



25 years of the Madrid Protocol

What, Why and How...is this important to a Polar educator?

José Xavier with many colleagues



**British
Antarctic Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL



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Summary

Origins of the Madrid Protocol

The challenges of Antarctic environmental affairs
today

The role of education of the Antarctic in the future











Antarctic research relevant to policy

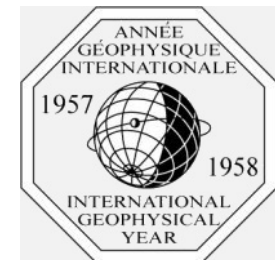
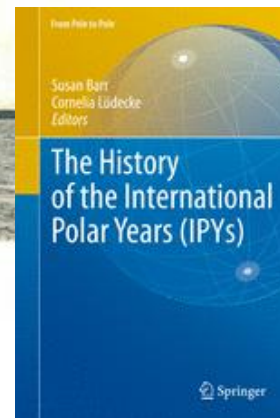
grew particularly from the late 1950's...



The First International Polar Year (1882-1883)

The Second International Polar Year (1932-1933)

International Geophysical Year (1957-58)

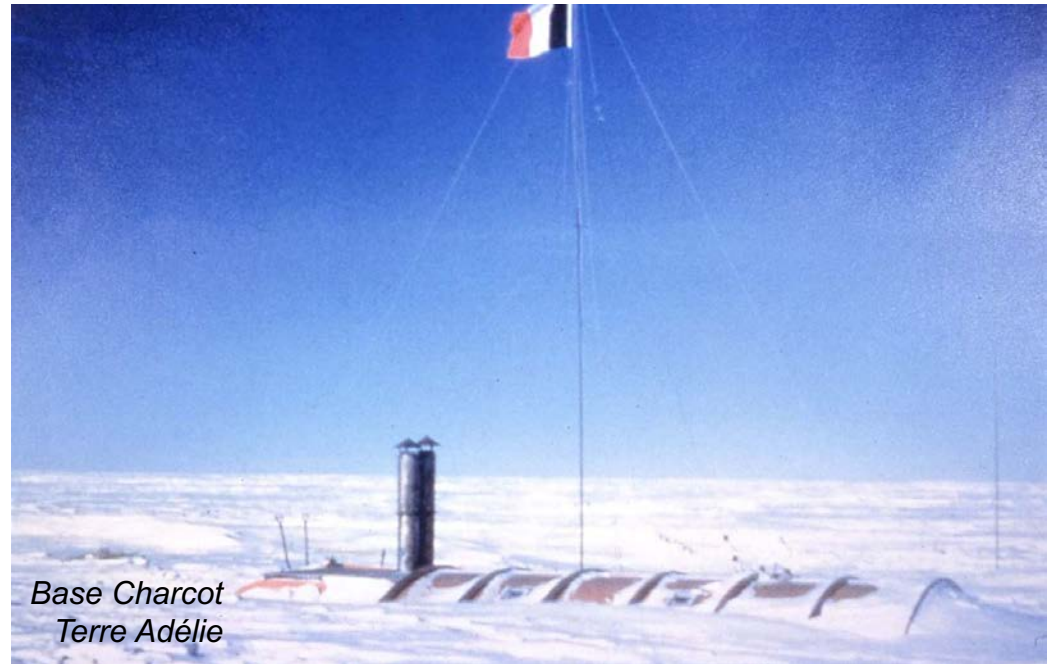


International Geophysics Year (1957-1958)



