

Features of satellite and ground truth database creation during monitoring of anthropogenic influence on coastal water areas

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When remotely monitor sea and ocean water areas it is necessary to carry out the combined analysis of satellite and ground truth data. Such an approach was used during the monitoring of anthropogenic influence on coastal water areas of Mamala Bay (Oahu Island, Hawaii). Large collections of satellite images taken by QuickBird, IKONOS, RADARSAT, ENVISAT, EO-1, TERRA, AQUA and other satellites were acquired during the monitoring in 2002 – 2004. Remote sensors of these satellites register spatial structure of surface waves, ocean surface temperature, hydrooptical heterogeneities in ocean upper layer and other parameters. As a result of satellite image processing, areas of water environment pollution propagation are detected, remote evaluation of wind speed and direction, as well as mapping of temperature fields and some biological components were carried out. To verify satellite monitoring data, the collection of ground truth data including parameters of wind conditions measured by ground stations and in the water area (shipboard), surface wave parameters (wave buoys), current fields (ADP sensors, drifters), temperature fields (thermistor strings), temperature and salinity variations in depth (CTD and XBT sensors), microstructure data (MSS, TOMI), hydrooptical (Secchi disks, AC-9) and hydrobiological (Niskin bottles) characteristics, as well as tide conditions, was carried out. Task-oriented database is formed basing on the analysis and systematization of the obtained information. This database includes both initial information and the results of thematic processing of satellite imagery and ground truth data. Main features of creation of task-oriented database including satellite and ground truth data acquired during the complex experiment in Mamala Bay water area (Oahu Island, Hawaii) are given in this paper. Created database provides the possibility of complex analysis of the studied coastal water area conditions, allow us to create thematic GIS, as well as to work out recommendations on nature-conservative measures for Oahu Island (Hawaii) recreation area.