National Aeronautics and Space Administration

EARTHDATA

Introducing the ASF Displacement Portal

Forrest Williams
Alaska Satellite Facility

Agenda

- Overview of the OPERA-DISP products
- Caveats for the products
- **Demo: ASF Displacement Portal**
- Q&A

OPERA-DISP

- Measures surface displacement of the Earth at cm scales
- Useful for studying displacement from many sources
  - Earthquake, groundwater withdrawal, landslide, etc.
- Created by the JPL OPERA team
- Hosted at the Alaska Satellite Facility
- PS+DS Time Series InSAR data

National Aeronautics and Space Administration

InSAR

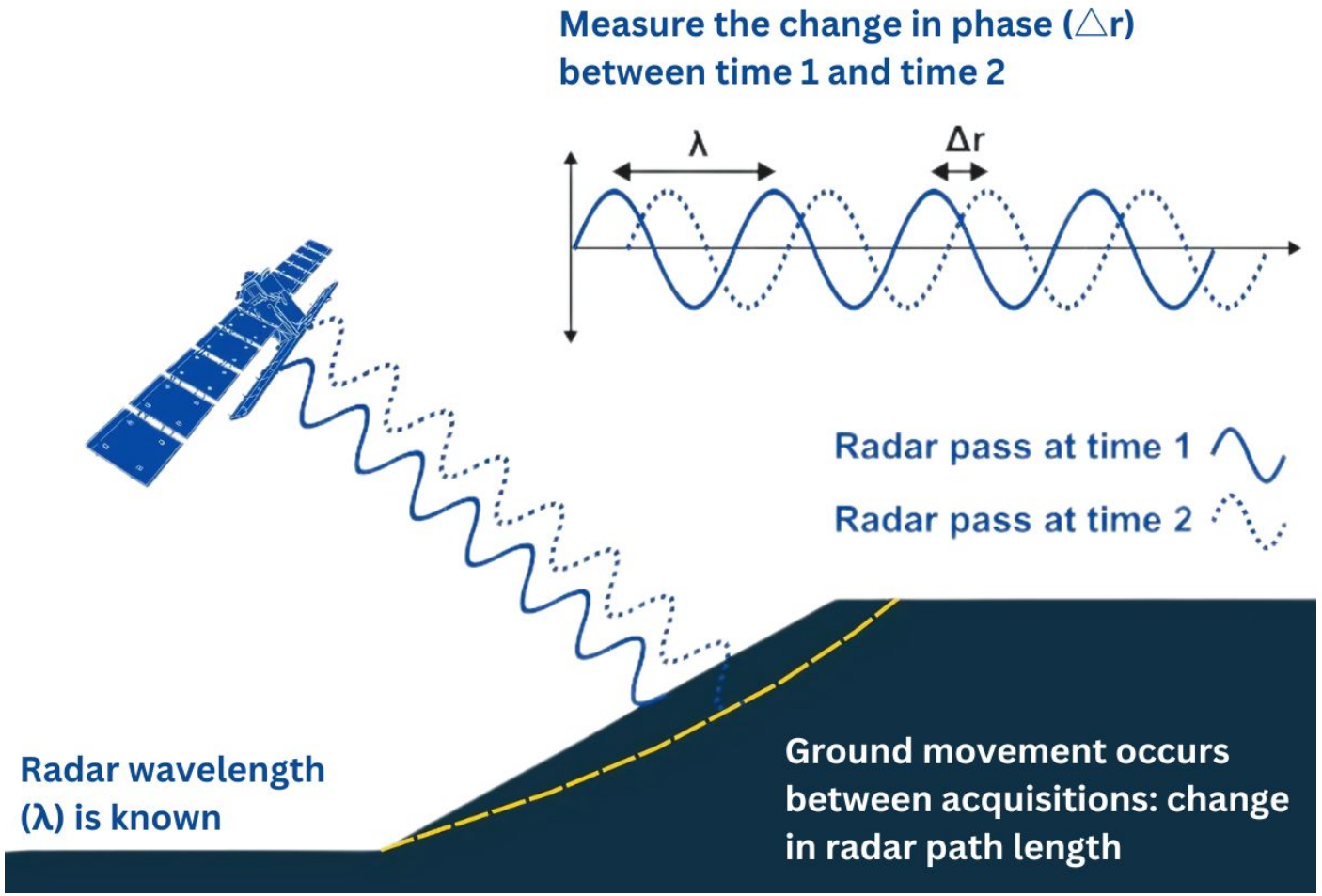
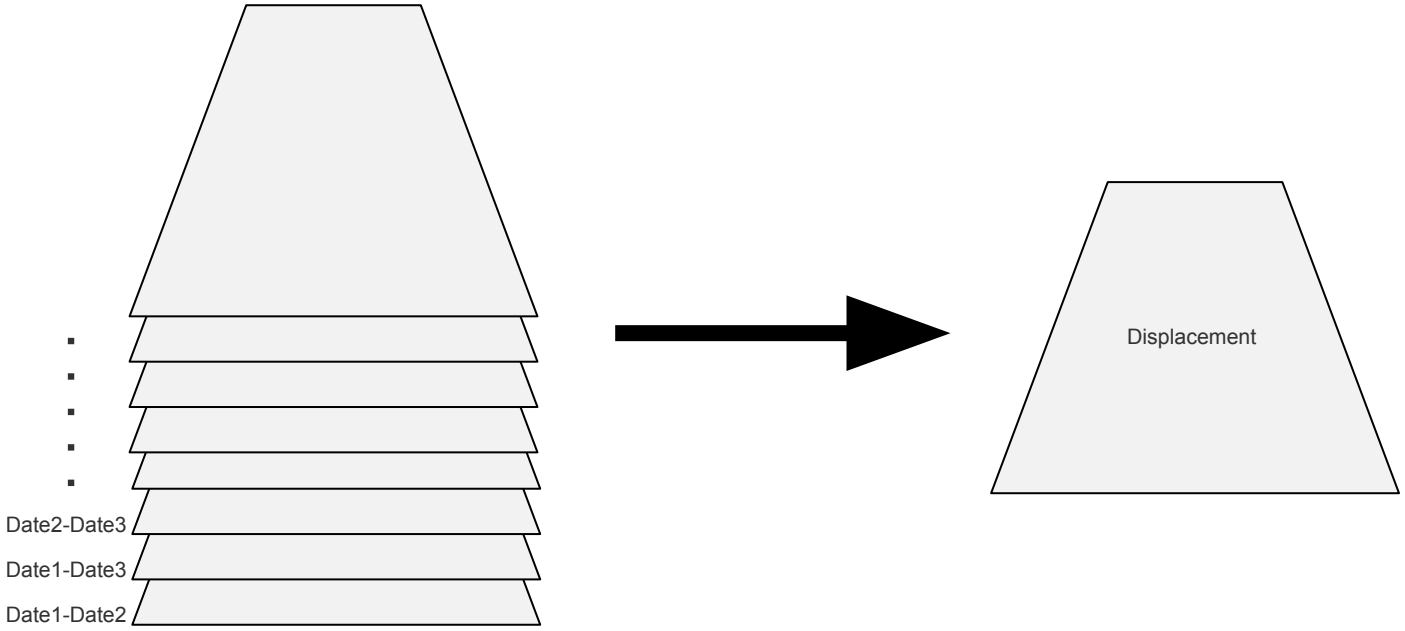


