

History of the participation to the Colloquium: spatial analysis and time series

Colloquium Conference Spatial analysis Oceanography Python Leaflet D3.js

A little bit of history

The first Colloquium was organised in 1969 by Prof. Jacques Nihoul. Since the 3rd Edition, the event was officially made an annual event:

"The increasing success of the First and Second Colloquia on Ocean Hydrodynamics organized at the University of Liège commanded that they be continued. (...) It is a great joy for the Organizing Committee to realize that, in the same time, the continuation of the Colloquia was deeply desired by all the participants and that their gratifying determination was indeed answerable for making, from now on, the Liège Colloquium on Ocean Hydrodynamics an annual meeting."



What about the logo? The millenium of the Liège Principality was celebrated in 1980 by the city and the province of Liège. The symbol of the celebration was designed by a local artist, Willy Warnier, and then yielded to Jacques Nihoul. It is still the official logo of the colloquium.

Data collection



Data sources:

- ✓ Special Edition (electronic or paper) (1970–1989)
- ✓ Lists from the secretariat (2000–)
- ✗ Missing information in the 1990's

Pre-processing

- ✓ Adaptation of country names to fit 2018 countries;
- ✓ Checking consistency of surname initials;
- ✓ Occasional editing of the affiliations to ensure discovery by geolocators.

Tools & processing

The code is written in Python (version 3.6).

All the tools are made available from

<https://github.com/gher-ulg/Liege-Colloquium-on-Ocean-Dynamics>.

Python modules

geopy	geocoding web services	https://pypi.python.org/pypi/geopy
pysnp	reading shapefile format	https://pypi.org/project/pysnp/
pycountry	country list and iso codes	https://pypi.org/project/pycountry/
haversine	geodesic distance	https://pypi.org/project/haversine/
geolite2	access to GeolIP2 databases	https://pypi.org/project/maxminddb-geolite2/

Maps

Leaflet	interactive maps	https://leafletjs.com/
D3.js	data-driven documents	https://d3js.org/
d3-hexbin	hexagonal binning	https://github.com/d3/d3-hexbin

Time series

Highcharts interactive charts <https://www.highcharts.com/>

Topics

Most frequent words:

1. ocean × 11
2. marine, modelling, hydrodynamics × 10
5. turbulence, sea × 8
7. processes × 7

Most attended editions:

