners from various EU countries ("EU projects"). As of December 2019, there were **81 EU projects in their implementation phase**.

In 2019, Eurac Research initiated 29 EU projects as a partner or lead partner (17 and 12 respectively).

New **EU co-financing amounts to €8,763,746**.

## EU projects funded or co-funded by EU programmes (ongoing projects in December 2019):

**34**

Horizon 2020

**1**

7th Framework Programme  
for Research and  
Technological Innovation  
(FP7)

**5**

European Territorial  
Cooperation  
Alpine Space

**3**

European Territorial  
Cooperation Central  
Europe

**12**

European Territorial  
Cooperation  
Interreg Italy-Austria

**4**

European Territorial  
Cooperation  
Interreg Italy-Switzerland

**11**

European Regional  
Development Fund  
(ERDF)

**2**

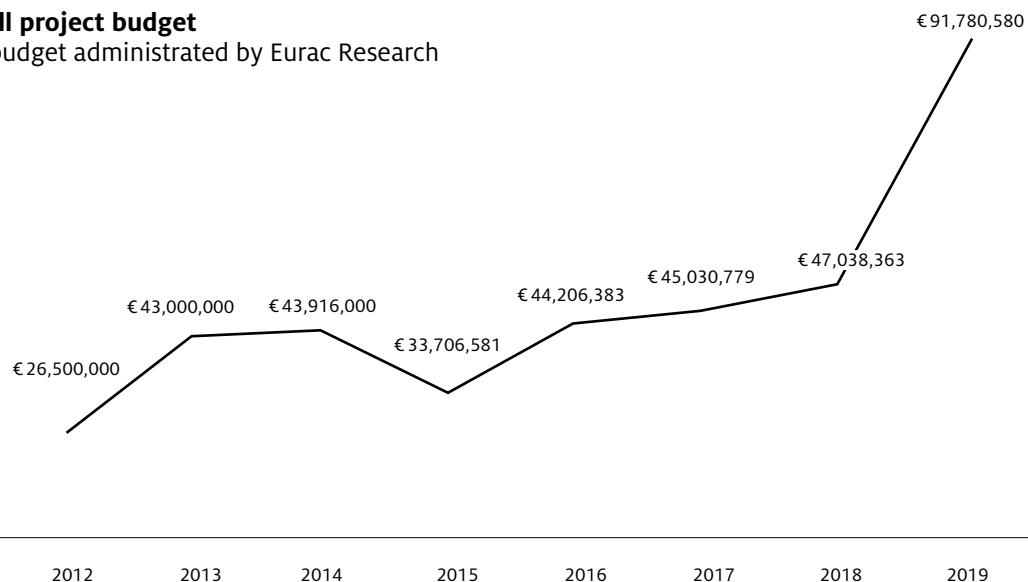
COST Action

**9**

Other programmes  
(Erasmus+, AAL)

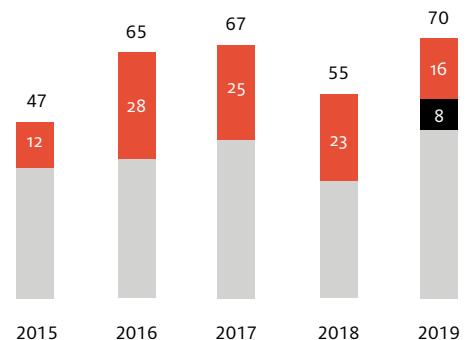
## Overall project budget

Total budget administrated by Eurac Research

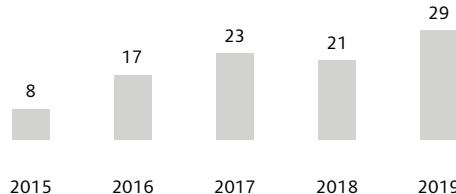


## EU project applications as project partner or lead partner vs applications accepted

- accepted EU project applications (full proposals)
- EU project applications under evaluation
- not approved EU project applications



## EU projects initiated during the year



## EU projects completed during the year



## Newly approved projects

### Matilde

*Migration Impact Assessment to Enhance Integration and Local Development In European Rural And Mountain Areas*

**Financed by:** Horizon 2020

**Project duration:** 36 months

**Partners:** 25

**Role of Eurac Research:** Lead partner

**Total project budget:** 2,987,830€

### Cultural-E

*Climate and cultural based design and market valuable technology solutions for Plus Energy Houses*

**Financed by:** Horizon 2020

**Project duration:** 60 months

**Partners:** 18

**Role of Eurac Research:** Lead partner

**Total project budget:** 9,641,336€

### Wolfalps

*Coordinated actions to improve wolf-human coexistence at the alpine population level*

**Financed by:** Life+

**Project duration:** 60 months

**Partners:** 19

**Role of Eurac Research:** Partner

**Total project budget:** 11,939,693€

**Eurac Research EU contribution:** 192,253€

### We-R

*Illusions of eternity: the Constitution as a lieu de mémoire and the problem of collective remembrance in the Western Balkans*

**Financed by:** Horizon 2020 - Marie Skłodowska Curie Action – Individual Global Fellowship

**Project duration:** 36 months

**Fellow:** Ms Carna Pristan

**Role of Eurac Research:** Lead partner

**Further Hosting Organisation:** Trustees of Columbia University in the City of New York

**Total project budget:** 251,002€

### OB-VISLY

*An Ontology-based Visual Analytics Approach to Big Data from Agricultural Monitoring Infrastructure*

**Financed by:** Horizon 2020 – Marie Skłodowska Curie Action – Individual Fellowship

**Project duration:** 24 months

**Fellow:** Ms Ekaterina Chuprikova

**Role of Eurac Research:** Lead partner and hosting organisation

**Total project budget:** 171,473€

### SensorBIM

*Miglioramento dell'efficienza energetica degli edifici con BIM e RFID*

**Financed by:** Interreg Italia-Austria

**Project duration:** 29 months

**Partners:** 8

**Role of Eurac Research:** Partner

**Total project budget:** 1,103,682€

**Eurac Research EU contribution:** 263,697€



# Finance 2019

# Finanzen 2019

# Finanze 2019

## Basic financing

from the Autonomous Province of Bozen/Bolzano

### Grundfinanzierung

durch die Autonome Provinz Bozen-Südtirol

### Finanziamento

della Provincia autonoma di Bolzano

**49%**

€23,452,569

## Third party funding

### Drittmittel

### Fondi terzi

**51%**

€24,399,898

Partner funding / Mitgliedsbeiträge / Contributi dei soci

€893,482

Project partner funding / Projektaufträge / Progetti

€22,659,641

(Total budget administrated by Eurac Research /

Von Eurac Research verwaltetes Gesamtbudget /

Budget totale amministrato da Eurac Research)\*

Courses / Kurse / Corsi

€279,577

Meeting management

€251,145

Sponsorships / Sponsoring / Sponsorizzazioni

€62,000

Other revenues / Andere Einnahmen / Altri

€254,053

**Total**  
**Gesamtsumme**  
**Totale**

**100%**

€47,852,467

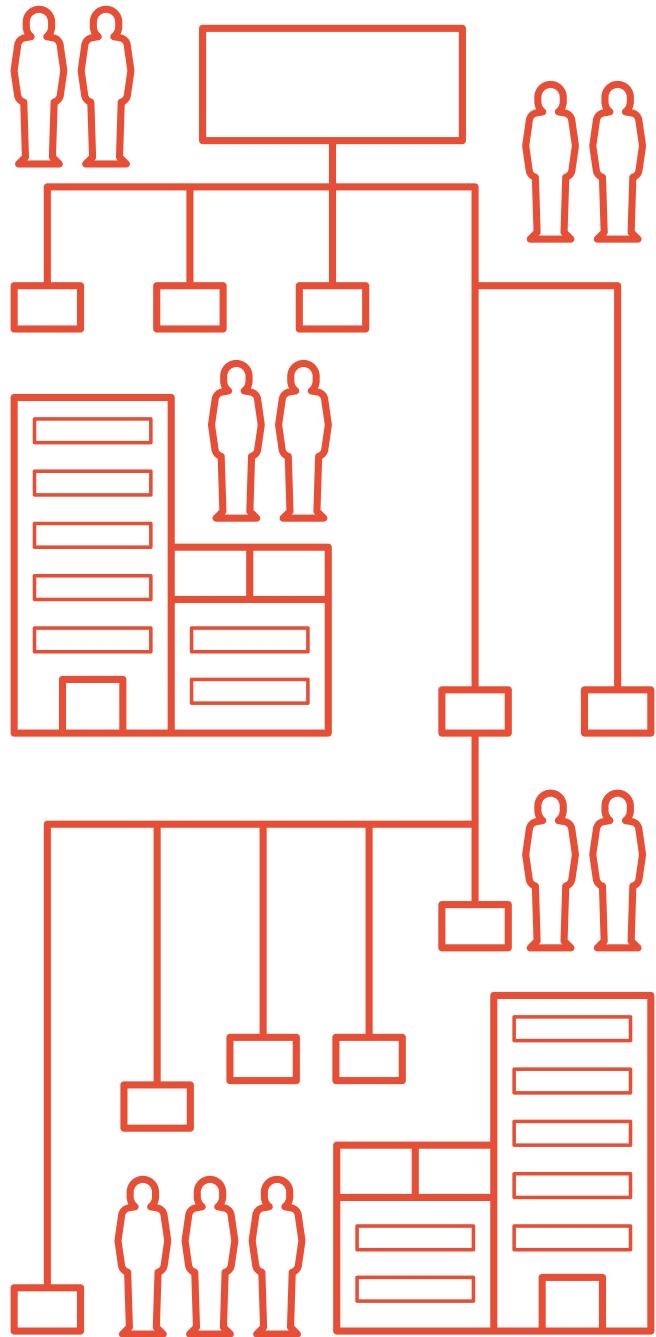
\*

Of the total budget administered by Eurac Research (€22,659,641), €17,524,439 comes from EU funding. Eurac Research manages €10,938,965 of these EU funds on behalf of EU project partners. The total budget also includes €2,355,436 provided by the Autonomous Province of Bolzano for special funding of specific projects.

Eurac Research verwaltet ein Gesamtbudget von 22.659.641 Euro; 17.524.439 Euro davon sind Fördermittel der EU, wobei Eurac Research den Anteil von 10.938.965 Euro im Auftrag von EU-Projektpartnern verwaltet. Das Gesamtbudget enthält auch 2.355.436 Euro, die das Land Südtirol als Sonderfinanzierung für konkrete Projekte zur Verfügung stellte.

Del budget totale amministrato da Eurac Research (22.659.641 euro) 17.524.439 euro provengono da finanziamenti UE. Di questi la quota di 10.938.965 euro viene amministrata per conto di partner di progetto europei. Il budget complessivo comprende anche il finanziamento straordinario di 2.355.436 euro da parte della Provincia Autonoma di Bolzano per specifici progetti.



