

VISUALIZATION

of hydrological, physical and biogeochemical modelling of the

BALTIC SEA using a GEODOME®

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BACKGROUND: The Baltic Sea suffers from severe environmental problems, such as large cyanobacteria blooms (F1) and hypoxia (F2). These are results of interactions between physical chemical and biogeochemical processes in atmosphere, land and ocean (F3). In order to convey complex processes interactions, and thereby support policy makers, scientific modeling is used to give projections of the state of the future Baltic Sea under the impact of climate change (F4) and different nutrient load scenarios (F5).

SCIENTIFIC RESEARCH: A hierarchy of models were used, ranging from Global Climate Models (GCMs), regional downscaling model, hydrographical model to coupled physical-biogeochemical ocean models of the Baltic Sea., that in turn were used as forcing for marine food web models (F6). Results from two GCMs were used, Hadley and ECCHAM models, running two different IPCC scenarios, A1B and A2 (F7) and two different initial conditions (A1B_1 and A1B_3). In total 4 different climate scenarios were downscaled by a regional coupled atmosphere-ocean model (RCOA) in order to increase the spatial resolution. These scenarios forced the three different marine models in combination with 4 different nutrient load scenarios ("business as usual", "present loads", "current legislation" and "Baltic Sea Action Plan"), giving in total 38 projections of the future state of the Baltic Sea. The large number of scenarios aids in addressing uncertainties and ranges in the results. The resulting huge amount of scientific information and data needs to be conveyed in an informative way to decision makers.

SCIENTIFIC COMMUNICATION: Interactive presentations have been performed at a number of occasions; at stakeholder and scientific conferences such as Stockholm World Water Week, Baltic Sea Day, at the Stockholm University and at the Government Offices of Sweden. Up to 20 people can take place inside the dome, lying on the floor or sitting on chairs. Technicians run the Uniview software that enables a travel, through space towards the earth. Large data sets can then be projected onto the cupola shaped screen (a projection quite similar to "google earth" (F8, F9)). The present scientists guide the audience through processes, data and scenarios and are able to point to highlights and important features in data. The format has shown to encourage discussion and enhance understanding of scientific results, where the innovative, engaging, and compelling exhibit promotes effective communication of scientific concepts to all sorts of audiences.