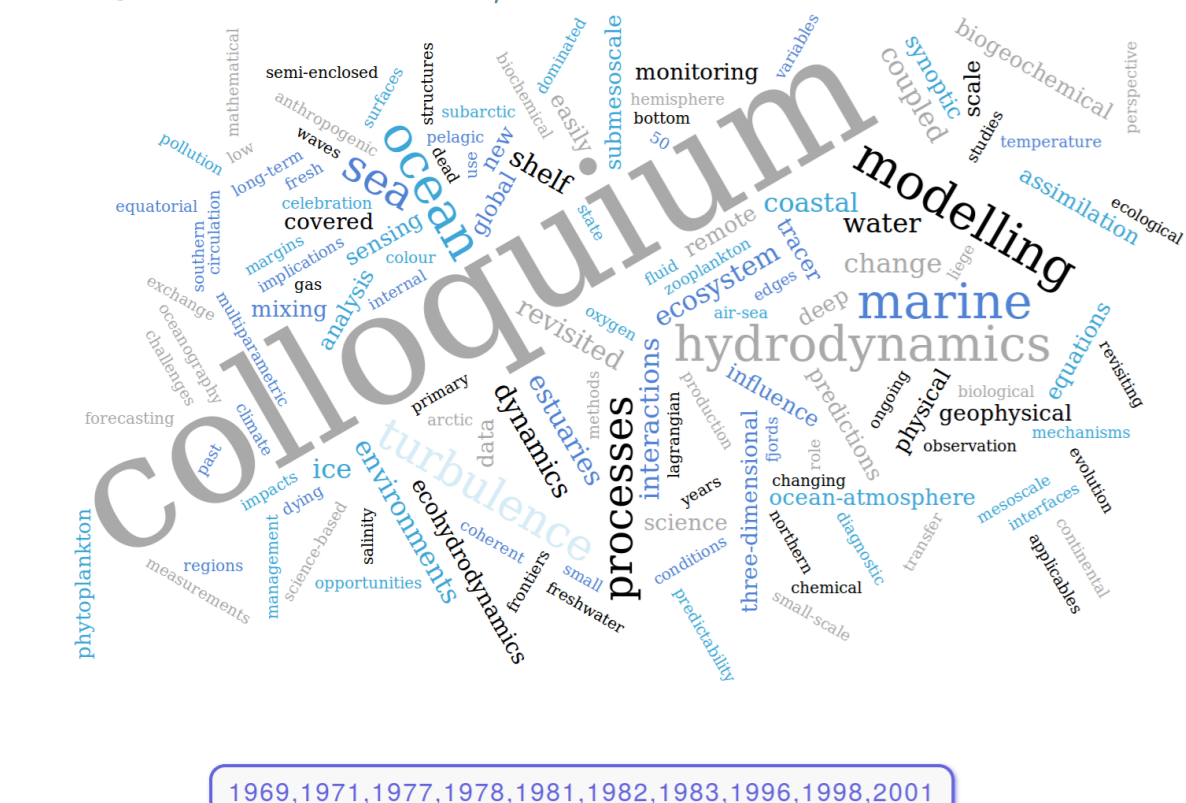
- 2013 "Primary production in the ocean: from the synoptic to the global scale", 220 participants from 35 countries.
- 2016 "Submesoscale Processes: Mechanisms, Implications and new Frontiers", 202 participants from 25 countries.
- 2014 "Low oxygen environments in marine, estuarine and fresh waters", 157 participants from 31 countries.

By decade:

- 1970's "Marine Forecasting Predictability and Modelling in Ocean Hydrodynamics" (1978) 78 participants from 16 countries.
- 1980's "Coupled ocean-atmosphere models" (1984) 133 participants from 20 countries.
- 1990's missing data
- 2000's "Exchange Processes at the Ocean Margins" (2000) 143 participants from 21 countries.

Interactive wordle-like:

<https://gher-ulg.github.io/Liege-Colloquium/topicwordle.html>



1st edition:

"Les équations hydrodynamiques applicables à l'océan"

