Self-Evaluation of the Research

of the Institute of Geography, University of Bern, Switzerland

2010–2018

Chinwe IFEJIKA SPERANZA and Aline WICKI on behalf of all GIUB members, 20.12.2019

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Preface

The GIUB's self-evaluation of its research was conducted in a participatory, inclusive, and iterative manner that reflects the collaborative spirit at GIUB. All the constituencies, from students through early- and mid-career researchers to faculty, contributed to its content in various degrees.

List of Abbreviations

Agroscope	Swiss centre of excellence for agricultural research
BeNeFri	exchange programme between the Universities of Bern, Neuchâtel, and Fribourg
BGS	Swiss Soil Science Society
BORIS	Bern Open Repository and Information System
ca.	circa
CCAFS	Independent Scientific Committee of the Climate Change, Agriculture and Food Security
CDE	Centre for Development and Environment
CGIAR	Consultative Group on International Agricultural Research
CHF	Swiss francs
cLab	chemistry laboratory
COST	European Cooperation in Science and Technology
CRED	Center for Regional Economic Development
Cu	copper
DORA	San Francisco Declaration on Research Assessment
e.g.	for example
EC	European Commission
ERC	European Research Council
ERK2	Erosion Risk Map of Switzerland in a 2×2m grid
ESA	European Space Agency
ESKAS	Swiss Government Excellence Scholarships for Foreign Scholars and Artists
FOAG	Federal Office for Agriculture
FOEN	Federal Office for the Environment
FP6/FP7	European Union's Research and Innovation funding programme
FTIR	Fourier-transform infrared spectrometer
GIS	Geographic Information System
GIUB	Institute of Geography of the University of Bern
GPS	Global Positioning System
GSDR	UN Global Sustainable Development Report
H2020	Horizon 2020
Habil	habilitation
HADES	Hydrological Atlas of Switzerland

IGU-IAG	International Geographical Union
Int.	international
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
IRC	Interfaculty Research Centre
ISC	Independent Steering Committee
ISI	Internation Scientific Indexing
IT	Information Technology
IZFG	Interdisciplinary Centre for Gender Studies
MeteoSwiss	Federal Office of Meteorology and Climatology
mLab	multimedia laboratory
Mobi-Lab	Mobiliar Lab for Natural Risks
MONTANAQUA	project on the water situation and management of the Crans-Montana-Sierre region
MSc	Master thesis
NCCR	National Centres of Competence in Research
NRP/NFP	National Research Programmes
OcCC	Swiss Federal Department of the Environment, Transport, Energy and Communications (DETEC) Advisory body on climate change issues
OCCR	Oeschger Centre for Climate Change Research
Öffentl.	public
OM	upper mid-career researchers
OSPP	Outstanding Student Poster and Presenting Interactive Content
PAGES	Past Global Changes
PALAEO-RA	Global Climate of the Past Six Centuries
PECS	Programme on Ecosystem Change and Society
Phil.-Nat.	Faculty of Philosophy and Natural Sciences
PLANAT	National Platform for Natural Hazards
QSE	Quality Assurance and Development
R4D	Research for Development
Rio +20	UN Conference on Sustainable Development 2012
RoR	Rat für Raumordnung
SCNAT	Swiss Academy of Sciences

SDC	Swiss Development Corporation
SDG	Sustainable Development Goals
SEVEN	Service of Environment and Energy of the Canton of Vaud
SGAG	Swiss Society for Applied Geography
SLM	Sustainable Land Management
SNF	Swiss National Funds
SNIS	Swiss Network for International Studies
SSC	Swiss Science Council
SWOT analysis	analysis of strengths, weakness, opportunities, and threats
td-net	Network for Transdisciplinary Research
UMB	early-career researchers, Unterer Mittelbau - UMB
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
Vetsuisse	Vetsuisse Faculty (veterinary medicine)
VR	Vice-Rectorate
WOCAT	World Overview of Conservation Approaches and Technologies
Zn	zinc

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Summary

The Institute of Geography of the University of Bern (GIUB) ***pursues a geography of global change connecting temporal and spatial scales. It conducts interdisciplinary research that is needed to address current challenges towards achieving a sustainable and just world. We work on human–environment interactions, requiring competences from social and natural sciences to contribute knowledge for societal transformation (GIUB Mission Statement 2019).***

This self-evaluation report provides an overview of GIUB's research performance from 2010 to 2018. We self-evaluate its research performance in terms of its *quality, scientific productivity, societal relevance including outreach and impact, international standing, and support for early-career development*. This evaluation should enable GIUB to identify and clarify its strengths and weaknesses and to use these insights in an internal learning process to identify strategies for using our strengths and improving our weaknesses. Since 2010, the GIUB has undergone significant changes in structure and personnel (eight out of ten research units have a new leader). This evaluation coincides with the seventh professorship replacement and therefore offers the GIUB an opportunity to adapt its structures where necessary.

The Institute of Geography of the University of Bern is the second largest of its kind in Switzerland. It follows the vision of a comprehensive geography with its Bern model of geography, which considers and teaches physical, human, and integrative geography equally. In recent years, the GIUB has played a decisive role in major trans- and interdisciplinary and interfaculty research projects. The GIUB's focus on key societal challenges puts research in a very strong position because it ensures that the GIUB carries out research that is relevant to society on local, national, and global scales. This focus also makes the GIUB an attractive place to conduct research, as evidenced by the large number of third-party-funded young researchers joining the GIUB, and it facilitates the acquisition of competitive third-party funding. Such funding has mainly been from the Swiss National Science Foundation and from the public sector, which highlights the local, national, and global relevance of the research at GIUB.

In line with the University of Bern, which is a signatory of DORA, the GIUB understands scientific output to take various forms, such as data, research and review articles, training young scientists, intellectual property rights, reagents, digital media, and software. In international rankings, the GIUB has been able to place itself well ahead, especially in the categories of scientific impact, collaboration, open access, and gender equality, and can therefore keep pace with other leading universities in geography across the world. The GIUB's work in research and teaching is recognized nationally and internationally and has been honoured with awards. Through its high media presence and high number of outreach publications, the dialogue with society is lively, and research conducted at the GIUB provides scientific evidence for informing public opinions. The annual quantitative evaluations conducted by the University of Bern Vice-Rectorate Research confirm the high quality of our Institute's research in national and international comparison.

The GIUB has made key contributions to the establishment of the University's competence centres. Several research units are part of various university-wide research foci and centres on climate research, sustainability research, economic development, and gender studies. GIUB members have always played important roles in University policy and the management of centres and committees, and they hold important international directorships. Internationally, competences at GIUB are widely recognized, with GIUB making key contributions to the reputation of the University of Bern. GIUB professors have led international initiatives and programmes, such as co-leading the development of the recently published Global Sustainable Development Report to the United Nations. The strong international involvement is also evidenced by the fact that GIUB staff are lead authors on large community papers.

Further, GIUB actively supports early-career development through mentoring of students and doctoral and post-doctoral researchers. Through this supportive approach, many GIUB alumni at Master, doctorate, and post-doctorate levels have succeeded in finding employment within and outside of academia. The early- and mid-career researchers are important pillars of the GIUB, as in many cases they play a decisive role in the GIUB's research performance. Moreover, equal opportunities in all matters have been a core concern of the GIUB for many years.

Finally, the GIUB not only draws strengths from its history and resources but as a forward-looking institute also explores what the future might hold for geography as an academic discipline. In addition to the many changes in the professorships, the acquisition of third-party funding has always been a challenge. The greatest challenge in the coming years will continue to be the constant competition for research funding. Other challenges will be the need for additional resources to finance and expand IT capacity and the collaboration with the University of Bern’s centres of excellence. The GIUB's focus on interdisciplinary and transdisciplinary research and its conviction that the coexistence of physical geography and human geography under one roof remains successful and must be steadily pursued remains a strength that has helped the GIUB navigate its dynamic academic environment.

1. Introduction

Since 2010, over a period of eight years, the Institute of Geography at the University of Bern (GIUB) has successfully undergone a phase of major personnel changes due to the replacement of eight professors. A new structure and governance were established in 2014, which proved efficient in this transition phase and allowed the new research groups to develop and to participate in shaping the GIUB. This evaluation comes together with the seventh replacement at professor level and thus provides an opportunity to adjust the structure, if necessary, in order to anticipate future challenges.

The **objective of this self-evaluation of the research** of and by the GIUB is to assess its research in terms of its *quality, scientific productivity, societal relevance including outreach and impact, international standing, and support for career development in research*. This includes examining future prospects while taking into consideration its strengths and weaknesses in research. The research evaluation, in particular that through external peers, aims at showing the GIUB promising storylines to cope successfully with its tasks, both currently and in the future.

We regard this evaluation as an opportunity to (a) identify and clarify the strengths of the GIUB, (b) to identify its weak points, and (c) to use these insights for an internal social learning process to identify strategies for (i) using our strengths and (ii) improving our weaknesses.

2. The Institute of Geography Research Profile

The GIUB pursues the **vision of a comprehensive geography**, comprising **ten specific fields of geographic inquiry.** It follows the Bern model of geography, in which physical geography, human geography, and integrative geography interact to address societally relevant topics (Figure 1).
The GIUB was one of the first institutes at the University of Bern to develop its own vision, in 2014 (**GIUB Vision 2021**). In this vision, the GIUB presented its guiding principles (see background documents), defined its strategic goals, and designed a new structure and governance to support their achievements. The GIUB was thus in a position to successfully master major transitions in its professorships.

> *The Institute of Geography of the University of Bern (GIUB)* ***pursues a geography of global change, connecting temporal and spatial scales. It conducts interdisciplinary research that is needed to address current challenges towards achieving a sustainable and just world. We work on human–environment interactions, requiring competences from social and natural sciences to contribute knowledge for societal transformation (GIUB Mission Statement 2019).***

Box 1: The 2019 Vision of GIUB. Source: GIUB Vision 2021

The GIUB has thus constantly nurtured its Bern model of geography through its vision. According to the GIUB Vision 2021, the institute offers **ten thematic foci** covering a broad range of research areas (GIUB principle 2); it conducts internationally recognized research and stands out for its innovative and interdisciplinary teaching (GIUB principle 4). Equally, the Institute collaborates closely with regional stakeholders and the public administration (GIUB principle 7). In the course of the next transition in the leadership of another research unit, the GIUB has recently adapted its vision (Box 1).

The GIUB thus contributes strongly to the University of Bern's Strategy 2021. The four guiding principles of the University's strategy 2021—to be a 'dynamic university offering a full range of courses', to 'distinguish itself by concentrating on five major aspects', to 'reinforce its reputation as a teaching university' and to engage in 'targeted promotion of the academics of the future'—are also at the heart of the Institute's strategy. These principles are reflected in the **ten principles** that GIUB established in 2014 in its Vision 2021[1].

Further, **the GIUB makes key contributions to four of the five key pillars of the University of Bern strategy**: *sustainability, health and medicine, intercultural knowledge,* and *politics and administration*. GIUB research is core to the University's focus on (1) sustainability, specifically in the areas of climate, responses to global change, north-south relations, and water supply. The institute also contributes to (2) health and medicine (e.g., through participation in the University's One Health project), (3) intercultural knowledge, and (4) politics and administration. Digitalization is a further focus of the University to which GIUB contributes through its geoprocessing lab, the mLab, instruments (see Chapter 10.2), and various research projects and teaching initiatives.

The GIUB has been fundamental in **establishing various university competence centres** (IZFG, OCCR, CDE, CRED). Several research units are part of these strong university-wide research foci and centres (see Chapter 5) on climate research, sustainability research, economic development, and gender studies. Maintaining these links is thus important for both the GIUB and the centres. The GIUB also remains a key partner with various University of Bern entities, through collaborative projects such as the One Health **interfaculty research** project, common teaching, and publications.

With regard to **societal collaboration**, we often adopt an interdisciplinary and transdisciplinary approach. We engage in various advisory committees. An illustrative example of our **public–private partnership** is the Mobiliar Lab for Natural Risks, funded by the Swiss Mobiliar Insurance. Several units collaborate closely with practitioners. Box 2 provides some illustrative examples of the GIUB's research.

- *Scientific Excellence:* A publication first-authored by GIUB scientist Raphael Neukom in *Nature* in July 2019 stating that recent warming is unprecedented led to over 1000 news stories worldwide. The article is currently (11 Dec. 2019) ranked eighth out of 251,681 articles in any journal with respect to impact.
- *Research for Practitioners:* Natural hazard expertise becomes increasingly important, but experts are increasingly rare. The Geomorphology, Natural Hazards and Risk Research group at the GIUB educates natural hazard experts and collaborates closely with the public and private sectors.
- *Transdisciplinary Research:* Improving the sustainability of food systems requires strategies and policy options based on science. In a Swiss Research for Development (R4D) project led by Stephan Rist (GIUB & CDE) and Chinwe Ifejika Speranza (GIUB), researchers and practitioners have co-developed a food sustainability assessment tool that can be used by various actors to assess food systems.

