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# ESSReS-PEP-POLMAR, an international and interdisciplinary postgraduate education concept on Earth and Environmental Sciences

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Postgraduate education is gaining increasing importance and has been identified as one instrument to foster quality and promote networking, both in research and in education.
Exchange and co-operation between graduate programmes that have related topics produce added value for all. Students have access to a range of research facilities, course offers, and a broad scientific community from which they can start building their individual scientific network. Larger events like PhD conferences, career symposia or cost-intensive trainings are more easily tackled by joining forces of various players.
The postgraduate programmes ESSReS-PEP-POLMAR are part of a larger network of marine and climate science programmes in the north-western region of Germany and together host up 180 (23 ESSReS, 130 POLMAR, 30 PEP) PhD/Master students in their respective programmes. Here, we will present a number of joint activities from this collaboration.
Today, the PhD education is completely different to that from 15 years ago due to a variety of different scientific offerings including e.g. excursions, soft skill courses and special seminars. In the framework of the ESSReS-PEP-POLMAR concept the Postgraduate Programme Environmental Physics (PEP) at the University of Bremen educates the participants on the complex relationship between atmosphere, hydrosphere (ocean), cryosphere (ice region) and solid earth (land). Here, the learning of experimental methods in environmental physics at the most advanced level, numerical data analysis using supercomputers, and data interpretation via sophisticated methods prepare students for a scientific career. Within cooperation with the Ocean University of China (OUC) students are participating one year in the PEP programme during their master studies since 2006, to get finally a double degree of both universities.
Two different ways to further graduation are currently possible at the Alfred Wegener Institute. The Helmholtz Graduate School for Polar and Marine Research (POLMAR) provides a coherent framework for a structured postgraduate programme. POLMAR is a trans disciplinary umbrella organization for currently 130 PhD students and combines high-level science qualification in the various disciplines of polar and marine research with other key qualifications through joint seminars, lectures and practical training. Doctoral education within POLMAR is structured systematically and adapted to the individual needs of the PhD students.
The Earth System Science Research School (ESSReS) covers 23 PhD students working at the Alfred Wegener Institute, Helmholtz Center for Polar and Marine Research, the Jacobs University and the University of Bremen. The ESSReS aims at the integration of research at the interface of Biology, Physics, Geophysics, Mathematics and Informatics. It is therefore multi- and interdisciplinary in every aspect. The training, curriculum, and PhD research subjects are closely located at the interfaces between the participating disciplines. This is guaranteed by interdisciplinary supervision of the PhD project, documented by the members of the “PhD committee”. The long-term goal is not only to enhance exchange and interaction between these disciplines, but to enforce a new integrated concept, where separation between disciplines becomes obsolete. Consequently, ESSReS-PEP-POLMAR provides a solid base for a new generation of excellent scientists in Earth and Environmental Sciences.