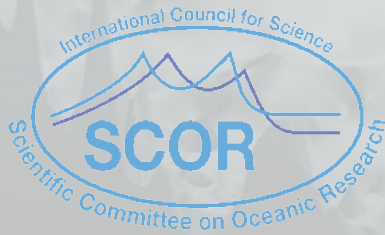


# GEOTRACES



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



## International Project Office

Catherine Jeandel  
Elena Masferrer-Dodas

# GEOTRACES IPO Tasks

## 1. Coordination centre

- Assisting GEOTRACES SSC members
- Working with co-chairs (preparing agenda for meetings, reports, following action items, etc)
- Facilitating communications among the various components of GEOTRACES
- Acting as primary interface for communications with the broader community
- Liaising with other projects and sponsors
- Interacting with GEOTRACES national representatives
- Reporting: from meetings, Annual Report to SCOR, SCOR Review document
- Requests for cruise endorsement
- Coordinate special session submission
- Following fieldwork planning
- ...

**3. Administration/logistics:** logistics for meetings, IPO budget, managing IPO Agreement with all sponsors

**4. Assisting the GEOTRACES Data Assembly Centre** in securing metadata.

## 2. Developing and/or maintaining project tools/products:

### Communication/Outreach:

- **Website**
- Facebook and Twitter page
- Mailing lists
- Publishing **Science Highlights**
- **eNewsletter** + Special Issues
- Outreach Resources Libraries and website
- GEOTRACES Video
- Brochures and other materials (e.g. postcards, posters, banners, etc.)

### Management Tools: GEOTRACES DOoR

### Databases :

- GEOTRACES Peer-reviewed Papers and PhD and Master Dissertations
  - GEOTRACES IDP Reference
- GEOTRACES Researchers Analytical Expertise

# Examples of products

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

**SCOPE**  
GEOTRACES is an international marine chemistry programme. Its goal is to identify processes and quantify fluxes that control the distributions of key trace elements and isotopes in the ocean. And to establish the sensitivity of these distributions to changing environmental conditions.

Key trace elements and isotopes are those that are:  
 • micronutrients essential to life in the ocean (e.g. Fe, Zn, Cd, Cu, Co)  
 • tracers of natural processes in the ocean (e.g.  $\delta^{15}N$ ,  $\delta^{13}C$ ,  $\delta^{33}S$ )  
 • significantly perturbed by human activities (e.g. Pb, Hg, Au)  
 • used as proxies to reconstruct the past (e.g.  $^{210}Pb$ ,  $^{239}Pu$ ,  $^{235}U$ ,  $^{238}U$ )

**FIRST INTERMEDIATE DATA PRODUCT AVAILABLE**  
 It includes hydrographic and marine geochemical data acquired during the first 3 years of the programme. It consists of two parts:  
 (1) A compilation of digital trace metal data  
 (2) The eGEOTRACES Electronic Atlas

**GEOTRACES ARCTIC FIELD PROGRAMME**  
 The major field effort this year is focused on implementing the International GEOTRACES Arctic research programme with three cruises (from Germany, US and Canada) scheduled to be held this summer.

**SYNTHESIS OF RESULTS**  
 GEOTRACES plans to launch a 3-parted synthesis initiative over the next three years. One component will focus on sources and sinks of TSM at ocean boundaries, starting with the workshop "The biological and climatic impacts of ocean trace-element chemistry" (7-8 December 2016, Royal Society in London UK).

**GET INVOLVED**  
 Forthcoming meetings:  
 • "The biological and climatic impacts of ocean trace-element chemistry" (7-8 December 2016, Royal Society in London, UK)  
 • Sessions under Theme 2 of GOSPAR2016 (2016 conference)  
 • Sessions at Ocean Sciences 2016 (2016 conference)

Use GEOTRACES Data  
 • Download GEOTRACES Intermediate Data Product (available from GEOTRACES website)

**FOR MORE INFORMATION**  
 • Visit: [www.geotraces.org](http://www.geotraces.org)  
 • Read: the GEOTRACES Science Plan (available from the website)  
 • Read: the GEOTRACES International Project Office (IPIO) brochure  
 • Contact: GEOTRACES International Project Office ([ipio@geotraces.org](mailto:ipio@geotraces.org)) with questions

Like us on [Facebook](#) and [Twitter](#)

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

**Product**

GEOTRACES aims to understand biogeochemical cycles and distributions of trace elements and their isotopes in all major ocean basins.

