

Seadatacloud 3rd GA, Brest 17-18. Oct. 2019

Successes and challenges bringing national ocean observing into a global perspective – the OceanSITES example

Johannes Karstensen
GEOMAR, Kiel, Germany

HELMHOLTZ

SPITZENFORSCHUNG FÜR
GROSSE HERAUSFORDERUNGEN





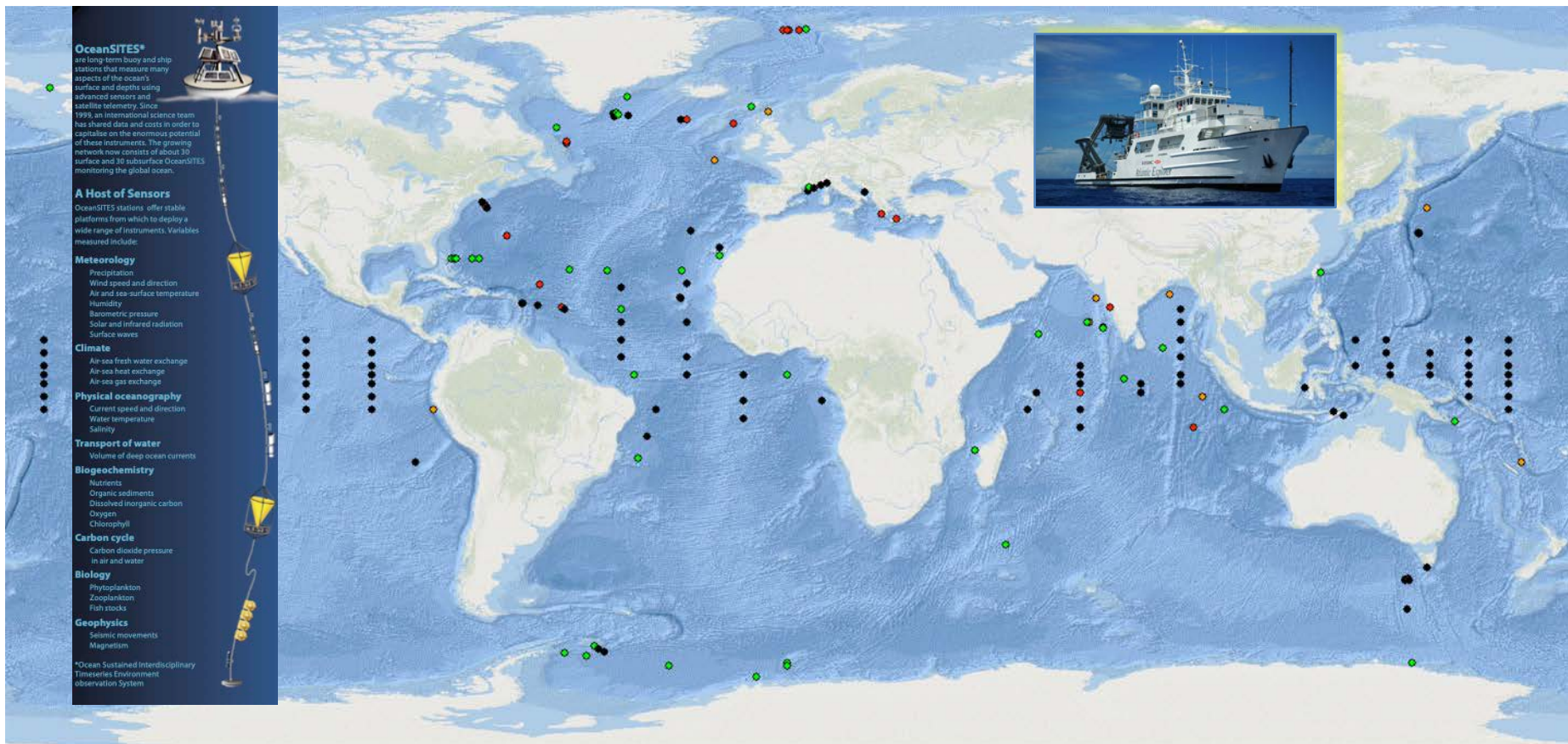
OceanSITES: A Worldwide Network of Deepwater Reference Stations

