



COOP+ project: Promoting the cooperation among international Research Infrastructures to address global environmental challenges.

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During the Anthropocene, mankind will face several global environmental challenges. One of the first and more successful responses provided by Science to these challenges is the collecting of long-term series of biophysical variables in order to improve our knowledge of natural systems. The huge amount of information gathered during the last decades by Research Infrastructures (RIs) has helped to understand the structure and functioning of natural systems at local and regional scales. But how can we address the global cross-scale and cross-disciplinary challenges posed by the global environment change? We believe that it will be necessary to observe, model better and understand the whole biosphere using long term data generated by international RIs.

RIs play a key role on many of the last advances and discoveries in science, from the observation of the Higgs Boson at CERN to the exploration of the Universe by the telescopes of the European Southern Observatory in Chile. The scale of complexity, instrumentation, computing resources, technological advances, and also of the investments, and the size of research collaborations, do not have precedents in Science. RIs in environmental field are developing fast, but the corresponding communities need yet to further reflect the need for a wider global collaboration because the challenges to tackle are in essence of global nature.

This contribution describes how COOP+ project (EU Horizon 2020 Coordination and Support Action) will promote the cooperation among RIs at a global scale to address global environmental challenges. Our project evolves from the experience of the successful FP7 COOPEUS project (see <http://www.coopeus.eu>), which explored the use and access to data from RIs in environmental research in Europe and USA.

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 (NEON, TERN, AMISR/SRI, CGSM, OOI, INPA/LBA, IMOS, OCN, AMERIFLUX, etc.) 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 address several important questions regarding RIs:

What could be the contribution of international RIs to address cross-disciplinary global challenges like modelling and understanding the carbon cycle? Is it feasible to join the knowledge gathered in Arctic research with marine science outputs into comprehensive global models? What collaboration approaches could be implemented to foster the cooperation among RIs? What is the role of local observatories (bottom-up) in this cooperation framework?

This contribution will describe COOP+ project using the concept of global challenge. We will describe several possible case study that could be addressed by a network of international RIs.