Image Credit: SatSense

Time Series InSAR

Combine many InSAR images to reconstruct displacement over time

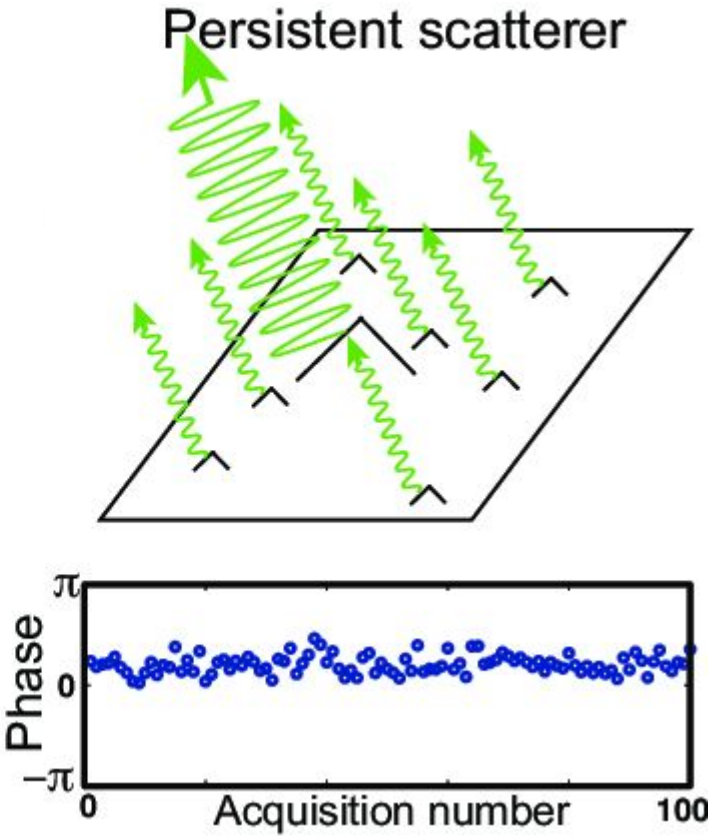


National Aeronautics and Space Administration

PS Time Series InSAR

PS: Persistent scatterer

- Treat highly-coherent (stable) features as single points
- High resolution
- Low spatial coverage

