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Media Release

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Scientific ocean drilling expedition explores continental rift development in Greece

International science party to focus on faulting, landscape evolution and past climate in a seismically active rift

The Corinth Rift, located in the Gulf of Corinth in Central Greece is one of the most seismically active areas in Europe. It is here that one of the Earth's tectonic plates is being ripped apart causing geological hazards including earthquakes. This rifting process is the focus of the International Ocean Discovery Program (IODP) Expedition 381 "Corinth Active Rift Development". An international team of scientists will leave the port of Corinth on October 20th onboard the drilling vessel *Fugro Synergy*.

Continental rifting is fundamental for the formation of new ocean basins, and active rift zones are dynamic regions of high geohazard potential. The Corinth Rift, Greece, is a unique laboratory situated in one of the most seismically active areas in Europe. Geologically the Corinth Rift is a very young tectonic feature, forming in the last five million years. The main rift today is situated across a marine basin, which, with its high rates of activity, closed drainage system and high sedimentation rates, makes it an ideal location to examine early rift development and how the landscape responds to tectonic and climate forcing factors.

An international team of scientists, led by Co-Chief Scientists Prof Lisa McNeill (University of Southampton, UK) and Prof Donna Shillington (Lamont-Doherty Earth Observatory of Columbia University, USA), will collect cores at three different locations, drilling up to a depth of 750 meters below the seabed. The expedition in the Corinth Rift will last for about eight weeks.

The overall aim is to gain an insight into the rifting process by recovering sediment cores and data of the properties of the borehole materials. They act as archives as they are capturing and recording the geological history in their composition, age and structures.

Lisa McNeill: "We are very excited to get started with this expedition, after many years of

planning by many scientists from around the world.” Researchers have been working in the Gulf of Corinth region for many decades, examining sediments and active fault traces exposed on land and using marine geophysics to image the basin and its structure below the seafloor. Still – there is very little information about the age of the sediments and of the environment of the rift in the last 1 to 2 million years. “By drilling, we hope to find this last piece of the jigsaw puzzle! It will help us to unravel the sequence of events as the rift has evolved and, importantly, how fast the faults, which regularly generate damaging earthquakes, are slipping.”

Donna Shillington: “This expedition will provide key missing information on the timing and rates of fault activity in the Corinth rift. Not only is this information very important for understanding faulting and hazards in this rift zone, it will also help us understand other active and ancient rift zones around the world. I’m looking forward to working with the rest of the Science Party on this exciting expedition!”

The expedition will aim to address questions on four main scientific themes:

- Natural Hazards – As one of the most seismically active areas in Europe, what are the implications for earthquake activity in a developing rift?
- Structural Evolution – How does the rift actually evolve and grow and on what timescale? How did the activity on faults change with time?
- Surface Processes – How does the landscape respond to tectonic and climatic changes?
- Paleoclimate reconstruction – What was the climate in the Eastern Mediterranean and the environment of the rift basin in the last 1 to 2 million years?

33 Scientists of different geoscience disciplines from Australia, Brazil, China, France, Germany, Greece, India, Norway, Spain, the United Kingdom, and the United States will participate in IODP Expedition 381. Nine of them will sail onboard the DV *Fugro Synergy* October to December of this year. After the offshore phase in the Gulf of Corinth the whole Science Team will meet for the first time at the IODP Bremen Core Repository (BCR), located at MARUM – Center for Marine Environmental Sciences at the University of Bremen, Germany, to split, analyze and sample the cores and analyze the data collected in February 2018.

The expedition is conducted by the European Consortium for Ocean Research Drilling (ECORD) as part of the International Ocean Discovery Program (IODP). The International Ocean Discovery Program (IODP) is an international marine research program supported by 23 countries, which explores Earth's history and structure recorded in seafloor sediments and rocks, and monitors sub-seafloor environments. Through multiple platforms – a feature unique to IODP – scientists sample the deep biosphere and sub-seafloor ocean, environmental change, processes and effects, and solid earth cycles and dynamics.

More information:

About the expedition – www.ecord.org/expedition381

About the research programme – www.iodp.org

About the European part of the programme – www.ecord.org

Expedition Blog:

<https://esoexp381corinthactiveriftdevelopment.wordpress.com/>

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