



## **Cooperation of international Research Infrastructures to address environmental global challenges**

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Human impact on the planet is causing a set of global environmental problems that threaten the wellbeing of current and future generations. Examples of these environmental problems include climate change, decline of biodiversity, alteration of biogeochemical cycles, ocean acidification, etc. These environmental Global Challenges (GCs) are transnational and complex, combining elements of both natural and social factors. Providing solutions for these challenges can be significantly enhanced through the collaboration of various related institutions, governments and stakeholders.

A deeper understanding of the causes and consequences of GCs, as well as the processes which control them is required. Environmental Research Infrastructures (RIs) are key players in this learning process. Covering many fields of research, it is through RIs collaboration that GCs can be more fully addressed. However, the collaboration among environmental RIs is still limited nationally as well as internationally. Although contact is encouraged and interactions are common practice, there are few cases where RI managers initiate and foster transnational collaborations in order to address specific problems.

The COOP+ project aims to explore and strengthen cooperation among global RIs by bringing various RIs together and working on the identification of requirements, strengths, knowledge gaps and other relevant items in regard to the selected GCs. For this purpose, 13 GCs have been selected: coral bleaching, marine debris, noise impact on marine fauna, Arctic sea ice melting, pollinators decline, threatened species, agriculture pollutants, nitrogen cycle, carbon and GHG, geohazards and extreme events, estuaries, global urbanization process, and ozone depletion. These GCs are being analysed and described by multidisciplinary teams of experts composed of scientists, RIs operators and other stakeholders. This assessment will derive a list of tasks and requirements to be fulfilled by the participating RIs regarding each GC. Moreover, it is expected that the outcomes of this work will encourage and promote project participants and stakeholders, as well as the general public to take action with regard to the challenges and solutions outlined by the GC descriptions.

This task of describing GCs is an open initiative: all input is welcome. To input with any suggestions, please send an email to [info@coop-plus.eu](mailto:info@coop-plus.eu). This contribution presents the preliminary results obtained during the description of the selected GC's under the point of view of RIs:

- Template used to describe all GC in a standardized way. It contains several sections regarding topics such as: rationale of the challenge, identification of scientific/technical/social needs, role of RIs in the GC, tasks to be done (data collection, experimental research, modelling, dissemination), etc.
- Configuration of working teams designed to describe the GCs. Each GC has a person in charge who is responsible of coordinating the writing process. The working team is composed by scientists experts in each challenge, experts in thematic RIs (within EU and abroad), policy makers and other stakeholders.

The results obtained by this description task will be published in a special issue in a Geoscience journal. The writing teams are expected to become project consortia willing to participate in specific calls to address GCs.