Johannes Karstensen, Tom Trull
co-chairs OceanSITES observing network

OceanSITES - observations in support for:



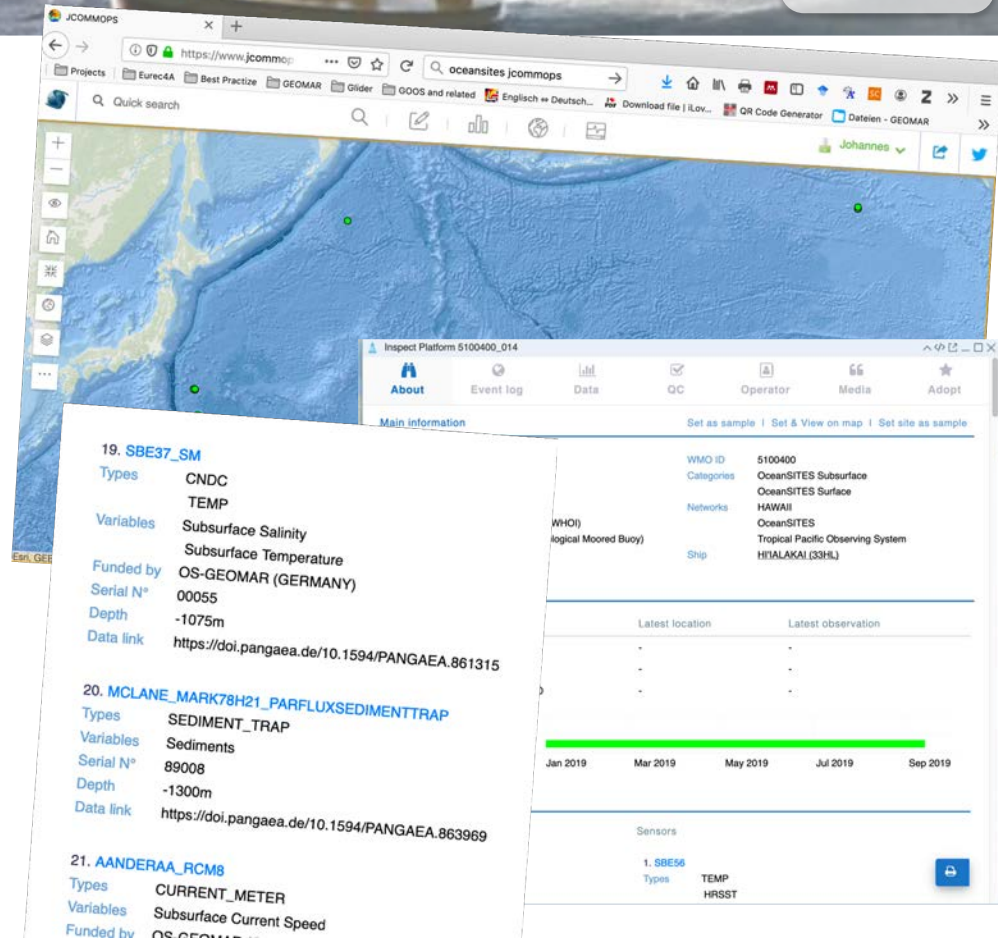
OceanSITES time series stations



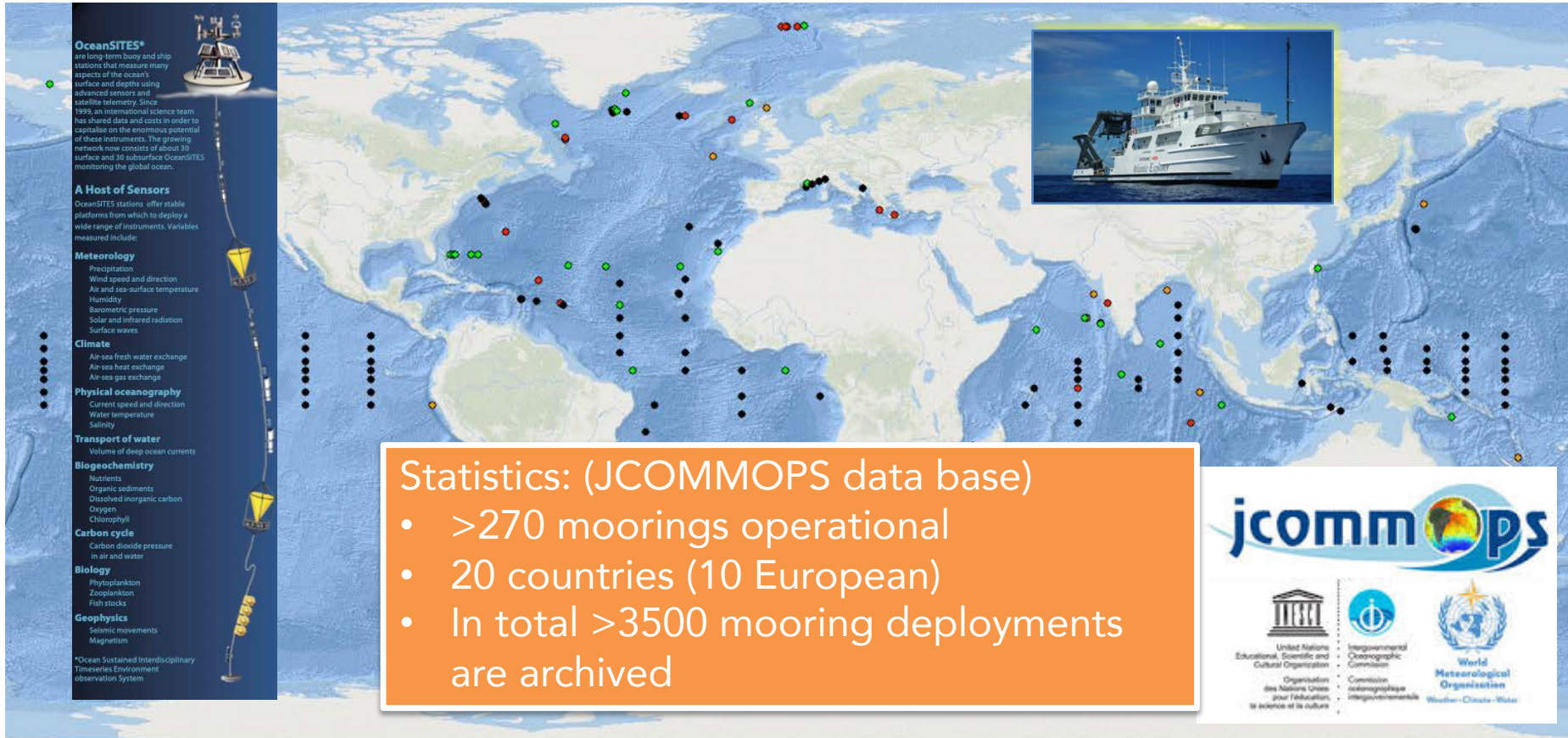
Why OceanSITES?



- Coordinate national observations for the benefit of the Global Ocean/Climate Observing System (GOOS/GCOS)
- JCOMM-OPS is our metadata base -> exploration
- Partner observing networks:
 - Argo – profiling floats
 - GO-SHIP – research ships
 - GLOSS sea level
 - DBCP – surface drifter, real-time data
 - OceanGlider - glider
 - HF Radar - Radar
 - SOT – commercial ships, underway ocean/atmosphere data



OceanSITES time series stations



OceanSITES time series stati



OceanSITES*
are long-term buoy and ship
stations that measure many
aspects of the ocean's
surface and depths using
advanced sensors and
satellite telemetry. Since
1995, an international science team
has shared data and costs in order to
capitalise on the enormous potential
of these instruments. The growing
network now consists of about 30
surface and 30 subsurface OceanSITES
monitoring the global ocean.



