



OPERA

Observational Products for End-Users from Remote Sensing Analysis

Fifth OPERA Workshop

September 11, 2025

Updates from NSITE (NASA's contribution to SNWG)
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What is NSITE?

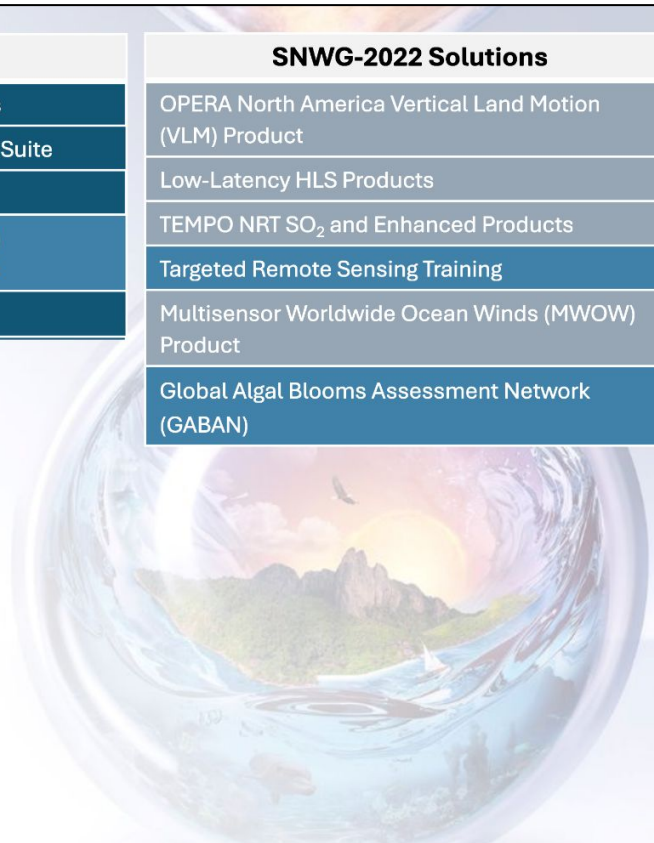


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- NSITE: NASA's Satellite Needs Working Group Implementation Team
 - New name motivated by confusion between SNWG (interagency working group) and NASA's role
 - NSITE includes all NASA affiliated support to SNWG:
 - SNWG Management Office at NASA MSFC
 - Facilitates the assessment, implementation, and oversight for the identified solutions; responsible for stakeholder engagement for solutions from the 2020 cycle onwards
 - The Interagency Satellite Observation Needs (ISON) Program at NASA HQ
 - Natasha
 - NASA-affiliated solution implementation teams (GSFC, MSFC, ARC, LaRC, and JPL)
 - The teams that are implementing the different solutions, including the OPERA team
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Status of SNWG solution portfolio



SNWG-2016 Solutions	SNWG-2020 Solutions	SNWG-2022 Solutions
Airborne Data Management Group (ADMG)	TEMPO/GOES Near Real-Time Products	OPERA North America Vertical Land Motion (VLM) Product
Harmonized Landsat and Sentinel-2 (HLS) product	Global HLS-Derived Vegetation Indices Suite	Low-Latency HLS Products
High-Resolution North America NISAR Data	Air Quality Sensors and Forecasts	TEMPO NRT SO ₂ and Enhanced Products
Data Curation for Discovery (DCD)	Merged Planetary Boundary Layer (PBL) Temperature and Water Vapor Products	Targeted Remote Sensing Training
SNWG-2018 Solutions	Sea Surface Salinity with Sea Ice Mask	Multisensor Worldwide Ocean Winds (MWOW) Product
Global NISAR Soil Moisture Product		Global Algal Blooms Assessment Network (GABAN)
OPERA Global Dynamic Surface Water Extent (DSWx) Product		
OPERA Near-Global Surface Disturbance (DIST) Product		
OPERA North America Surface Displacement (DISP) Product		
Water Quality Products		
Global Cloud Composites from SatCORPS		
GEOS-5 Atmospheric Composition Reanalysis		
Low-Latency ICESat-2/ATLAS Products		
Animal Tracking (Internet of Animals)		
	Stage of Production	
	Formulation	
	Implementation	
	Operations	



