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Data Citation Standard: A Means to Support Data Sharing, Attribution, and Traceability

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Geo-referenced data are crucial for addressing many of the burning societal problems and to support related interdisciplinary research. Data sharing is hampered by the lack of a widely accepted method for giving credit to those who make their data freely available and for tracking the use of data throughout it's life-cycle. Particularly in the scientific community, recognition and renown are important currencies. Providing means for data citation would be a strong incentive for data sharing.

Recently, a number of organizations and projects have started to address the concept of data citation (e.g., PANGAEA, NASA DAACS, USGS, NOAA National Data Centers, ESIP, US National Academy of Sciences, and EGIDA). A number of proposals for data citation guidelines have emerged and a better understanding of the many issues at hand is evolving, but to date, no standard has been accepted. This is not surprising, as data citation is far more complicated than citation of scientific publication. Data sets differ in many aspects from standard scientific publications. For example, data sets generally are not locatable and attributable in the same way as scientific publications. Data sets often are not static (introducing versioning), and they are mostly not peer-reviewed (requiring quality control). There is a consensus that the implementation of a standard would reveal new issues that are not obvious today.

With the Global Earth Observation System of Systems (GEOSS), the Group on Earth Observations (GEO) is in a unique position to provide the testbed for the implementation of a draft standard. The GEO Plenary supports the implementation of a draft standard developed by the Science and Technology Committee (STC) of GEO with support of the EGIDA Project. This draft is based on guidelines developed by international groups.

Currently, users of the GEO-Portal are not obliged or encouraged to cite data accessed through GEOSS – if at all, citation requirements come from the individual data providers. This naturally leads to a at-best non-standard form of data citation or, in the worst case, no data citation at all. The testbed implementation will rectify this situation and help to identify issues not covered by the standard. The process of implementing and iteratively improving the draft is led by the GEO Work Plan Task ID-03 under the Institutions and Development Board; coordinated with the GEO working groups in charge of developing the GEOSS Common Infrastructure (e.g., the Architecture Board, SIF, DSTF, GCI-CT; with other groups within GEO, such as the Data Sharing Task Force, who have initiated similar activities, and with organizations outside of GEO developing the internationally emerging specifications. Metadata for GEOSS data and products may have to be extended to support data citation.

It is expected that the availability of a draft citation standard will increase the attractiveness of GEO and GEOSS for scientists by fostering acknowledgment of their contributions when others use them. The testbed implementation will provide valuable insight into issues that need to be addressed and this will be infused into the international discussion on data citation.