

GEOTRACES

An International Study of the Marine Biogeochemical Cycles of Trace Elements and their Isotopes

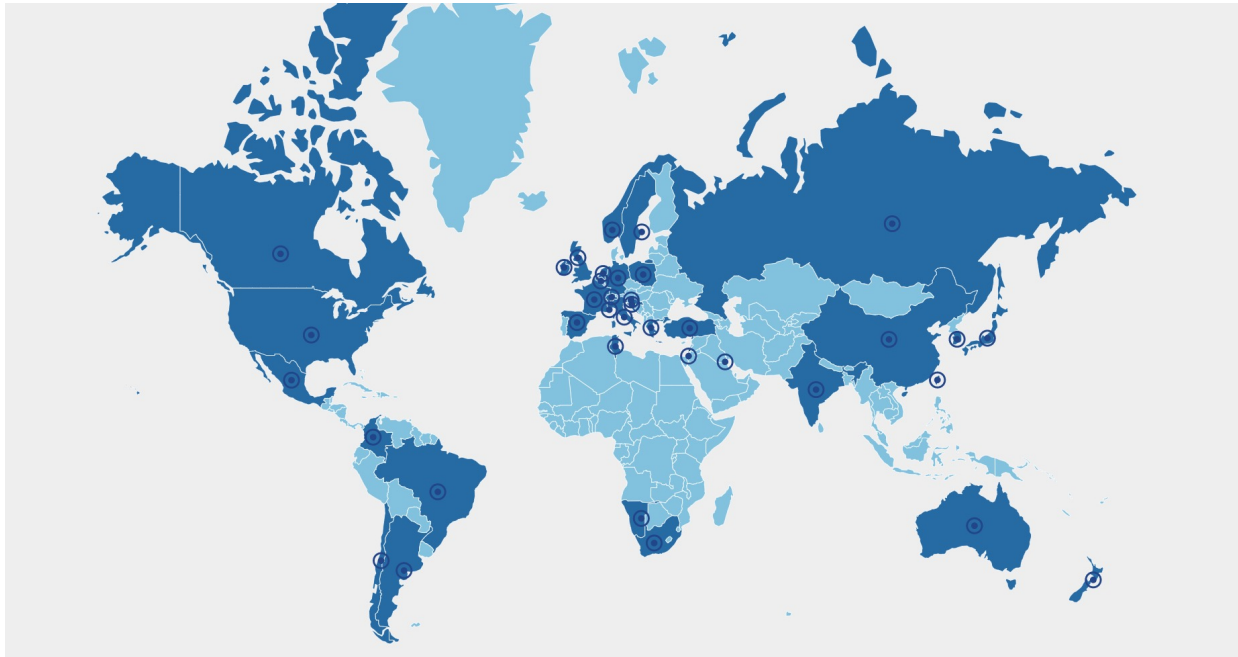


2021 United Nations Decade
2030 of Ocean Science
for Sustainable Development

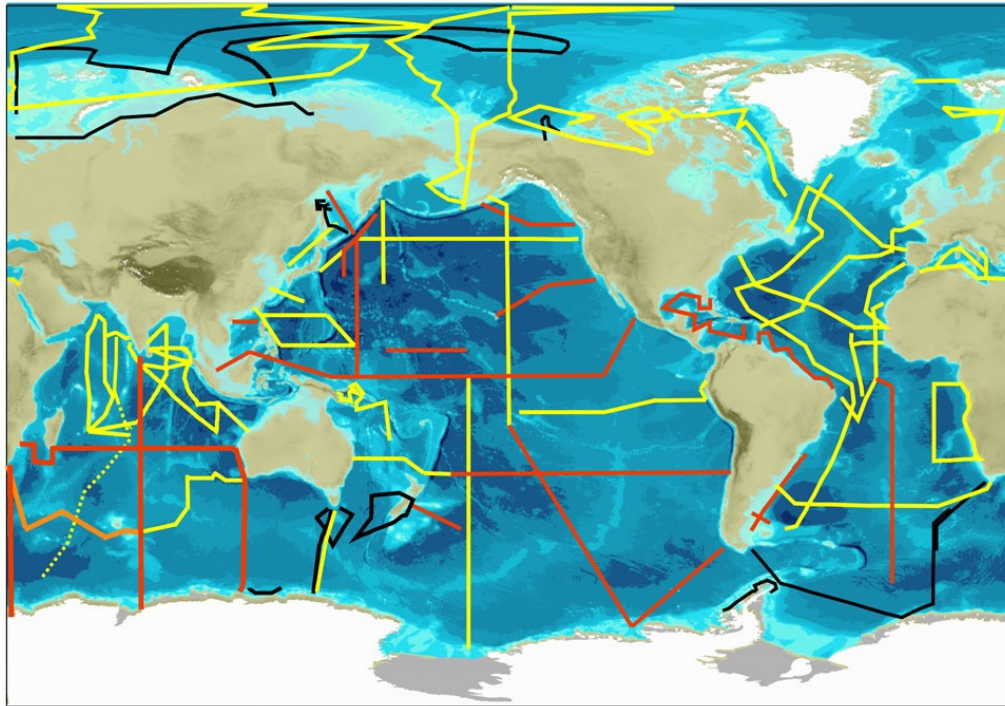


GEOTRACES mission

- **GEOTRACES** mission is to identify processes and quantify fluxes that control the distributions of key trace elements and isotopes (TEIs) in the ocean, and to establish the sensitivity of these distributions to changing environmental conditions
- Scientists from more than **35 nations** have been involved in the programme, which is designed to study all major ocean basins
- Co-chairs: Karen Casciotti (University of Stanford, USA)
