United Nations
Educational, Scientific and
Cultural Organization

Intergovernmental
Oceanographic
Commission

27-28 November 2017
Cape Town, South Africa

Building International Partnership to Enhance Science-Based
Ecosystem Approaches in Support of
Regional Ocean Governance

Science partnerships supporting ocean and coastal governance

Kirsten Isensee

Project Specialist
Ocean Science Section IOC-UNESCO
27 November 2017


Scientific Knowledge
Combat Climate Change
Policy Action
Public Understanding

United Nations Educational, Scientific and Cultural Organization

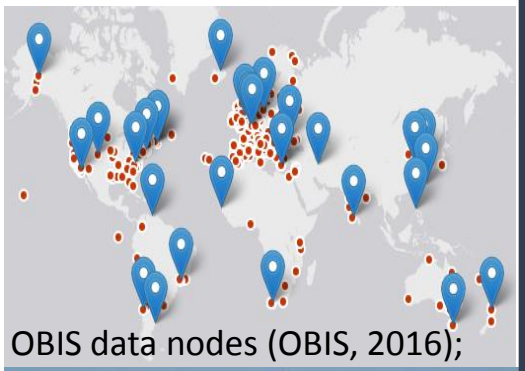
Intergovernmental Oceanographic Commission

14 LIFE BELOW WATER

WHY?
Ocean science for sustainable development

- **Ocean science crucial for sustainable development**, in order to protect ocean and human health
- **Need to understand ocean science capacities** - but many questions remain

- **Global Ocean Science Report first consolidated assessment of ocean science**:
  - Identifies and quantifies elements driving ocean science capacity (workforce, infrastructure, investment, data management), productivity (publications) and performance
  - Aims to strengthen international ocean science collaboration and science-policy interaction and support SDG14 (in particular 14.a)



OBIS data nodes (OBIS, 2016);

RRS James Cook (NERC);

OTGA, 2016

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

14 LIFE BELOW WATER

Key Findings

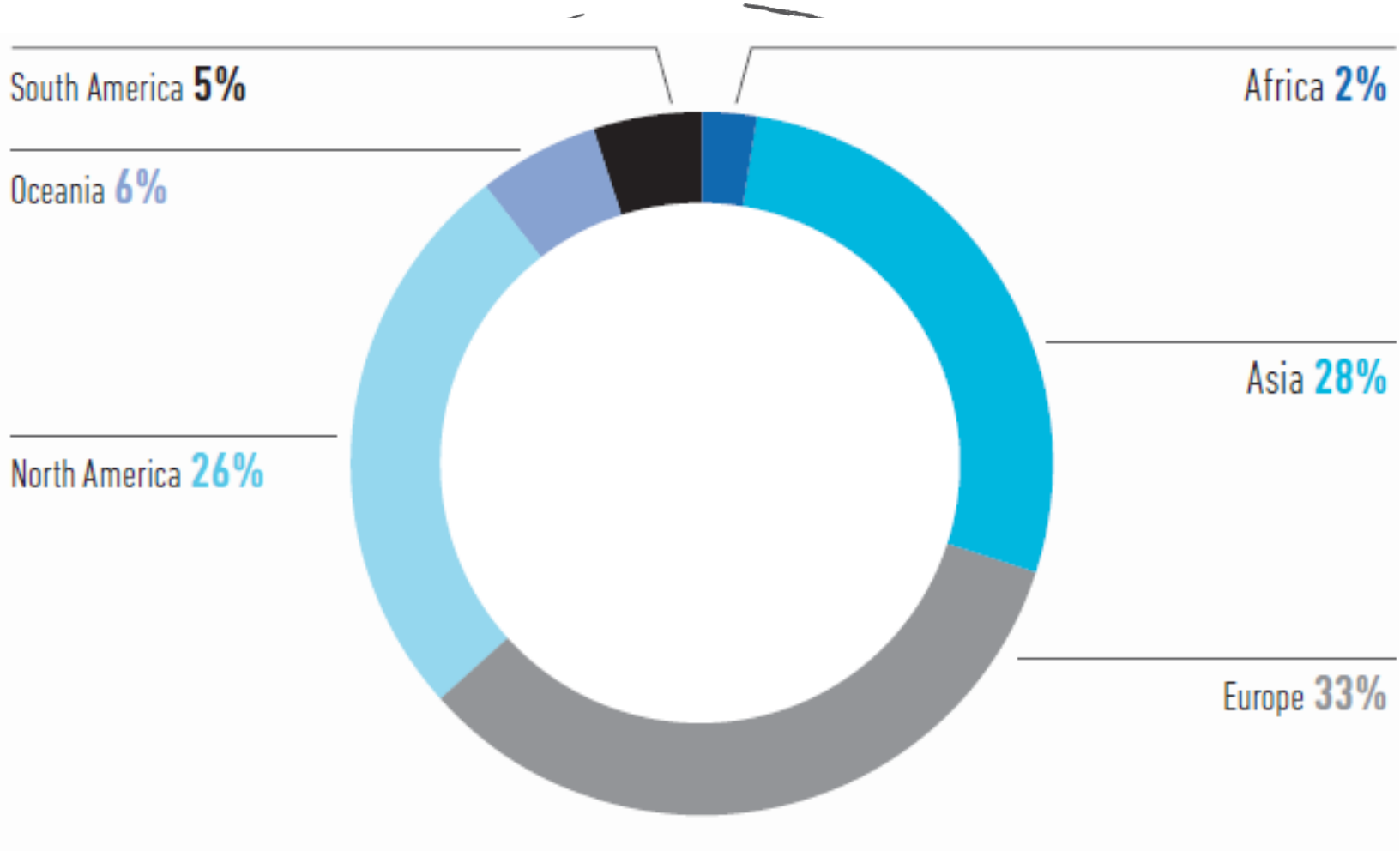
1. Global ocean science is '**big science**'.
2. Ocean science is **multidisciplinary.**
3. There is more equal **gender balance** in ocean science than in science overall.
4. Ocean science **expenditure** is highly variable worldwide.
5. Ocean science benefits from **alternative funding.**
6. Ocean science **productivity** is increasing.
7. International collaboration increases **citation** rates.
8. Ocean **data centres** serve multiple user communities with a wide array of products.
9. **Science-policy** interactions can occur through many avenues.
10. National **inventories** on ocean science capacity exist only in few countries.

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

14 LIFE BELOW WATER

How ‘big’ is our ocean science? Are we prepared?



Proportion of global publication authorship by continent 2010-2014.