Box 2: Illustrative examples of research profiles. Source: own box

[1] Geographisches Institut (2014): *Strukturbericht 2014*. Bern: GIUB Vision 2021

Internationally, competences at GIUB are widely recognized, with GIUB making key contributions to the reputation of the University of Bern. GIUB professors have led international initiatives and programmes such as co-leading the development of the recently published Global Sustainable Development Report to the United Nations.

Further, the GIUB actively supports **career development** through mentoring of students and post-doctoral researchers. Through this supportive approach, many GIUB alumni at Master, doctorate, and post-doctorate levels have succeeded in finding employment within and outside academia.

Our research foci on key societal challenges put research at the GIUB in a very strong position: i) they ensure we conduct research that is relevant for local population; ii) they make the GIUB an attractive place to conduct research, as evidenced by the large number of third-party-funded young researchers joining the GIUB; and iii) they facilitate competitive third-party funding acquisition.

2.1 Research Units and their Profiles

Research at the GIUB comprises the following ten **subdisciplines** (Figure 1), each of which is organized as a „Research Unit“ with typically one research group but in some cases several. The ten units are administratively organized in three departments: physical geography, integrative geography (new name: Geographies of Sustainability Department), and human geography.

The following summary gives the current profiles, with only 3 out of 10 unit leaders remaining the same since January 2010 (Figure 2).

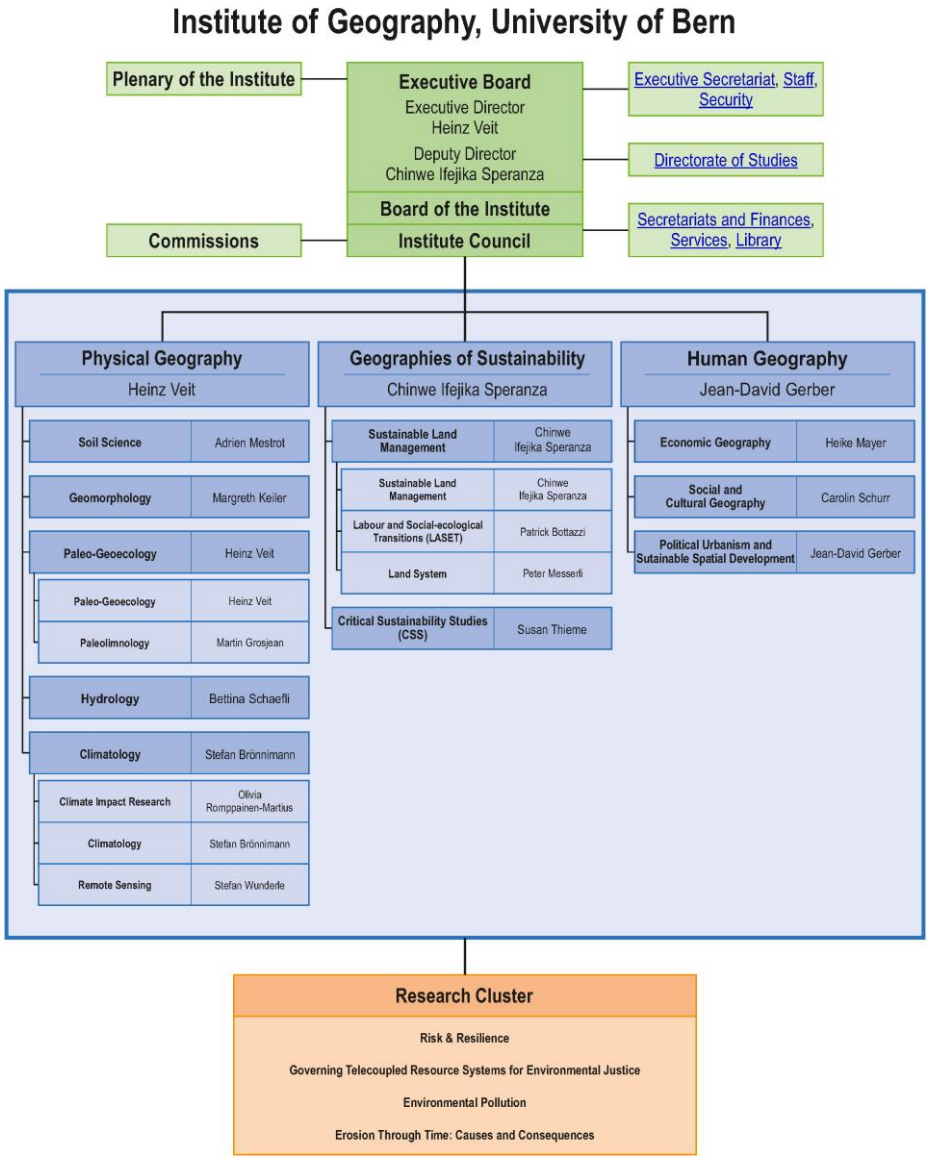

Figure 1: The structure of the GIUB and its research units. Source: www.geography.unibe.ch

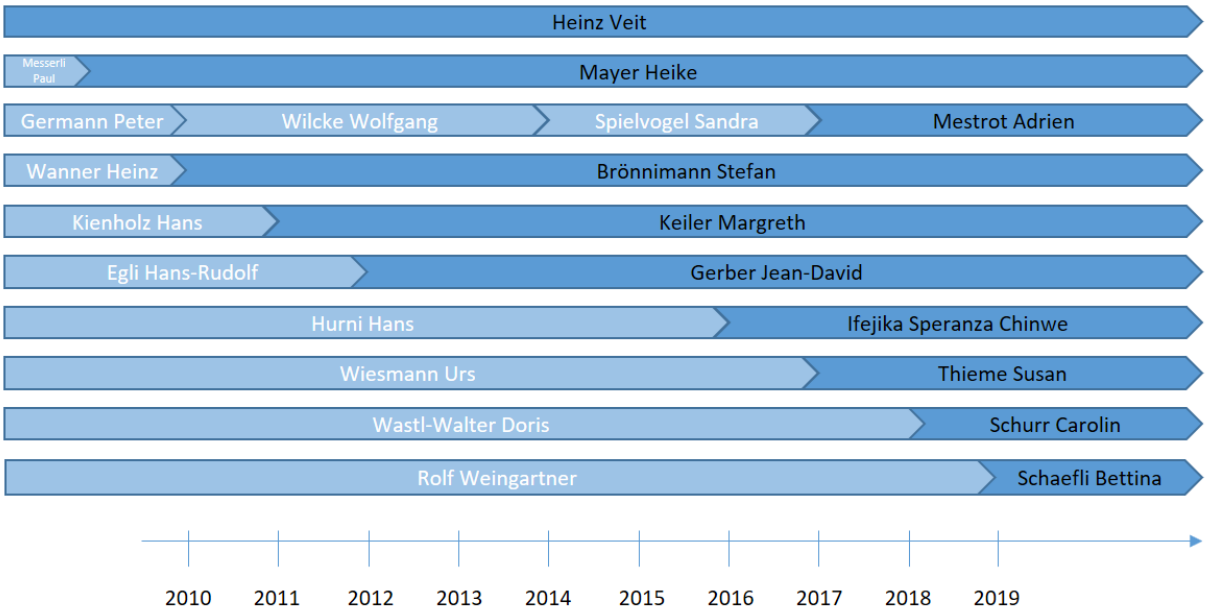

Figure 2: Changes in Unit Lead during the evaluation period. Source: own figure

1. **Soil science** (Adrien Mestrot, since 2018): The unit studies the biogeochemical cycles of nutrients (e.g. copper, zinc and phosphorus) and pollutants (e.g. antimony, arsenic, cadmium, mercury, uranium, microplastics) in soils.[2]
2. **Geomorphology** (Margreth Keiler, since 2011): The unit studies societally relevant geomorphological processes such as debris flows, sediment transport, and landslides and provides expertise on risk analysis and management, vulnerability, and risk perception. The group closely collaborates with the Mobiliar Lab for Natural Risks. [3]
3. **Paleogeoecology** (Heinz Veit, since 1996) also comprising the Palaeolimnology group (Martin Grosjean, since 2008): The unit aims at reconstructing past environments for detecting the short and long-term dynamics of ecosystems and climate (using e.g., soils-palaeosols, eolian sediments, periglacial features, and biogeochemical and other proxies in lake sediments).[4]
4. **Hydrology** (Bettina Schaefli, since 2019): The unit studies water fluxes at different spatial and temporal scales. Analyses include both field measurements and long-term model simulations.[5]
5. **Climatology** (Stefan Brönnimann, since 2010), also comprising the Climate Impacts group (Olivia Romppainen-Martius, since 2010) and the Remote Sensing group (Stefan Wunderle, since 1999): The unit focuses on documenting and understanding past and present variations in weather and climate, including remote sensing of essential climate variables from space and understanding the physical and dynamical processes that result in extreme weather events in Switzerland. The group collaborates closely with the Mobiliar Lab for Natural Risks.[6]

[2] Source: http://www.geography.unibe.ch/research/soil_science_group/index_eng.html
[3] Source: http://www.geography.unibe.ch/research/geomorphology/index_eng.html
[4] Source: http://www.geography.unibe.ch/research/paleo_geoecology_group/index_eng.html; http://www.geography.unibe.ch/research/paleolimnology_group/index_eng.html
[5] Source: http://www.geography.unibe.ch/research/hydrology/index_eng.html
[6] Source: http://www.geography.unibe.ch/research/climate_impact_research_group/index_eng.html; http://www.geography.unibe.ch/research/climatology_group/index_eng.html; http://www.geography.unibe.ch/research/remote_sensing_group/index_eng.html

6. **Sustainable land management (new name: Land Systems and Sustainable Land Management)** (Chinwe Ifejika Speranza, since 2016), also comprising the Labour and Social-ecological Transitions group (Patrick Bottazzi, since 2018): The unit studies natural resources and land use systems, including processes of land use change, deforestation, land degradation, soil erosion, and changes in wildlife habitat. It investigates their management and governance and interrelations between labour and the processes of co-evolution between societies and ecosystems.[7]
7. **Geography of sustainable development (new name: Critical Sustainability Studies)** (Susan Thieme, since 2017): The unit studies the processes of globalization and sustainable development, such as the role different forms of (im)mobilities in the context of education and work, governance and access to resources, and social and societal learning processes. [8]
8. **Urban and regional planning (new name: Political Urbanism and Sustainable Spatial Development)** (Jean-David Gerber, since 2012): The unit focuses on actors and their strategies in order to understand changes in spatial planning practices in view of the needs to increase density, improve quality standards, and renew ageing infrastructures and buildings.[9]
9. **Economic geography** (Heike Mayer, since 2009): The unit examines the evolution of urban and regional economies and the ways in which places develop and maintain their economic competitiveness and sustainability.[10]
10. **Social and cultural geography** (Carolin Schurr, since 2018): The unit studies feminist geographies of the global intimate and explores how the intimate and the global intertwine in our everyday, quotidian, and affective lives. [11]

The close collaboration between the units was further fostered by establishing four **Research Clusters** (GIUB principle 3), each spanning several units (Figure 3), in a bottom-up approach. These clusters, with a lifetime of 4–6 years, are risk and resilience (concluded); telecoupled resource systems and environmental justice, environmental pollution, and erosion through time. Through this approach, various goals have been achieved: promotion of early-career researchers and promotion of internal and interdepartmental cooperation. Feedback from involved individuals shows that not only research but also teaching profit when current topics in Geography are examined from different perspectives. Among other approaches, the cluster strategy has thus been **a centripetal force in promoting internal collaboration**. As the research clusters will soon be completed, the units involved are deliberating how to continue the cooperation.

Having this broad expertise and diverse methodological competences in one institute allows a scientific basis to be provided for solutions to the complex problems of our society and **the next generation of interdisciplinary and transdisciplinary academics** to be educated while each unit performs top research in its individual field. In this way, students are exposed both to disciplinary research that uses state-of-the-art methods and to interdisciplinary approaches, and they experience the close collaboration between the research groups of the GIUB.