More statistics: (JCOMMOPS data base)

- 40 Institutions
- 40 Ships involved in station work
- 40 Sensors
- 30 Variables
- 4 different types of telecommunication
-

-> in transition!! Not complete now

2697	United States
223	Japan
160	Germany EU
78	United Kingdom EU
77	Australia
55	France EU
41	India
35	Netherlands EU
26	European Union
19	Greece EU
16	India
10	Korea (Republic Of)
8	China
5	Denmark EU
5	Norway EU
2	Italy EU
2	New Zealand
1	Spain EU
1	Brazil
1	Canada

Geophysics
Sediment movements
Magnetism

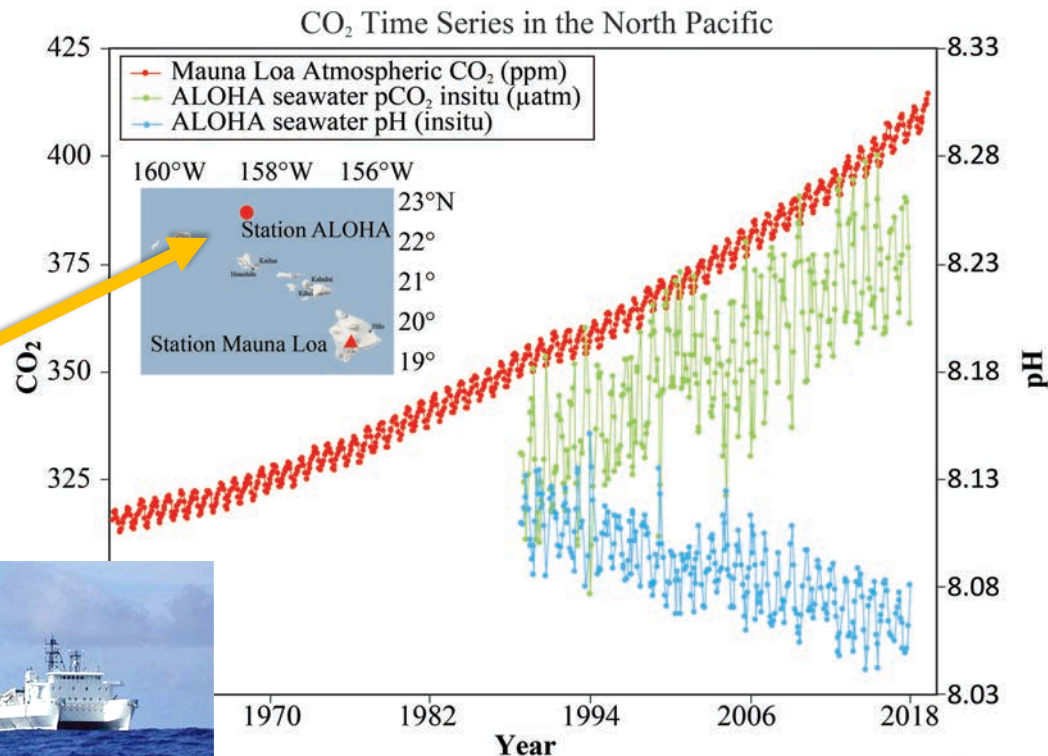
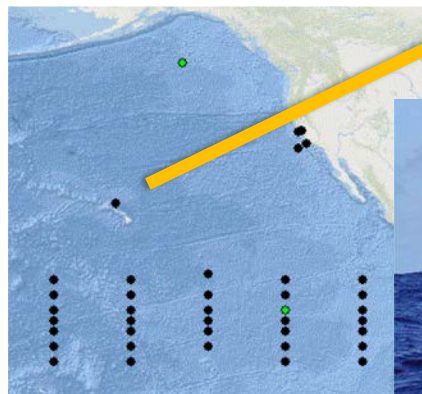
*Ocean Sustained Interdisciplinary
Timeseries Environment
observation System



