



## 2<sup>nd</sup> GEOTRACES data/model synergy workshop

**Amphitheater Dussane**

**ENS Ulm,  
45 rue d'Ulm  
75005 Paris**

**Co-Sponsored by ESF COST Action ES0801; US-GEOTRACES;  
GEOTRACES (France) and SCOR**

### **Program**

#### **Monday 7, afternoon**

**13h30** : welcome (J-C Dutay)

**13h35**: introduction to the goals of the meeting and the GEOTRACES program (RF Anderson)

#### **S1: Observation and modelling of particle concentration:**

**Chair: Christoph Heinze**

**Rapporteur: Francois Lacan**

**13h50** H. Loisel, N. Sohne, L. Duforet, D. Dessailly, L. Boop, and O. Aumont : Analyse of the temporal variability of the space retrieved particulate organic carbon over the global ocean.

**14h10** Lars Stemmann: Particle transformation in the mesopelagic layers of the oceans. What can we learn by using imaging systems.

**14h30** Kriest, I., Oschlies, A., Khatiwala, S.: Parameterisation of Remineralisation Length Scales in Large-scale Models of Marine Biogeochemistry

**14h50** M. Shigemitsu, Yamanaka, Y., Watanabe, Y. W., Okada, N. Kriest, I., Oschlies, A., Maeda, N., Noriki, S. Seasonal characteristics of the carbon isotope biogeochemistry of settling particles in the western subarctic Pacific: a model study

**15h10** **Break**

**15h40** C Heinze, T Ilyina: The potential of radionuclides for detecting the impact of ocean acidification on marine particle fluxes

**16h00** A Burke, O Marchal, L Bradtmiller, J McManus, R François : Application of an Inverse Method to Interpret  $^{231}\text{Pa}/^{230}\text{Th}$  Observations from Marine Sediments

**16h20** **Discussion**

## Tuesday 8, morning

### S2: Observation and Modelling particle reactive tracers, Th and Pa

**Chair: Bob Anderson**

**Rapporteur: Mark Siddall**

**9h00** R Anderson, M Fleisher: What can we learn from  $^{231}\text{Pa}/^{230}\text{Th}$  ratios?

**9h20** S. Tyldesley, M. Siddall, S Mueller, A Ridgwell: Co-response of Pa/Th and export production during freshwater experiments

**9h40** Luo, R. Francois, S. Allen: Sediment  $^{231}\text{Pa}/^{230}\text{Th}$  as a recorder of the rate of the Atlantic meridional overturning circulation: Insights from a 2-D model

**10h00** M Roy Barman: Modelling the effect of boundary scavenging on Thorium and Protactinium profiles in the ocean

**10h20** T. Arsouze, S. Khatiwala, R. F. Anderson: The importance of lithogenic particles for scavenging  $^{231}\text{Pa}$  and  $^{230}\text{Th}$  from the entire ocean

**10h40 break**

**11h00** S. A. Müller, G. Henderson, M. Siddall, N. R. Edwards:  $^{231}\text{Pa}$  and  $^{230}\text{Th}$  in the GENIE Earth system model: Exploring the combined effect of changes in circulation and biological export production on sedimentary  $^{231}\text{Pa}/^{230}\text{Th}$  ratios

**11h20** S. Marchandise, M. Roy-Barman, E. Robin, S. Ayrault and C. Colin: Distribution and isotopic signature of Thorium and REE-bearing phases in marine sediments

**11h40** A. Radic, F. Lacan and C. Jeandel: Iron isotopes in seawater: a new tracer for the oceanic iron cycle ?

**12h00 Discussion**

## Tuesday 8, afternoon

### S3: Observation and Modelling particle reactive tracers – part 2 Nd isotopes and boundary exchange

**Chair: Martin Frank**

**Rapporteur: Thomas Arsouze**

**14h00** T Arsouze: an overview on Nd modelling

**14h20** Jeandel C. Peucker-Ehrenbrink B., Godderis Y., Lacan F, Arsouze T: Impact of ocean margin processes on dissolved Si, Ca and Mg inputs to the ocean

**14h40** O. Aumont, A. Tagliabue, L. Bopp, and T. Gorgues: Sediment mobilization: revisiting the iron hypothesis

**15h00** Johannes Rempfer, Fortunat Joos and Thomas Stocker: Modelling the neodymium cycle using the Bern3d model

**15h20** M. Grenier, C. Jeandel, F. Durand, F. Lacan: Original study of the Equatorial Pacific Ocean fertilization based on a lagrangian simulation of the circulation coupled to Nd isotopic composition and Rare Earth Element concentration data