- > 60 States
- 4 000 scientific organisations
- 25 000 scientists & technicians

Provided conditions to
make Antarctica a
continent dedicated to
Science



*Base Charcot
Terre Adélie*



Signature of the Antarctic Treaty 1959



In 2016
53 Parties



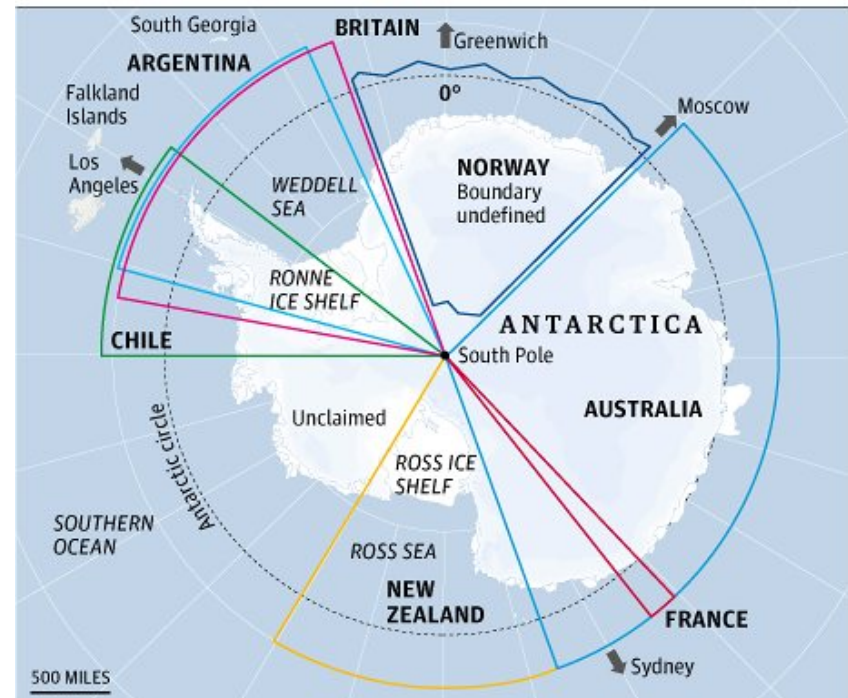
Antarctic Treaty

Signed in 1959, *into force* in 1961

Antarctica does not belong to any country

But there are “on-hold” claims....

The competing claims



<http://www.ats.aq/e/ats.htm>

Antarctic Treaty focus on 3 key issues

- . International cooperation
- . Science
- . Protection of the Antarctic Environment



A continent dedicated to Peace and Science



Freedom of scientific
investigation in Antarctica
Station settlement

International cooperation
in scientific investigation:

- Information exchange
- Personnel exchange
- Scientific observations
- Results exchange



Antarctic Treaty includes...

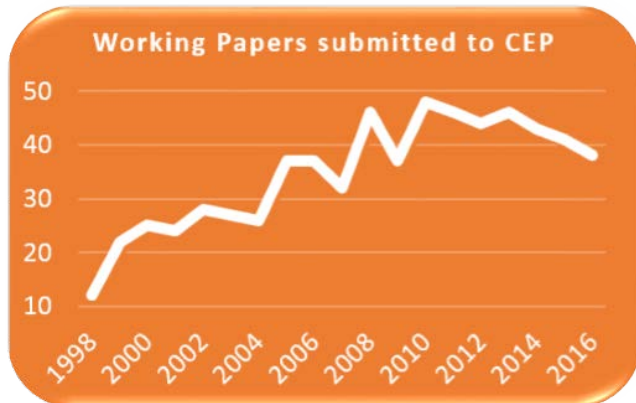
- Conservation of Antarctic Seals (1972)
- Conservation of Antarctic Marine Living Resources (1980)
- Convention for the Regulation of Antarctic Mineral Resource Activities (1988) – **never ratified**
- **Protocol on Environmental Protection to the Antarctic Treaty or Madrid Protocol (1991)**

