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The Development of GPS Buoy for Ocean Surface Monitoring: Initial Results

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Abstract : This study presents a kinematic positioning approach which is use the GPS buoy for precise ocean surface monitoring. A GPS buoy data from two experiments have been processed using a precise, medium-range differential kinematic technique. In each case the data were collected for more than 24 hours at nearby coastal site at a high rate (1 Hz), along with measurements from neighboring tidal stations, to verify the estimated sea surface heights. Kinematic coordinates of GPS buoy were estimated using the epoch-wise pre-elimination and the backward substitution algorithm. Test results show the centimeter level accuracy in sea surface height determination can be successfully achieved using proposed technique. The centimeter level agreement between two methods also suggests the possibility of using this inexpensive and more flexible GPS buoy equipment to enhance (or even replace) the current use of tidal gauge stations.

Keywords : global positioning system, kinematic GPS, sea surface height, GPS buoy, tide gauge
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