[7] Source: http://www.geography.unibe.ch/research/sustainable_land_management_group/index_eng.html; http://www.geography.unibe.ch/research/labour_and_social_ecological_transitions_laset_research_group/index_eng.html

[8] Source: http://www.geography.unibe.ch/research/geography_and_sustainable_development/index_eng.html

[9] Source: http://www.geography.unibe.ch/research/urban_amp_regional_planning/index_eng.html

[10] Source: http://www.geography.unibe.ch/research/economic_geography/index_eng.html

[11] Source: http://www.geography.unibe.ch/research/social_and_cultural_geography/index_eng.html

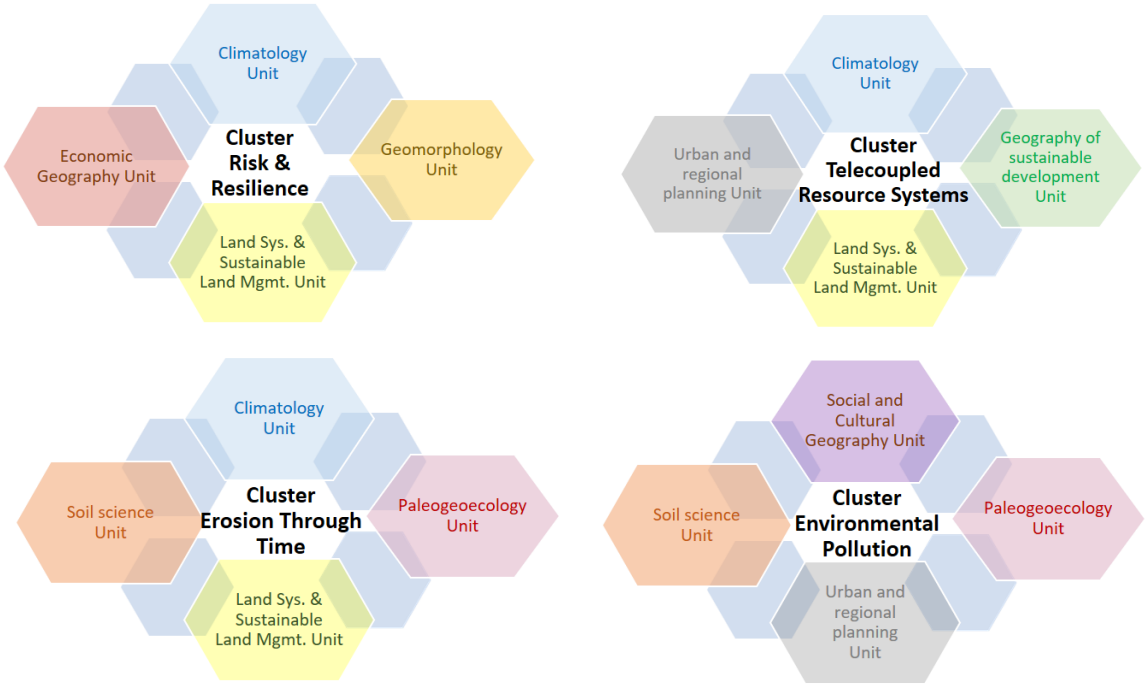

Figure 3: GIUB Research Clusters and involved units and groups. Source: Own figure.

3. Quality of research

As a **signatory of DORA**, the University of Bern acknowledges that outputs of scientific research can take various forms, such as data, research and review articles, training young scientists, intellectual property rights, reagents, digital media, and software, and that these should be considered in the evaluation of the output of scientific research[12]. This also includes policy briefs, articles in practitioners' newsletters, newspapers, and qualitative metrics such as engagement in public events organized by science and influence on policy and practice. In the following, we discuss research funding and illustrate the varied outputs of the scientific research at the GIUB.

3.1 Finances – Research funding

The **Canton of Bern owns and primarily funds** the University of Bern. Consequently, the University's research requirements are twofold. On the one hand, internationally renowned research is encouraged as a basis for successful third-party funding acquisition; on the other hand, research with local relevance and impact is expected.

The GIUB has the **principle of a common and open infrastructure and equal distribution** of core funds across research units regardless of the level of appointment of the unit leader. The **common expenditures** encompass the technical and administrative support (including IT, cartography), a study secretariat, a soil chemistry lab, a geoprocessing computer lab, an instrument pool, and a media lab. It also comprises five methodological lectureships, each with 50% appointment level, and contracted lectures (*Lehraufträge*). The remaining funds, after subtracting the salaries of the unit leaders, amount to ca. 140 points (eq. ca. CHF 1300.-) per unit, of which some resources are used for common activities,

[12] Source: https://sfdora.org/read/

such as the research clusters. The amount of flexible personnel resources per unit is thus very small. **Operational funds are distributed equally across the units**, while **investment funds** are managed in common through the GIUB's council.

The GIUB is thus **strongly externally funded**. Figures 4 and 5 show that funding has mainly been from the Swiss National Science Foundation and from the public sector, highlighting the **local relevance** of the research at GIUB. An important point to note is that until 2013, the CDE, which became a new university centre, was still a part of the GIUB (Figure 2).

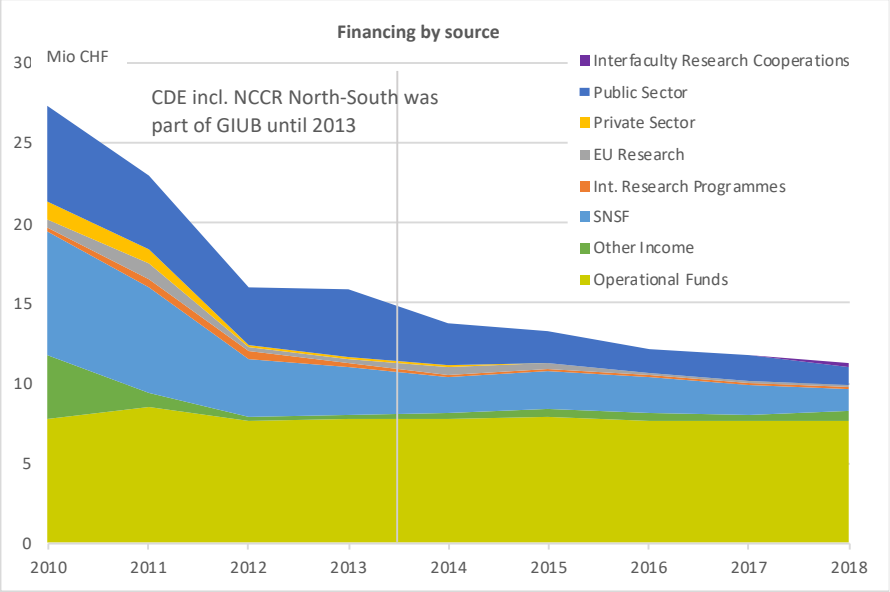

Figure 4: Development in research funds 2010-2018. Source: Tom Reist

Financing

	Third-party Financing								Operational Funds			Total Financing
	SNSF	Int. Research Programmes	EU Research	Private Sector	Public Sector	Other Income	Interfaculty Research Cooperations	Total Third-party Funds	Cantonal Funding	Other Income	Operational Funds	Total Financing
2010	7'658'290	281'756	556'761	1'048'114	5'976'126	3'969'081		19'490'128	7'819'504		7'819'504	27'309'632
2011	6'615'650	560'524	994'998	769'750	4'608'995	809'396		14'359'313	8'535'073	21'805	8'556'878	22'916'191
2012	3'644'289	474'865	269'063	75'658	3'642'544	211'055		8'317'474	7'620'894	71'893	7'692'787	16'010'261
2013	2'958'942	321'543	273'920	116'791	4'208'708	185'585		8'065'489	2'929'209	4'899'932	7'829'141	15'894'630
2014	2'279'592	146'146	400'516	104'391	2'688'845	335'394		5'954'884	6'747'972	1'065'065	7'813'037	13'767'921
2015	2'304'694	168'118	353'584	41'875	2'018'674	494'353		5'381'298	7'183'154	744'445	7'927'599	13'308'897
2016	2'248'981	64'169	106'290	35'015	1'455'474	583'114		4'493'043	6'162'946	1'428'064	7'591'010	12'084'053
2017	1'765'464	179'073	69'512	93'511	1'526'639	447'924		4'082'123	6'657'485	969'263	7'626'748	11'708'871
2018	1'348'875	112'359	62'105	94'047	1'124'017	603'114	173'953	3'518'471	6'880'363	826'262	7'706'625	11'225'096

Figure 5: Development in research funds 2010-2018. Source: Tom Reist

Further, **the proportion of third-party research funding to the University funds** in 2018 is equivalent to 51% of the core funding from Canton Bern (Figures 4 & 5). Moreover, although the professorship on climate impacts research (Olivia Romppainen-Martius) is administered through the OCCR, the professorship (but not its third-party base funding) is accounted at the GIUB. Due to these structural accounting arrangements at the university level, not all funds acquired by GIUB professors are credited to GIUB accounts. If the annual CHF 1.7 million of the third-party funded Mobiliar Lab for Natural Risks (Olivia Romppainen-Martius; Margreth Keiler) is accounted at the GIUB, the GIUB's ratio of third-party funding to core funding from the Canton is much higher. Thus, GIUB scientists have demonstrated they are able to **acquire competitive research grant**s at various levels and for various durations (Box 3).

Individual small project funds comprise the majority of **third-party research funds**. In addition, the GIUB has hosted several long and large projects. **Two NCCRs** were hosted by the GIUB 2001–2012, and the GIUB also participated in thematic research projects (e.g. NRP).

- *Example of long projects*: The project Swiss Hydrological Atlas (HADES) started in 1988, the World Overview of Conservation Approaches and Technologies (WOCAT, now hosted at CDE) in 1992. Both projects are still ongoing.
- *Example of funding from the private sector*: Since 2010, the Mobiliar insurance company has funded the professorship on climate risk (Olivia Romppainen-Martius) and from 2013 the Mobiliar-Lab, which transfers science to applications.
- *Example of competitive research funds*: In February 2018, Stefan Brönnimann was awarded an ERC Advanced Grant for his project, Palaeoreanalysis, which aims at producing a monthly global 3-dimensional climate reconstruction and analyzing interannual-to-decadal large-scale climate variability.

Box 3: Illustrative examples of long-term projects and funding from the private sector. Source: own box

With the transition of the NCCRs at GIUB to independent university centres of excellence (NCCR Climate later became OCCR, and NCCR North South later became CDE), **third-party funded research** at the GIUB has gone from around 50% higher research funds than the Swiss average per professor to about 62% of the average in Swiss Geography[13]. The fact that the GIUB hired six new professors between 2010 and 2018 arguably influenced the research funds, as new research groups need time to establish themselves.

The **public administration is an important funding source for the GIUB**, highlighting the importance and relevance of GIUB research for federal agencies and other stakeholders. The main funders are the SDC, the FOEN, and MeteoSwiss. Since the beginning of collaboration with the Mobiliar insurance company, the private sector has also become an important source of funding.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
SNF /NFP / NRP	2	1		1						**4**
H2020						1				**1**
FP7	1	1	1		1					**4**
SNIS				1						**1**
ERC									1	**1**
Other	2				1	1	1	1	4	**10**

Table 1: Number of large research projects at the GIUB. Each project is listed only once, in its starting year. Source: own table

[13] See the 2018 quantitative research evaluation of the GIUB by the University.

The GIUB has acquired large research grants (Table 1). In the evaluation period, about CHF 10 million on average has been generated every year from competitive and non-competitive grants. Even in 2012 after the ending of the NCCR funds, third-party funding was high at CHF 8.3 million, which was more than the total operational funds in that year, including salaries. The establishment of the Mobiliar-funded professorship (Climate impacts in Alpine regions) and the GIUB-associated Mobiliar-Lab strengthened the importance of GIUB as a research node.

3.2 Number of PhDs and Habilitations

Similar to the high number of Master students, the GIUB has 139% of the average number of PhD students in Swiss Geography. Habilitations follow a similar pattern, as Table 2 shows. Between 2010 and 2018, the GIUB fostered 11 habilitations.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
PhD	11	5	12	11	5	12	8	8	11	**83**
Habil	1	2	2	1	1	0	1	2	1	**11**

Table 2: Number of PhDs and Habilitations at GIUB (2010-2018). Source: own table

3.3 Research Outputs and Impact of a typical publication

The GIUB has a strong research output, whose quality it ensures through **internal peer reviews at unit level**. During the evaluation period, members of the GIUB published 80–170 peer-reviewed journal articles, 30–60 book chapters, and 5–10 monographs per year (Figure 6). It is interesting to note that the recent phase of rapid change did not leave any traces on publication output over the evaluation period.

Peer-reviewed articles are the major research output. In addition, research output also comes in many other forms. Researchers of the GIUB have published numerous maps, datasets, codes, e-learning tool, films, and more, which are increasingly acknowledged by the community (Box 4). For instance, GIUB research has produced several national risk maps (Soil Erosion Risk Map, Winter Storm Hazard Map, etc.).

