

Introduction to Optical Remote Sensing

Dr. Birgit Heim, AWI Potsdam & Therese Keck, FU Berlin

Date & Time:	Nov 1 – 4, 2016
Location:	AWI building E - 4025
Language:	English
POLMAR credit points:	4
Registration:	info.polmar@awi.de

Course content:

Earth remote sensing is the contactless observation of the atmosphere and Earth's surfaces and waters by sensors onboard satellite platforms. This course will specifically examine marine optical remote sensing, so called Ocean Color remote sensing. In doing so we will cover the theory of radiative transfer and optical satellite missions, spectro-radiometric field measurements, and data processing techniques.

We will introduce the topic with theoretical background of radiative transfer in atmosphere and water and optical satellite missions in general.

The practical work will cover out-door field measurements with the hyperspectral field spectrometer RAMSES (spanning visible and near-infrared wavelength regions, 320–920 nm). We will analyse and visualise the measured spectral radiances with prepared Python code.

The computing part of the course introduces standard processing of satellite sensor data with open source remote sensing software. You can try the open remote sensing software ESA BEAM VISAT and the follow-on software SNAP. We will provide you with time series of Chl-a and Sea Surface Temperature (SST) satellite data –please indicate beforehand if you have regional interests. Please also indicate if you have some interest in processing land remote sensing products, e.g., time series of Land Surface Temperature (LST), or vegetation indices.

Target group:

This course is primarily intended for PhD students who are interested in optical remote sensing applications. Place availability given, interested undergraduate students and postdocs are equally welcome. The course is also not exclusively addressed to participants with background in oceanography, biology and physics, participants from terrestrial applications are equally

welcome. For the most part and where possible, the level of instruction will take into consideration the spread of disciplinary backgrounds of course participants.

Pre-requisites:

Course participants are kindly asked to bring a laptop to be able to undertake the data processing. Participants are required to install:

SNAP (<http://step.esa.int/main/download/>)

BEAM VISAT, www.brockmann-consult.de/cms/web/beam/releases, version 5.0), and Python 2.7 (!) via the Package Anaconda: <https://www.continuum.io/downloads> on their computers.

If you need any support please contact:

therese.keck@wew.fu-berlin.de

Literature:

The webbook "Ocean Optics Webbook" by Curtis Mobley on <http://www.oceanopticsbook.info/> is a freely accessible source for a first guess on radiative transfer in the atmosphere and waters. Course participants are kindly asked to prepare for the course with the chapter "Light and Radiometry".

More information, please contact: birgit.heim@awi.de and therese.keck@wew.fu-berlin.de

Our courses are generally free of charge for all participants. However, they do have a price and can cost as much as 150 € per day per student. Please take this into account when cancelling your place on the last minute.
