EGU21-10877
https://doi.org/10.5194/egusphere-egu21-10877
EGU General Assembly 2021

Developing Global Coordination of Solid Earth Research Infrastructures in Support of the United Nations Sustainable Development Goals.

Lesley Wyborn[1], Tim Rawling[2], Simon Cox[3], Ben Evans[1], Simon Hodson[4], Jens Klump[5], and Steven McEachern[6]

[1]National Computational Infrastructure, Australian National University, Acton, ACT, Australia (lesley.wyborn@anu.edu.au)
[2]AuScope Ltd., Melbourne, Victoria, Australia (tim@auscope.org.au)
[3]CSIRO Land and Water, Clayton, Victoria, Australia (simon.cox@csiro.au)
[4]National Computational Infrastructure, Australian National University, Acton, ACT, Australia (ben.evans@anu.edu.au)
[5]CODATA, Paris, France (execdir@codata.org)
[6]CSIRO Mineral Resources, Kensington, WA, Australia (jens.klump@csiro.au)

AuScope is Australia's National Geoscience Research Infrastructure Program. As outlined in is 2020-2030 10-year Strategy[1], AuScope seeks to provide a world-class research physical and digital infrastructure to help tackle Australia's key geoscience challenges, in particular, food and water sustainability, minerals and energy security, and mitigating impact from geohazards. These challenges tie in directly with the following United Nations (UN) Sustainable Development Goals (SDGs): SDG#6 (Clean Water and Sanitation); SDG#7 (Affordable and Clean Energy); SDG#8 (Decent Work and Economic Growth); SDG#9 (Industry, Innovation and Infrastructure); SDG#13 (Climate Action) and SDG#15 (Life on Land).

The SDGs were set in 2015 by the UN General Assembly to be achieved by the year 2030. If the global research sector is to support achieving them, is a rethink required? Current practices tend to focus on building infrastructures in domain and/or national/regional and/or sector (research, government, private) and/or institutional/network silos. These are not necessarily enabling global interoperability, reuse and open sharing of data. For example, AuScope is building high-quality geoscience research data and software infrastructures that are at the heart of positioning Australia to meet these SDG challenges. Equivalent geoscience research infrastructures are also being built internationally (EPOS (Europe); EarthScope, EarthCube (USA)) and AuScope is looking for ways to interoperate more effectively with these.

Within the international geoscience community some interoperable networks are in place to enable global collaborations that share data and software (e.g., Earth System Grid Federation (ESGF), which develops software infrastructure for the management, dissemination, and analysis

of model output and observational climate data; the Federation of Digital Seismograph Networks (FDSN) enables members to coordinate station siting and provide free and open data). However, these are the exceptions rather than the rule.

None of the SDGs depend exclusively on geoscience data: all require integration with data from other domains, particularly from the social sciences and humanities. Some initiatives trying to assist data combination between the social sciences and the physical or environmental sciences are emerging (e.g., the Data Documentation Initiative - Cross Domain Integration (DDI-CDI)[2]; the CODATA/ISC Decadal programme on "Making data work for cross-domain grand challenges"[3]) , but traditional organizational and funding arrangements do not usually facilitate this. While there are exemplars of how to achieve integration of global domain and cross-domain research infrastructures and data sharing frameworks, we urgently need to leverage these to develop a roadmap that enables global integration of data and research infrastructures, both within the geosciences and beyond, to ensure sustainable production of data, products and services that support the realisation of the UN SDGs by 2030. In doing so, potentially the main tension will be to ensure that in enabling the broader, global transdisciplinary goals of the SDGs that deeper domain science is not compromised, scarce expertise is not misdirected, and that infrastructure developments within the domains are not unduly hampered.

[1]https://www.auscope.org.au/news-features/strategy-and-investment-plan-launch

[2]https://ddi-alliance.atlassian.net/wiki/spaces/DDI4/pages/860815393/DDI+Cross+Domain+Integration+DDI-CDI+Review

[3]https://codata.org/initiatives/strategic-programme/decadal-programme/