**To date:**  
 800 scientists  
 35 nations  
 747 stations  
 52 cruises completed  
 1024 data sets

**Discoveries include...**

**New paradigm for oceanic iron cycle!**  
 Major iron ridges from continental margins and mid-ocean ridges are observed everywhere. Dust inputs remain essential drivers of  $N_2$  fixation at low latitude (Tagliabue et al., 2017, Nature).

Visit our site and join us!  
[www.geotraces.org](http://www.geotraces.org)

**join us on facebook**  
**follow us on twitter**

**GEOTRACES Outreach**

**New!**  
**Intermediate Data Product 2017**  
 freely available on-line!

It includes: (1) a compilation of digital trace metal data  
 (2) the eGEOTRACES Electronic Atlas

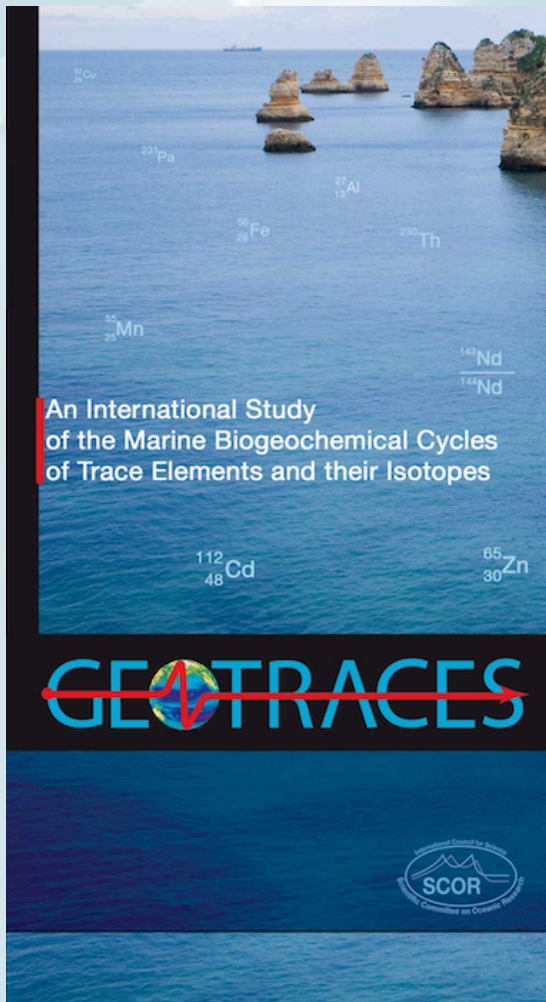
**3D scenes showing the distribution of dissolved iron (DfFe) in the Atlantic and the Pacific.** Hydrothermal iron inputs and important release of DfFe from the margin sediments are identified in the two basins.

**GEOTRACES In Numbers**  
 completed: 105  
 cruises completed: 38  
 downloaded papers: 940



# New Products

# New GEOTRACES Brochure



>> IDP is now included in the brochure

## Intermediate Data Product

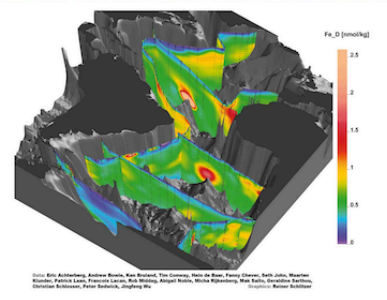
GEOTRACES is releasing and sharing hydrographic and marine geochemical data to strengthen and intensify collaboration within the broader ocean research community.

The Intermediate Data Product consists of two parts:

- (1) the *digital data* and
- (2) the *eGEOTRACES Electronic Atlas*

The *digital data* contains hydrographic and biogeochemical data covering the global ocean (available at <https://www.bodc.ac.uk/geotraces/data/dp/> - User selected data subsets can be extracted and downloaded at <https://webodv.awi.de/>).