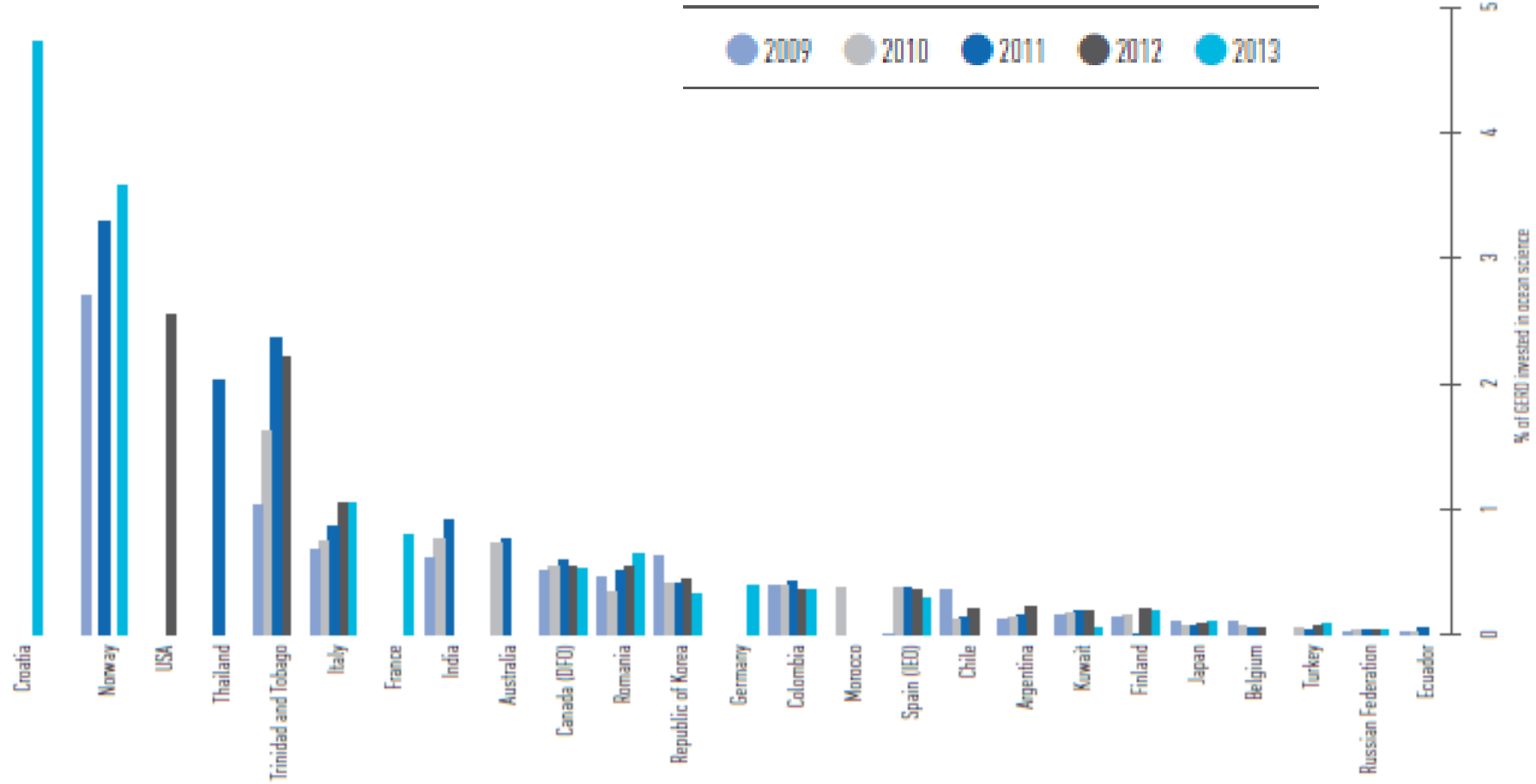
United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

14 LIFE BELOW WATER

How much do we invest in Ocean Science?

