



# An Introduction to Synthetic Aperture Radar (SAR) and Its Applications

November 6, 13, & 20, 2024

11:30-13:30 (English) or 14:30-16:30 (Spanish) EST (UTC-5)

Synthetic Aperture Radar (SAR) has the capability to observe the Earth's surface both day and night and through most weather conditions, making it an ideal sensor to support a wide range of science and applications. Additionally, unique capabilities of SAR include its ability to penetrate through various mediums (such as vegetation, snow, and soil), measure surface deformation and small movements on the order of centimeters, and its sensitivity to structure and to moisture content. These capabilities are valuable for monitoring vegetation structure and land use, detecting surface deformation and movements in land (e.g., earthquakes, landslides) and ice (e.g., glacier movement), flooding, and soil moisture, to name a few. This online webinar will provide an introduction to SAR, including interferometric SAR (InSAR), as well as a review of the characteristics of historical, current and upcoming openly available SAR satellite data. It will also explore the type of applications that each sensor can best address. Additionally, this webinar will discuss online sources of openly available SAR data, along with tools, software, and other resources to understand, explore, and facilitate the analysis of SAR data.

## Part 1: Introduction to Synthetic Aperture Radar (SAR)

ARSET Instructors: Erika Podest

Objectives:

- Identify radar remote sensing signal characteristics
- Recognize how the radar signal interacts with the surface
- Interpret a SAR image to distinguish different features (e.g., vegetation, water, inundation) detected by the sensor
- Identify application areas where different SAR sensors are most applicable
- Compare and contrast the capabilities and characteristics of historic, current, and upcoming SAR data

## Part 2: Introduction to Interferometric SAR (InSAR)

ARSET Instructors: Erika Podest

Guest Instructors: Eric Fielding (JPL)

Objectives:

- Identify the basics concepts of Interferometric SAR
- Identify the steps to generate a SAR interferogram
- Interpret an interferogram to measure surface deformation
- Identify the applications that InSAR can address



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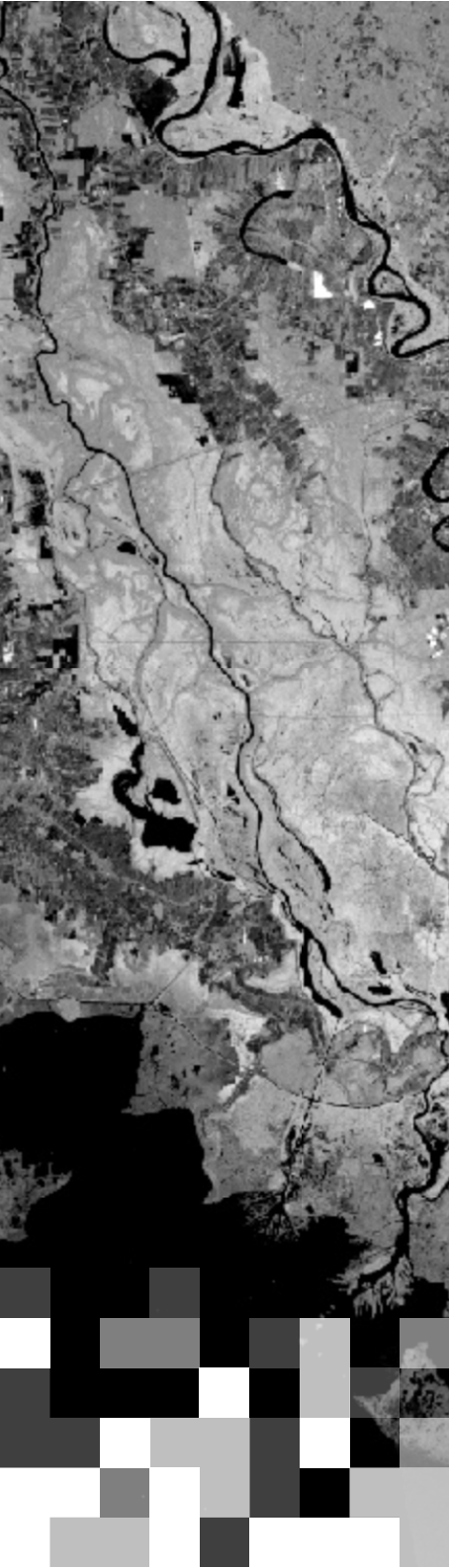
### Part 3: An Overview of SAR Data Sources and Tools

ARSET Instructors: Erika Podest

Guest Instructors: Franz Meyer (ASF, University of Alaska, Fairbanks), Heidi Kristenson (ASF)

Objectives:

- Access openly available SAR data from the Alaska Satellite Facility (ASF) Distributed Active Archive Center (DAAC)
- Explore tools to visualize and download openly available SAR data from the ASF DAAC



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