The *eGEOTRACES Electronic Atlas* (available at [www.egeotraces.org](http://www.egeotraces.org)) provides section plots and animated 3D scenes such as the image below showing the distribution of dissolved iron in the Atlantic Ocean (warm colours indicate high concentrations).



© ICS: Bill Altabeck, Andrew Brown, Ben Buxton, Tim Corns, Hans de Boer, Penny Elsevier, Seth John, Marlon Kasten, Patrick Lepp, Francisco Lopez, Bob Matting, August Neill, Wilco Rijnbeek, Mark Sachs, Ingrida Savelle, Christian Schuster, Peter Siedler, Jingfeng Wu

# Filter by Keyword - GEOTRACES Science Highlights

- We created word cloud using keywords given by authors of the GEOTRACES papers highlighted. → 193 Science Highlights published so far (37 new in the past year)
- We used the cloud to select a list of around 200 keywords.
- Catherine associated the keywords to each science highlight.
- Keywords have been assigned to each highlight on the site and later the keyword filter has been constructed (with the help of Paule).

<http://www.geotraces.org/science/science-highlight>

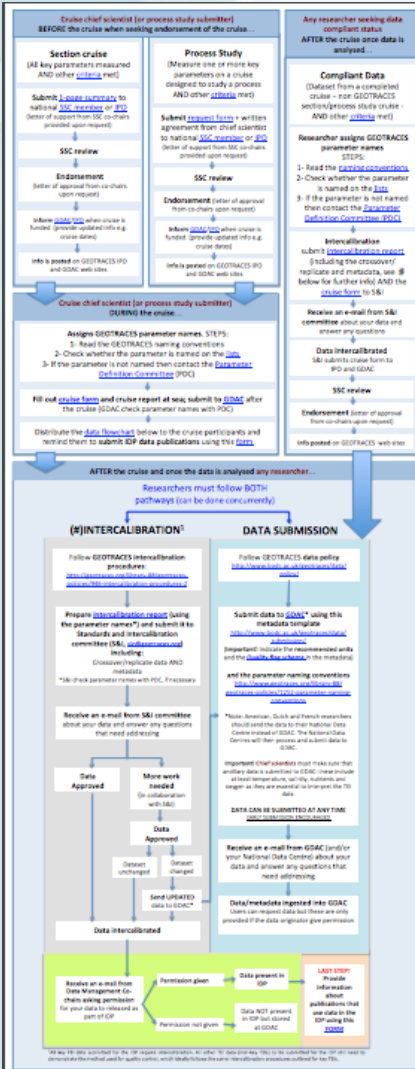
The screenshot shows the GEOTRACES website interface. At the top is a navigation menu with links: HOME, ABOUT, SCIENCE (highlighted), CRUISES, DATA, S&I, MEETINGS, LIBRARY, OUTREACH, NEWS&JOBS. Below the menu is a breadcrumb trail: 'You are here: Home > Science > Science Highlights'. On the left is a 'FILTER BY KEYWORD' sidebar with a list of keyword buttons: Aerosol Inputs, Aerosols, Aluminium, Analysis, Anoxia, Antarctic Geology, Arctic Ocean, Arsenic, Artificial Intelligence, Atlantic Ocean, Atmospheric Dynamic, Barium, Barium Isotopes, Behavior, Benthic, Beryllium, BioGEOCAPES, Biological Pump, Black Sea, Boundary Exchange, Boundary Scavenging, Budget. The main content area is titled 'SCIENCE HIGHLIGHTS' and contains the following text: 'Some recent GEOTRACES science findings are reported below. When getting older they are compiled in the [Science Highlights Archive](#) where the "Title Filter" search box will allow you to filter them by words in title (please note that only one-word search queries are allowed e.g. iron, Atlantic, etc.).' Below this is an 'IMPORTANT NOTICE' regarding a Joomla! search box malfunction. The main article title is 'A NEW APPLICATION OF AEROSOL IRON ISOTOPES: TRACING ANTHROPOGENIC IRON; AN EXAMPLE OF THE NORTH ATLANTIC OCEAN'. The category is 'Science Highlights'. The article text begins: 'Conway and co-authors (2019, see reference below) present the first evidence that anthropogenic iron (Fe) from combustion sources is visible at the basin scale, using iron isotopic composition ( $\delta^{56}\text{Fe}$ ) analysis of the soluble aerosol phases collected during GEOTRACES cruise GA03 in the North Atlantic Ocean. Off Sahara, soluble aerosol samples have near-crustal  $\delta^{56}\text{Fe}$  whereas those from near North America and Europe display  $\delta^{56}\text{Fe}$  values as light as -1.6%. Coupled to aerosol deposition modeling these results reveal that soluble anthropogenic aerosol Fe flux to the global surface oceans is highly likely to be underestimated.' At the bottom of the article is a figure with three panels: 'a' shows a map of the North Atlantic with sampling locations for Saharan airmass (grey circles) and North American airmass (blue triangles); 'b' shows a plot of  $\delta^{56}\text{Fe}$  values for these airmasses; 'c' shows a plot of soluble mineral dust Fe and soluble fossil fuel Fe concentrations. A legend for 'GA03 aerosol sampling' is provided.

