
## Geotraces – Spain

# 2013
# Geotraces SSC meeting

Bremerhaven, 02-04 October 2013

# Geotraces - Spain

- National committee (under SCOR-Spain)
  - A. Tovar-Sanchez (Cadiz-CSIC)
  - A. Cobelo & R. Prego (Vigo-CSIC)
  - P. Masqué, E. Garcia-Solsona & J. Garcia-Orellana (Barcelona-UAB)

# Activities I

- Participation at the GEOTRACES Latin America Meeting, Rio de Janeiro, November 2012. Several presentations and also started the collaboration with some south American labs.

- Participation at the Workshop on voltammetry and GEOTRACES, Sibenik (Croacia), 6-9 October 2012.

- Participation at a meeting held at ETH-Zurich in March 2013 to coordinate U-236 studies. A number of samples from the Arctic, Southern Ocean, Atlantic, Mediterranean and Pacific have been collected during the last year for this new tracer.

- Participation at the Arctic GEOTRACES Meeting held in Bremerhaven in April 2012, that lead to the submission of two Polarstern proposals in Germany for expeditions in 2015 and 2016 (now approved and working on the actual plans).

# Activities II

- Participation in different meetings and workshops: AWI, Brest and Liege workshops and Goldschmidt, OSM, ASLO

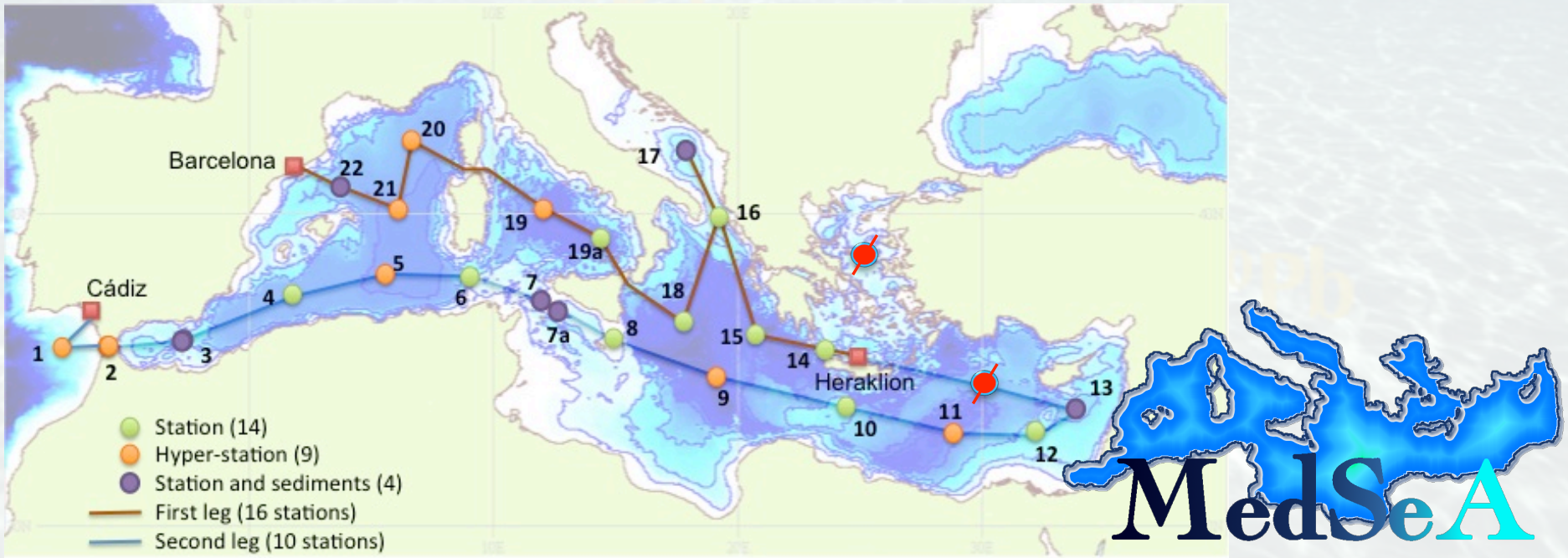
- Participation in future GEOTRACES expeditions:
  - US Geotraces  section between Perú and Tahití (GP16): PI Tim Kenna
  - French Geotraces North Atlantic (GEOVIDE): PI Géraldine Sarthou

- Participation in Fukushima expedition: measurement of $^{90}Sr$.

