

# **ÖAW Earth System Sciences (ESS) Call 2021**

## **Resilience of Mountain Regions: interdisciplinary and transdisciplinary approaches**

**Call begins: 10 November 2021**

**End of the submission period: 16 February 2022**

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## 1. Introduction

Maintaining the natural bases of existence of humankind is one of the central tasks of societal action. In view of the current reports of the IPCC and other scientific assessments of the profound changes to the earth as a system it should be given unrestricted priority. Social and economic developments of a defining nature such as the digitisation and mechanisation of agriculture, dramatically increased mobility, changes in land use, massive changes to material flows and water supply, including the flow regime of rivers, loss of species, spreading of invasive species, the threats to or destruction of natural ecosystems, zoonosis, migration, demographic and other societal changes are taking place against the background of a changing climate. They have a significant impact on ecological and socio-economic systems in the earth's mountain regions from a local up to a global scale.

Earth System Sciences (ESS) is a programme of the Austrian Academy of Sciences (ÖAW) that is financed by the Austrian Federal Ministry of Education, Science and Research (BMBWF), the objective of which is to research into the earth as a system. This is being done especially in view of the intensification of global change<sup>1</sup> and achieving the goals of the UN Agenda 2030 for sustainable development (Sustainable Development Goals)<sup>2</sup>. Supplementary to the funding portfolio of ÖAW the ESS programme will fund interdisciplinary and transdisciplinary projects on topics having a pioneering scientific role. The new, third call on the topic of "Resilience of Mountain Regions" is highly up-to-date from a scientific and political point of view, touches on several UN Sustainability Goals and fits perfectly into the framework of international activities, including of the United Nations. International research networks such as the global Mountain Research Initiative (MRI)<sup>3</sup>, the Global Observation Research Initiative in Alpine Environments (GLORIA)<sup>4</sup>, the Global Mountain Biodiversity Assessment (G MBA)<sup>5</sup>, the World Glacier Monitoring Service (WGMS)<sup>6</sup> and the Global Terrestrial Network for Permafrost (GTN-P)<sup>7</sup> may supplement and intensify the projects funded.

## 2. Objectives

The superordinate objective of the call is to strengthen capacities in research and civil society, economy and politics to deal with the accelerated and intensified consequences of global change in mountain regions. In order to understand coherencies and interdependencies between physical, chemical, geological, hydrological, hydraulic, biological and political, socio-economic and cultural processes and to open up options to act not only orientation knowledge but also expert knowledge and transformation knowledge are necessary. The development of this knowledge requires interdisciplinary and transdisciplinary accesses by using all available information that involves scientific, demographic, socio-economic and technical data, and other approaches from planning and social sciences and the humanities. The complexity of the issues, which may only be processed in a societal context, also requires the promotion of participatory structures by making use of existing knowledge and the willingness to create new knowledge in the population.

Developing, linking and making available such knowledge is in the central focus of the present call. In doing so the programme shows two distinctive features that should become clear in the project applications. It aims at

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1 including <https://www.ipcc.ch/assessment-report/ar6/>

2 <https://www.bundeskanzleramt.gv.at/entwicklungsziele-agenda-2030>

3 <https://www.mountainresearchinitiative.org/activities/projects>

4 <https://gloria.ac.at>

5 <https://www.gmba.unibe.ch>

6 <https://wgms.ch>

7 <https://gtnp.arcticportal.org>

- interdisciplinary and, at the same time, transdisciplinary<sup>8</sup> projects that mobilise and bring together methodologies from different disciplines;
- high-risk-high-potential projects that follow extraordinary and high-risk academic approaches.

Another objective of the ESS programme is to promote networking and collaboration between disciplines and research groups. Here the ESS forms an interface between Austrian science and the international research landscape. It is closely involved in international research programmes and cooperations via its three national committees "Geo/Hydro Sciences", "Global Change" and "Man and the Biosphere"<sup>9</sup>. The programme makes a contribution to "Responsible Science"<sup>10</sup> and intensifies the dialogue between sciences and society by promoting interdisciplinary and transdisciplinary research into core issues shaping the relationship between humankind and the environment. By its interdisciplinary and transdisciplinary orientation the ESS programme follows the UNESCO "Guidelines on Sustainability Science in Research and Education"<sup>11</sup>.

### 3. Research topics

The topic of "Resilience of Mountain Regions" is a highly up-to-date, cross-cutting issue both from a scientific and political perspective. It is excellently suited for interdisciplinary and transdisciplinary collaborations between the most different academic disciplines. The exact definition of the term "Resilience" is different in different disciplines (e.g. hydrology, ecology, geosciences, social sciences and the humanities, engineering). In general the term describes the ability of a system, be it an ecosystem, an individual, a city, a technical system, an economic system or a society, to react to disruptions to existing circumstances. These system disruptions can occur suddenly or creepingly.