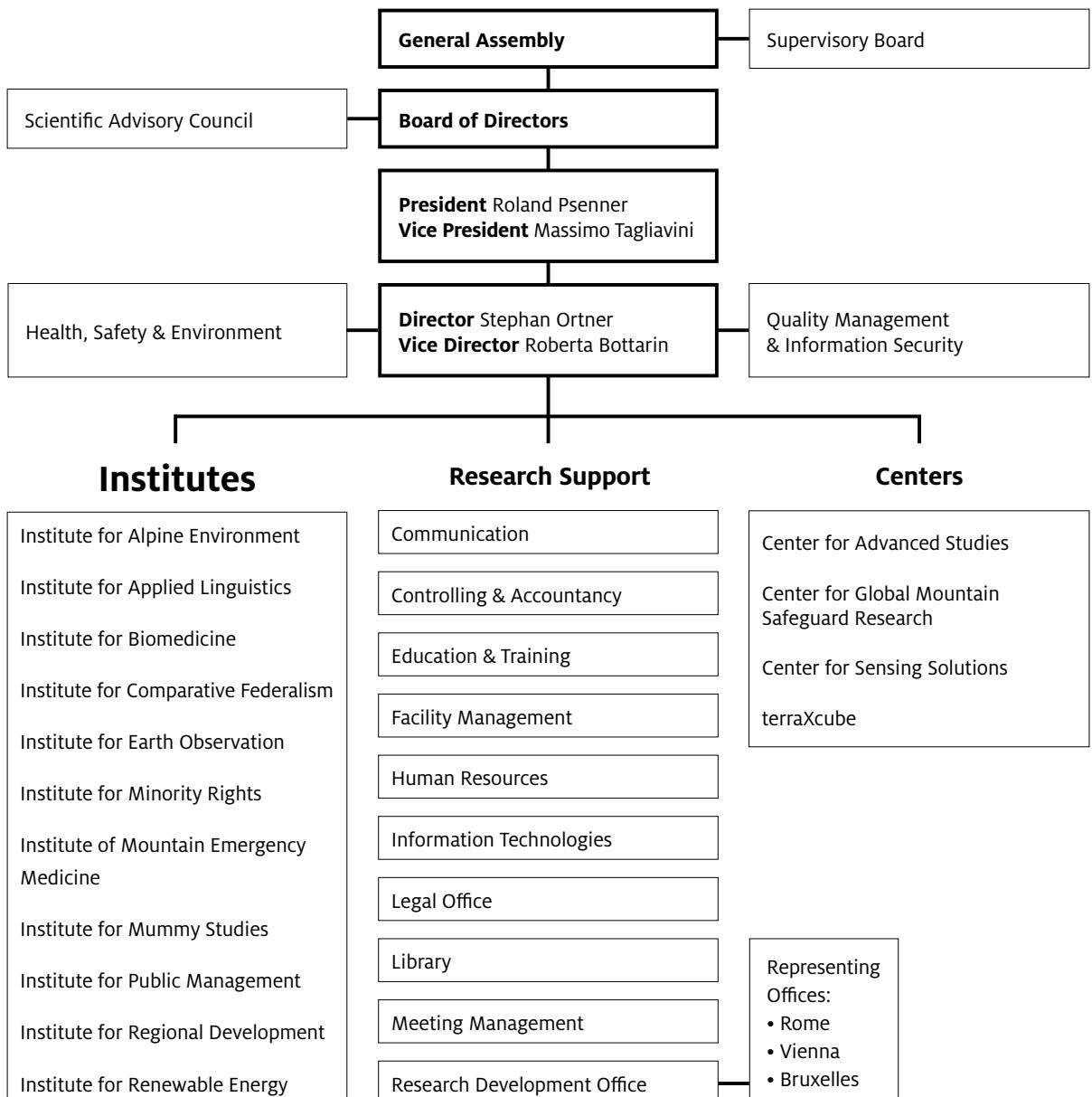


# ORGANISATION

# Organigram

# Organigramm

# Organigramma



# Committees

## Organe

## Organi

### Members – Mitglieder – Soci

Autonome Region Trentino Südtirol /  
Regione Autonoma Trentino Alto Adige  
Autonome Provinz Bozen - Südtirol /  
Provincia Autonoma di Bolzano - Alto Adige  
Bezirksgemeinschaft Burggrafenamt /  
Comunità Comprensoriale Burgraviato  
Brennercom  
Gemeinde Bozen / Comune di Bolzano  
Freie Universität Bozen / Libera Università di Bolzano  
Gemeinde Brixen / Comune di Bressanone  
Gemeinde Meran / Comune di Merano  
Handels-, Industrie-, Handwerks- und Landwirtschafts-  
kammer Bozen /  
Camera di Commercio, Industria,  
Artigianato e Agricoltura di Bolzano  
Handels- und Dienstleisterverband Südtirol /  
Unione Commercio, Turismo, Servizi Alto Adige  
Hoteliers- und Gastwirteverband /  
Unione Albergatori e Pubblici Esercenti  
IDM Südtirol - Alto Adige

Wirtschaftsverband Handwerk und Dienstleister /  
Confartigianato Imprese  
Messe Bozen / Fiera Bolzano  
Raiffeisenverband Südtirol /  
Federazione Cooperative Raiffeisen  
Stiftung Südtiroler Sparkasse /  
Fondazione Cassa di Risparmio di Bolzano  
Südtiroler Bauernbund  
Südtiroler Kulturinstitut  
Universität zu Lübeck  
Athesia AG

### Sponsors – Förderer – Sostenitori

Leitner AG  
Raiffeisenkasse Bozen /  
Cassa Rurale di Bolzano  
Südtiroler Volksbank /  
Banca Popolare dell'Alto Adige

**Board of Directors**  
**Verwaltungsrat**  
**Consiglio di amministrazione**  
(2019-2022)

Roland Psenner  
*President & Chair*  
Massimo Tagliavini  
*Vice President*

Evelyn Kustatscher  
Peter Silbernagl  
Philipp Moser

Stephan Ortner  
*Director*  
Wolfram Sparber  
*Representative of the  
Heads of Institute*

**Board of Auditors**  
**Überwachungsrat**  
**Collegio sindacale**  
(2012 – 2020)

Sara Pitscheider  
*Chair*  
Renata Battisti Leita  
Silvano Taiana

# Institute for Alpine Environment

## Institut für Alpine Umwelt

### Istituto per l'ambiente alpino



Head of Institute  
**Ulrike Tappeiner**

Vice Head of Institute  
**Roberta Bottarin**

**Scientific Advisory Council**  
(2017 – 2020)

**Jill S. Baron (2017 - 2019)**

Natural Resource  
Ecology Lab,  
Colorado State University  
**Josef Dalla Via**  
Dienststelle Forschung  
und Universität der Auto-  
nomen Provinz Bozen

**Michele Freppaz**

University of Torino,  
Agriforfood

**Christian Körner**

Institut für Botanik,  
Universität Basel



**34**

Total staff

**13**

Postdocs

**7**

PhD students

**9**

University  
lecturers  
(outgoing)

**2**

Visiting  
scientists  
(incoming)



**21.3**

Full-time  
equivalent  
(researchers)



**23**

Total projects

**16**

International  
projects



**43**

Journal  
publications

**6**

Contributions  
to conference  
proceedings

**71**

Presentations

Information regarding all institutes' and centers' total staff, postdocs, PhD students from 31.12.2019; all other figures refer to totals for 2019.

## Papers Selection

Dainese M, Martin EA, Aizen M, Albrecht M, Bartomeus I, et al. (2019): A global synthesis reveals biodiversity-mediated benefits for crop production. *Science Advances* 366 (6464), 480-485. DOI: 10.1126/science.aax4851

Schirpke U, Candiago S, Egarter Vigl L, Jäger H, Labadini A, Marsoner T, Meisch C, Tasser E, Tappeiner U (2019): Integrating supply, flow and demand to enhance the understanding of interactions among multiple ecosystem services. *Science of the Total Environment* 651, 928-941. DOI: 10.1016/j.scitotenv.2018.09.235

Schirpke U, Altzinger A, Leitinger G, Tasser E (2019): Change from agricultural to touristic use: Effects on the aesthetic value of landscapes over the last 150 years. *Landscape and Urban Planning* 187, 23-35. DOI: 10.1016/j.landurbplan.2019.03.004

Schirpke U, Tappeiner G, Tasser E, Tappeiner U (2019): Using conjoint analysis to gain deeper insights into aesthetic landscape preferences. *Ecological Indicators* 96, 202-212. DOI: 10.1016/j.ecolind.2018.09.001

Schirpke U, Tappeiner U, Tasser E (2019): A transnational perspective of global and regional ecosystem service flows from and to mountain regions. *Scientific Reports* 9 (6678). DOI: 10.1038/s41598-019-43229-z

Della Chiesa S, La Cecilia D, Genova G, Balotti A, Thalheimer M, Tappeiner U, Niedrist G (2019): Farmers as data sources: Cooperative framework for mapping soil properties for permanent crops in South Tyrol (Northern Italy). *Geoderma* 342, 93-2015. DOI: 10.1016/j.geoderma.2019.02.010

Steinwander M, Jäger S, Schlick-Steiner BC, Steiner FM, Seeber J (2019): Low-quality dwarf-shrub litter negatively affects the fitness of Alpine earthworms (*Lumbricus rubellus* Hoffmeister, 1843; Oligochaeta: Lumbricidae). *Applied Soil Ecology* 139, 79-84. DOI: 10.1016/j.apsoil.2019.03.013

Steinwander M, Schlick-Steiner BC, Steiner FM, Seeber J (2019): One plus one is greater than two: Mixing litter types accelerates decomposition of low-quality Alpine dwarf shrub litter. *Plant and Soil* 438, 405-419. DOI: 10.1007/s11104-019-03991-5

Scotti A, Jacobsen D, Tappeiner U, Bottarin R (2019): Spatial and temporal variation of benthic macroinvertebrate assemblages during the glacial melt season in an Italian glacier-fed stream. *Hydrobiologia* 827 (1), 123-139. DOI: 10.1007/s10750-018-3731-8

Scotti A, Tappeiner U, Bottarin R (2019): Stream benthic macroinvertebrates abundances over a 6-year monitoring period of an Italian glacier-fed stream. *Biodiversity Data Journal* 7, e33576. DOI: 10.3897/BDJ.7.e33576

Zoderer B M, Tasser E, Carver S, Tappeiner U (2019): Stakeholder perspectives on ecosystem service supply and ecosystem service demand bundles. *Ecosystem Services* 37, 100938. DOI: 10.1016/j.ecoser.2019.100938

Phillips HRP, Guerra CA, Bartz MLC, Briones MJL, Brown G, et al. (2019): Global distribution of earthworm diversity. *Science* 66 (6464), 480-485. DOI: 10.1126/science.aax4851

Kattge J, Bönnisch G, Díaz S, Dainese M, Fontana V, Niedrist G, Tappeiner U, et al. (2019): TRY plant trait database – enhanced coverage and open access. *Global Change Biology* 26, 119 - 188. DOI: 10.1111/gcb.14904

Zen M, Candiago S, Schirpke U, Egarter Vigl L, Giupponi C (2019): Upscaling ecosystem service maps to administrative levels: beyond scale mismatches. *Science of The Total Environment* 660, 1565-1575. DOI: 10.1016/j.scitotenv.2019.01.087

Zoderer B M, Tasser E, Carver S, Tappeiner U (2019): An integrated method for the mapping of landscape preferences at the regional scale. *Ecological Indicators* 106, 105430. DOI: 10.1016/j.ecolind.2019.05.061

# Institute for Applied Linguistics Institut für Angewandte Sprachforschung Istituto di linguistica applicata



Heads of Institute

**Andrea Abel**

**Marcello Soffritti**

**Scientific Advisory Council**  
(2017 – 2020)

**Rudolf de Cillia (2017 - 2019)**

Universität Wien

**Ulrich Heid**

Universität Hildesheim

**Bernardo Magnini**

Fondazione Bruno Kessler

**Donatella Pulitano**

Terminologiedienst Bern  
und Universität Genf

**Stefania Spina**

Università per Stranieri  
di Perugia



**23**

Total staff

**9**

Postdocs

**6**

PhD students

**6**

University  
lecturers  
(outgoing)

**2**

Visiting  
scientists  
(incoming)



**17.57**

Full-time  
equivalent  
(researchers)



**30**

Total projects

**9**

International  
projects



**6**

Journal  
publications

**14**

Contributions to  
Edited Books

**8**

Contributions  
to conference  
proceedings

**60**

Presentations

## Books

Abel A, Glaznieks A, Lyding V, Nicolas N (2019): Widening the Scope of Learner Corpus Research: Selected Papers from the Fourth Learner Corpus Research Conference. Presses Universitaires de Louvain. Louvain-la-Neuve.