- **Fundings:** No funding from Spanish Science Ministry: Calls are closed.

# Activities: Med Sea cruise

- We co-organized with NIOZ the GEOTRACES section GA04-S (Mediterranean Sea) on board Ángeles Alvariño between May 2nd and June 1st in the frame of the MedSeA project.



# Activities: Med Sea cruise


- We sampled about 100 depths at 10 stations to analyze:
  - $^{231}Pa/^{230}Th$, $^{236}U$, $^{238}U$, Pu isotopes, $^{137}Cs$, $^{90}Sr$, $^{129}I$, $^{234}Th$, $^{237}Np$, $^{228,226}Ra$, Nd-isotopes and Deuterium.
  - We also carried out some experiments on $^{210}Pb$ and $^{210}Po$ using several techniques to evaluate potential differences between methods.
  - We also deployed ISP (n=6) in order to collect particles to analyze particulate trace metals.

- Future collaboration of Spanish scientist in Biogeotraces

# Publications

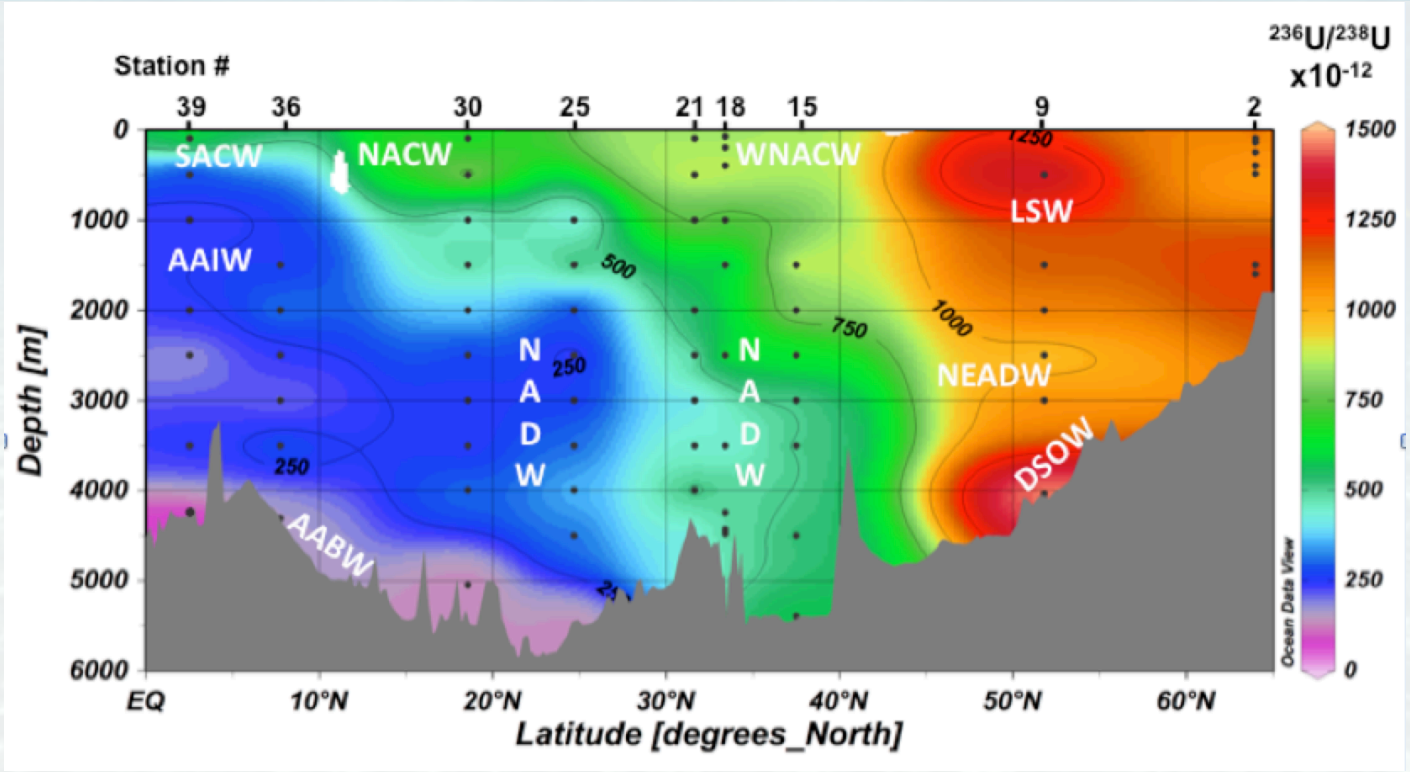
Thesis:

- Patricia Cámara: Radionuclides in the Arctic Ocean: tracing sea ice origin, drifting and interception of atmospheric fluxes

Articles:

- Rodellas V, Garcia-Orellana J, Tovar-Sánchez A, Basterretxea G, López-Garcia JM, Sánchez-Quiles D, Garcia-Solsona E, Masqué P. Submarine groundwater discharge as a source of nutrients and trace metals in a Mediterranean Bay (Palma Beach, Balearic Islands). Submitted to *Marine Chemistry*.
- Geibert W, Rodellas R, Annett A, van Beek P, Garcia-Orellana J, Hsieh Y-T, Masqué P. The measurement of $^{226}$Ra via the rate of $^{222}$Rn ingrowth with the radium delayed coincidence counter. Submitted to *Limnology and Oceanography Methods*.
- Santos-Echendia J, Caetano M, Brito P, Canario J, Vale C, 2012. The relevance of defining trace metal baselines in coastal waters at a regional scale: The case of the Portuguese coast (SW Europe). *Marine Environmental Research* 79: 86-99. doi: 10.1016/j.marenvres. 2012.05.010
- Prego, R., Santos-Echeandía, J., Bernárdez, P., Cobelo-García, A. & Varela, M. 2013. Trace metals in the NE Atlantic coastal zone of Finisterre (Iberian Peninsula): terrestrial and marine sources and rates of sedimentation. *Journal of Marine Systems*, in press, 10.1016/j.jmarsys.2012.05.008
- Rigaud S, Puigcorbé V, Camara-Mor P, Casacuberta N, Roca-Martí M, Garcia-Orellana J, Benitez-Nelson CR, Masque P and Church T. A methods assessment and recommendations for improving calculations and reducing uncertainties in the determination of $^{210}$Po and $^{210}$Pb activities in seawater. Accepted to *Limnology and Oceanography Methods*.
- Casacuberta N, Masqué P, Garcia-Orellana J, Garcia-Tenorio R and Buesseler KO (2013) $^{90}$Sr and $^{89}$Sr in seawater off Japan as a consequence of the Fukushima Dai-ichi nuclear accident. Biogeosciences 10, 3649-3659.
- Casacuberta N, Christl M, Lachner J, Rutgers van der Loeff M, Masqué P, Arno Synal H. A first transect of U-236 in the Noth Atlantic Ocean. Submitted to Geochimica & Cosmochimica Acta