Maeve Lohan (University of Southampton, UK)



GEOTRACES presentation card



To date:

35 nations

130 cruises completed
(+10 completed during the reporting period)

43 sections completed
(+1 completed during the reporting period, in orange)

1,688 publications

Data Products in 2014 and 2017
New data product forthcoming in Nov21

Map legend: Map of GEOTRACES sections. In red: Planned Sections. In yellow: Completed Sections. In orange: Section completed during the reporting period. In black: Sections completed as GEOTRACES contribution to the IPY.

New GEOTRACES Intermediate Data Product 2021!

Just published (17 November)!

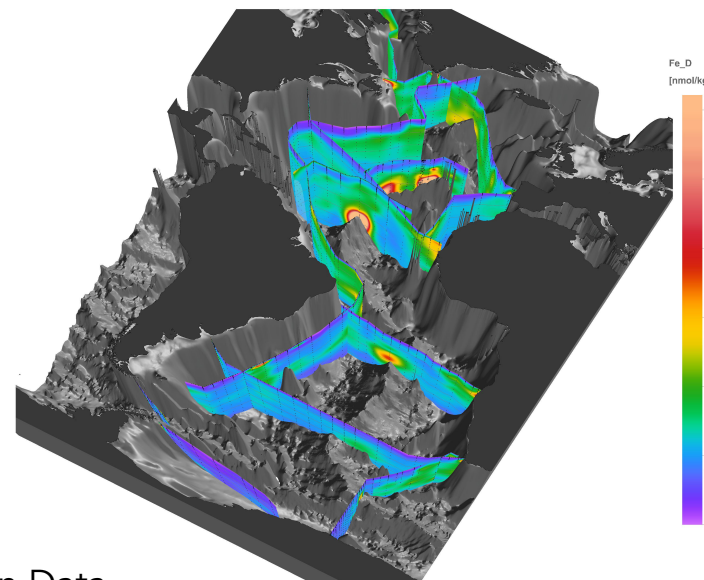
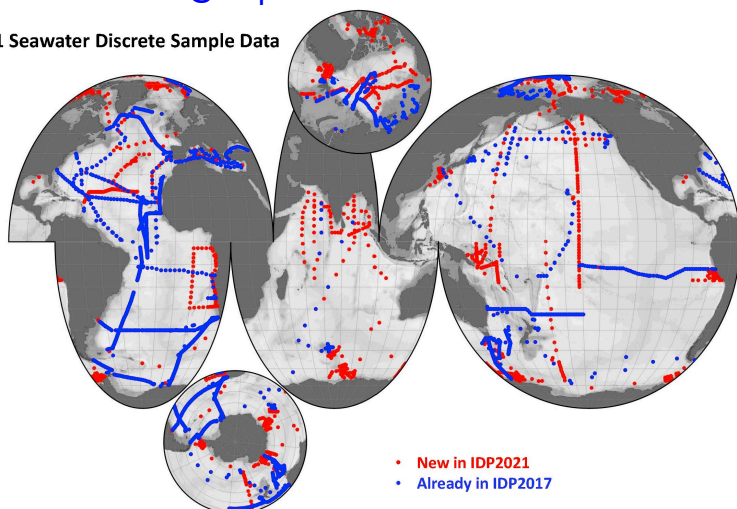
IDP2021 consists on:

Freely available on-line!
Thanks to 350 data contributors!

(1) a **compilation of digital trace metal data** 100,000 samples from 77 cruises
(geotraces.org/dp)

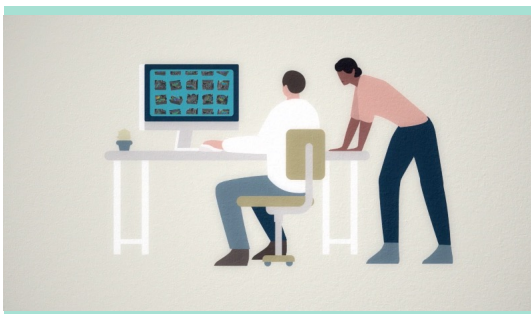
(2) the **eGEOTRACES Electronic Atlas**
(egeotraces.org)

IDP2021 Seawater Discrete Sample Data



Data available in 3 formats: csv ASCII, NetCDF and as Ocean Data View collections. Analysis, exploration and visualisation without download possible thanks to the **web ODV tool**
(<https://geotraces.webodv.awi.de/>)

Dissolved Fe in the Atlantic Ocean



Just published!

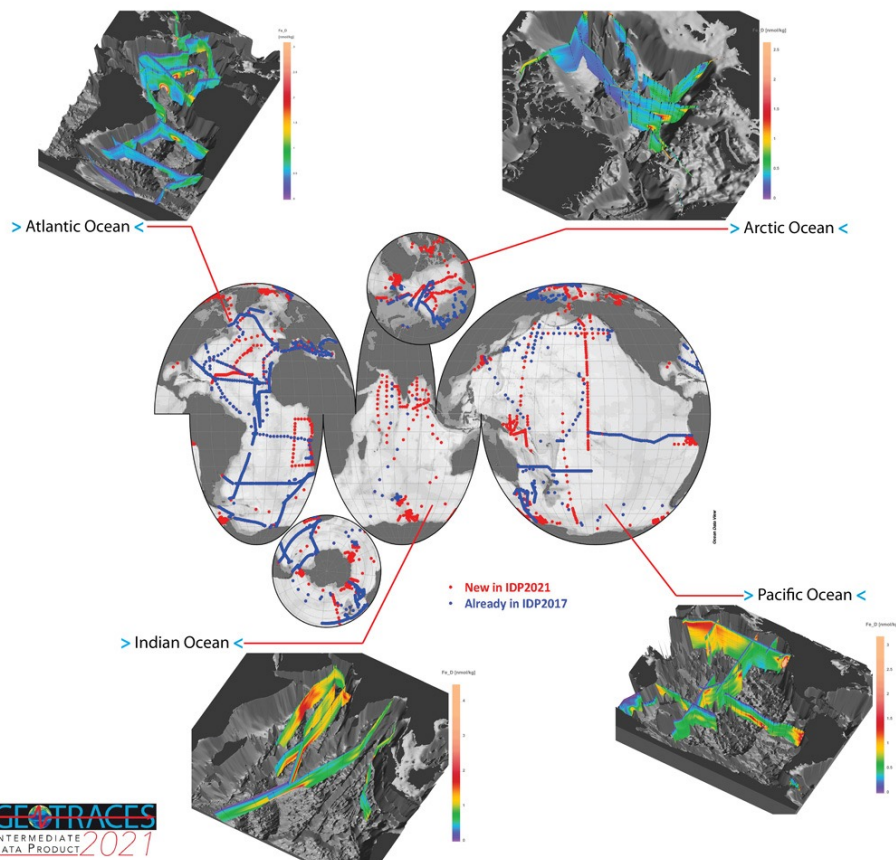
**New GEOTRACES Intermediate Data Product,
IDP2021!**