**15h40 break**

**16h00** F Lacan, M Labatut: Trace element concentrations of the suspended particles in the Southern Ocean (Bonus/GoodHope transect)

**16h20** A Oka, H Hasumi, H Obata, T Gamo, Y Yamanaka: Simulation of rare earth elements (REEs) with an ocean general circulation model

**16h40** Cogez et al: Limitations of Neodymium isotopes modelling with Global Circulation Models

**17h00 Discussion**

## **Wednesday 9, morning**

### **S4: cycling of micronutrient – The Fe cycle**

**Chair: Bill Landing**

**Rapporteur: Marie Boye**

**9h30** J.-M. Lee, E.A. Boyle, R.F. Zhang, J. Fitzsimmons, T. Ito: Distribution of dissolved Fe and Cu in the Bermuda Time-Series Station and the Tropical North Atlantic Ocean.

**9h50** F. Chever, E. Bucciarelli, G. Sarthou, S. Speich, M. Arhan, P. Penven, A. Tagliabue: Dissolved iron concentrations in the Atlantic sector of the Southern Ocean, along a transect from the subtropical domain to the Weddell Sea Gyre

**10h10** M Boye: The organic complexation in modeling the oceanic iron cycling

**10h30 break**

**10h50** E Boyle and W Jenkins: Hydrothermal Iron in the Deep Western South Pacific

**11h10** A Tagliabue, L Bopp, J-C Dutay, A R. Bowie, F Chever, P Jean-Baptiste, E Bucciarelli, D Lannuzel, T Remenyi, G Sarthou, O Aumont, M Gehlen, C Jeandel: On the importance of hydrothermalism to the oceanic dissolved iron inventory

**11h30** M Jin, C Deal, S Elliott, E Hunke et al: Modeling of the influences of sea ice cover and sea ice ecosystem on iron cycle

## **Wednesday 9: afternoon**

### **S4: CONTINUED: cycling of micronutrient – The Fe cycle**

**14h00** T Gorgues, C Menkes, O Aumont, J Murray, L Slemons: The iron phases, a crucial factor for the biomass variability in the Pacific HNLC region?

**14h20 discussion**

### **S5: Inverse modelling and others**

**Chair: Reiner Schiltzer**

**Rapporteur : J-C Dutay**

**15h20** W. J. Jenkins and A.C. Naveira Garabato: Constraining the oceanic budgets and fluxes of primordial helium-3

**15h40** P Jean-Baptiste, J-C Dutay, P Peylin : Constraint on oceanic hydrothermal <sup>3</sup>He from inverse modeling.

**16h00 Break**

**16h20** W landing, C Measures: The Trace Metals Component of the CLIVAR/Repeat Hydrography (CO<sub>2</sub>) project

**16h40** Celine Gallon, A. Russell Flegal: Silver in the North Pacific Ocean: potential as a tracer of anthropogenic inputs

**17h00 discussion**

## Thursday 10: morning

### S6: Stable isotope modelling (N, C, Si, etc)

Chair: Gideon Henderson

Rapporteur : Ben Reynolds

**9h00** B C. Reynolds, B Bourdon: Understanding the global marine  $\delta^{30}\text{Si}$  distribution

**9h20** G F. de Souza, B C. Reynolds, J F. Rudge, B Bourdon : Modelling nutrient-type cycling and mass-dependent isotope fractionation using a simple 1D model: Silicon as an example

**9h40** C Somes and A Schmittner: Modeling the Global Distribution of Nitrogen Isotopes in the Ocean

**10h00** A de Brauwere, F Fripiat, A-J Cavagna, D Cardinal, M Elskens : Modelling Si isotopic compositions and fluxes in the Southern Ocean with a box model

**10h20 Break**

**10h40** G Wang: Using Short-Lived Radium Isotopes to Study Transport Processes in South China Sea

**11h00** Nives Ogrinc :The use of geotracers in the costal marine studies (the Gulf of Trieste, N Adriatic)

**11h20** K Rodgers, S Mikaloff-Fletcher, Claudie Beaulieu, D Bianchi, E Galbraith, A Gnanadesikan, T Naegler, J Sarmiento, R Slater: Atmospheric radiocarbon as a tracer of large-scale Southern Ocean wind variations over the period 950-1950

**11h40 Discussion**

**13h00 Workshop closes**