

Test on Retrieving Tide with Network-RTK System

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SUMMARY

In Hong Kong, fairways dredging work and the connected hydrographic survey were conducted using the tide information obtained from the conventional tide gauges. With the proliferation of using GPS in positioning and navigation for hydrographic activities, there has been a trend to utilise onboard Kinematic GPS (KGPS) to retrieve tide directly. There are two main pre-requisites for the realisation of such GPS tide retrieval application, i.e. (i) a correction model for the height separation between the ellipsoid and the local chart datum and (ii) a permanent GPS base station network. In Hong Kong, the establishment of a new network-RTK system provides a possibility for conducting KGPS tide retrieval in the local waters. This paper discusses a test on retrieving tide using the local network-RTK system. The test was carried out in two steps, firstly an empirical correction model for the separation between the WGS84 ellipsoid and Hong Kong Chart Datum (HKCD) was generated using the GPS and leveling observations taken at 71 widely spread known points. Secondly, field tests were carried out with a survey vessel to verify the feasibility and assess the performance of both the real-time and post processing KGPS-tide retrieval using the said correction model and the network-RTK system. The results revealed that real-time tide retrieval with local network-RTK system was practical for stationary vessel but not for mobile vessel due to the limitation of the GSM data link. Post processing of onboard GPS data in On-The-Fly (OTF) mode was found feasible for retrieving tide for both static and mobile vessel.

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