Protocol on Environmental Protection to the Antarctic Treaty

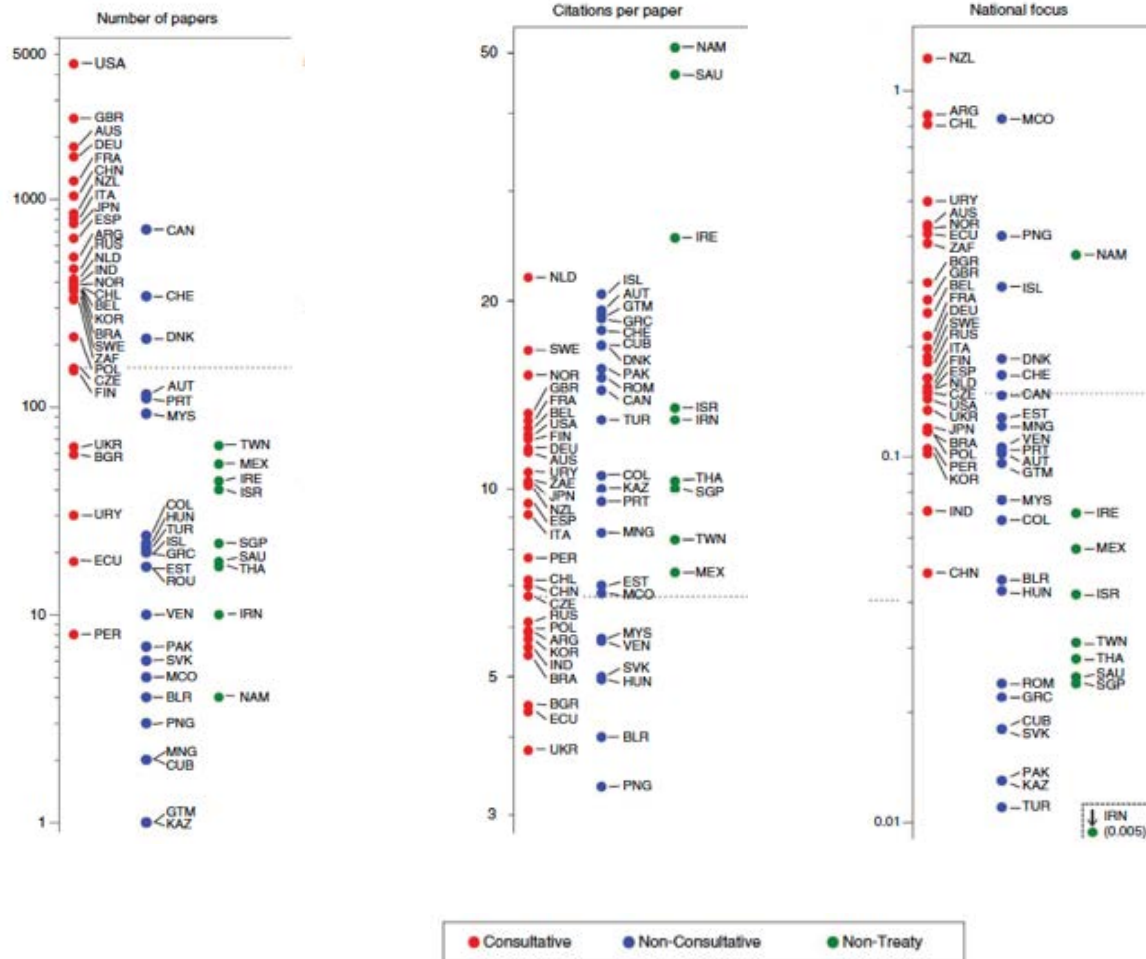


Designates Antarctica as a natural reserve, devoted to peace and science
(Article 2)

There is no expiration date for the Protocol



Commission of the Environmental Protection (CEP)



Number of Educational outputs?

Celebrating the 25th Anniversary of the Madrid Protocol in 2016!!!



Santiago Declaration on the Twenty Fifth Anniversary of the signing of the Protocol on Environmental Protection to the Antarctic Treaty



Major issues to Antarctic policy makers

- Knowledge of Antarctic environment is incomplete
- Situation is not static...

Impact of human activities should be recognized and minimized

Major issues to Antarctic policy makers

Slow pace of Antarctic policies development:

Pollution management – Stopped

Protected Areas – Stopped?

Conservation status of species – Stopped



Antarctic marine reserves deal within reach as Russia thaws environmental stance



World's largest marine protected area declared in Antarctica

Problems: Need for quality science and good interpretation of results, funding, emerging issues, political contexts, lack of communication

Sutherland *et al.* (2013) *Nature* 503: 335-337

Hughes *et al.* (2016) *Antarctic science* (editorial)

Scientific Committee on Antarctic Research is playing a key role



Persistent organic pollutants
Bioprospecting
Wildlife disturbance

Specially protected species
Non-native species
Environmental impacts

ALWAYS EVIDENCE-BASED ADVICE



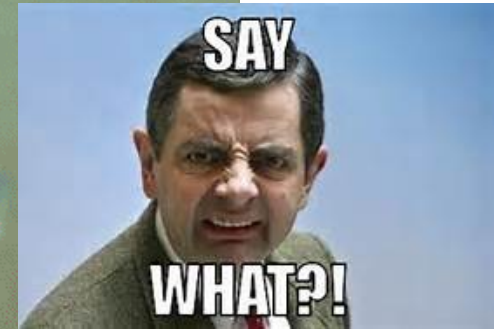
SCAR identifies issues emerging from greater scientific understanding of the region and brings them to the attention of policy makers

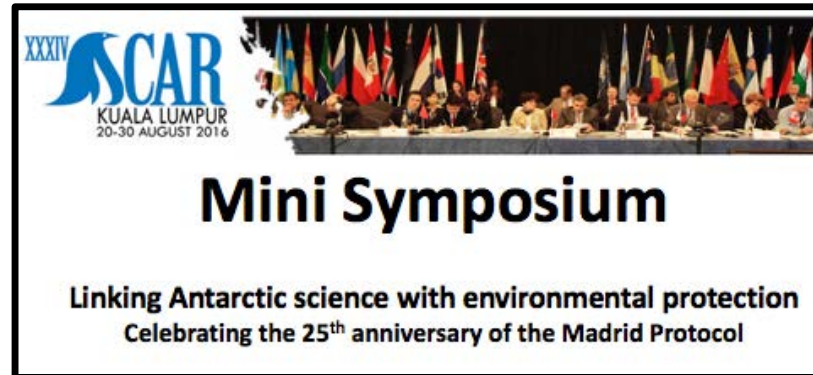
What scientists need to know about policy makers

- Applying science into policy is DIFFICULT!
- “We need more research” is the wrong answer
- Policy makers can be experts too 😊
- Economics and law are important in policy advice
- Public opinion matters
- Policy and science operate on different scales

Educators can help a lot!!!!

