INVITATION

to the PhD course in Sea-truthing for calibration and validation of satellite ocean colour imagery of coastal zone and lakes
16th-23rd of May at Askö Marine Laboratory, Sweden

Nordic Network for Aquatic Remote Sensing **NordAquaRemS** (www.NordAquaRemS.org) invites for a PhD training course for sea-truthing of MERIS data at Askö, 16-23 May 2010. The main goal of this course is to provide intensive training in deployment of optical instrument to measure inherent and apparent optical properties of sea water and the atmosphere for the calibration and validation of radiometric data measured by ocean color scanner placed on the satellite platforms: MERIS and MODIS. The course will consist of lectures in marine remote sensing & bio-optics, given by international experts in the field, including members of the ESA MERIS validation team and hands-on training on taking in situ optical measurements. We would like to invite PhD students that may benefit from this type of training, namely first to second year PhD students in bio-optics or aquatic remote sensing. Places for Masters students are subject to availability.

Background

Nordic Network in Aquatic Remote Sensing (www.NordAquaRemS.org) is funded by the NordForsk. The aim of the network is to coordinate and exchange of information between national aquatic remote sensing projects conducted in all countries around the Baltic Sea as well as providing PhD training courses for Nordic and Baltic PhD students. The course is supported by the Institute of Oceanology, Polish Academy of Sciences (IOPAS), Sopot. Poland. IOPAS gives the support in the frame of EU FP7 EUROFLEETS project, (www.eurofleets.eu) which goal is to integrate and optimise usage of the European research vessel fleet. IOPAS has offered access to its research vessel "Oceania" to NordAquaRemS students within EUROFLEET project NA6 activity.

The venue

The Askö Laboratory is a marine field station belonging to Stockholm Marine Research Centre (SMF, http://www.smf.su.se/english/askolaboratory/index.html). The station is located on the island of Askö, 80 km south of Stockholm in the Trosa archipelago in the north-western Baltic Proper. The approximate costs for food and accommodation are 430 Euros per student.

Travel to Askö field station during the afternoon of Sunday, 16th May. Transport by buss will be organized at 13:20 from the train station in Vagnhärad to Uttervik. 14:00 boat from Uttervik to Askö. The boat journey takes about 20 minutes. The course will be finished on Saturday afternoon, and participants will travel back to Stockholm on Sunday morning, 23rd May. The travel information may requested from Dr. Sigrid Ehrenberg at +46 73 6903442 or sze@bredband.net.

Course details

The training course combines the lectures given by leading experts in the fields of ocean optics, bio-optics and ocean colour remote sensing with the practical work on two ships during the real calibration-validation campaign during MERIS overpasses over the region of investigation on 18 and 21 May 2010.
The theoretical lectures and seminars will cover principle concepts of bio-optical properties and remote sensing of coastal waters (Roland Doerffer and Ajit Subramaniam), bio-optical properties of the NW Baltic (Susanne Kratzer), metrology in ocean optics' (Gerald Moore), remote sensing and optical properties of lakes' (Anu Reinart) and introduction to spatial statistics using R' (John Lewis).

The field work will include hands-on training on deployments of various state of the art optical instruments, water sampling for laboratory measurement of bio-optical parameters, such as CDOM absorption and SPM and chlorophyll a concentration. The field work will be conducted during the MERIS overpasses on 18 and 21 May at two transects: an open sea transect passing Gustaf Dahlen light house, and a second transect through Himmerfjärden. The safety briefing will briefing for the research vessels "Oceania" and "Limanda" will be given before the start of the field work. The intercalibration exercises are planned with the participating groups supporting this training course: Stockholm University (Sweden), IOPAS (Poland) Tartu Observatory (Estonia) and Gerald Moore from Bio-Optika, UK.

Equipment

The TACCS radiometer and AC9plus (equipped with CTD probe SAIV/AS and volume scattering meter VSF3) from Stockholm University, and a Trios System from Tartu Observatory will be deployed on Limanda, a minor research vessel belonging to Askö Laboartory.

The Polish group from IOPAS will make their R./V. "Oceania" available for the course, and will bring a whole set of optical equipment: A set of TRIOS Ramses hyperspectral radiometers to measure incident solar radiation, and distribution of downwelling and upwelling radiance and irradiance in the water column in the function of depth. They will also bring the latest 19 wavebands Biosherical Compact Optical Profiling System. The Biospherical profiler measures downwelling irradiance and upwelling radiance in the function of depth as well as incident solar irradiance and its diffuse component as it is equipped with a rotating shadow band. They will also bring a couple of Microtops and a Secchi disc. *In situ* IOPs will be measure with Integrated Optical-Hydrological Probe fitted with AC-9, SeaBird SB-47 CTD head, and TRIOS MicroFlu-CDOM, and there will be a full gear for filtering samples for IOP's spectrophotometric measurements in the lab on board ship as well as at Askö Laboratory (operated by Stockholm University).

Registration

All course candidates must send the application form until **18 March 2010**. The course information, application forms and detailed travel information may be downloaded from **NordAquaRemS** web page (http://www.nordaquarems.org/events/) or requested from Dr. Sigrid Ehrenberg at +46 73 6903442 or sze@bredband.net. The information concerning the IOPAS research vessel and the EUROFLEETS project may be requested from Dr. Piotr Kowalczuk (piotr@iopan.gda.pl).

The organizers offer the financial support for students from project partners' countries and Baltic Sea countries fulfilling the following criteria:

- Students from partner institutes of the Nordic Network will get their travel (budget flight, bus or train, no taxi) and accommodation at Askö paid for. Only institutes that were included in the NordForsk application are counted as partner institutes. However, students from Baltic countries have to cover 30% of their travel costs.
- Places for Masters students and/or PhD students from outside the Nordic Network are subject to availability. All students that are not members of the network have to pay their own travel expenses and their stay at Askö (food and accommodation).

Dr Susanne Kratzer
Dr Sigrid Ehrenberg
Dr Piotr Kowalczuk