IMAS translatingnatureintoknowledge

INSTITUTE FOR MARINE AND ANTARCTIC STUDIES

The Protocol on Environmental Protection to the Antarctic Treaty

Dr Julia Jabour

Master of Polar Law
University of Akureyri
Iceland
17 October 2011






UTAS

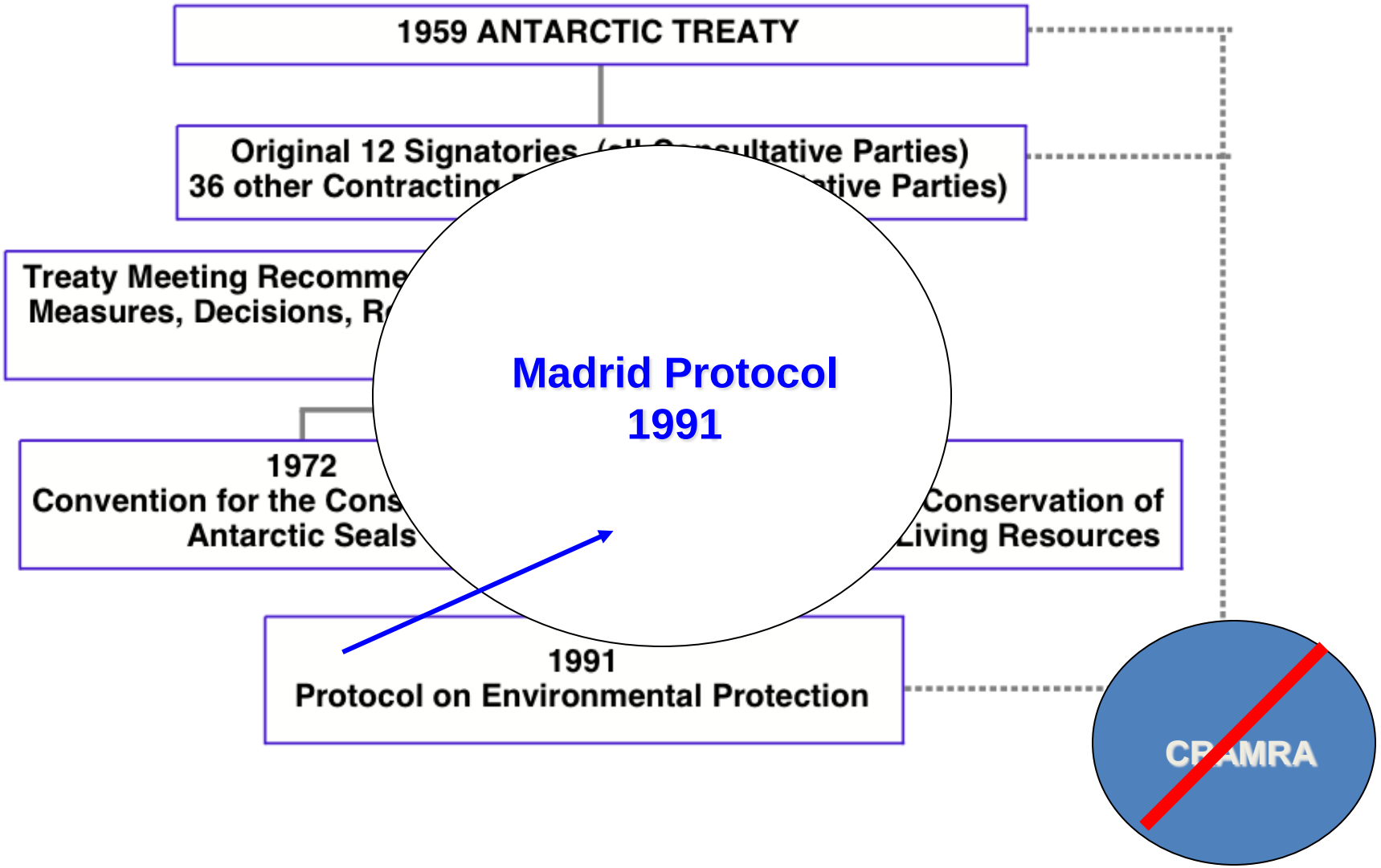
6 – The Madrid Protocol

This seminar examines the framework for environmental management established under the Madrid Protocol through a discussion of the key elements of the text and related annexes. This topic also looks at the emerging ‘hot topics’ related to environmental management within Antarctica. These ‘hot topics’ include area management, species protection and liability for environmental damage.

Recommended Reading

Antarctic and Southern Ocean Coalition, Information Paper 89 to ATCM XXXIV, Buenos Aires, 2011, “The Antarctic Environmental Protocol, 1991-2011”

Olav Orheim, Anthony Press and Neil Gilbert (2010) ‘Managing the Antarctic Environment: The evolving role of the Committee for Environmental Protection’ in Berkman PA, Lang MA, Walton DWH and Young OR (eds) Science Diplomacy: Antarctica, Science and the Governance of International Spaces, Washington: Smithsonian Institution Scholarly Press, p209–21.


1959 ANTARCTIC TREATY
Original 12 Signatories
Parties)
36 other Contracting
ative Parties)
Treaty Meeting Recomme
Measures, Decisions, R
Madrid Protocol
1991
1972
Convention for the Cons
Antarctic Seals
Conservation of
Living Resources
1991
Protocol on Environmental Protection
CRAMRA

Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol)

- Finalised October 1991 only 2 years after rejection of CRAMRA
- Many words re environment lifted directly from CRAMRA
- In force 14 January 1998
- 27 Articles + 6 Annexes
- Schedule on Arbitration
- 2 Institutions - the Committee for Environmental Protection (CEP) & Arbitral Tribunal

Compliance

- State responsibility :
  - Art. 13: *Each party shall take appropriate efforts within its competence…*
- Inspection procedures in place to try to encourage compliance

Objective - Article 2

"The parties commit themselves to the comprehensive protection of the Antarctic environment and dependent and associated ecosystems and hereby designate Antarctica as a natural reserve devoted to peace and science."

Environmental Principles – Article 3

- *Limit* adverse impacts on total ecosystem
- *Avoid* adverse effects on total ecosystem
- Scientific research has priority
- Planned activities must take account of scope of activity, cumulative impacts, safety, capacity to monitor, capacity to respond promptly to accidents, etc
- NO DEFINITIONS ∴ interpretation arbitrary according to state practice

Annexes

I Environmental Impact Assessment

II Conservation of Antarctic Fauna and Flora

III Waste Disposal and Waste Management

IV Prevention of Marine Pollution

V Area Protection and Management

VI Liability Arising from Environmental Emergencies (not yet in force)

Annex I - Environmental Impact Assessments

- Article 8 and Annex I - EIA for *all authorised human activity* - prior assessment of impact:
  - Less than minor or transitory
  - Minor or transitory
  - More than minor or transitory
- No definitions .. responsibility of State Operator .. but guidelines do exist (CEP 2005)
- Preliminary Assessment (PA)
- Initial Environmental Evaluation (IEE)
- Comprehensive Environmental Evaluation (CEE)
- Problems include uncertainty over what triggers evaluation from one level to next and perhaps inconsistently applied

Recent IEEs

France	Initial evaluation of the environmental impact of the tourist activity conducted in the Antarctic Peninsula by the ship "Boulard"	Private tourist cruise on sail boat with planned landing
Germany	Operation of Kohnen summer station	Scientific research
Germany	Seismic measurements in the drainage basin Ekstromisen	Scientific research
India	Initial Environmental Evaluation for Development of Approach Path at Proposed New Indian Research Station at Larsemann Hills, East Antarctica	Construction of a path
New Zealand	IEE. Tangaroa Whale Research Voyage 2010	Science
United States	"CBS News" Initial Environmental Evaluation for the "60 Minutes" Proposed Antarctic Expedition	Film production