In the early days...when one talks to the other...





More engagement of scientists needed...
Do you have research papers that might have policy implications?

Research relevant to Antarctic policies

Introduction of
non-native
species

Repair or
remediation of
environmental
damage

Area
protection and
management

Improving
biodiversity
knowledge

Climate change
implications for
the environment

Monitoring and
state of the
environment
reporting

Marine spatial
protection and
management

Research relevant to Antarctic policies

Site specific
guidelines for
tourist-visited
sites

Human footprint
/ wilderness
management

Improving
environmental
impact
assessment

Designation and
management of
Historic Sites and
Monuments

Tourism and
NGO activities

Protection of
outstanding
geological values

Solutions in progress...

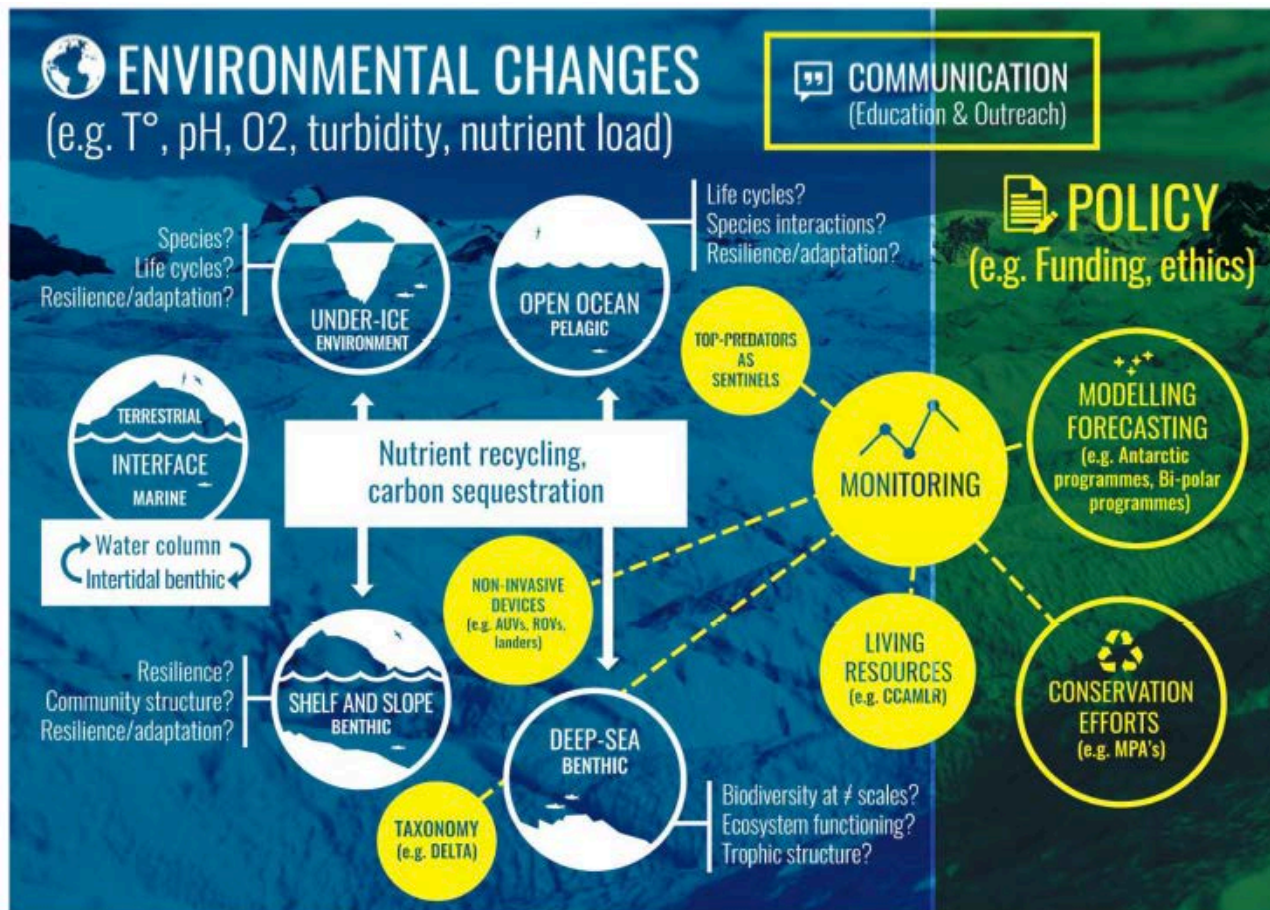


- . **Creation of mechanisms to facilitate collaborations**
(to address scientific issues relevant to Antarctic policy)
- . **Establish good communication channels**
(e.g. more engagement between scientists and policy makers)
- . **Adequate interpretation of evidence-based (well funded) science**