The concept of resilience as understood in the ESS programme is based on the assumption that humankind and nature are so deeply intertwined that they must be considered as one social-ecological system for the purposes of solving complex environmental problems (Stockholm Resilience Center<sup>12</sup>). The conclusion is derived from the fact that practically all ecosystems in our globalised society are influenced by humans. Today it is evident that the different forms of use of the global ecosystems by humankind are not sustainably designed.

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8 For the purposes of "Future Earth" transdisciplinarity means involving different disciplines from natural and social sciences and the areas of business, environment, politics, standards and values, governance and conflicts, as well as cooperation with non-academic local players. Interdisciplinary research in close coordination with application-oriented institutions and persons in the region is intended. Transdisciplinary research is oriented towards societal needs; its results are in line with academic principles.

9 These include the UNESCO International Geoscience and Geoparks Programme (IGGP), UNESCO Intergovernmental Hydrological Programme (IHP), UNESCO Man and the Biosphere Programme (MAB), World Climate Research Programme (WCRP), UN International Strategy for Disaster Reduction (ISDR), International Scientific Committee on Alpine Research (ISCAR), Long Term Ecosystem Research (LTER) and Future Earth.

10 Responsible Science, which is also termed "Responsible Research and Innovation" (RRI) in an EU context, actively binds civil society to research and innovation processes to deal with current challenges more effectively and in line with the values, expectations and needs of society. As a new orientation framework for research and research promotion the concept is gaining more and more significance with the European Commission and has, *inter alia*, been integrated into the current "Horizon Europe 2021-2027" research framework programme. Austria has included Responsible Science as an important element in the "Action Plan for Competitive Research Space" of the Federal Ministry of Education, Science and Research (BMBWF). One of the first steps is the creation of an alliance for Responsible Science, which numerous institutions from sciences, research, education and practice have already joined.

11 <https://en.unesco.org/sustainability-science/guidelines>

12 Stockholm Resilience Center: <https://www.stockholmresilience.org/>

The degree of impacts caused by climate change and other environmental changes that the earth's ecosystems and our society can tolerate without having to transfer to new structures, processes or conditions will soon be exceeded.

The resilience of mountain regions and their ecosystems and socio-economic circumstances is endangered as a result of disruptions caused by humans, which are at least influenced in terms of the size of the risks, such as climate change and its consequences, changes in land use, floods and droughts, storms and fires, landslides and rockfalls, pollutant inputs and use of pesticides, changes to river morphology, plastic pollution and the spreading of invasive species. Their resilience depends on our ability to understand the extent and the dynamics of these changes and to react by sustainable development. Beyond dealing with scientific issues the present call is therefore intended to contribute to the development of solutions which may affect the entire spectrum of options to act ranging from warding off danger via adaptation strategies to transformative social changes.

In doing so the programme takes into consideration current global agendas and Austria's national objectives.

The UN Sustainability Goals<sup>13</sup> (SDGs) are paramount. Austria is working towards implementing the Agenda 2030 at a national, regional and international level by 2030 and taking concrete steps towards achieving those sustainable development goals in Austria and abroad. A great interest lies in answering the question of how changing environmental and climate conditions in mountain regions are reflected in ecological and socio-economic system coherences and how those risks may be dealt with by society in line with the formulated concept of resilience.

Moreover, as an alpine country, Austria with its broad expertise in researching mountain ecosystems is predestined to make a significant contribution to the topics of the above-stated UN Agenda<sup>14</sup>, as well as to the *EU Biodiversity Strategy for 2030* and the *National Biodiversity Strategy Austria 2020+*. The present call can promote the positioning of Austrian scientists in a cross-disciplinary topic. This applies to young scientists in particular.

Previous research activities and investments in research infrastructures in Austria create excellent conditions for achieving the scientific and societal objectives defined in the present call.

#### 4. Expectations

This call comes with the expectation that the research projects are located in the context of interdisciplinary and transdisciplinary research into mountain regions. The submitted research projects should therefore

- provide an innovative contribution to understanding the "Resilience of Mountain Regions";
- be structured in an interdisciplinary and transdisciplinary manner;
- demonstrate a connection to international research programmes and strategies;
- make a contribution to implementing the Agenda 2030 in Austria;
- promote disciplinary and interdisciplinary development and cooperation in the field of Austrian universities and research;

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<sup>14</sup> <https://www.bundestkanzleramt.gv.at/entwicklungsziele-agenda-2030>

- seek a dialogue between politics, economy and civil society and make the research objective fruitful;
- strengthen the risk perception and risk response capacity of the population in mountain regions;
- where possible, make use of data, existing locations or long-term research infrastructures (e.g. LTER sites, biosphere parks, geoparks, national parks, research catchments);
- serve the purpose of supporting young scientists.

