

OPERA Global Dynamic Surface Water Extent (DSWx) Product Suite

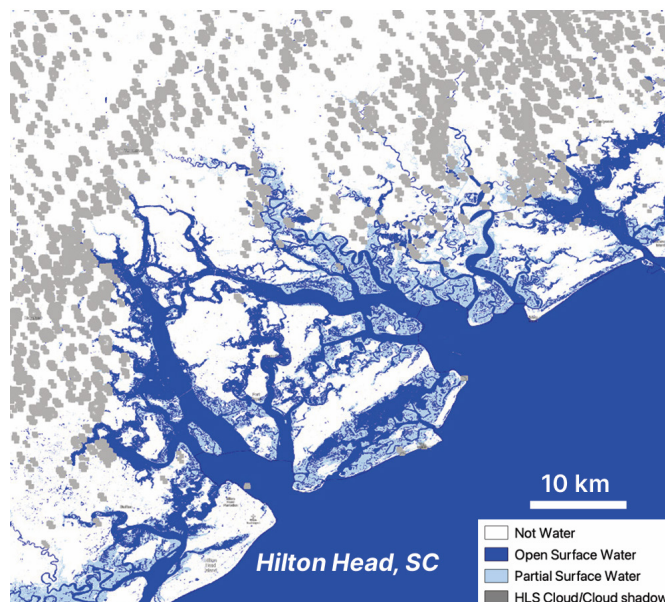
Satellite Needs Working Group - Solution Fact Sheet

NASA's Satellite Needs Working Group (SNWG) Implementation Team (NSITE) representatives from the Jet Propulsion Laboratory (JPL) Observational Products for End-Users from Remote Sensing Analysis (OPERA) project are developing a suite of near-global Dynamic Surface Water Extent (DSWx) products from optical and synthetic aperture radar (SAR) imagery. The suite consists of three products that utilize the temporal frequency of the Harmonized Landsat and Sentinel-2 (HLS: DSWx-HLS) optical imagery, with the cloud penetrating capability of Sentinel-1 (DSWx-S1) and NASA-ISRO Synthetic Aperture Radar (NISAR: DSWx-NI) data. DSWx is analysis-ready across the product suite.

Tidal channel networks near Hilton Head, South Carolina developed utilizing DSWx-HLS. Features shown from the HLS input mask include: Open Surface Water (dark blue), Partial Surface Water (light blue), Not Water (white), and Cloud/Cloud Shadow (gray). These data can be explored in NASA Worldview.

<https://go.nasa.gov/3ARW4Nc>

Credit: OPERA Jet Propulsion Laboratory



Scientific & Societal Benefit

- Provides near-global data of surface water extent for all land masses except Antarctica at 30 m resolution
- Measures surface water multiple times per week, depending on cloud conditions
- Blends the benefits of both optical and SAR imagery to produce surface water observations through clouds and vegetation, day or night, and in areas of complex terrain
- Improves water resource management, disaster response, and understanding of hydrologic processes through surface water observations

NASA's SNWG Implementation Team (NSITE)

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Data Characteristics			
Products	DSWx-HLS	DSWx-S1	DSWx-NI
Platform	Harmonized Landsat 8 and Sentinel-2A/B/C (HLS)	Sentinel-1A/C	NASA-ISRO Synthetic Aperture Radar (NISAR)
Sensor Type	Optical	Radar	
Processing Level	3		
Temporal Coverage	April 2023 - present	September 2024 - present	Based on NISAR availability
Temporal Frequency	~ 3 days	12 days; 6 days in certain areas; higher with S-1C	~ 6 days
Spatial Coverage	Near-global (all land masses except Antarctica)		
Spatial Resolution	30 m		
Data Format	Cloud-optimized GeoTIFF		

How do I access this data?

OPERA DSWx products are distributed by NASA's Earthdata archive, including data access, documentation, and usage examples.



NASA's Earthdata Archive

Where can I find more information?

More information on OPERA DSWx products is available on this solution's webpage. The OPERA website provides further information on DSWx and other OPERA products.



OPERA DSWx Webpage



OPERA Website

Background Image Credit: Generated in QGIS using provisional DSWx products

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