

U.S. Group on Earth Observations

AGU Fall Meeting | December 3, 2020

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USGEO

Updates

GEO

International Context

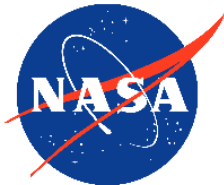
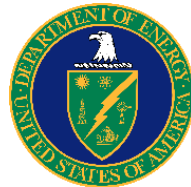
Panel

USGEO Activities

USGEO

Subcommittee of the White House National Science and Technology Council – Committee on the Environment

- Plan & coordinate federal Earth observations, research, and activities
- Foster improved Earth system data management and interoperability
- Identify high-priority user needs for Earth observations data
- Coordinate US positions for and coordinate participation in GEO



Smithsonian



ICMO





2019 NATIONAL PLAN FOR CIVIL EARTH OBSERVATIONS

A Report by the
U.S. Group on Earth Observations Subcommittee
Committee on the Environment

of the
NATIONAL SCIENCE & TECHNOLOGY COUNCIL

December 2019



Goal One

Support and
Balance the
Portfolio of Earth
Observations

Goal Two

Engage the Earth
Observations
Enterprise

Goal Three

Improve the
Impact of Earth
Observations



USGEO

Satellite Needs Working Group

First-ever whole-of-government approach to identifying desired satellite products and measurement needs across the civilian departments and agencies, and communicating this information to NASA.

NASA assesses which it can serve with current missions, future plans, and/or with new funds. NASA notifies OMB/OSTP and gives feedback to agencies.

Goal 3: Improve the Impact of Earth Observations

- *Action:* Conduct a biennial satellite needs process that includes an analysis showing how each agency has implemented or applied the available satellite data to meet the agency mission objectives
- *First assessment : 2016-2017* - *Second assessment: 2018-2019*
- *Third Assessment began June 2020, completion in April 2021*

