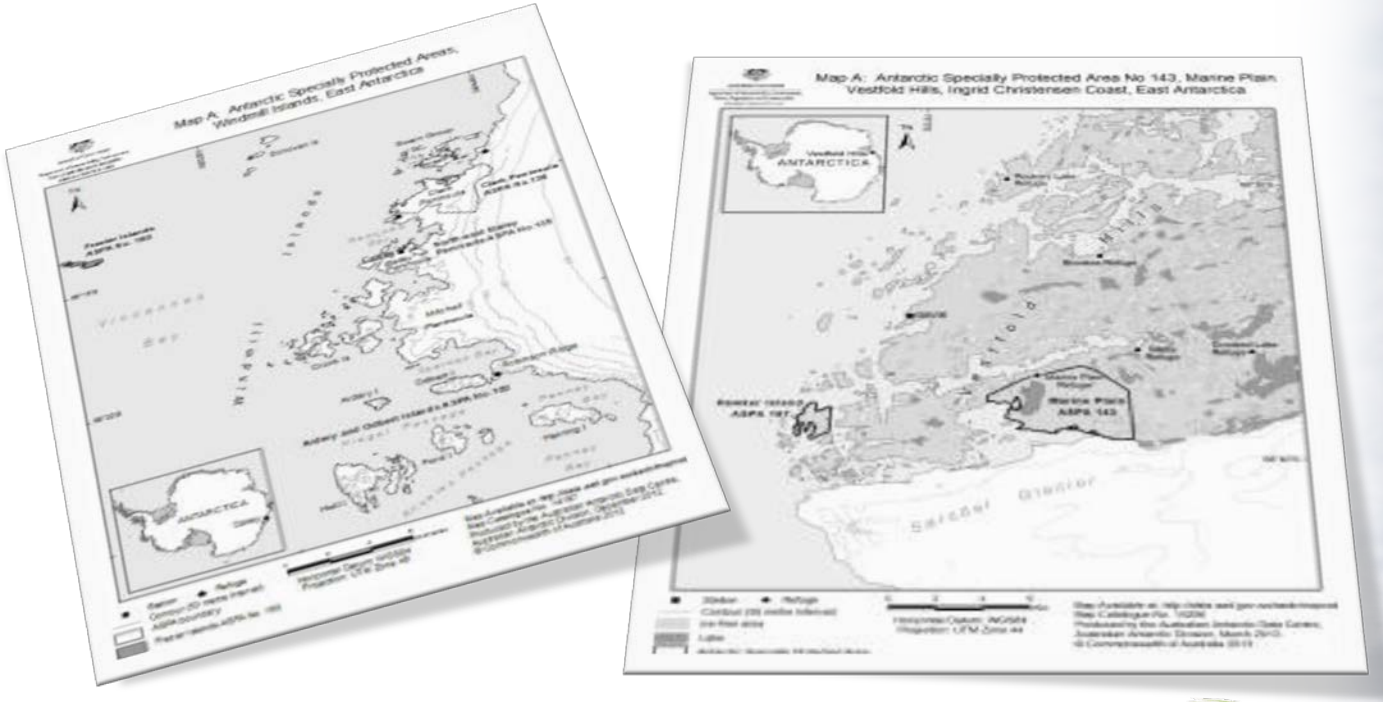
Antarctica New Zealand

Dr Neil Gilbert

Environmental Consultant

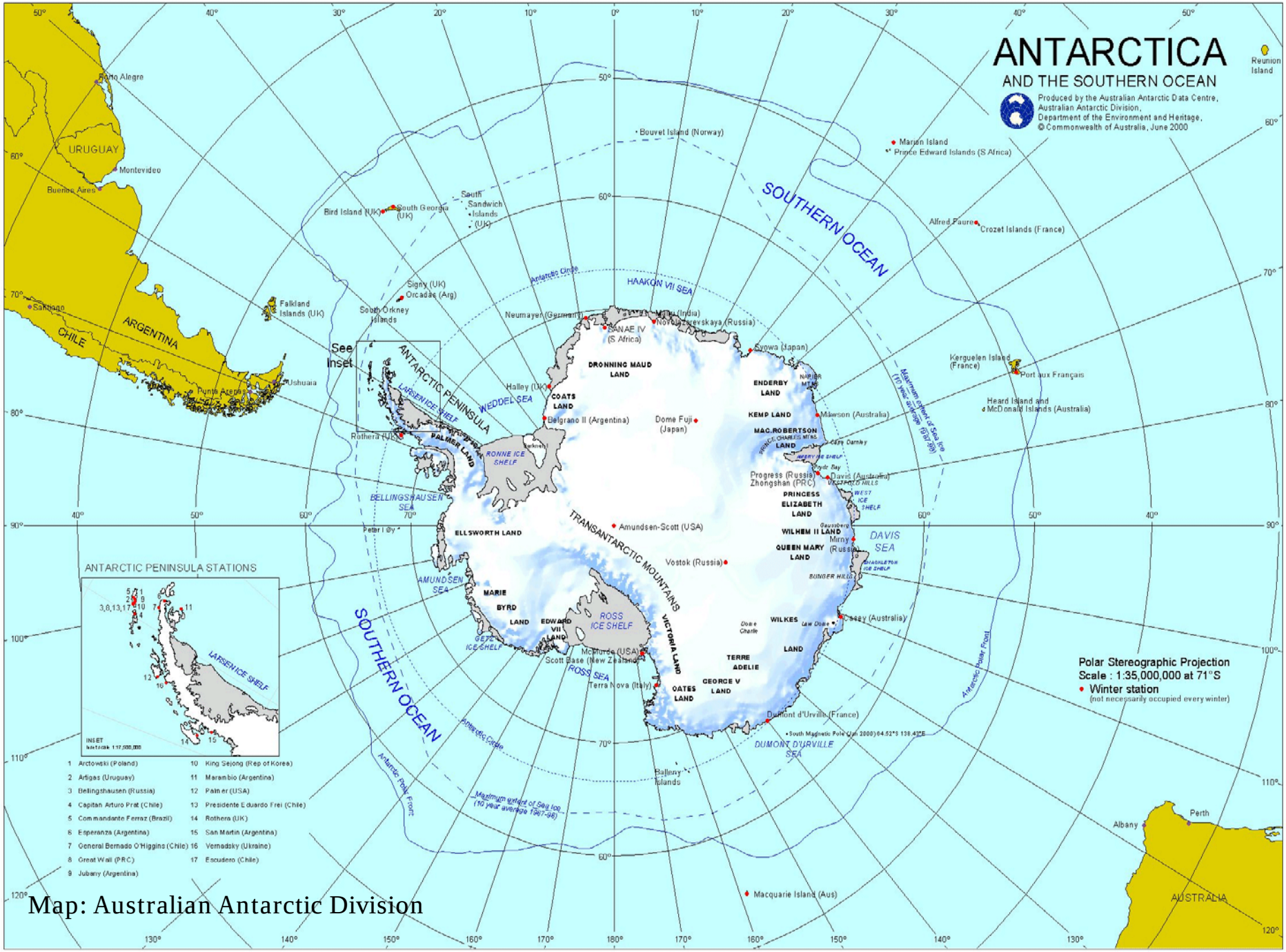
constantia consulting
Creative Environmental Solutions

Establishing Protected Areas in Antarctica: Why Bother?