SNWG-2024 Cycle



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- This cycle, 25 agencies submitted a record 124 surveys, with three first-time agencies.
 - Steady increase in the need for continuous, routinely collected, high-quality, free data (as opposed to data for periodic or episodic needs)
 - Spatial resolution is the most critical attribute to agencies; broad need for 10-30 m to <1 m spatial resolution data (needs for 10-m HLS, OPERA-DIST, and OPERA-DSWx were communicated)
 - Most frequent request is for daily data with 1-day latency; about 1/3 request sub-daily frequency and latency
 - Decision-making needs are more likely to request high level data products
 - Data volume and lack of computational and human resources are the most common obstacles to the use of satellite data
 - OPERA product were frequently mentioned in the surveys (including an interest in 10-m product suites) and prominent in future solution brainstorming!
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2024 solutions (presented to OMB 9/2/2025)



Top three

- High-Resolution Harmonized Land Surface Temperature Products within HLS
- Accessible 3D Topographic Mapping Software (ASP software from Ames)
- FIRMS-2G: Second Generation of the Fire Information for Resource Management System

Additional Possible Solutions

- 10-m HLS (US, not global)
 - High-Resolution Evapotranspiration Product within HLS (expansion of OpenET)
 - Ongoing and Mobile Pandora Measurements in Smoky Regions
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- New solution roll-out from the 2024 assessment
 - Outreach:
 - External webinar series to inform the broader community about SNWG solutions
 - Newsletter about SNWG updates
 - HLS workshop
 - **Impact stories are important – actual impact and not potential impact, showcasing both interagency work *and* collaboration between NASA entities**
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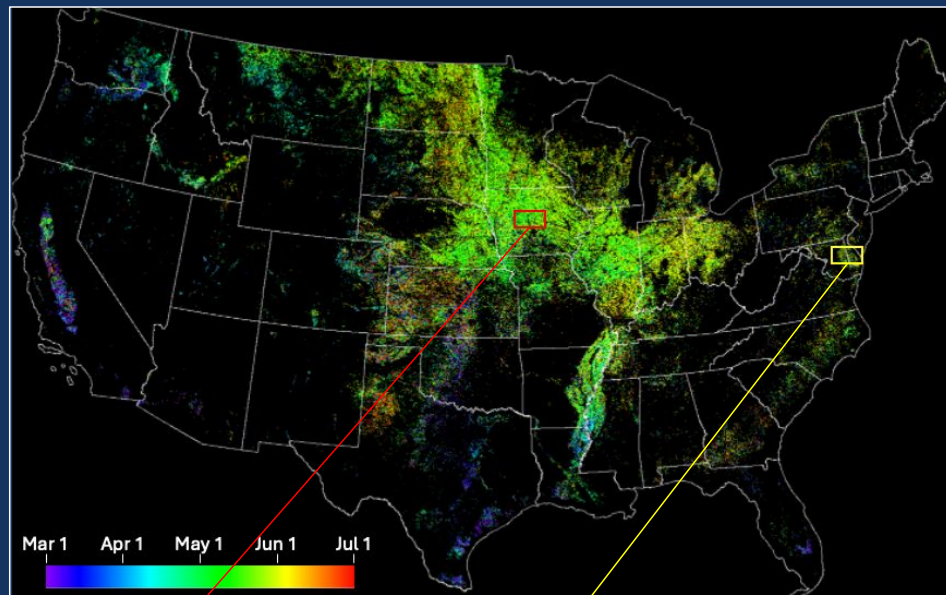
How the USDA is using HLS data to track crop emergence across the United States



USDA needs **timely information** on planting, crop development, conditions, and harvesting to support weekly crop progress reports which inform potential agricultural interventions, supply and demand projections, and economic outlooks.

The Harmonized Landsat Sentinel-2 (HLS) dataset, provided by SNWG, enables near-daily mapping of **crop emergence at field scale**.

Ensuring the USDA has up to date, accurate information on field conditions supports **strong agricultural and economic growth**.



HLS-derived green-up dates for crops in 2023; corn and soybean emerge within a short time frame in central Iowa (red box) compared to more diverse crop green-up dates in the Delmarva Peninsula (yellow box).

Credit: **Feng Gao**, USDA-ARS Hydrology and Remote Sensing Lab.