Wigham C, Stemle EW (2019): Building computer-mediated communication corpora for socio-linguistic analysis. Clermont Auvergne University Publishing House. Clermont Auvergne.

## Papers Selection

Abel A, Glaznieks A (2019): „Sicherlich mache ich den einen oder anderen Fehler, aber ...“: Varianz in Lernertexten im deutschen Sprachraum. In: Dimensions of Linguistic Space: Variation, Multilingualism, Conceptualisations = Dimensionen des sprachlichen Raums: Variation, Mehrsprachigkeit, Konzeptualisierung. 363-384.

Abel A, Glaznieks A (2019): Fehler oder nicht? Sprachliche Variation in Schulaufgaben. In: Sprachliche Variation im Deutschen: unterrichtsdidaktische, deskriptive und internationale Perspektiven. 39-67.

Barrett J, Colombo S, Engel D, Reimelt J (2019): The SMS project: Lesson materials for teachers.

Chiocchetti E (2019): Aus der Vergangenheit lernen: Entwicklung der deutschen Rechtsterminologie in Südtirol. In: Nationale Variation in der deutschen Rechtsterminologie. 91-180.

Chiocchetti E, De Camillis F (2019): Translator skills for expert-to-lay communication: experiences with e-learning modules on occupational health and safety. In: New Challenges for Research on Language for Special Purposes. 309-326.

Chiocchetti E, De Camillis F, Stanizzi I (2019): Terminologische Herausforderungen bei Gesetzesänderungen am Beispiel des Familienrechts. In: Legal translation: current Issues and Challenges in Research, Methods and Application. 113-128.

Chiocchetti E, Krambitter K, Ralli N, Stanizzi I (2019): 25 Jahre Bozner Methode: Terminologiearbeit in Südtirol. In: Terminologie: Epochen, Schwerpunkte, Umsetzungen: zum 25-jährigen Bestehen des Rats für deutschsprachige Terminologie. 175-191.

Engel D, Stopfner M (2019): Communicative Competence in the Context of Increasing Diversity in South Tyrolean Schools. In: International Research on Multilingualism: Breaking with the Monolingual Perspective. 59-78.

Frey JC, König A, Stemle E (2019): How FAIR are CMC corpora? In: Proceedings of the 7th Conference on CMC and Social Media Corpora for the Humanities (cmccorpora19). 25-30.

Glaznieks A, Glück A (2019): From the Valleys to the World Wide Web: Non-Standard Spellings on Social Network Sites. In: Building computer-mediated communication corpora for socio-linguistic analysis. 21-45.

Lyding V, König A, Gorgaini E, Nicolas L, Pretti M (2019): DI-ÖSS - Building a digital infrastructure in South Tyrol. In: Selected papers from the CLARIN Annual Conference 2018, Pisa, 8-10 October 2018; Editors: Inguna Skadina and Maria Eskevich; Series: Linköping Electronic Conference Proceedings, Issue: 159. 92-102.

Lyding V, Rodosthenous C, Sangati F, Ul Hassan U, Nicolas L, König A, Horbacauskiene J, Katinskaia A (2019): v-trel: Vocabulary Trainer for Tracing Word Relations - An Implicit Crowdsourcing Approach. In: Proceedings of the International Conference on Recent Advances in Natural Language Processing (RANLP 2019); Natural Language Processing in a Deep Learning World; Varna, Bulgaria 2-4 September 2019; Edited by Galia Angelova, Ruslan Mitkov, Ivelina Nikolova, Irina Temnikova. 674-683.

Ralli N, Stanizzi I (2019): Ansätze zur Vereinheitlichung der Rechts- und Verwaltungsterminologie: ein Beispiel aus Südtirol. In: New Challenges for Research on Language for Special Purposes. 159-172.

Stemle EW, Abel A, Lyding V (2019): Language varieties meet One-Click Dictionary. In: Kosem, I., Zingano Kuhn, T., Correia, M., Ferreria, J. P., Jansen, M., Pereira, I., Kallas, J., Jakubíček, M., Krek, S. & Tiberius, C. (eds.) 2019. Electronic lexicography in the 21st century. Proceedings of the eLex 2019 conference. 1-3 October 2019, Sintra, Portugal. Brno: Lexical Computing CZ, s.r.o.

Zanasi L, Konecny C, Autelli E, Abel A (2019): Il progetto LeKo: Per una fraseodidattica dell’italiano L2 basata su corpora di apprendimento. In: Il mondo dell’italiano. L’italiano nel mondo. Convegno per il Centenario dell’Università per Stranieri. 149-160.

# Institute for Biomedicine

# Institut für Biomedizin

# Istituto di biomedicina



Head of Institute  
**Peter P. Pramstaller**

Vice Head of Institute  
**Andrew A. Hicks**

Coordinator  
**Vera Sophia Claudia Amon**

Technical Group Leader  
**Chiara Cantaloni**  
**Alessandro De Grandi**  
**Clemens Egger**

Research Group Leader  
**Christian Fuchsberger**  
**Francisco Manuel Lopes da Silva Domingues**  
**Deborah Mascalzoni**  
**Cristian Pattaro**  
**Alessandra Rossini**

**Scientific Advisory Council**  
(2017 – 2020)

**Michael Boehnke**  
University of Michigan, Ann Arbor  
**Pascal Borry**  
Centre for Biomedical Ethics and Law - University of Leuven  
**Harry Campbell**  
Usher Institute of the University of Edinburgh

**Elisabetta Cerbai**  
Università degli Studi di Firenze  
**Richard M. Myers**  
HudsonAlpha Institute for Biotechnology, Alabama  
**Maria Grazia Spillantini**  
John Van Geest Centre for Brain Repair, University of Cambridge



**74**

Total staff

**32**

Postdocs

**10**

PhD students

**14**

University lecturers (outgoing)

**2**

Visiting scientists (incoming)



**31.9**

Full-time equivalent (researchers)



**30**

Total projects

**18**

International projects



**42**

Journal publications

**51**

Presentations

## Papers Selection

Wuttke M, Li Y, Li M et al. A catalog of genetic loci associated with kidney function from analyses of a million individuals. *Nature Genetics*. 2019; 51(6): 957-972.  
(Fuchsberger C, De Grandi A, Gögele M, Hicks AA, Mascalzoni D, Pramstaller PP, Pattaro C)

Tin A, Marten J, Halperin Kuhns VL et al. Target genes, variants, tissues and transcriptional pathways influencing human serum urate levels. *Nature Genetics*. 2019; 51(10): 1459-1474.  
(Fuchsberger C, De Grandi A, Gögele M, Hicks AA, Mascalzoni D, Pramstaller PP, Pattaro C)

Teumer A, Li Y, Ghasemi S et al. Genome-wide association meta-analyses and fine-mapping elucidate pathways influencing albuminuria. *Nature Communications*. 2019; 10(1): 4130.  
(Fuchsberger C, De Grandi A, Gögele M, Hicks AA, Mascalzoni D, Pramstaller PP, Pattaro C)

De Grandi A, Franzini M, Rosipal Š et al. Highly Elevated Plasma -Glutamyltransferase Elevations: A Trait Caused by -Glutamyltransferase 1 Transmembrane Mutations. *Hepatology*. 2019; 71(3): 1124-1127.  
(De Grandi A, Pramstaller PP)

Flannick J, Mercader JM, Fuchsberger C et al. Exome sequencing of 20,791 cases of type 2 diabetes and 24,440 controls. *Nature*. 2019; 570(7759): 71-76.  
(Fuchsberger C)

Rainer J, Gatto L, Weichenberger CX. ensembldb: an R package to create and use Ensembl-based annotation resources. *Bioinformatics*. 2019; 35(17): 3151-3153.  
(Rainer J, Weichenberger CX)

Domingues FS, König E, Schwienbacher C et al. Compound heterozygous SNT2 mutations in two siblings with early-onset epilepsy, intellectual disability and macrocephaly. *Seizure - European Journal of Epilepsy*. 2019; 66: 81-85.  
(Domingues FS, König E, Volpatto CB, Picard A, Cantaloni C, Mascalzoni D, Hicks AA, Pramstaller PP)

Mascalzoni D, Bentzen HB, Budin-Ljøsne I et al. Are Requirements to Deposit Data in Research Repositories Compatible With the European Union's General Data Protection Regulation? *Annals of Internal Medicine*. 2019; 170(5): 332-334.  
(Mascalzoni D, Fuchsberger C, Pattaro C, Pramstaller PP, Rossini A)

Motta BM, Grander C, Gögele M et al. Microbiota, type 2 diabetes and non-alcoholic fatty liver disease: protocol of an observational study. *Journal of translational medicine*. 2019; 17(1): 408.  
(Motta BM, Gögele M, Foco L, Vukovic V, Melotti R, Fuchsberger C, De Grandi A, Cantaloni C, Picard A, Mascalzoni D, Rossini A, Pattaro C, Pramstaller PP)

Grover S, Lill CM, Kasten M et al. Risky behaviors and Parkinson disease: A mendelian randomization study. *Neurology*. 2019; 93(15): e1412-e1424.  
(Del Greco MF)

Staunton C, Slokenberga S, Mascalzoni D. The GDPR and the research exemption: considerations on the necessary safeguards for research biobanks. *European Journal of Human Genetics*. 2019; 27(8): 1159-1167.  
(Staunton C, Mascalzoni D)

Weichenberger CX, Rainer J, Pattaro C et al. Comparative assessment of different familial aggregation methods in the context of large and unstructured pedigrees. *Bioinformatics*. 2019; 35(1): 69-76.  
(Weichenberger CX, Rainer J, Pattaro C, Pramstaller PP, Domingues FS)

