



A world full of complexities

This is a difficult world, one could well say – and a **complex** one, too, with Nature being ingrained with complexities in the behavior of processes, hazards, cascading effects, and feedbacks between geosphere and biosphere...

All of this occurs with a population projected at 10 billion by 2100, dwindling natural resources, expected temperature rise, shifting societies, worldwide migrations, and a climatic crisis.

Is this, then, a terrible world? "It ain't necessarily so". Of course, it's up to a range of stakeholders

OPEN

(Multiple) challenges foster insight

1. Natural hazards - of all sorts

Disaster on Disaster: Unique Challenges for Natural Catastrophe Preparedness

"While the rapidly evolving COVID-19 pandemic upended operations around the world last year, enterprises had to scramble to **respond** for hurricanes, typhoons, wildfires and other **natural disasters**."

"While the prospect of weathering natural disasters in 2021 seems more **complex** and potentially daunting than ever, risk management, emergency preparation and disaster response have made tremendous **progress** since the beginning of 2020."

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2. Geosciences are cool

Aquifer systems extending far offshore on the U.S. Atlantic margin

"A remarkably **newly** **discovered** aquifer is hiding under the salty Atlantic **ocean**, just off the northeastern coast of the United States. [...] It may be the largest of its kind, stretching for nearly 350 kilometers, at ca. 200-400 m below seafloor."

"Evidence suggests that such aquifers might potentially represent a **resource** to supplement other **resources** elsewhere, from southern California, Australia or the Middle East." (source: LiveScience)

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Forward to the future (quandaries)

3. Natural, but complex

Impact of future tsunamis on household welfare: merging geophysics, economics and catastrophe modelling

"Integration of tsunami **hazard** and **economic** consequences may be of substantial interest to Governments and agencies in charge of evaluating the **economic risk** and formulating **mitigation policies**."

"Such products may contribute to sustainable **development** in countries where private insurance is insufficient to mitigate such disasters. This analysis could be utilized, for instance, with vessels in port where fishing is a key part of the **economy** of the local **community**."

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4. Societies, continents, planets

Geosciences Supporting a Thriving Society in a Changing World

Climate Change Resilience, Adaptation, Sustainability
Natural Hazards, Global Change, Infrastructure
High Quality Geospatial Data and Maps
Energy, Technology, Engineering
Ocean, Coastal, and Health

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A world in transition

Where in this *complex* world?

Beauty is the land of hope – what about trust?

Every human being dreams about hoping. So, better start taking notice of keywords: Rhythm, and *rhyme*, even with little *reason*. Is this the key to a successful narrative? Maybe. Hard facts, tables, diagrams? Maybe (not).

How are we going to inject evidence into the public discourse? Can we mend the fault between rhyme and reason? In fact - is reason ever going to sound with rhyme?

We might not need to constantly reaffirm factual evidence as a *totem*. Of course, we do. But by crafting the message in a *rhyme* where imagination was *renewed* by *rhyme*. Geosciences have to turn forecasting

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An old science for a novel task

...as long as they are not blindly sacrificed

"Earth sciences are **fundamental** to tackling **climate** change, natural **hazards** and the **energy** transition, yet universities worldwide are putting geoscience departments on the chopping block – right when they are needed most. [...] **Without** geoscientists there will be **no** sustainable future."

"The interest is there, as shown by pupils striking and fighting for climate action. They demand educational reforms to learn about the urgency, severity and **science** of the climate crisis, showing there is a desire to study Earth science en masse."

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Alpha and Omega

On one hand, geoscientists hold a precious knowledge of time (from milliseconds to million years), of space (from microscopes to satellites), and we know how delicate the Earth System is.

On the other hand, we strive for cross-disciplinarity, a broader set of skills, proactive networking with colleagues not just across disciplines but also throughout Social, Economic, and Operational Sciences. We thus need to pursue a novel mindset, while offering the best of our enduring knowledge.