JAMSTEC’s PALAU-2010 Field Campaign (May-June)

Facility:

- R/V Mirai cruise (55 days) (Doppler radar, 3hr upper-air)
- Doppler radar at Palau
- 6-hourly upper-air soundings at Woleai Atoll
- 6-hourly Intensive upper-air soundings at NOAA stations (Palau and Yap)
- Argo mooring buoy deployment using R/V Mirai (7 buoys, 1 year operation)

Purposes:

- Clarify the mechanisms governing northward propagation of summertime ISV (w/ TC genesis)
- Role of ocean mixed layer structure on the northward ISV
A possible role of ocean mixed layer in PALAU area

Wang and Rui (1990)
Variation of Ocean Mixed Layer Depth

Triton #10
137.0°E
8.0°N

thermocline
ridge

Triton #12
138.0°E
2.0°N

El Niño
La Niña
2008 case (deep mixed layer):

**ISV** → **weak westerly** (at equator) → **weak SST decrease** (off equatorial)
2004 case (shallow mixed layer):

ISV $\rightarrow$ **strong westerly** (at equator) $\rightarrow$ **significant SST decrease** (off equatorial)
TC → SST decrease (ocean mixing)

Quick SST recovery at 12°N (thermocline trough)

Slow recovery at 8°N (thermocline ridge)
Low SST westerly wind → Sustaining monsoon trough north of the low-SST area → Repeated TC formation (or TD-wave amplification)
Proposal of the extension of YOTC period

• Extension until the autumn of 2010

• On-going transition of ENSO phase to El Niño can cause thinner ocean mixed layer in the western north Pacific.

• This gives a speculation that SST over the shallow mixed layer will be sensitive to ISV activity and can possibly cause more significant northward ISV propagation with above-normal TC cases in this basin, as like the 2004 summer case.

• Observational data during the PALAU-2010 field campaign (upper-air soundings, ocean temperature/salinity, etc.), provided immediately to GTS, will be a good source of the operational data assimilation systems.