Application of satellite altimetry for fisheries investigation

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Satellite altimetry data provide good possibility to reveal the zones of high dynamic activity, e.g. oceanic currents and fronts, mesoscale features, etc. The four oceanic region were considered: Irminger Sea, Mid Atlantic Ridge (North Atlantic), Canary Upwelling Region (Eastern Central Atlantic), and Southeastern Pacific. Both satellite altimetry data (TOPEX/Poseidon, ERS -1, 2) and in situ measurements (oceanographic surveys) demonstrated good correlation between these two different types of data in revealing of dynamic features at the ocean surface. The main dynamic features in the regions are: Sub-Polar Front and North Atlantic Current (Irminger Sea and Mid Atlantic Ridge), Canary Current and coastal upwelling (Eastern Central Atlantic), Sub-Tropical Front and South Pacific Current (Southeastern Pacific). Analysis of distribution, abundance and biological state of various fish species revealed the links between organisms and their dynamic environmental conditions in the considered regions. Variability of the distribution and abundance of rock grenadier over Mid Atlantic Ridge is closely connected to variations of Sub-Polar Front location. Distribution of fishery grounds in the Irminger Sea coincides with dynamic heterogeneities at the sea surface elevation field. Distribution of small pelagic fish in Canary Upwelling Region is influenced by mesoscale features of Canary Current and coastal upwelling. Sub-Tropical Front meandering and eddies in Southeast Pacific influence significantly horse mackerel distribution. Thus the peculiarities of dynamic features of the ocean surface which can be derived by satellite altimetry might be a good opportunities for fisheries research. This work was partly supported by the Russian Fund of Basic Research, Grant 06-05-65061