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## Developing an ethical framework for Environmental and Earth System Research Infrastructures: the experience in the ENVRI<sup>plus</sup> project

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ENVRI<sup>plus</sup> is a Horizon 2020 project bringing together Environmental and Earth System Research Infrastructures (RIs), projects and networks with technical specialist partners to create a more coherent, interdisciplinary and interoperable cluster of Environmental Research Infrastructures across Europe (<http://www.envriplus.eu/>). Ethical questions concern all RIs and it is important to raise awareness about ethics during their development. ENVRI<sup>plus</sup> is the first European project in which ethics applied to geosciences find space as a fundamental issue, at the base of scientific activities.

One theme of the project deals with the societal relevance and understanding, and within that theme an entire work-package (WP) aims at developing an ethical framework for RIs. Objectives of this WP are:

- increase the awareness of both the scientists and the public on the importance of ethical aspects in Earth sciences;
- establish a shared ethical framework of reference, to be adopted by RIs governing bodies;
- increase the awareness of RIs management and operational levels and of the individual involved scientists on their social role in conducting research activities and research work environment;
- assess the ethical and social aspects related to the results achieved and deliverables released within the project.



Figure 1: ENVRI<sup>plus</sup> logo

Activities include:

- 1) reviewing the state of art on ethical issues useful for the goals of the project (collection and analysis of materials already existing within scientific organizations, institutions all over the world);
- 2) the creation of a questionnaire, through which to investigate how each RI participating in ENVRI<sup>plus</sup> faces ethical issues in relation to its activities, and so to understand the level of perception that researchers and technicians involved in the project have on the ethical implications of their scientific activities; in particular, some of the considered problems concern data integrity and truthful research conduction, communication of research results and uncertainties, public safety communication, role of scientist in the decision making process;
- 3) the definition of ethics guidelines to be used by partners for building their policies and their own codes of conduct, including ethics principles for the RI Governing Bodies according to Geoethics definition (<http://www.geoethics.org/definition.html>) and terms of reference (e.g., Singapore Statement 2010 and Montreal Statement 2013);
- 4) the elaboration of an ethical label template to characterize each product of the project, that partners will be able to use in order to give essential information about the ethical and social implications of their products;

5) the dissemination of all the results of the previous activities on websites and social networks, so that they are suitable for the public; the materials will specifically focus on increasing transparency and credibility of individual scientists and of the scientific work carried out at the RIs; promoting a better understanding and acceptance of the role that science and scientists play in the public discussion and policy making; explaining the inherent uncertainties and limitations in scientific results.

This presentation provides an overview on activities and results of this project concerning ethical aspects.

