Summer Term 2009

ESSReS-L4: Introduction to the interdisciplinary field of Earth System Science Research, Part IV

Physics and Chemistry of the Atmosphere, Remote Sensing, Phytooptics

Block course: 17.-20. 08. 2009, full day

Location: IUP Bremen, NW1 - S1360

Resonsible: ***A. Ladstätter-Weißenmayer, J. Notholt,*** *A. Bracher, K. Grosfeld, W. von Hoyningen-Huene, C. Melsheimer, A. Richter*

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Contents:

The recognition that significant changes in the composition of the Earth's atmosphere are occurring on both short and long timescales and thereby modifying our environment and climate, has resulted in scientific debate as well as public concern, and emphasises the need for global measurements of atmospheric constituents at representative spatial and temporal sampling. In order to assess the significance of such changes a detailed understanding of the physical and chemical processes controlling the global atmosphere is required. The accurate assessment of the impact of current and future anthropogenic activity or natural phenomena on the behaviour of the system, comprising the atmosphere and the Earth's surface, requires quantitative knowledge about the temporal and spatial behaviour of several atmospheric trace constituents (gases, aerosol, clouds) from the local to global scales in the troposphere, stratosphere and mesosphere. This can be gained by remote sensing techniques. An introduction to different aspects of remote sensing, the technical requirements and different scientific topics are discussed, exercises and lab-tours are given.

Extended Abstracts: ESSReS-L4.pdf

ESSReS-L3: Introduction to the interdisciplinary field of Earth System Science Research, Part III

Marine Biology and Geophysics, Excursion on Research Vessel Heincke

Block course: 13.-17. 04. 2009, full day

Location: RV Heincke, AWI-Helgoland

Resonsible: ***J. Bijma, V. Unnithan,*** *A. Benthien, F. Beu, K.-U. Richter, U. Richter, S. Gadeberg*

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Contents:

The goals of this practical is to:

- Provide an introduction to marine biogeoscience research methods at sea and to experience sea-going oceanography in reality.
- Introduce marine navigation and positioning.
- Introduce mapping, GIS and data management.
- Study the impact of tides and ocean currents in the region.
- Investigate planktonic and benthic communities.
- Study sedimentary characteristics and profiles from the shallow inter-tidal to the deeper shelf.
- Investigate the bathymetry and geomorphology of the North Sea (impact of the glacial interglacial cycles:Tunnel Valleys?)

The course is organized in collaboration with The Bachelor/Mater course of the Jacobs University.

Participation is in two legs: Leg 1(13-15 April), Leg 2 (15-17 April), exchange of the groups via Cuxhaven will be orgnized.

Time schedule:

Leg 1:

13 April, 8 am: Loading, Fischereihaven-Bremerhaven
Disembarging Helgoland, ca. 6 pm
Back to Cuxhaven on 15 April, ca,. 6pm
Leg 2:
15 April: 10:30 departure AWI, Ferry Cuxhaven-Helgoland 11:30-12:45
back to Bremerhaven by RV Heincke, 17 April, ca. 6 pm

Winter Term 2008/2009

ESSReS-L2: Introduction to the interdisciplinary field of Earth System Science Research, Part II
Introduction to computational techniques and statistical analyses
Block course: 16 - 20 February 2009, one week, 9 am - 4 pm
Location: AWI, Jacobs University
*Responsible: **V. Unnithan**, M. Mudelsee, P. Baumann, S. Frickenhaus, A. Gelessus, H. Grobe, K. Grosfeld, T. Laepple, L. Linsen, G. Lohmann, R. Sieger*
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Contents:
A better understanding of the Earth System requires advanced methods and techniques in data analysis and modelling. This can be gained by statistical data analysis of time series as well as complex numerical models. With this course, training and education in different computational methods/platforms as well as data analysis techniques is fostered as key components, when investigating local processes in a global context.
Extended Abstracts: ESSReS-L2.pdf
Lecture Material for download

ESSReS-L1: Introduction to the interdisciplinary field of Earth System Science Research, Part I
The Earth system and its components, an overview
Block course: 06.-10.10.2008, 9 am – 4 pm
Location: AWI, IUP, Jacobs University
*Responsible: **G. Lohmann**, P. Baumann, T. Brey, J. Kipfstuhl, A. Ladstätter-Weißenmayer, F. Lamy, P. Lemke, L. Linsen, J. Notholt, D. Olbers, C. v. Savigny, A. Schaefer, B.-M. Sinnhuber, G. Uenzelmann-Neben, V. Unnithan, C. Voelker, D. Wolf-Gladrow*
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Contents:
This course gives an introduction and provides a broad overview about the interdisciplinary field of Earth System Science, comprising the atmosphere, ocean, cryosphere and solid earth, which at the same time determine the conditions experienced by the biosphere. Basic knowledge of processes and mechanisms of the individual Earth system components will be taught in order to sensitize for problems when bridging the gap between disciplines.
Extended Abstracts: ESSReS-L1.pdf
Lectures for download (authorized access only)