Recent CEEs

India	Final Comprehensive Environmental Evaluation of New Indian Research Base at Larsemann Hills, Antarctica	Construction of Antarctic facility
Korea (ROK)	Draft Comprehensive environmental evaluation; Construction and operation of the Jang Bogo Antarctic Research Station, Terra Nova Bay, Antarctica	Activity aims to establish a plan that will minimize the impact of the construction and operation of a new Korean research station on the Antarctic continent
Russian Federation	Water Sampling of the Subglacial Lake Vostok. Final Comprehensive Environmental Evaluation	Water Sampling of the Subglacial Lake
United States	CEE for Development and Implementation of Surface Traverse Capabilities	Operational: Infrastructure

Annex II

- An updated 1964 Agreed Measures
- Taking of or harmful interference with native fauna and flora is prohibited, except in accordance with a permit
- Defines ‘native’ species, who is an appropriate authority, what a permit is, what ‘take’ means, what ‘harmful interference’ means, etc
- Prohibits introduction on non-native species (hence dogs removed)
- Appendix lists specially protected species
  - recently whole Annex reviewed but few significant changes
- All Fur seal (*Arctocephalus*) species de-listed in 2006

Antarctic Fur Seal beside a nesting endangered Wandering albatross

Photo taken at Albatross Island, Bay of Isles, South Georgia. © Judith Horsburgh

Annex III

- Waste disposal and management - obligation to minimise waste, clean up past and present sites (if possible - see Art.1) and remove (if possible)
- Waste management plans
- Observation/inspection (Art.14 Protocol) linked to Art.7 Treaty
- Inspection reports sent to all Parties and considered by CEP and ATCM

The fuel farm for an abandoned Argentinean Antarctic research station, Almirante Brown.

Photo taken at location on Antarctic Peninsula. © Julia Jabour

Annex IV

- Antarctic (south of 60º S) “Special Area” under MARPOL
- Defines ‘discharge’, ‘garbage’, ‘noxious liquid substance’ & other critical terms
- Some substances totally prohibited, some restricted to how and where discharged
- Always exempt in cases of emergency (safety of lives, ships)
- Lots of international law relates to ships and shipping anywhere in the world, including south of 60º S

Australian resupply vessel *Aurora Australis* in 9/10 pack ice off Casey Station, 2001.

Annex V

- Specially Protected Areas (71) - entry by permit
  SPAs may be small units inside a Specially Managed Area (SMA) (7)
- Historic Sites and Monuments (85)

- Designation based on environmental, scientific, historic, aesthetic or wilderness values - or planned or ongoing research
  - No definitions of these terms
  - Interesting academic work currently being undertaken to find out what these terms mean today

- Includes marine protected areas, but with CCAMLR's "prior approval"

Koru Memorial, Scott Base, commemorates 257 victims of the Air New Zealand tragedy, November 28, 1979 when an Antarctic sightseeing flight collided with Mount Erebus on Ross Island, Antarctica.

Annex VI Liability

- Applies to environmental emergencies arising from authorised human activity
- Emergency = “accidental event…that results in, or imminently threatens to result in, any significant and harmful impact on the Antarctic environment”
- Provisions on preventative measures, contingency plans and response action
- Liability = when an operator fails to take prompt and effective response action to environmental emergencies arising from its activities - shall be liable to pay the costs of approved response action taken by another Party/Parties

MV *Nordkapp* (R) grounded off Deception Island, January 2007. Assisted by sister vessel *Nordnorge* (L). Photograph anon.

Committee for Environmental Protection's 5-year work plan

Top 3 Priority 1 Topics	Plan
Introduction of non-native species	1. Continue developing practical guidelines and resources 2. Continue advancing recommendations from Climate Change ATME
Tourism and NGO activities	1. Provide advice to ATCM as requested 2. Advance recommendations from ship-borne tourism ATME
Global Pressure: Climate Change	1. Consider implications of climate change for management of Antarctic environment 2. Advance recommendations from Climate Change ATME

Non-native species – what are they?

Non-native / alien species: an organism occurring outside its natural past or present range and dispersal potential, whose presence and dispersal in any biogeographic zone of the Antarctic Treaty area is due to unintentional human action.

Introduction / introduced: direct or indirect movement by human agency, of an organism outside its natural range. This term may be applied to intercontinental or intra-continental movement of species.

Transient: non-native species that have survived in small populations for a short period in Antarctica, but which have either died out naturally or have been removed by human intervention.

Persistent / established: non-native species that have survived, established and reproduced for many years in a restricted locality in Antarctica, but which have not expanded their range from a specific location.

Invasive / invasion: non-native species that are extending their range in the colonised Antarctic region, displacing native species and causing significant harm to biological diversity or ecosystem functioning.

Endemic: Native species restricted to a specified region or locality in Antarctica.

Non-native species

Madrid Protocol Annex II Article 4

1. No species of animal or plant not native to the Antarctic Treaty area shall be introduced onto land or ice shelves, or into water in the Antarctic Treaty area except in accordance with a permit.

3. Permits under paragraph 1 above shall be issued to allow the importation only of the animals and plants listed in Appendix B to this Annex and shall specify the species, numbers and, if appropriate, age and sex and precautions to be taken to prevent escape or contact with native fauna and flora.

Non-native species cont.

Annex II Appendix B Importation of Animals and Plants

The following animals and plants may be imported into the Antarctic Treaty area in accordance with permits issued under Article 4 of this Annex:

(a) domestic plants; and

(b) laboratory animals and plants including viruses, bacteria, yeasts and fungi.

Non-native species cont.

- Huskies from Greenland and Canada first used in the Antarctic by the British in 1898 and introduced by Australia in 1954
- Madrid Protocol Annex II Article 4.2
  - Dogs shall not be introduced onto land or ice shelves and dogs currently in those areas shall be removed by April 1, 1994.

Non-native species cont.

Annex II Article 4

Any plant or animal for which a permit has been issued … shall, prior to expiration of the permit, be removed from the Antarctic Treaty area or be disposed of by incineration or equally effective means that eliminates risk to native fauna or flora. The permit shall specify this obligation. Any other plant or animal introduced into the Antarctic Treaty area not native to that area, including any progeny, shall be removed or disposed of, by incineration or by equally effective means, so as to be rendered sterile, unless it is determined that they pose no risk to native flora or fauna.

Non-native species cont.

Annex II Article 5

Nothing in this Article shall apply to the importation of food into the Antarctic Treaty area provided that no live animals are imported for this purpose and all plants and animal parts and products are kept under carefully controlled conditions and disposed of in accordance with Annex III to the Protocol and Appendix C to this Annex.

Non-native species cont.

Appendix C: Precautions to Prevent Introductions of Micro-organisms

1. Poultry. No live poultry or other living birds shall be brought into the Antarctic Treaty area. Before dressed poultry is packaged for shipment to the Antarctic Treaty area, it shall be inspected for evidence of disease, such as Newcastle's Disease, tuberculosis, and yeast infection. Any poultry or parts not consumed shall be removed from the Antarctic Treaty area or disposed of by incineration or equivalent means that eliminates risks to native flora and fauna.
2. The importation of non-sterile soil shall be avoided to the maximum extent practicable.

Non-native species cont.