Time series

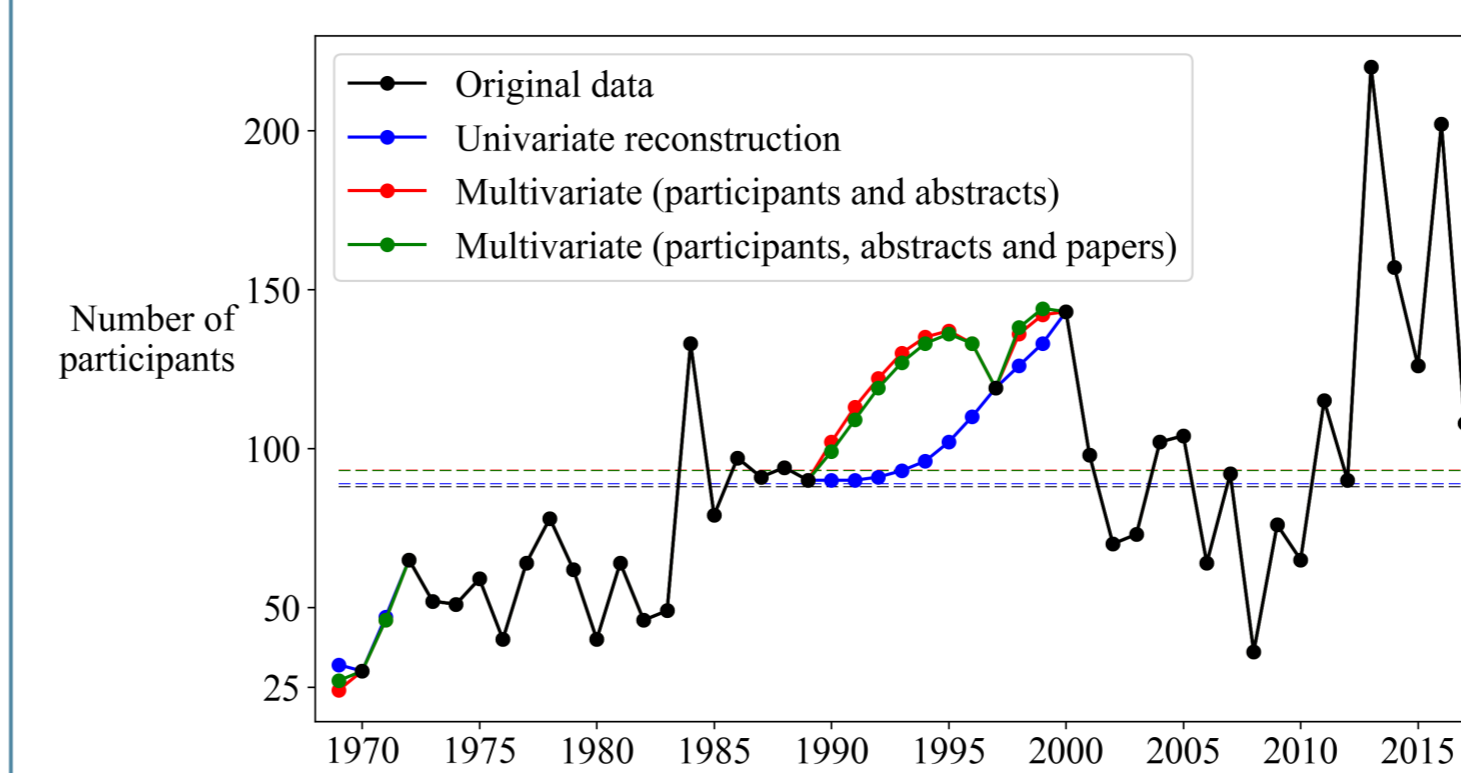
<https://gher-ulg.github.io/Liege-Colloquium/participationTime.html>

Years with the most...

- participants: 2013 220
- papers published: 1988 51
- countries represented: 2013 35
- abstracts submitted: 2016 276
- papers published with respect to the number of participants: 1988 54%

Time series reconstruction

<http://modb.oce.ulg.ac.be/mediawiki/index.php/DINEOF>



Tool: DINEOF (Data-Interpolating Empirical Orthogonal Functions).

