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Movement of hypoxia in strongly enclosed waters of ports and harbor

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We conducted field observations in relation to hypoxia which occurs in strongly enclosed waters, such as ports and harbors, and examined generation mechanism and movement of hypoxia. Diurnal variations in hypoxia were driven by tide and wind in the strongly enclosed waters in the head of Osaka Bay. It was found that processes of the organism decomposition, oxygen consumption and carbon dioxide generation were different in and out of the ports. In the spring and summer when the water column is stratified, surface water absorbs CO_2 and bottom water stores CO_2 in strongly enclosed waters. On the other hand, in the end of summer, the stored CO_2 upwells to the surface and causes spontaneous emission because the north wind induces the upwelling.

Keywords: strongly enclosed waters, hypoxic water mass, carbon dioxide, wind drift, upwelling