Chapter 14
International Funding and Collaboration in Sea Level Rise Research

Mayte López-Ferrer
Universitat Politècnica de València, Spain

ABSTRACT

International collaboration and research funding in Sea Level Rise (SLR) research are investigated in this chapter. SLR can be taken as a paradigmatic research area to study the international scientific collaboration and research funding efforts because it is affecting the whole planet and is an interdisciplinary research area involving disciplines belonging to the geosciences but also the life sciences, technology sciences, and social sciences. The aim of the chapter is to identify the main stakeholders in the topic, institutions, and countries; analyze overlapping efforts; identify possible research gaps; and to study the role played by the funding agencies. Bibliometrics and a social network analysis approach are applied. Co-occurrence networks of keywords, affiliations, and funding agencies among scientific papers in Thomson Reuters' Web of Science Core Collection in the SLR topic are analyzed. Conclusions show that international scientific collaboration is common in SLR, but international co-financing is less frequent.

INTRODUCTION

Globalization, in its broadest sense, "is a process that encompasses the causes, course, and consequences of transnational and transcultural integration of human and non-human activities" (Al-Rodhan & Stoudmann, 2006). It has an undeniable impact. Its geopolitical implications include global economic integration, international politics, stability and durability of cultures and also the transmission of knowledge and science. Science undergoes a process of globalization, which compels to scientists from different geographical and cognitive communities to understand each other. But due to the fact that science is strongly conditioned by social aspects (traditions, schools, institutions, economic interests, and reputation systems), this understanding is not always so evident. And, also, the other way round. Scientific research affect society and human life, as well, since their results are at the base of technological developments, that produce new tools that in turn transform the society way of life (cars, freezers, computers are examples).

DOI: 10.4018/978-1-5225-5487-5.ch014

Interdisciplinary and multidisciplinary science is another remarkable feature of research. Here the research problem is approached by two or more scientists from different disciplines. In words of Boldrini, Craglia, Mazzetti and Nativi (2015, see chapter 14 this book), multidisciplinary research is academic but loosely integrated, i.e. consisting of scientists from distinct disciplines researching the same topic but with multiple disciplinary goals. In the case of interdisciplinarity, research is academic and tightly integrated, and the scientists from unrelated disciplines try to create and share knowledge to pursue a common goal.

The interdisciplinary approach is based on a conceptual model that involves the integration of theoretical frameworks, research designs and methodologies, and requires the use of different perspectives and skills throughout the different phases of the research (Aboelela et al., 2007).

In both multidisciplinary and interdisciplinary research cooperation is always key. Such cooperation can have different levels of intensity, ranging from simple communication of ideas to the mutual integration of conceptual and theoretical frameworks. In addition, this cooperation may result in the solution to a specific problem, in a few co-authored scientific papers or, perhaps, in a new emerging scientific discipline. Both globalization and multidisciplinary or interdisciplinary science are strongly related to scientific collaboration.

BACKGROUND

Data sharing is first step in scientific collaboration. This is particularly true of research carried out on large-scale facilities and when research questions demand not just single experiments but rather sequences of them, which is very common in the geosciences. The experiments undertaken in these facilities are of growing complexity and are expected to soon produce a "data avalanche" (Bunakov, Jones, & Matthews, 2015, see chapter 7 this book).

In the geosciences there are many initiatives in order to share data, e.g.: PANdata (http://www.pandata.eu) (Bunakov, Jones & Matthews, 2015, see chapter 7 this book); Tatiana (Dyke, Lund, & Girardot, 2009; Dyke, Lund, & Girardot, 2010); Mulce (http://mulce.org)(Reffay, Chanier, & Betbeder, 2012) and (Reffay, Dyke, & Betbeder, 2012); datapublication (http://datapublication.tge-adonis.fr); Dataverse project (King, 2007); and ESSD journal, all in.

Open access and open data movements have encouraged the scientific community to pay more attention to their data by considering the societal impact brought about by making such data available to everyone. But to make these changes sustainable, shaping policies, funding specific research programs, organizing networks, providing infrastructure, promoting standards, etc. are necessary steps. In addition, because researchers' time is limited and publication pressure is high and in many disciplines, collaboration is necessary. However, the quality of collaboration and data publication is not given sufficient importance to make it a priority for researchers. So, innovation is needed to find easier processes for researchers to make their datasets reusable and to render their research results more visible.

Raw research data are the cornerstone with which researchers build knowledge; their findings supports the idea that any paper presenting results from an empirical study should be linked to the data that has been used for it. As such, the aim of data availability is to facilitate validation, since interpretations of data are easier to do with the data alongside it; replication, since opens the door to further analyses on the same data to verify the conclusions; and meta-analysis, datasets may be compared or combined to build higher order analyses.