www.bodc.ac.uk/geotraces/data/dp

Freely available on-line!
Thanks to 350 data contributors!

Released on 17 November.
View video of the release event:
<https://youtu.be/bgaQUHZFJtc>

**What does IDP2021 include
and how can be accessed?**
View video:
<https://youtu.be/j3mjfh-RSjU>

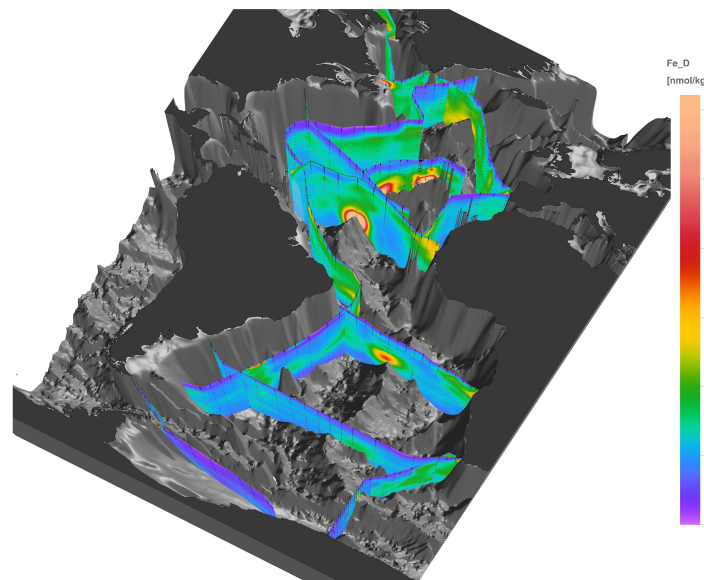
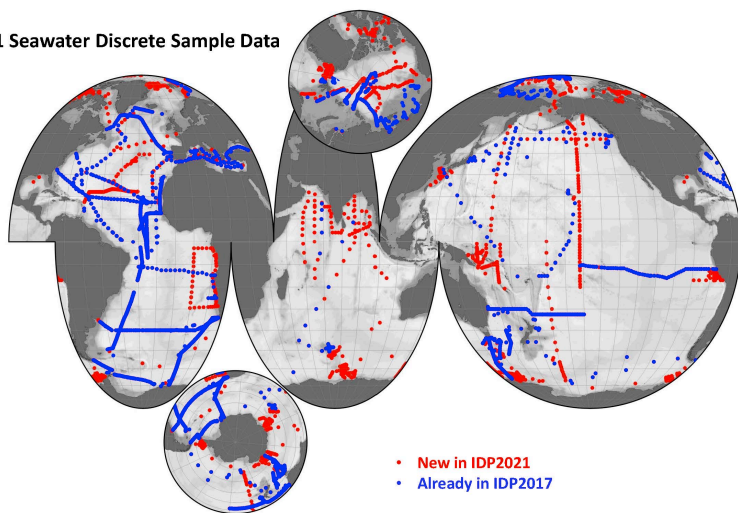


IDP2021 consists on:

(1) a **compilation of digital trace metal data** 100,000 samples from 77 cruises
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IDP2021 Seawater Discrete Sample Data

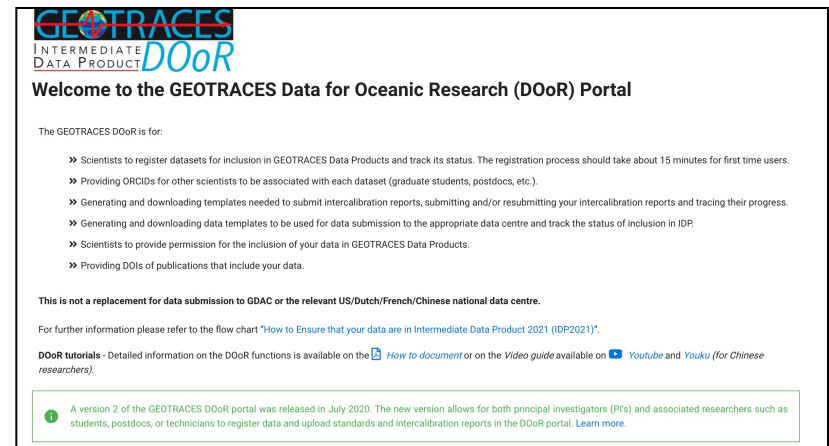


Data available in 3 formats: csv ASCII, NetCDF and as Ocean Data View collections. Analysis, exploration and visualisation without download possible thanks to the **web ODV tool**
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Dissolved Fe in the Atlantic Ocean

GEOTRACES Data for Oceanic Research (DOoR)

- **Dedicated on-line portal to register data sets** for intercalibration and potential inclusion in IDP2021, generate templates for data submission and provide necessary metadata for the building of the IDP2021.
- **Management tool** for GEOTRACES subcommittees and the GEOTRACES Data Centre to work on the preparation of the IDP2021.



GEOTRACES
INTERMEDIATE DATA PRODUCT **DOoR**

Welcome to the GEOTRACES Data for Oceanic Research (DOoR) Portal

The GEOTRACES DOoR is for:

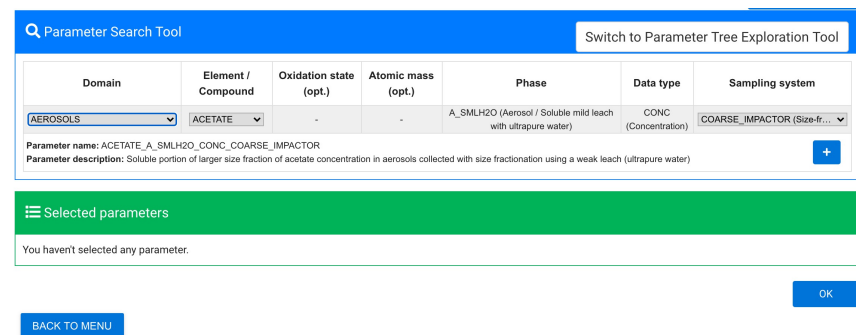
- » Scientists to register datasets for inclusion in GEOTRACES Data Products and track its status. The registration process should take about 15 minutes for first time users.
- » Providing ORCID's for other scientists to be associated with each dataset (graduate students, postdocs, etc).
- » Generating and downloading templates needed to submit intercalibration reports, submitting and/or resubmitting your intercalibration reports and tracing their progress.
- » Generating and downloading data templates to be used for data submission to the appropriate data centre and track the status of inclusion in IDP.
- » Scientists to provide permission for the inclusion of your data in GEOTRACES Data Products.
- » Providing DOIs of publications that include your data.

This is not a replacement for data submission to GDAC or the relevant US/Dutch/French/Chinese national data centre.

For further information please refer to the flow chart "How to Ensure that your data are in Intermediate Data Product 2021 (IDP2021)".