Zanon A, Riekschnitz D, von Troyer M et al. Generation of an induced pluripotent stem cell line (EURACi005-A) from a Parkinson's disease patient carrying a homozygous exon 3 deletion in the PRKN gene. *Stem Cell Research*. 2019; 41: 101624.  
(Zanon A, Riekschnitz D, Volpatto C, Picard A, Cantaloni C, Pramstaller PP, Hicks AA, Pichler I)

Del Greco MF, Foco L, Teumer A et al. Lipidomics, Atrial Conduction, and Body Mass Index. *Circulation. Genomic and Precision Medicine*. 2019; 12(7): e002384.  
(Del Greco MF, Foco L, Melotti R, Vukovic V, Hicks AA, Pramstaller PP, Rossini A, Pattaro C)

Guida M, Zanon A, Montibeller L et al. Parkin Interacts with Apoptosis-Inducing Factor and Interferes with Its Translocation to the Nucleus in Neuronal Cells. *International Journal of Molecular Sciences*. 2019; 20(3): pii: E748.  
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# Institute for Comparative Federalism

# Institut für Vergleichende Föderalismusforschung

# Istituto di studi federali comparati



Head of Institute  
**Francesco Palermo**

Coordinator  
**Carolin Zwilling**

Vice Head of Institute  
**Jens Woelk**

**Scientific Advisory Council**  
(2017 – 2020)

**Eva Maria Belser**  
University of Fribourg  
Chair for Constitutional and  
Administrative Law  
**Josep-Maria Castellá Andreu**  
University of Barcelona  
Department of Constitutional  
Law and Political Sciences

**Andreas Kiefer**  
Council of Europe  
Secretary General of the  
Congress  
**Patricia Popelier**  
University of Antwerp  
Faculty of Law  
**Cheryl Saunders**  
Melbourne Law School  
University of Melbourne



**22**

Total staff

**12**

Postdocs

**2**

PhD students

**9**

University  
lecturers  
(outgoing)

**5**

Visiting  
scientists  
(incoming)



**14**

Full-time  
equivalent  
(researchers)



**30**

Total projects

**26**

International  
projects



**16**

Journal  
publications

**31**

Contributions to  
Edited Books

**100**

Presentations

## Books

Alber, Elisabeth / Klotz, Greta / Engl, Alice / Kofler, Ingrid. Grenzüberschreitende Governance und Bürgernähe. Die Rolle von „Grenz“-Gemeinden in der Europaregion Tirol-Südtirol-Trentino / Governance transfrontaliera e vicinanza ai cittadini. Il ruolo dei comuni di confine nell'Euregio Tirolo-Alto Adige-Trentino, Eurac Research, Bolzano/Bozen, 2019, [www.eurac.eu/it/research/Publications/Pages/publicationdetails.aspx?pubId=0103778&pubType=E](http://www.eurac.eu/it/research/Publications/Pages/publicationdetails.aspx?pubId=0103778&pubType=E), ISBN 9789004364196.

Cittadino, Federica. Incorporating Indigenous Rights in the International Regime on Biodiversity Protection: Access, Benefit-sharing and Conservation in Indigenous Lands, Brill-Nijhoff, Leiden/Boston, 2019, <https://doi.org/10.1163/9789004364400>, ISBN 9789004364196.

Palermo, Francesco / Kössler, Karl. Comparative Federalism: Constitutional Arrangements and Case Law, Hart Publishing, Oxford, 2019, [www.bloomsburyprofessional.com/uk/comparative-federalism-9781509928460/](http://www.bloomsburyprofessional.com/uk/comparative-federalism-9781509928460/), ISBN 9781509928460 (paperback).

Alber, Elisabeth / Engl, Alice / Pallaver, Günther (eds.). Politika 2019: Südtiroler Jahrbuch für Politik, Annuario di politica dell'Alto Adige: Parlamentswahlen 2017/18 und Landtagswahlen 2018: Tirol, Südtirol, Trentino und Bayern im Vergleich - Elezioni politiche 2017/2018 ed elezioni provinciali 2018: Tirolo, Alto Adige, Trentino e Baviera a confronto, Raetia, Bolzano/ Bozen, 2019, [www.raetia.com/it/storia-politica/elisabeth-alber-alice-engl-guenther-pallaver-politika-19-detail.html](http://www.raetia.com/it/storia-politica/elisabeth-alber-alice-engl-guenther-pallaver-politika-19-detail.html), ISBN 9788872836880.

Palermo, Francesco / Lattarulo, Patrizia / Omizzolo, Andrea / Provenzano, Vincenzo / Streifeneder, Thomas (eds.). Le Regioni d'Europa tra identità locali, nuove comunità e disparità territoriali = The regions of Europe among local identities, new communities and territorial disparities, FrancoAngeli, Milano, 2019, [http://ojs.francoangeli.it/\\_omp/index.php/oa/catalog/book/425](http://ojs.francoangeli.it/_omp/index.php/oa/catalog/book/425), ISBN-13 9788891795526.

Zwilling, Carolin / Obwexer, Walter / Happacher, Esther (eds.). EU-Mitgliedschaft und Südtirols Autonomie: Die Auswirkungen der EU-Mitgliedschaft auf die Autonomie des Landes Südtirol am Beispiel ausgewählter Gesetzgebungs- und Verwaltungskompetenzen, Band II, Verlag Österreich, Wien, 2019, <https://doi.org/10.33196/9783704682703>, ISBN 9783704682468.

## Papers Selection

Alber, Elisabeth / Zwilling, Carolin. Italiens Spagat zwischen Einheit und Differenzierung: Reformen und differenzierter Regionalismus unter der „Regierung der Veränderung“ in: Jahrbuch des Föderalismus 2019: Föderalismus, Subsidiarität und Regionen in Europa, Nomos, Baden-Baden, 2019, 313-327, <https://doi.org/10.5771/9783748901174-313>.

Alberton, Mariachiara. EU progress towards its Sustainable Development Goals. in: EUrekal, 2019, <https://blogs.eurac.edu/eureka/eu-progress-sustainable-goals/>.

Cittadino, Federica. Science novit curia? Damage evaluation methods and the role of experts in the Costa Rica v Nicaragua case. in: Questions of International Law, 2019, 35-53, <http://www.qil-qdi.org/scientia-novit-curia-damage-evaluation-methods-and-the-role-of-experts-in-the-costa-rica-v-nicaragua-case/>.

Fessha, Yonatan Tesfaye. Second chamber as a site of legislative intergovernmental relations: An African federation in comparative perspective. in: Regional & Federal Studies, 2019, 1-24, <https://doi.org/10.1080/13597566.2019.1690997>.

Fessha, Yonatan Tesfaye. A federation without federal credentials: The story of federalism in a dominant party state. in: Steytler, Nico / Fombad, Charles M. (eds.), Decentralization and constitutionalism in Africa, Oxford University Press, Oxford, 2019, part II, 5, <https://oxcon.ouplaw.com/view/10.1093/law/9780198846154.001.0001/law-9780198846154-chapter-6>.

Kössler, Karl. Territorial Referendums from a Constitutionalist Perspective: Functions, Justifications and Legal Design. in: López Basaguren, Alberto / Escudero San-Epifanio, Leire (eds.), Claims for Secession and Federalism: A Comparative Study with a Special Focus on Spain, Springer, Heidelberg, 2019, 278-310, [https://doi.org/10.1007/978-3-319-59707-2\\_16](https://doi.org/10.1007/978-3-319-59707-2_16).

Nicolini, Matteo. African Legal Traditions. in: Mousourakis, George (ed.), Comparative Law and Legal Traditions: historical and contemporary perspectives, Springer, Heidelberg, 2019, 281-297, [https://doi.org/10.1007/978-3-030-28281-3\\_10](https://doi.org/10.1007/978-3-030-28281-3_10).

Palermo, Francesco. Federalism and the European Union: asymmetry, policies and some recurring federal dilemmas. in: Kincaid, John (ed.), A Research Agenda for Federalism Studies, Edward Elgar Publishing, Cheltenham, 2019, 198-208, <https://doi.org/10.4337/9781788112970.00021>.

Palermo, Francesco. Towards a Comparative Law of Secession? in: Delledonne, Giacomo / Martinico, Giuseppe (eds.), The Canadian Contribution to a Comparative Law of Secession: Legacies of the Quebec Secession Reference, Springer International, Cham, 2019, 265-282, [https://doi.org/10.1007/978-3-03469-6\\_13](https://doi.org/10.1007/978-3-03469-6_13).

Palermo, Francesco. Why Do Federal Studies Matter and What Does Matter? in: Federal Governance, volume 15, number 1, 2019, 6-10, <https://doi.org/10.24908/fgv15i1.13148>.

Parolari, Sara. Democrazia diretta nel Regno Unito: il referendum è lo strumento adeguato per uscire dall'impasse della Brexit? in: Forum di Quaderni costituzionali Rassegna, issue 2, 2019, 1-7, <http://www.forumcostituzionale.it/wordpress/wp-content/uploads/2019/03/parolari.pdf>.

Parolari, Sara / Trettel, Martina. Media e Cultura. in: Zwilling, Carolin / Obwexer, Walter / Happacher, Esther (eds.). EU-Mitgliedschaft und Südtirols Autonomie: Die Auswirkungen der EU-Mitgliedschaft auf die Autonomie des Landes Südtirol am Beispiel ausgewählter Gesetzgebungs- und Verwaltungskompetenzen II, Band II (Handbook), Verlag Österreich, Wien, 2019, 457-487, <https://doi.org/10.33196/9783704682703>.

Piacentini, Arianna. "Trying to Fit In": Multiethic Parties, Ethno-Clientelism, and Power-Sharing in Bosnia and Herzegovina and Macedonia, in: Nationalism and Ethnic Politics, volume 25, issue 3, 273-291, <https://doi.org/10.1080/13537113.2019.1639426>.

Valdesalici, Alice. The peregrinations of fiscal federalism: past, present and future of a research agenda. in: Kincaid, John (ed.), A Research Agenda for Federalism Studies, Edward Elgar Publishing, Cheltenham, 2019, 93-105, <https://doi.org/10.4337/9781788112970.00012>.

Woelk, Jens. From Enlargement Perspective to "Waiting for Godot"? Has the EU Lost Its Transformative Power in the Balkans? in: Antonioli, Luisa / Bonatti, Luigi / Rizza, Carlo (eds.), Highs and Lows of European Integration: Sixty Years After the Treaty of Rome, Springer, Cham, 2019, 27-47, [https://doi.org/10.1007/978-3-319-93626-0\\_3](https://doi.org/10.1007/978-3-319-93626-0_3).