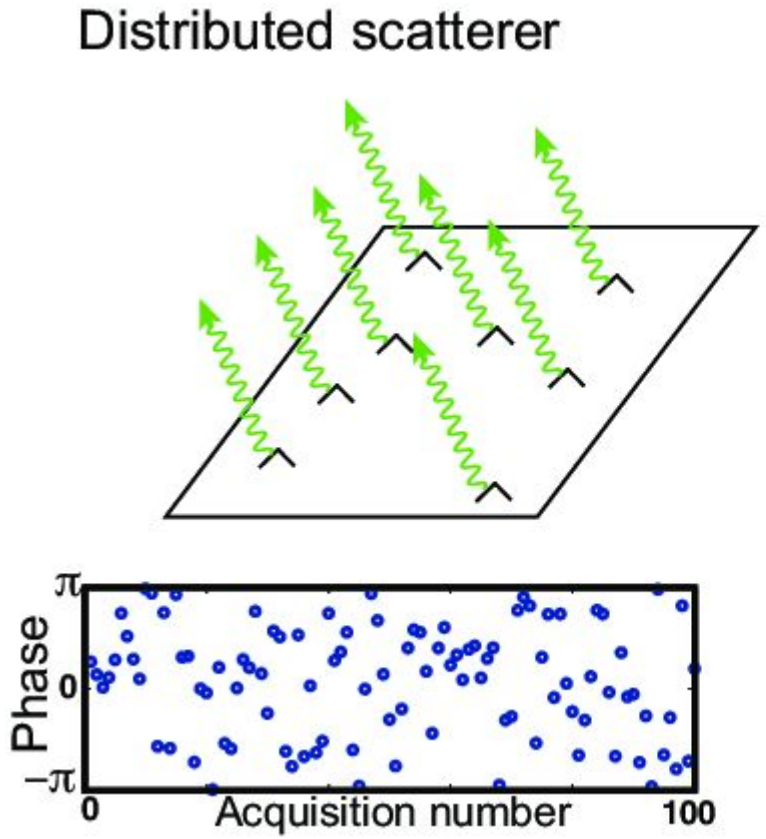


National Aeronautics and Space Administration

DS Time Series InSAR

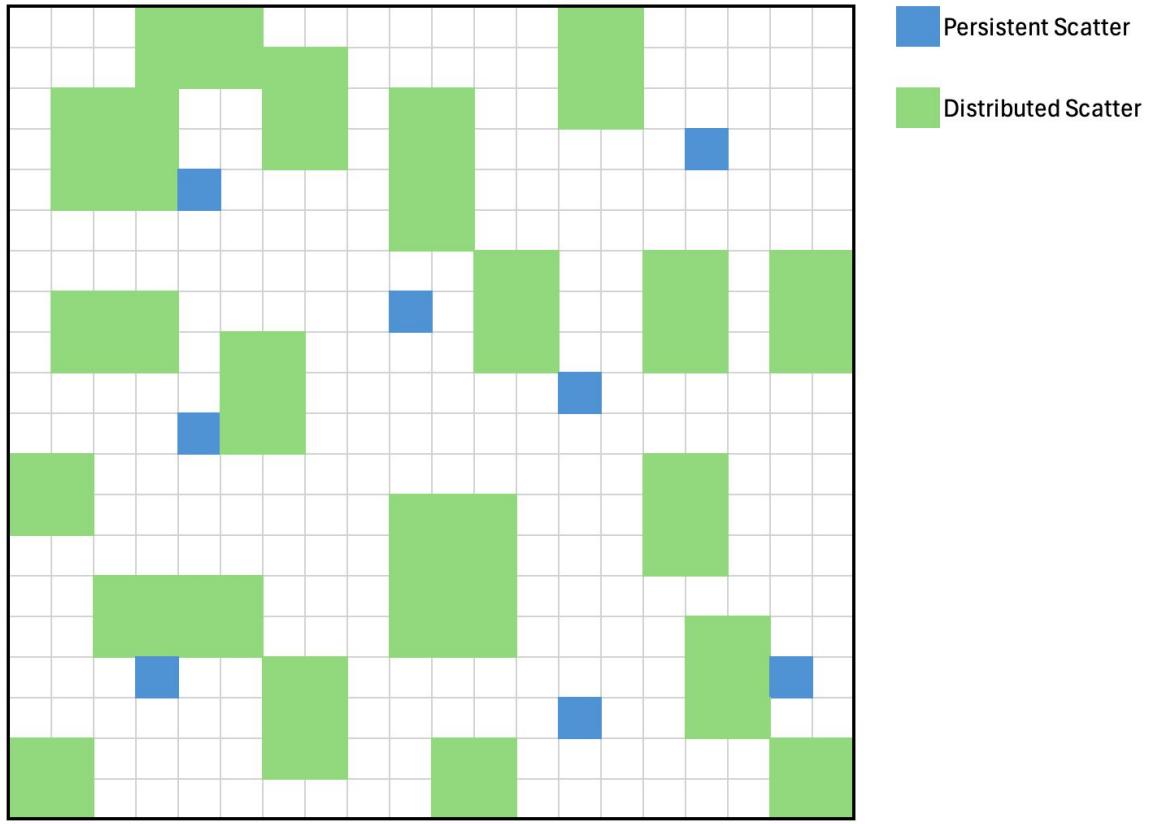
DS: Distributed Scatters

- Treat less-coherent but close features as larger features via averaging
- Low resolution



PS+DS Time Series InSAR

PS+DS: Combine both scatterer types into a single analysis



National Aeronautics and Space Administration

OPERA-DISP Specs

- **Spatial Coverage:** Most of North America and U.S. outlying territories
  - Creation is in progress
  - Southwestern U.S. is most complete
- **Temporal Coverage:** 2016-2024
  - Forward processing towards end of year
- **Pixel Spacing:** 30 m

OPERA-DISP File Format

- Cloud-optimized NetCDF files
- Important layers
  - Displacement
  - Filtered, local displacement
  - Coherence
  - Reliability mask