- . **Assessment of emerging issues well in advance**
(e.g. having more engaged scientists into policy making; check CEP plans)
- . **International scientific engagement to address policy relevant issues**
(e.g. Through SCAR research programs with national funding bodies)
- . **Creation of an Antarctic Treaty Education & Outreach Forum**

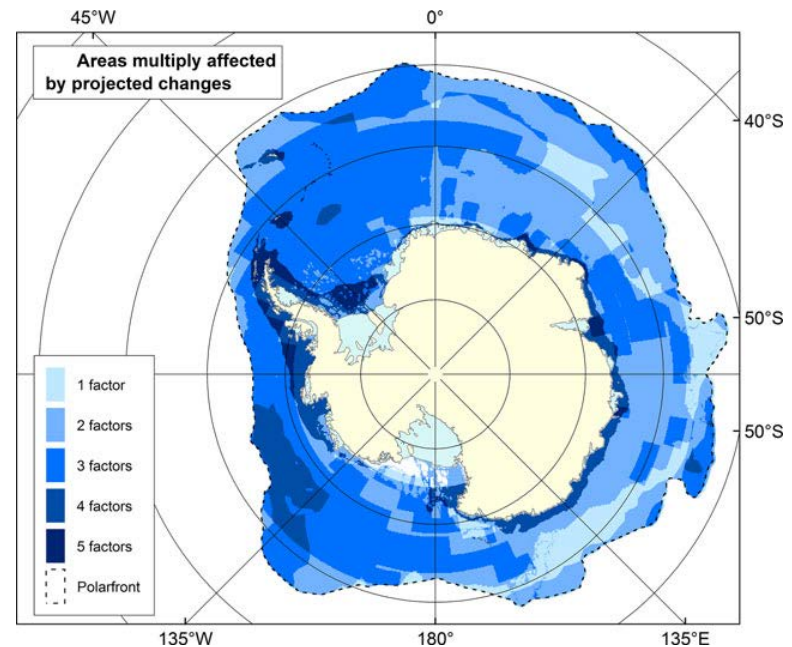
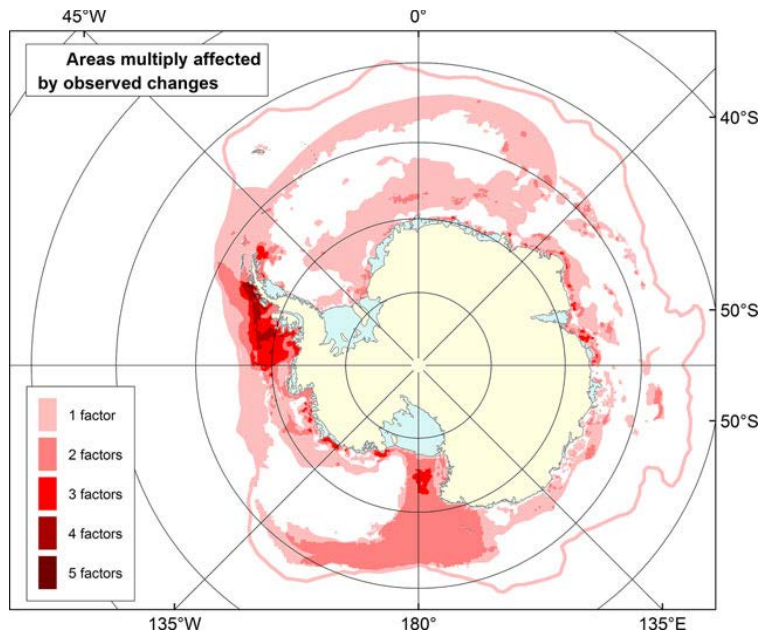
Example of a framework...COMMUNICATION is key!



