

## Global Terrestrial Observations – Coming of Age

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Enabled by broad, open data policies and practices for the U.S. Landsat satellite series, and the European suite of Sentinel satellites in the Copernicus Program, tremendous advancements have been made in technologies and platforms for global terrestrial observations. Included among these advancements is the work that Australia has done with Data Cube technologies at their National Computing Center (<http://nci.org.au/services/virtual-laboratories/australian-geoscience-data-cube/>), the Joint Research Center's (JRC) work on the Global Surface Water Explorer (<https://global-surface-water.appspot.com>) using Google Earth's Engine 60, 000+ computers worldwide, the Global Human Settlement Layer (<http://ghslsys.jrc.ec.europa.eu/>), and the U.S. Geological Survey's (USGS) work on Land Change Monitoring, Assessment, and Projection (LCMAP) (<https://eros.usgs.gov/science/lcmap>) at their Sioux Falls, South Dakota Earth Resources Observation and Science Center.

Each of these technological advancements is permitting analysis of continental and global landscape change that was not possible, heretofore. In fact, these emerging technologies, with international collaboration, can now bring to global terrestrial observations and analysis the same kind of advancements experienced in global mid- to long-range weather forecasting over the last 50 years. While data feeding these global weather forecasting models is derived from all national weather services or bureaus, there are very few truly global modeling centers. It is this fact that provides an analog upon which several (like those mentioned above) global centers for terrestrial observations could emerge. Data derived from national, regional and international mapping efforts of both surficial and bedrock geology, as well as their derivative products, should not be overlooked as key components of global terrestrial monitoring.

### Biography:

Barbara J. Ryan is Director of the Group on Earth Observations (GEO) in Geneva, Switzerland. She leads the Secretariat in coordinating the activities of 105 Member States and 118 Participating Organizations that are integrating Earth observations globally.

Ryan holds a Bachelor's in Geology from the State University of New York at Cortland, a Master's in Geography from the University of Denver, and a Master's in Civil Engineering from Stanford. She was awarded an honorary doctorate of science from the State University of New York at Cortland, was recently named an Honorary Fellow of the American Geographical Society, was one of 10 global Leaders to be named to the Geospatial World Forum's Hall of Fame (2017).