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The Arctic dimension of the European Plate Observing System (EPOS) and the Norwegian contribution

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European Plate Observing System (EPOS) – (http://epos.rm.ingv.it/) is a large scale research infrastructure and e-science for data and observatories on earthquakes, volcanoes, surface dynamics and tectonics. EPOS has been included in the European Strategic Forum for Research Infrastructure (ESFRI) Road Map on December 2008 and the Preparatory Phase Project (EC-FP7 INFRA-2010-2.2.2, Grant Agreement No.262229) has started in November 2010.

On behalf of the Norwegian National EPOS Consortium (NNEC), the Department of Earth Science, University of Bergen participates and represents Norway in the EPOS Preparatory Phase Project (EPOS-PPP). NNEC consists of seven institutions, Department of Earth Science, University of Bergen (GEO-UiB), NORSAR, Norwegian Mapping Authority (SK), Norwegian Geological Survey (NGU), Department of Geosciences, University of Oslo (GEO-UiO), Norwegian Geotechnical Institute (NGI) and the Christian Michelsen Research (CMR).

Within this consortium, the main contributors of seismological data are the Norwegian National Seismic Network operated by the Department of Earth Science, University of Bergen (GEO-UiB) in collaboration with NORSAR, whereas the main contributor of the geodetic data is the Norwegian Mapping Authority (Statens Kartverk - SK). The Norwegian Geological Survey (NGU) collects and archives national geological and geophysical databases. The remaining institutions, Department of Geosciences, University of Oslo (GEO-UiO), the Norwegian Geotechnical Institute (NGI) and the Christian Michelsen Research (CMR) are interested in collaborating within the fields of seismological data analysis and modelling, geodynamic modelling, geohazards assessment and management, computer visualization and application of these competence areas for the design of infrastructure subjected to earthquake loading.

Within the framework of the EPOS project, Norwegian interests are significant, not only in fundamental scientific issues related to geodynamic processes, but also in terms of the application of these to several central problems such as CO2 storage (or other toxic waste repositories) in geological formations, geothermal energy (hot-dry rock) potential, geohazards and their consequences to the society. In this regard, the large earthquake of magnitude 6.1 which occurred on February 21, 2008, in the continental shelf area of Spitsbergen, is a recent reminder of the significant earthquake hazard and risk in Norway and the adjacent offshore areas. An earthquake of similar size near a densely populated area would have resulted with disastrous effects. Another important dimension is the Arctic areas. The Barents Sea region, Svalbard area, Jan Mayen (with an active volcano) and the Norwegian continental shelf including also deep sea areas with the major plate boundary in the northern North Atlantic and its continuation in the Arctic Sea constitute an area with significant geographical extent within the European plate. In this context, the Norwegian monitoring networks (both seismological as well as geodetic) have a special geographical coverage in the Arctic, which is unique and superior to most of the other countries in Europe participating in the EPOS project. The already existing links with the other ESFRI initiatives where strong Norwegian participation is established, such as SIOS, EMSO and Aurora Borealis, combined with the strong links with the Norwegian Oil Industry, where geodynamic processes constitute the fundamental element for hydrocarbon exploration and production as well as the related environmental issues, provide the necessary platform to collaborate and develop a significant dimension and balance in the European Research Area.