



Surface dynamics as part of the European Plate Observing System

John Ludden

British Geological Survey, Nottingham, United Kingdom and EuroGeosurveys, Brussels, Belgium (jludden@bgs.ac.uk, +44-(0)115-9363277)

The European Plate Observing System proposal includes a “surface dynamics” part to its objectives. EPOS will create and integrate “Dedicated observatories for multidisciplinary local data acquisition (volcanoes, in-situ fault-zone monitoring experiments, geothermal and deep drilling experiments, including the application of geophysics to Earth’s surface dynamics and environmental changes)”.

As geologists and geophysicists we have a good idea how to measure ground motions related to earth quakes, volcanoes, landslides etc. We also know that through integration of these measurements in large arrays we gain resolution and general background information that allows a much better understanding of ground motion, rates of deformation and the driving forces. How can these geophysical measurements be applied to other environmental geoscience problems? What sorts of observations might one include in EPOS?

Surface dynamic processes that can be measured by geophysical techniques include permafrost changes, coastline retreat, catchment morphology, post-glacial ice rebound, groundwater variation etc.. Some of these processes are driven by factors inherent to the deep Earth (lithosphere, mantle) interaction with surface processes (erosion, climate, sea level) which control the development of topography and are the focus of the TopoEurope project an ILP and an ESF-sponsored multidisciplinary research addresses within EPOS. Others processes are driven by climate change, population dynamics and people living on and interacting with the Earth’s surface and subsurface.

Where should the EPOS role focus? When do these problems become global in impact? When does geological engineering become a focus for EPOS – should it?

The aim of this paper is to stimulate discussion on how surface dynamics should be integrated into EPOS.