

# US Group on Earth Observations Satellite Needs Working Group

## Round 3 (2020) Federal Satellite Needs Survey Subject Matter Expert Workshop

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# Current SNWG Members

## **Department of Energy**

Shaima Nasiri (Co-Chair)

## **USDA**

Rick Mueller (Co-Chair)

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## **NOAA**

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Flavio Iturbide

## **Department Homeland Security**

Lee "Pepper" Spaulding

## **EPA**

Jim Szykman

## **NASA**

Gerald Bawden

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## **Department of State**

Fernando Echavarria

## **USAID**

Michael Crino

Kevin Horn

## **USGS**

Greg Snyder

## **National Science Foundation**

Greg Anderson

## **Census Bureau**

Pete Reid

## **NIST**

Steve Maxwell

## **DOD/NAVY**

Wayne Estabrooks

Caroline Wiernicki

## **DOD/NGA**

Scott Szymanski

Additional key participants: Gifford Wong, (STPI), Rina Zhang (STPI), Wade Price (NOAA/USGEO)

# USGEO's SNWG is tasked with surveying the satellite needs of civil agencies

- A two-year cycle (biennial) was approved by the U.S. Group on Earth Observations (USGEO)
  - There have been three biennial cycles starting in 2016, 2018, 2020
- Process allows Federal departments and agencies to communicate their Earth observation requests for specific satellite-based Earth observation data and information products to agencies with Earth-observing capabilities
- Information gathered during this process will be used to influence NASA's decisions on future sensors placed into orbit, new data products, and new data delivery strategies

# Timeline of Third (2020) Satellite Needs Survey

- 2016 – 77 responses
- 2018 – 79 responses
- 2020 – 123 responses

Significant increase in the number of submissions in 2020

- Phase 1 Jun - Sep 2020
  - SNWG conducts survey & USGEO sends results to NASA
- Phase 2 Oct – Nov 2020
  - NASA assembles NASA, USGS, and NOAA assessment teams
- Phase 3 Nov – Apr 2021
  - Teams conduct detailed needs assessment and interview respondents
- Phase 4 Apr – May 2021
  - NASA develops responses to individual surveys and potential solutions to needs
- Phase 5 May – Jun 2021
  - NASA review and report out

# 2016 Survey Updates

- USGEO was tasked with developing a survey in 2015. The SNWG was formed and the first federal satellite needs survey was conducted during 2016-2017.
- 77 Surveys were submitted to NASA.
- NASA proposed a set of activities in response to the submissions.

Formulation



Implementation



Operational

SNWG-2016 Activities	
Activity	Status
Historical airborne data products	The Airborne Data Management Group is inventorying NASA airborne and field campaigns. Direct data product access is through <a href="#">CASEI</a> as campaigns are curated.
Harmonized Landsat Sentinel-2 (HLS) product	Harmonized, science-quality surface reflectance products reprojected from Landsat 8 ( <a href="#">L30</a> ) and Sentinel-2 A/B ( <a href="#">S30</a> ) were released in August 2021. Historical processing is ongoing.
Support for Maxar products	NASA <a href="#">CSDA</a> is actively supporting users requesting archived Maxar/Worldview data as well as new acquisitions provided through NGA's <a href="#">NextView</a> license.
Additional NISAR downlink station	NASA is installing a new NISAR downlink station that will enable the collection of increased resolution (~7x7 m) imagery over North America and support SNWG Global Soil Moisture Product.
Support to agencies in accessing the requested data	The <a href="#">Data Curation for Discovery</a> team improves the discoverability and publication of NASA Earth Science data and other curated Earth observation data in trusted catalogs and platforms.

