UNIVERSITÀ DEGLI STUDI DI TRIESTE

UNIVERSITY OF BERGEN

SOCIETY OF EXPLORATION GEOPHYSICISTS
University of Trieste Student Chapter

The importance of geophysics in understanding the dynamics of the terrestrial Arctic due to warmer climate

Presented by: Prof. Tor Arne Johansen – University of Bergen

Date: 14.05.2024, 16:00 - 17:00

Classroom: Aula Magna, Via Weiss 1 (pal. C)

Virtual class: Join Teams Meeting

Meeting ID: 343 236 328 025

Passcode: 7YjNTC

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Abstract:

The surface temperatures in Svalbard in the Norwegian Arctic have shown to dramatically increase along with global warming over the last decades. The average temperature in Longyearbyen in Svalbard has increased by approximately 4 degrees Celsius since the opening of the University Courses at Svalbard about 30 years ago. Increased temperatures cause thawing of sediments, retreating glaciers and general destabilization of the ground. Furthermore, extensive thawing of the Cryosphere may cause severe outlet of climate gases. Heat flux into the frozen tundra causes frozen and stiff sediments to soften, which have significant effects on their elastic and seismic properties.

Geophysical methods will be important for revealing such ongoing near-surface dynamic processes caused by a warmer climate. In this presentation I will show examples on the use of active and passive seismic methods, and assisted by GPR data, for studying such phenomena, and, furthermore, emphasize the generics of methods already established and used by the oil and gas industry.

Biography:

Tor Arne Johansen received a PhD in geophysics in 1990 from the University of Bergen, Norway. He is currently a professor at Department of Earth Science at the University of Bergen and holds an adjunct professorship at The University Courses in Svalbard in the Norwegian Arctic. He has for decades been involved in research, supervision and teaching related to seismic reservoir characterization and seismic surveying in the Arctic. He has for the last 17 years regularly given courses on behalf of EAGE, SEG, CSEG and ASEG.