

Earth System Science – Bridging the gaps between disciplines; Perspectives from a multi-disciplinary Helmholtz Research School

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The joint ESSReS- team: Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Bremerhaven, Germany;
Institute for Environmental Physics, University of Bremen, Germany; Jacobs University Bremen, Germany.

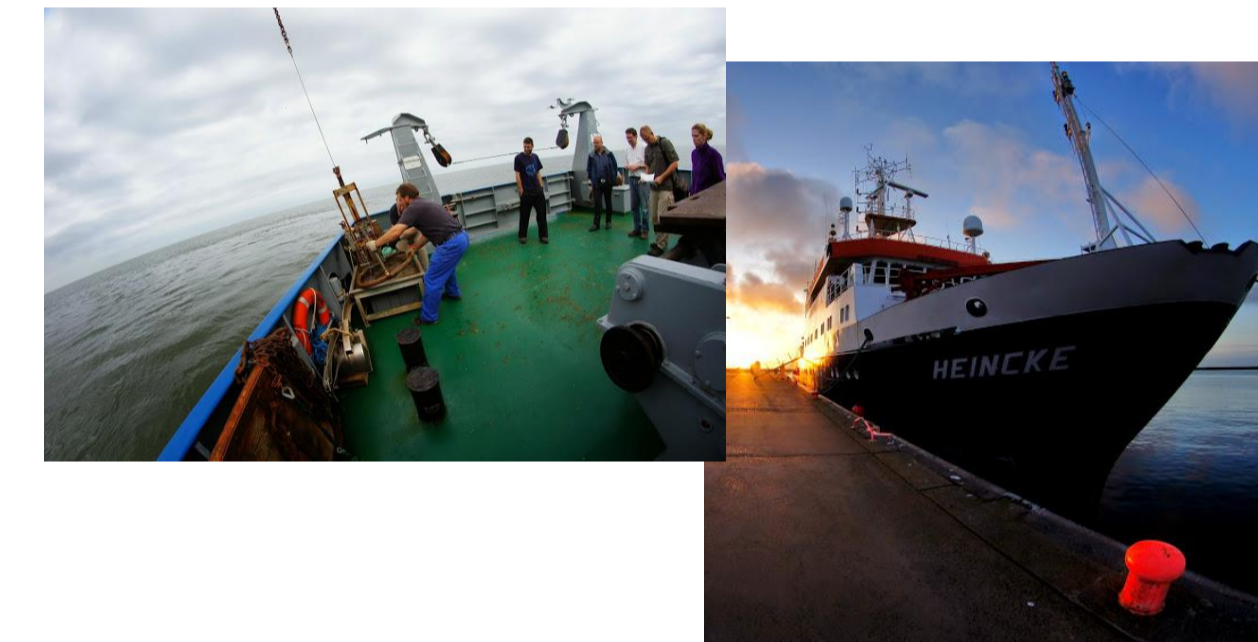
Earth System Science Research School (ESSReS)



ESSReS is an international and interdisciplinary research school for 23 PhD students at the **Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research (AWI)** and their partner universities: **University of Bremen** and **Jacobs University Bremen**. ESSReS combines observations, modelling, and data analysis in order to decipher the Earth's complex climate system. Structured training and supervision support interdisciplinary research at an early stage of the scientific career.

The educational program

Introductory lectures by senior scientists from the participating institutes (topics from Remote Sensing to the Living Ocean). Two cruises with research vessels (RC Uthörn, RV Heincke) were offered.



Computational skills courses were offered to teach several computational skills needed for a productive work flow.

Transferable skill courses were offered in cooperation with the Imperial College London. Three courses from "Research skills development" via "Presentation and communication skills" to "Career and leadership" were offered.



Expert courses were designed to give a more detailed insight into the research fields of the participating institutes. The content is focused on "Remote Sensing of the Atmosphere and Cryosphere", "Paleoclimate: From proxies to climate data" and "Bioarchives, a source of climate reconstructions"



Excursions Various excursions within ESSReS were offered to the PhD students as on-site training, practical application and social event.

Highest and lowest part of Northern Germany



Annual retreat in autumn of each year to ensure a regular exchange between the PhD students and the supervisors/senior scientists of the three institutions.