# 2018 Survey updates/ NASA activity status

SNWG-2018 Activities	
Activity	Status
Global 200m NISAR soil moisture product	NISAR science team members are evaluating four soil moisture retrieval approaches with an emphasis on agricultural regions and forests. Algorithm evaluation is underway.
Global surface water extent product	The Operational Products for End Users from Remote Sensing Analysis ( <a href="#">OPERA</a> ) project is implementing these three solutions that utilize common satellite data. Five product releases are scheduled between February 2023 and September 2025. A virtual community workshop will be held on February 4 and <a href="#">is open</a> to all Agency and SNWG participants.
Land surface disturbance/change product	
Land surface deformation product	
Water quality product	Analysis ready Level 2 and Level 3 products from OLCI on Sentinel-3 A/B are <a href="#">available</a> through the Ocean Biology Processing Group.
Radiation & clouds – <a href="#">SatCORPS</a>	<a href="#">SatCORPS</a> developed a global deployment template for high resolution satellite data processing in the cloud. The first test dataset will be completed in spring 2022.
Atmospheric composition using GEOS-5	The GEOS-CF modeling system is being upgraded to incorporate chemistry and aerosol modules along with transport and deposition algorithms from the GEOS model.
Low latency freeboard & ice thickness products over the Great Lakes	Expedited Sea Ice Height products are <a href="#">available at NSIDC</a> and will be discoverable via LANCE in 2022. A new algorithm approach for lake ice thickness product is under investigation.
Animal tracking using ICARUS ("Internet of Animals")	Activities underway include advancing the technical state of the art, working hand in hand with federal agencies, and integrating animal movement data with NASA remote sensing.

Formulation



Implementation



Operational

# SNWG-2020 Submitted a Total of 123 Surveys

*First-Time  
Participation in  
the SNWG Process*

Department	Agency (23) <i>Agency Names are linked to their section in Presentation Mode</i>	No. of Submitted Surveys
<b>Department of Energy</b>	Office of Science (SC)	16
<b>Department of Interior</b>	Bureau of Land Management (BLM)	4
	Bureau of Indian Affairs (BIA)	1
	Fish and Wildlife Service (FWS)	7
	National Park Service (NPS)	4
	Office of Surface Mining Reclamation and Enforcement (OSMRE)	3
	Bureau of Land Reclamation (USBR)	6
	United States Geological Survey (USGS)	29
<b>Department of Commerce</b>	<i>National Institute of Standards and Technology (NIST)</i>	2
	National Oceanic and Atmospheric Administration (NOAA)	19
	<i>United States Census Bureau (USCB)</i>	3
<i>Department of State</i>	<i>Bureau of Oceans and International Environment and Scientific Affairs (OES)</i>	2
	<i>Office of Management Policy, Rightsizing and Innovation (M/PRI)</i>	1
<b>Department of Homeland Security</b>	Office of Intelligence and Analysis (OIA)	1
<b>US Agency for International Development</b>	USAID	1
<b>Department of Agriculture</b>	Agriculture Research Service (ARS)	8
	Foreign Agriculture Service (FAS)	3
	Forest Service (FS)	1
	Farm Service Agency (FSA)	1
	National Agriculture Statistics Service (NASS)	4
	Natural Resources Conservation Service (NRCS)	2
<b>Environmental Protection Agency</b>	Office of Air and Radiation (OAR)	3
	Office of Research and Development (ORD)	2

National Science Foundation evaluated satellite needs through a separate process

# Proposed Activities Identified in the 2020-21 Satellite Needs Working Group Analysis

ID #

Summary of Proposed Activity

- # 1 TEMPO/GOES Near Real-Time and Enhanced Products
- # 2 Global Harmonized Landsat Sentinel-2 Derived Vegetation Indices Suite
- # 3 Vertical Land Motion Product (VLM)
- # 4 Global Evapotranspiration (G-ET) Product
- # 5 Harmonized Surface Thermal Infrared Product (H-TIR)
- # 6 Global Deformation Monitoring at the 50 Most Active Volcanoes
- # 7 Air Quality Forecasts and Distributed Pandora Sensors
- # 8 Merged GNSS-RO/Atmospheric Sounder Measurements for Planetary Boundary Layer Products (PBL GNSS-RO)
- #9 EarthDEM 2.0 m Elevation Mosaic and Strip Products
- # 10 Sea Ice from Sea Surface Salinity

## Solutions Featuring Commercial Data

- A Broader Access to Planet Data (License Uplift)
- B Access to DESIS Data (License Renewal)
- C Broader Access to Spire Data (License Uplift)
- D Discovery and Access to Commercial Data at NASA