Annex II Article 4.6

Each Party shall require that precautions, including those listed in Appendix C to this Annex, be taken to prevent the introduction of micro-organisms (eg. viruses, bacteria, parasites, yeasts, fungi) not present in the native fauna and flora.

Intersessional work

- Intersessional Contact Group on Non-Native Species, convened by New Zealand, reported to ATCM 2011 (WP 34)
- Produced a Non-Native Species Manual covering the unintended or accidental introduction of non-native species
  - natural pathways of introduction, human "ecosystems" (eg. stomach flora) and human to human transfer of pathogens (eg. illness) are not included
- "There is a limited understanding of the risks related to non-native species introductions and their impacts on the ecosystems"

***Biggest problem is not knowing what is endemic!**

Tourism and NGO activities

Antarctic Treaty Meeting of Experts on the Management of Ship-borne Tourism in the Antarctic Treaty Area, 9-11 December, 2009 Wellington, NZ

- 17 Recommendations re monitoring incidents, inspecting tourism operations, supporting the Polar Code, etc

but…

	Total	Person days in Antarctica	Person days ashore
Ship-based visitors (including tourists, staff and crew)	73,710	737,100	17,263
Air/Land-based visitors	1,500	15,000	15,000
TOTALS FOR VISITORS			**32,263**
Year-round scientists	1,088	393,105	393,105
Summer-only scientists	3,141	314,100	282,690
TOTALS FOR SCIENTISTS			**675,795**

Climate Change

- ATME Climate Change, April 2010, Norway
- Document: “Co-Chairs’ Report from Antarctic Treaty Meeting of Experts on Implications of Climate Change for Antarctic Management and Governance”
- Terms of reference:
  - key scientific aspects of climate change and consequences of such change to the Antarctic terrestrial and marine environment;
  - implications of climate change to management of Antarctic activities;
  - the need for monitoring, scenario planning and risk assessments;
  - outcomes of the Copenhagen negotiations relevant for the Antarctic; and
  - the need for further consideration of any of the above issues and manners in which this can be achieved.

Climate Change ATME findings

- a high risk of substantial ecosystem-scale changes in both the terrestrial and marine domains
- inherent uncertainty should not be a reason to delay action
- important to identify key regions, habitats, species, heritage values and scientific values most vulnerable to climate change
- likely impacts provide greater impetus for a broader systematic approach to spatial management
- temporal aspects of environmental management will also require consideration because of scheduling to avoid compromising high risk species during, eg. breeding

Findings cont.

- exacerbated high risk to biodiversity associated with establishment of non-native species
- responses to risks to infrastructure (eg. replacement of affected buildings) may place additional pressure on plant and animal habitat, compounding adverse effects
- some sources of important or unique scientific information may also be affected as the environment is modified
- high risks for environmental values arising from extreme climate events such as unusually high temperatures, high snow accumulation, drought or high melt

Summary

Uncertainty about scale, scope and timing of effects, however

- ATCM should consider developing an Antarctic climate change communication plan to bring the findings to the attention of other decision makers, the general public and the media.
- ATCM should consider how best to communicate findings to fora discussing and negotiating global climate change.

NB: ATMEs don't make decisions, only offer information and recommendations

Annex VI re Liability

- Measure 1 (2005) compromise annex after ~20 years of discussion (CRAMRA then MP)
- Liability arises when an operator fails to take prompt and effective response action to environmental emergencies arising from its activities
- An operator shall be liable to pay the costs of approved response action taken by another Party/Parties
- Still not in force… only 5/28 ratifications

Liability, Decision 4 (2010)

1) to continue to evaluate annually the progress made towards Annex VI…becoming effective…and what action may be necessary and appropriate to encourage Parties to approve Annex VI in a timely fashion;
2) that ten years from the adoption of Annex VI, in light of the evaluation pursuant to paragraph 1 above, to take a decision on the establishment of a time-frame for the resumption of negotiations, in accordance with Article 16 of the Protocol, to elaborate further rules and procedures as may be necessary relating to liability for damage arising from activities taking place in the Antarctic Treaty area and covered by the Protocol
3) to request the CEP to consider environmental issues related to the practicality of repair or remediation of environmental damage in the circumstances of Antarctica, in order to assist the ATCM in adopting an informed decision in 2015 related to the resumption of the negotiations

*** Phew! A dizzying level of commitment to liability**

Hot topics

Based on independent scrutiny of ATCMs and the ATCPs by environmental NGO Antarctic & Southern Ocean Coalition

- Cumulative impact
- Chronic, substandard implementation of the Protocol
- Dependent and associated ecosystems

(ASOC, est 1978, has 30 fee-paying members and many more supporting organisations; self-appointed watchdog of Antarctic matters)

What is impact?

From the CEP Guidelines (2005):

Nature: type of change imposed on the environment due to the activity (eg contamination, erosion, mortality)

Spatial extent: area or volume where changes are likely to be detectable

Intensity: a measure of the amount of change imposed on the environment due to the activity (measured or estimated through, eg. number of species or individuals effected, concentration of a pollutant in a water body, rates of erosion, mortality).

What is impact?

Duration: period of time during which changes in the environment are likely to occur.

Reversibility: possibility of the system returning to its initial environmental conditions once an impact is produced.

Lag time: time span between the moment outputs are released into or imposed on the environment and the moment impacts occur.

How to measure cumulative impact?

Need baseline studies first to determine ‘steady state’ and carrying capacity

Do we know the capacity of these receiving polar environments, particularly in times of warming and change?

***Great to have the concept but useless without tried and tested procedures**

Chronic, substandard implementation of the Protocol

- Inspection provisions in Article VII Antarctic Treaty/Article 14 Madrid Protocol encourage compliance in the absence of universal enforcement authorities.
  - many inspections occur but do not produce a change in behaviour
  - no censure in ATCMs (too diplomatic and censure might be counterproductive)

***Inescapable failing of international law?**

Dependent and Associated Ecosystems

- Protocol (and Treaty) area of application is south of 60º South
- Protocol includes ‘dependent and associated ecosystems’
- What does this mean in practical terms?
  - some guidance from CCAMLR’s area of application, which is south of Antarctic Convergence

Dependent and Associated Ecosystems

- Resolution 1 (2009) urges parties to enhance environmental protection northward to the Antarctic Convergence through –
  - cooperation
  - seeking CCAMLR's advice and, if agreed, their help to ask IMO to review and revise their MARPOL Special Area boundary northwards to the convergence

One practical example…

Proof of concept paper

Hindell et al (2011) “Foraging habitats of top predators, and Areas of Ecological Significance, on the Kerguelen Plateau”

