



## **Eddie activities in the south Baltic Sea: analysis of numerical model results and observations.**

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A coupled ice-ocean model has been used to investigate mesoscale eddy distribution and formation. Model results are compared with CTD and VM-ADCP transects obtained in the southern part of the Baltic Sea. The model consists of the Parallel Ocean Program (POP), which is descendant of the Bryan-Cox-Semtner model, coupled to the elastic-viscous-plastic (EVP) rheology sea ice model (CICE). The adaptation and coupling of the above models to a regional Arctic domain have been done at the Naval Postgraduate School (NPS). For the purpose of this study the regional coupled model has been configured for the Baltic domain at two horizontal resolutions: 1/12- and 1/48-degree (or respectively  $\sim 9$ -km and  $\sim 2$ -km).

The model was forced using realistic, daily-averaged atmospheric data, derived from European Centre for Medium-range Weather Forecasts (ECMWF). The 9-km model was integrated for forty four years (1958-2001 integration period) and 2-km resolution model was run for ten years (1958-1967). The VM-ADCP and CTD measurements were obtained from S/Y "Oceania" during many cruises over the last decade.

The mean circulations determined from the two model integrations are compared against each other and against available observational data in several locations of the south Baltic e.g. Bornholm Basin, Slupsk Channel and Gdansk Basin. Some of the most persistent eddy disturbances were investigated in those regions. We find that most of these disturbances are typically cyclonic. However, in regions like the Gdansk Basin anticyclonic eddies occur at times and they can be very strong. Similar structures are found in the observational data. The role of such structures on mass and

property transports, especially at depth in the Slupsk Channel is investigated.