Displacement is along the satellite's line-of-sight

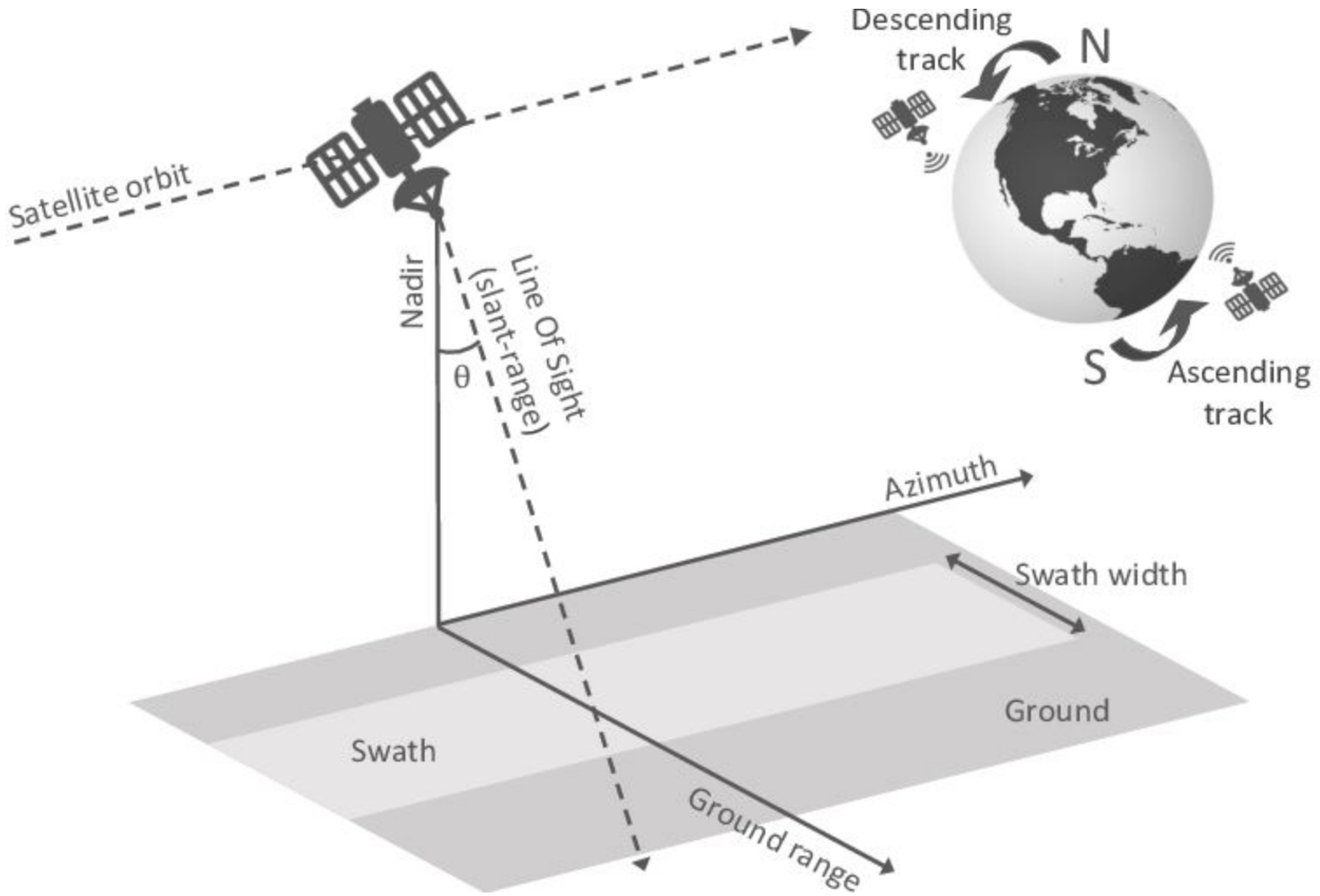
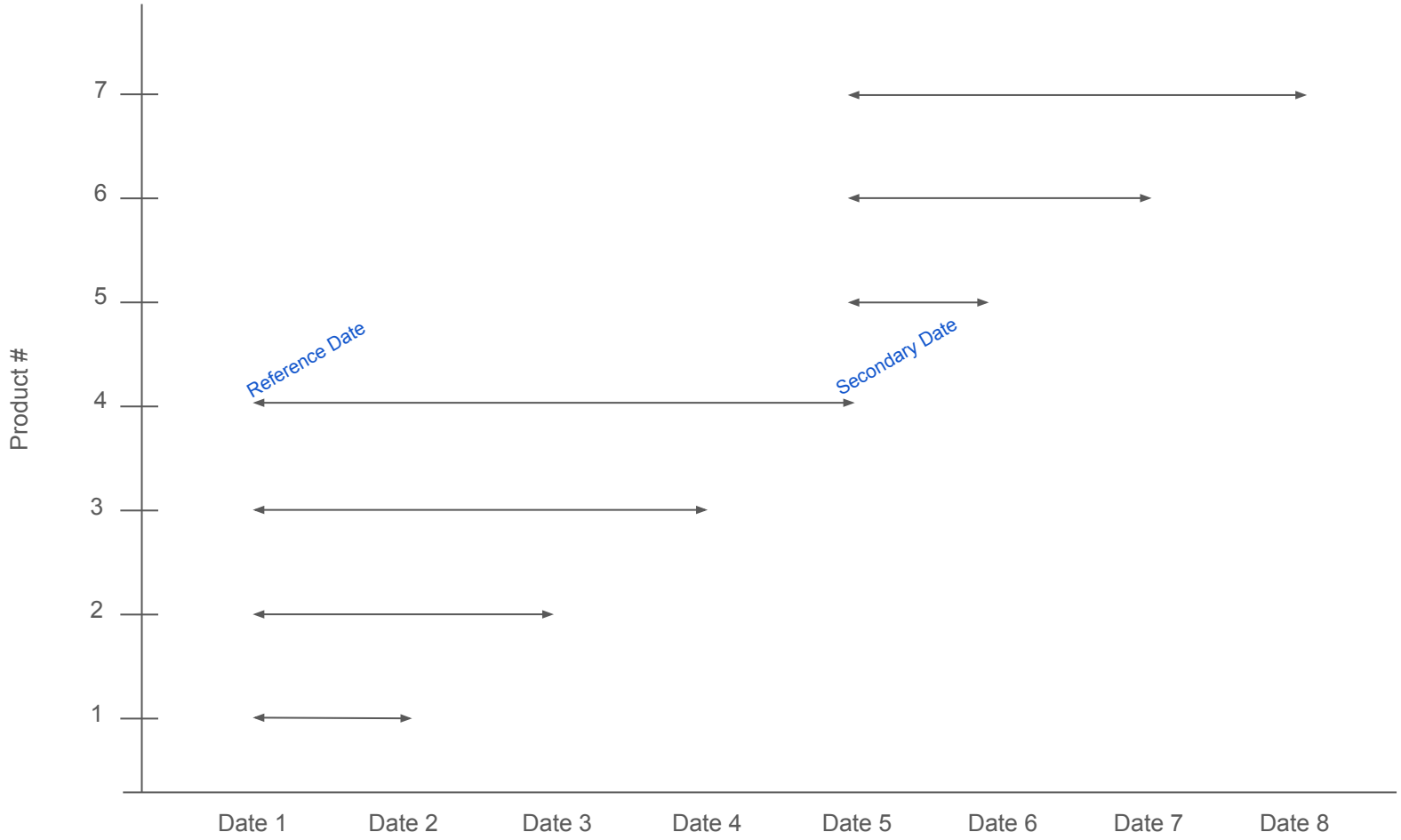