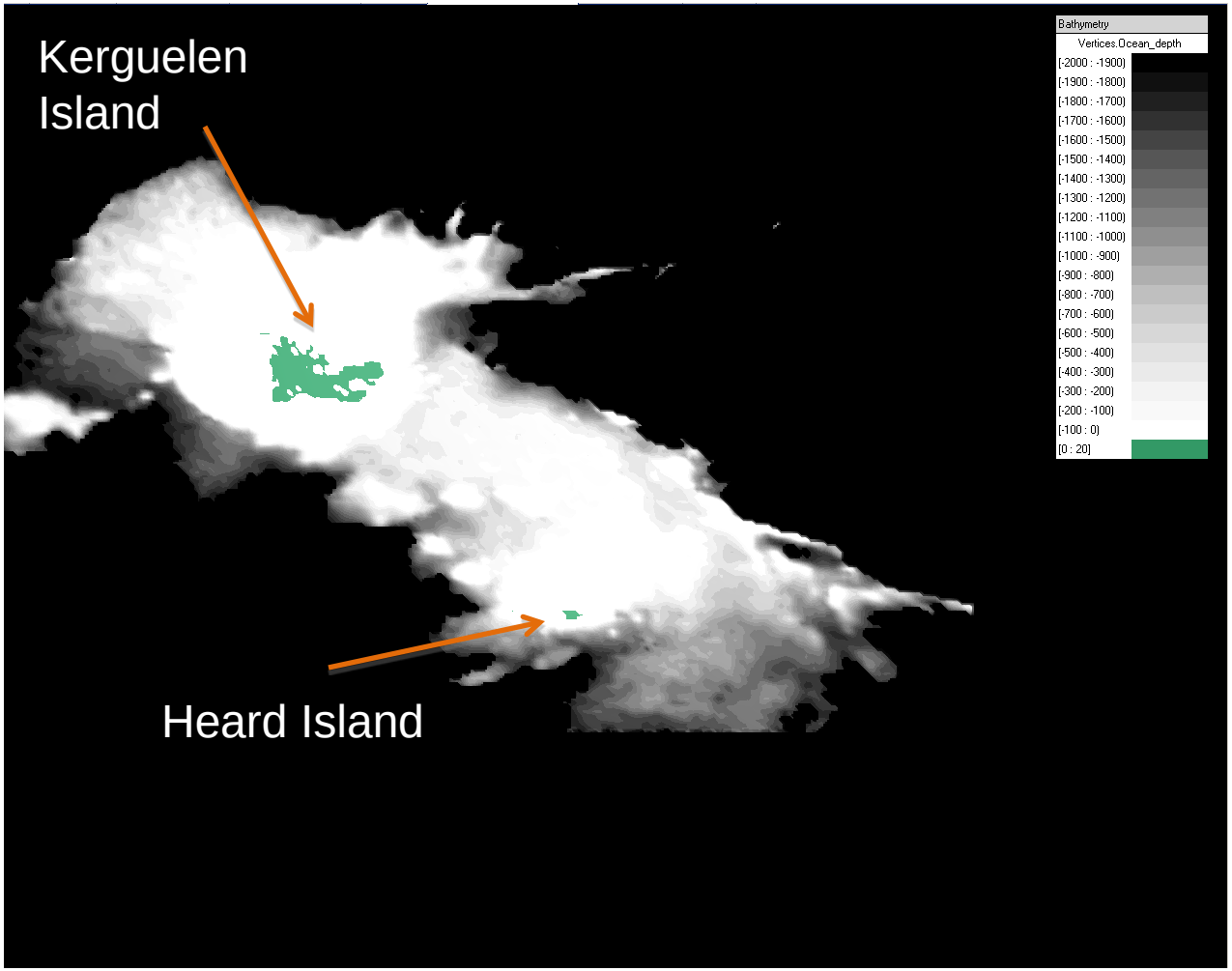
- Aim was to integrate tracking and diving data from a suite of predator species collected from French and Australian Antarctic programs at Kerguelen Plateau
- Birds and mammal predators play a key role in this ecosystem
- At-sea distributions proxy for Areas of Ecological Significance because concentrations of foraging activity are indicative of enhanced productivity

Areas of Ecological Significance

Defined by authors as

- Regions used expressly for foraging (not only transit)
- Regions used by many individuals
- Regions used by many species – diverse predator species require diverse prey

Kerguelen Plateau



Shared responsibility

Area covered by *Convention on the Conservation of Antarctic Marine Living Resources* + French and Australian national laws

- CCAMLR has 'ecosystem approach'
- area hit heavily by IUU fishing late 20th C, early 21st
- CCAMLR has compliance measures including chain of custody catch document scheme for Toothfish and VMS tracking of licensed vessels
- Aus/Fr bilateral treaties on cooperation in monitoring and enforcement

