The Department of Earth and Environmental Sciences at Dalhousie University (Halifax, Canada) invites applications for a Postdoctoral Research Fellow. The proposed project is co-funded by the Nova Scotia Offshore Energy Research Association (OERA) and Mitacs.

Project summary: Natural gas will play a critical role in the energy transition to reach Net Zero emissions. Triggered by a shift away from coal and oil, the gas demand will increase in the next decade before declining to today's levels by 2050. Assessing natural gas reserves of Canadian deep-water basins is key to define a sustainable path to achieve climate targets while securing access to energy. This project aims to provide a better understanding of the presence and distribution of natural gas reserves in the Shelburne Subbasin (Nova Scotia offshore) while defining physical properties of reservoir rocks. These goals will be achieved by combining rock physics modelling with amplitude versus offset analysis and elastic impedance inversion on multiple geophysical and well datasets. The proposed project will contribute to a better definition of Nova Scotia's offshore energy resources.

Project objectives:
1) Investigate the distribution of potential hydrocarbon-bearing reservoirs in the Shelburne Subbasin (Nova Scotia offshore) using 3D seismic reflection data and exploration wells.
2) Model elastic properties of rock formations of interest to examine petrophysical reservoir properties and understand fluid content, thus providing valuable insight for the interpretation of seismic amplitudes.
3) Derive amplitude versus offset (AVO) attributes to delineate the extent of the target formations and identify any potential fluids that may be present. This will also include a classification of the lithofacies of interest based on AVO attributes and an analysis of AVO signatures using intercept vs gradient cross-plots.
4) Characterize the rock physics properties of the subsurface through simultaneous seismic inversion.

The successful candidate must have a PhD degree in Geology, Geophysics, or related fields with proven expertise in quantitative seismic geomorphology (seismic inversion and AVO analysis) and familiarity with deep-water depositional systems (turbidite channels, fans, and mass-transport deposits). Extensive knowledge of Petrel, Hampson-Russell, or similar quantitative seismic interpretation software is an asset.

Application documents: Curriculum Vitae, Statement of motivation and research interests (up to one pages); Minimum of 2 sample publications; Names and contact information of two references.

Conditions of employment: Full-time, fixed term contract for 16 months. The researcher will receive a competitive salary, relocation expenses, and benefits in accordance with Dalhousie University.

Applications or inquiries should be emailed to Dr. Vittorio Maselli (vittorio.maselli@dal.ca).

The call for applications will remain open until the potential candidate is found. The preferred start date is no later than 1st September 2022.