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International Development of e-Infrastructures and Data Management Priorities for Global Change Research

Allison, M. L.[1], and Gurney, R. J.[2]

[1]Arizona Geological Survey, Tucson, Arizona, USA, lee.allison@azgs.az.gov
[2]University of Reading, Dept. of Meteorology, Reading, UK, r.j.gurney@reading.ac.uk

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An e-infrastructure that supports data-intensive, multidisciplinary research is being organized under the auspices of the Belmont Forum consortium of national science funding agencies to accelerate the pace of science to address 21st century global change challenges. Data discovery, access, sharing and interoperability collectively form core elements of an emerging shared vision of e-infrastructure for scientific discovery. The pace and breadth of change in information management across the data lifecycle means that no one country or institution can unilaterally provide the leadership and resources required to use data and information effectively, or needed to support a coordinated, global e-infrastructure.

An implementation plan that emerged from an 18-month long process involving ~120 experts in domain, computer, and social sciences from more than a dozen countries has resulted in a formal set of recommendations to the Belmont Forum collaboration of national science funding agencies and other stakeholders on what they are best suited to implement for development of an e-infrastructure in support of global change research. The five action themes adopted by the Belmont Forum:

1. Adopt Data Principles that establish a global, interoperable e-infrastructure with cost-effective solutions to widen access to data and ensure its proper management and long-term preservation. Researchers should be aware of, and plan for, the costs of data intensive research.
2. Foster communication, collaboration and coordination between the wider research community and the Belmont Forum, and across Belmont Forum projects through a Data and e-Infrastructure Coordination Office established within a Belmont Forum Secretariat.
3. Promote effective data planning and stewardship in all Belmont Forum agency-funded research to enable harmonization of the e-infrastructure data layer through enhanced project data planning, monitoring, review and sharing.
4. Determine international and community best practice to inform Belmont Forum research e-infrastructure policy, in harmony with evolving research practices and technologies and their interactions, through identification and analysis of cross-disciplinary research case studies.
5. Support the development of a cross-disciplinary training curriculum to expand human capacity in technology and data-intensive analysis methods for global change research, and increase the number of scientists with cross-cutting skills and experience in best practice.

The Belmont Forum is ideally poised to play a vital and transformative leadership role in establishing a sustained human and technical international data e-infrastructure to support global change research. The international collaborative process that went into forming these recommendations continues to present a unique opportunity for national governments and funding agencies and international bodies to work together to execute them.