

Program of the 1st CCRASEAL thematic workshop

Towards the Integration of Earth Observation, Geospatial and Conventional Technologies for Water Quality and Quantity Monitoring and Assessment in Southeast Asia

10th January 2023, Bangkok Thailand

On site event at:

Novotel Bangkok Future Park Rangsit, Thanyaburi District, Pathum Thani 12130

and on line via Zoom:

Zoom Meeting ID: 910 3855 6609

Password: No password

<https://ait-ac-th.zoom.us/j/91038556609>

CCRASEAL Project background

The *Climate Change Risk Assessment for Southeast Asian Lakes (CCRASEAL)* is a research project funded by the Asia-Pacific Network for Global Change Research (APN) and lead by the Asian Institute of Technology AIT, Thailand.

Overall objective of the project is to set up a methodological and analytical framework that leverages on existing data, methods and knowledge to assesses the current and projected climate change impacts and related risk on the mainland SEA region freshwater lakes.

The Asian Institute of Technology AIT is implementing the project in collaboration with 6 partners from 5 different countries in Southeast Asia and Europe, namely:

- Ministry of Natural Resources and Environment, Thailand;
- National Center for Water Resources Planning and Investigation, Ministry of Natural Resources and Environment, Vietnam;
- Universiti Kebangsaan Malaysia (UKM), Malaysia;
- Ministry of Natural Resources and Environment, Lao PDR;

- National University of Laos, Laos PDR;
- Ministry of Environment, Cambodia;
- University of Sassari, Italy (associate partner).

CCRASEAL Project outputs have the potential to allow government agencies, industry, practitioners and decision makers to track changes across Southeast Asia basins with unprecedented, homogeneous and consolidated spatial and temporal detail. CCRASEAL has indeed produced valuable insights across many areas, including coupled climate and land use and land cover changes, water availability and quality.

Workshop scientific rationale

Monitoring and assessment of physical, chemical and biological characteristics of water are crucial to support decision-making on health and environmental issues. Monitoring water quality and quantity should therefore receive adequate attention particularly in developing and transitioning countries where existing water monitoring networks and expertise on water resources assessment and management are all lacking.

Over recent years, Earth Observation (EO) and geospatial technologies have consolidated their capability and confidence of assessing water variables through radiometric measurements of water's optical properties. Furthermore, they showed to be essential tools to assess the ecological state of inland and coastal waters and to identify changes or trends over a continuous and broad range of spatial and temporal scales. However, even though important parameters (i.e. surface areas and levels, suspended sediments, dissolved organic matter, phytoplankton pigments and biomass, submerged aquatic vegetation, temperature etc.) have been quantified with adequate accuracies, water -related information retrieved through EO and geo-technologies is still complementary to traditionally retrieved information.

Relevant advances have been recently made in algorithms improvements, processing applications, sensor technology and satellite-derived products development and accessibility. This has certainly increased the potential applications of earth observation methods to water resources management.

However, to date, government and management agencies have been slow to adopt satellite-derived measurements because of lack of processing skills, expertise as well as of standard information retrieval protocols.

For this reason, there is still need discussions among scientists, stakeholders, policy makers and environmental managers on the effectiveness of integration of advanced EO and traditional technologies into national and international near-coastal and inland water quality monitoring efforts.

The aims of the workshop are

- To assess current earth observation advances technologies, methods and data integration for coastal and inland water quality/quantity monitoring and evaluation at regional and local level with a specific focus on SEA case studies.
- To identify best practices for the SEA region, new, improved and integrated data streams, products and strengthen communications between water quality managers and the research community.

Target audience

The event will bring together a range of stakeholders including CCRASEAL collaborators from the five focus countries (Thailand, Cambodia, Lao PDR, Malaysia and Vietnam), government officials, civil society, NGOs, working professionals on water quality/quantity assessment and management in private sectors and academia.

Structure of the Workshop

The workshop is a 2 (full) days event to be conducted in presence in Bangkok (Thailand) and online (via Zoom platform).

Day 1

- Morning session will be dedicated to scientific presentations to be provided by CCRASEAL Project Partners and invited speakers who are directly working on integration of earth observation, geospatial and conventional technologies for water quality and quantity monitoring and assessment in southeast asia or in other relevant regions globally.
- Afternoon sessions will have a group and/or plenary discussion and/or round table form. Stakeholders will be invited in presence and online to participate to the discussion.

Day 2 (Only for Project partners and collaborators)

- Field trip to permanent monitoring stations at PCD and/or MWA (at rivers and/or lakes).

Registration

To register for the Day 1 of this event, please scan the following QR code or click the following link:

<https://forms.gle/jxh4ZFhTD6JNFNR69>



Please could you confirm your availability to join the workshop to Siwat Kongwarakom, siwatk@ait.asia, specifying whether you will be joining in person or online (Zoom link to follow).

This event is published on the CCRASEAL website: <https://ccraseal.com>. You are invited to visit it regularly for updates.

