Advanced Webinar: Integrating Remote Sensing into a Water Quality Monitoring Program

Wednesdays, June 5 – June 19, 2019
June 5: 10:00 – 12:00 EST (UTC-4)
June 12: 10:00 – 12:00 EST (UTC-4)
June 19: 10:00 – 14:00 EST (UTC-4)

This webinar will focus on the use of NASA Earth Observations for monitoring water quality in coastal and larger inland water bodies. This will include an overview of data products used for water quality monitoring, an overview of aquatic remote sensing-specific criteria, methods and best-practices, obtaining NASA Earth observation data for water quality monitoring, and practical skill building in image processing for water quality monitoring of coastal and inland water bodies.

Weekly 2-hour webinars will include lectures, hands-on demonstrations, written instructions on how to conduct the exercises, and a question and answer session. The third session will also include an additional two-hour window for participants to work on exercises and submit questions to the instructors in an unstructured 'laboratory' time. This two-hour window is optional. Participants should expect to spend additional time outside the webinars working on exercises, with the laboratory time during the third session providing some support. There will be three homework assignments. Each assignment will ask questions from the content of the lectures, demonstrations, and output from the worked exercises. Homework assignments must be completed on time in order for the participant to be eligible for a completion certificate.

Learning Objectives: Participants will learn about water quality monitoring and how to acquire and use remotely-sensed imagery for water quality including:
- An understanding of remote sensing of water quality
- Acquiring remotely-sensed imagery and products for water quality monitoring
- Applying best practices for atmospheric correction of remotely-sensed images for water quality monitoring

● Analyzing water quality data using NASA's SeaDAS software and the validation of aquatic remote sensing data products

Session One: Water Quality in the Coastal Zone
- Overview of water quality monitoring in the coastal zone
  - Remote sensing data products for monitoring coastal water quality
- Case study exercise for water quality monitoring in coastal systems using Remote sensing data products and SeaDAS

Session Two: Water Quality of Larger Inland Water Bodies
- Overview of water quality monitoring of larger inland water bodies
  - Satellite sensors for water quality monitoring of inland water bodies
  - Applications of water quality monitoring of inland water bodies
- Case study exercise for water quality monitoring of inland water bodies using Remote sensing data products and SeaDAS focusing on cyanobacterial harmful algal blooms

Session Three: Aquatic Remote Sensing Skill Development and Best Practices
- Building a water quality monitoring work flow using remote sensing data products and in situ data observations
- "Nuts and Bolts" of image processing in SeaDAS for water quality monitoring
- Case study exercise of designing own water quality monitoring program

Prerequisites:
- Complete the on-demand "Fundamentals of Remote Sensing" webinar, Session 2C (http://arset.gsfc.nasa.gov/webinars/fundamentals-remote-sensing) or equivalent experience.
- Complete the "Advanced Webinar: Processing Satellite Imagery for Monitoring Water Quality; Advanced Online Training: Processing of Satellite Images for the Monitoring of Water Quality" webinar (https://arset.gsfc.nasa.gov/water/webinars/wq-image-processing) which was originally broadcast in September 2018.
- Download and install NASA's SeaDAS software (https://seadas.gsfc.nasa.gov/). As with the previous Advanced Webinar for water quality, this webinar will use SeaDAS. We recommend you open SeaDAS and ensure the software is working prior to starting the webinar.

Intended Audience: Regional, state, federal, and international organizations interested in addressing water quality monitoring through the use of remote sensing. Professional organizations in the public and private sectors engaged in environmental management and monitoring will be given preference over organizations focused primarily on research.