The funded projects must reflect the state-of-the-art in the relevant fields of research, be in line with the applicable scientific standards and be oriented towards solving problems.

## 5. Implementation

### 5.1 Basic principles

The Earth System Sciences (ESS) programme will be coordinated with the Austrian Academy of Sciences (ÖAW). Three national committees in the areas of Geo/Hydro-Sciences, Global Change and Man and the Biosphere (MAB) will be created for this purpose. The three national committees observe the Austrian research landscape, analyse its strengths and knowledge deficits and create new research focuses jointly with the international ESS Advisory Board (ESS-AB) on the basis of the findings obtained. The ESS-AB advises the national committees, ÖAW and the BMBWF on the development of the programme, carries out the award process, monitors the ongoing projects and carries out the evaluation of the final reports. The ESS programme administration supports the national committees and the ESS-AB in the administrative discharging of their tasks. Assessment of the project applications will be done by independent experts on the basis of scientific quality criteria in line with the objectives of the call.

### 5.2 Application procedure

Project applications should be prepared according to international research standards. In order to enable an international assessment procedure applications must be submitted in English. Collaboration with international partners is welcomed, however the project management must be situated in Austria. A maximum of 25% of the funding may go to foreign partners; awarding of funds to foreign project partners must be well-founded. Young scientists are expressly invited to submit project applications.

The maximum amount of project funding is EUR 500,000. For budgeting reasons the term is limited to three (3) years. If a project is planned as part of a long-term study of more than three years, the envisaged total term of the long-term study must be stated in the project application. Such contributions to long-term studies as part of the call should be planned in such a way that they may be concluded as an independent project with exploitable results after three years.

Cross-disciplinary project work should be recognisable in the application by the applicant stating two or more project managers from different disciplines. The columns "Principal Investigator(s)" (PI) and "Responsible PI" have been created in the application form for that purpose as the contract may only be concluded with one person, the "Responsible PI". The Responsible PI must work at an Austrian research institution.

The form available on the ÖAW website must be used for submitting the application. The application must contain a precise description of the scientific issue, the innovation potential

and the methodology, as well as a time and budget plan. Documentation of the expertise of the submitting project team (CVs, publication lists) must be enclosed.

By submitting their documents applicants acknowledge that the documents will be forwarded to members of the jury and external experts. Such forwarding is exclusively intended for assessing the application and ensuring the best possible decision-making regarding granting of the funding.

Any queries should be directed to the following address.

Contact and submission address:	Dr. Günter Köck Austrian Academy of Sciences [ <i>Österreichische Akademie der Wissenschaften/ÖAW</i> ] <a href="#">International Programmes</a> Dr. Ignaz Seipel-Platz 2, 1010 Vienna Phone +43 1 51581-2771 <a href="mailto:guenter.koeck@oeaw.ac.at">guenter.koeck@oeaw.ac.at</a>
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[Application form](#)

### 5.3 Selection procedure

All applications received will be subject to a formal examination. Applications which do not meet the formal requirements of the call will be excluded from the procedure. All applications which meet the formal criteria will be presented to the ESS Advisory Board. The assessment will be done by international experts who are selected by the members of the ESS Advisory Board. At least two expert opinions will be obtained per application.

The selection of the projects recommended for funding will take place in a meeting of the ESS Advisory Board. The final decision on awarding projects will be made by the Board of the Austrian Academy of Sciences jointly with the Federal Ministry of Education, Science and Research. Applicants will be notified of the decision in due time. As is internationally customary the decision will contain a brief factual justification. Anonymised excerpts from the expert opinions will be made available.

### 5.4 Project support and evaluation

After half of the term the projects will be evaluated by the ESS Advisory Board as part of a workshop in which all of the projects successful in the call will present the findings obtained by then. In the case of no project progress suspension of the payment of the next project instalment may be recommended until the deficits have been remedied. In the case of non-participation of a project team in the workshop for a well-founded reason an interim report must be transmitted to the ESS programme administration. A final report must be submitted no later than three (3) months after the end of the project. The report will be studied by the ESS Advisory Board. In the case of deficits these shall be remedied within a period of three (3) months. Payment of the final project instalment (5% of the approved budget total) will be made following final approbation by the ESS Advisory Board.

The project managers are expected to publish the research results in internationally recognised journals and, in addition, to make the same fruitful for societal action in a suitable form.

## 6. Schedule

The following schedule applies to the 2021 call of the Earth System Sciences (ESS) programme of the Austrian Academy of Sciences (ÖAW):

10 November 2021	Call for proposals
16 February 2022	Deadline for submission of applications (email date)
Mid June 2022	Decision on awarding of projects