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Baltic Earth, Earth System Science for the Baltic Sea region

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The Baltic Sea drainage basin is an area of evolving cold conditions and strong biogeochemical linkages. The Baltic Sea watershed drains nearly 20% of Europe. In the highly populated south, the temperate climate hosts intensive agriculture and industry. In the north, the landscape is boreal and rural. In the Baltic Sea itself, complex bathymetry and stratification patterns as well as extended hypoxic and anoxic deep waters add to the diversity (Meier et al., 2014). The area has been intensely studies and in particular different aspects of the energy and water cycle has been the focus of a large number of projects. Within the Baltic Sea climate change assessments, the climate of the Baltic Sea region is described and its changes summarized. For the future of the Baltic Earth research a number of Grand Challenges has been identified, this includes the water and energy cycles as well as changes in extreme events (in addition to sea level and salinity dynamics and land-sea biogeochemical feedbacks). For a highly complex and anthropogenically influenced system, combination of parameters causing changes needs to be investigated, thus an additional focus within the Baltic Earth focuses on Multiple stressors. The highly studied area with complex interactions defines an excellent region for method development for Earth System research, this includes development of coupled models as well as developments of new measurements systems (including in-situ as well as remote sensing). The presentation will summarize new research highlights from the Baltic Earth network.

Meier, M., A. Rutgersson and M. Reckerman (2014). An Earth System Science Program for the Baltic Sea Region. Eos, 95, 109-110.