

ANNUAL REPORT ON GEOTRACES ACTIVITIES IN CHINA-TAIPEI  
MAY 2014 – JUNE 2015

**Overview**

It has been a very difficult year for Taiwan oceanography community as we have lost our largest new R.V., the 3,000 ton *Ocean Researcher V* (OR/5), in October 2014. Due to the loss, our GEOTRACES cruises have been suspended. A 2000-ton new R.V. will be delivered at the end of 2016. Although it is designed for the operation of ROV, sediment coring, and mineral/energy survey, the R.V. will also be fully equipped with sampling capabilities for oceanography research. In addition, a 3000-ton R.V. (80 m in length) for oceanography research to replace OR/5 will be under construction in 2016 and is expected to be delivered in 2018. A complete trace metal clean sampling system will be installed on this vessel.

**New results**

We have determined the TEI composition of the dissolved and particulate samples collected in our 2nd GEOTRACES cruise, carried out in March 2014 and have obtained a lot of exciting new results from aerosols, seawater, size-fractionated SPM, and sinking particles samples. For example, the following figure exhibits the fate of the aerosol Fe in the oceanic region. Many manuscripts are under preparation.

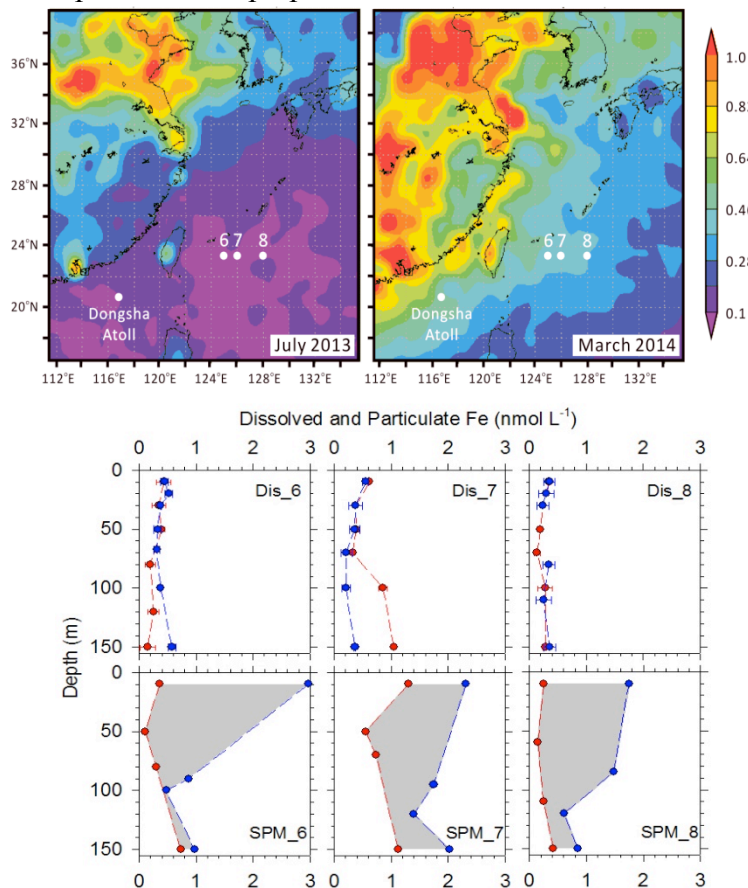


Figure 1. The comparison of MODIS aerosol optical depths and the distribution of dissolved and particulate Fe concentrations in the surface water of the offshore sampling station 6, 7, and 8 in the Western Philippine Sea in July 2013 (Red symbol) and March 2014 (Blue symbol) (Wang and Ho, in preparation).

### ***New Publications (2014/6-2015/5)***

- Huang, K.-F., D. W. Oppo and W. B. Curry (2014) Decreased influence of Antarctic Intermediate Water in the Tropical Atlantic during North Atlantic cold events, *Earth Planet. Sci. Lett.* doi:10.1016/j.epsl.2013.12.037
- **Jiann, Kuo-Tung** and Peng Ho (2014) Cadmium mixing behavior in estuaries: Redox controls on removal and mobilization. *Terrestrial, Atmospheric and Oceanic Sciences*, 25(5), 655-664. DOI: 10.3319/TAO.2014.04.01.01
- **Jiann, Kuo-Tung**, Liang-Saw Wen and Ching-Ling Wei (2014) Spatial and temporal distribution of trace metals (Cd, Cu, Ni, Pb, and Zn) in near-shore waters off the west coast of Taiwan. *Terrestrial, Atmospheric and Oceanic Sciences*, 25(1), 121-135. DOI: 10.3319/TAO.2013.09.13.01
- Rodriguez, I. B. and **T.-Y. Ho** (2015) Influence of Co and B12 on the growth and nitrogen fixation of *Trichodesmium*. *Frontiers in Microbiology* 6: 623. doi:10.3389/fmicb.2015.00623.
- Wei, C.-L., P.-R. Chen, S.-Y. Lin, D. D. Sheu, L.-S. Wen, and W.-C. Chou (2015) Distributions of <sup>210</sup>Pb and <sup>210</sup>Po in surface waters surrounding Taiwan: A synoptic observation. *Deep-Sea Res II*, 117, 155-166. doi: 10.1016/j.dsr2.2014.04.010
- Wei, C.-L., M.-C. Yi, S.-Y. Lin, L.-S. Wen, and W.-H. Lee (2014) Seasonal distributions and fluxes of <sup>210</sup>Po and <sup>210</sup>Pb in the Northern South China Sea, *Biogeosciences*, 11, 6813-6826, doi:10.5194/bg-11-6813-2014.
- Yang, S.-C., D.-C. Lee, **T.-Y. Ho**, L.-S. Wen, and H.-H. Yang (2014) The isotopic composition of dissolved cadmium in the water column of the West Philippine Sea. *Frontiers in Marine Science* doi:10.3389/fmars.2014.00061.

### ***Other activities***

- Dr. Tung-Yuan Ho has received 5-yr funding (2015 to 2019) from Academia Sinica to study trace metal-nitrogen fixation interaction in marine diazotrophic cyanobacteria. Dr. Kuo-Fang (Denner) Huang, an assistant research fellow at Academia Sinica, has been supported to establish Taiwan 4th MC-ICPMS system (Neptune Plus). Dr. Haojia (Abby) Ren, an expert by using nitrogen isotope to study marine biogeochemistry, has joined the department of geosciences at National Taiwan University as an assistant professor in August 2014.

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