

# 9.11 (Tue)

am 10:00 –  
am 12:00

総合研究棟 | 4階会議室

## 22nd LaMer Special Seminar

### Tempo-spatial variation of the Kuroshio through the Tokara Strait based on long-term ferryboat ADCP data

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The first long-term continuous transverse-vertical structure and temporal variability of the Kuroshio across the Tokara Strait measured by ferryboat acoustic Doppler current profiler (ADCP) with unprecedented resolution is presented. The Kuroshio shows a multiple-core structure through the Tokara Strait and has a mean transport of 26.98 Sv ( $1 \text{ Sv} \equiv 10^6 \text{ m}^3 \text{ s}^{-1}$ ) with a standard deviation of 3.21 Sv. The average transports through the northern and southern channels are 6.97 and 20.01 Sv, respectively. Baroclinic transport relative to the bottom amounts to 21.93 Sv and fluctuates by 2.68 Sv, indicating that the Kuroshio through the Tokara Strait is about 80% baroclinic. In July (October), the Kuroshio become strongest (weakest) with much stronger baroclinic (barotropic) structure. The empirical orthogonal function (EOF) analysis reveals that the EOF1 (meander) and EOF2 (transport) modes totally explain approximately 67% of the total current variance in the Kuroshio through the Tokara Strait. The meander mode is energetic at period bands of 10–20, 30–50, and 70-day, while relatively weak transport signals is also found near period on the 100-day timescale. The EOF3 mode exhibits an almost banded structure on a smaller scale than the first two EOF modes, which may be associated with the Kuroshio-induced wake in the lee of Tokara Islands located approximately 20 km upstream of the ferryboat ADCP section. High-resolution JCOPE-T reanalysis data ( $1/36^\circ$ ) reproduced the Kuroshio-induced wake and revealed that the wake water was colder where isotherms dome up.