DOoR tutorials - Detailed information on the DOoR functions is available on the [How to document](#) or on the [Video guide](#) available on [Youtube](#) and [Youku](#) (for Chinese researchers).

1 A version 2 of the GEOTRACES DOoR portal was released in July 2020. The new version allows for both principal investigators (PIs) and associated researchers such as students, postdocs, or technicians to register data and upload standards and intercalibration reports in the DOoR portal. [Learn more](#).



Parameter Search Tool Switch to Parameter Tree Exploration Tool

Domain	Element / Compound	Oxidation state (opt.)	Atomic mass (opt.)	Phase	Data type	Sampling system
AEROSOLS	ACETATE	-	-	A_SMLH2O (Aerosol / Soluble mild leach with ultrapure water)	CONC (Concentration)	COARSE_IMPACTOR (Size-fr....)

Parameter name: ACETATE_A_SMLH2O_CONC_COARSE_IMPACTOR
Parameter description: Soluble portion of larger size fraction of acetate concentration in aerosols collected with size fractionation using a weak leach (ultrapure water)

Selected parameters
You haven't selected any parameter.

BACK TO MENU OK

<https://geotraces-portal.sedoo.fr/pi/>



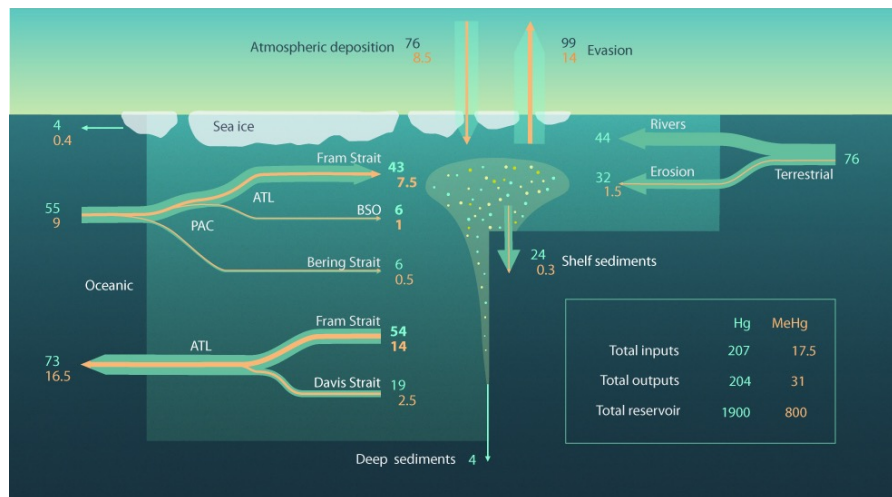
Precise estimate of the mercury export from the Arctic to the Atlantic Ocean

- Using new observations acquired during several GEOTRACES cruises a refined arctic Hg budget was established.
- The Hg concentrations in the East Greenland Current (EGS 1.29 ± 0.43 pM) were higher, compared to the West Spitsbergen Current (WSC 0.80 ± 0.26 pM), resulting in a northward flow of 43 ± 9 Mg y^{-1} and a southward flow of 54 ± 13 Mg y^{-1} at Fram Strait.
- The updated arctic Hg mass balance shows that the Arctic Ocean exports about 18 Mg y^{-1} Hg to the Atlantic Ocean, 40% of which is in the form of methylmercury.

Reference:

Petrova, M. V.; Krisch, S.; Lodeiro, P.; Valk, O.; Dufour, A.; Rijkenberg, M. J. A.; Achterberg, E. P.; Rabe, B.; van der Loeff, M. R.; Hamelin, B.; Sonke, J.E., Garnier, C.; Heimbürger-Boavida, L.E. Mercury Species Export from the Arctic to the Atlantic Ocean. *Mar. Chem.* 2020, 103855.