# GEOTRACES IPO Products

## Guide for cruise leaders

To be updated with the DOoR!!!

## GEOTRACES Best Practices



GEOTRACES BEST PRACTICES		RATIONALE
<b>Publications</b>	Include « GEOTRACES » in keywords, abstract or summary of your <b>GEOTRACES publications</b> and/or send the URL of your (or your students) <b>Master/ PhD Thesis repository</b> to the International Project Office (IPO, ipo@geotraces.org)	Contribute to give visibility/acknowledge the programme – Facilitate tracking and inclusion in the <a href="#">GEOTRACES Publication Database</a>
<b>Publications from DATA in IDP</b>	Fill in the <b>FORM</b> to provide any <b>new publication</b> that should be linked to your data included in the Intermediate Data Product (IDP)	To ensure your publications are properly linked with your data and dully cited
<b>Special Sessions and Issues</b>	Inform the IPO (ipo@geotraces.org) <i>at the planning stage</i> of any <b>GEOTRACES Special Session</b> at a scientific conference or <b>GEOTRACES Special Issue</b> in a scientific journal	To ensure they are advertised through the GEOTRACES web site and mailing list
<b>Outreach / Educational</b>	Inform the IPO (ipo@geotraces.org) about any <b>outreach and teaching material/activity</b> (e.g. presentations)	To contribute to build a valuable GEOTRACES outreach/educational <a href="#">repository</a> that you can also use
<b>Cruise info (chief scientists)</b>	Follow the steps included in the <a href="#">Cruise Guide</a>	To ensure the data from the cruise will be properly included in the IDP
<b>Data</b>	Follow the steps included in the <a href="#">Data Flow-Chart</a>	To ensure your data is properly intercalibrated and included in the IDP
<b>National Activities</b>	Inform the IPO (ipo@geotraces.org) about any <b>national GEOTRACES event</b> organised	To ensure it is advertised through the GEOTRACES web site and mailing list
<b>Networking</b>	<b>Subscribe</b> to the <a href="#">GEOTRACES mailing list</a> and <b>register your analytical skills</b> in the <a href="#">database</a> . Invite your colleagues to do so	To be kept informed about the activities and contribute to networking



# GEOTRACES IPO Products: On-line database of publications

GEOTRACES References

Simple search   **Advanced search**   Parameter search

Reset

889 publications found.