# Institute for Earth Observation

# Institut für Erdbeobachtung

# Istituto per l'osservazione della Terra



Head of Institute  
**Marc Zebisch**

Vice Head of Institute  
**Claudia Notarnicola**

Research Group Leader  
**Alexander Jacob**  
**Claudia Notarnicola**  
**Marc Zebisch**

**Scientific Advisory Council**  
(2017 – 2020)

**Laura Candela**  
ASI - Agenzia Spaziale  
Italiana, Roma  
**Roberto Dinale**  
Provincia autonoma di  
Bolzano, Ufficio Idrografico

**Thomas Glade**  
Universitat Wien, Institut  
für Geographie und Regional-  
forschung  
**Doris Klein**  
FireBIRD Mission; German  
Remote Sensing Data Center  
(DFD) of the Earth Observa-  
tion Center (EOC)



**36**

Total staff

**12**

Postdocs

**9**

PhD students

**7**

University  
lecturers  
(outgoing)

**2**

Visiting  
scientists  
(incoming)



**20.91**

Full-time  
equivalent  
(researchers)



**29**

Total projects

**19**

International  
projects



**19**

Journal  
publications

**1**

Contributions to  
Edited Books

**7**

Contributions  
to conference  
proceedings

**65**

Presentations

## Papers Selection

Rossi M, Niedrist G, Asam S, Tonon G, Tomelleri E, Zebisch M, *A Comparison of the Signal from Diverse Optical Sensors for Monitoring Alpine Grassland Dynamics*, in Remote Sensing 2019, Issue 3, Vol. 11

Ventura B, Vianello A, Frisinghelli D, Rossi M, Monsoro R, Costa A, *A Methodology for Heterogeneous Sensor Data Organization and Near Real-Time Data Sharing by Adopting OGC SWE Standards*, in ISPRS International Journal of Geo-Information 2019, Issue 4:167, Vol. 8

De Gregorio L, Callegari M, Marin C, Zebisch M, Bruzzone L, Demir B, Strasser U, Marke T, Günther D, Nadalet R, Notarnicola C, *A novel data fusion technique for snow cover retrieval*, in IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing 2019

Bertone A, Zucca F, Marin C, Notarnicola C, Cuozzo G, Krainer K, Mair V, Riccardi P, Callegari M, Seppi R, *An Unsupervised Method to Detect Rock Glacier Activity by Using Sentinel-1 SAR Interferometric Coherence: A Regional-Scale Study in the Eastern European Alps*, in Remote Sensing 2019

Matiu M, Jacob A, Notarnicola C, *Daily MODIS Snow Cover Maps for the European Alps from 2002 onwards at 250 m Horizontal Resolution Along with a Nearly Cloud-Free Version*, in Data 2019

Bartkowiak P, Castelli M, Notarnicola C, *Downscaling Land Surface Temperature from MODIS Dataset with Random Forest Approach over Alpine Vegetated Areas*, in Remote Sensing 2019, Issue 11, vol. 11

Torresani M, Rocchini D, Sonnenschein R, Zebisch M, Marcantonio M, Ricotta C, Tonon G, *Estimating tree species diversity from space in an alpine conifer forest: The Rao's Q diversity index meets the spectral variation hypothesis*, in Ecological Informatics 2019, Vol. 52, pp 26-34

Matiu M, Petitta M, Notarnicola C, Zebisch M, *Evaluating Snow in EURO-CORDEX Regional Climate Models with Observations for the European Alps: Biases and Their Relationship to Orography, Temperature, and Precipitation Mismatches*, in Atmosphere 2019

Standardi L, Karlsen S R, Niedrist G, Gerdol R, Zebisch M, Rossi M, Notarnicola C, *Exploiting Time Series of Sentinel-1 and Sentinel-2 Imagery to Detect Meadow Phenology in Mountain Regions*, in Remote Sensing 2019, Issue 5, Vol. 11

De Gregorio L, Guenther D, Callegari M, Strasser U, Zebisch M, Bruzzone L, Notarnicola C, *Improving SWE estimation by fusion of snow models with topographic and remotely sensed data*, in Remote Sensing 2019, Issue 2033, Vol. 11

Murillo-García F, Steger S, Alcántara-Ayala I, *Landslide susceptibility: a statistically-based assessment on a depositional pyroclastic ramp*, in Journal of Mountain Science 2019, Issue 3, Vol. 16, pp 561-580

Genova G, Rossi M, Niedrist G, Della Chiesa S, *Meteo Browser South Tyrol: A Shiny App to download the meteorological time series from the Open Data Catalogue of the Province of Bolzano/Bozen – Italy*, in Research Ideas and Outcomes 2019

Terzi S, Torresan S, Schneiderbauer S, Critto A, Zebisch M, Marcomini A, *Multi-risk assessment in mountain regions: A review of modelling approaches for climate change adaptation*, in Journal of Environmental Management 2019, Issue 1, Vol. 232, pp 759-771

Rastner P, Prinz R, Notarnicola C, Nicholson L, Sailer R, Schwaizer G, Paul F, *On the Automated Mapping of Snow Cover on Glaciers and Calculation of Snow Line Altitudes from Multi-Temporal Landsat Data*, in Remote Sensing 2019

Schmaltz EM, Van Beek LPH, Bogaard TA, Kraushaar S, Steger S, Glade T, *Strategies to improve the explanatory power of a dynamic slope stability model by enhancing land cover parameterisation and model complexity*, in Earth Surface Processes and Landforms 2019, Issue 6, Vol. 44, pp 1259-1273

# Institute for Minority Rights

## Institut für Minderheitenrecht

### Istituto sui diritti delle minoranze



Heads of Institute  
**Joseph Marko**  
**Günther Rautz**

Research Group Leader  
**Roberta Medda-Windischer**  
**Alice Engl**  
**Verena Wisthaler**

**Scientific Advisory Council**  
(2017 – 2020)

**Sia Spiliopoulou Åkermark**  
Åland Islands Peace Institute  
**Joshua Castellino**  
Minority Rights Group International  
**Ilze Brands Kehris**  
(2017 - 2019)  
United Nations Human Rights Committee

**Petra Roter**  
University of Ljubljana  
**Ricard Zapata Barrero**  
Universitat Pompeu Fabra, Barcelona



**20**

Total staff

**9**

Postdocs

**3**

PhD students

**10**

University lecturers (outgoing)

**2**

Visiting scientists (incoming)



**12.9**

Full-time equivalent (researchers)



**19**

Total projects

**6**

International projects



**8**

Journal publications

**17**

Contributions to Edited Books

**1**

Contributions to conference proceedings

**60**

Presentations

## Books

Grote G (2019), Im Schatten der Zeitenwende. Tirol 1900-1918, Bozen: Athesia.

Marko J (ed.), Constantin S (a. ed.) (2019), Human and Minority Rights Protection by Multiple Diversity Governance. History, Law, Ideology and Politics in European Perspective, London/New York: Routledge.

Medda-Windischer R, Boulter C, Malloy T (2019), Extending Protection to Migrant Populations in Europe. Old and New Minorities, London/New York: Routledge.

Rautz G, Pirker J, Pandel M, Neisser H, Hren K, Hafner G, Stainer-Hämmerle K (Hrsg.) (2019), Grenzen: Trennung und Verbindung, gemeinsam2020skupno, Klagenfurt-Laibach-Wien: Hermagoras-Mohorjeva.

Rautz G, Fink M (Hrsg.) (2019), 100 Jahr Erster Weltkrieg – Europa und Europaregion: von den Grenzen von 1918 zu den Netzwerken 2018, Euregio Atelier, Bozen: Euregio book.

Tomaselli A, Wright C (eds.) (2019), The Prior Consultation of Indigenous Peoples in Latin America: Inside the Implementation Gap. London/New York: Routledge.

## Papers Selection

Carlà A (2019), South Tyrol: a Model for All? The Other Face of Minority Accommodation, *Europäisches Journal für Minderheitenfragen* 1-2: 140-166.

Carlà A (2019), From Security Considerations to De-Securitising the Discourse on 'Old' and 'New', In Extending Protection to Migrant Populations in Europe. Old and New Minorities, Routledge: London/New York.

Carlà A, Mitterhofer J (2019), Coming to Terms with Controversial Memories in South Tyrol: The Monument to Victory of Bolzano/Bozen, EuropeNow 26.

Constantin S, Carlà A (2019), "Territorial and Cultural Self-Governance in Italy: Strengths and Challenges of South Tyrol's Autonomy" in Olgun Akbulut and Elçin Aktoprak (eds.) Minority Self-Government in Europe and the Middle East. From Theory to Practice, Studies in International Minority and Group Rights Volume 15, Brill Nijhoff, 154–182.

Engl A (2019), Horizontale und vertikale Kooperation in der Europaregion – Grundlagen und Grundfragen, In Verwaltungskooperation in der Europaregion. Potenziale ohne Grenzen?, Baden-Baden: Nomos.

Grote G (2019), „Bordering Brexit: Ireland, Northern Ireland and the politics of Britain's exit from the EU“, (mit Lindsey Earner Byrne) in: Rautz G, Fink M (Hrsg.), 100 Jahre Erster Weltkrieg – Europa und Europaregion: von den Grenzen von 1918 zu den Netzwerken 2018, Euregio Atelier, Bozen: Euregio book.

Marko J, Constantin S, Rautz G, Carlà A, Wisthaler V (2019), "Against assimilation: The right to multiple identities" in Joseph Marko (ed.), Sergiu Constantin (a. ed.) Human and Minority Rights Protection by Multiple Diversity Governance. History, Law, Ideology and Politics in European Perspective, London/New York: Routledge, 227-306.

Medda-Windischer R (2019), Migration in sub-state territories with historical-linguistic minorities: Main challenges and new perspectives, *Acta Universitatis Sapientiae: European and Regional Studies*, Vol. 14, issue 2.

Medda-Windischer R, Marko J, Unger H, Tomaselli A, Ferraro F (2019), Against annihilation: the right to existence, in Human and Minority Rights Protection by Multiple Diversity Governance – History, Law, Ideology and Politics in European Perspective, London: Routledge.

Medda-Windischer R (2019), Migration and old minorities in South Tyrol: beyond a 'Nimby' approach?, in Alto Adige. Crocevia d'Europa. Al centro del nuovo ciclo di migrazioni italiane ed europee del XXI secolo, Roma: Aracne.

Mitterhofer J, Marcher A, Kofler I, Wisthaler V (2019), Accommodation and Integration of Asylum Seekers in South Tyrol, In Alpine Refugees. Immigration at the core of Europe, Berlin: Cambridge Scholars Publishing.

Rautz G (2019), Die Situation der deutschsprachigen Minderheit in Südtirol nach dem Ersten und Zweiten Weltkrieg unter dem Gesichtspunkt der inneren Selbstbestimmung, in Pan-Matscher-Kittel-Vogt-Videsott-Pfeil (Hrsg.), EJM, Vol. 12 No 3-4, Berliner Wissenschaftsverlag.

Röggla, M and Larin, SJ ( 2019) 'Participatory consociationalism? No, but South Tyrol's Autonomy Convention is evidence that power-sharing can transform conflicts'. *Nations and Nationalism*, 25: 1018– 1041. <https://doi.org/10.1111/nana.12478>.

Tomaselli A (2019), Processes and Failures of Prior Consultations with Indigenous Peoples in Chile, In The Prior Consultation of Indigenous Peoples in Latin America: Inside the Implementation Gap. London/New York: Routledge.

Wonisch K, Wlasak P (2019), Religiöse Motivation für freiwillige Flüchtlingshilfe – zwei lokale Fallstudien“ in Flucht und Asyl – internationale und österreichische Perspektiven. Wien: Verlag der Österreichischen Akademie der Wissenschaften.