% of R&D expenditure towards Ocean Science from 0.1 to 4.7%

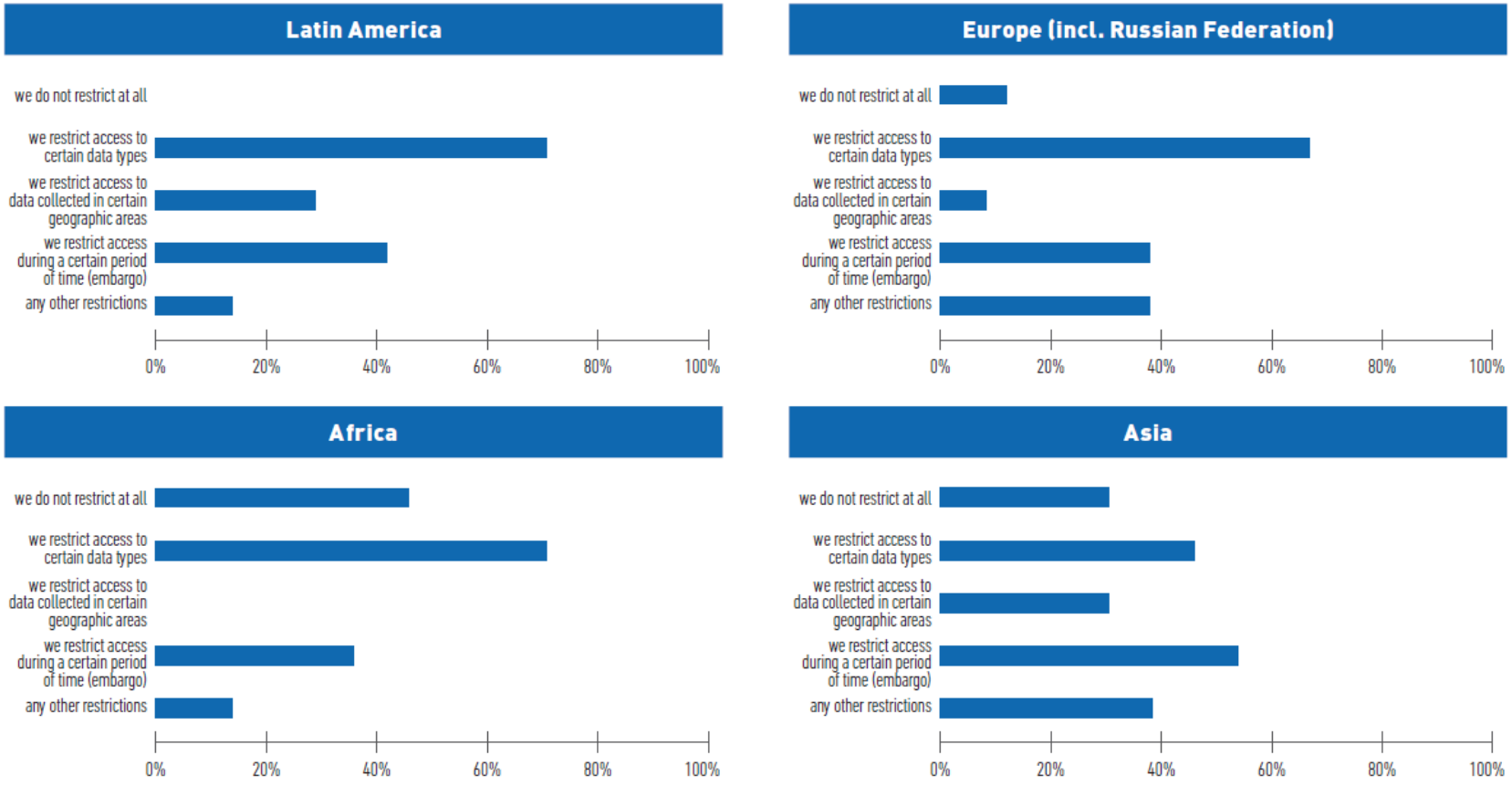


United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

14 LIFE BELOW WATER

Open data – sharing knowledge to advance in Ocean Science



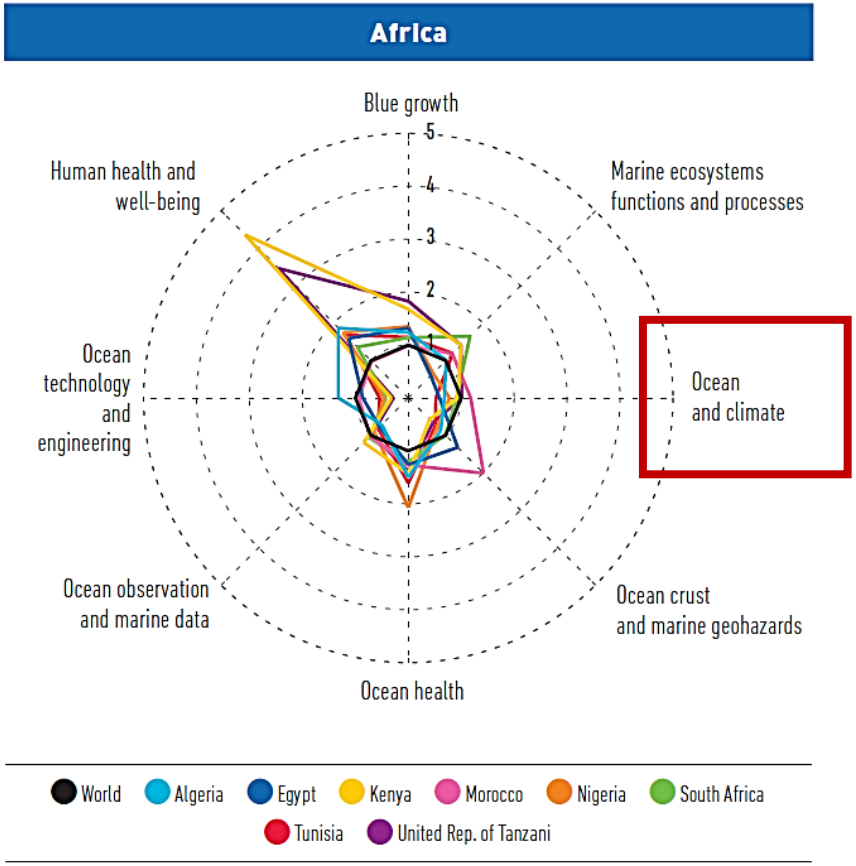
The percentage of data centres which restrict/do not restrict access to data.

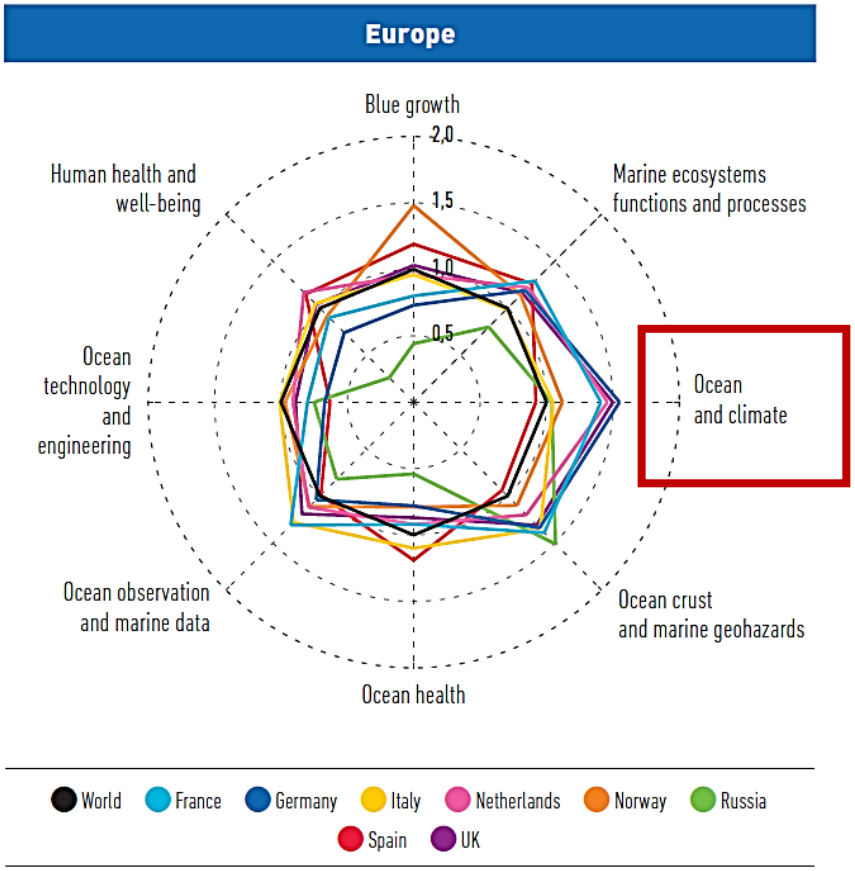
United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

14 LIFE BELOW WATER

What are the national strengths in different ocean sciences categories?



