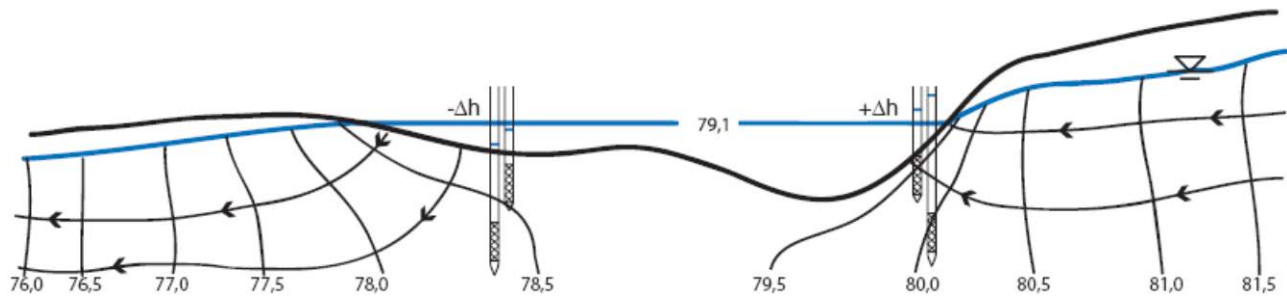


Ph.D. course on

Surface-ground water interaction: From watershed processes to hyporheic exchange



DATES: Monday August 26 – Friday August 30, 2019

GUEST LECTURERS: Don Rosenberry, USA
Masaki Hayashi, Canada

VENUE: GEOCENTER, University of Copenhagen, Øster Voldgade 10,
1350 K, DENMARK

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SUBJECT AREA AND MOTIVATION

Groundwater-surface water interaction is a topic currently receiving a lot of focus as the European Water Framework Directive requires its member state to assess groundwater and surface waters as one water body. It is therefore the goal to bring together PhD students from different disciplines thereby bridging areas like geology, hydrology, biology/ecology, and geochemistry. The objectives of the course are; (1) to introduce advanced topics and recent research on mainly physical aspects of groundwater-surface water interactions at various scales and (2) to present classical and new methods for monitoring and modeling groundwater-surface water interaction.

TENTATIVE PROGRAM:

DAY 1	Introduction and characteristics of flow between ground water and surface water
	Basic concepts Darcy's law Equipotentials and flowlines Topographically driven groundwater flow system
	Physical setting Lakes Wetland Rivers and streams Coastal
	Scale of study and/or setting Geological setting, heterogeneity Flow paths Time of travel
DAY 2	Watershed-scale exchange
	Vadose zone hydrology Hillslope hydrology and riparian zone Baseflow analysis
DAY 3	Coastal, lake, wetland, hyporheic exchange
	Physiography related to flow path Scale (gradients of watershed, river; meander, pool-riffle, bedform)
DAY 4	Methods of measurement
	Well arrays Local-scale hydraulic gradients and hydraulic conductivity Seepage meters Tracers (Isotopes/solutes, temperature)
DAY 5	Lake/wetland water balance
	Water balance equation Estimation of groundwater exchange flux Case study examples

COURSE DETAILS AND HOW TO APPLY:

A total of 5 ECTS is credited for this course (corresponding to 125 hours in total including the lectures and exercises during the course and preparatory reading before the course). The course is limited to 20 students. There is no course fee. Participants must pay their own travel, accommodation, and meals.

Registration is open until Monday June 24, 2019. Please use the on-line registration available on the website www.hobe.dk. For more information contact Peter Engesgaard (pe@ign.ku.dk).

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