

Submission of the United States of America
Topics for Earth Information Day 2021
September 2021

The United States welcomes the opportunity to provide inputs on possible themes for Earth Information Day 2021 which will take place in conjunction with the session of the Subsidiary Body for Scientific and Technological Advice during the Glasgow Climate Change Conference. Earth Information Day provides an opportunity to exchange information on the latest activities and advancements in systematic observations that will enhance Parties' and non-Party stakeholders' understanding of the global climate system. Systematic observations (satellite, remote sensing and in situ) are critical for understanding sources and sinks of global greenhouse gas emissions and informing the necessary ambition and actions for addressing climate change.

The United States is supportive of efforts to make Earth Information Day 2021 diverse and inclusive to ensure a wide range of scientific voices and organizations can participate and engage in the discussion. We support having a virtual component to the Earth Information Day, building upon the success of the thirteenth Research Dialogue in June 2021. The United States has significant technical expertise in systematic observations and would welcome the opportunity to highlight specific capabilities for observations, observation-based products and services, and data management at this session. The program should also include recent advancements in systematic observations for understanding changes in the earth system from relevant international organizations such as the WMO, UNESCO/IOC, the Group on Earth Observations (GEO), UN Environment Program, and Committee on Earth Observation Satellites.

The United States proposes the following topics for consideration to inform this and subsequent Earth Information Day events that will improve understanding of the current gaps and future directions for global earth system observations and use of earth system observations to inform climate change mitigation and adaptation policies:

- **Systematic observations for achieving climate targets:** Improving greenhouse gas emission estimates are critical for understanding trends in natural sources and sinks for greenhouse gases and can be useful for strengthening reporting on global greenhouse gas emission reductions. The NOAA Global Greenhouse Gas Reference Network coupled with the WMO's Global Atmosphere Watch Programme and the WMO's Integrate Global Greenhouse Gas Information System anchor greenhouse gas observations worldwide. These observations serve as the basis for NOAA's CarbonTracker, OCO-2 validation, and other analysis tools. The discussion could focus on the use of observations and new analysis tools for achieving climate targets and how this information can be used to inform decision makers.
- **Earth system data democratization:** The United States is committed to democratization of systematic Earth observations which is predicated on technical FAIR-ness, ensuring data is Findable, Accessible, Interoperable and Reusable; practical

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fairness, promoting equitable access to data by the range of stakeholders supporting the global response to climate change; and cooperation to achieve equitable access to the data and derived products and services decision makers need in a timely and accessible manner. For example, NOAA is supporting global efforts to democratize data through a variety of mechanisms including GEONETCast Americas, a user-driven, user-friendly and low-cost information dissemination service that aims to provide global information as a basis for sound decision-making in a number of critical areas and serves as a US contribution to the GEO. The discussion at Earth Information Day could include efforts to promote the full and open access to data, creating tailored products and services from observations, and needs and challenges with storing and assimilating large amounts of data. The WMO could also be asked to present on the progress of updating their Unified Policy for the International Exchange of Earth System Data which will be up for approval during the extraordinary session of the WMO Congress to increase understanding of the implications of this policy on climate data sharing and management.

- **Understanding ocean carbon research and observation needs:** In April 2021, IOC-UNESCO published the "Integrated Ocean Carbon Research (IOC-R): A Summary of Ocean Carbon Knowledge and a Vision for Coordinated Ocean Carbon Research and Observations for the Next Decade" to provide a research framework to assess changes in ocean carbon cycling in response to climate change and atmospheric climate forcing. This report presents a synthesis of the state of knowledge about the oceans' role in the carbon cycle, including current gaps, and proposes future directions for ocean carbon cycle research and observations. This report could provide a basis for discussing the value of a coordinated approach to ocean carbon research and observations and understanding the role and impacts of ocean carbon on marine ecosystems.
- **Connecting observations and stakeholders:** Engaging a wide range of partners is critical for expanding systematic observations, filling gaps, catalyzing innovation, and developing relevant and useful products and services. This discussion could include opportunities for increasing capacity to collect and utilize systematic observations, improving observations, predictive capabilities, and products and services at regional and local scales, increasing engagement with the private sector, and better coordination and collaboration with indigenous and local communities. This discussion could also highlight efforts such as the WMO Study Group on Integrated Urban Services, WMO Global Basic Observing Network, and the Systematic Observing Financing Facility as mechanisms that are working to expand observing capacity and better connect with stakeholders.
- **Understanding climate-driven changes to ecosystems and marine life:** There is an increasing effort to improve global coordination of data and information about climate change-driven ecosystem change and biodiversity impacts. Systematic observations of

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physical, chemical, and biological parameters are essential for measuring change and understanding the potential impacts of climate on species and ecosystem conditions. Efforts like GEO's Biodiversity Observation Network and the Marine Biodiversity Observation Network, along with the Global Ocean Observing System and other partners, are working to identify needs of society and the economy for biodiversity observations and to better connect observations to improving ecosystem assessments and predictive capabilities. The discussion could include presentations on advancements in marine life observing and how those data can be integrated into societally relevant products and services.