

# Challenges and Motivations for International Coordination of Open Science Data Infrastructures

\*Mustapha Mokrane<sup>1</sup>

## 1. ICSU World Data System

Modern scientific research is an increasingly global endeavour and sharing common resources and instruments is becoming the norm. Scientific progress is built on the exchange of knowledge and practice—literature, data, and other research artefacts—amongst researchers in the scientific community. Data are widely recognized as a foundational and essential element of research and their availability, sharing and reuse are at the core of the Open Science paradigm.

Scientific communities have long come together to coordinate their research activities internationally including the management and stewardship of data. Taking advantage of the new information and communication technologies, they also enabled the physical networking of research data infrastructures which led to the emergence of large-scale regional and global research data infrastructures supporting science. These global data infrastructures became a reality in pioneering research domains such as astronomy, genomics, and Earth sciences resulting in more efficient research and revolutionizing the conduct of research.

However, these international networks face many challenges because they cut across national boundaries, (scientific) cultures, and sometimes disciplines. Their success is heavily dependent on the convergence and synergies between diverse national (data) policies and funding schemes. Furthermore, these international networks are largely focussing and serving specific domains, thus re-creating silos of data infrastructures when the challenges facing society require multi- and transdisciplinary data infrastructures.

This presentation will review several exemplars in the Earth and Space sciences, analyze common practices and approaches to derive lessons learnt and identify key issues that require policy actions, and the types of actions that might be appropriate.

Keywords: Global Data Infrastructure, Open Science, International Coordination