World
Meteorological
Organization
Climate - Water

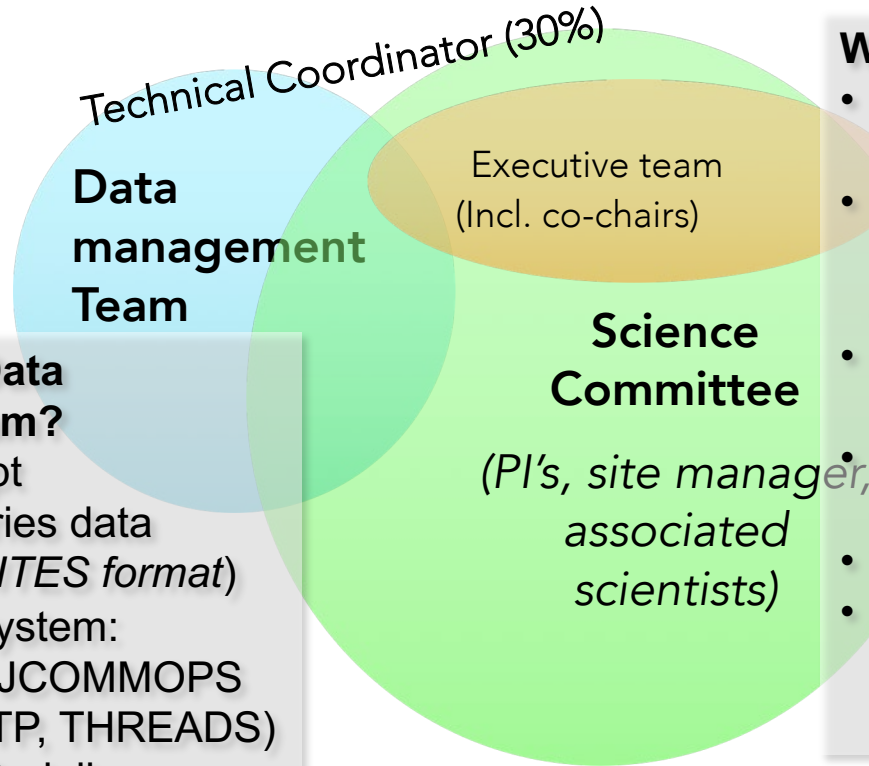
OceanSITES time series stations

- Regional/local observing objectives
- “Extreme” heterogeneous
 - Observing objectives
 - QA / QC Approaches
 - Data archiving
 - Funding National/Institutes



data.noaa.gov/products/trends/co2/co2_mm_mlo.txt ALOHA (http://hahana.soest.hawaii.edu/hot/products/HOT_surface_CO2.txt)
Physical and biogeochemical modulation of ocean acidification in the central North Pacific. *Proc Natl Acad Sci USA* 106:12235-12240.

