

ANNUAL REPORT ON GEOTRACES ACTIVITIES IN ITALY

May 1st, 2021 to April 30th, 2022

New GEOTRACES or GEOTRACES relevant scientific results

- Dissolved neodymium isotopes in the Mediterranean Sea

A new comprehensive compilation of dissolved Nd isotopic composition of Mediterranean seawater has been generated from 24 depth profiles covering the entire basin (Montagna et al., 2022). In particular, we have analysed 80 new seawater samples from 10 to 4087 m water depth, which represent one third of the total number of samples obtained so far in the Mediterranean Sea for ϵ_{Nd} . The new dataset reveals a clear ϵ_{Nd} – salinity correlation and a zonal and depth gradient with ϵ_{Nd} systematically increasing from the western to the eastern Mediterranean basin, reflecting the large-scale basin circulation. The conservative ϵ_{Nd} behaviour and the non-conservative components were evaluated/quantified based on results from an Optimum Multiparameter (OMP) and Parametric Optimum Multiparameter (POMP) analyses. The outcomes indicate that dissolved ϵ_{Nd} behaves overall conservatively in the open Mediterranean Sea. However, misfits between measured and OMP- and POMP-derived ϵ_{Nd} values exist in almost all sub-basins, which can be explained by the influence of detrital lithogenic ϵ_{Nd} signatures through interaction with highly radiogenic Nile sourced volcanic fractions and unradiogenic sediments.

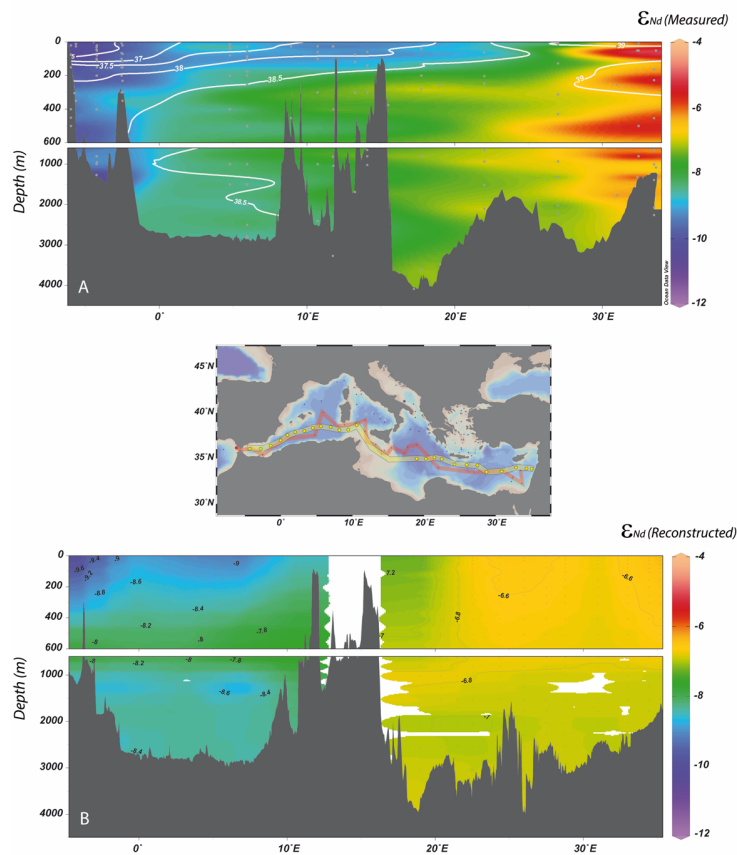


Fig. 1. Measured and POMP-derived ϵ_{Nd} values along a longitudinal transect from the Strait of Gibraltar to the eastern Levantine basin. The red and yellow lines in the map represent the W-E transects for the measured and calculated ϵ_{Nd} values, respectively (Modified from Montagna et al., 2022).

GEOTRACES or GEOTRACES relevant cruises

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New projects and/or funding

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GEOTRACES workshops and meetings organized (Please include the number of early career researchers involved in each event, when possible)

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Outreach activities conducted (please list any outreach/educational material available that could be shared through the GEOTRACES web site) (We are particularly interested in recordings from webinars from GEOTRACES research)

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Other GEOTRACES activities

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New GEOTRACES or GEOTRACES-relevant publications (published or in press) (Please identify those publications acknowledging SCOR funding and for these publications include the number of PhD or postdoc students involved, if possible)

- Montagna P., Colin C., Frank M., Störling T., Tanhua T., Rijkenberg M., Taviani M., Schroeder K., Chiggiato J., Gao G., Dapoigny A., Goldstein S. (2022). Dissolved neodymium isotopes in the Mediterranean Sea. *Geochimica et Cosmochimica Acta*, 322, 143-169.

Paleo-papers related to GEOTRACES topics

- Trotter J., McCulloch M., D'Olivo J.P., Scott P., Tisnerat-Laborde N., Taviani M., Montagna P. (2022). Deep-water coral records of glacial and recent ocean-atmosphere dynamics from the Perth Canyon in the southeast Indian Ocean. *Quaternary Science Advances*, 6, 100052.
- Sanchez-Cabeza J.A., Rico-Esenaro S.D., Corcho-Alvarado J.A., Rollin S., Carricart-Gavinet J.P., Montagna P., Ruiz-Fernandez A.C., Cearreta A. (2021). Plutonium in coral archives: A good primary marker for an Anthropocene type section. *Science of the Total Environment*, 145077.
- Colin C., Duhamel M., Siani G., Dubois-Dauphin Q., Ducassou E., Liu Z., Wu J., Revel M., Dapoigny A., Douville E., Taviani M., Montagna P. (2021). Changes in the intermediate water masses of the Mediterranean Sea during the last climatic cycle: New constraints from neodymium isotopes in foraminifera *Paleoceanography and Paleoclimatology*, 36, e2020PA004153.

Completed GEOTRACES PhD or Master theses (please include the URL link to the pdf file of the thesis, if available)

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GEOTRACES presentations in international conferences

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Submitted by ... (please include contact e-mail address)