



## COOP+ project: Fostering systematic global cooperation among international Research Infrastructures



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**Humanity is facing enormous environmental challenges: biodiversity decline, climate change, ocean acidification, sea level rise, overpopulation, etc. One of the first and more successful responses provided by science to address these challenges is the collecting of long-term series of biophysical variables.**

During the last four decades we have created a diverse ecosystem of environmental research infrastructures (RIs) covering a wide range of spatial and thematic scales. The information gathered by RIs has helped us to understand the structure and functioning of natural systems at local and regional scales. However, this is not enough to address the overwhelming challenge that we face: to understand and simulate the structure and functioning of the Earth System under a global change scenario.

We need to add new “super-powers” to the already existing RIs in order to address the above mentioned global chal-

lenges. These new capabilities are, in my personal opinion, related to social abilities such as: empathy, cooperation and synergy. It is not only about strengthening the technical functioning of the already existing RIs, we need to make them work together.

Environmental international

*Ubuntu is an African term that describes the importance of cooperation. It states that "a person is a person through other people". This way of thinking can help us to create the needed relationships among Research Infrastructures.*

RIs should be open and available to others, affirming to others, should not feel threatened that others are able and good. The COOP+ (Cooperation of research infrastructures to address global challenges in the environment field) H2020 project will follow up the actions started by COOPEUS (FP7) to foster the cooperation among

environmental RIs. The general goal of COOP+ is to strengthen the links and coordination of the ESFRI RIs related to Marine Science (EMSO), Arctic and Atmospheric Research (EISCAT), Carbon Observation (ICOS) and Biodiversity (LifeWatch), with international counterparts and to leverage international scientific cooperation and data exchange with non-EU countries.

During the time span of COOP+ (March 2016 to July 2018) we will do our best to implement the abovementioned philosophy in the cooperation agenda of environment RIs.

But cooperation could remain as an empty concept useful only in presentations and meetings. We must fill the concept with real life problems. COOP+ activities will focus on environmental Global Challenges: polyhedral and sometimes wicked problems that threaten the sustainability of our modern societies from a social and environmental perspective. We will select some Global Challenges as



"cooperation threads" within COOP+, incorporating the lessons learned in COOPEUS. This will reinforce the cross-disciplinary view, adding participants from other regions and complementary disciplines. We will promote an open coordination framework for Global Cooperation, based on scientific excellence and win-win collaborations opportunities with third parties (with an initial participation of USA, Canada, Australia and Brazil).

One month after the beginning of the project, we foresee some important points to consider in order to be successful:

- We must be aware that some of the European RIs are still under construction. It is not straightforward to cooperate with others during this phase. But this is also a great opportunity for RIs to learn how others are building their own infrastructure. Fortunately, there are several EU projects working with environmental infrastructures (GLOBIS-B, ENVRIplus, etc.). COOP+ will establish synergistic links with these projects.
- Science is a sort of common language for people whose native languages are different. Yet this language has many dialects and jargons. For example: ecologists usually try to decipher cause-effect relationships among physical factors and biological variables using correlational analysis.

Hydrologists are used to work with process-based models calibrated using a physical approach. These visions are compatible to each other and must be put together. RIs will effectively cooperate only if the scientists working with them are able to cooperate using common languages. COOP+ will contribute to this frame-

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work by promoting best practices among international RIs, sharing techniques and procedures.

- RIs are complex organizations with strong cross-scale effects. Many are based on the concept of local observatory: a place where information is gathered from the field. Thus, RIs can be considered as networks of sites that collect/analyse data in order to satisfy local and regional needs. Attention must be paid to the topology of these networks if we really want to foster the cooperation among RIs. Several types of cross-scale interactions could arise if we consider the different levels of the hierarchical organization

within each RI.

COOP+ aims to be an active actor in the cooperation among people and organisations. Our team is highly motivated to contribute as well as to establish links with other similar projects like ENVRIplus. As for myself, I will do my best to be an effective coordinator. I am sure COOP+ will result in fruitful discussions and the establishment of long lasting cooperation among environmental RIs.