OceanSITES Organigram



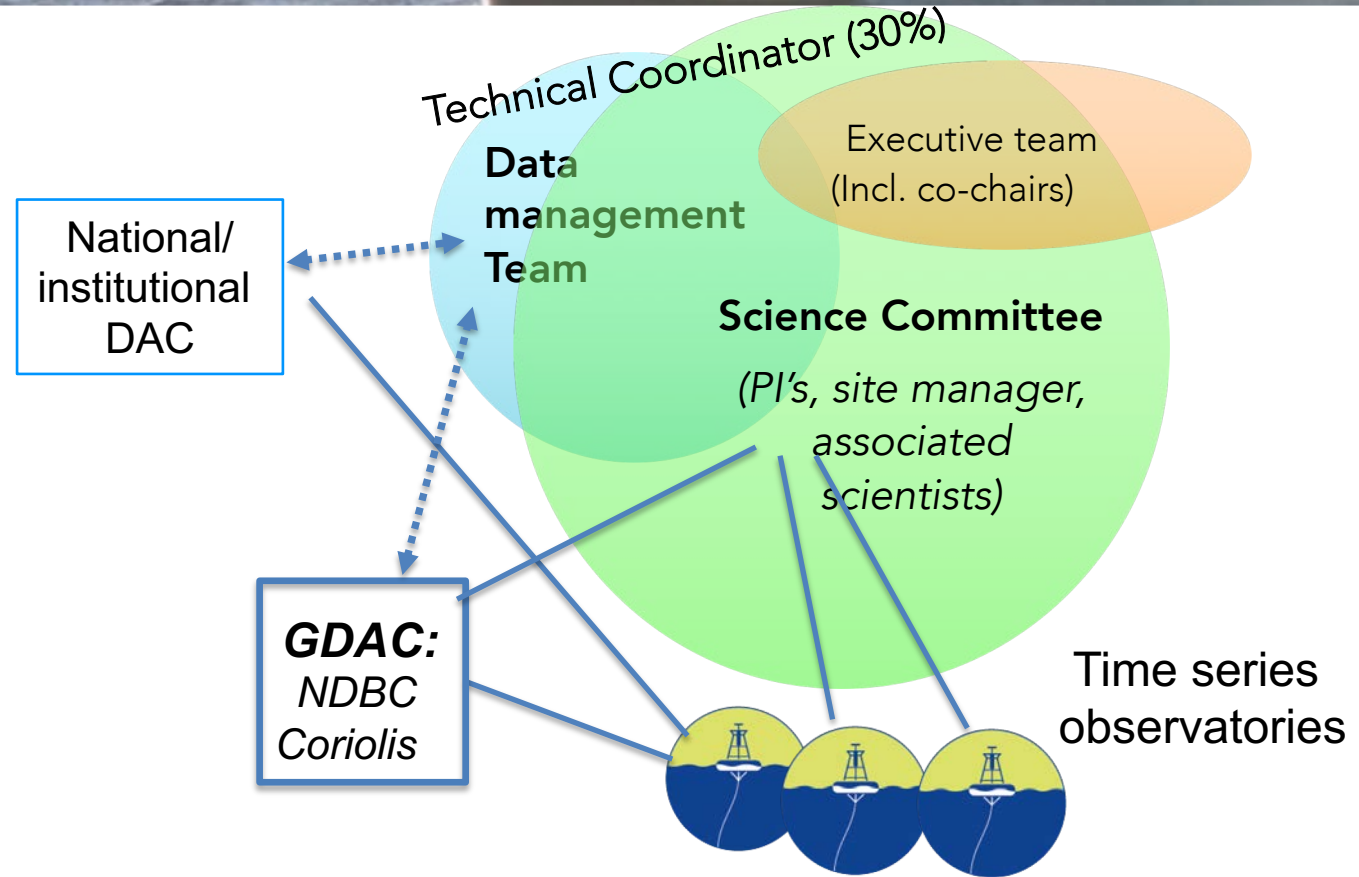
Why be part of Data management team?

- Create and adapt netCDF time series data format (*OceanSITES format*)
