Japan GEOTRACES National Report 2018

Hajime Obata

Scientific Meetings

•Annual Meeting of GSJ 2018 (11 - 13 Sep., Okinawa)

- GEOTRACES session

(K. Norisuye, K. Yamaoka, K. Horikawa, M. Inoue, J. Zhang, S. Kawagucci, H. Obata)

•GEOTRACES-Japan Symposium (Jan., 2019, Kashiwa)

Post cruise meeting (GP02)

•BioGEOTRACES Japan Workshop

Meeting



BIOGEOTRACES JAPAN BIGINS

Nagasaki University, Nagasaki, Japan 19-21 September, 2018

Guest speakers: Dr. Maria Maldonado, Dr. Tung-Yuan Ho Expected participants: 21



WESTPAC WG: A framework for cooperative studies in the Western Pacific Marginal Seas: Energy and materials exchange between land and open ocean (PI: JING ZHANG (2017 - 2020) with 9 countries)





<u>2nd workshop:</u> Nov. 13-14, 2018, Qingdao, China

Cruise

• One GEOTRACES-related Hakuho-maru cruise was approved.

GP22 section cruise at 155°E (PI: H. Obata) **GP22**



Cruise

• One GEOTRACES-related Hakuho-maru cruises was approved.

GP22 section cruise at 155°E (PI: H. Obata) Tentative date: 31 May to 19 August, 2021

Publications (16 in 2017-2018)

- Kim, T., H. Obata, J. Nishioka, T. Gamo (2017): Distribution of dissolved zinc in the western and central subarctic Pacific. Global Biogeochemical Cycles, 31, 1454-1468.
- Che, H. and J. Zhang (2018): Water Mass Analysis and End-Member Mixing Contribution Using Coupled Radiogenic Nd Isotopes and Nd Concentrations: Interaction Between Marginal Seas and the Northwestern Pacific. Geophysical Research Letters, 45, 2388-2395.
- Takahata, N, K. Shirai, K. Ohmori, H. Obata, T. Gamo, and Y. Sano (2018): Distribution of helium-3 plumes and deep-sea circulation in the central Indian Ocean. Terrestrial, Atmospheric and Oceanic Sciences, 29, 331-340.
- Gamo, T. and K. Shitashima (2018): Chemical characteristics of hadal waters in the Izu-Ogasawara Trench of the western Pacific Ocean. Proceedings of Japan Academy Series B Physical and Biological Sciences, 94, 45-55.
- Aoyama, M., Y. Hamajima, Y. Inomata, Y. Kumamoto, E. Oka, T. Tsubono and D. Tsumune (2018): Radiocaesium derived from the TEPCO Fukushima accident in the North Pacific Ocean: surface transport processes until 2017. Journal of Environmental Radioactivity, 189, 93-102.
- Otosaka, S. (2017): Processes affecting long-term changes in 137Cs concentration in surface sediments off Fukushima. Journal of Oceanography, 73, 559-570.

Water mass analysis and end-member mixing contributions estimation using Nd isotopes



CDW: > 20% in surface KSSW: > 80% along 50-m isobaths KIW: >10% in shelf water

Mixing model

$$\varepsilon_{Nd_{MIX}} = \frac{\varepsilon_{Nd_1} * [Nd]_1 * S_1 * f_1 + \varepsilon_{Nd_2} * [Nd]_2 * S_2 * f_2}{[Nd]_1 * S_1 * f_1 + [Nd]_2 * S_2 * f_2}$$

 $f_1 + f_2 = 1$

Ja	apan Sea			
	KW	YSW	CDW	
	62±2%	28±7%	10±3%	
Northwest Pacific Ocean				
	KW		MSW	
	94±3%		6±3%	

(Che and Zhang, GRL 2018)



(Nishioka et al., 2013)

Funding

- GEOTRACES Japan (Grant-in-Aid for Sci. Res. A, overseas academic research, Japan Society for the Promotion of Science)
 - PI: Toshi Gamo
 - Total ¥ 33.3 M (From 2016 to 2020)
 - For GEOTRACES studies and travel fees etc.
- Ocean Mixing Processes: Impact on Biogeochemistry, Climate and Ecosystem (OMIX) (Grant-in-Aid for Sci. Res. in Innovative Areas)
 - PI: Ichiro Yasuda,
 - J. Nishioka & H. Obata ¥ 73 M (From 2015 to 2019)
 - J. Zhang ¥ 10 M (From 2015 to 2019)