# Institute of Mountain Emergency Medicine

## Institut für Alpine Notfallmedizin

### Istituto per la medicina d'emergenza in montagna



Head of Institute  
**Hermann Brugger**

Research Group Leader  
**Hannes Gatterer**

Vice Head of Institute  
**Giacomo Strapazzon**

**Scientific Advisory Council**  
(2017–2020)

**Peter Bärtsch**  
Facharzt Innere Medizin und Sportmedizin; ehemaliger ärztlicher Direktor Abteilung Sportmedizin der Universität Heidelberg

**Peter Hackett**  
Institute of Altitude Medicine, Telluride, Colorado

**Benjamin D. Levine**  
Institute for Exercise and Environmental Medicine (IEEM)

at Texas Health Presbyterian Hospital Dallas; University of Texas Southwestern Medical Center

**Marco Maggiorini**  
Department of Internal Medicine, University Hospital Zurich

**Ken Zafren**  
Division of Emergency Medicine, Stanford University California



**20**

Total staff

**9**

Postdocs

**1**

PhD students

**7**

University lecturers (outgoing)



**10.06**

Full-time equivalent (researchers)



**22**

Total projects

**12**

International projects



**47**

Journal publications

**7**

Contributions to Edited Books

**78**

Presentations

## Books

W, Vaccaro R, Moser D, Prina MG (2019): Report on energy simulations for Land Niederösterreich

Moser D, contribution to the elaboration of the book (2019): Solar Skins: An opportunity for greener cities, Solar Power Europe & ETIP PV

## Papers

### Selection

Dow J, Giesbrecht GG, Danzl DF, et al. Wilderness Medical Society Clinical Practice Guidelines for the Out-of-Hospital Evaluation and Treatment of Accidental Hypothermia: 2019 Update. **Wilderness Environ Med.** 2019;30(4S):S47–S69.

Oberholzer L, Siebenmann C, Mikkelsen CJ, Junge N, Piil JF, Morris NB, Goetze JP, Meinild Lundby AK, Nybo L, Lundby C. Hematological Adaptations to Prolonged Heat Acclimation in Endurance-Trained Males. **Front Physiol.** 2019 Nov 1;10:1379

Gatterer H, Niedermeyer M, Pocecco E, Frühauf A, Faulhaber M, Menz V, Burtscher J, Posch M, Ruedl G, Burtscher M. Mortality in Different Mountain Sports Activities Primarily Practiced in the Summer Season-A Narrative Review. **Int J Environ Res Public Health.** 2019 Oct 15;16(20). pii: E3920.

Gaasch M, Putzer G, Schiefecker AJ, Martini J, Strapazzon G, Ianois B, Thome C, Paal P, Brugger H, Mair P, Helbok R. Cerebral autoregulation is impaired during severe hypothermia- a porcine multimodal neuromonitoring study. **Ther Hypothermia Temp Manag** 2019

Hüfner K, Brugger H, Caramazza F, Stawinoga AE, Brodmann-Maeder M, Gatterer H, Turner R, Tomazin I, Fusar-Poli P, Sperner-Unterweger B. Development of a Self-Administered Questionnaire to Detect Psychosis at High Altitude: The HAPSY Questionnaire. **High Alt Med Biol.** 2019 Aug 21.

Gatterer H, Bernatzky G, Burtscher J, Rainer M, Kayser B, Burtscher M. Are Pre-ascent Low-Altitude Saliva Cortisol Levels Related to the Subsequent Acute Mountain Sickness Score? Observations from a Field Study. **High Alt Med Biol.** 2019 Aug 14.

Kössler F, Mair L, Burtscher M, Gatterer H. 5-Hydroxymethylfurfural and  $\alpha$ -ketoglutaric acid supplementation increases oxygen saturation during prolonged exercise in normobaric hypoxia. **Int J Vitam Nutr Res.** 2019 Aug 14:1-6.

Wallner B, Moroder L, Brandt A, Mair P, Erhart S, Bachler M, Putzer G, Turner R, Strapazzon G, Falk M, Brugger H. Extrication times during avalanche companion rescue: a randomized single-blinded manikin study. **High Alt Med Biol.** 2019 Jul 2.

Malacrida S, Giannella A, Ceolotto G, Reggiani C, Vezzoli A, Mrakic-Sposta S, Moretti S, Turner R, Falla M, Brugger H, Strapazzon G. Transcription Factors Regulation in Human Peripheral White Blood Cells during Hypobaric Hypoxia Exposure: an in-vivo experimental study. **Sci Rep.** 2019 Jul 9;9(1):9901.

Zuccarelli L, Galasso L, Turner R, Coffey EJB, Besone L, Strapazzon G. Human Physiology During Exposure to the Cave Environment: A Systematic Review With Implications for Aerospace Medicine. **Front Physiol.** 2019 Apr 24;10:442.

Dünnewald T, Gatterer H, Faulhaber M, Arvandi M, Schobersberger W. Body Composition and Body Weight Changes at Different Altitude Levels: A Systematic Review and Meta-Analysis. **Front Physiol.** 2019 Apr 16;10:430. **Joint first authorship**

Brugger H, Bouzat P, Pasquier M, Mair P, Fieler J, Darocha T, Blancher M, de Riedmatten M, Falk M, Paal P, Strapazzon G, Zafren K, Brodmann Maeder M. Cut-off values of serum potassium and core temperature at hospital admission for extracorporeal rewarming of avalanche victims in cardiac arrest: A retrospective multi-centre study. **Resuscitation** 2019;139:222-229.

Brodmann Maeder M, Saghir R, Pun M, et al. Inter-cultural Competence of Western Teachers for Nepalese Rescuers. **High Alt Med Biol.** 2019;20(1):22–27.

Rauch S, Schenk K, Strapazzon G, Dal Cappello T, Gatterer H, Palma M, Erkert M, Oberhuber L, Bliemsrieder B, Brugger H, Paal P. Suspension syndrome: a potentially fatal vagally mediated circulatory collapse-an experimental randomized crossover trial. **Eur J Appl Physiol.** 2019 119(6):1353-1365.

Pietsch U, Strapazzon G, Ambühl D, Lischke V, Rauch S, Knapp J. Challenges of helicopter mountain rescue missions by human external cargo: need for physicians onsite and comprehensive training. **Scand J Trauma Resusc Emerg Med.** 2019 Feb 13;27(1):17

# Institute for Mummy Studies

# Institut für Mumienforschung

# Istituto per lo studio delle mummie



Head of Institute  
**Albert Zink**

Coordinator  
**Frank Maixner**

## Scientific Advisory Council (2017 – 2020)

**Lars Engstrand**  
Karolinska Institutet - Department of Microbiology, Tumor and Cell Biology (MTC), Stockholm

**Vito Claudio Fericola**  
Istituto Nazionale di Ricerca Metrologica, Torino

**György Pálfi**  
Department of Biological Anthropology, University of Szeged

**Thomas Rattei**  
Department of Microbiology and Ecosystem Science, University of Vienna



**12**

Total staff

**4**

Postdocs

**4**

PhD students

**2**

University lecturers (outgoing)



**8.7**

Full-time equivalent (researchers)



**14**

Total projects

**8**

International projects



**7**

Journal publications

**17**

Presentations

## Papers Selection

Tett A, Huang KD, Asnicar F, Fehlner-Peach H, Pasolli E, Karcher N, Armanini F, Manghi P, Bonham K, Zolfo M, De Filippis F, Magnabosco C, Bonneau R, Lusingu R, Amuasi J, Reinhard K, Rattei T, Boulund F, Engstrand L, Zink A, Collado MC, Littman DR, Eibach D, Ercolini D, Rota-Stabelli O, Huttenhower C, Maixner F, Segata N (2019). *The Prevotella copri complex comprises four distinct clades that are underrepresented in Westernized populations.* Cell Host and Microbe 26(5): 666-679.

Heindl LM, Pernter P, Zink AR, Panzer S (2019). *The Eyes of Ötzi: The Tyrolean Iceman Mummy.* Ophthalmology: Journal of The American Academy of Ophthalmology 126(4): 530.

Maixner F (2019). *Molecular Reconstruction of the Diet in Human Stool Samples.* mSystems 4(6).

Maixner F, Thorell K, Granehäll L, Linz B, Moodley Y, Rattei T, Engstrand L, Zink A (2019). *Helicobacter pylori in ancient human remains.* World Journal of Gastroenterology 25(42): 6289.

Zink A, Maixner F (2019). *The current situation of the Tyrolean Iceman.* Gerontology 65(6): 699-706.

Tumler D, Paladin A, Zink A (2019). *Perimortem sharp force trauma in an individual from the early medieval cemetery of Säben-Sabiona in South Tyrol, Italy.* International Journal of Paleopathology 27: 46-55.

Samadelli M, Gregori G, Maixner F, Rossani M, Del Vesco P, Borla M, Paladin A, Wurst C, Sterflinger-Gleixner K, Voitl C, Cibin M, Thomas GS, Frohlich B, Thompson RC, Zink AR (2019). *A First Assessment of the Conservation of the Mummified Human Remains in the Museo Egizio in Turin in the Framework of the "Mummy Conservation Project".* Rivista del Museo Egizio.

# Institute for Public Management

# Institut für Public Management

# Istituto per il management pubblico



Head of Institute  
**Kurt Promberger**

Vice Head of Institute  
**Josef Bernhart**

## Scientific Advisory Council (2017 – 2020)

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Fachhochschule Graubünden  
Zentrum für Verwaltungsmangement  
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Università degli Studi di Roma "Tor Vergata"  
Università della Svizzera italiana, Lugano

**Manfred Röber**  
Universität Leipzig – Public Management und Kompetenzzentrum für Öffentliche Wirtschaft  
**Paolo Rondo-Brovetto**  
Alpen-Adria Universität Klagenfurt – Abteilung für Öffentliche Betriebswirtschaftslehre



**9**

Total staff

**2**

Postdocs

**1**

PhD students

**2**

University lecturers (outgoing)



**8.18**

Full-time equivalent (researchers)



**9**

Total projects

**8**

International projects



**3**

Contributions to Edited Books

**2**

Contributions to conference proceedings

**4**

Presentations

## Books

Atz H, Bernhart J, Promberger K (2019): Wie weiblich ist die Gemeindepolitik? Der mühevolle Weg der Frauen ins Rathaus, Athesia Tappeiner Verlag, Bozen.

Piazolo F, Kempfer G, Promberger K (2019): Innovative Solutions for an ageing Society. Proceedings of SMARTER LIVES meets uDay19, 28.05.2019 Bolzano – Bozen, Pabst Science Publishers, Lengerich.

## Papers Selection

Bernhart J, Decarli P, Promberger K (2019): Wirkungsorientierte Steuerung und der Weg zum Strategischen Management - Länderspezifische Interpretationen und institutionelle Rahmenbedingungen. In: Weiß J (Hrsg.), Strategisches Management und wirkungsorientierte Steuerung in Kommunen, Springer VS, Wiesbaden, S. 7-28.

Bernhart J, Decarli P, Promberger K (2019): Fallstudie: Strategisches Management in der Marktgemeinde Lana. In: Weiß J (Hrsg.), Strategisches Management und wirkungsorientierte Steuerung in Kommunen, Springer VS, Wiesbaden, S. 91-103.

