

## Characteristics of bottom intrusion in the Bungo Channel

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Bungo Channel is located between Kyushu and Shikoku and faces to the Pacific Ocean. A cold water mass with high nutrients intermittently intrudes into the Bungo Channel from summer to autumn. The phenomenon is called "Bottom Intrusion (BI)". According to Kaneda et al., (2002), the BI occurs in neap tide of summer with the current of 15 cm/s. However, when we analyzed moored current and water temperature data at the central part of the Bungo Channel, we could not see the relation between the BI and moon age. There is a possibility that the discrepancy between our analysis and Kaneda et al. (2002) is caused by the different year data. In the present study, we reexamine the characteristics of the BI, especially relationship between the BI and moon age, using long-term water temperature data.

At the Uchiumi in the central part of the Bungo Channel, multilayer water temperature has observed since 1995. At other five stations (Hoketsu, Yusu, Shitaba, Fukuura, Okinoshima), Ehime University has also observed multilayer water temperature since 2008. In the present study, we analyze the deepest data at each station to understand the characteristics of the BI. We defined the BI as follows. Water temperature continually drops for 30 hours and its drop range is more than 0.5 °C. At first, we analyzed water temperature data at 60 m depth in Uchiumi from 1997 to 2011. The BI occurred evenly in every moon age, we could not recognize the relation between BI and neap tide as Kaneda et al, (2002) pointed out. In addition, such kind of relation was not seen in other stations except in Yusu. Water temperature drops in Uchiumi were from 0.5 –7.0 °C. We thought range of water temperature drop might affect to the relation. Therefore, we divided two cases, drop range is more or less than 2 °C. We could not see the relation of neap tide in both cases. Furthermore, we investigated the relation between the BI and neap tide in each year, but we could not recognize the relation.

From the above analysis, it was found that the BI occurs without relation of moon age. However there is the relation only in Yusu. A vertical mixing area is located west of Yusu. Therefore, the BI might be blocked by the strong mixing associated with spring tide. This is why the BI occurs in neap tide in Yusu. Kaneda et al., (2002) clearly showed the relation between BI and moon age. The relation at Uchiumi was for only two years of 17 years. We will discuss why there was the relation in 1995-1996.

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