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The TOPOMOD-ITN project: unravel the origin of Earth's topography from modelling deep–surface processes

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EC-Marie Curie Initial Training Networks (ITN) projects aim to improve the career perspectives of young generations of researchers. Institutions from both academic and industry sectors form a collaborative network to recruit research fellows and provide them with opportunities to undertake research in the context of a joint research training program. In this frame, TOPOMOD - one of the training activities of EPOS, the new-born European Research Infrastructure for Geosciences - is a funded ITN project designed to investigate and model how surface processes interact with crustal tectonics and mantle convection to originate and develop topography of the continents over a wide range of spatial and temporal scales. The multi-disciplinary approach combines geophysics, geochemistry, tectonics and structural geology with advanced geodynamic numerical/analog modelling. TOPOMOD involves 8 European research teams internationally recognized for their excellence in complementary fields of Earth Sciences (Roma TRE, Utrecht, GFZ, ETH, Cambridge, Durham, Rennes, Barcelona), to which are associated 5 research institutions (CNR-Italy, Univ. Parma, Univ. Lausanne, Univ. Montpellier, Univ. Mainz) , 3 high-technology enterprises (Malvern Instruments, TNO, G.O. Logical Consulting) and 1 large multinational oil and gas company (ENI). This unique network places emphasis in experience-based training increasing the impact and international visibility of European research in modeling. Long-term collaboration and synergy are established among the overmentioned research teams through 15 cross-disciplinary research projects that combine case studies in well-chosen target areas from the Mediterranean, the Middle and Far East, west Africa, and South America, with new developments in structural geology, geomorphology, seismology, geochemistry, InSAR, laboratory and numerical modelling of geological processes from the deep mantle to the surface. These multidisciplinary projects altogether aim to answer a key question in earth Sciences: how do deep and surface processes interact to shape and control the topographic evolution of our planet.