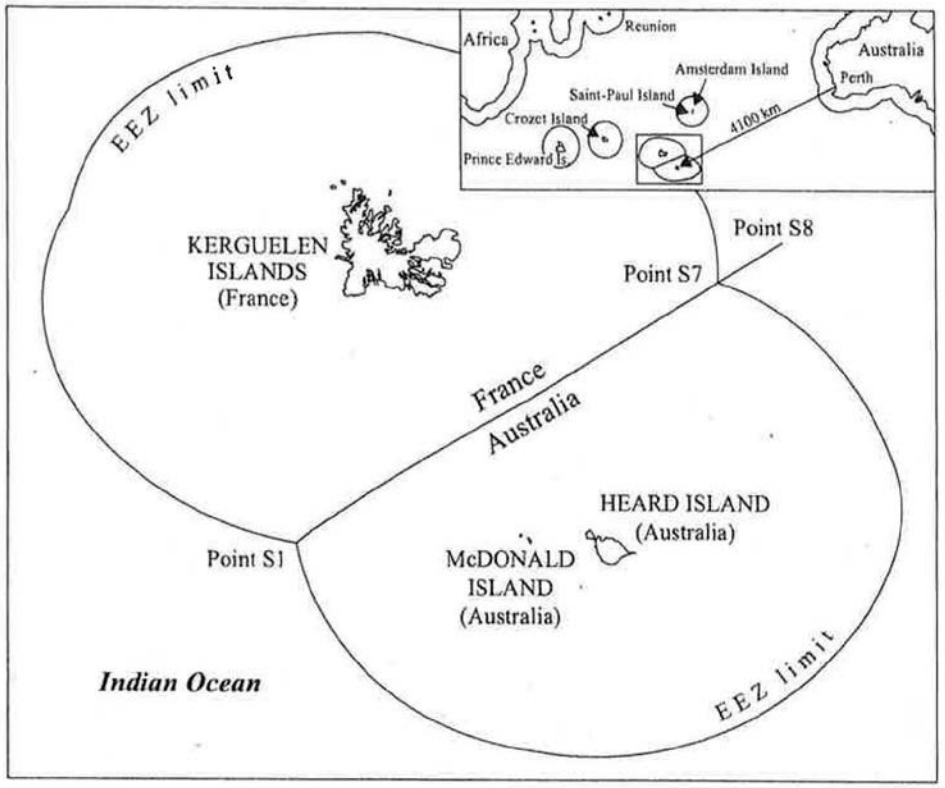
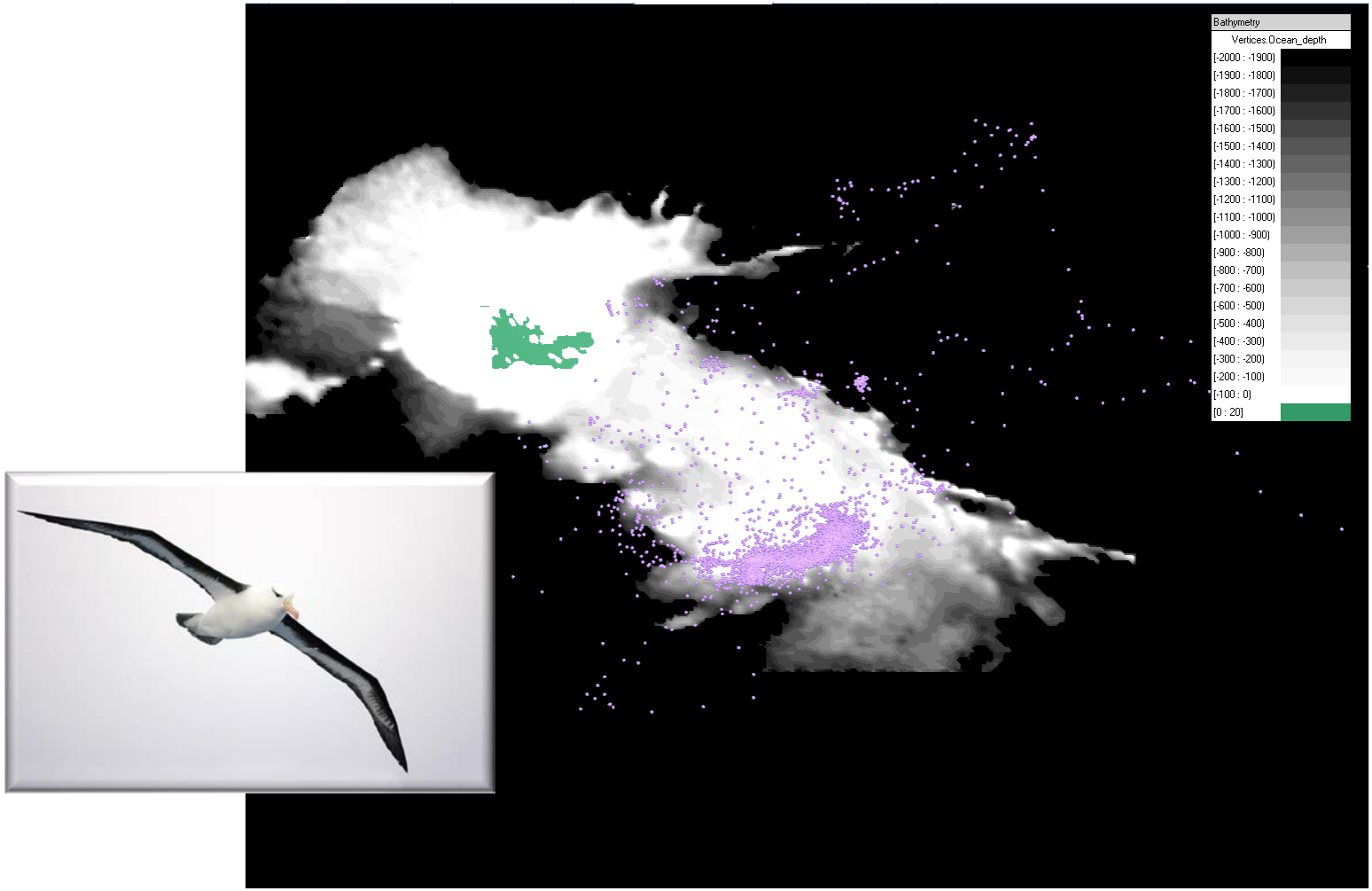
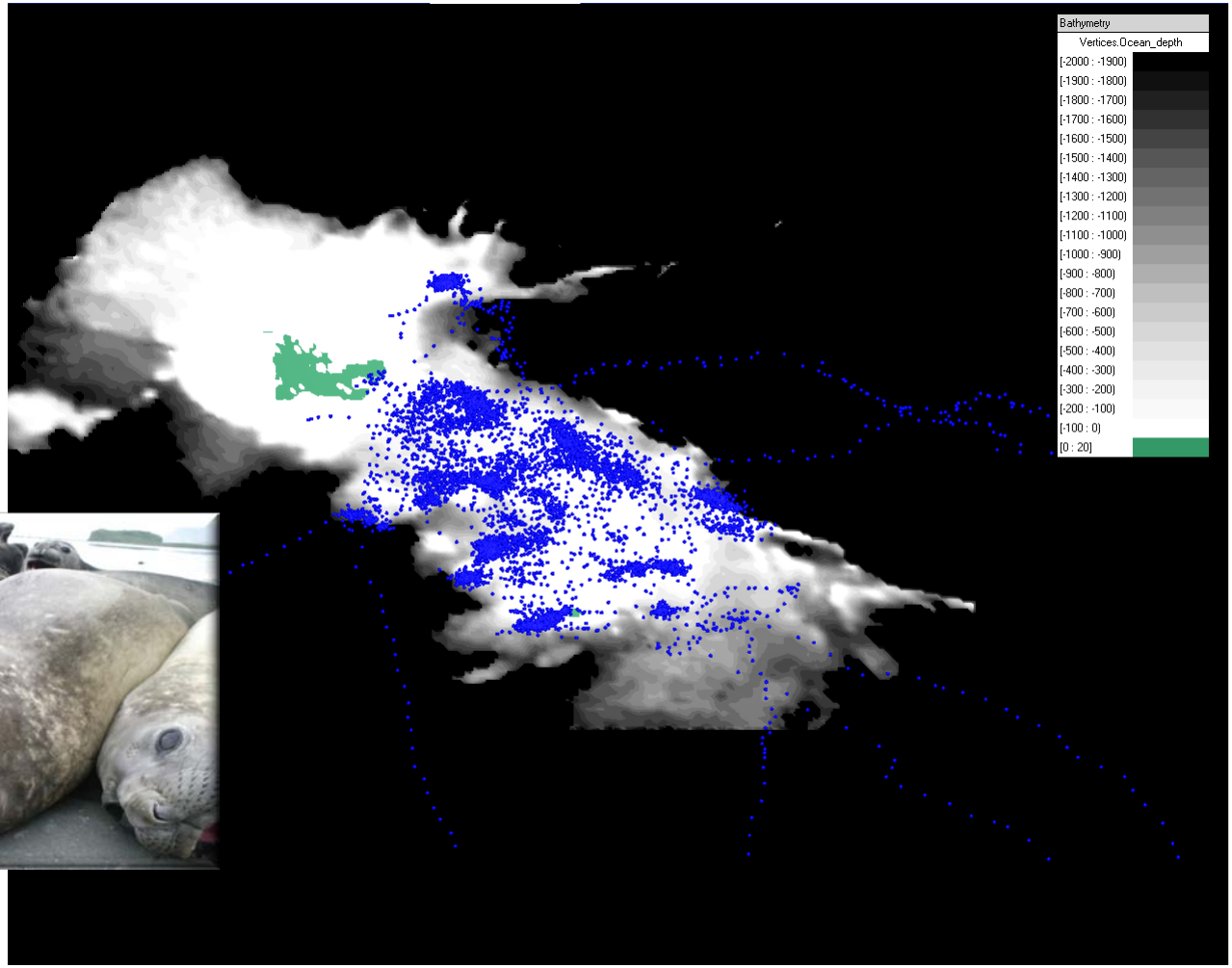