# Results

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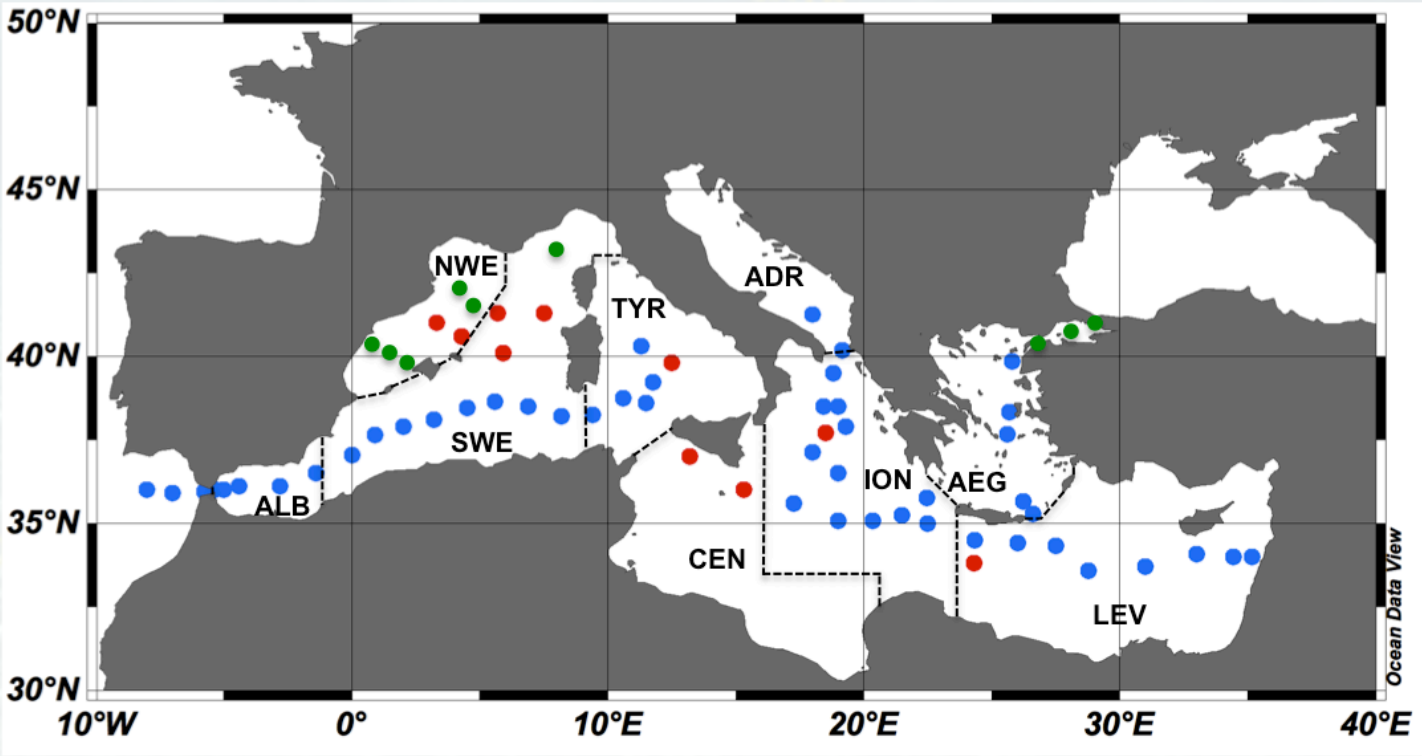


Rodellas, V., Garcia-Orellana, J., Feldman, M., Masqué, P., Weinstein, Y. Submarine Groudnwater Discharge from **Ra-228** into the entire Mediterranean Sea In preparation