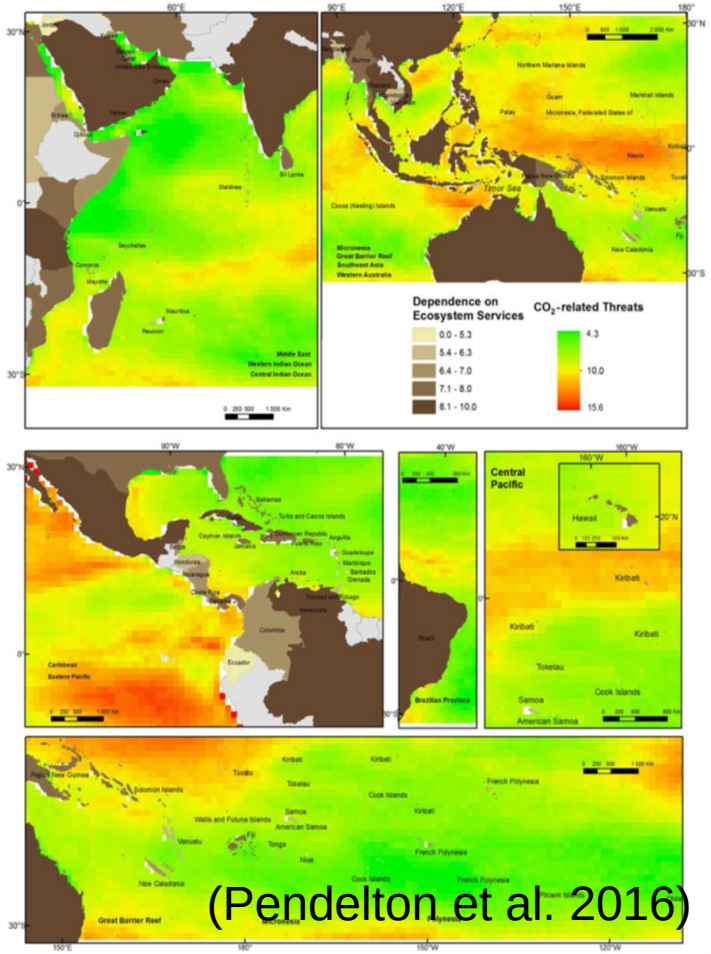


National strengths in different ocean sciences categories. Spider plots show the Specialization Index (SI) compared to the world (2010–2014).

Ocean Acidification a global 'issue'

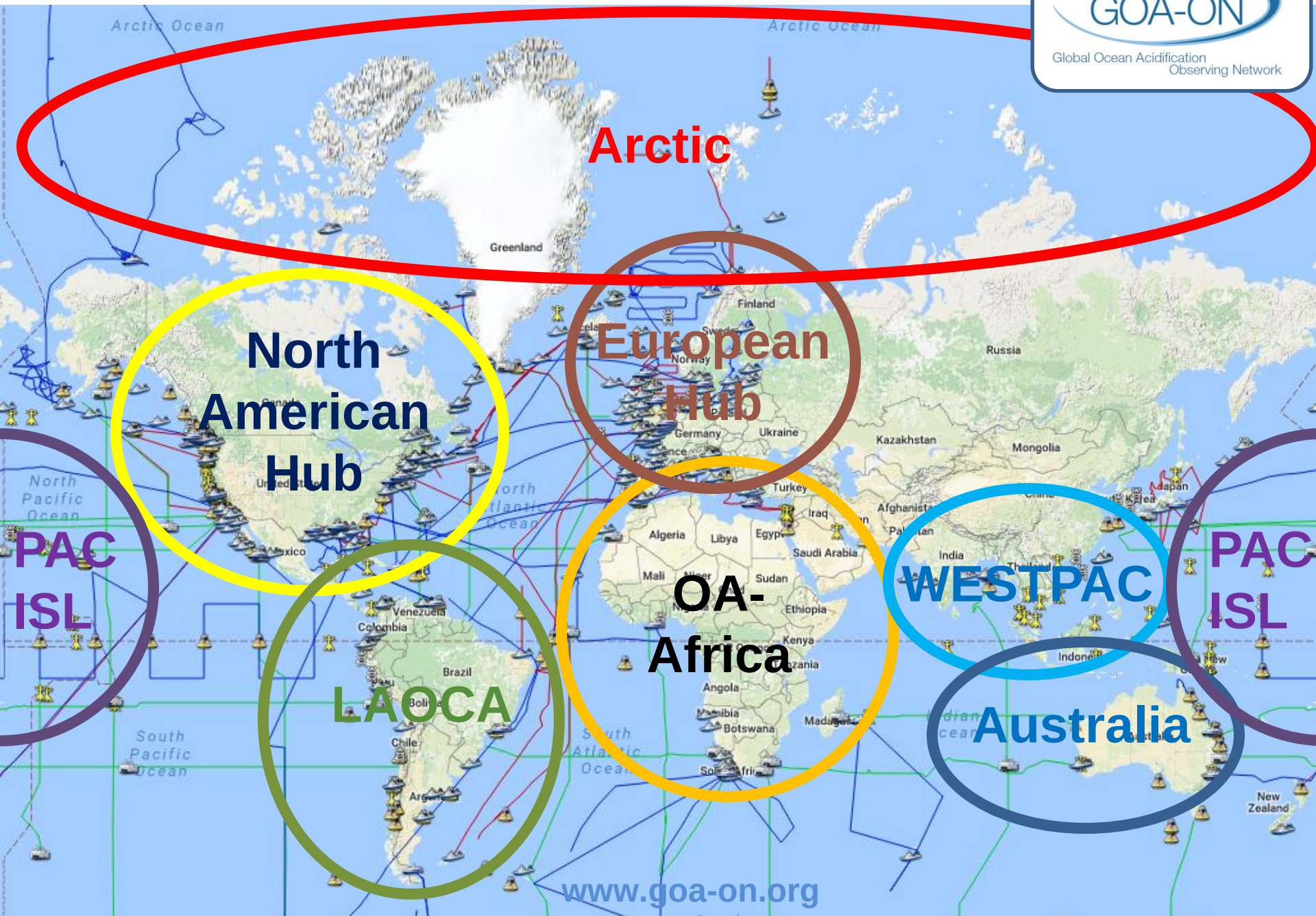
50% of marine animals threaten by ocean acidification

(Wittmann & Pörtner 2013)



(Pendelton et al. 2016)