- Dissemination system: DACs, GDACs, JCOMMOPS
- Data sharing (FTP, THREADS) via NDBC and Coriolis

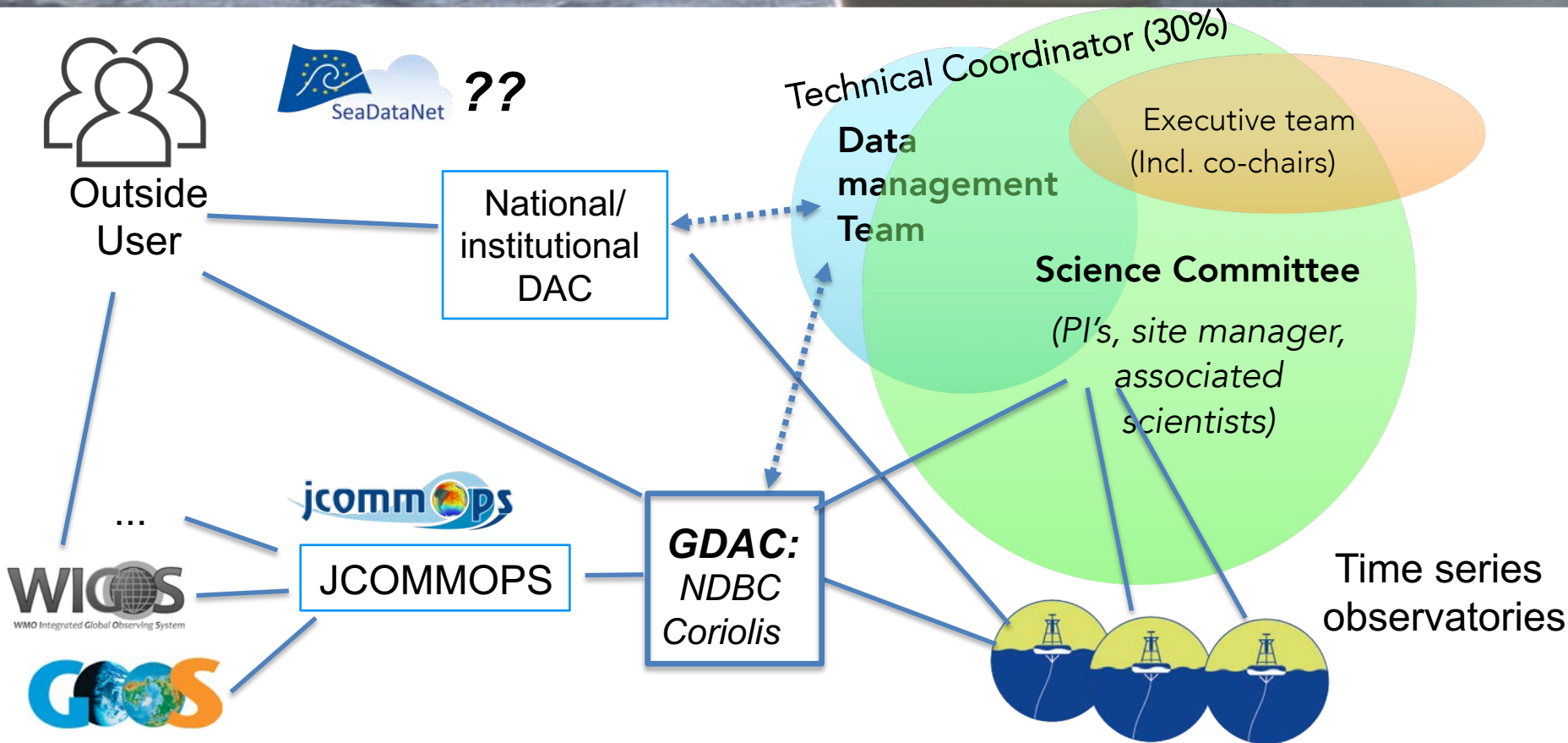
Why be part of OceanSITES?