2017

Abadie, C., Lacan, F., Radic, A., Pradoux, C., & Poltrasson, F. (2017). Iron isotopes reveal distinct dissolved iron sources and pathways in the intermediate versus deep Southern Ocean. *Proceedings of the National Academy of Sciences*, 114(5), 858–863. doi:10.1073/pnas.1603107114

Banerji, U. S., Bhushan, R., & Jull, A. J. T. (2017). Mid-late Holocene monsoonal records from the partially active mudflat of Diu Island, southern Saurashtra, Gujarat, western India. *Quaternary International*, 443, 200–210. doi:10.1016/j.quaint.2016.09.060

Bates, S. L., Hendry, K. R., Pryer, H. V., Kinsley, C. W., Pyle, K. M., Woodward, E. M. S., & Horner, T. J. (2017). Barium isotopes reveal role of ocean circulation on barium cycling in the Atlantic. *Geochimica et Cosmochimica Acta*, 204, 286–299. doi:10.1016/j.gca.2017.01.043

Bown, J., Laan, P., Ossebaar, S., Bakker, K., Rozema, P., & de Baar, H. J. W. (2017). Bioactive trace metal time series during Austral summer in Ryder Bay, Western Antarctic Peninsula. *Deep Sea Research Part II: Topical Studies in Oceanography*, 139, 103–119. doi:10.1016/j.dsr2.2016.07.004

Boyd, P. W., Ellwood, M. J., Tagliabue, A., & Twining, B. S. (2017). Biotic and abiotic retention, recycling and remineralization of metals in the ocean. *Nature Geoscience*, 10(3), 167–173. doi:10.1038/ngeo2876

1270 References in total

geotraces-biblio.sedoo.fr/search?campaign=GP16&param=Fe\_D\_CONC\_BOTTLE

GEOTRACES References

Cruise: GP16  
Parameter: Fe\_D\_CONC\_BOTTLE

6 publications found.

2017

Fitzsimmons, J. N., John, S. G., Marsay, C. M., Hoffman, C. L., Nicholas, S. L., Toner, B. M., German, C. R., & Sherrill, R. M. (2017). Iron persistence in a distal hydrothermal plume supported by dissolved-particulate exchange. *Nature Geoscience*, 10(8), 196–201. doi:10.1038/ngo2002

Heller, M. I., Lam, P. J., Moffet, J. W., C. P. Lee, J. M., Toner, B. M., & Marcus, M. A. (2017). Accumulation of Fe oxyhydroxides in the Peruvian oxygen deficient zone implies non-oxygen dependent Fe oxidation. *Geochimica et Cosmochimica Acta*, 211, 174–183. doi:10.1016/j.gca.2017.05.019

John, S. G., Hogg, J., Townsend, E., Weber, T., Tagliabue, A., Moore, K., Lam, P., Marsay, C. M., & Thi, C. (2017). Biogeochemical cycling of Fe and Fe stable isotopes in the Eastern Tropical South Pacific. *Marine Chemistry*. doi:10.1016/j.marchem.2017.05.003

Sarnal, V., Hogg, J. E., Henderson, P. B., van Beek, P., Reyes, J.-L., Hammond, D. E., Hawco, N. J., Saito, M. A., Sedwick, P., Moore, W. S., & Charette, M. A. (2017). Radium-228 as a tracer of dissolved trace element inputs from the Peruvian continental margin. *Marine Chemistry*. doi:10.1016/j.marchem.2017.05.008

2016

Botheu, R. M., Mende, D. R., Hawco, N. J., Melvin, M. R., Fitzsimmons, J. N., Saito, M. A., Sedwick, P. N., DiLong, E. F., & Repetti, D. J. (2016). Siderophile-based microbial adaptations to iron scarcity across the eastern Pacific Ocean. *Proceedings of the National Academy of Sciences of the United States of America*, 113(5), 1423–1428. doi:10.1073/pnas.1606041113

2015

Reising, J. A., Sedwick, P. N., German, C. R., Jenkins, W. J., Moffet, J. W., Sogut, B. M., & Tagliabue, A. (2015). Basin-scale transport of hydrothermal dissolved metals across the South Pacific Ocean. *Nature*, 523(7558), 200–203. doi:10.1038/nature14577

On-line searchable database of GEOTRACES Publications (peer-reviewed papers and PhD and Master dissertations):

<http://www.geotraces.org/library-88/scientific-publications/peer-reviewed-papers>

(Main menu: Library – Publication database)