GOA-ON regional networks



United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

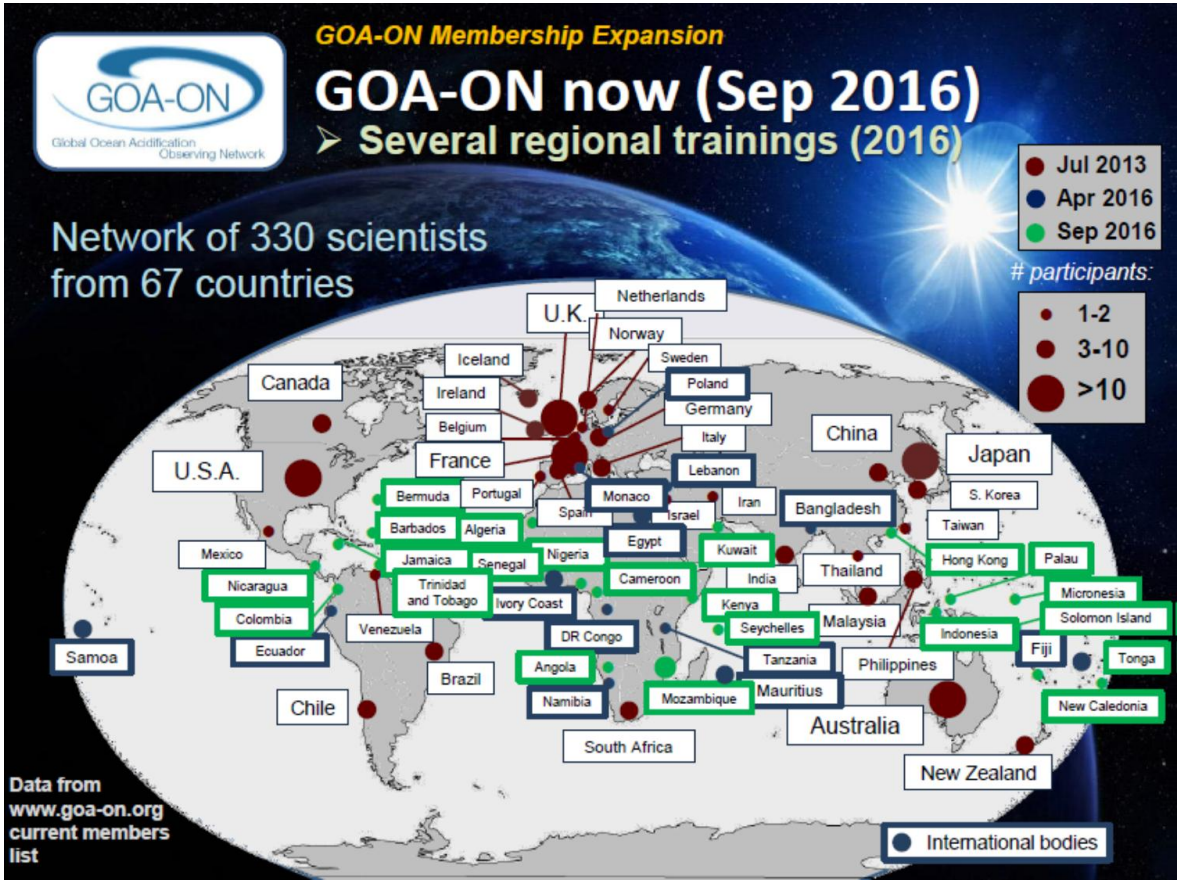
14 LIFE BELOW WATER

Global Ocean Acidification Observing Network

Goal 1 Understanding of global OA conditions

Goal 2 Understanding of ecosystem response to OA

Goal 3 Data to optimize OA modeling



Ocean Acidification a global 'issue' addressed at the regional scale

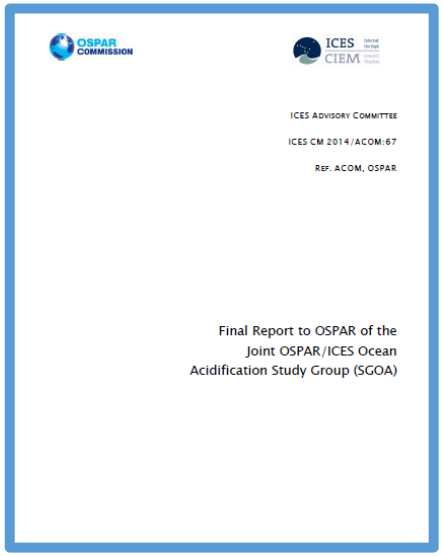
United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

14 LIFE BELOW WATER

OSPAR COMMISSION

ICES CIEM


ICES Advisory Committee

ICES CM 2014/ACOM:67

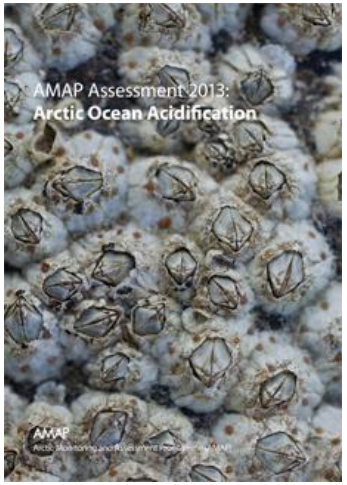
Ref. ACOM, OSPAR

Final Report to OSPAR of the Joint OSPAR/ICES Ocean Acidification Study Group (SGOA)