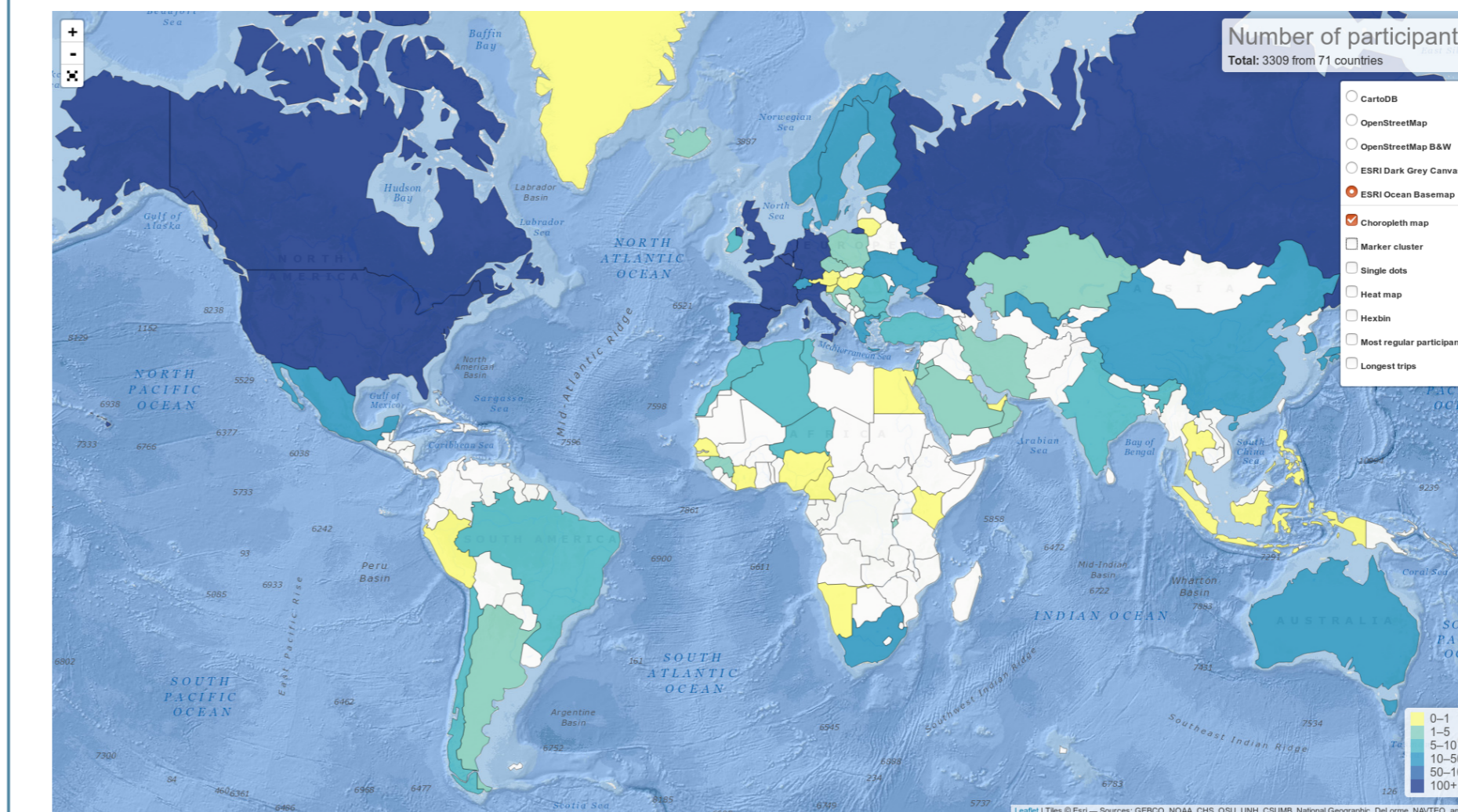
Goal: recover the number of participants in the 1990's, using the following information (when available):

1. number of published papers and
2. number of abstracts.

Results: the scarcity of any type of information in the 1990's makes the reconstruction difficult. Forecast for the number of participants for the 2018 edition: 112.