Xavier, Brandt, Ropert-Coudert, Badhe, Gutt, Havermans, Jones, Costa, Lochte, Schloss, Kennicutt II & Sutherland (2016) *Frontiers in Marine Science* 3:94

The Southern Ocean ecosystem under multiple climate change stresses - an integrated circumpolar assessment

JULIAN GUTT¹, NANCY BERTLER², THOMAS J. BRACEGIRDLE³, ALEXANDER BUSCHMANN¹, JOSEFINO COMISO⁴, GRAHAM HOSIE⁵, ENRIQUE ISLA⁶, IRENE R. SCHLOSS^{7,8}, CRAIG R. SMITH⁹, JEAN TOURNADRE¹⁰ and JOSÉ C. XAVIER^{3,11}



The need to respect nature and its limits challenges society and conservation science

Jean-Louis Martin^a, Virginie Maris^a, and Daniel S. Simberloff^{b,1}



We need fundamental shifts in values
from
a growth-centered society to
one acknowledging biophysical limits
and
centered on human well-being
and biodiversity conservation

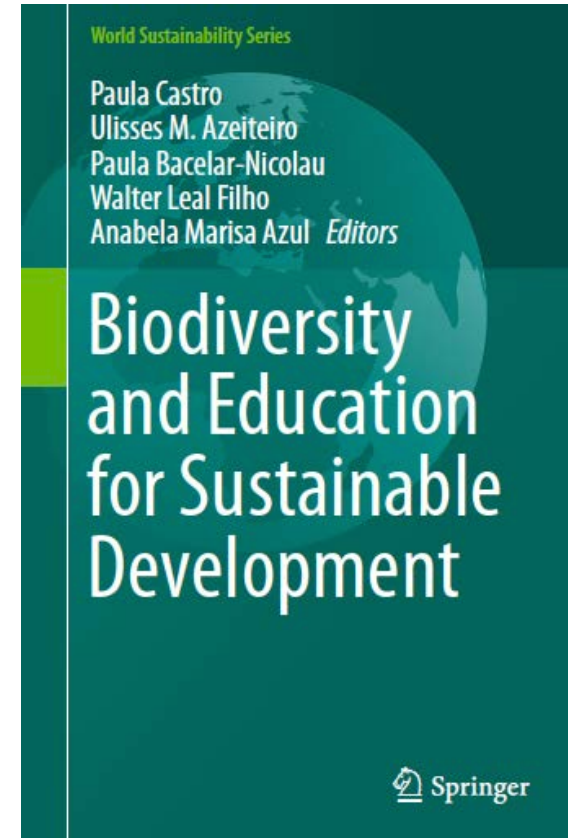
Emerging issue on Education with Environmental Protection (e.g. Biodiversity)

Importance of the Polar Regions and Biodiversity

Step 1. Evaluation of Impact

Education on Biodiversity in the Polar Regions

José C. Xavier, Gerlis Fugmann, Inga Beck, Louise Huffman
and Eric Jensen



Visitor Survey

Institution logo

Date:

Email address:

1. What is your gender?

☐ MALE ☐ FEMALE ☐ OTHER

2. What is your age?

_____ years

3. How many years of formal education (in school, college and university) have you had?

_____ years

4. Do you live locally or are you visiting?

☐ LOCAL ☐ VISITOR / TOURIST

5. What prompted your visit today (tick all that apply)?

☐ Fun day out ☐ Learn about animals
☐ See animals ☐ Entertainment
☐ Family time ☐ Other (specify below)

If Other:

7. Please note whether you agree with the following statement:

5. Please list anything that comes to mind when you think of 'polar wildlife':

- 1.
- 2.
- 3.
- 4.
- 5.

6. If you can think of an action that you could take to help save polar plant or animal species, please list below: (Or if you can't think of any actions, tick here ☐)

- 1.
- 2.

*If you listed actions above, have you taken any of these actions in the last month? NO ☐ YES ☐

'I feel personally concerned about animals going extinct' (circle your answer)

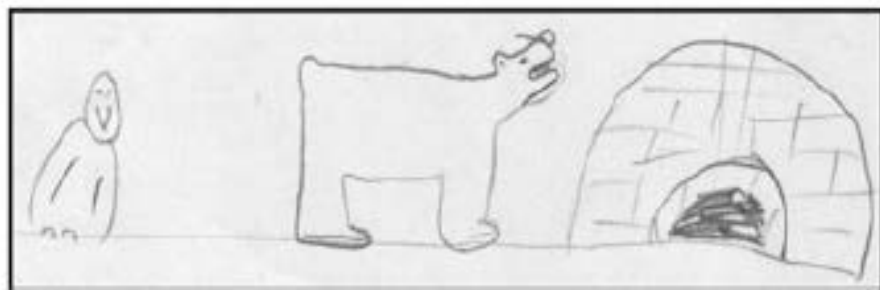
Strongly Disagree - Disagree - Somewhat Disagree - Neutral - Somewhat Agree - Agree - Strongly Agree

(Or if you have no opinion about this statement, tick here ☐)

[Information about the survey, who is conducting it, how data will be used, etc.]