WIOMSA
Coasts Ocean and People

NAIROBI CONVENTION

AMAP

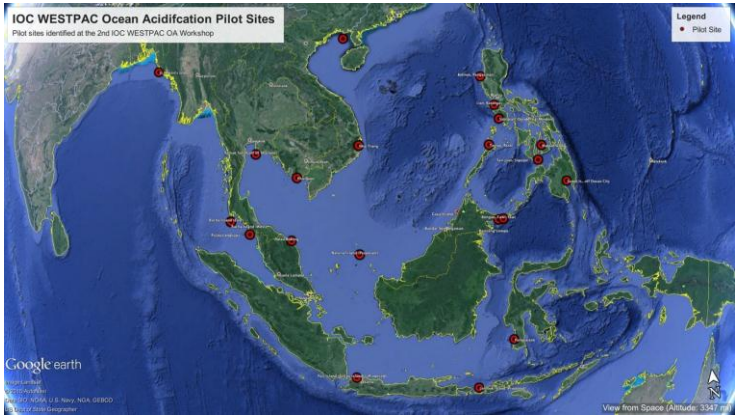


ARCTIC COUNCIL

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

WESTPAC
10th International Scientific Conference
17-20 April 2017 Qingdao, China



OA-Fisheries Partnerships

Supporting Shellfish Hatcheries

Wiley Evans, Hakai Institute

Simone Alin, NOAA PMEL

AOOS Alaska Ocean Observing System

Alutiiq Pride Shellfish Hatchery Seward, AK

Tessa Hill, UC Davis

NANOOS

Taylor Shellfish Hatchery Quilcene, WA

Whiskey Creek Shellfish Hatchery Tillamook, OR

CeNCOOS

Hog Island Oyster Company Tomales Bay, CA

Carlsbad Aquafarm Carlsbad, CA

Todd Martz, SIO

Burke Hales, OSU

STATE OF OREGON 1859

GOA-ON Global Ocean Acidification Observing Network

NOAA

IOOS Integrated Ocean Observing System

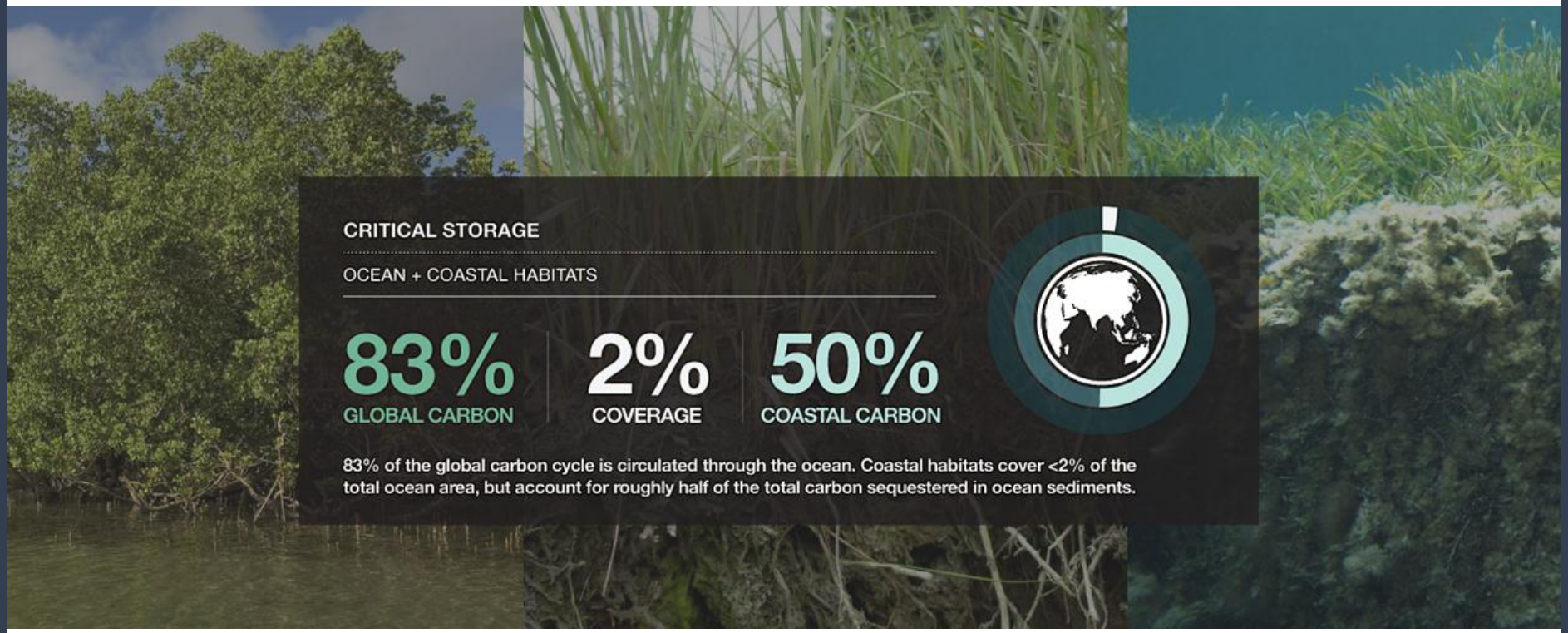
OAP NOAA OCEAN ACIDIFICATION PROGRAM

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

14 LIFE BELOW WATER

Coastal Blue Carbon nature based solution to combat climate change



the BLUE CARBON initiative

National and international efforts to protect, conserve and restore coastal Blue Carbon Ecosystem, e.g. Blue Carbon Partnership, GEF Blue Forest Project, in Kenya, Indonesia, Costa Rica, Philippines etc.

