

Global Hydrology and Remote Sensing Capacity Building

Course Description:

As water security under changing climate being one of the most critical international issues, satellite remote sensing technique bears the promising potential to overcome the limited spatial coverage of in-situ observations thus enabling better understanding of water cycles at regional and global scales.

This short course particularly reviews the multiple satellite remote sensing observation for water cycle over the globe from NASA Applied Science and the National Weather Center HyDROS Lab. The course includes three Sections:

- 1) overviews the satellite remote sensing observations of global water cycle components;
- 2) review the decadal development of the OU/NASA CREST hydrological model and its application in predicting water availability, flood hazards, and landslide disasters; and
- 3) show case various projects of remote sensing-enabled hydrological capacity building by collaborating with international partners in Africa, Peru and Colombia etc.

Course Objective:

This course aims to provide students a fundamental yet practical skillset to understand basics of satellite remote sensing for hydrology and water resource management under changing climate. Specifically, it addresses the following questions:

1. What are the satellite missions/data available for water and climate study?
2. How remote-sensing data can be used for water security study, especially over South America?

This course presents a collection of recent innovation in hydrology, remote sensing, meteorology, and climate science and is designed for governmental officials, researchers and students, and practitioners.

Complimentary e-Textbooks may be provided by the Authors for students:

- 1: Radar Hydrology- Principles, Models and Applications, 2015, ISBN: 9781466514621 by Hong et al.
<https://www.amazon.com/Radar-Hydrology-Principles-Models-Applications/dp/1466514612>
2. Hydrologic Remote Sensing: Capacity Building for Sustainability and Resilience by Hong et al. 2016
<https://www.amazon.com/Hydrologic-Remote-Sensing-Sustainability-Resilience-ebook/dp/B01MUHW5LM>
3. Remote Sensing and Modeling of Water-related Hazards, AGU. By Hong et al. 2022,
<https://www.wiley.com/en-us/Remote+Sensing+of+Water+Related+Hazards-p-9781119159148>