Figure 1. Location of HIMI and the Kerguelen Islands

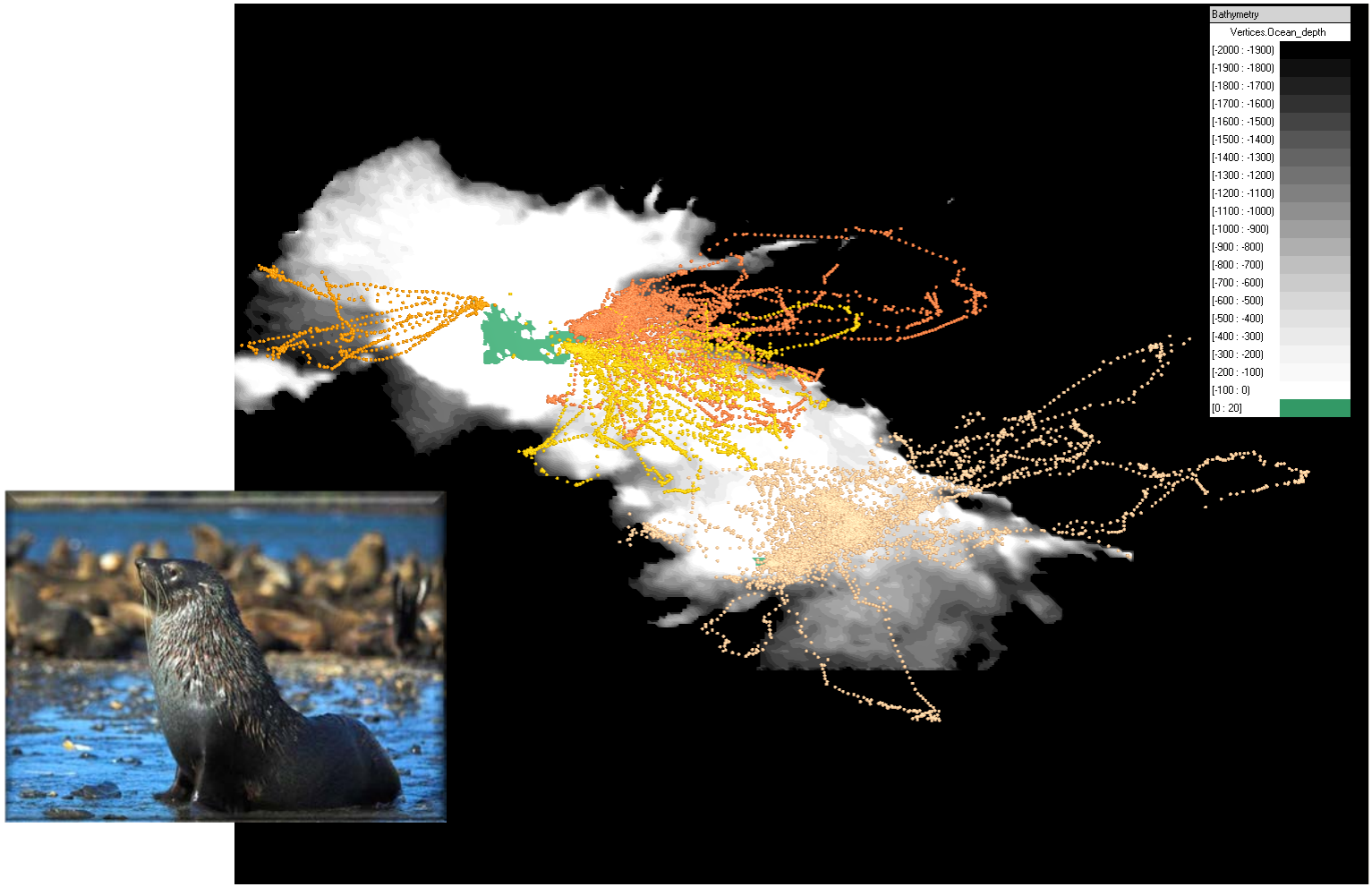
Black-browed Albatross



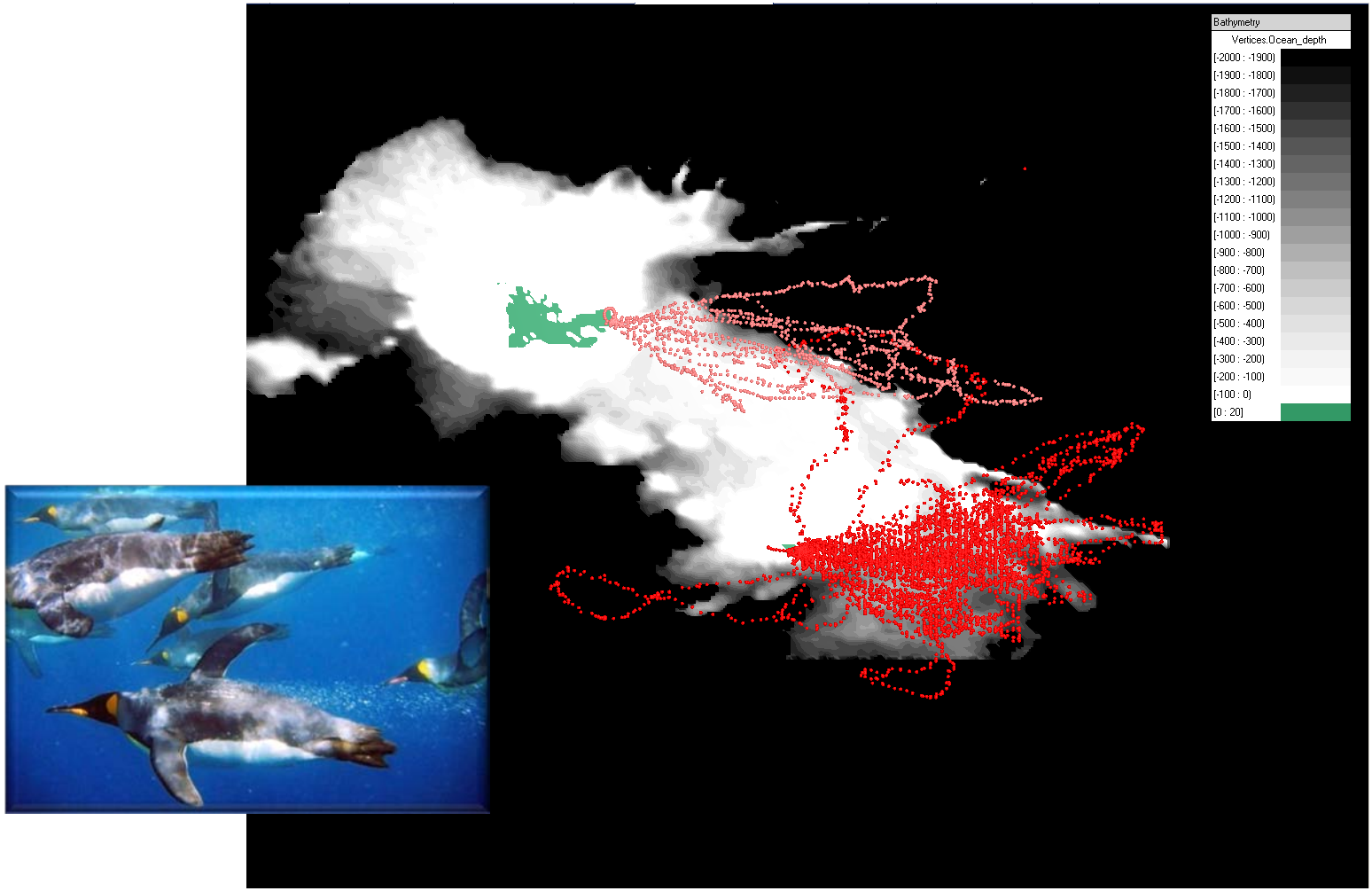
Southern Elephant seals



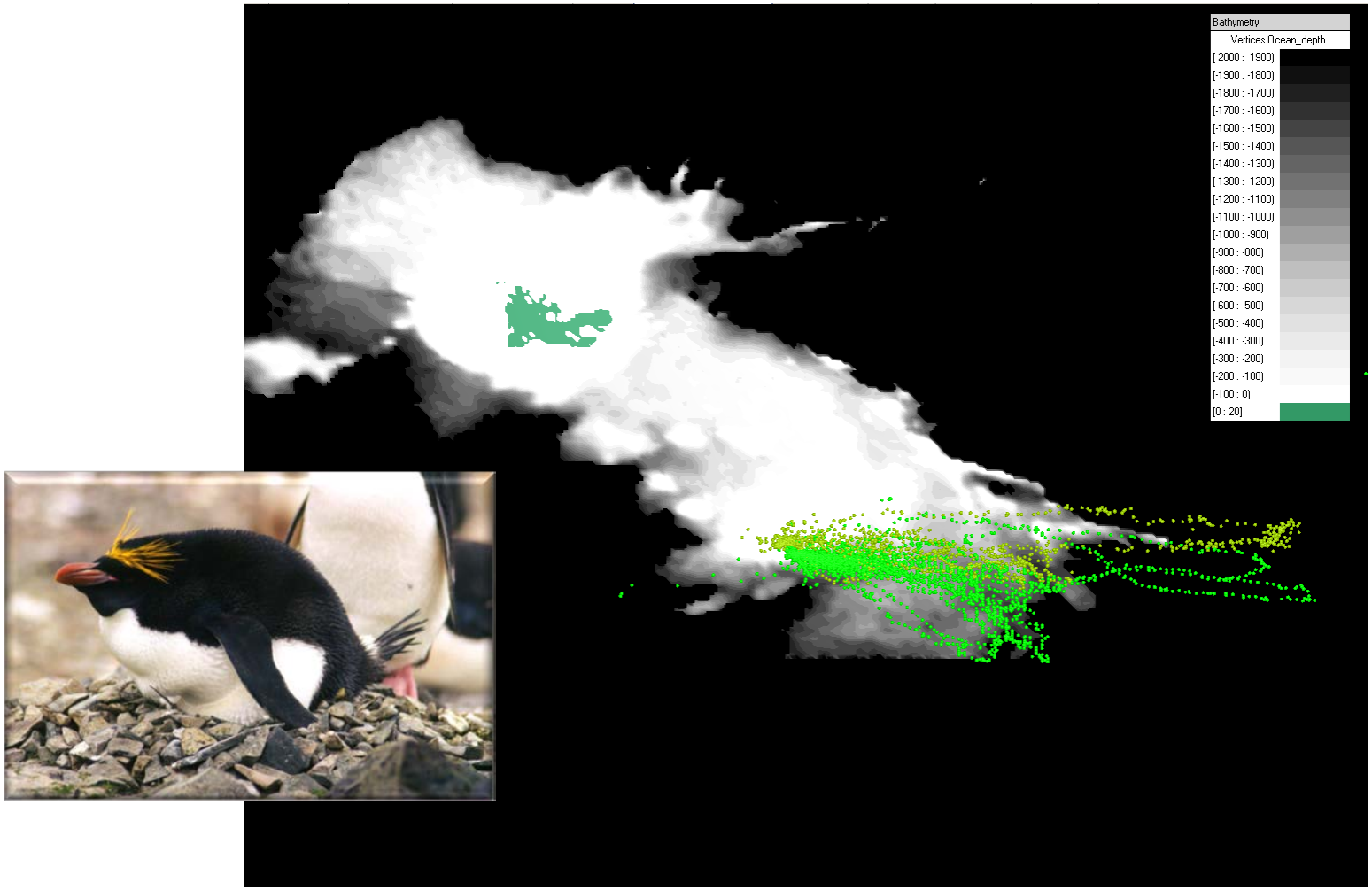
Antarctic Fur Seals