**NEW!!!** Equivalent searches using operators (AND, OR and NOT) are now possible!

**IDP2017 references service**

(Reiner's) IDP2017 info file contains references query which is executed on user-click

The user is directed to the IPO (SEDOO) page showing **ONLY** the results of the query (e.g. Fe\_D\_CONC\_BOTTLE @ GP16)



## Other activities

- **SCOR review** of GEOTRACES
- **Logistics for meetings**
  - Hosting the GEOTRACES Data Portal Meeting (25-27 September 2018)
  - Assistance provided as requested: GEOTRACES Data Management Meeting (April 2018, Liverpool, UK), the GEOTRACES SSC Meeting (July 2018, Taiwan), the GEOTRACES-PAGES Workshop (November 2018, Aix-Marseille, France) and the GEOTRACES S&I meeting (November 2018, Marseille, France)

## Some statistics (up to May 2019)

- **38\*** new highlights published (193 in total)
- **6** eNewsletters published, including one special issue (bimonthly 33 in total)
- **295\*** new peer-reviewed papers included in the GEOTRACES Publication Database (1230 in total)
- **108** new articles published on the GEOTRACES website
- **72** new announcements sent through the GEOTRACES mailing list
- 546 likes in Facebook (top post reached 1.6K)
- 780 likes and 1,007 followers (top tweet reached 3.1K)
- 157 new subscribers on the GEOTRACES mailing list

\*Up to July 2019.

# GEOTRACES DOoR – Data Portal

## *GEOTRACES Data for Oceanic Research (DOoR)*

URL for tests: <https://geotraces-portal-test.sedoo.fr/pi/>

- **Managing** the GEOTRACES DOoR developments in close collaboration with all Exec members including GDAC and very specially the S&I committee
- **3 IT staff have been involved: Guillaume Brissebrat, François André and Arnaud Mière** (SEDOO - OMP Data Centre, Toulouse) **MANY THANKS!**

For test only !! Portal under construction...



### Welcome to the GEOTRACES DOoR

PLEASE use this portal to register your data to be included in the GEOTRACES Data Products and follow the status of your data.  
🔗 For further information please refer to the flow chart available

Reminder! The portal will provide you with templates for both data intercalibration (S&I) and data submission. Only S&I reports must be submitted using this portal. Data must be sent by email to GDAC (or to the US/Dutch/French national data centre).

Please use your ORCID to login



# Timeline GEOTRACES DOoR

- **September 2017** - SSC meeting (Salvador, Brazil)
- April 2018 - DMC meeting (Liverpool, UK)
- July 2018 - SSC meeting (Taipei, Taiwan)
- **September 2019** - Data Portal Meeting (Toulouse, France)
- March 2019 -> First Prototype
- **September 2019** -> Testable version

DOoR components	Description
<b>PI Interface</b> <a href="https://geotraces-portal-test.sedoo.fr/pi/">https://geotraces-portal-test.sedoo.fr/pi/</a>	Access: Open to any user having an <b>ORCID</b> <ul style="list-style-type: none"> <li>• Step 1 - Register datasets -&gt; Barcode</li> <li>• Step 2 - Generate intercalibration and data templates</li> <li>• Step 3 - Upload intercalibration reports</li> <li>• Step 4 - Give permission to use my data in the IDP</li> <li>• Step 5 - Provide publication information</li> <li>• List my datasets</li> <li>• Update your email and/or affiliation</li> </ul>
<b>S&amp;I Interface</b> <a href="https://geotraces-portal-test.sedoo.fr/si/">https://geotraces-portal-test.sedoo.fr/si/</a>	Access: Only available to S&I members <ul style="list-style-type: none"> <li>• Automatic notification system</li> <li>• Review registration datasets (by S&amp;I member)</li> <li>• Send S&amp;I committee final approval</li> </ul>
<b>Administration Interface</b> <a href="https://geotraces-portal-test.sedoo.fr/admin/">https://geotraces-portal-test.sedoo.fr/admin/</a>	Access: Only IT developers and IPO (admin) <ul style="list-style-type: none"> <li>• Force cruise list refresh</li> <li>• Users management (S&amp;I co-chair, S&amp;I member, user, GDAC and admin)</li> <li>• Export Parameters</li> </ul>
<b>GDAC Interface</b> <a href="https://geotraces-portal-test.sedoo.fr/admin/">https://geotraces-portal-test.sedoo.fr/admin/</a>	<ul style="list-style-type: none"> <li>• List my datasets</li> <li>• Compliant cruises management</li> <li>• (register dataset in the place of a PI)</li> </ul>

