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On Suspended matter grain size in Baltic sea

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Suspended matter grain size data were gathered during the 25th research vessel “Akademik Mstislav Keldysh” cruise (1991, September-October). Initial quantitative data were obtained with a use of the Coulter counter and subsequently modified into volume concentrations (mm3/l) for size intervals. More than 80 samples from 15 stations were analyzed (depth range 0-355 m).
The main goal of research was to illustrate the spatial variability of suspended matter concentration and dispersion in Baltic Sea.
The mutual feature of suspended matter grain size distribution is the logical rise of particle number along with descending of particle’s size.
Vertical variability of grain size distribution was defined by Baltic Sea hydrological structure, including upper mixed layer – from the surface to the thermocline – with 35 m thick, cold intermediate layer – from the thermocline to the halocline- and bottom layer, which lied under the halocline.
Upper layer showed a rise in total suspended matter concentration (up to 0.6 mm3/l), while cold intermediate level consisted of far more clear water (up to 0.1 mm3/l). Such a difference is caused by the thermocline boarding role. Meanwhile, deep bottom water experienced surges in suspended matter concentration owing to the nepheloid layer presence and “liquid bottom” effect. Coastal waters appeared to have the highest amount of particles (up to 5.0 mm3/l).
Suspended matter grain size distribution in the upper mixed layer revealed a peak of concentration at 7 μ, which can be due to autumn plankton bloom.
Another feature in suspended matter grain size distribution appeared at the deep layer below halocline, where both O_2 and H2S were observed and red/ox barrier is. The simultaneous presence of Fe and Mn (in solutions below red/ox barrier) and O_2 leads to precipitation of oxyhydrates Fe and Mn and grain size distribution graph peaking at 4.5 μ.