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# ForM@Ter: a solid Earth thematic pole

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Over the last years, several notable initiatives have been developed to provide Solid Earth sciences with an efficient research e-infrastructure. The EPOS project (European Plate Observing System) was included in the EFSRI roadmap in 2008. The 7th European frame program funded an e-science environment such as the Virtual Earthquake and Seismology Research Community in Europe (VERCE). GEO supports the development of the Geohazard SuperSites and Natural Laboratories portal, while the ESA SSEP project (SuperSites exploitation plateform) is developing as an Helix Nebula usecase.

Meanwhile, operational use of space data for emergency management is in constant progress, within the Copernicus services.
This rich activity is still leaving some gaps between the data availability and its scientific use, either for technical reasons (big data issues) or due to the need for a better support in term of expert knowledge on the data, of software availability, or of data cost. French infrastructures for data distribution are organized around National Observatory Services (in situ data), scientific services participating to the International association of geodesy data centres and wider research infrastructures such as the Réseau Sismologique et géodésique Français (RESIF) that is contributing to EPOS. The need for thematic cooperative platforms has been underlined over tha last years. In 2009, after a scientific prospective of the French national space agency (CNES) it becomes clear the urgent need to create thematic centres designed to federate the scientific community of Earth observation. Four thematic data centres are currently developing in France in the field of ocean , atmosphere, critical zone and solid Earth sciences.

For Solid Earth research, the project – named ForM@Ter – was initiated at the beginning of 2012 to design, with the scientific community, the perimeter, structure and functions of such a thematic centre. It was launched by the CNES and the National Centre for Scientific Research (CNRS), with the active participation of the National institute for geographical and forestry information (IGN). Currently, it relies on the contributions of scientists from more than 20 French Earth science laboratories.

Preliminary analysis showed that a focus on the determination of the shape and movements of the Earth surface (ForM@Ter : Formes et Mouvements de la Terre) can federate a wide variety of scientific areas (earthquake cycle, tectonics, morphogenesis, volcanism, erosion dynamics, mantle rheology, geodesy) and offers many interfaces with other thematics, such as glaciology or snow evolution. This choice motivates the design of an ambitious data distribution scheme, including a wide variety of sources – optical imagery, SAR, GNSS, gravity, satellite altimetry data, in situ observations (inclinometers, seismometers, topometry, etc.) – as well as a wide variety of processing techniques. The challenge of the project, in the evolving context of the current and forthcoming national and international e-infrastructures, is to design a non redundant service based on interoperations with existing services, and to cope with highly complex data flows due to the granularity of the data and its associated knowledge.