Included in the current « contract »

***Current work focused on finalising:***

- PI Interface
- S&I Interface

***Short-term evolution:***

- Interface for GDAC / Interface to serve IDP
- Improved Administration Interface

- *GEOTRACES  
website migration*

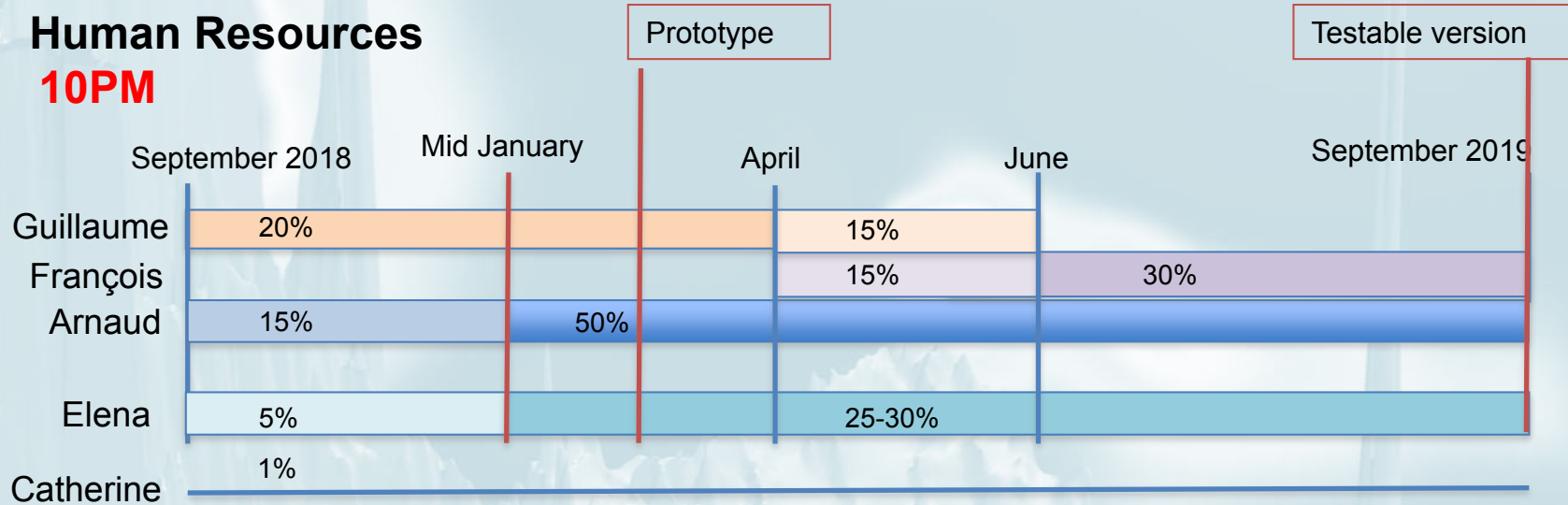
- *DOoR integration  
in the new web site*

***Future developments:***

- Import IDP2014 and IDP2017 metadata (assign barcode)
- Improved DOI system (DOoR to automatically update IDP references)
- Interface for Managing the Parameters
- Researchers Analytical Expertise Database?

