

WORKSHOP
NEMO - NumERical MOdelling using high performance computing
infrastructures

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Solid Earth Dynamics Department,
Institute of Geodynamics of the Romanian Academy, Romania.
Jean-Louis Calderon str. 19-21 nr. sector 2, Bucharest

1) PRESENTATION TITLE:

Numerical simulation of specific seismicity patterns in the Vrancea region, Romania

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3) ABSTRACT:

Based on seismicity characteristics for the Vrancea subcrustal activity (2D geometry, segmentation, seismicity rate, etc.), a numerical process is proposed to simulate seismicity patterns and seismic cycle features of this particular area. A discrete structure of elementary cells is assumed to explain the generation of background seismicity. Moderate events are associated to the presence of asperities in the downgoing lithospheric body. Major shocks ($M_w > 6.5$) are coupled with a percolation-type process (sudden transition from finite clusters to an infinite cluster). The proposed model can explain general features, such as the non-linear frequency-magnitude distribution and can reasonably constrain the magnitude range of major events (M_w 6.5 to 7.8) and the range of the cycle duration (40 to 100 years). The predicted maximum possible magnitude is M_w 7.6 for the upper active segment (60 – 100 km depth) and M_w 7.8 for the lower active segment (120 – 170 km depth), respectively.

4) POSITION OF CORRESPONDING AUTHOR:

Student	yes	no
Post-Doctoral	yes	no
Researcher	yes	no