Supervision concept

- Regular PhD committee meetings
- PhD proposal after 6 month
- Progress Assessment Form
- Conference attendance, presentations
- Research stay abroad
- Clearly structured research and education plan

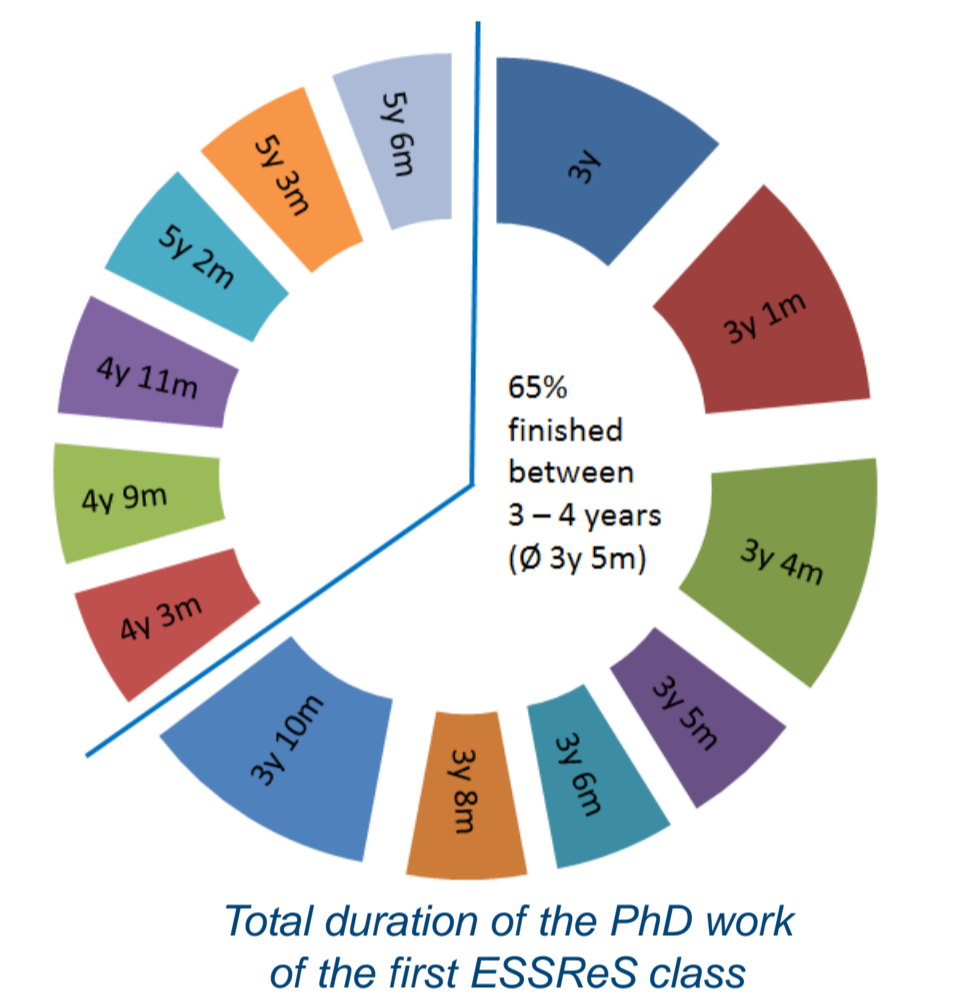
Support

- Provides competitive grants for
 - conference attendance
 - collaborative research with international partners
- Personal training, coaching, child care, etc.

Was ESSReS successful?

First cohort (22 PhDs):

- ✓ 17 finished, mean duration 3y 11m (3 years to 5.5 years)
- ✓ Career: 10 Science (PostDoc, Assistant Professor), 3 Industry, 1 Teacher, 3 unknown
- ✓ 1 changed topic after 18 month, left ESSReS
- ? 4 of 22 PhDs did not finish their PhD (18%), two of them still working on it
- ✓ Including 2.5 month PhD programme