Bernhart J, Decarli P, Promberger K (2019): Fallstudie: Strategisches Management in der Stadtgemeinde Meran. In: Weiß J (Hrsg.), Strategisches Management und wirkungsorientierte Steuerung in Kommunen, Springer VS, Wiesbaden, S. 105-117.

Simbrig I, Kathrein J, van der Sanden M (2019): Acceptance, quality of life and willingness-to-pay measures to assess prerequisites and impacts of the use of assistive technologies by older adults – a review. In: Piazolo F, Kempfer G, Promberger K (2019), Innovative Solutions for an ageing Society, Proceedings of SMARTER LIVES meets uDay19, 28.05.2019 Bolzano – Bozen, Pabst Science Publishers, Lengerich, S. 98-113.

Kathrein J, Simbrig I, Ates N, Piazolo F (2019): Effects of the solution bundle gAAALaxy on the quality of life of community-dwelling older adults – a qualitative analysis. In: Piazolo F, Kempfer G, Promberger K (2019), Innovative Solutions for an ageing Society, Proceedings of SMARTER LIVES meets uDay19, 28.05.2019 Bolzano – Bozen, Pabst Science Publishers, Lengerich, S. 67-80.

Simbrig I (2019): Evaluation of an assistive technologies bundle by informal carers of older adults, AAA-TE (Association for the Advancement of Assistive Technology in Europe) Conference, 27.-30.08.2019 in Bologna.

Simbrig I (2019): i-evAALution: AAL-Lösungen integrieren und evaluieren, Konferenz der Deutschen Gesellschaft für Gerontologie und Geriatrie (DGGG), Sektion „Alter und Technologie“, 05.-06.06.19 in Siegen.

Botschen G, Bernhart J, Combe I, Hemetsberger A, Promberger K (2019): The flexible retail brand aesthetically folding physical and social environments, 20. Conference European Association for Education and Research in Commercial Distribution, 02.-04.07.2019 in Zaragoza.

Knell L, Bernhart J, Promberger K (2019): Why Success and Innovation Always Start with Failure, 4. Business & Entrepreneurial Economics (BEE) Conference, 15.-18.05.2019 in Dubrovnik.

# Institute for Regional Development

## Institut für Regionalentwicklung

### Istituto per lo sviluppo regionale



Head of Institute  
**Thomas Streifeneder**

Research Group Leader  
**Filippo Favilli**  
**Christian Hoffmann**  
**Elisa Ravazzoli**

**Scientific Advisory Council**  
(2017–2020)

**Tor Arnesen**  
Eastern Norway Research  
Institute Østlandsforskning  
(ØF)  
**Maria Nijnik**  
James Hutton Institute  
Aberdeen

**Virna Bussadori**  
Amt für Landesplanung  
Autonome Provinz Bozen  
**Georg Hauger**  
IVS Verkehrssystemplanung  
TU Wien



**26**

Total staff

**6**

Postdocs

**1**

PhD students

**4**

University  
lecturers  
(outgoing)



**21.39**

Full-time  
equivalent  
(researchers)



**42**

Total projects

**23**

International  
projects



**17**

Journal  
publications

**11**

Contributions to  
Edited Books

**3**

Contributions  
to conference  
proceedings

**65**

Presentations

## Books

Lattarulo, P., Omizzolo, A., Palermo, F., Provenzano, V., Streifeneder, T., (2019), *Le Regioni d'Europa tra identità locali, nuove comunità e disparità territoriali* = *The regions of Europe among local identities, new communities and territorial disparities*. Franco Angeli, Milano.

Perlik, M., Galera, G., Machold, I., Membretti, A., (2019), *Alpine Refugees. Immigration at the core of Europe*. Cambridge Scholars, London.

Plassmann, G., Kohle, Y., Badura, M., Lüthi, R., Kahlen, J., Favilli, F., De Bortoli, I., Nitsch, C., Jurgeit, F., Klar, C., Guitteny, M., Santi, S., Lüthi, R., Costes, G., (2019), *ALPBIONET2030: Integrative Alpine wildlife and habitat management for the next generation; Spatial analysis and perspectives of (ecological) connectivity in the wider Alpine areas*. Extremdruck, Neustadt bei Coburg.

## Papers Selection

Barbieri, C., Streifeneder, T., (2019). "Agritourism Advances around the Globe: A Commentary from the Editors". Special Issue in Open Agriculture.

Cavallaro, F., Dianin, A., (2019). "Cross-border commuting in Central Europe: features, trends and policies". Transport Policy, Vol. 78, 86-104.

Cantiani, M.G., Bettà, A., De Meo, I., Maino, F., Paletto, A., Tamanini, S., (2019), "Green cities for a better future? – A case study from an alpine region: the Town of Trento". UPLanD: Journal of Urban Planning, Landscape and Environmental Design, Vol. 4, 41-52.

De Bortoli, I., Favilli, F., Maino, F., (2019), "Conflict Prevention and Management Toolkit for The Ecological Connectivity in The Alps". International Journal of Environmental Research and Technology, 30-42.

Gretter, A., Dalla Torre, C., Maino, F., Omizzolo, A., (2019), "New Farming as an Example of Social Innovation Responding to Challenges of Inner Mountain Areas of Italian Alps". Journal of Alpine Research | Revue de géographie alpine, Vol. 107.

Membretti, A., Cutello, G., (2019). "Migrazioni internazionali ed economie incorporate nelle aree montane". Mondi Migranti. Rivista di studi e ricerche sulle migrazioni internazionali, 53-67.

Ravazzoli, E., Dalla Torre, C., Streifeneder, T., (2019), "Transforming the role of women farmers and of refugees: Two Italian experiences of social innovation in mountain areas". Journal of Alpine Research | Revue de géographie alpine, Vol. 107.

# Institute for Renewable Energy

# Institut für Erneuerbare Energie

# Istituto per le energie rinnovabili



Head of Institute  
**Wolfram Sparber**

Vice Head of Institute  
**Alexandra Troi**

Research Group Leader  
**Roberto Fedrizzi**  
**Roberto Lollini**  
**David Moser**  
**Daniele Vettorato**

Technical Group Leader  
**Giorgio Belluardo**

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ARUP, London  
**Sebastian Herkel**  
Fraunhofer-Institut für Solare Energiesysteme, Freiburg  
**Pascal Terrien**  
European Institut for Energy Research in Karlsruhe

**Marko Topic**  
Universität Ljubljana, Colorado State University, Labor für Optoelektronik und Photovoltaik in Ljubljana, Europäische Technologie Plattform Photovoltaik



# 108

Total staff

# 32

Postdocs

# 22

PhD students

# 5

Visiting scientists  
(incoming)



# 59.07

Full-time equivalent  
(researchers)



# 60

Total projects

# 39

International projects



# 26

Journal publications

# 33

Contributions to conference proceedings

# 75

Presentations

## Books

W, Vaccaro R, Moser D, Prina MG (2019): Report on energy simulations for Land Niederösterreich

Moser D, contribution to the elaboration of the book (2019): Solar Skins: An opportunity for greener cities, Solar Power Europe & ETIP PV

## Papers Selection

Buffa S, Cozzini M, D'Antoni M, Baratieri M, Fedrizzi R "5th Generation District Heating and Cooling systems: a review of existing cases in Europe", Renewable and Sustainable Energy Reviews, vol. 104, January 2019

Prina MG, Lionetti M, Manzolini G, Sparber W, Moser D "Transition pathways optimization methodology through EnergyPLAN software for long-term energy planning", Applied Energy, vol. 235, pp. 356-368, February 2019

Scaramuzzino C, Garegnani G, Zambelli P "Integrated approach for the identification of spatial patterns related to renewable energy potential in European territories", Renewable and Sustainable energy review, vol. 101, pp. 1-13, March 2019

Moroni S, Alberti V, Antonucci V, Bisello A "Energy communities in the transition to a low-carbon future: A taxonomical approach and some policy dilemmas", Journal of Environmental Management, vol. 236, pp. 45-53, April 2019

Pezzutto S, Croce S, Zambotti S, Kranzl L, Novelli A, Zambelli P "Assessment of the Space Heating and Domestic Hot Water Market in Europe—Open Data and Results", Energies, vol. 12, pp. 1-16, May 2019

Ingenhoven P, Belluardo G, Makrides G, Georgiou GE, Rodden P, Frearson L, Herteleer B, Bertani D, Moser D "Analysis of Photovoltaic Performance Loss Rates of Six Module Types in Five Geographical Locations", IEEE Journal of photovoltaics, vol. 9, pp. 1-6, May 2019

Barchi G, Pierro M, Moser D "Sustainable Predictive Energy Control Strategy for Peak Switch and Shifting Using BESS and PV Generation Applied to the Retail Sector", Electronics, vol. 8, pp. 1-19, May 2019

Balest J, Secco L, Pisani E, Caimo A "Sustainable energy governance in South Tyrol (Italy): A probabilistic bipartite network model", Journal of Cleaner Production, vol. 221, pp. 854-862, June 2019

Bottino Leone D, Larcher M, Herrera-Avellanosa D, Haas F, Troi A "Evaluation of natural-based internal insulation systems in historic buildings through a holistic approach", Energy, vol. 181, pp. 521-531, August 2019

Della Valle N, Zubaryeva A "Can we hope for a collective shift in electric vehicle adoption? Testing salience and norm-based interventions in South Tyrol, Italy", Energy Research & Social Science, vol. 5, pp. 46-61, September 2019

Torresin S, Albatici R, Aletta F, Babich F, Kang J "Assessment Methods and Factors determining Positive Indoor Soundscapes in Residential Buildings: A systematic review", Sustainability, vol. 11, pp. 1-23, September 2019

Herrera-Avellanosa D, Haas F, Leijonhufvud G, Brostrom T, Buda A, Pracchi V, Webb A, Hüttler W, Troi A "Deep renovation of historic buildings", International Journal of Building Pathology, vol. 37, October 2019

Dipasquale C, Fedrizzi R, Bellini A, Gustafsson M, Ochs F, Bales C "Database of energy, environmental and economic indicators of renovation packages for European residential buildings" Energy and Buildings, vol. 203, pp. 1-11, November 2019

Benedetti M, Bonfà F, Bertini I, Introna V, Salvatori S, Ubertino S, Paradiso R "Maturity-based approach for the improvement of energy efficiency in industrial compressed air production and use systems", Energy, vol. 186, November 2019

Torresin S, Albatici R, Aletta F, Babich F, Oberman T, Kang J "Acoustic Design Criteria in Naturally Ventilated Residential Buildings: New Research Perspectives by Applying the Indoor Soundscape Approach", Applied Sciences, vol. 9, pp. 2-24, December 2019

# Center for Advanced Studies



Head of Center  
**Harald Pechlaner**

Co-Head of Center  
**Roland Benedikter**

**Scientific Advisory Council**  
(2019 - 2023)

**Ireneusz Paweł Karolewski**  
Institut für Politikwissen-

**Henning Vöpel**  
Hamburgisches WeltWirt-

schaft - Universität Leipzig

schaftsInstitut

**Birgit Renzl**

Betriebswirtschaftliches  
Institut - Universität Stuttgart



**16**

Total staff

**8**

Postdocs

**4**

PhD students

**4**

University  
lecturers  
(outgoing)



**10.17**

Full-time  
equivalent  
(researchers)



**12**

Total projects

**6**

International  
projects



**7**

Journal  
publications

**12**

Contributions to  
Edited Books

**1**

Contributions  
to conference  
proceedings

**31**

Presentations

## Books

Scuttari A. (2019): *Cycling and Motorcycling Tourism: An Analysis of Physical, Sensory, Social, and Emotional Features of Journey Experiences*, Springer, Cham.