King Penguins

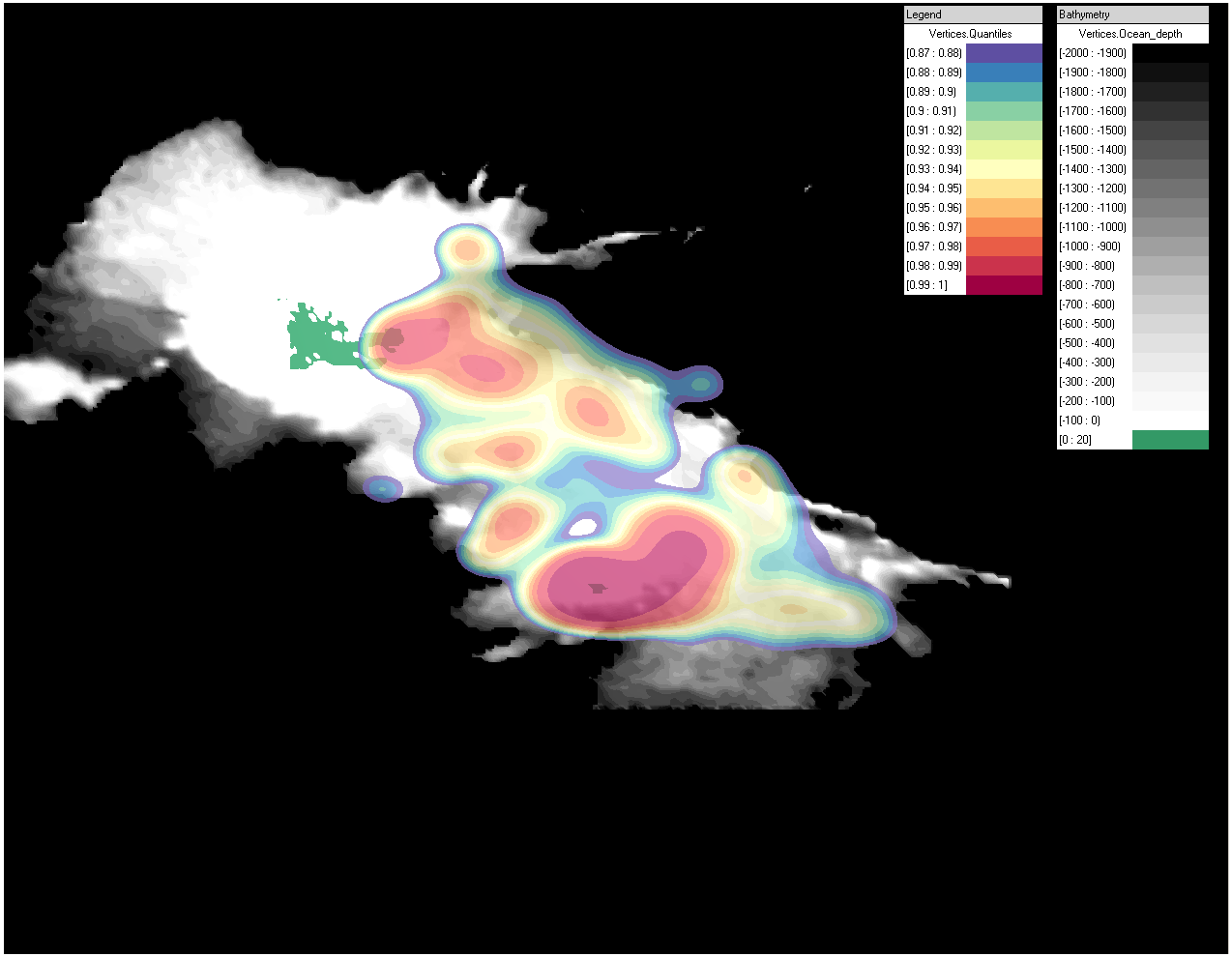


Macaroni Penguins



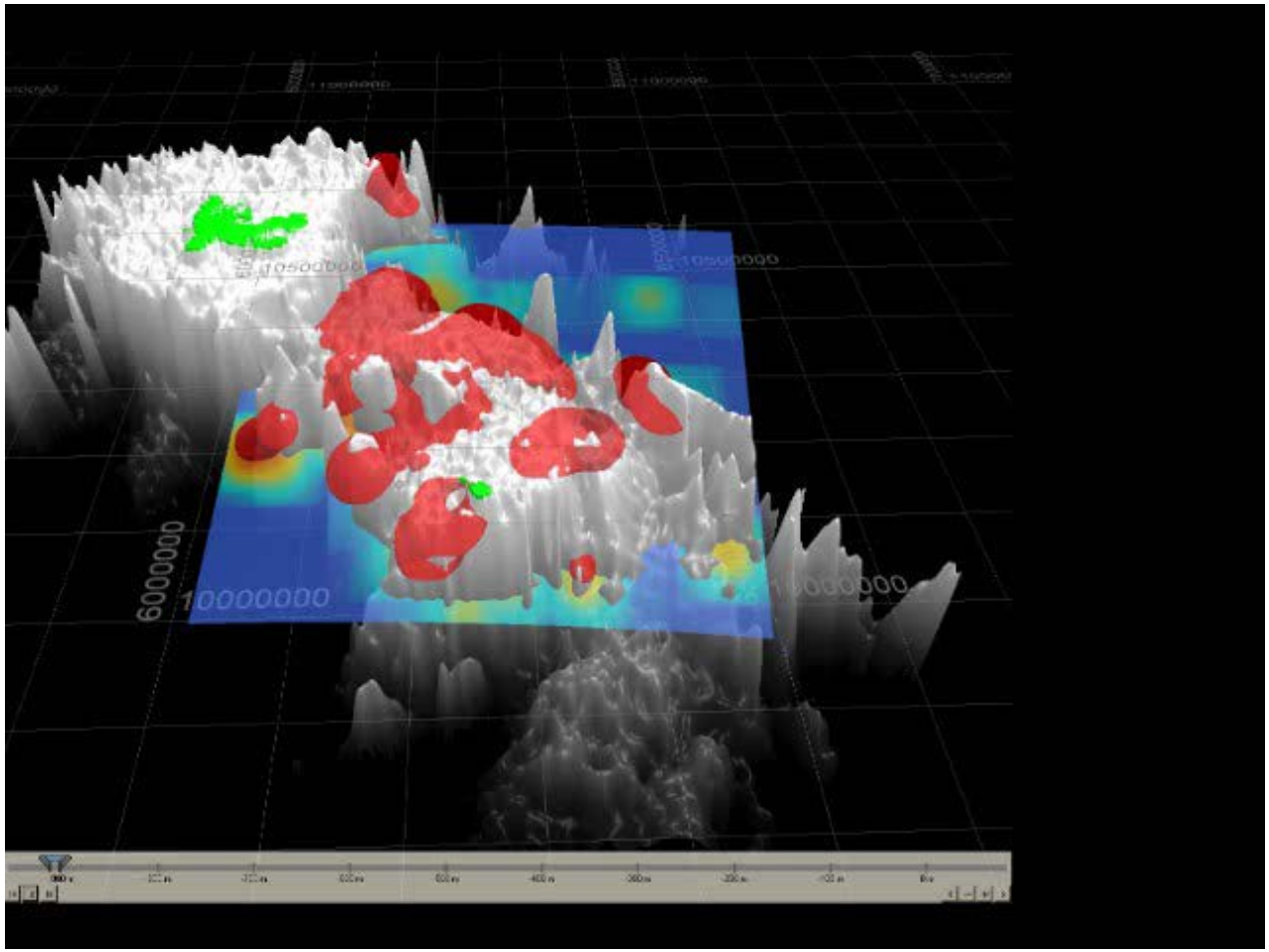
All species combined

Bathymetric features associated with regions of highest density

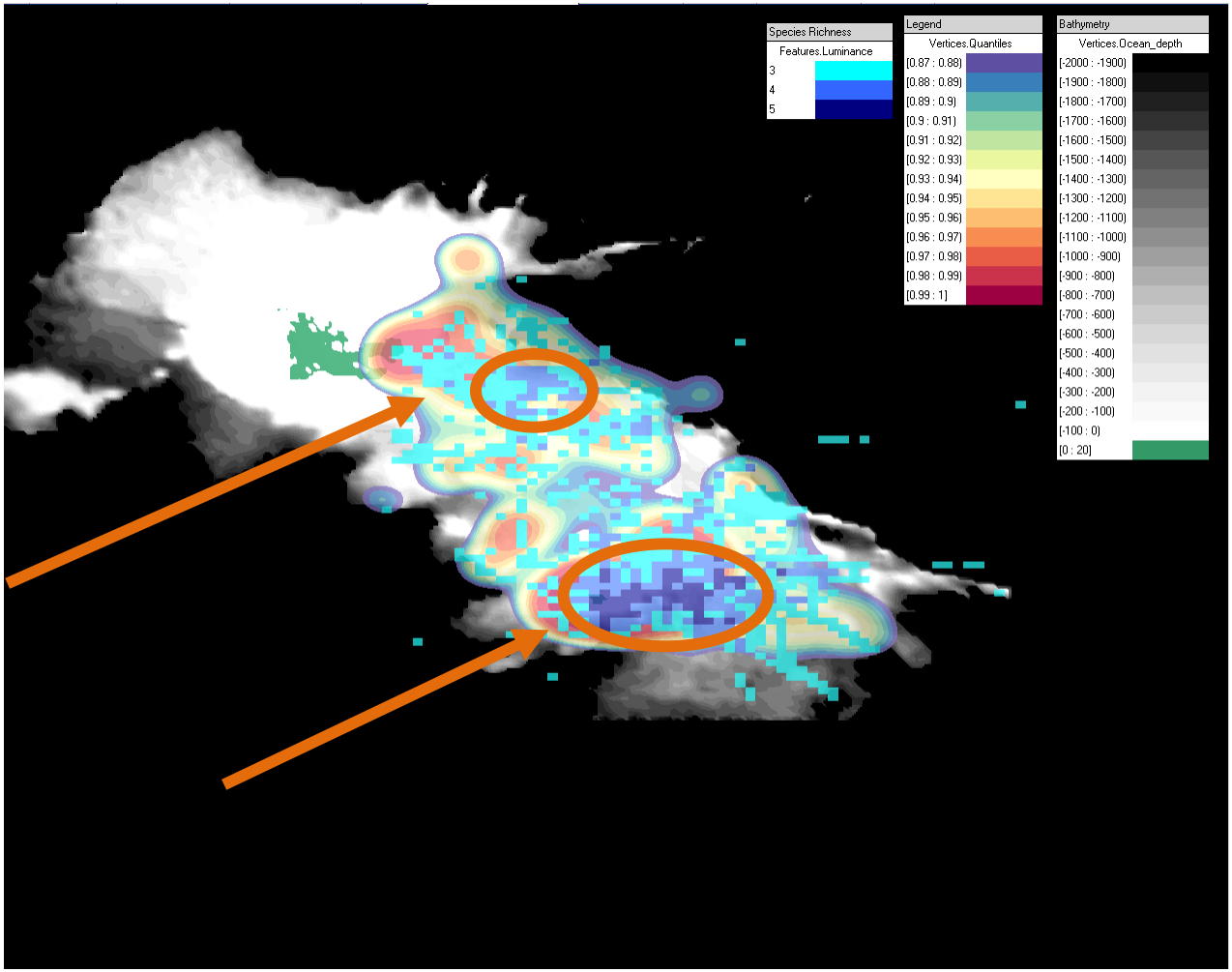


3D imagery

Southern Elephant seal dives



Potential Areas of Ecological Significance



Tutorial Topic

Choose one of the six Protocol Annexes and describe, in 200 words, its essential value in protecting the Antarctic environment and dependent and associated ecosystems.