- Be part of a large network of partners
- Gain access to and enhance usership of infrastructure and data
- Get assistance for initiating new sustained time-series programs
- Enhance footprint of your observations
- Technological development
- Make national observing visible in a global context

OceanSITES Data flow



OceanSITES Data flow





SeaDataNet

SITES

Taking the pulse of
the global ocean



Suggestion:

Why not import all OceanSITES netCDF data
to make them visible via Seadatanet CDI?

Data

Maps

Meetings

News

Documents

Publications

Links

Contact

The OceanSITES data flow is carried out through three organizational units: Principal Investigators (PIs), Data Assembly Centers (DAC), and Global Data Assembly Centers (GDAC). In general, a PI provides data to a DAC, which formats this information into the OceanSITES format.

Data Users Guide

The OceanSITES

Ifremer Coriolis

- ▶ Ifremer FTP: <ftp://ftp.ifremer.fr/ifremer/oceansites/>
- ▶ Ifremer THREDDS Catalog: <http://tds0.ifremer.fr/thredds/CORIOLIS-OCEANSITES-GDAC-OBS/CORIOLIS-OCEANSITES-GDAC-OBS.html>

Page: <http://dods.ndbc.noaa.gov/oceansites>

NDBC FTP: <ftp://data.ndbc.noaa.gov/data/oceansites/>

- ▶ NDBC THREDDS Catalog: <http://dods.ndbc.noaa.gov/thredds/catalog/oceansites/catalog.html>

Some OceanSITES data challenges



- Metadata fields (e.g. SeaVoX Device Catalogue)
- Metadata definitions e.g. Instrument vocabulary (across all sites >100 different instrument types)
- Compatibility with Global system (JCOMMOPS)
- **Standards** for auxiliary data (ship service, decoding? Expocode)
- Discovery and tracking of distributed (non-netCDF) data e.g. genomic analysis of samples, sediment trap data analysis
- Structuring and archiving data products (e.g. flux time series)
- Ensure that complex data carries adequate metadata (omics)
- Make data ready for use (e.g. Obs4MIPs)
- Explore ways to track data points from the OceanSITES stations (which , national, etc.) into ocean products
- Release OceanSITES community endorsed Best Practices



Taking the Pulse of the Global Ocean

www.oceansites.org

oceansites.jcommops.org