

## Shallow water bathymetry derived from visible satellite image: toward application to the waters around Japan

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Hydrographic organisations and their affiliated institutes are stepping up development of the technology of Satellite Derived Bathymetry (SDB).

In SDB, water depths are estimated from visible satellite images based on the basic principle of exponential attenuation of light. In practice, however, the intensity of light detected by the satellite sensor is affected by various local conditions; for example, attenuation rate in water varies with the water quality, and reflection rate on the seabed differs according to the types of sediment and benthos.

Toward the application of SDB to the waters around Japan, we have been developing and verifying the technology of SDB based on the methods by Lyzenga (1978) taking into account of the environmental characteristics of Japan. We analyse the images obtained by WorldView-2, equipped with optical sensors of eight bands (six of them are visible bands) at 1.8m of horizontal resolution, which are available since October 2009. We expect SDB will be a rapid and cost-effective solution for surveying shallow water topography and navigational obstructions, producing dense bathymetric dataset for tsunami simulation, etc.

In our presentation, we show the recent analysis results of SDB in several sea areas around Japan, as well as the evaluation of the results by comparison with multibeam or LiDAR surveys. Based on that, we will discuss the future utilisation of the SDB data.

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