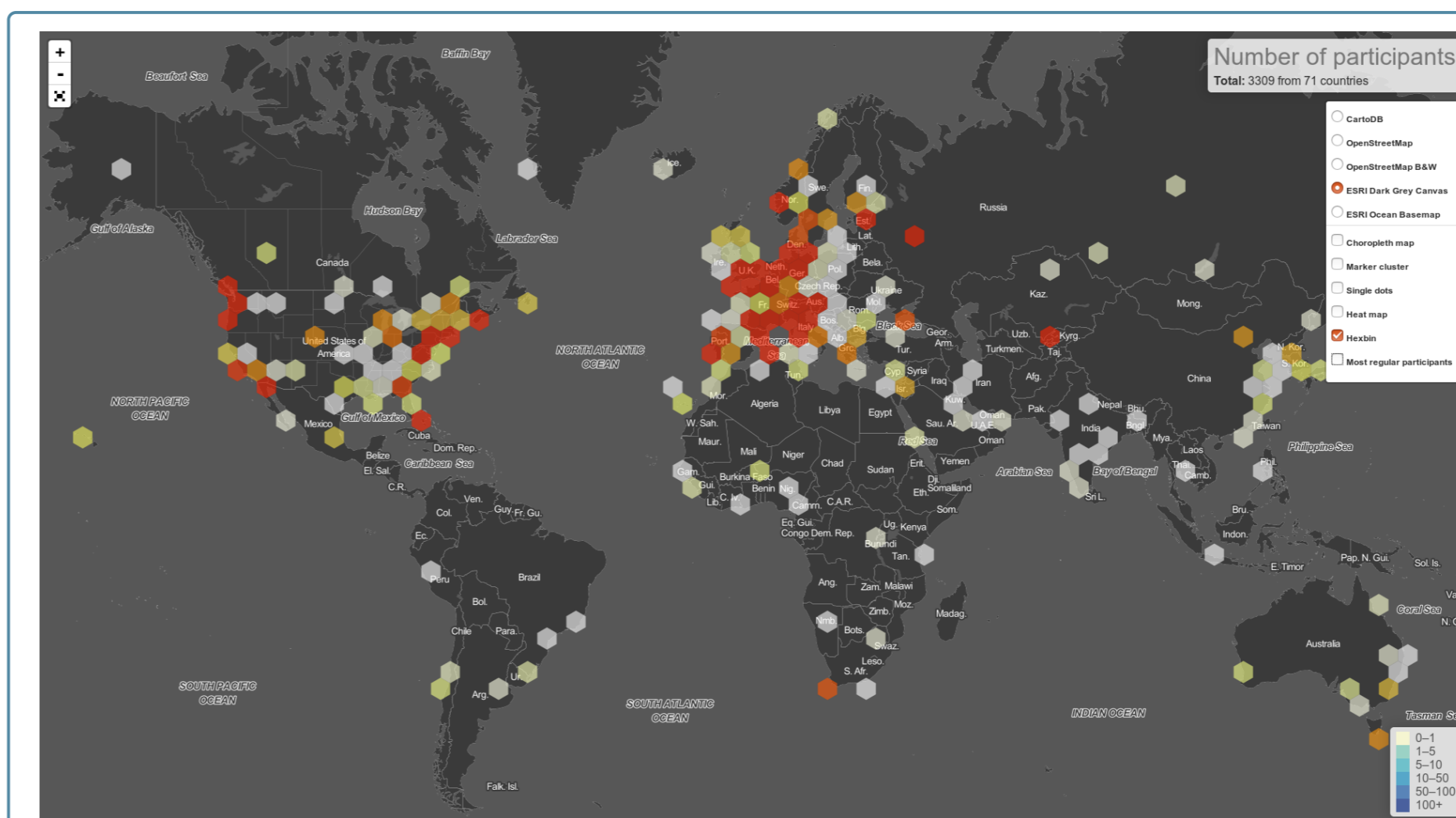
Maps

<https://gher-ulg.github.io/Liege-Colloquium/participationMap.html>



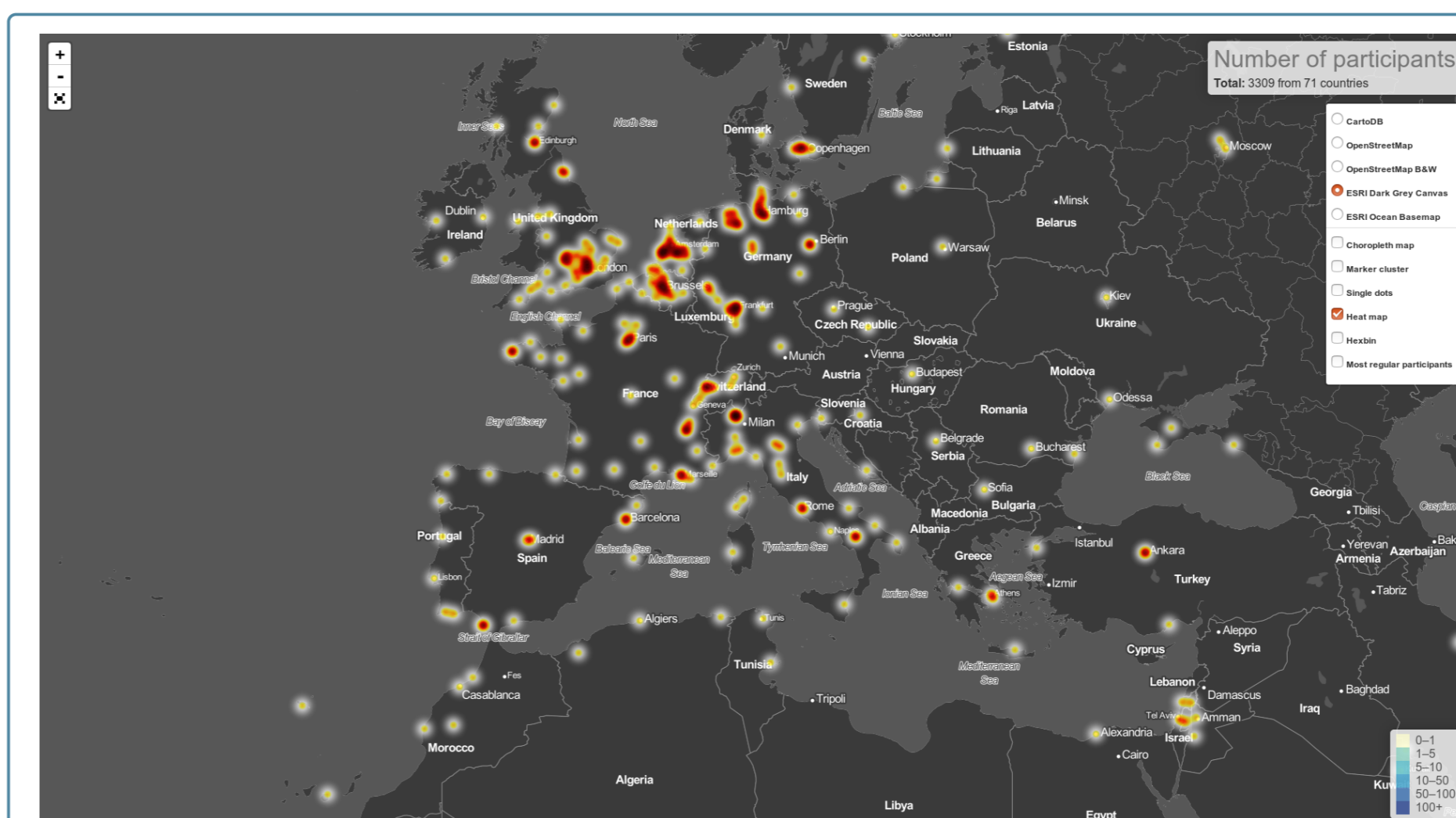
Choropleth map: spatial representation of the participant origin. Countries close to Belgium (France, Netherlands, Italy, Germany, Spain, United Kingdom) are well represented.

Strong participation by Canada, United States of America and Russia.