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

14 LIFE BELOW WATER

Coastal Blue Carbon nature based solution to combat climate change

the BLUE CARBON initiative

Between 1-7% of blue carbon sinks are being lost annually

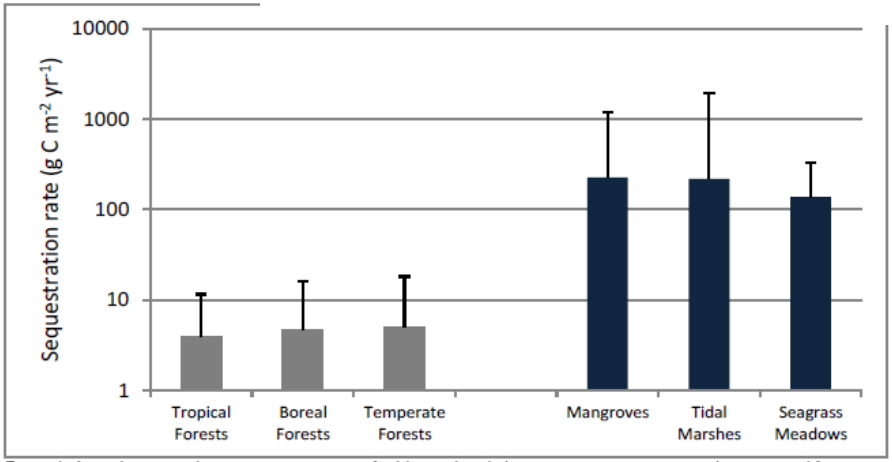
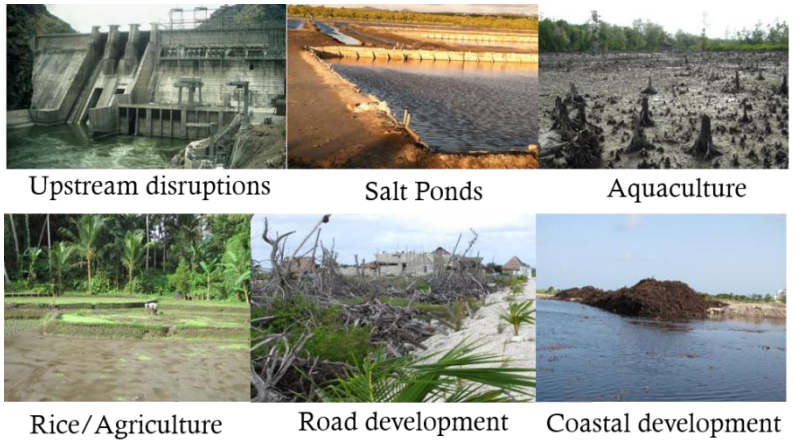
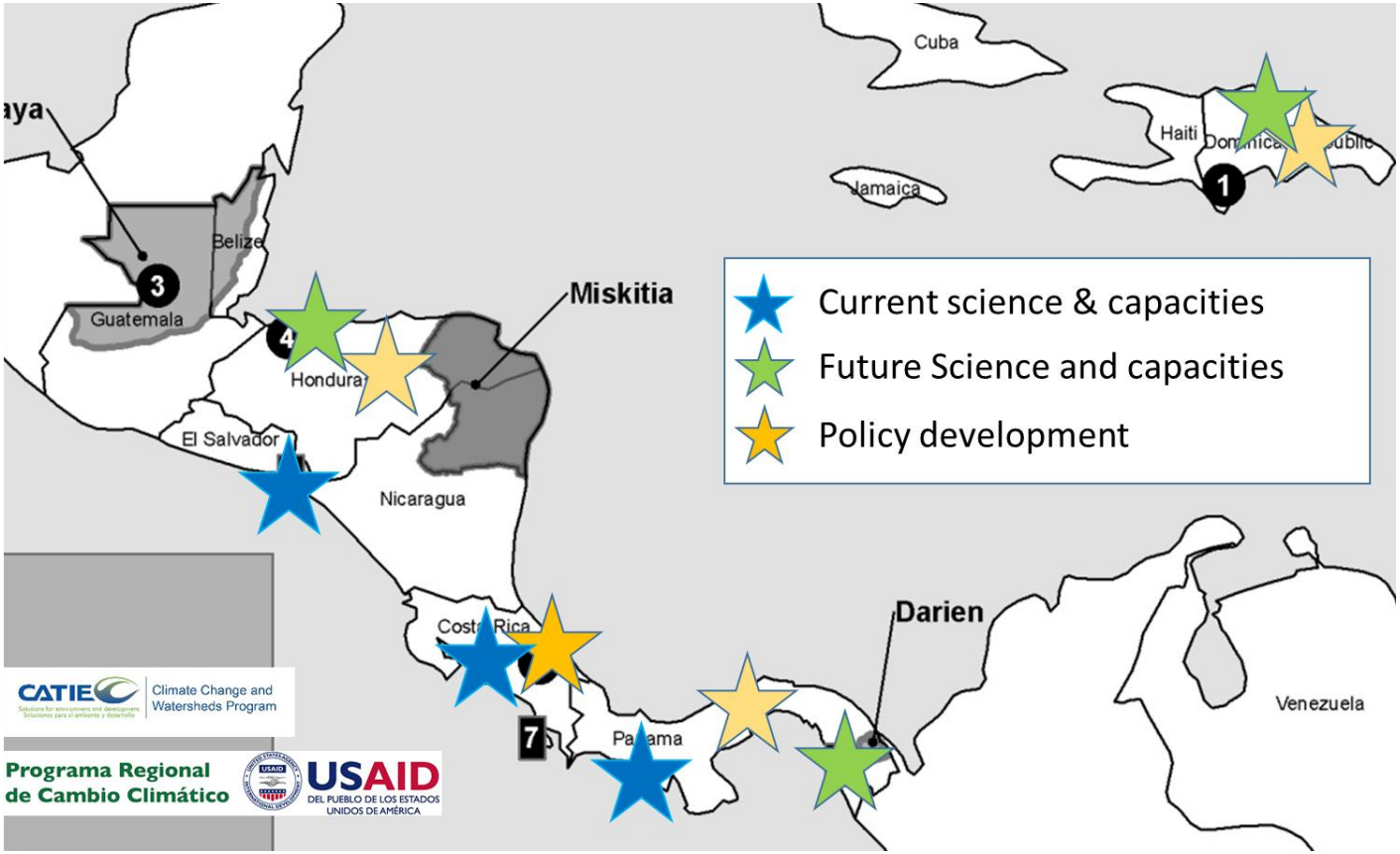


Figure 1. Annual mean carbon sequestration rates for blue carbon habitats per unit area compared to terrestrial forest habitats (error bars indicate maximum rates of accumulation). The annual sequestration rate of a given ecosystem is the quantity of CO_2 removed from the atmosphere and/or ocean and trapped in natural habitats (Modified from McLeod et al. 2011).



Pendleton et al. 2013

Coastal Blue Carbon nature based solution to combat climate change



Activities in Central America – Blue Carbon (Catie, 2015)