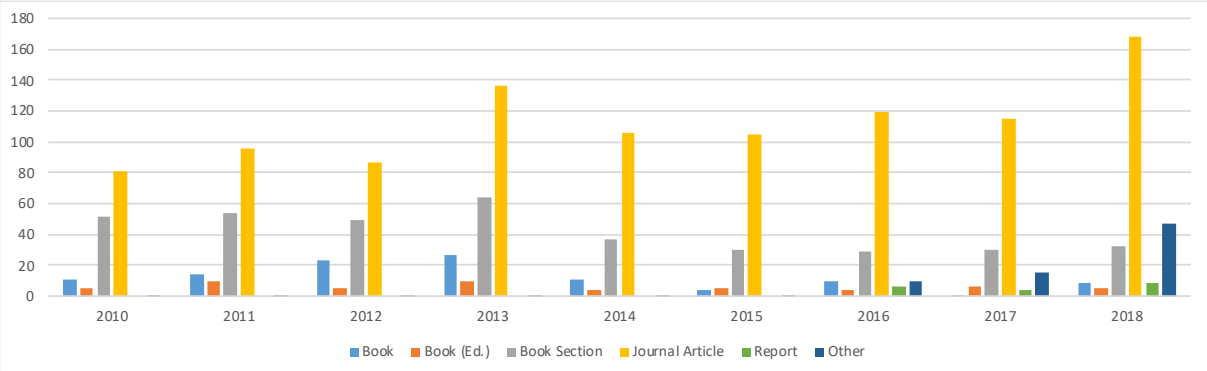

Figure 6: Publications of GIUB 2010-2018. The Other category includes newspaper or magazine articles, conference or workshop contributions, working papers, theses, journal or series, audiovisual and event materials, datasets, wall calendars, learning and simulation games, radio reports, and blog posts. Source: Tom Reist based on BORIS

Papers from GIUB authors are published in top journals, as evidenced by a high maximum rank index. GIUB authors also regularly publish in high-profile journals (six papers in 2019[14]). It is also noteworthy that GIUB staff are **lead authors on large international community papers**. However, many publications are also written for other outlets that are targeted to specific audiences (e.g., policy briefs, articles in practitioners' newsletters, etc.). These publications are important: often it is here that the transformation of knowledge within society begins.

Moreover, we **include students and early career researchers in our research** to foster their entry into the academic field. PhD students almost exclusively now publish cumulative theses. It has also become more common to publish papers from Master theses[15], sometimes even with the participation of BSc students. Even seminars have resulted in edited books, common conference presentations, and media.

Most of the GIUB publications are stored as full-text files on the University's repository, BORIS. As of 7 Oct 2019, 37% of them are stored as **open access documents** (compared to a University average of 20%). GIUB publications are downloaded ca. 6000–8000 times per month.

Through conferences and participation in science–society events, GIUB members have shared their research findings in both science and society (Box 4 & 5)

- *Award-winning paper:* The paper 'The affective economy of transnational surrogacy' by Carolin Schurr and Elisabeth Militz was awarded the Ashby prize by the *Economy and Space Journal*.
- *Book publication:* The book *The Political Economy of Capital Cities* (2018) by Heike Mayer and others is a 'must' for geographers and economists alike.
- *Film*: The film *Älven min Vän – The River, My Friend* by Hannah Ambühl, a GIUB student, was screened at the Nordic Film Days, Lübeck, an international festival.

Box 4: Illustrative examples of research output. Source: own box

- *Example of a conference*: In 2016, the 10th International Conference of the International Academic Association on Planning, Law, and Property Rights took place at the GIUB, organised by Jean-David Gerber. This is one of the main conferences in the field.
- *Example of outreach*: www.hochwasserrisiko.ch. A research initiative entitled 'Flood-risk research initiative – from theory to practice' and conducted by the Mobiliar Lab for Natural Risks is developing practical tools that look into all the eventualities that can arise in the event of flooding, thereby helping cantonal and municipal authorities, other experts, and the general public to identify flood risks so that subsequent damage can be minimized.

Box 5: Illustrative examples of outreach. Source: own box

[14] *Nat. Ecol. Evol.* **3,** 1007; *Nat.* **571**, 550; *Nat. Geo*. **11**, 643; *Nat. Geo.* **11,** 650; *Sci.* **365,** 583; *Sci. Adv.* **5,** eaav5449 (red = first authored)

[15] E.g. See box 10 about the award-winning MSc thesis by Michael Scheurer on microplastics in soils.

3.4 GIUB's position in national and international comparison

The GIUB, as the **second largest institute of geography in Switzerland**, plays a key role in Switzerland. The GIUB has been key to making the University of Bern known in sustainability and climate sciences in the Swiss university landscape. The annual quantitative evaluations conducted by the University of Bern Vice-Rectorate Research confirms the high quality of research at the GIUB in national and international comparisons.

In the academic ranking of world universities by subject fields, GIUB has a good international ranking in scientific impact, research collaboration, open access publications, and proportion of female authorship. The Leiden Ranking (2014–2017 for Life and Earth Sciences) positions the GIUB as follows: scientific impact: 126/840); collaboration 89/935; open access 89/935; and gender 82/958, measuring proportion of male and female authorships. The GIUB's high international standing means it is able to compete with the leading universities in geography (e.g., Stockholm University, Arizona State University, Yale University, Freie Universität Berlin, and the University of Zurich).

4. Scientific relevance

The GIUB is externally perceived as **an attractive research location**. The regular SNF professorships at GIUB as well as the many postdocs, PhDs and Master students coming from outside the University of Bern confirm this attraction. The collaboration with the University's competence centres (OCCR, CDE, CRED, IZFG) is intensive and successful, as the various **collaborative publications** show.

Apart from scientific excellence, another profile of the GIUB concerns **applied research and the transformation of scientific knowledge for practitioners, the public administration, and policy makers** (Box 6). Former GIUB students find jobs in environmental sections of the private sector or public administration. Cohort analyses of MSc alumnis by the Swiss Federal Office for Statistics show that 87% of former GIUB students[16] become employed after finishing their studies, with 36% finding permanent positions.

- *Example of international functions*: Peter Messerli, Director of the Centre for Development and Environment and affiliated to the GIUB, was appointed in 2016 as a co-chair of the group of 15 independent scientists drafting the UN Global Sustainable Development Report (GSDR) to help inform the 2019 SDG Summit. Peter Messerli and the other co-chair, Endah Murniningtyas, presented the report "The Future is Now: Science to Achieve Sustainable Development." at the 2019 UN Summit.
- *Example of international functions*: Chinwe Ifejika Speranza was appointed a member of the Independent Scientific Committee of the Climate Change, Agriculture and Food Security (CCAFS) Research Programme of the CGIAR Centers and Research Programs. The CGIAR (Consultative Group on International Agricultural Research) comprises 15 international research centres located in different continents.

Box 6: Illustrative examples of international functions. Source: own box

[16] Nobs M. 2019. AbsolventInnenbefragung 2017 des Bundesamtes für Statistik. Auswertung für die Universität Bern. p. 37

5. Collaboration, contacts, and cooperation

The principles of the GIUB are reflected in its engagement in partnerships, both locally and internationally, and its contributions to solutions to societal challenges (see background documents). **Interdisciplinary and transdisciplinary** research (Box 7) are key strengths of almost all research units. Over the past few years, the GIUB has developed **a culture of close internal collaboration**. In 2018, 32 out of 279 items from the GIUB in the BORIS repository had authors from more than one unit, and three had authors from four different units (See Annex 4). The research clusters, shared infrastructure, common teaching, and cross-unit colloquia are other expressions of this close collaboration.

- *Example of interdisciplinary research:* How old is the Amazon ecosystem, and when did humans arrive in the flood plains? For over a decade, Heinz Veit has worked with archaeologists to rewrite the settlement history of the Amazon basin.
- *Example of a transdisciplinary project:* The SNF Professorship AgroWork, a project led by Patrick Bottazzi, studies the societal conditions of an agroecological transition in West Africa in collaboration with farmers' organizations, think tanks, the University of Dakar, and governmental agencies from Senegal.
- *Example of science with practitioners:* In the context of his PhD, conducted at the CDE and the SLM unit of the GIUB with the Swiss Federal Ministry of Agriculture, Pascal Bircher enhanced the Erosion Risk map of Switzerland (ERK2). This map serves as a basis for environmental and agricultural law enforcement in Switzerland.

Box 7: Illustrative examples of interdisciplinary and transdisciplinary research. Source: own box

In the 2017 Alumni report of the Federal Office of Statistics, the GIUB stands out as **a beacon (competence centre) of interdisciplinary and transdisciplinary knowledge and research** at the University of Bern. The 2017 alumni of GIUB scored their interdisciplinary knowledge at 6.1 out of 7 points, the highest score in this dimension. The report also shows that GIUB alumni had the highest proportion of employees in a leadership or management function (*Kaderfunktion*).[17]

5.1 Research Collaboration with University of Bern Organs

Geography at Bern captures the University's Strategy 2021 well with its human, physical, and integrative Geography (new name: Geographies of Sustainability) departments. The GIUB thus supports the Faculty of Science in implementing the goals of the University's Strategy 2021.

5.1.1 Research collaboration with University of Bern Competence Centres

Several research groups of the GIUB are **members of University Competence Centres**. Five research units are members of the OCCR, two units are members of the CDE, and two units are members of the CRED. In fact, **GIUB personnel lead all three centres** (Martin Grosjean as OCCR director, Peter Messerli as CDE director, and Heike Mayer as steering board member of CRED). Furthermore, the unit of social

[17] *Nobs 2019: AbsolventInnenbefragung 2017 des Bundesamtes für Statistik. Auswertung für die Universität Bern*

and cultural geography is involved in the IZFG. These collaborations also extend to teaching in the graduate schools of the centres.

Within the new university strategy to fund Interfaculty Research Centres“ (IRC), GIUB personnel were successful with the One Health project[18], which includes, from the GIUB, Martin Grosjean, Moritz Bigalke, and Adrien Mestrot (Box 8).

- *Example of cooperation*: GIUB scientists Martin Grosjean, Moritz Bigalke, and Adrien Mestrot participate in the University‘s Interfaculty Research Cooperation One Health, in which they study the pathways of arsenic through the environment, food chain, and human body.

Box 8: Illustrative examples of research collaboration. Source: own box.

5.1.2 Research collaboration with institutes in the Faculty of Sciences

The ten units of the GIUB collaborate with many other institutes of the Faculty of Sciences at the University of Bern, as demonstrated by common research projects, common publications, teaching, and the organization of conferences. This concerns units in the Institutes of Physics, Biology, Chemistry, and Geology. Furthermore, GIUB research units also collaborate with other faculty bodies, such as the faculty IT services.

5.1.3 Research collaboration with other University of Bern Institutes

The University of Bern is a full university, and the various units of the GIUB collaborate actively with many institutes of other faculties, reflected through common research projects, publications, teaching, and conference organization. Important partners of the GIUB within the University of Bern are the Institutes of Social Anthropology, Political Sciences, Economics, History, Philosophy, Archaeology, Medicine, Vetsuisse, and several others. For instance, out of 279 published items for 2018 from the GIUB in the repository BORIS, 55 had co-authors from at least one other institute or centre of the University.

5.2 Research collaborations beyond the University of Bern

The GIUB engages in **various networks stemming from different collaborations** between the University and the world at large (Figure 7).

The GIUB **participates in national and international networks,** such as the BeNeFri (Bern, Neuchatel, Fribourg) exchange programme, in co-teaching; common joint research projects; joint Master programmes; joint supervision of Bachelor, Master, and doctoral students; participation of researchers from all units in summer schools; training courses; and affiliated professorships.

The GIUB has also **strong international cooperation**. This concerns global research programmes such as these three Future Earth Core projects: Global Land Project (mainly through the CDE) and Past Global Changes (PAGES, mainly through OCCR), as well as the PECS (Programme on Ecosystem Change

[18] Further information:
http://www.geography.unibe.ch/research/soil_science_group/research_projects/one_health/index_eng.html

and Society (through the GIUB). The Mountain Research Initiative has been hosted by the GIUB. The strong international involvement is also evidenced by the fact that GIUB staff are **lead authors on large community papers**.

Various **research partnerships with universities in different world regions** have been established in research projects. Moreover, GIUB researchers are involved in various international research projects. During the evaluation period, GIUB scientists collaborated in five FP7/H2020 projects, three COST Actions (categorized under 'other' in Table 1), two NFPs, and two NCCRs.

