



Preface to the special issue of the Division Energy, Resources and the Environment at the EGU General Assembly 2024

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Abstract. The European Geosciences Union (EGU) brought together 22 828 geoscientists in April 2024 from more than 100 countries around the globe, covering all disciplines of Earth, planetary and space sciences, organised in 22 divisions. The division on Energy, Resources and the Environment (ERE) follows an interdisciplinary approach to serve society with provision of solutions to challenges of our time and in the future. For example, adequate and reliable supplies of affordable resources, obtained in environmentally sustainable ways, are and will be essential for economic prosperity, environmental quality and political stability around the world. After a pandemic low of contributions EGU received a record-breaking total number of 19 748 abstracts with 928 coming from ERE. With the highest increase of abstracts of all divisions in ERE, it is obvious that our scientific community recognises more and more the important role of geosciences in sustainable development. This volume of *Advances in Geosciences* spans the range of topics of the division and continues a series of ERE special issues over the course of the last eleven years.

than half of the members are early career scientists in ERE like on the EGU level.

Geoscientific interdisciplinarity is of utmost importance to tackle the challenges of the future. A major task for humankind is to provide adequate and reliable supplies of affordable energy and other resources. These should be obtained in environmentally sustainable ways, which is essential for economic prosperity, environmental quality and political stability around the world. The core of the ERE division consists of experts in various fields that will help meet the mutually coupled challenges of energy, resources and the environment. Earth system science is mainly based on geology, geography, physics, chemistry and biology, drawing from engineering, mathematics and computing. Many topics like geophysics, seismology, vulcanology, subsurface imaging, mineral exploration, planetary science, geo-energy, hydrogeology, mineralogy, geochemistry, ocean science, paleoclimate, soil science, geobiology, palaeontology, geo- and biodiversity, environmental geology, natural resource management, landscape evolution, geoheritage, natural hazards, engineering geology, geostatistics, remote sensing or geodata science (this list is not comprehensive and does not reflect any order of importance, it is just to outline the diversity) are either divisions of the EGU or worked on as themes in one or the other division.

The work of the scientists in the ERE division is strongly directed to the Sustainable Development Goals (SDGs), also known as the global goals, adopted by the United Nations. There are 17 integrated goals: no poverty, zero hunger, good health and well-being, quality education, gender equality, clean water and sanitation, affordable and clean energy, de-

1 Preface to the special issue 2024

The EGU brings together geoscientists from all over Europe and the rest of the world, covering all disciplines of the Earth, planetary and space sciences. From 14–19 April 2024 the General Assembly took place in Vienna with 22 828 participants from 113 countries. With 2421 members from 88 countries ERE is the 6th largest division of 22 of the EGU. More

cent work and economic growth, industry/innovation and infrastructures, reduced inequalities, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land, peace/justice and strong institutions and finally partnerships for the goals. Meeting the targets of the SDGs requires contributions by scientists, especially by us geo-scientists, focusing on understanding, monitoring, protecting, managing and restoring the natural environment.

The ERE division shows leadership in the pursuit of sustainability. There is an urgent need to address challenges facing our planet and people – from the rise of global poverty to the acceleration of climate change and its consequences (flooding, soil degradation, ocean acidification, natural hazards, etc.) and the resulting threats to health and social justice (Capello et al., 2023). In Earth sciences we are professional specialists able to tackle both today’s challenges and our future ones. We possess a holistic view of the Earth, studying its physical, chemical and biological components on multiple scales and dimensions, including time, to learn from the past and project the future.

After a pandemic low of contributions in the years 2021, 2022 and 2023 EGU received a record-breaking total number of 19 748 abstracts in 2024. Compared to 2023, this is an increase of 17 %. In total 928 abstracts came from ERE. The growth in abstracts varied between the divisions. The ERE division recorded the strongest increase of all divisions with 56 % more abstracts than the year before. We take that as a positive sign that our scientific community recognises more and more the importance of sustainable development by integrated, inter- and multidisciplinary research.

The programme during the General Assembly of the EGU in 2024 from ERE covered again the chapters integrated studies, renewable energy, geo-storage, raw materials and resources, process coupling as well as inter- and transdisciplinary sessions (ITS). The division lead and co-organised 54 sessions. Our abstracts in ERE were presented 60 % as oral, 30 % as poster and 10 % as PICO. This volume of *Advances in Geosciences* spans the range of topics of the division with contributions from all chapters and continues a series of eleven ERE special issues over the course of the last eleven years (Bruckman et al., 2021, 2022; Juhlin et al., 2014; Kühn et al., 2013, 2015, 2016, 2024; Martens et al., 2017, 2018, 2019, 2020). We incorporate emerging topics into the division ERE along the line and we advocate that every idea and opportunity should be studied and tested.

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