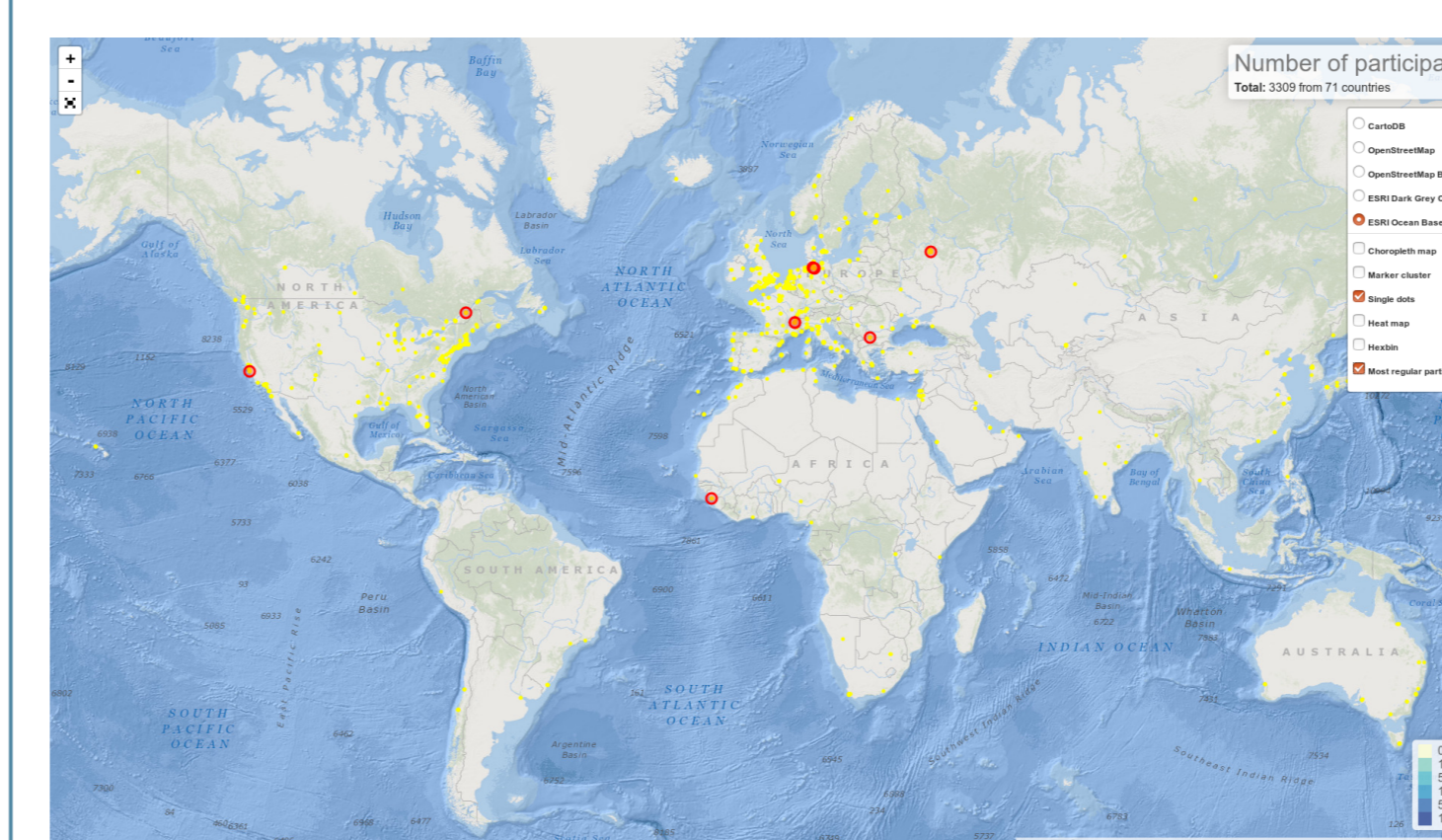
Hexbin map: highlights the areas with the highest density of participants.

Coastal zones of United States, China and Australia well covered.