# Proposed Commercial Activity A Uplift Planet License

## UPDATE

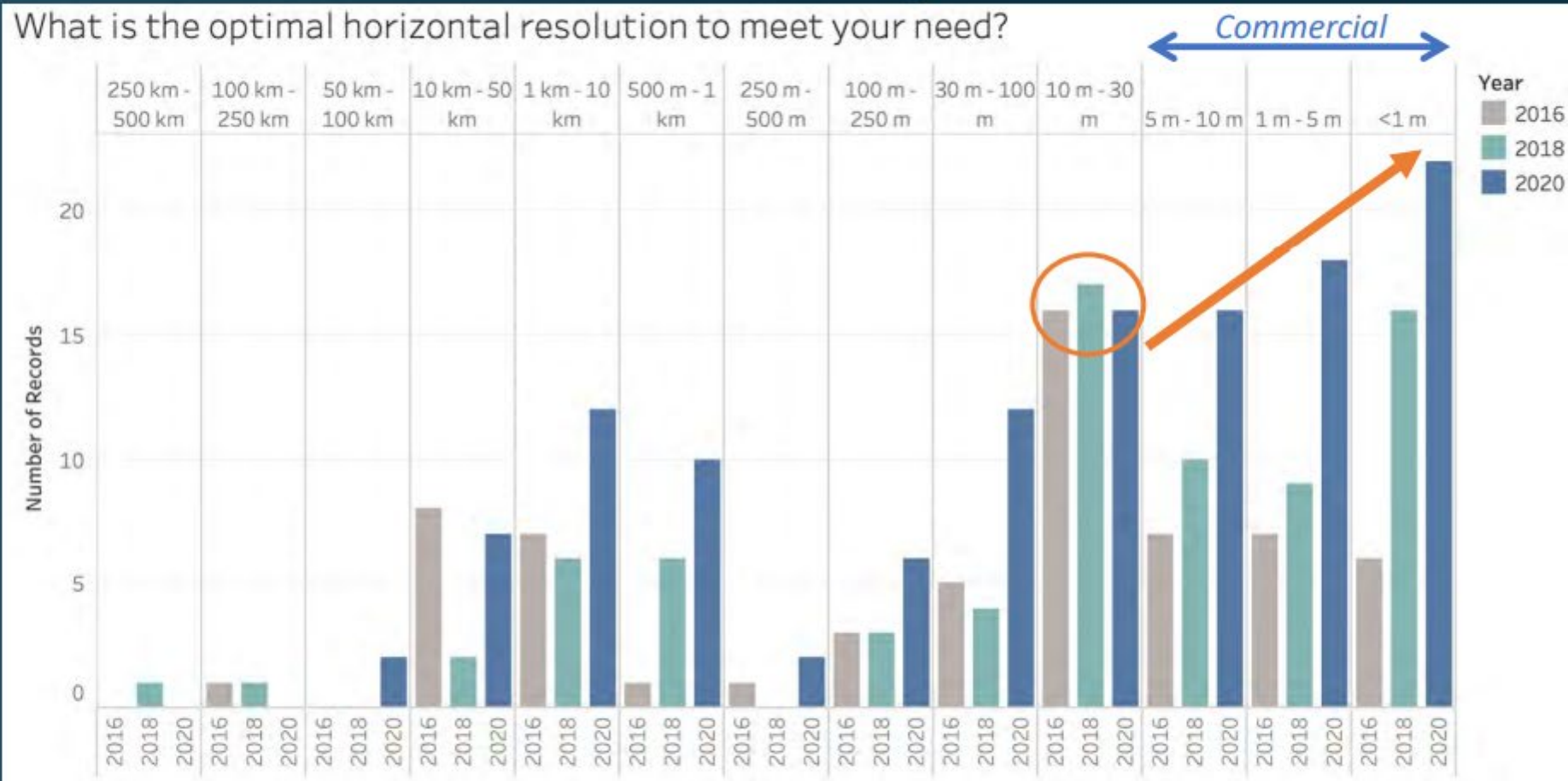
- NASA "Uplifted" Planet End User License Agreement (EULA) to include U.S. Federal Civilian Agencies, their contractors and grantees, and NSF
- The EULA does not include DOD, nor IC.

The EULA covers scientific non-commercial use; unlimited access with 5 million sq. km per user as default; 30-day delay for PlanetScope w/low-latency with justifications & RapidEye only. PlanetScope resolution: 3-5m.

<https://earthdata.nasa.gov/esds/csdap/commercial-datasets>



# Optimal Horizontal Spatial Resolution to Meet Satellite Needs by SNWG Year



Most frequent request in 2016-18: 10-30 m

Most frequent request in 2020: <1 m

Overall trend increase: <10 m

Thank you!

Be on the lookout for the  
2022 SNWG Survey Starting June 1, 2022

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