

Submission of the United States of America
Views on Possible Themes for the Earth Information Day 2022

August 2022

The United States welcomes the opportunity to provide views on possible themes for the Earth Information Day 2022 to be held in conjunction with SBSTA 57 (November 2022) in Sharm el-Sheikh, Egypt. Earth Information Day provides a valuable opportunity for exchanging information on the state of the global climate system and developments in systematic observation (FCCC/SBSTA/2019/2, paragraph 58). This includes relevant updates on recent advancements in systematic observations from relevant international organizations such as the WMO, UNESCO/IOC, Global Climate Observing System (GCOS), Committee on Earth Observation Satellites (CEOS), and Group on Earth Observations (GEO). In addition to focusing on the observations themselves, it is important to include information about approaches and tools for managing systematic observations in a transparent and accessible manner and the connection between observations and climate service delivery as part of the event.

Organization of Earth Information Day 2022

The United States is supportive of efforts to make Earth Information Day 2022 diverse and inclusive to ensure a wide range of scientific voices and organizations can participate and engage in the discussion. This includes emphasizing the role of and opportunities for citizen science to engage young people, underrepresented communities, and indigenous-led innovations in earth observations in the topics selected. It could also be helpful to hear from municipalities, businesses, and organizations like Camda that are working to create resources that enable the transparent and reliable use of information from non-party stakeholders. It is important that Earth Information Day discuss systematic observations from global to local levels in order to showcase policy-relevant information for the range of stakeholders that will be participating in the event. There can also be important discussions about the limitations, barriers, and opportunities for increasing the accessibility and usability of climate information from multiple sources and how that can contribute to more robust climate solutions.

Lastly, the United States strongly encourages maintaining the option for virtual participation during the event and the poster session to expand the opportunity for participation to those that cannot travel to COP27 but will benefit from engaging in the discussion. It will also be helpful to ensure that the presentations are focused on a specific set of themes and provide actionable information or ideas. This will enable a productive conversation between policymakers and experts. Considering the use of alternate formats instead of just presentations and posters could also make for a more engaging Earth Information Day event. This could include demonstrations of specific tools and/or data applications.

Possible Themes for Earth Information Day 2022

The United States would like to propose a few themes 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:

Sector-specific Observations

Given the focus of COP27 on "Implementation...Plus," i.e., delivering on existing commitments and creating new commitments where none exist, Earth Information Day could focus on sector-specific observational needs and innovations that will help to demonstrate how different sectors are using earth information for decisionmaking. Organizing around specific sectors could also inform actions to reduce emissions, increase adaptive capacity and build resilience, increase accountability, identify opportunities for collaboration or partnerships, and enable cross-sectoral exchange of lessons learned or best practices. Helpful examples could include efforts to decarbonize the shipping industry and curb emissions from aviation and provide an opportunity to hear from the International Maritime Organization and the International Civil Aviation Organization, respectively. Agriculture is another sector that could highlight efforts to protect productivity in a changing climate, reduce emissions from food production and to enhance co-benefits through agricultural conservation practices. Focusing on these types of sector-specific data would enable a multidisciplinary discussion to better understand the earth observations and climate data needed to improve decision making within and across sectors.

Observations to Increase Opportunities to Address Methane Emissions

As catalyzed with the Global Methane Pledge at COP26 and further emphasized in the Intergovernmental Panel on Climate Change (IPCC) Working Group III report, reducing methane emissions is necessary to keep warming below 1.5 degrees. The technology currently exists to be able to significantly reduce anthropogenic methane emissions, particularly from the oil and gas sector, which would help to reduce the impacts of climate change and improve local air quality through the reduction of ground-level ozone. There are many different sources of methane emissions and determining the sources responsible for variations in annual increases of methane is complex. Global concentrations of methane can be retrieved from spectral signatures in the infrared, from the current generation of polar-orbiting satellite hyperspectral interferometers. Earth Information Day is an opportunity to understand the approaches for determining the scope and contributions of methane emissions and identifying opportunities to apply innovative approaches for observing methane emissions by sector. For example, improving understanding of urban methane emissions and being able to more precisely identify sources of leaks. Another example could be hearing from UNEP's International Methane Emissions Observatory (IMEO) on the role of remote sensing in detecting large methane emissions sources.