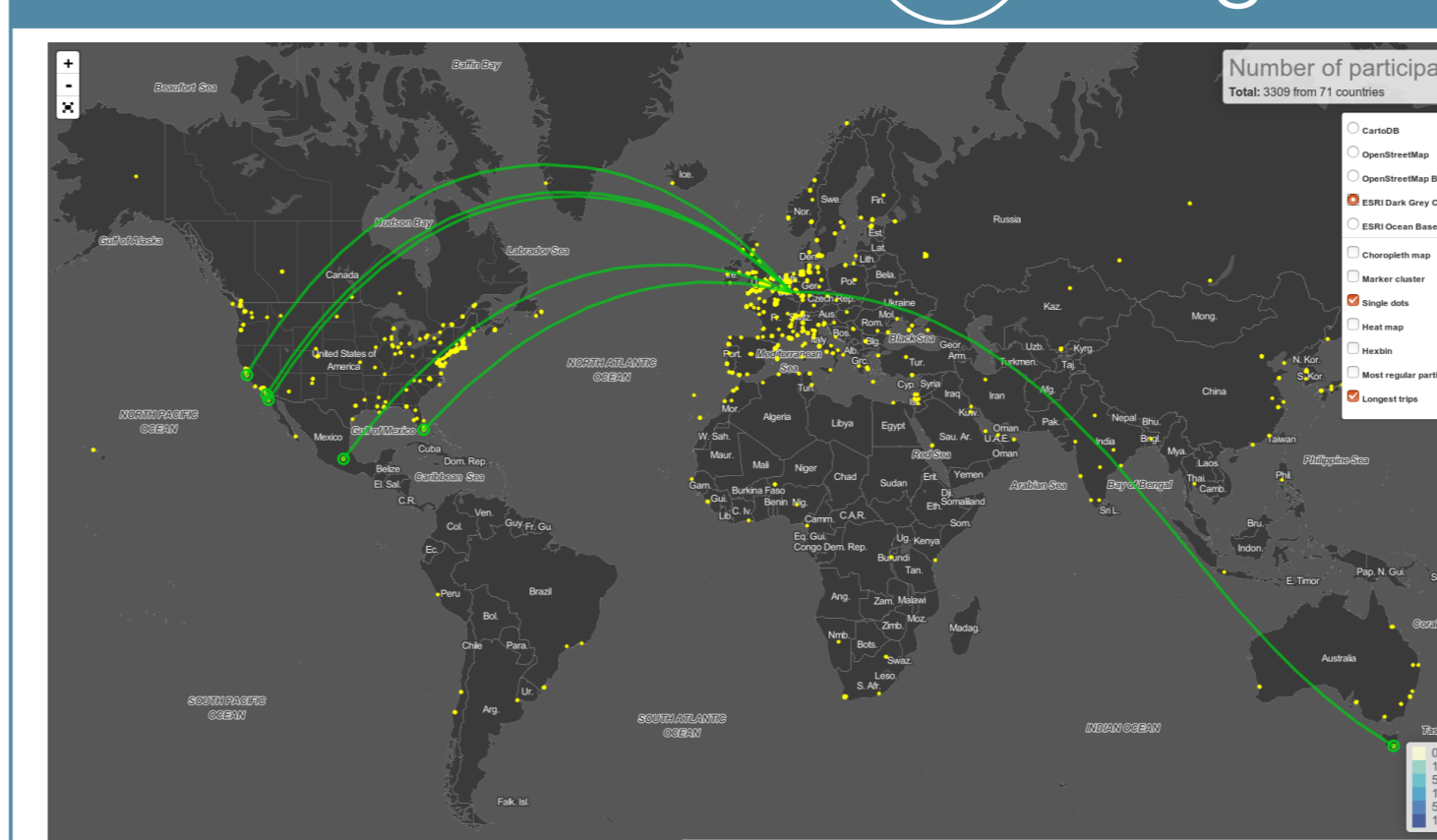
Heat map: similar to the previous visualisation. A closer view on European countries exhibits the main oceanographic research centers.

Most regular participants



G. Chabert d'Hières	Grenoble (France)	12 ×
H.G. Ramming	Hamburg (Germany)	7 ×
A. Bah	Liège (Belgium), Conakry (Guinea), Laval (Canada)	7 ×
E. Stanev	Sofia (Bulgaria), Oldenburg (Germany), Hamburg (Germany)	7 ×
A. Kostianoy	Moscow (Russia)	7 ×
P. Brasseur	Liège (Belgium), Grenoble (France)	7 ×
P.C. Chu	Monterey, CA (U.S.A.)	7 ×

Largest distances travelled



Single travel: K. Swalding (University of Tasmania): 17016 km
Cumulated distance:

P. Chu	Monterey	81395 km
A. Monreal	Ensenada	46523 km
E. Chassignet	Miami	45162 km
D. Salas de León	Ciudad de México	37178 km
C. Gibson	San Diego	36704 km

Acknowledgement

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