Kofler I. (2019): *Le Tyrol du Sud et la signification de Heimat: un laboratoire européen de coopération interculturelle*, L'Harmattan, Paris.

Pechlaner H., Innerhofer E., Erschbamer G. (eds.) (2019): *Overtourism: Tourism Management and Solutions*, Routledge, London, New York.

Pechlaner H. (Hrsg.) (2019): *Destination und Lebensraum – Perspektiven touristischer Entwicklung: 20 Jahre Tourismusforschung von Eurac Research*, Springer Gabler, Wiesbaden.

Alber E., Engl A., Klotz G., Kofler I. (2019): *Grenzüberschreitende Governance und Bürgernähe: Die Rolle von „Grenz“-Gemeinden in der Europaregion Tirol-Südtirol-Trentino = Governance transfrontaliera e vicinanza ai cittadini: Il ruolo dei comuni di confine nell'Euregio Tirolo-Alto Adige-Trentino*, Eurac Research, Bozen/Bolzano.

## Papers Selection

Nordin S., Volgger M., Gill A., Pechlaner H. (2019): Destination governance transitions in skiing destinations: A perspective on resortisation. In: *Tourism Management Perspectives*, Vol. 31: 24-37. <https://doi.org/10.1016/j.tmp.2019.03.003>

Scuttari A., Orsi F., Bassani R. (2019): Assessing the tourism-traffic paradox in mountain destinations. A stated preference survey on the Dolomites passes (Italy). In: *Journal of Sustainable Tourism*, Vol. 27(2): 241-257. <https://doi.org/10.1080/09669582.2018.1428336>

Marcher A., Erschbamer G., Pechlaner H. (2019): Escaping from the Event? Residents' Perception of Christmas Markets in Northern Italy. In: *Event Management*, 23(4-5): 599-611(13). <https://doi.org/10.3727/152599519X15506259855715>

Benedikter R., Tsedze W.M., Unterkicher K. (2019): Africa, Go Green! A New Initiative for the Continent's Youth to Become Leaders in the Global Environment Needs to Combine Activism with Knowledge, Research and Policy. In: *New Global Studies*, Vol. 13(3): 111-121. <https://doi.org/10.1515/ngs-2019-0026>

Benedikter R., Ouedraogo I., Tsedze W.M. (2019): Political dialogue in Côte d'Ivoire: a difficult, but exemplary task. Could the Ivory Coast become a role model of multi-dimensional reconciliation for other African nations? In: *Global Change, Peace & Security*, Vol. 31(3): 351-360. <https://doi.org/10.1080/14781158.2019.1588871>

Kučerová J., Maráková V., Scuttari A. (2019): Business Model of the Hiking Route Via Transalpina. In: Sousa C., Vaz de Freitas I., Marques J. (eds.): *Proceedings of the 2nd International Conference on Tourism Research (ICTR 2019)*, Academic Conferences and Publishing International Ltd., Sonning Common: 157-165.

Dibiasi A., Iselin D. (2019): Measuring Knightian Uncertainty. In: KOF Working Papers, No. 456, KOF Swiss Economic Institute, ETH Zurich: 1-43. <https://doi.org/10.3929/ethz-b-000341984>

Volgger M., Pechlaner H., Scuttari A., Innerhofer E. (2019): Architectural Governance and the Coordination of Building Culture: An Exploratory Reflection. In: Volgger M., Pfister D. (eds.): *Atmospheric Turn in Culture and Tourism. Place, Design and Process Impacts on Customer Behaviour, Marketing and Branding*, Emerald, Bingley: 63-76.

Benedikter R., Gruber M. (2019): The Technological Retro-Revolution of Gender. In a Rising Post-Human and Post-Western World, It Is Time to Rediscuss the Politics of the Female Body. In: Loh J., Coeckelbergh M. (eds.): *Feminist Philosophy of Technology*, J.B. Metzler, Stuttgart: 187-205. [https://doi.org/10.1007/978-3-476-04967-4\\_10](https://doi.org/10.1007/978-3-476-04967-4_10)

Benedikter R. (2019): Foreword. In: Pechlaner H., Innerhofer E., Erschbamer G. (eds.): *Overtourism: Tourism Management and Solutions*, Routledge, London, New York: xiii-xviii.

Innerhofer E., Erschbamer G., Pechlaner H. (2019): Overtourism: The challenge of managing the limits. In: Pechlaner H., Innerhofer E., Erschbamer G. (eds.): *Overtourism: Tourism Management and Solutions*, Routledge, London, New York: 3-13.

Scuttari A., Isetti G., Habicher D. (2019): Visitor Management in World Heritage Sites: Does overtourism-driven traffic management affect tourist targets, behavior and satisfaction? The case of the Dolomites UNESCO WHS (Italy). In: Pechlaner H., Innerhofer E., Erschbamer G. (eds.): *Overtourism: Tourism Management and Solutions*, Routledge, London, New York: 187-205.

Dibiasi A. (2019): Non-Linear Effects of Uncertainty. In: SSRN. <http://dx.doi.org/10.2139/ssrn.3130157>

Kofler I. (2019): Der Tourismussektor und seine Besonderheiten innerhalb des regionalen Innovationsnetzwerkes (RIS) Südtirol. In: Pechlaner H. (Hrsg.): *Destination und Lebensraum – Perspektiven touristischer Entwicklung: 20 Jahre Tourismusforschung von Eurac Research*, Springer Gabler, Wiesbaden: 39-48.

Erschbamer G. (2019): Destination Design: neue Perspektiven für die Destinationsentwicklung? In: Pechlaner H. (Hrsg.): *Destination und Lebensraum – Perspektiven touristischer Entwicklung: 20 Jahre Tourismusforschung von Eurac Research*, Springer Gabler, Wiesbaden: 217-223.

Marcher A., Mitterhofer J., Kofler I., Wisthaler V. (2019): Accommodation and integration of asylum seekers in South Tyrol. In: Perlik M., Galera G., Machold I., Membretti A. (eds.): *Alpine Refugees: Immigration at the core of Europe*, Cambridge Scholars, London: 183-190.

# Center for Global Mountain Safeguard Research

## Zentrum zum Schutz und Erhalt von Gebirgsräumen

## Centro per la salvaguardia delle aree montane\*



Head of Center  
**Stefan Schneiderbauer**

Co-Head of Center  
**Jörg Szarzynski**



**3**

Total staff

**2**

Postdocs



**1.9**

Full-time equivalent (researchers)



**1**

Total projects

**1**

International projects



**1**

Journal publications

**5**

Presentations

### Papers Selection

Graw, V., Dubovyk, O., Duguru, M., Heid, P., Ghazaryan, G., Villagrán de León, J.C., Post, J., Szarzynski, J., Tsegai, D., Walz, Y. – Assessment, Monitoring and Early Warning of Droughts: The potential for Satellite Remote Sensing and beyond. In: Drought challenges: Livelihood Implications in Developing Countries. Volume 2 in the Current Directions in Water Scarcity Research series. Eds.: Everisto Mapedza, Daniel Tsegai, Michael Brüntrup and Robert McLeman. Elsevier (2019).

\*Global Mountain Safeguard Research (GLOMOS) is a collaborative programme and scientific alliance, started in July 2019, between the United Nations University Institute for Environment and Human Security (UNU-EHS) and Eurac Research.

# Center for Sensing Solutions



Head of Center  
**Roberto Monsorno**

**Scientific Advisory Council**  
(2019 - 2020)

**Michael Oberhuber**  
Land- und Forstwirtschaft-  
liches Versuchszentrum  
Laimburg

**Gaetano Marrocco**  
Università degli Studi di  
Roma "Tor Vergata"



**10**

Total staff

**2**

Postdocs

**2**

PhD students

**3**

University  
lecturers  
(outgoing)



**3.17**

Full-time  
equivalent  
(researchers)



**18**

Total projects

**8**

International  
projects



**2**

Journal  
publications

**1**

Contributions  
to conference  
proceedings

**12**

Presentations

## Papers Selection

Tondini S, Tritini S, Amatori M, Croce S, Seppi S, Monsorno R - "LoRa-based wireless sensor networks for urban scenarios using an open-source approach." Sensors and Trasnducers by IFSA Publishing, vol. 238, n.10/18, pp. 64-71, e-ISSN 1726-5479 (2019).

Ventura B, Vianello A, Frisinghelli D, Rossi M, Monsorno R, Costa A - "A Methodology for Heterogeneous Sensor Data Organization and Near Real-Time Data Sharing by Adopting OGC SWE Standards." ISPRS Int. J. Geo-Inf. 2019, 8(4), 167; <https://doi.org/10.3390/ijgi8040167>

# terraXcube



Head of Center  
**Christian Steurer**

Technical Group Leader  
**Andrea Nollo**



5

Total staff

1

Postdocs



2

Full-time  
equivalent  
(researchers)

4

Total projects



1

Journal  
publications

1

Contributions  
to conference  
proceedings

## Papers Selection

M. Scanavino, A. Vilardi and G. Guglieri, "A new facility for UAV testing in climate-controlled environments\*," *2019 International Conference on Unmanned Aircraft Systems (ICUAS)*, Atlanta, GA, USA, 2019, pp. 1436-1444.



## **IMPRESSUM**

### **Publisher**

Eurac Research  
Drususallee 1, 39100 Bozen/Italien  
Viale Druso 1, 39100 Bolzano/Italia  
T +39 0471 055 055  
F +39 0471 055 099

### **Scientific Supervision**

Roberta Bottarin, Roland Psenner, Stephan Ortner

### **Concept and Coordination**

Daniela Mezzena, Francesca Taponecco

### **Texts**

Barbara Baumgartner, Valentina Bergonzi,  
Giovanni Blandino, Laura Defranceschi, Sigrid  
Hechensteiner, Daniela Mezzena, Elena Munari,  
Sara Senoner, Rachel Wolfe

### **Special thanks to**

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### **Data Analysis**

Cinzia Bettella, Uta Fritsch, Francesca Taponecco

### **Graphic Design**

Alessandra Stefanut

### **Illustrations**

Oscar Diodoro

### **Image Editor**

Annelie Bortolotti

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p. 44: (1,2) Pavana\_The Vertical Eye,  
(3) Eurac Research  
p. 45: Ivo Corrà  
p. 46: Eurac Research  
p. 47: Joerg Szarzynski  
p. 48: Eurac Research

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**Eurac Research**

Drususallee/Viale Druso 1  
39100 Bozen/Bolzano

**T** +39 0471 055 055

info@eurac.edu

**www.eurac.edu**