Image Credit: TRE Altimera

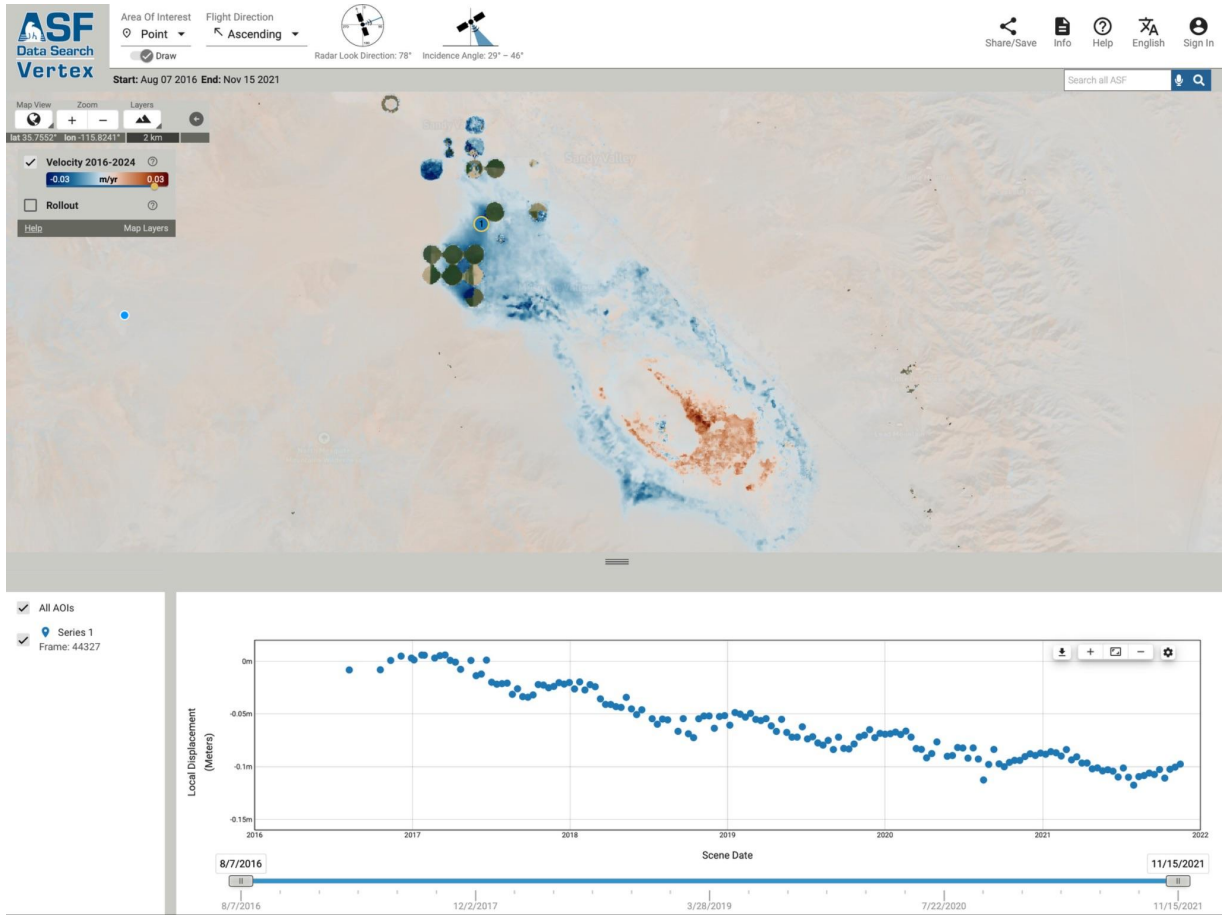
Displacement is between a specific reference and secondary date



National Aeronautics and Space Administration

ASF Displacement Portal

- Open-source web interface for OPERA-DISP dataset
- Offers intuitive spatial browsing and direct exploration of the data
- Uses local displacement



National Aeronautics and Space Administration

DEMO!

National Aeronautics and
Space Administration

Resources

- https://displacement.asf.alaska.edu
- https://www.jpl.nasa.gov/go/opera/products/disp-product-suite/
- https://search.asf.alaska.edu

National Aeronautics and
Space Administration

Try out the portal today!

CONTACT
uso@asf.alaska.edu

WEBSITE
displacement.asf.alaska.edu