

ANNUAL REPORT ON GEOTRACES ACTIVITIES IN CHINA-TAIPEI

June 1st, 2015 to April 30th, 2016

New scientific results

We have been studying the elemental and isotopic composition of the dissolved and particulate samples collected in Taiwan GEOTRACES cruises, carried out in July 2013 and March 2014 in the Western Philippine Sea. The following figure exhibits new data for trace metal distribution pattern in the suspended particles.

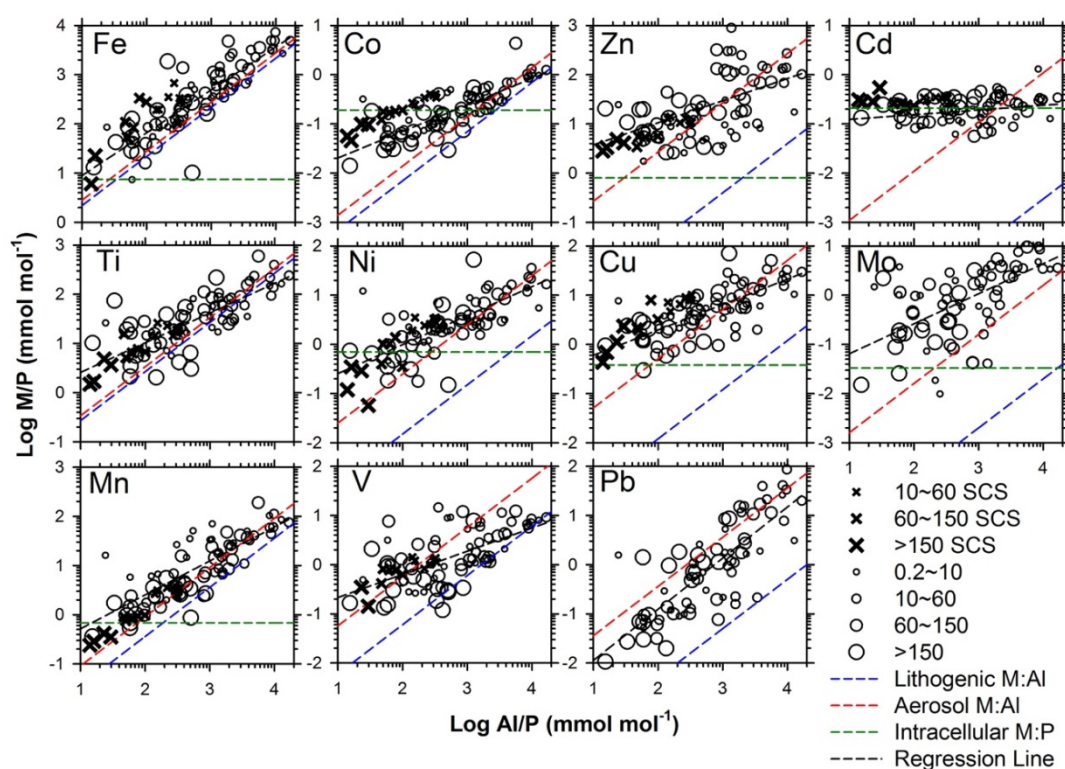


Figure. The distribution pattern of trace metals in size-fractionated suspended particles collected in the WPS, shown by log Metal/Al ratios vs log P/Al ratios. The red and blue dashed lines represent the log M/Al ratios of the in-situ aerosols collected in the WPS and of lithogenic materials, respectively. The green dashed lines represent the average metal quotas in marine plankton assemblages (Liao et al. submitted).

New Publications (2015/6-2016/5)

- Chuang, C.-Y., P.H. Santschi, L.-S. Wen, L.D. Guo, C. Xu, S. Zhuang, Y. Jiang, Y.-F. Ho, K.A. Schwehr, A. Quigg, C.-C. Hung, D. Schumann. 2015. Biopolymer-facilitated transport of ^{234}Th , ^{233}Pa , ^{210}Pb , ^{210}Po and ^7Be , radionuclides in the ocean. *Marine Chemistry*, 173, 320-329.
- Chuang, C.-Y., P.H. Santschi, C. Xu, Y. Jiang, Y.-F. Ho, A. Quigg, L.D. Guo, P.G. Hatcher, M. Ayrano, D. Schumann. 2015. Molecular level characterization of diatom associated biopolymers that bind ^{234}Th , ^{233}Pa , ^{210}Pb , and ^7Be in seawater: a case study with *Phaeodactylum tricornutum*. *Journal of Geophysical Research: Biogeosciences* DOI: 10.1002/2015JG002970

- Lin, Y. C., J. P. Chen, T. Y. Ho, and I. C. Tsai (2015) Atmospheric iron deposition in the northwestern Pacific Ocean and its adjacent marginal seas: the importance of coal burning. *Global Biogeochemical Cycles* doi:10.1002/2013GB004795.
- Ren, H.J., A.S. Studer, S. Serno, D.M. Sigman, G.W. Winckler, R.F. Anderson, S. Oleynik, R. Gersonde, G.H. Haug. (2015) Glacial-to-interglacial changes in nitrate supply and consumption in the subarctic North Pacific from microfossil-bound N isotopes at two trophic levels. *Paleoceanography* DOI: 10.1002/2014PA002765.
- Yang, S.-C., D.-C. Lee, and T.-Y. Ho (2015) Cd isotopic composition in the suspended and sinking particles of the surface water of the South China Sea: the effects of biotic activities. *Earth and Planetary Science Letters* doi:10.1016/j.epsl.2015.07.025
- Yang, S.-C., D.-C. Lee, T.-Y. Ho, L.-S. Wen, and H.-H. Yang (2015) 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.

New projects

- Dr. Tung-Yuan Ho has proposed 3-yr project to MOST (Ministry of Science and Technology) to carry out GEOTRACES research in the WPS and the Northwestern Pacific Ocean from 2016 to 2019. The title of the project is: Taiwan GEOTRACES II: Biogeochemical cycling and seasonal transformation of aerosol trace metals in the Western Philippine Sea. The scientific cruises are most likely to be carried out in 2018. The new RV will be equipped with trace metal clean sampling gears.

Other activities

- Dr. Chia-Ying Chuang is going to join Research Center for Environmental Changes at Academia Sinica this fall, 2016 as an assistant research fellow, whose Ph.D. research is closely associated with trace metal scavenging processes in the ocean. Two of her recent publications are included above. She has expressed her strong interests in doing GEOTRACES related research in Taiwan.
- TORI, Taiwan Ocean Research Institute, has been deploying moored sediment traps at two deep water depths (2000 and 3500 m) at our time series station in the northern South China Sea, SEATS, since 2014. Prof. Ching-Ling Wei and Tung-Yuan Ho have been measuring Th/U activities and trace metal fluxes by using the sinking particle samples.

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