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

14 LIFE BELOW WATER

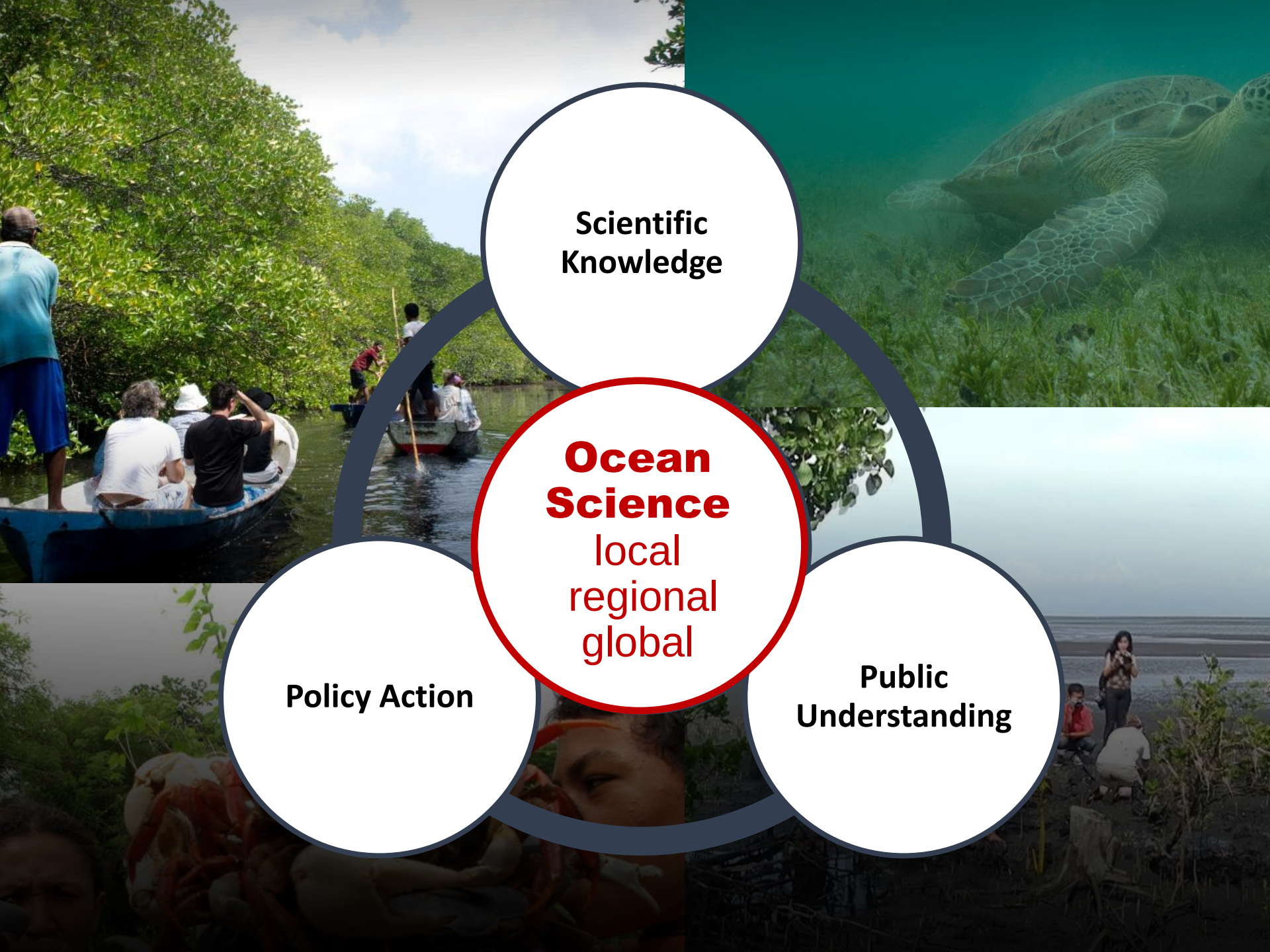
Coastal Blue Carbon nature based solution to combat climate change

Science

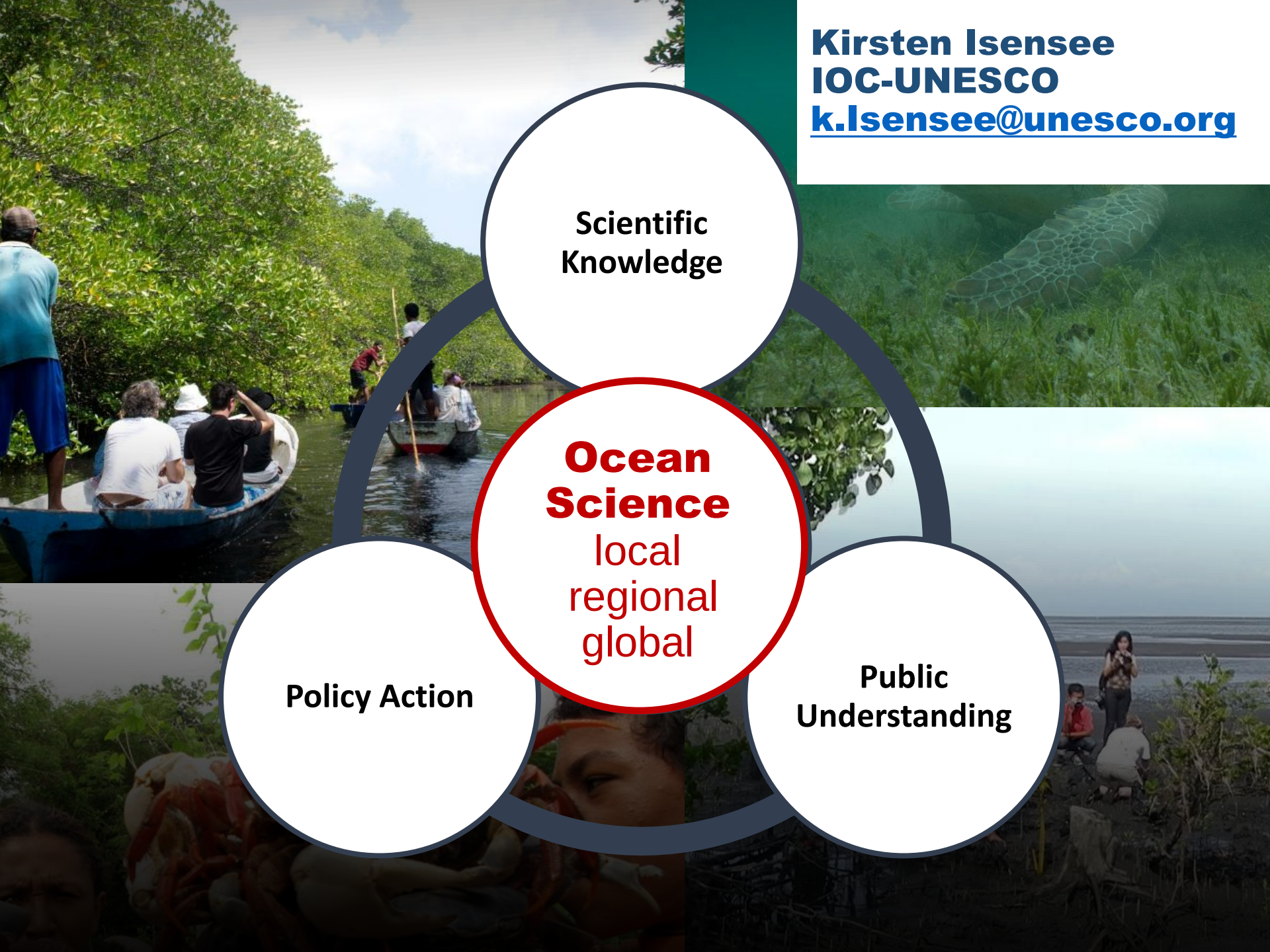
- Methods
  - Stocks vs. fluxes
  - Local capacities
  - Emissions factors
- GHG Inventories
- Restoration

Policy & finance

- Decision-makers understand and internalize topic
- Policy statements and instruments
  - NAMA, REDD+?
- Options and costs analyses


Scientific Knowledge
Ocean Science
local
regional
global
Policy Action
Public Understanding

Kirsten Isensee
IOC-UNESCO
k.Isensee@unesco.org



Kirsten Isensee
IOC-UNESCO
k.Isensee@unesco.org