## Human Resources

**10PM**



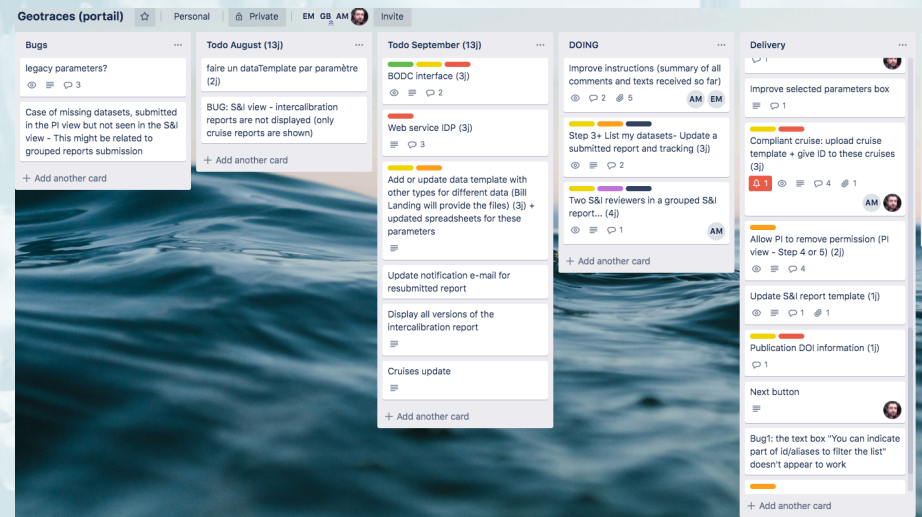
Staff SEDOO	Person Month (aprox estimates)
Guillaume	1.85 PM
François	1.05 PM
Arnaud	4.3 PM
<b>TOTAL</b>	<b>7.2 PM</b>

Staff IPO	Person Month (aprox estimates)
Catherine	0.1 PM
Elena	2.7 PM
<b>TOTAL</b>	<b>2.8 PM</b>

# IPO tasks in D0oR

## Managing D0oR development means...

- Liaising with Exec. (specially S&I co-chairs), organising meetings (in person or virtual)
- Weekly meeting with IT developers (up to 3 times a week)
- Digesting/translating GEOTRACES demands to IT developers -> defining concept/needs, establish actions and assign tasks (using Trello)
- Propose solutions (e.g. Parameter Search Tool – dropdown menus by token)
- Assisting IT developers (questions, documents, corrections)
- Testing...



# To come... MAJOR WEBSITE OVERHAUL !



Joomla!™



WORDPRESS

First tests started on 28 August.

## Reasons

- Results from 2018 SSC survey indicate that SSC members are happy with the GEOTRACES web site. Main improvements to be made: Search tool!!
- Move from the current host in Villefranche-sur-Mer to the SEDOO in Toulouse.
- The most used CMS -> easiest to maintain, more extensions, etc.

## Additional Benefits

>> This will allow to integrate the GEOTRACES DOoR on the GEOTRACES website (same window).

>> SEDOO will take care of website and extensions updates, backup and security check up.

## Constraint

>> Less freedom for layout (design) and extensions (some functionalities may be reduced)

# New Template



SIGN IN



DATA ACCESS ▾

ABOUT THE DATA ▾

ABOUT US ▾

Home

## IAGOS DATA PORTAL

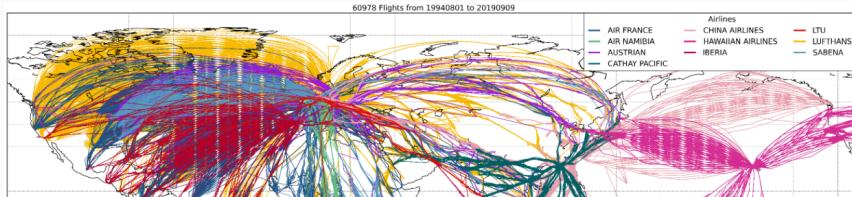
In-service Aircraft for a Global Observing System

IAGOS central website

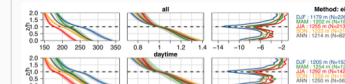
IAGOS-CARIBIC website

Data access

NRT IAGOS data used in CAMS



### News



**THANK YOU FOR YOUR ATTENTION ...**

**DOOR**

IPO  
staff: 1FTE

**NEW WEB**

Researchers Analytical Expertise Database

Need information?

Logistics for meetings