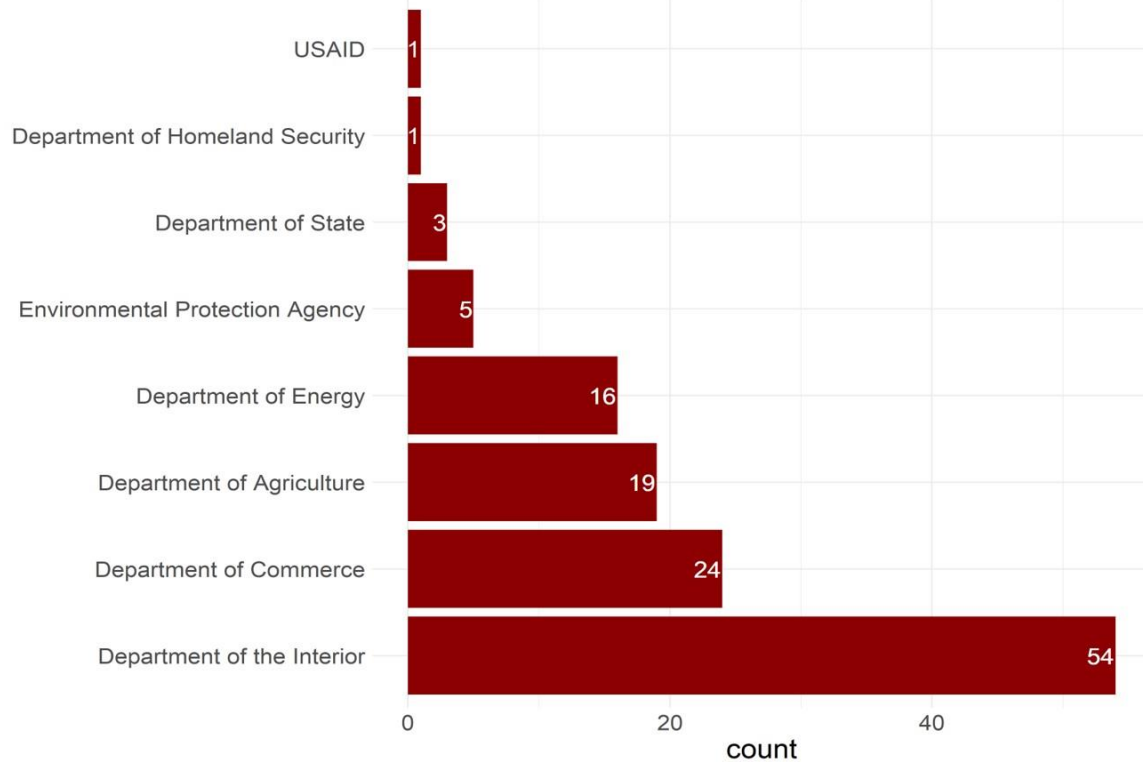
2018 Satellite Needs – Needs Identified

- Production of a NISAR global 200m **Soil Moisture** product.
- Produce a sub-weekly, global **Surface Water Extent** product from optical + radar imagery; 8satellite harmonized product, Landsat-Sentinel-2-Sentinel-1+NISAR and SWOT
- Support ingest of Level 1b **Ocean and Land Color** Instrument data available through the Sentinel Gateway, perform data processing, archiving and distribution of data
- Produce a **Land Surface Change** detection product on a sub-weekly scale at 10 m to 30m: Landsat, Sentinel 2, radar from Sentinel 1 and NISAR
- Produce a North America **Land Surface Deformation** detection product/time series on a sub-weekly scale: Sentinel 1 + NISAR
- Increased spatial & temporal resolution of **Radiation & Clouds** products at SatCORPS
- Conduct GEOS-5 simulations that assimilates satellite and ground base **Aerosol and Trace gas** concentrations (2008-2018) by June 2020
- Low latency **freeboard & ice thickness** over the Great Lakes from IceSat-2
- Animal Tracking: Advance ICARUS **tag miniaturization** and study the potential for **CubeSat/Small Satellite deployment** of an ICARUS-type system



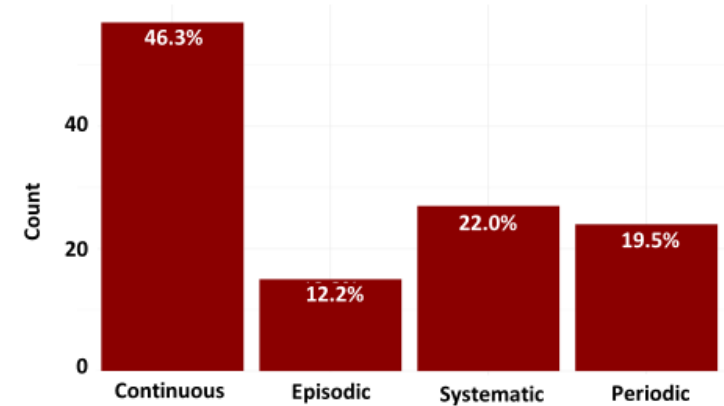
2020 Satellite Needs Submissions

Survey Respondents to 2020 SNWG Survey



- 5 new Departments/Agencies
- NSF submitted needs based on inputs from across the agency

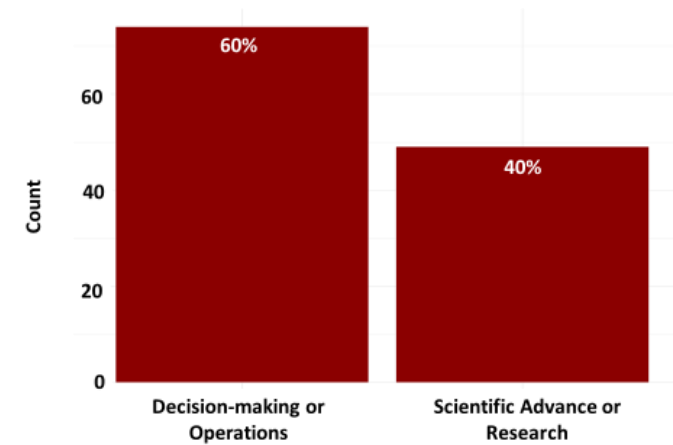
Cyclic Nature of Submitted Needs



Examples

- Periodic: Crop health during season or reservoir levels after snow melt
- Episodic: Imagery during forest fires or eruptions
- Systematic: Time-series to detect landslide motion, volcanic unrest, or ecosystem disturbance

Scientific Nature of Submitted Needs



Innovation Task Team

- Goal 2: Engage the Earth Observations Enterprise
 - *Action:* Perform a feasibility study to advance the Earth Observations Enterprise through activities such as accelerators, incubators, and industry clusters.
 - *Action:* Scope an open-competition program that combines innovative Earth observation data sourcing, including identifying pathways for development and metrics to recognize and measure incubator success.

INTENTION

Capture information on existing efforts

Assess if, how, and where Accelerators et al and Open Innovation could advance the EOE and the EO value proposition.