Professors and staff from the GIUB **serve the scientific communities** in global assessments (e.g., Intergovernmental Panel on Climate Change, Fifth and Sixth Assessment reports; Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Global Assessment Report; Global Sustainable Development Report). They also **serve on European bodies** (e.g., European Commission, European Space Agency), and **advise the Swiss government** at the national, cantonal, and municipal levels (e.g., Rat für Raumordnung RoR, platform for natural hazards PLANAT, government advisory board on climate change OcCC, City of Bern).

GIUB members **play important roles in international associations,** such as the International Union of Geodesy and Geophysics, as well as in national associations. For instance, GIUB members are in leading functions in nine commissions of the Swiss Academy of Sciences[19]. The GIUB is also represented in Ambizione and the evaluation body for the Doc.CH Humanities and Social Sciences initiative of the Swiss National Science Foundation.

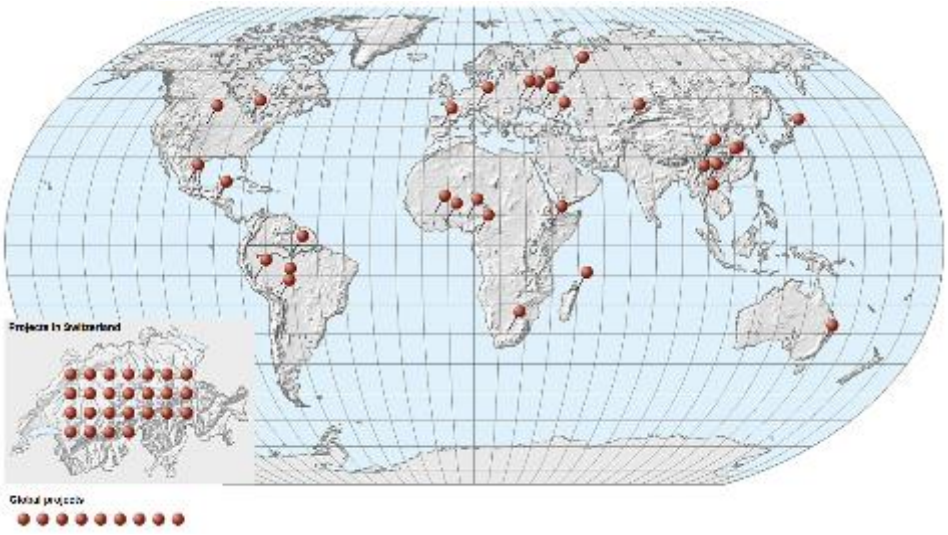

Figure 7: Research Projects of the GIUB.
Source: https://www.geography.unibe.ch/research/index_eng.html

[19] Source: ASG, ACP, KPS, Fernerkundung, Hydrologie, Geomorphologie, ICAS, td.net, commission for networks

5.3 Outreach to society

Through the various activities and outputs that we generate, we speak to different actors in society. Among others, we engage with the public through **participation in radio and TV programmes, providing expert opinion** on issues of concern to society, and subject-focussed videos and excursion guidelines. With a monthly average of 18,000 accesses in 2019, the GIUB **website was one of the most frequently visited institute websites of the University of Bern** (Source: Online Marketing, University of Bern, 9 Sep 2019). The **GIUB is also a publisher**, 'Geographica Bernensia',[20] and publishes research performed at the GIUB (since 2013 exclusively as Open Access).

Dialogue with society takes place through a series of publications that are suitable for the public (excursion guides, brochures, fact sheets), through engagement in committees, through public events, and through numerous media contacts. A number of events involving representatives of the GIUB have addressed the public in recent years. They include the Rio +20 events, the International Hydrology Day in spring 2013, the presentation of the results of the MontanAqua, CC Hydro-energie, and CC Hydro projects, the presentation of the results of the Fifth IPCC Assessment Report, the IPBES global assessment, and the UN 2019 SDG-report.

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Workshops (min. 60 participants)					1		1	2	1
Conferences (min. 120 participants)			1			1	1	1	1

Table 3: Major workshops and conferences conducted by GIUB 2010-2018. Source: own table

The GIUB was active at all **three researchers' nights** during the evaluation period. In 2011, it organized a very successful open house day on the occasion of its 125th anniversary. The GIUB has also co-hosted the **Swiss Geosciences Meetings** (2012; 2018 with the Institute of Geological Science), and actively leads sessions during the annual meetings elsewhere in Switzerland (Table 3).

The GIUB provides **valuable and high-quality services for national and international science, for the City of Bern, and for the Canton of Bern**. It has an active dialogue with society and in particular supports the schools (e.g. in cooperation with the subject didactics of geography—Matthias Probst—at the Berner College of Education, in which the textbook *Geography, knowledge, and understanding* was developed).

Further, the GIUB makes i**mportant contributions to topical issues and discussions at federal and cantonal level** (e.g. expert knowledge for the Federal Government's strategy for mountain areas and rural areas, and studies on the capital regions of Switzerland.) The GIUB is represented in **various commissions** (for example, in the governing bodies of several commissions within the Swiss science council) and delegations at national and international levels (for example, as scientific representatives in the UN conference on sustainable development in Rio de Janeiro 2012, Rio +20, and as members of European Commission taskforces).

[20] Source: https://www.geography.unibe.ch/services/geographica_bernensia/online/index_eng.html

GIUB researchers occupy various functions in **advising and guiding governmental, scientific, and civil-society organizations**[21] . In collaboration with the Swiss Federal Research Institute for Agriculture (Agroscope) and the Swiss Federal Office for Agriculture, GIUB researchers made key contributions to developing the current erosion risk map of agricultural areas in Switzerland (ERK2)[22]. Many of the contributions have also been student theses at PhD and Master Levels. In this way, GIUB research **informs decisions on erosion risk management at the policy and practice levels** in Switzerland.

Through its high media presence, the GIUB **contributes a scientific evidence base for informed public opinions**. In 2019 (1 Jan until 8 Nov; numbers are not available for previous years), the University of Bern published seven press releases on GIUB research (out of 70 research-related press releases in total). This number includes the press release on the Global Sustainable Development Report, chaired by Peter Messerli. These seven press releases generated 644 media reports. The majority of reports was related to three papers, all first-authored by GIUB scientists and published simultaneously in *Nature* and *Nature Geoscience*. A substantial number of media reports associated with the GIUB that are not directly related to University press releases exist but are not systematically tracked, and neither is the press release and media echo of the GIUB-co-organized science film festival.

6. Recognition through prizes, fellowships, invitations, chairs, and honours

The GIUB's **work in research and teaching** is recognized both nationally and internationally. Both students and researchers at the GIUB have been honoured with awards on many different occasions for their outstanding work, from national poster awards and nomination to an advisory body to international honours such as a European Research Council advanced grant and co-chair of UN Global Sustainable Development Report (Box 9; Annex 1).

- *Example of a national advisory body*: Heike Mayer is member of the *Rat für Raumordnung*, a council of spatial planning that advises the Swiss Government, and serves the Canton of Bern in similar functions.
- *Example of an international advisory body*: Chinwe Ifejika Speranza served in the European Commission Task Force on Rural Africa, which has published its report, "An Africa-Europe agenda for rural transformation." The report serves to inform current and future European–African partnerships.

Box 9: Illustrative examples of prizes, fellowships, invitations, chairs, and honours. Source: own box

[21] Source: https://sustainabledevelopment.un.org/globalsdreport/2019; https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/farming/documents/report tfra_mar2019_en.pdf

[22] Source: https://www.agroscope.admin.ch/agroscope/de/home/themen/umwelt-ressourcen/boden-gewaesser-naehrstoffe/landwirtschaftlicher-gewaesserschutz/erosion.html

7. Promoting young researchers

The **support to early career researchers is a key element** in the University's Strategy 2021. The early-career researchers at GIUB are active, organize workshops and conferences, and contribute significantly to the publications at GIUB. Early-stage researchers, PhD students, and even MSc and BSc students are closely involved in the research process. They have also received various **prizes and awards for their research** (Table 4; Box 10; Annex 1).

Access to UniBern Graduate Schools: GIUB PhD candidates have options to attend the International Graduate School North-South coordinated by the CDE, the OCCR Graduate School of Climate Sciences, the OCCR Swiss Climate Summer School, and the Interdisciplinary Graduate School Gender Studies. These options acquaint them with interdisciplinary approaches and to research in an international environment.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
SNF Ambizione		2	3			1				6
SNF Early or Advanced Postdoc Mobility	4					4		3	1	12
SNF professorships to outstanding researchers				1	1		1		1	4
Marie-Curie Fellowship	1			1			1		2	5
ESKAS				1	1	1	2	2	1	8
Other	2	1		1		1			2	7

Table 4: Promotion of early-career researchers. Source: own table

Mentoring of early-career researchers: At the postdoctoral level, the GIUB introduced the **system of research clusters,** which provide four qualification positions to mentor early-career researchers at the postdoc level (habilitation). In addition to the mentors in the Units and research clusters, the GIUB directors also guide habilitation candidates and hold **annual progress meetings**. In addition, it **organizes information events** on funding schemes and **trains candidates** for SNF Ambizione, SNF Professorships, and ERC Grants.

- *Example of an early-stage researcher:* Early-stage researcher Christoph Oberlack managed the Telecoupled Resource Systems for Environmental Justice cluster and coordinated a joint concept paper on polycentric governance in telecoupled resource systems (a 'highly cited paper' in ISI).
- *Example of involvement of students in research process:* The award-winning MSc thesis by Michael Scheurer on microplastics in soils was one of the first studies of its kind; the subsequent paper in *Environmental Science and Technology* attracted worldwide media interest.

Box 10: Illustrative examples of early career researchers. Source: own box

Currently, 59 PhD candidates, 31 early postdocs and about 8 mid-career scientific staff work at the GIUB. With the new university-wide regulations, each doctoral candidate and postdoc has **two supervisors with regular career meetings** and a PhD or post-doctoral agreement as appropriate. In addition to **mentoring by the individual group leaders**, **the GIUB director also supervises and mentors** the advanced postdocs and lecturers at the GIUB. The University of Bern is very active in supporting early-stage researchers in **applications for career grants** (Grants Office). Last year, for instance, three GIUB early-career researchers received this grant.

With the improved formalizations of supervision of doctoral and post-doctoral researchers, it is expected that the balance between research and non-research academic work becomes more predictable. In the revised university regulations, GIUB postdoc researchers are **guaranteed 50% of a fulltime equivalent as protected research time**[23]. This is now one of the points in their employment agreements.

The **research group leaders and supervisors monitor** appropriate allocation and recognition (e.g., in the KSL course description) of working time to research, teaching, and nonteaching tasks (e.g., organization of workshops and conferences). Yet, the duration and conditions of working contracts (e.g., percentage of employment for research and teaching) often **depends on the funding sources**. Third-party-funded research often requires concentration on research activities to meet the research project goals. This leaves less time for the engagement of early-career researchers in non-research but academically important activities of self-administration (e.g. engagement in GIUB or faculty commissions).

During the evaluation period, the GIUB was **successful in attracting four SNF professorships** (one of which eventually did not come to GIUB), six Ambizione grantees, and numerous other fellows with individual fellowships (ESKAS, Marie Slovodska Curie, etc.). Former GIUB staff are now in faculty positions elsewhere (E.g. Chair of Human Geography, Christine Bischsel, University of Fribourg; Chair of Physical Geography, Prof. Dr. Roland Zech, University of Jena; Martin Jacques Coper, Assistant Professor at the Universidad de Concepcion, Chile; Jürg Luterbacher, University of Giessen).

8. Equal Opportunities

GIUB is committed to **equal opportunities irrespective of** nationality, language, disabilities, or gender. Equal opportunities **have been a core topic of the GIUB** for many years, and the Institute has been very successful in **promoting equal opportunities at the professorial level**. Currently, 6 out of 10 unit leaders or 6 out of 12 professors (aoP and oP in total) are female. Among students, the gender ratio is about 50%, but the proportion of female researchers drops at the postdoctoral level. The GIUB has a commission on equal opportunities with an annual budget of CHF 3,000.-. Activities supported include support to early- and mid-career researchers to cover conference participation costs with care for their children. The GIUB works closely with the Interfaculty Centre for Gender Studies (IZFG), which provides further support in mentoring and 'improving compatibility of study, professional and care commitments'[24].

[23] https://www.unibe.ch/e152701/e322683/e325053/e815539/ul_rgl_postdoc_ger.pdf

[24] https://www.unibe.ch/university/organization/executive_board_and_central_administration/vice_rectorate_quality/office_for_gender_equality/index_eng.html

9. Perspectives of early- and mid-career researchers

Both the early-career and mid-career researchers are **important pillars of GIUB** (Box 11). Both these echelons organize their own general meetings, and their members represent their scientific and professional interests in all the relevant committees and commissions on the GIUB's council and at the faculty level. They also represent their interests at the university level through the mid-career association of the university (*Mittelbauvereinigung der Universität Bern*; MVUB). With the support of the GIUB and various University organs, they organize further training and research workshops for their members.

