Remote Sensing of Water Systems

Thursday, October 29, 2015
Lecture Hall Y11-F-06
University of Zurich, Irchel Campus

08:00 – 08:45  Dr. Daniel Odermatt, Odermatt & Brockmann GmbH / Eawag (CH)
Remote sensing applications for global and local water quality surveys

09:00 – 09:45  Dr. Alexander Damm, University of Zurich (CH)
The faint glow of plants: implications to advance water cycle research

10:00 – 10:45  Dr. Viviana Maggioni, George Mason University (VA, USA)
The effective use of satellite products for water cycle research: an applied perspective

11:00 – 11:45  Dr. Marta Yebra, Fenner School of Environment and Society. The Australian National University (AUS)
Spatial data of the water cost of carbon capture and the environmental impacts of fire

13:15 – 14:00  Dr. Kostas Andreadis, NASA Jet Propulsion Laboratory (CA, USA)
Data, data everywhere: Making sense of observations and models across scales

14:15 – 15:00  Dr. Wouter Dorigo, Vienna University of Technology (A)
Sensing the future – Earth observation of water resources to secure ecosystem services in a changing world
Dr. Viviana Maggioni: This talk will present a novel framework to estimate errors associated with high-time resolution satellite precipitation products and its application in water resources management, hazard mitigation, and vector-borne disease control.

Dr. Daniel Odermatt: Global water management and climate change expose rivers and lakes to an increasing stress. This talk is on recent and future remote sensing applications that help to secure these waters’ sustainable use by facilitating water quality information for policy makers and the public.

Dr. Alexander Damm: Remote sensing of chlorophyll fluorescence (F) is an exciting achievement of the past years. This talk is on the use of F to estimate plant water use efficiency and related implications for ecosystem research and food security. New perspectives based on F are discussed to assess aquatic ecosystems.

Dr. Kostas Andreadis: The development of hydrologic prediction systems that properly address water cycle science and applications requires the merging of an ever-increasing stream of observations and imperfect models. This talk will discuss some current approaches and difficulties towards developing such a system, as well as present some potential solutions.

Dr. Marta Yebra: Global estimates of vegetation water use (transpiration) and carbon uptake are needed for a better understanding of the capacity of ecosystems to convert water and CO₂ into biomass and improve ecosystem management for mitigation as well as adaption to global change. This talk is on a simple method to derive consistent estimates of plant water use and carbon uptake at global scale based on global meteorological data and satellite estimates of the biophysical property that explicitly couple both CO₂ and water fluxes; the canopy conductance. This talk will then present some insights on the impact of fire on water resources, carbon storage, and remaining fuel load.

Dr. Wouter Dorigo: Climate change and human interference are increasingly pressurising our global water resources. Predicted changes in the water cycle are expected to substantially impact vegetation growth and, hence, the quality of terrestrial ecosystem services such as food and timber production, water purification, biodiversity, climate regulation, and atmospheric carbon sequestration. However, model predictions of the global water cycle and terrestrial ecosystems are uncertain due to lack of suited observational data to calibrate and validate the models. This talk proposes a research line that uses remote sensing to bridge this gap and will ultimately contribute to a sustainable use of natural resources.