Identify issues for engagement

Innovation Task Team: Plan

- I. Initial information gathering on Accelerators, Incubators, Industry Clusters and Open Innovation and Prize Competitions
 - II. Landscape assessment – Part A
 - III. Assess & discuss results from Part A
 - IV. Conduct interviews
 - V. Landscape assessment – Part B
 - VI. Synthesize information / Prepare report
- Surface Issues hampering agencies from more quickly and effectively working with the rest of the Earth Observations Enterprise to accelerate innovation and improve access, products, and services
- I. Deliver to USGEO (and EOE, as appropriate)



Data Management Working

- Reestablished to respond National Plan Activities
- Goal 1 –Support and Balance the Portfolio of Earth Observations
- Lead on 5 Actions
 - *Action:* Coordinate activities machine learning, AI, and data fusion to improve the usefulness and value of Earth observations to end-users.
 - *Action:* ... Develop procedures for the calibration and inter-calibration of sensors, and advancing data assimilation and re-analysis of historical data.
 - *Action:* Identify best practices and coordinate investment for commercial cloud services and high-performance computing access ... in coordination with the Federal Chief Information Officer community.
 - *Action:* With the Federal Chief Data Officer Council, coordinate and encourage efforts in data stewardship technologies and techniques to improve Earth observation data discovery and usability.
 - *Action:* Examine agency practices on how Federal funding opportunities are written to ensure that all Federally-funded project data are provided to a publicly accessible archive, consistent with Federal policies and regulations.

Data Management Working Group

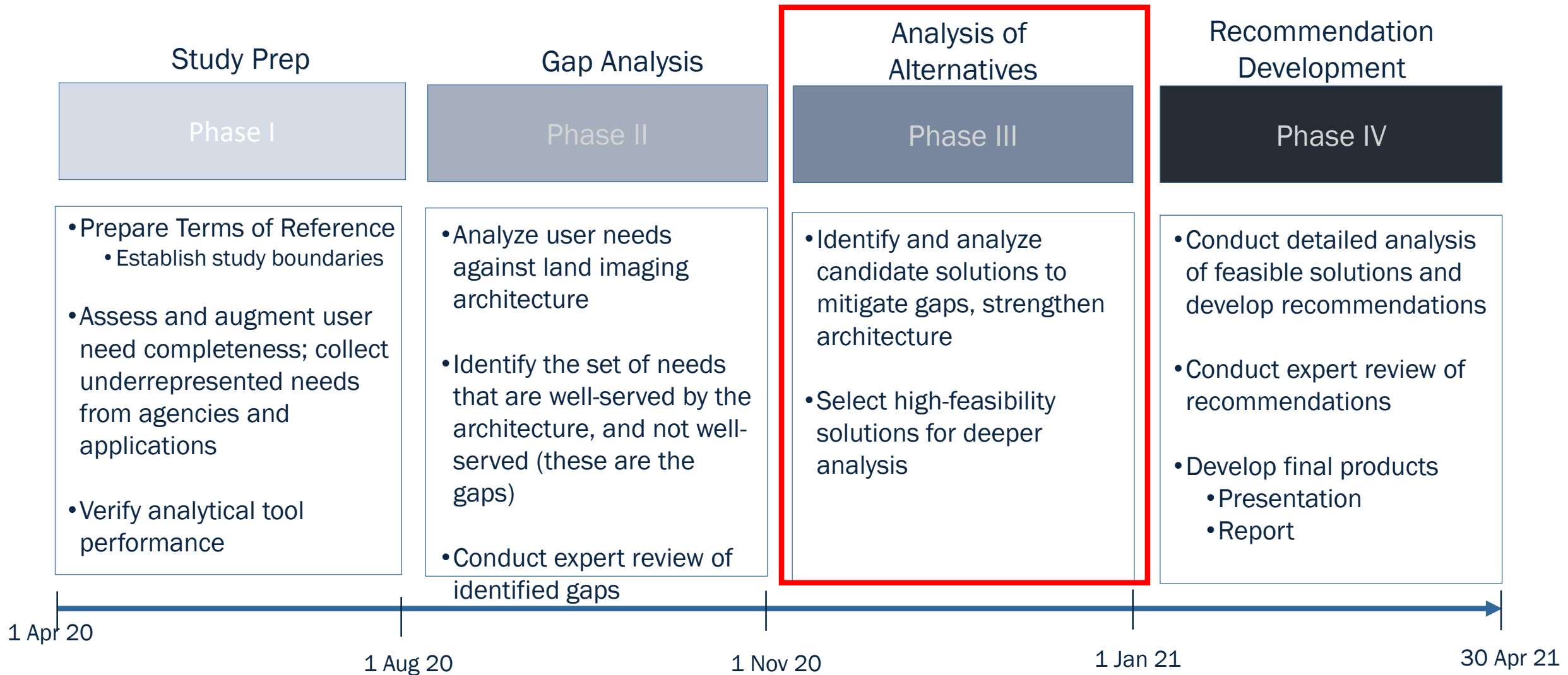
- Input to 6 actions
 - Goal 1: Support and Balance the Portfolio of Earth Observations
 - *Action:* Work with commercial data providers and analytics companies to develop a set of best practices for commercial data buys. (With Commercial Task Team)
 - *Action:* Explore mechanisms for piloting a market-driven clearinghouse for the procurement of Earth observations data and analytics.
 - Goal 2: Engage the Earth Observations Enterprise
 - *Action:* Perform a feasibility study to advance the Earth Observations Enterprise through activities such as accelerators, incubators, and industry clusters. (with Innovation Task Team)
 - *Action:* Identify and evaluate existing models for federal/non-federal provision of Earth observations and web services to highlight areas for increased engagement.
 - *Action:* Engage in a focused, short-term initiative to discover new Earth observations from non-federal sources and determine paths for making the data discoverable and accessible.
 - Goal 3: Improve the Impact of Earth Observations
 - *Action:* Advance analytical tools and capabilities to analyze the Earth observation portfolio for chokepoints, useful measurements, dependencies, and connections to commercial data.