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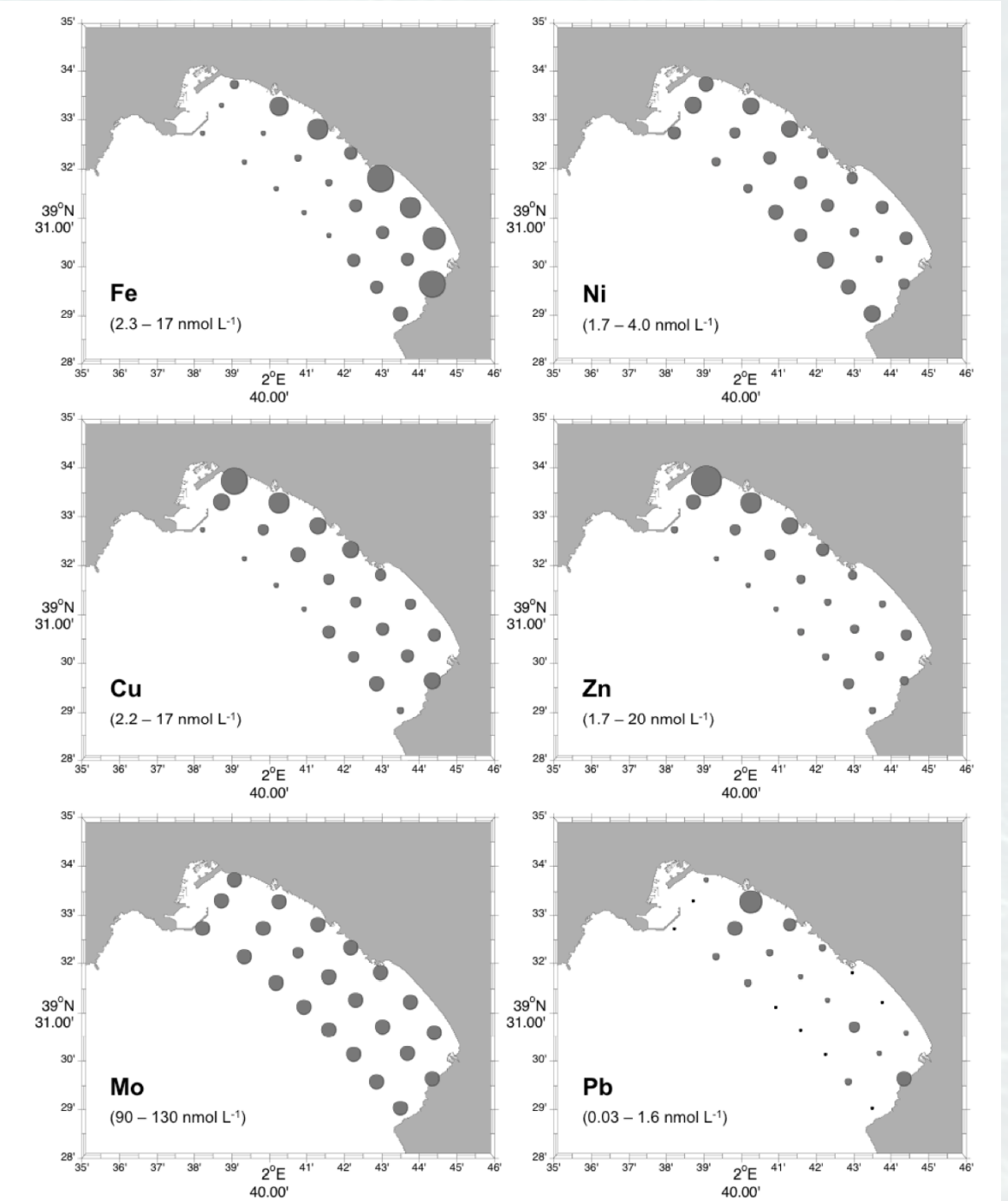

# Defined interests & potential

- Metals (A. Tovar & A. Cobelo):
  - Fe, Al, Cd, Co, Cu, Mn, Mo, Ni, Pb, V and Zn (dissolved and particulated)
- Nd isotopes (E. Garcia-Solsona in collaboration with Toulouse)
- Radioactive isotopes (P. Masqué & J. Garcia-Orellana):
  - Natural radionuclides: $^{210}Po/^{210}Pb$, $^{234}Th/^{238}U$, Ac, Ra, Th isotopes
  - Artificial radionuclides: $^{239,240}Pu$, $^{137}Cs$, $^{236}U$, $^{90}Sr$…
- SGD processes (J. Garcia-Orellana)