Please note: To capture their perspectives, early-career and the mid-career researchers have written and reviewed Chapter 9.1 and 9.2, respectively.

> The early career and mid-career researchers are major pillars of the GIUB, especially in research and teaching. They are significantly involved in publication activities and make important contributions to the acquisition of third-party funding. The promotion of young researchers is a special concern of the Institute, as are equality and equal opportunities. Consequently, status-specific mission statements are taken into account and implemented as far as possible.

Box 11: The institutional principle of the GIUB. Source: GIUB Vision 2021

9.1 Early-career researchers

The GIUB's early-career researchers (*Unterer Mittelbau*: UMB) are PhD candidates, scientific staff, and postdocs before habilitation. Most of them are employed on a temporary basis and this group is therefore subject to relatively high staff turnover. In recent years, UMB members have contributed to most GIUB publications and also co-supervised student Bachelor and Master theses. In addition, representatives of the UMB are active in various University commissions. Further, the **Commission for the Promotion of Young Scientists** has an annual budget for the promotion of conference participation, which is also available to UMB members.

UMB members appreciate the support and recognition they enjoy from the Institute. However, a number of **structural difficulties**, which can only partly be dealt with at an institute level, are regularly voiced and discussed at the UMB level. The numbers of PhD students, postdocs, and scientists with permanent positions at the Institute decline drastically up the qualification hierarchy. The low number of postdocs is mentioned as a weakness in the most recent annual evaluation reports. The structural constraints create uncertainty for those who do not have an opportunity to advance an academic career at the GIUB and difficulties concerning the feasibility of more extensive and complex projects. However, the situation also creates difficulties from the Institute's point of view, since the GIUB deals with many long-term tasks while most of its members are employed on short-term contracts. This also results in an increased workload for those holding more long-term positions, who then have to deal with many of those tasks in teaching, student supervision, administration, commission work, and running of lab infrastructures that require some familiarity with Institute structures. Often, UMB members' contributions to teaching activities are not visible on university websites or in evaluations. This can become problematic for those who have to demonstrate teaching experience. An online

survey conducted recently about the working conditions and various employment, teaching, and graduation models for PhD students at the GIUB highlighted a significant spread in the duration and conditions of employment agreements, of the framing of supervision, and in the conditions for the graduation. The UMB is currently working on concrete suggestions how these circumstances could be improved.

9.2 Mid-career researchers

The mid-career researcher level (*Oberer Mittelbau*: OM), comprising mainly lecturers, is both **a springboard for an advanced professorship** within or outside the GIUB and a platform for academics with long-term employment, who thus make a significant contribution to strengthening the GIUB's existing thematic emphases in both teaching and research. In 2013, the GIUB completed a new mission statement for the upper mid-career researchers, which showed that a clear professional situation and perspective is necessary to maintain the functions of the OM.

The GIUB has seven lecturers. The mid-career researchers have been **heavily involved in the concretization of cluster formation** between two or more GIUB units. Many theses supervised by the OM are integrated into current research projects and thus provide a first insight into the working environment at the University. The OM's broad research activities are reflected in a **large number of publications**, conference participations, and lectures. In addition, three habilitations were submitted ('Remote Sensing in Climatology' by Stefan Wunderle, 'Spatio-Temporal Dynamics and Drivers of Flood Risk Change - Perspectives of Coupled Component Models' by Andreas Zischg and 'Land Use Systems and Sustainable Development: Mesoscale Approaches in Land System Science' by Andreas Heinimann). All this as well as the appointment to the UNESCO Chair for Natural and Cultural Heritage for Sustainable Mountain Development of Stephan Rist show that the **work of the OM is attracting attention** in the international scientific environment.

Furthermore, the members of the OM are involved in commissions and boards of directors of national and international professional organizations (e.g. Swiss Geomorphological Society, International Geographical Union). Members of the OM bring diverse experience and orientations and thus contribute substantially to the discussion and development of research topics, interdisciplinary cooperation, and cluster teaching.

10. Challenges and Opportunities

The structure of the GIUB has proved efficient in the recent phase of rapid change, which has involved six replacements of professors within four years. It provided **sufficient structure** while allowing the new research groups to develop and to participate in shaping the GIUB. With the seventh and last foreseeable replacement in this phase of change, the GIUB has the opportunity to adjust its structure, if necessary, and to anticipate changes in the upcoming years, during which fluctuation and thus **flexibility will likely be lower and finances will probably decrease**.

In order to maintain its outstanding achievements in research, teaching, and services, the GIUB relies on the **principles for research, teaching, and institutional development** (see background documents). The GIUB's Vision 2021 pursues the creation of content and a structure that is oriented towards further qualitative and quantitative growth in the GIUB. The content and structure of the future GIUB outlined in the vision, and introduced above in Chapter 2, will ensure the Institute can **safeguard what has been achieved even in the event of potential setbacks** (GIUB Vision 2021).

An issue related to the **recent changes in professorships** is the shift in research and teaching focus, which means that 'older' topics are abandoned and no longer contribute to the GIUB profile, so a **transition time is needed** to concretize the new directions and their interconnections. The new professorships also mean that more time is needed to build and solidify research networks and acquire new research funding. Further employment of AoP (*Ausserordentliche Professur*) and Assistant professors tenure track means clarification is needed about the criteria for promotion to the next level. This is currently being developed at the faculty level as it also affects other institutes at the Faculty. Further, differing levels of pay between AoPs and OPs (*Ordentliche Professur*) for the same burden of work and responsibilities has also been discussed and is receiving attention at the GIUB and faculty levels.

In their forward-looking approach, various constituencies at GIUB have deliberated over the Institute and its challenges and opportunities. One of the outputs of such a meeting is a SWOT analysis of the research at the GIUB.

Beyond the GIUB's strengths are some weaknesses and threats that need to be tackled: **the extra effort needed in transdisciplinary approaches** when co-designing research with society, the limited technical capacity at GIUB to support research activities, and the consequent need for more funding and expanding IT capacities. These weaknesses are also mirrored in the threats identified.

While **collaboration** with the University Centers were discussed as a strength, perceived competition between GIUB and the Centers was also discussed. Further issues arose when discussing the plans for a new Master in Sustainability at the CDE, the options at GIUB of a Master in Geography and Sustainable Development, the regular Master in Geography, and the need for dialogue and enhanced collaboration. Issues that GIUB research needs to focus on, digitalization and sustainability, were discussed while also highlighting how dependence on third-party funding steers research. To address the gap on digitalization, discussions about establishing a research group on machine learning in geography are ongoing.

Competitive funding: Probably the greatest challenge of the next few years will remain **the constant competition for research resources**. Not least due to the many personnel changes in recent years, new contacts must be made and new sources of research funding must be found. Being dependent on third-party funding requires that GIUB plans for uncertainty in the long term due to funding being limited to

a few years. This also relates to m**aintaining support for early-career researchers through competitive third-party-funded research.** Hence, **adequate funding** for promotion positions for early-career researchers **remains a challenge**.

Balancing teaching and research load: A common challenge that cuts across professors and mid- and early-career staff is the **high workload**. GIUB has been successful in maintaining a high enrolment of students at both Bachelor and Master Level and aims at maintaining student interest in studying at the GIUB. Although this success is reflected in the number of Geography majors at the GIUB exceeding the Swiss average by a factor of two, it also reflects an **enormous burden of teaching placing pressure on adequate time for research**. The GIUB is working to relieve this burden through promotion positions for early-career researchers despite limited funding.

10.1 Further development of the Bern model of Geography

The previously successful concept of the Bern model of Geography (see current Mission Statement, Chapter 1) has great potential for the future, because the complexity of the problems to be solved can only be dealt with in an **interdisciplinary way**. This is also in line with the University's Strategy 2021, which focusses on contributing to solving current challenges and thus to the vision of knowledge creating value.

The GIUB is known for its 'Bernese spirit', a cooperative and dialogical culture of cooperation with successful collaboration between natural and social science research groups (GIUB Vision 2021). This is one of the **GIUB's success factors**. The GIUB maintains its **orientation towards interdisciplinary research** and its conviction that the coexistence of physical geography and human geography under one roof remains successful and should continue to be exploited (GIUB Vision 2021). The tried-and-tested division of the Institute into 50% physical geography, 30% human geography, and 20% integrative geography (new name: Geographies of Sustainability) has therefore been retained (GIUB vision 2021; structure report 2014).

The GIUB's strongly established **sustainability focus offers exciting development opportunities**, especially since sustainability is a focus of the University's Mission Statement. The GIUB intends to maintain its thematic breadth in the future while promoting cooperation between the subareas.

The GIUB has a **structure that can dynamically adapt to the changing requirements of its environment**. This structure should enable the GIUB to form thematic focal points and to continue to contribute to current, socially relevant topics. The **interdisciplinary research clusters** make it possible to tackle complex topics and make an important contribution to sustainability research.

A further **opportunity is in the supervision of student work**, where concerted efforts will be made to integrate more students into ongoing research and thus give them more access to research practice. In this way, the artificial separation of teaching and learning from research will diminish further.

10.2 Opportunities provided by infrastructure and challenges to maintain them

10.2.1 The GIUB chemistry laboratory (cLab)

GIUB hosts **a state-of-the-art laboratory** that enables it to occupy a top position in environmental analysis within the discipline of geography and beyond. This was an attraction for the first and second SNF Professorships granted to the institute (Professor Roland Zech, 2014; and Professor Adrien Mestrot, 2016). Both Professors have now progressed in their careers to occupy structural positions. The laboratory is **a platform for interdisciplinary cooperation** and is used by a wide variety of research groups, institutes and centers of the University of Bern (IPS, Evolutionary Biology, Anatomy, Geology, Vetsuisse, Molecular medicine, Geology, CDE, Centre for Space and Habitability) in Switzerland and abroad. The lab is the basis for acquiring third-party funding from the SNF, the EC, other institutions (foundations, University of Bern), and the Interfaculty Research Cooperation (e.g. One Health) of the University of Bern. There, two groups from the GIUB analyse environmental pollutants in the food chain. The **laboratory plays an important part in education** at the Bachelor, Master and PhD levels and attracts guest PhDs and postdocs (e.g. ESKAS) from many countries (Brazil, Iran, Pakistan, Sudan, China, Thailand, Columbia). The new laboratory will continue to strengthen our position in the future.

10.2.2 The GIUB Media Lab (mLab)

The 2018 initiated mLab offers **space for multimedia methods** in research and teaching, interdisciplinary and transdisciplinary cooperation, and **critical examination of media and digitalization**. The mLab is also a co-working space and a place of exchange for students and staff at the GIUB. It enables collaborative work with film, audio, social media, and other media formats, whose importance continues to grow for teaching, research, GIUB's social presence, and the communication of research results to the non-university public. The mLab contributes to the strategy of the University of Bern and received substantial financial support from the Faculty (strategic funds, 300,000 CHF) to promote and encourage new and creative research approaches. It offers the GIUB and the Faculty an opportunity to distinguish itself in the field of digital media research.

10.2.3 Instrument collection

Many GIUB research groups conduct field experiments, for which various instruments are used. Thus, GIUB has a **collection of instruments,** ranging from hand-held GPS and dGPS (differential GPS) through field thermometers to a spectrometer. These instruments, maintained and managed by a technician, are used in teaching and field courses and enrich teaching and research. Having a technician enables GIUB to adapt **instruments for customized use**, hence making such research more affordable than when using trademark products.

10.2.4 Geoprocessing

Geoprocessing at the Institute of Geography covers the areas of Geographic Information Systems (GIS), Satellite Remote Sensing, Surveying / Photogrammetry and Cartography. Whereas cartography is primarily a service area, GIS, Remote Sensing, and surveying are mainly used in research and teaching. Geoprocessing contents are offered at all three levels, from Bachelor (Geoprocessing I & Geoprocessing II) through Master (Geoprocessing III) to PhD (Supervision of individual work).

11. Outlook

In general, the subject of Geography is often characterized by dynamic forces that are key for complementing expertise in specific areas—which enable Geography to compete with other disciplines that deal with the same issues. We achieve our centripetal powers through promoting and maintaining internal collaboration, such as the research clusters; through the collaborative environment at the University of Bern, as exemplified by the University Centers, which draw on expertise from a range of disciplines; and through our thorough integration into the wider scientific and administrative environment.

Can we maintain these in the future? Which structure and governance are needed?

Experience and current developments show that the GIUB is on the right track to use emerging opportunities and take on the challenges arising from an increasingly complex world. Having successfully undergone a phase of major personnel changes, the GIUB is in a very good position to conduct innovative research that provides solutions to solving challenges of global change.

