Remote Sensing for Climate-Sensitive Infectious Diseases

October 7 & 9, 2025

11:00-13:00 EDT (UTC-4)

Climate-sensitive vector-borne diseases such as malaria impact millions of people each year, causing more than 700,000 deaths annually, according to the World Health Organization (WHO). Satellite remote sensing data can provide valuable insights for monitoring conditions which support disease vectors. In this training, participants will learn the basic principles of how satellite remote sensing data can be applied to track climate-sensitive vector-borne disease outbreaks and provide early warnings for potential outbreaks. Participants will learn about general approaches to apply satellite remote sensing data when studying or forecasting climate-sensitive infectious diseases. These will be illustrated with a case study example in the forecasting of malaria. Participants will also become familiar with some of the common, freely available NASA remote sensing datasets used in these applications, as well as where and how to access them and how to decide which datasets are fit for their purpose.

Part 1: How Remote Sensing Can be Used to Study Climate-Sensitive Infectious Diseases

Host: Assaf Anyamba

Guest Instructors: Tatiana Loboda

- Identify environmental variables and conditions that can be observed from space which are relevant to climate-sensitive infectious disease outbreaks.
- Identify how satellite observations can improve the assessment and forecasting of climate-sensitive infectious disease outbreaks.
- List the steps of a conceptual framework for incorporating remote sensing data into the study of climate-sensitive infectious diseases.
- Recognize several remote sensing datasets commonly used to study and forecast climate sensitive infectious diseases, along with their key attributes such as resolution, coverage, latency, and uncertainty.
- Select appropriate remote sensing datasets for studying climate-sensitive infectious diseases based on the disease characteristics, region of interest, and relevant environmental parameters.
- Examine common benefits and challenges of using remote sensing data for studying climate-sensitive infectious diseases.

Part 2: Case Study in the Use of Remote Sensing to Study Climate-Sensitive Infectious Diseases

Host: Assaf Anyamba

Guest Instructors: Michael Wimberly

- Identify environmental variables and conditions relevant to malaria that can be observed from space.
- Recognize why the remote sensing datasets used in this case study were chosen, based on their key attributes.
- Recognize the steps taken for accessing and preparing remote sensing data for use in this case study.
- Identify the steps used by the EPIDEMIA system for integrating remote sensing data.
- Examine the benefits and challenges of using remote sensing data for tracking and forecasting malaria in Ethiopia, and how these were addressed through the case study.
- Examine the primary outcomes of the case study and ways its approach might be expanded in the future.

ARSET empowers the global community through remote sensing training.