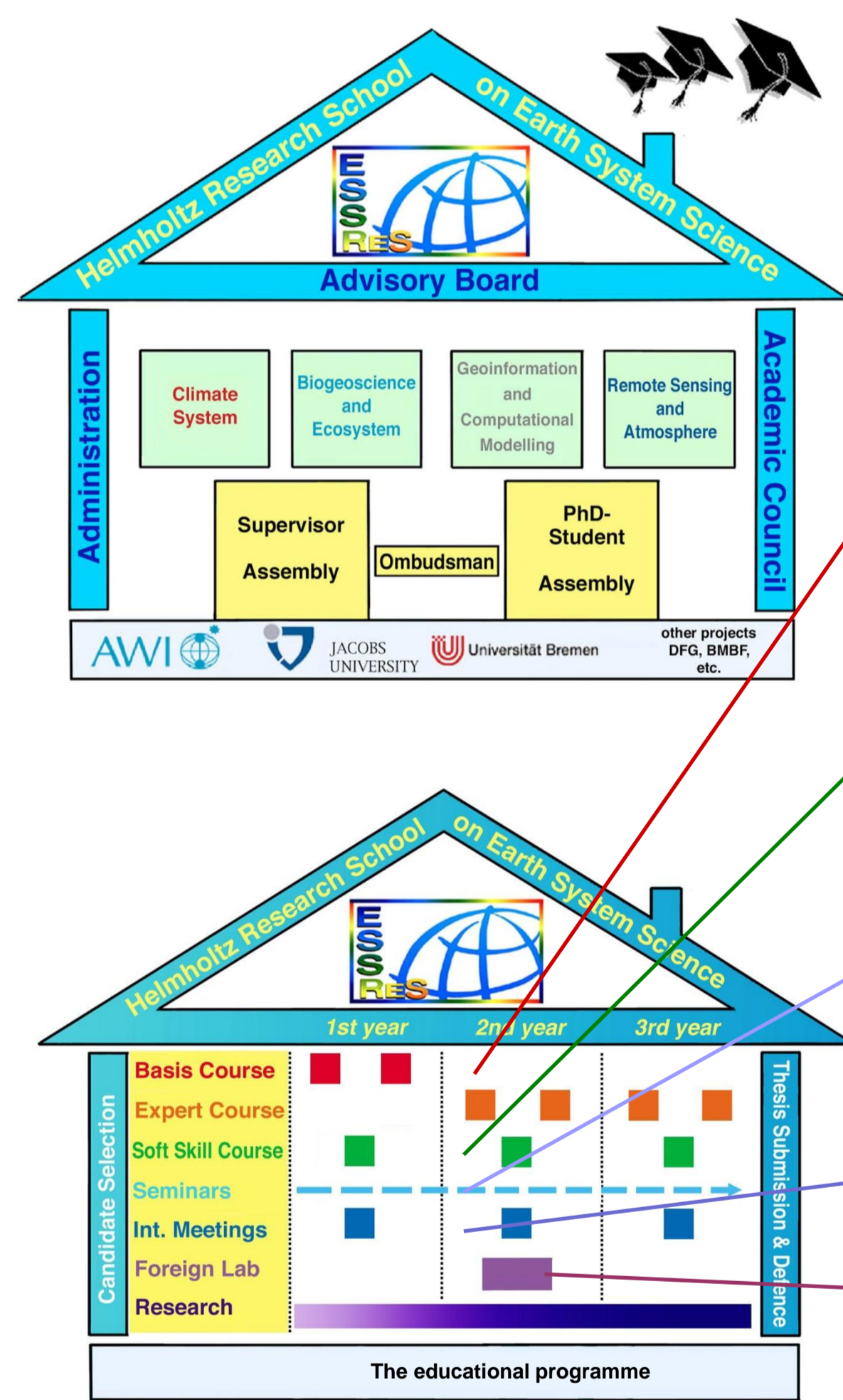
Second cohort (23 PhDs) in the completing phase:

- ✓ 5 finished, mean duration 3y 3m (3.1 years to 3.5 years)
- ✓ Career: 5 Science (PostDoc)
- ✓ 1 changed topic after 2 years to become a teacher
- ? 1 of 23 PhDs did not finish, changed topic
- ✓ Including 2.5 month PhD programme



PhDs of the second class receive their Helmholtz Certificates

The structural and educational concept



ESSReS II L1-L9:

- 30 days of basic and expert courses with more than 45 lecturers
- Invited 4 international lecturer/guest scientists for 1 week until 3 month

ESSReS II SST1-SST4:

- Research skills development
- Presentation and Communication skills
- Career and leadership training
- Scientific writing and individual coaching

ESSReS II S1-S6:

Monthly seminars
„Students teach students“

ESSReS II R1-R3:

Annual retreats „PhD conference“
PhDs, supervisors, peers

Conference funding:

> 40 proposal funded

ESSReS-FL:

4 research stays in Italy, Copenhagen, Toronto, Paris

Recruitment

Online application process for 12 (9) PhD stipend position during two successive periods of three years each, following the educational programme as a cohort. The classes were filled with applicants of the collaborating institutions to reach maximum size of 22-24 PhDs.