12. References

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13. Annexes

13.1 Annex 1: List of prizes, fellowships, invitations, chairs and honours

Prizes and honours at Master students	
SGAG prizes	2010, 2011, 2015, 2016
Faculty of Science prize for Geosciences	2016
German young researcher's award in hydrology	2014
Schweizer Preis für Phänologie und Saisonalität der Kommission für Phänologie und Saisonalität der SCNAT	2011
Poster prize at Swiss Global Change Day	2010, 2014
Poster prize of ***Bodenkundlichen Gesellschaft der Schweiz*** (BGS)	2010

Prizes and honours for doctoral students	
The 2018 Outstanding Student Poster and PICO (OSPP) Award of Natural Hazard Division of European Geoscience Union	2018 (Veronika Röthlisberger)
University of Bern Faculty Award for Geosciences	2017 (Jacques Coper)
Nachwuchspreis Hydrologie 2014 der Bundesanstalt für Gewässerkunde (Deutschland)	2014 (Simon Schick)
CLIMANDES E-Learning Workshop, ***Medaille der Fuerza Aérea del Perú***	2015 (Alena Giesche und Stefan Hunziker)
Poster award at the Swiss Global Chance Day	2015 (Céline Dizerens)
Prize for best Student Work from ***Service de l'environnement et de l'énergie du canton de Vaud*** (SEVEN)	Carol Hemund
International Geneva Award	2016 (Christoph Oberlack et al.)

Prizes and honours for lecturers and professors	
Grant of ca. 3 million Swiss francs from the European Research Council Advanced grant for PALAEO-RA project.	2018 (Stefan Brönnimann)
Nominated member of the European Commission Task Force Rural Africa	2018 (Chinwe Ifejika Speranza)
Appointed a member of the Independent Steering Committee (ISC) of the Climate Change, Agriculture and Food Security (CCAFS)	2019 (Chinwe Ifejika Speranza)
Preis für Hochschullehre Geographie des Verbands der Geographen an deutschen Hochschulen	2017 (Moritz Bigalke)
UNESCO Chair for Natural and Cultural Heritage for Sustainable Mountain Development	2016 (Stephan Rist)
Lead Author of Global Assessment of Biodiversity and Ecosystem Services of the Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services (IPBES)	2019 (Andreas Heinimann)
Wissenschaftlichen Beirat des td-Net Schweiz	2017 (Stephan Rist)
Lead of the IGU-IAG Commission/Working Group on Geomorphology and Society – Past, Present and Future.	2018 (Margreth Keiler)
Co-chair of UN Global Sustainable Development Report	2016 (Peter Messerli)
Ehrenmitgliedschaft der Ungarischen Geographischen Gesellschaft	2013 (Doris Wastl-Walter)
Elected by the Finnich ***Akademie der Wissenschaften in den dreiköpfigen*** Scientific Advisory Board of a Finnish centre of	2013 (Doris Wastl-Walter)

excellence, Research on the Relational and Territorial Politics of Bordering, Identities and Transnationalisation (RELATE)	
Eine Studie zu Mikroplastik in Schweizer Auenböden: starken Medienecho mit > 40 internationalen Zeitungsberichten und zahlreichen Radio- und Fernsehbeiträgen im deutschsprachigen Raum.	2018 (Moritz Bigalke et al.)
Worlddidac Award for the WASSERverstehen project	2016 (Matthias Probst)
Member of the Training and Outreach Committee of the European Association of Geochemistry	2014 (Adrien Mestrot)
Member of the ***Rat für Raumordnung***	2011, 2015 (Heike Mayer)

Fellowships	Start
Marie-Curie	2018 (ITN; Andreas Heinimann) 2018 (Sarwar Sohel) 2016-18 (Umberto Lombardo) 2013 (Adrien Mestrot) 2010-11 (Krystyna Saunders) 2009-10 (Rixt de Jong)
SNF professorships to outstanding researchers	2018 (Patrick Bottazzi) 2016 (Adrien Mestrot) 2014-17 (Roland Zech) 2013 (Sam Jaccard)
Ambizione SNF	2015 (Raphael Neukom) 2012-15 (Krystyna Saunders) 2012 (Jean-David Gerber) 2012 (Chinwe Ifejika Speranza) 2011 (Krystyna Saunders) 2011-15 (Rixt de Jong)
SNF Early- or Advanced Postdoc Mobility (outgoing)	2018 (Tobias Schneider) 2017 (Abdul Malik) 2017 (Leonor Rodrigues) 2017 (Benjamin Bandowe) 2015 (Béla Filep) 2015 (Benjamin Amann) 2015 (Umberto Lombardo) 2015 (Ivan Hernandez-Almerida) 2010 (Béla Filep) 2010 (Daniel Viviroli) 2010 (Matthias Trachsel) 2010 (Rixt de Jong)
ESKAS	2019 (Mussie Fessehaye) 2018 (James Natia) 2017 (Mark Malgwi) 2017 (Amro Eltayeb) 2016 (Emily Brandao) 2016 (Emily Mutea) 2015 (Marcelo Zamuriano) 2014 (Isaq Kakakhel) 2013 (Abdul Malik)

other	2019 (Chidi Ofoegbu, SARECO - Swiss-African Research Cooperation) 2018 (Fabiana Segura; FAPESP (Brazil) 2018 (Azadeh Omidi; Ministry of Science, Research and Technology of Iran.) 2015 (Anneli Karlsson; *Bundesanstalt für Gewässerkunde (BfG)*) 2013 (Charirat Kusonwiriyawong; Agricultural Research Development Agency (ARDA; Thailand)) 2011 (Anna Kurkowska; *Sciex-NMSch Programm*) 2010 (Martín Jacques Coper, Chilian Government) 2010 (Olivia Romppainen-Martius, *Assistenzprofessur* tenure track; *Professur für Klimafolgenforschung im Alpenraum der Mobiliar-Versicherungsgesellschaft*)

Emeriti	
Ehrenmitglied der Akademie der Naturwissenschaften	2016 (Paul Messerli)
Ehrendoktor der Naturwissenschaften der Leopold-Franzens-Universität Innsbruck	2010 (Bruno Messerli)
Ehrenmitglied der Bodenkundlichen Gesellschaft der Schweiz	2010 (Peter Germann)
Mitglied der Deutschen Akademie der Naturforscher Leopoldina	2010 (Heinz Wanner)
Titularprofessor phil.-nat. Fakultät	2010 (François Jeanneret)

International Workshops organized by GIUB Staff (min. 60 participants)

2018: Early Instrumental Meteorological Series, Bern,

2017: Climate Reanalyses and Services for Society, Bern

2017: 2nd European Hailworkshop 2017

2016: '*Rikobasiertes Naturgefahren-Management - Bedeutung und Grenzen ökonomischer Daten'* – Conference and Workshop of the Mobiliar Lab of Natural Risks, September 2016, Bern, Switzerland

2014: 1st European Hail Workshop 2014

Conferences organized by GIUB staff (min. 120 Participants)

2018: Swiss Geoscience Meeting

2017: *Tagung der Bodenkundlichen Gesellschaft der Schweiz*

2016: 10th Conference of the International Academic Association on Planning, Law and Property Rights (PLPR2016), 'Land as a scarce resource'. February 15th –19th, 2016, Bern, Switzerland. 160 participants.

2015: Bicentennary of the Tambora Eruption, Bern

2012: Swiss Geoscience Meeting

Projects and products (maps) in context of natural hazards and risks

- Study on modelling building property parameters contributing to an earthquake risk model for Switzerland - Swiss Federal Office of the Environment, Switzerland
- Research Initiative Flood Risk– Mobiliar Insurance: www.hochwasserrisiko.ch
- Effects and benefits of prevention instrument of the KGV for buildings - *Preventation Fondation of Inter-canton Re-Insurance Association (IRV*)
- Monitoring of flood risk in Switzerland – pilot study - Swiss Federal Office of the Environment, Switzerland
- SOLID DB – Sediment Transport and Bedload Database – Improvement of the concept for the measuring network and data analysis - FOEN – Hydrology Division, Switzerland
- Implementation *Praxiskoffer Risikodialog* - Swiss Federal State, PLANAT – National Platform for Natural Hazards, Switzerland
- HADES: https://hydrologischeratlas.ch/
- Erosion risk map Switzerland: https://www.blw.admin.ch/dam/blw/de/dokumente/Nachhaltige%20Produktion/Umwelt/Boden/Erosionsrisikokarte%202019.pdf.download.pdf/Erosionsrisikokarte%202019.pdf
- Winter wind storm risks
- Storm Risk Map (BAFU): https://www.bafu.admin.ch/bafu/en/home/topics/natural-hazards/state/maps/geodata.html

13.2 Annex 2: International research projects

FP6

2006–10	Paläolimnologie	FP6 Projekt «Millennium: European Climate of the Last 1000 Years»
2007–10	Kulturgeographie	SeFoNe: Searching for neighbours: dynamics of physical and mental borders in the new Europa (FP6)

FP7

2008–13	Klimatologie	FP7: Assessing Climate Impacts on the Quantity and quality of Water (ACQWA)
2010	MRI	*offizieller Beobachter im FP7-ENV-2010 4.1.4 BalkanGEOnet Projekt*
2011–13	Klimatologie	FP7: European Reanalysis of Global Climate Observations (ERACLIM)
2012-14	Klimatologie	FP7 ERA.Net RUS: Arctic Climate Processes Linked Through the Circulation of the Atmosphere (ACPCA)
2014–16	Klimatologie	FP7: European Re-Analysis of global CLIMate observation (ERA-CLIM II)

H2020

2015-19	Klimatologie	H2020: EU Surface Temperature for All Corners of Earth (EUSTACE)
2019-22	Klimatologie	H2020: RECEIPT

ERC projects

2018-23	Klimatologie	ERC Advanced Grant: A Palaeoreanalysis To Understand Decadal Climate Variability (PALAEO-RA)

Copernicus Climate Change Services

2017-21	Klimatologie	C3S 311a Lot1: Climate Data Rescue Services
2019-22	Klimatologie	C3S C311c: In Situ Upper Air Database (CISUAD)

X COST Actions

2010	MRI	Partner im COST Antrag «Enhancing the resilience capacity of SENSitive mountain FORest ecosystems under environmental change Forschung (SENSFOR)»
2008–11	Hydrology	*Infiltrations- und Speichervermögen gehemmt durchlässiger Böden unter Waldstandortstypen mit unterschiedlicher Durchwurzelung und deren Beeinflussung durch Bestandesaufbau bzw. Waldbehandlung*
2009–12	Climatology	Advances in homogenisation methods of climate series: an integrated approach
2018-22	Climatology	Compound weather and climate events

NFP / NRP / SNF

2007–10	Social and cultural Geography	*Religion und Ethnizität - Eine Studie mit jungen Erwachsenen (NFP58)*
2010	Social and cultural Geography	«Understanding Inequalities of Access to The Labour Market: The Intersection of Gender and Ethnicity» NFP 60 «Geschlechtergleichheit»
2010–13	Hydrology	*Wasserbewirtschaftung in Zeiten von Knappheit und globalem Wandel (MontanAqua) NFP 61 «Nachhaltige Wassernutzung»*
2011–14	Social and cultural Geography	*Berufliche Benachteiligungen im Lichte von Geschlecht und Ethnizität» NFP 60 «Geschlechtergleichheit»*
2013–16	Soil Science	Metal Isotope tracing in agriculture, MISOTRAG, *NFP 69 «Gesunde Ernährung und nachhaltige Nahrungsmittelproduktion»*

NCCR

2001–13	CDE	NCCR North-South
2001–13	Climatology	NCCR Climate Variability, Predictability and Climate Risks

Sinergia Projekte

2010–13	Climatology	Future and Past Solar Influence on the Terrestrial Climate (FUPSOL)
2014–17	Climatology	FUPSOL II
2016	Climatology	«Paleo-Fires»
2015–17	Hydrology/ Climatology	«CC Adapt»
2018	Paleo-limnology	«Lake Victoria»

SNIS

2013-16	Political Urbanism and Sustainable Spatial Development	"The effects of large-scale land acquisitions on households in rural communities of the Global South" (Swiss Network for International Studies SNIS). Main applicant: J.-D. Gerber

Other funding bodies

2018	Sustainable Regional Development	"Employment and Social Differences in the Health Sector: An Institutional Perspective on a Swiss Hospital"
2018	Interfaculty Research Cooperation	One Health" is the first of three approved interfaculty projects funded by the University of Bern