Thank you very much for completing this survey!

(a)



(b)

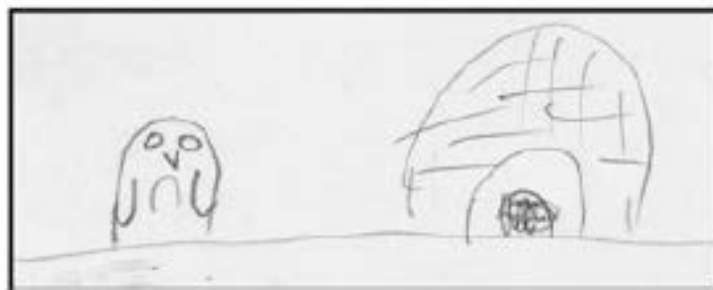


Fig. 2 Pre- **a** and post-visit **b** drawings for same child from impact evaluation at London Zoo

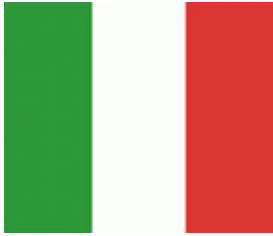


**Policy makers, scientists and educators are striking back...
working together!!!!**

But how? Good historical context...



This is your opportunity!!!



PEI 2017 ITALY

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BRINGING POLAR RESEARCH INTO THE CLASSROOMS

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Liceo Fabio Filzi
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Collaborate
Promote collaborations between educators

Improve
Support scientists in increasing public communication skills

Update
Update and exchange key information with polar educators

Discuss
Discuss the future vision of Polar Educators International

Register at this link:
www.polareducator.org
until
15 January 2017

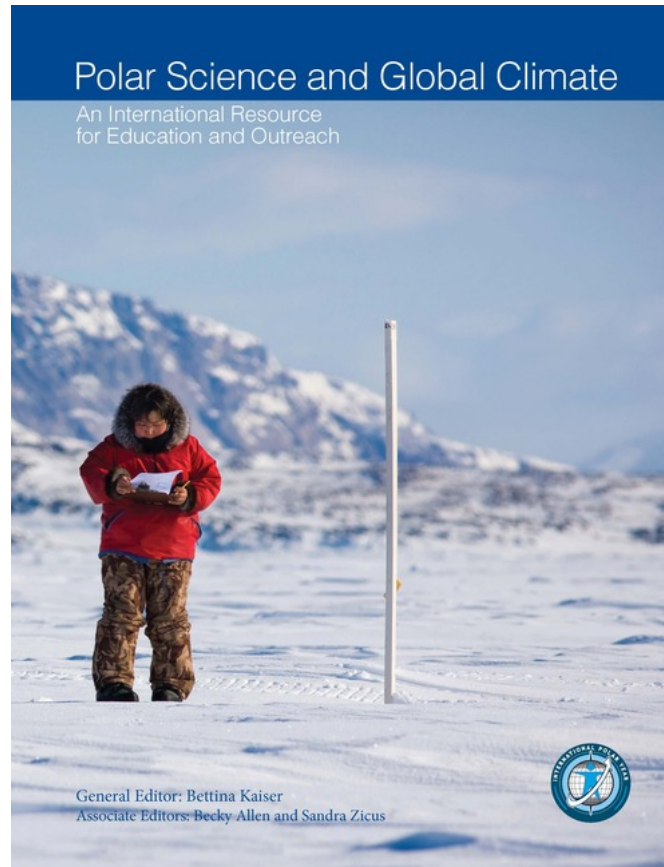
Early-bird Fee
50€
Until 15 Jan
[75 € afterwards]

