EGU24 Media Tip Sheet: Natural Hazards: Causes, effects, and monitoring efforts

Volcanoes. Earthquakes. Floods. Landslides. Storms. Fires. All of these natural hazards can pose problems for anyone and anything in their path. Scientists are making significant strides in understanding causes and effects of these hazards, and finding ways to monitor and warn of calamitous events.

Unveiling the Multifaceted Hazard Risks of Volcanic Eruptions: The case of Kolumbo submarine volcano

Volcanic eruptions pose threats beyond the unleashing of solids and gases from their innards, particularly when located near or within bodies of water. In the case of Kolumbo, an active submerged volcano located near Santorini, Greece, tsunamis are a serious threat to several Aegean isles. To that end, scientists have deployed advanced sensors to monitor Kolumbo's active hydrothermal vents as part of the SANTORY project, which aims to create communication tools and monitoring protocols.

Mon, 15 Apr, 08:35–08:45 CEST, Room -2.20

Session GM9.6

Causes, consequences and implications of the 2023 Lake Rasac GLOF, Cordillera Huayhuash, Peru

Glacial lake outburst floods, or GLOFs, are expected to become more common as glacier ice loss accelerates. For instance, Peru's Cordillera Huayhuash has lost some 40% of its glacier area since the 1970s. Integrating meteorological data with remote sensing and field observations from this region allowed scientists to document the most recent GLOF from the moraine-dammed Lake Rasac. This work corroborates the hypothesis that GLOF frequency will increase as a result of warming permafrost.

Mon, 15 Apr, 16:15–18:00 CEST, Hall X4, X4.74

Session NH3.5

On the generation of a meteotsunami, the case study of supercell storm, over Adriatic Sea

On July 22, 2023, an intense thunderstorm over the central Po Valley crossed the Adriatic Sea to the Croatian coast. The combined effects of the downdraft, pressure variation, and the storm's high speed likely triggered a meteotsunami—a tsunami that results from atmospheric pressure disturbances. Scientists applied numerical models to assess impacts of the downdraft and storm surge.

Tues, 16 Apr, 11:15–11:25 CEST, Room L2

Session OS4.3

Reading the sedimentary archives in the Danube floodplain downstream of Vienna (Austria)

Anthropogenic interventions along river systems like channelization and hydropower dams can alter stream dynamics and cause sedimentary imbalances. A project explores about 200 years of urban and geomorphological transformations of the Danube floodplain between Vienna (Austria) and Bratislava (Slovakia), combining historical and sedimentological methods. Extensive river engineering like flood control structures allowed Vienna to develop as a metropolis, but in recent decades, restoration has occurred, particularly downstream of the city.

Tues, 16 Apr, 16:15–18:00 CEST, Hall X3, X3.74

Session GM5.3

Early warning meteorological fire danger over Central Europe

Meteorological fire danger has been increasing throughout Europe in recent decades, driven in part by compound effects of droughts and heatwaves. The increase in fire severity poses a challenge to both fire management and forecasting. Here, a team of scientists presents a statistical model of energy released by wildfires, with a focus on Central Europe's three major land cover types: forest, shrub and agriculture. The goal is to better forecast high levels of danger.

Wed, 17 Apr, 08:35–08:55 CEST, Room 1.14

Session NH7.1

Global observations of an up to 9 day long, recurring, monochromatic seismic source near 10.9 mHz associated with tsunamigenic landslides in a Northeast Greenland fjord

Nine days is a long time for a source to produce seismic waves. Yet, scientists have identified just such a signal emanating from the Dickson fjord of northeast Greenland after a landslide caused a tsunami on 16 Sept. 2023 (see abstract EGU24-20066 for landslide details). In this work, a team analyses the post-landslide long-period seismic signal, finding great complexity. Their modeling shows that a seiche—a sloshing of water—excited by the landslide-induced tsunami could account for the signal, but the seiche would need to swash for the duration.

Wed, 17 Apr, 16:55–17:05 CEST, Room D3

Session GM2.1

Do earthquakes cause more damage in the summer?

Earthquakes do not have a season. But, the damage they cause may depend on the time of year because seasonal temperature changes might affect how a particular location experiences shaking. Waves that travel through soft sedimentary layers are amplified, which results in larger ground motions. In this study, a team considers whether temperature affects site amplification in the Groningen region of the Netherlands.

Wed, 17 Apr, 17:05–17:15 CEST, Room D3

Session GM2.1

Radiative forcing and stratospheric ozone changes due to recent volcanic eruptions and major forest fires

How do volcanic eruptions and forest fires change Earth's stratosphere? A team of scientists explores this question, finding that, for instance, the 2022 Hunga Tonga eruption increased the depth of the Antarctic ozone hole. The Australian bushfire emissions of 2020 deepened the ozone hole as well. These events—wildfires and eruptions—work together to change the radiative forcing experienced at the top of the atmosphere.

Thurs, 18 Apr, 10:45–12:30 CEST, Hall X5, X5.33

Session AS3.13

Exact timing, sulfur spread and global climate footprint of the caldera-forming Mt. Mazama eruption, the largest volcanic eruption of the Holocene

In Oregon, USA, a caldera-forming eruption of Mount Mazama about 7,700 years ago created the iconic Crater Lake. Yet, its exact timing and impacts on the global climate remain mysterious. In a new study, scientists use high-resolution ice-core analysis to constrain the date and determine the amount of sulfur injected into the atmosphere. The extreme conditions likely affected emerging societies; this information can help to identify risks from comparable future eruptions.

Fri, 19 Apr, 10:45–12:30 CEST, Hall X5, X5.226

Session CL1.2.10