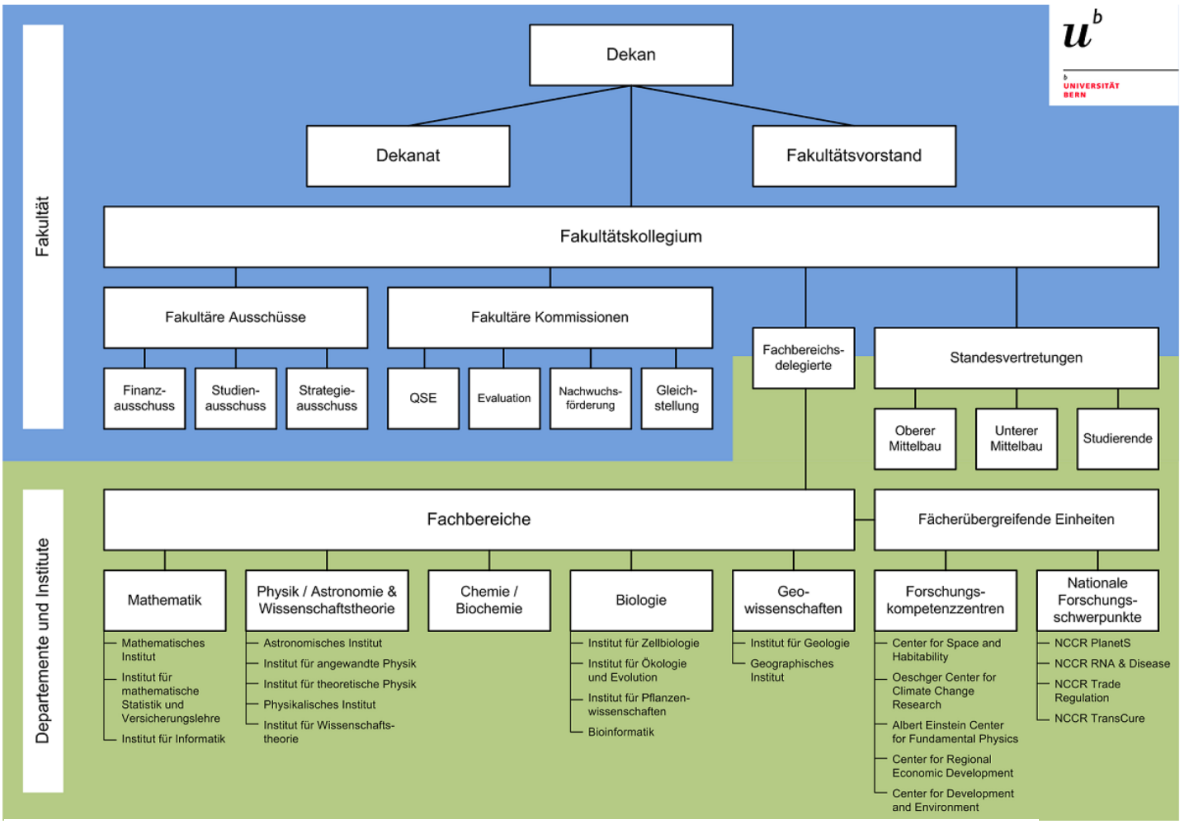
13.3 Annex 3: Achievements in university self-administration (commissions, committees, etc.)

At the university level, GIUB professors have contributed to the university administration. For example, Prof. em. Dr. Doris Wastl-Walter served as the Vice-rectorate «Quality» from 2011 to 2017. In addition, GIUB members have served as faculty delegates to university commissions (see Table below).

At the faculty level, GIUB members also actively contribute to its self-administration as organised in various commissions. The commissions include (1) Finances, (2) Studies (3) Faculty strategy, (4) Quality Assurance and Development (QSE-Qualitätssicherung und Entwicklung), (5) Evaluation, (6) Promotion of early careers, (7) Equal opportunities (see figure below).

The GIUB and the Institute of Geology, which together comprise the Geosciences, engage in the commissions, sometimes with double representation and sometimes the representation rotates between the two institutes.

GIUB members in University and Faculty commissions 2019	
University commission for sustainable development	Prof. Dr. Chinwe Ifejika Speranza
Finance committee (Representative Geosciences)	Prof. Dr. Heinz Veit; deputy: Prof. Dr. Jean-David Gerber
Study committee(Representative Geosciences)	Prof. Dr. Martin Grosjean
Strategy committee (presidium)	Prof. Dr. Heike Mayer
Strategy committee (Representative Geosciences)	Prof. Dr. Stefan Brönnimann



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13.4 Annex 4: Examples of collaborations between Clusters 2018/2019

Clusters	Units involved
Risk and Resilience	Geomorphology, Economic Geography, Climatology, Sustainable Land Management
Telecoupled Resource Systems	Urban and regional Planning, Sustainable Land Management, Geography of Sustainable development , Hydrology, Climatology
Environmental Pollution	Soil Science, Paleo-geoecology, Urban and regional Planning, Social and Cultural Geography
Erosion Through Time	Paleo-geoecology, Sustainable Land Management , Climatology
Publications (In 2018 more than 30 publications with authors from at least 2, sometimes even 3 or 4 units appeared. Here is a small selection)	**Units involved**
Bandowe, Benjamin; Fränkl, Lea Alina; Grosjean, Martin; Tylmann, Wojciech; Mosquera, Pablo; Hampel, Henrietta; Schneider, Tobias (2018). A 150-year record of polycyclic aromatic compound (PAC) deposition from high Andean Cajas National Park, southern Ecuador. Science of the total environment, 621, pp. 1652-1663.	Soil Science, Paleo-Geoecology
Boillat, Sébastien; Gerber, Jean-David; Oberlack, Christoph; Zähringer, Julie Gwendolin; Ifejika Speranza, Chinwe; Rist, Stephan (2018). Distant Interactions, Power, and Environmental Justice in Protected Area Governance: A Telecoupling Perspective. Sustainability, 10(11), p. 3954.	Sustainable Land Management, Urban and regional Planning, Geography of Sustainable development
Bottazzi, Patrick; Crespo, David; Bangura, Leonard Omar; Rist, Stephan (2018). Evaluating the livelihood impacts of a large-scale agricultural investment: Lessons from the case of a biofuel production company in northern Sierra Leone. Land use policy, 73, pp. 128-137.	Sustainable Land Management, Geography of Sustainable development
Brönnimann, S., C. Rohr, P. Stucki, S. Summermatter, M. Bandhauer, Y. Barton, A. Fischer, P. Froidevaux, U. Germann, M. Grosjean, F. Hupfer, K. Ingold, F. Isotta, M. Keiler, O. Martius, M. Messmer, R. Mülchi, L. Panziera, L. Pfister, C. C. Raible, T. Reist, O. Rössler, V. Röthlisberger, S. Scherrer, R. Weingartner, M. Zappa, M. Zimmermann, A. P. Zischg (2018) 1868 – das Hochwasser, das die Schweiz veränderte: Ursachen, Folgen und Lehren für die Zukunft. Geographica Bernensia, G94, 52 S., doi:10.4480/GB2018.G94.01.	Climatology, Paleo-Geoecology, Geomorphology, Hydrology
Brönnimann, Stefan; Wintzer, Jeannine (2018). Climate Data Empathy. Wiley interdisciplinary reviews - climate change, 10(2), e559.	Climatology, Social and Cultural Geography
Felder, Guido; Gómez-Navarro, Juan José; Zischg, Andreas Paul; Raible, Christoph; Röthlisberger, Veronika; Bozhinova, Denica; Martius, Olivia; Weingartner, Rolf (2018). From global circulation to local flood loss: Coupling models across the scales. Science of the total environment, 635, pp. 1225-1239.	Hydrology, Geomorphology, Climatology

Henne, Paul Daniel; Bigalke, Moritz; Büntgen, Ulf; Colombaroni, Daniele; Conedera, Marco; Feller, Urs; David, Frank; Fuhrer, Jürg; Grosjean, Martin; Heiri, Oliver; Luterbacher, Jürg; Mestrot, Adrien; Rigling, Andreas; Rössler, Ole Kristen; Rohr, Christian; Rutishauser, This; Schwikowski, Margit; Stampfli, Andreas; Szidat, Sönke; Theurillat, Jean-Paul; Weingartner, Rolf; Wilcke, Wolfgang; Tinner, Willy (2018). An Empirical Perspective for Understanding Climate Change Impacts in Switzerland. Regional environmental change, 18(1), pp. 205-221.	Climatology, Paleo-Geoecology, Soil Science, Hydrology
Keller, Luise; Rössler, Ole Kristen; Martius, Olivia; Weingartner, Rolf (2018). Delineation of flood generating processes and their hydrological response. Hydrological processes, 32(2), pp. 228-240.	Hydrology, Climatology
Kellner, Elke; Oberlack, Christoph; Gerber, Jean-David; Weingartner, Rolf (18 June 2018). Polycentric governance can compensate an incoherent regime under climate change. The case of multifunctional water use in Oberhasli, Switzerland. In: Multi-use of water and related management implications under a changing climate. 18.-19.6.2018.	Hydrology, Urban and regional planning
Mosimann, Markus; Frossard, Linda; Keiler, Margreth; Weingartner, Rolf; Zischg, Andreas Paul (2018). A Robust and Transferable Model for the Prediction of Flood Losses on Household Contents. Water, 10(11), p. 1596.	Climatology, Geomorphology, Hydrology
Oberlack, Christoph; Boillat, Sébastien; Brönnimann, Stefan; Gerber, Jean-David; Heinimann, Andreas; Ifejika Speranza, Chinwe; Messerli, Peter; Rist, Stephan; Wiesmann, Urs (2018) Polycentric governance in telecoupled resource systems. Ecology and Society, 23(1)	Sustainable Land Management, Urban and regional Planning, Geography of Sustainable development, Climatology
Rössler, Ole Kristen; Brönnimann, Stefan (2018). The effect of the Tambora eruption on Swiss flood generation in 1816/1817. Science of the total environment, 627, pp. 1218-1227.	Hydrology, Climatology
Zischg, Andreas Paul; Hofer, Patrick; Mosimann, Markus; Röthlisberger, Veronika; Ramirez, Jorge Alberto; Keiler, Margreth; Weingartner, Rolf (2018). Flood risk (d)evolution: Disentangling key drivers of flood risk change with a retro-model experiment. Science of the total environment, 639, pp. 195-207.	Hydrology, Geomorphology, Climatology
Infrastructure	**Units involved**
mLab	Geography of Sustainable development, Social and Cultural Geography
cLab	Soil Science, Sustainable Land Management, Paleo-Geoecology, Climatology, Hydrology, Geomorphology

Joint major research projects/proposals	Units involved
Mobiliar Lab for Natural Risks (Rolf Weingartner, Margreth Keiler, Olivia Martius).	Climatology, Hydrology, Geomorphology
Proposal for a "National Centre of Competence in Research" (NCCR) on digitisation (Chinwe Ifejika Speranza, Susan Thieme, Jean-David Gerber)	Sustainable Land Management, Urban and regional Planning, Geography of Sustainable development
Interfaculty research cooperation "One Health" (Adrien Mestrot, Moritz Bigalke, Martin Grosjean)	Soil Science, Paleo-Geoecology
Cooperation within university centres	**Units involved**
Centre for Regional Economic Development (CRED): Heike Mayer, Jean-David Gerber	Economic Geography, Urban and regional planning
Oeschger Centre for Climate Change Research (OCCR): Martin Grosjean, Rolf Weingartner, Margreth Keiler, Olivia Martius, Stefan Brönnimann, Stefan Wunderle	Paleo-Geoecology, Climatology, Hydrology, Geomorphology
Centre for Development and Environment (CDE): Pete Messerli, Chinwe Ifejika Speranza, Susan Thieme	Sustainable Land Management, Geography of Sustainable development
Joint issues	**Units involved**
GeoAgenda 1/2019 über feministische Geographie (Eds. Marina Richter, Sara Landolt) u.a. mit Beiträgen von Marina Richter, Susan Thieme, Carole Ammann, Kathrin Nägeli, und Elisabeth Militz	Climatology, Geography of Sustainable development, Social and Cultural Geography
GeoAgenda 2/2019 über Alexander v. Humboldt (Eds. Wintzer, J. und S. Brönnimann) u.a. mit Beiträgen von J. Wintzer, und S. Brönnimann, Heinz Veit und Stephan Rist	Climatology, Geography of Sustainable development, Social and Cultural Geography, Paleo-Geoecology
Events	**Units involved**
Seminar series "Environmental Pollution" of the cluster	Soil Science, Social and Cultural Geography, Paleo-Geoecology, Urban and regional planning
Bern Human Geography Colloquium	Urban and regional planning, Economic Geography, Social and Cultural Geography, Geography of Sustainable Development