Endorsed by

Contact Us

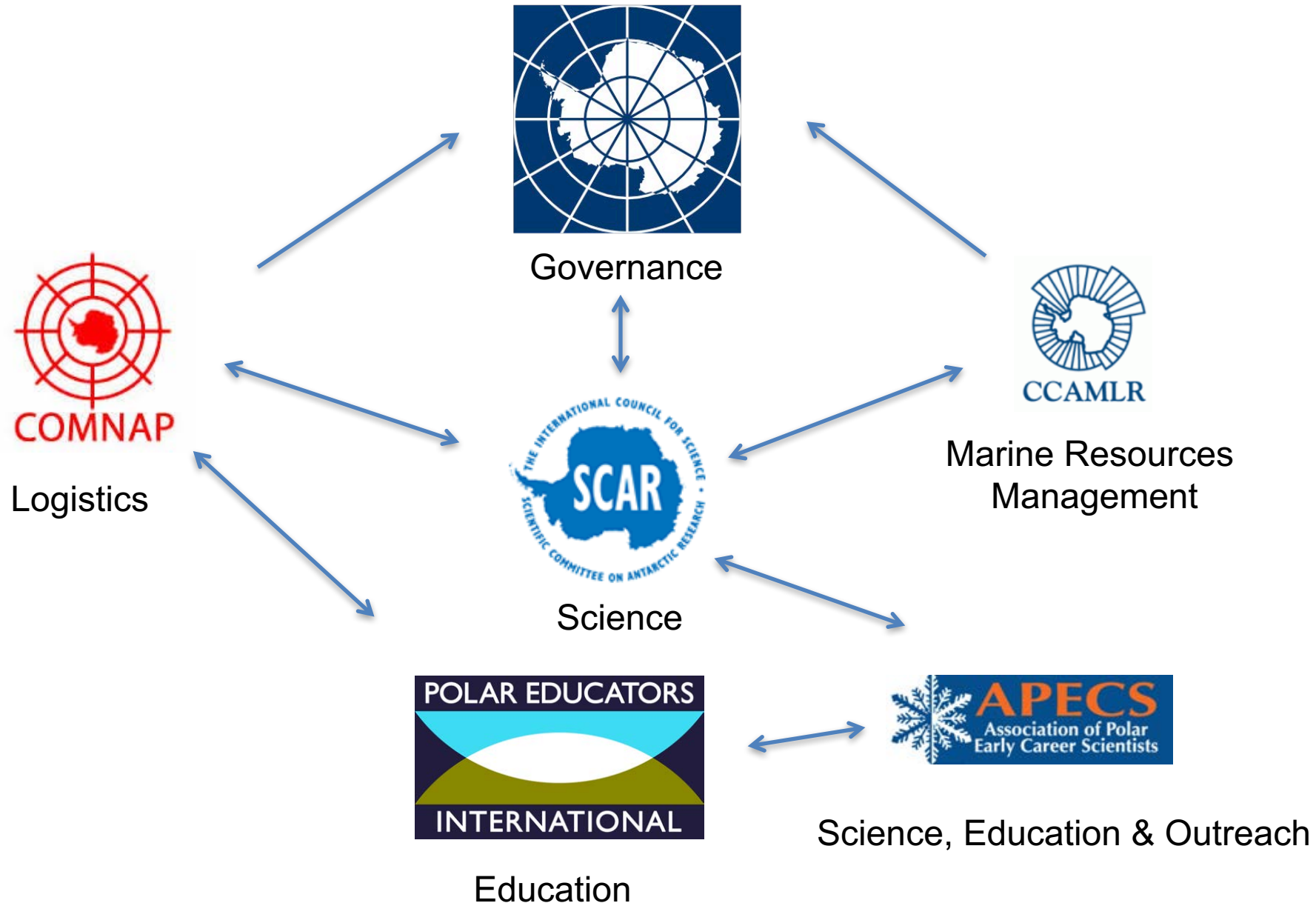
- ✉ mcattadori@gmail.com
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- 📱 #polareducators
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corso Rosmini 61
38068 Rovereto
Trento - Italy

Considerable work already done...



Kaiser *et al.* (2010)

Networking





Intersessional contact Group
Education and Outreach (IP papers delivered)



SCAR CBET
(PEI rep.)



Education & Outreach
Expert group



(PEI rep.)

Build your network

With your colleagues (PEI)



With early career scientists (APECS)



Within your country representatives (Antarctic Treaty System)

With (other) scientists/educators via SCAR Capacity Building, Education & Training (SCAR CBET)...and these workshops!!!

Walton *et al.* (2013) *Antarct. Sci.* 25:473

May *et al.* (2014) *J. Geol. Resource and Eng.* 4:217-221

Liggett (2015) *Polar Record* 5:470-479

25 years of the Madrid Protocol

- Important for Antarctic Treaty affairs**
- Help addressing future issues**
- Education about the Antarctic is crucial!**

Polar Educators International play a key role



**British
Antarctic Survey**
NATURAL ENVIRONMENT RESEARCH COUNCIL

**POLAR SCIENCE
FOR PLANET EARTH**

Acknowledgements

Matteo, Alessia, Betty, Louise, Gary, Patricia, Betsy, Julia and all organizers!!!

All colleagues from the SCAR Mini-symposium that contributed

MAKE THE BEST OF THIS WEEK