Day 1: 10th January 2023

8:00 – 8:30	Registration
-------------	---------------------

Welcome and Opening addresses

	Welcome addresses by Prof. Shobhakar Dhakal , Vice President for Academic Affairs (VPAA), Asian Institute of Technology (AIT)
8:30 – 8:45	Welcome addresses by Dr. Monthip Sriratana , Senior Adviser at National Research Council of Thailand (NRCT) and APN National Focal Point Opening address by Dr. Salvatore G.P. Virdis , CCRASEAL PI

Opening Session & Invited Talks

08:45 – 9:10	<i>“CCRASEAL Project overview, workshop format, objectives and expected results”</i> (Dr. Salvatore G.P. Virdis, CCRASEAL PI)
09:10 – 09:30	Invited Talk 1: <i>“The power and promise of remotely sensed water quantity and quality - From lake area to lake trophic state”</i> Dr. Michael Frederick Meyer (USGS, USA)
09:30 – 09:50	Invited Talk 2: <i>“Studying Eutrophication processes: a conventional monitoring approach from the watershed to water-body”</i> Dr. Bachisio M. Padedda (UNISI, Italy)
09:50 – 10:00	Q&A Session

10:00 – 10:20 Coffee break & Photo session

Technical Session 1: EO and conventional techniques to assess coastal, estuarine and inland waters

Chair: Prof. Sangam Shrestha (AIT, Thailand)

10:20 – 10:40	<i>“High Resolution Future Climate Scenarios for Southeast Asia”</i> Dr Liew Juneng (UKM, Malaysia)
10:40 – 11:00	<i>“Land use and land cover changes in Southeast Asia from 1992 to 2020”</i> Mr. Aung Chit Moe (AIT, Thailand)
11:00 – 11:20	<i>“Integrated Water Management and Climate Change Resilience: experiences and best practices in Lao”</i> Ms. Sengphasouk Xayavong, Mr. Vilakone Maniphousay & Ms Oulavanh Sinsamphanh (MONRE and NUoL, Laos PDR)
11:20 – 11:40	<i>“Long-Term Spatiotemporal Analysis of Lake Surface Water area changes in Southeast Asia”</i> Ms. Tatsaneewan Phoesri (AIT, Thailand)
11:40 – 12:00	Q&A Session

12:00 – 13:00 Lunch Break

Technical Session 2: Integration of multi-source and multi-resolution EO systems for coastal, estuarine and inland waters: changes/trends/shifts detection

Chair: Dr. Sarawut Ninsawat

13:00 – 13:20	<i>“Integrating remote sensing derived water quality parameters into national monitoring networks: case studies in high productive inland and coastal waters”</i> Dr. Salvatore G.P. Virdis (AIT, Thailand)
13:20 – 13:40	Invited Talk 3: <i>“Current Situation and Water Quality Management in Thailand”</i> , Dr. Chaiyo Juisiri (PCD, Thailand)
13:40 – 14:00	<i>“Rainfall-runoff modelling using SCS-CN Method at the Multi-Basin scale in Mainland Southeast Asia”</i> Mr Siwat Kongwarakom (AIT, Thailand)
14:00 – 14:20	<i>“Development of multi-basin models, water data services and sciences hub for Vietnam and the Mekong region”</i> Dr Duong Du Bui (NAWAPI, Vietnam)
14:20 – 14:40	Q&A Session
14:40 – 15:10	Invited Talk 4: <i>“Improving regional groundwater storage by data assimilation techniques with satellite gravimetry data”</i> Dr. Natthachet Tangdamrongsub (AIT, Thailand)

15:10 – 15:20 **Coffee break**

Panel discussion: Integration of Earth Observation, Geospatial and Conventional technologies for Water Quality and Quantity Monitoring and Assessment: integration potential in South East Asian public and private institutions.

15:20 – 16:20	Moderators: Dr Salvatore G.P. Virdis and Prof. Sangam Shrestha Prof. Nitin K. Tripathi (AIT, Thailand) (TBD) Dr. Sarawut Ninsawat (AIT, Thailand) (TBD) Dr. Thi Phuoc Lai Nguyen (AIT, Thailand) Dr Noppadon Khiripet (NSTDA/NECTEC, Thailand) Mr. Federico Puggioni (UDDI Thammasat University)
16:20 – 16:30	Closing Remarks by Prof. Dieter Trau , Dean of the School of Engineering and Technology (SET), Asian Institute of Technology (AIT)

Day 2: 11th January 2023 (Only for CCRASEAL Project Partners)

Project partners and collaborators will be visiting 2 permanent monitoring stations located at Chao Phraya river and other lake/reservoir belonging to the Metropolitan Water Authority (MWA) of Thailand and Pollution Control Department (PCD) of the Ministry of Natural Resource and Environment of Thailand.

PCD Sam Khok (Wat Chankapo) Station

- Located in Wat Chankapo, CCRASEAL project partners will meet experts from PCD.

MWA Sam Lae Station

- Located near Wat Sam Lae, CCRASEAL project partners will meet experts from MWA and join the meeting at Sam Lae Station.