National Plan - National land Imaging Study

- Goal 1: Support and Balance the Portfolio of Earth Observations
 - Objective: Implement innovative Federal procurement and acquisition
 - *Action*: Identify shared agency needs related to land imaging and evaluate options for optimally addressing those needs with current resources through increased agency coordination.
- USGS 1-year National Land Imaging Study to address this objective, by April 30, 2021
 - Provide findings and recommendations that will benefit agency applications – 2022-2026
 - Build on previously collected requirements and capabilities information and analytical tools

National Land Imaging Study Phases



Commercial Task Team

- Goal 1 - Support and Balance the Portfolio of Earth Observations
 - *Action:* Work with commercial data providers and analytics companies to develop a set of best practices for commercial data buys.
- Goal 2 – Engage the Earth Observations Enterprise
 - *Action:* Work with commercial providers to understand issues, agency practices, and policies that foster development of small and medium businesses and start-ups.

Deliverable	Goal of the Deliverable
Non-Federal Data Buys	Understanding of current data procurement - internal USGEO document
Commercial Environmental Data Definitions – White Paper	Government wide agreement on definitions and terminology on licensing; requirements process – internal USGEO document
Best Practices – Understanding the Opportunities and Challenges from the commercial sector’s perspective	Feedback on: government definitions; procurement processes; business opportunities using environmental information; impacts of moving to commercial environmental data buys on the research community – public document





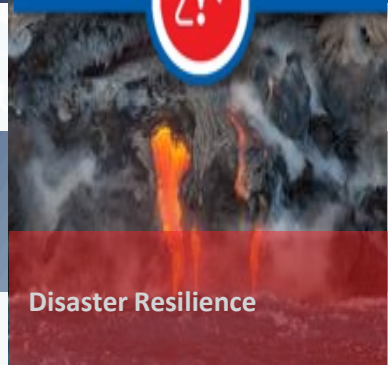
Americas Caucus GEO Principals



Regional GEO Priority Areas Working Groups



Biodiversity and
Ecosystem Sustainability



Disaster Resilience



Food Security and
Sustainable Agriculture



Water Resources
Management



Health



Capacity
Development

Outreach • Workshops • Training • Infrastructure • Data • Tools • Services



Earth Observations for the Americas

New GLAM System Finds Immediate Relevance in 2020

<http://glam.nasaharvest.org/>



"Dry weather that drove the soybean harvest compromises the sowing of wheat. In Córdoba, soil moisture is the lowest in the last 6 years. I'm sharing the GLAM system developed by NASA Harvest, as seen in an excellent meeting of AMA."