DOI: <https://doi.org/10.1016/j.marchem.2020.103855>

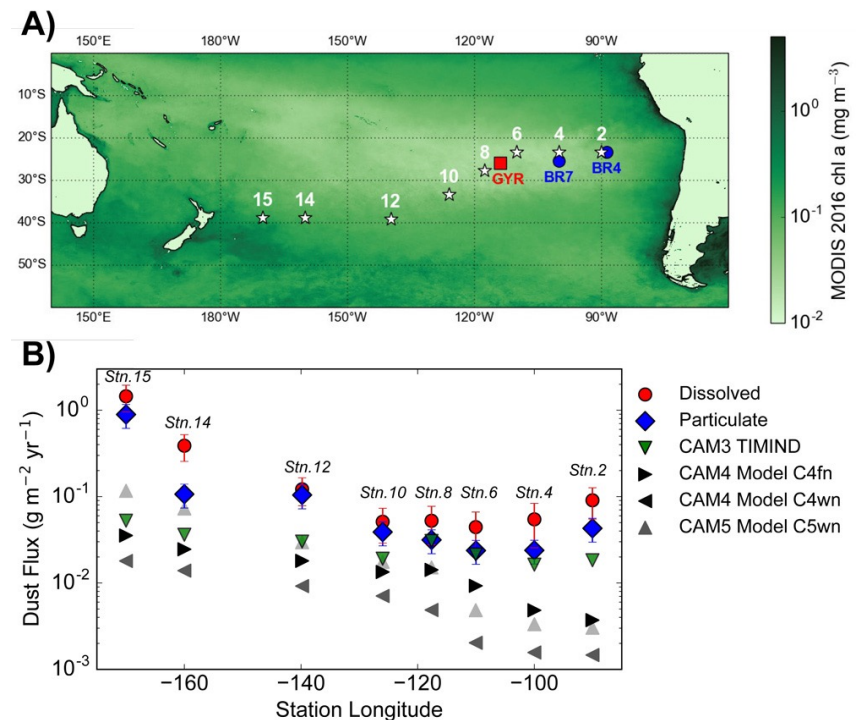


Surface water trace element and isotope data challenge dust flux models

- Using measurements of dissolved and particulate thorium-230 (^{230}Th) and thorium-232 (^{232}Th) along a section across the South Pacific authors estimated the dust flux over this remote area.
- Although the calculated dust input rates stand among the lowest ever determined, they are 1–2 orders of magnitude higher than those estimated by global dust models.
- Using published dissolved iron (Fe) data, Fe/ ^{232}Th ratios and solubility of these tracers in aerosols, the authors also estimated the dust-borne Fe flux over the South Pacific Gyre (SPG).
- They reveal that in contrast to previous studies, atmospheric deposition and not the physical transport, is the most important process supplying Fe to phytoplankton at the surface of the SPG.

Pavia, F. J., Anderson, R. F., Winckler, G., & Fleisher, M. Q. (2020). Atmospheric Dust Inputs, Iron Cycling, and Biogeochemical Connections in the South Pacific Ocean From Thorium Isotopes. *Global Biogeochemical Cycles*, 34(9).

DOI: <https://doi.org/10.1029/2020GB006562>



3rd GEOTRACES Summer School planned for 2021

- **International GEOTRACES Summer School: Introducing Polar Parameters**
15 – 21 July 2022 in Bremerhaven, Germany
- 50 students and 16 lecturers
- Course to include:
 - Lectures
 - Training in shipboard sampling (*RV Heincke*)
 - Lab/computer practicals (ICP-MS analysis, sample processing, sensor measurements, ODV visualisation)
- Organisers: Walter Geibert (AWI), POLMAR Graduate School @AWI (Claudia Hanfland)



GEOTRACES Video for the general public

UNDERSTANDING THE OCEANS
TO PREPARE THE FUTURE

Animation by Adrian Artis

Directed by Catherine Jeandel and Elena Masferrer

Voice by Thomas Boutilier / Thanks to Rogue Elephant

Youtube link: <https://youtu.be/FoGnPTpOICg>

Thank you very much!

Contact us

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