Observations to Improve Early Warning Systems

The role and value of Multi-Hazard Early Warning Systems (MHEWS) is well-established, and yet global coverage remains woefully inadequate. As announced by the UN Secretary-General António Guterres in March 2022, within the next five years everyone on Earth should be protected by early warning systems against increasingly extreme weather and climate change. The WMO is tasked with leading this effort to achieve universal coverage of MHEWS through closing observation gaps and improving capacity to use and respond to early warning information, and will develop a global plan on how to achieve this goal by COP27. Earth Information Day could include updates about the global plan to achieve universal coverage of early warning systems as well as existing efforts such as the [WMO Global Multi-hazard Alert System](#), [Climate Risk and Early Warning Systems \(CREWS\)](#), the [Systematic Observation Financing Facility \(SOFF\)](#), and [Risk-Informed Early Action Partnership \(REAP\)](#). In order to increase access to MHEWS, it is important to create partnerships across public and private sectors to provide the data and service-delivery support necessary. The U.S. is a key supporter of this work and has been investing in increases and improvements in observations and developing a wide-range of tools, products, and services that can help decision-makers and individuals act effectively in the face of extreme weather events and changing environmental conditions.

Observations to Inform Carbon Dioxide Removal (Marine and Terrestrial)

As noted by the IPCC in the Working Group III report, carbon dioxide removal (CDR) is a necessary component of any strategy to keep temperatures at 1.5 degrees Celsius, in particular for the hard-to-abate sectors. There are multiple approaches, including both marine and terrestrial options, that have different efficacy potential, durability, viability, and social dimensions. However, policymakers have insufficient information in order to be able to evaluate the risks and opportunities they present. It could be helpful for Earth Information Day to include an update on the state of the science of CDR including baseline monitoring to understand system processes that influence the viability and durability, interactions and tradeoffs between CDR and other mitigation and adaptation options, and information for verification and reporting to ensure transparency.

Using Co-design and Co-production to Increase Engagement in Climate Science

In order to ensure more tailored and user-friendly climate science, it is important to consider if there are changes, refinements, or new approaches for collecting, analyzing and disseminating climate information. Partnering with stakeholders on the co-design and co-production of knowledge are helping to transform science to be more inclusive, equitable, and community-driven which increases the impact and the beneficial outcomes of the information generated. There are currently several efforts underway to better implement co-design and co-production approaches, but more work needs to be done in order to ensure credibility and legitimacy of these processes and the integration and archival of the data collected. Engaging with multiple stakeholders also increases the potential for more resilient climate action by

empowering communities and creating solutions that are a better fit for each specific context. Earth Information Day is an opportunity to hear about success stories from implementing multi-stakeholder approaches to science and to share lessons learned that can start to shift the paradigm of climate science towards more collaborative and co-generated approaches.

Using Advanced Technologies and Capabilities to Increase Accessible Climate Data

There is a need to increase timely, actionable and reliable environmental information across the entire Earth-observing system in order to meet current and future needs in a changing climate. There are increasing numbers of *in situ* and satellite based observations to inform decision-making, creating a more complex and voluminous dataset. However, using those data to support more accurate and reliable products and applications requires substantial computing resources. Understanding the resources available to overcome these limitations such as cloud computing, greater automation, machine learning, computer vision, data mining, and artificial intelligence can improve climate data archival capabilities, increase the uptake of climate information, support more accurate and reliable products, and inspire new applications for climate data. These innovations can also help to connect with and retain early career science, technology, engineering and mathematics students which can enable them to develop bold new approaches and creative ways of thinking about climate action.

Ocean Observations to Inform Decision-Making and Adaptation in Marine and Coastal Zones

There is an increasing suite of mature, long-term and consistent ocean observations (remote and field measurements) that can provide valuable information to guide National Adaptation Plans and other decision-making needs relative to marine and coastal regions and their broader global environmental impacts. Efforts are required to socialize the availability and utility of these observations to inform diverse stakeholder needs, and to fill known gaps in the observational network. This theme would leverage and advance ongoing activities underway as part of the U.N. Decade for Ocean Science for Sustainable Development, working in partnership with CEOS, GEO, and other partners.