



Press Release

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Oldest European lake reveals its secrets

In a recently published Nature article, an international research team with LIAG participation unlocks the secrets of Lake Ohrid that is located between Northern Macedonia and Albania. With an age of 1.4 million years, Lake Ohrid is not only the oldest lake in Europe, but also an ideal witness of Mediterranean climate history. The drilling took place within the framework of the ICDP (International Continental Scientific Drilling Program). The research team discovered pronounced low-pressure areas with intensive rainfall during interglacial periods. Similar phenomena could occur again in the future, as a result of man-made climate change.

In 2013, the international research team with LIAG participation began its investigations on Lake Ohrid between Macedonia and Albania. Researchers from various European countries drilled 568 metres into the sediment layers below the lake. Five more years and various geological, chemical and physical analyses were needed to unlock the secrets of the sediments at the bottom of Lake Ohrid. Now, the research team was able to publish its results within the scientific journal "nature".

Lake Ohrid is exactly 1.36 million years old and has experienced several warm and ice ages. Geochemical data and pollen findings show that it rained more heavily in the northern Mediterranean during the warm periods. The intensive rainfall occurred mainly in autumn. Due to the warm sea surface and the influx of humid Atlantic air masses, pronounced low-pressure areas developed in the northern Mediterranean. These phenomena may be repeated in the Mediterranean region in the face of man-made climate change. In its regular reports, the Intergovernmental Panel on Climate Change (IPCC) not only summarizes the state of scientific knowledge on climate change, but also forecasts the consequences of global warming for individual areas. The IPCC's forecasts for the Mediterranean region do not provide a clear picture. With the findings from drilling in Lake Ohrid, researchers are now able to calculate more reliable scenarios for the Mediterranean region.

"What is special about Lake Ohrid is that it has hardly been disturbed by external influences in the last 1.4 million years," says Dr. Thomas Wonik, department head at LIAG and part of the international research team. The lake has never completely dried up, nor have catastrophic events distorted the geological picture. That's why the researchers can reconstruct the local climate history very precisely. One approach is to compare the natural radioactivity of sediments with global climate reference curves. These curves show the cyclical climate history of the last five million years. The sediments from Lake Ohrid highly correlate with the results of the global climate reference curve and show the same variations between ice ages and interglacial warm periods. "Rarely in geophysics can we read the dynamics of warm and cold periods so precisely from physical borehole measurements as in the case of Lake Ohrid," says Wonik.





Institute:

The Leibniz Institute for Applied Geophysics (LIAG) is an independent research institute and a member of the Leibniz Association. LIAG conducts research on the upper part of the Earth's crust. The focus of our work is to explore structures and processes in the subsurface by using geophysical methods. For this purpose, we develop and optimize measurement techniques as well as processing, modeling, and inversion methods. LIAG has more than 50 years of experience in the field of geophysical research.

Contact:

Dr. Thomas Wonik 0511-643 3517 Thomas.Wonik@leibniz-liag.de

Link to paper: https://rdcu.be/bP6ID

Additional material: 2 photos



LIAG/T. Grelle: The drilling platform lay on Lake Ohrid for several weeks. An international research team carried out various drillings and measurements.







LIAG/T. Grelle: Preparations of a drill core that the researchers have recovered from the 293-metre-deep lake.