- Esteban Copati, Head of Estimations



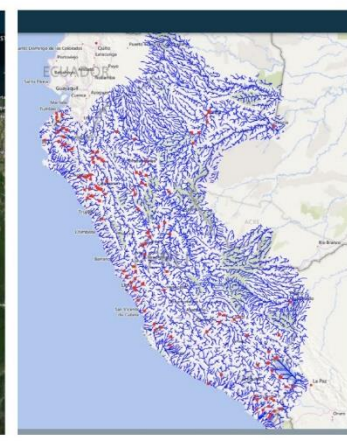
Wheat: the NASA image that sounds the alarm

2 June 2020
AMA Telecon Debuts New GLAM System

Head of Estimations (Bolsa de Cereales) uses system, tweets about the dry conditions compromising wheat planting in northern Argentina. Immediately picked up by one of Argentina's most important news outlets La Nación.



COLOMBIA



PERU



CENTRAL AMERICA

GEOGLoWS Global Streamflow Forecasting System

Capacity Development: AmeriGEO Week

Capacity Building
Address User Needs
Actionable Data & Information

Together, the Americas are advancing use of Earth Observations

Colombia: Geo Director in Colombia and its priorities.

"Pondré la lupa en la erosión del suelo y la contaminación de las aguas": directora del Ideam

AMERIGEOWEEK 2019
August 19 - 23, San Miguel, Lima, Peru
Registration Now Open

AmeriGEOSS Week 2018 Highlights

TOP OUTCOMES:

- GEO-Chile joined GEOSS to co-chair the CWG
- GEO Peru released a new environmental data portal
- GEOSS members from INASA, GEOSIS, and other organizations supporting AmeriGEOSS participants

148 PARTICIPANTS

Plataforma de Información y Coordinación, COVID-19

521713 Total de Casos Confirmados

134595 Activos

374,789 Recuperados

12,329 Fallecidos

Mapa Principal COVID-19

ANÁLISIS, DATOS, ALERTAS, HERRAM. (HERRAMIENTAS DE ANÁLISIS)



Communication, Outreach, Partnerships, Training and Development

GEO Week 2020

Week at a Glance

MON NOV 2	TUES NOV 3	WED NOV 4	THURS NOV 5	FRI NOV 6
WELCOME VIDEO	INDUSTRY TRACK	EXCOM 53	VIRTUAL PANELS	VIRTUAL PANELS
GEO MEMBERSHIP DRIVE	EXCOM 53	INDUSTRY TRACK	Conversation with GEO Principals: Deriving Value from GEO	Open Earth Observations: Approaches to Data Sharing
MEET OUR MEMBERS		GEO AWARDS		

New GEO Members in 2020:
Namibia, Nicaragua, Rwanda

New GEO Participating Organization:
Coalition for Rainforest Nations

New GEO Associate:
Water Youth Network



Appointment of Yana Gevorgyan as the next GEO Secretariat Director effective 1 July 2021

Provisional approval: *Urban Resilience & Human Settlements* as a 4th GEO Engagement Priority



- Dec 7-9, Indigenous-led
- <http://www.earthobservations.org/indigenoussummit2020.php>



ANNOUNCING THE INDIVIDUAL EXCELLENCE AWARDS

Nancy Searby



Dr. Searby embodies GEO's core values and principles:

- Worked tirelessly to raise awareness about GEO's work
- Advanced GEO's capacity development objectives.
- Blends the skills of connection building, diplomacy, leadership and achievement combined with a deep sense of caring and humility

<https://appliedsciences.nasa.gov/our-impact/news/nancy-searby-receives-geo-excellence-award>

AGU PAPERS: EARTH OBSERVATION IMPACT

Monday, 7 December , 2020

- SY006-01: Case Studies of Landsat Users in Machine Learning and AI: Mapping the Benefits of EO Data in a Data Ecosystem
- SY006-02: Valuing Environmental Risk Information: Evidence from Flood Insurance Rate Map Revisions
- SY006-03: Earth Observations Enable Cost-Effective Conservation of Eastern North Pacific Blue Whales
- SY006-04: Earth Observation Technology Applied to SDG 15.8 in West Africa: Multi-data Stream Analysis and Validation Approaches
- SY006-05: The socio-economic benefits of Earth Observation: measurement methods and challenges ahead
- SY006-06: Uncovering the Value in Earth Observations
- SY006-07: Economic and societal benefits of Earth observations: Repository design, development, and testing

National Plan:

Action: Collect current agency-commissioned economic studies and synthesize the state-of-knowledge on the economic value of Earth observations, including their return-on-investment, ability to accelerate innovation, and contributions to economic growth.

Action: Develop a catalog of ways to quantify the social and economic value of Earth observations. Collect, catalog, and publish qualitative narratives and quantitative examples on the benefits of Earth observations.

Interagency Group - NASA, NOAA, USGS + others in GEOVAL community



Observations (USGEO)
Working Group