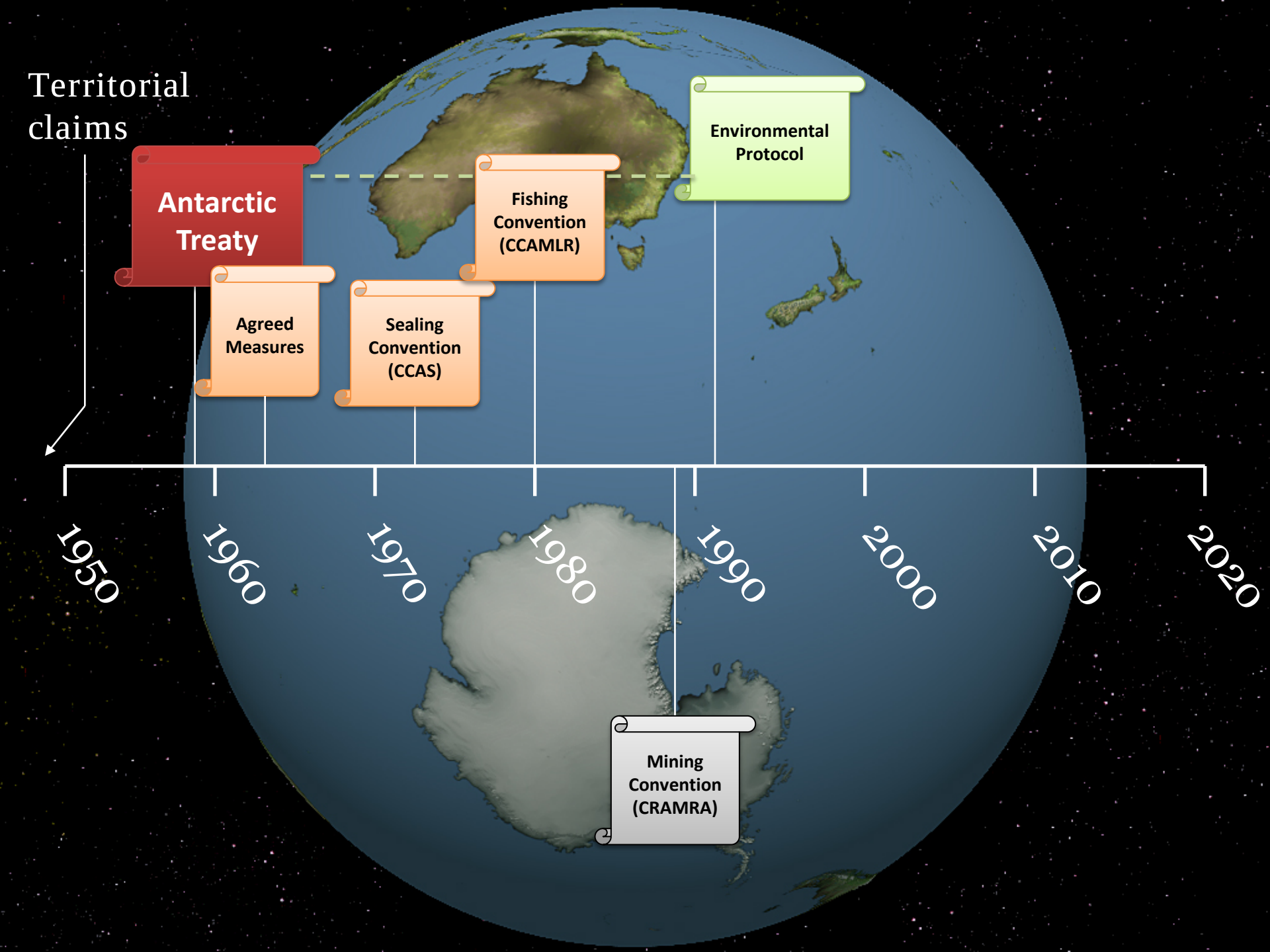


WPC – The Role of Parks and Protected Areas in an Era of Change – 14 November 2014

IUCN WORLD PARKS CONGRESS
SYDNEY 2014



Map: Australian Antarctic Division


Territorial claims
Antarctic Treaty
Agreed Measures
Sealing Convention (CCAS)
Fishing Convention (CCAMLR)
Environmental Protocol
Mining Convention (CRAMRA)
1950
1960
1970
1980
1990
2000
2010
2020

The Antarctic Treaty System

Antarctic Treaty 1959

Promotes peace and scientific research

Annual Treaty Meetings

Environmental Protocol 1991

Designates Antarctica as a natural reserve for peace and science

Sets out tough environmental rules

Committee for Environmental Protection

Commission

Scientific Committee

Convention on Marine Living Resources 1980

Conservation and rational use of marine resources

Antarctic Governance

A natural reserve devoted to peace and science

Environmental Protocol to the Antarctic Treaty

- A natural reserve devoted to peace and science
- All activities planned & conducted to avoid detrimental environmental impacts

Annexes:

- Annex I Environmental impact assessment
- Annex II Protection of flora and fauna
- Annex III Waste management
- Annex IV Prevention of marine pollution
- Annex V Protected areas system
- Annex VI Liability for environmental damage

Protected Areas & IUCN

IUCN Protected Area Management Categories:

- Category Ia — Strict Nature Reserve
- Category Ib — Wilderness Area
- Category II — National Park
- Category III — Natural Monument or Feature
- Category IV — Habitat / Species Management Area
- Category V — Protected Landscape / Seascape
- Category VI — Protected Area with sustainable use of natural resources

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Annex V to the Protocol

- *Antarctic Specially Protected Areas*
  - Permit for entry
  - Management Plan reviewed every 5 years
  - No expiry date unless specified
- *Antarctic Specially Managed Areas*
  - No permit for entry
  - Management Plan reviewed every 5 years
  - No expiry date unless specified

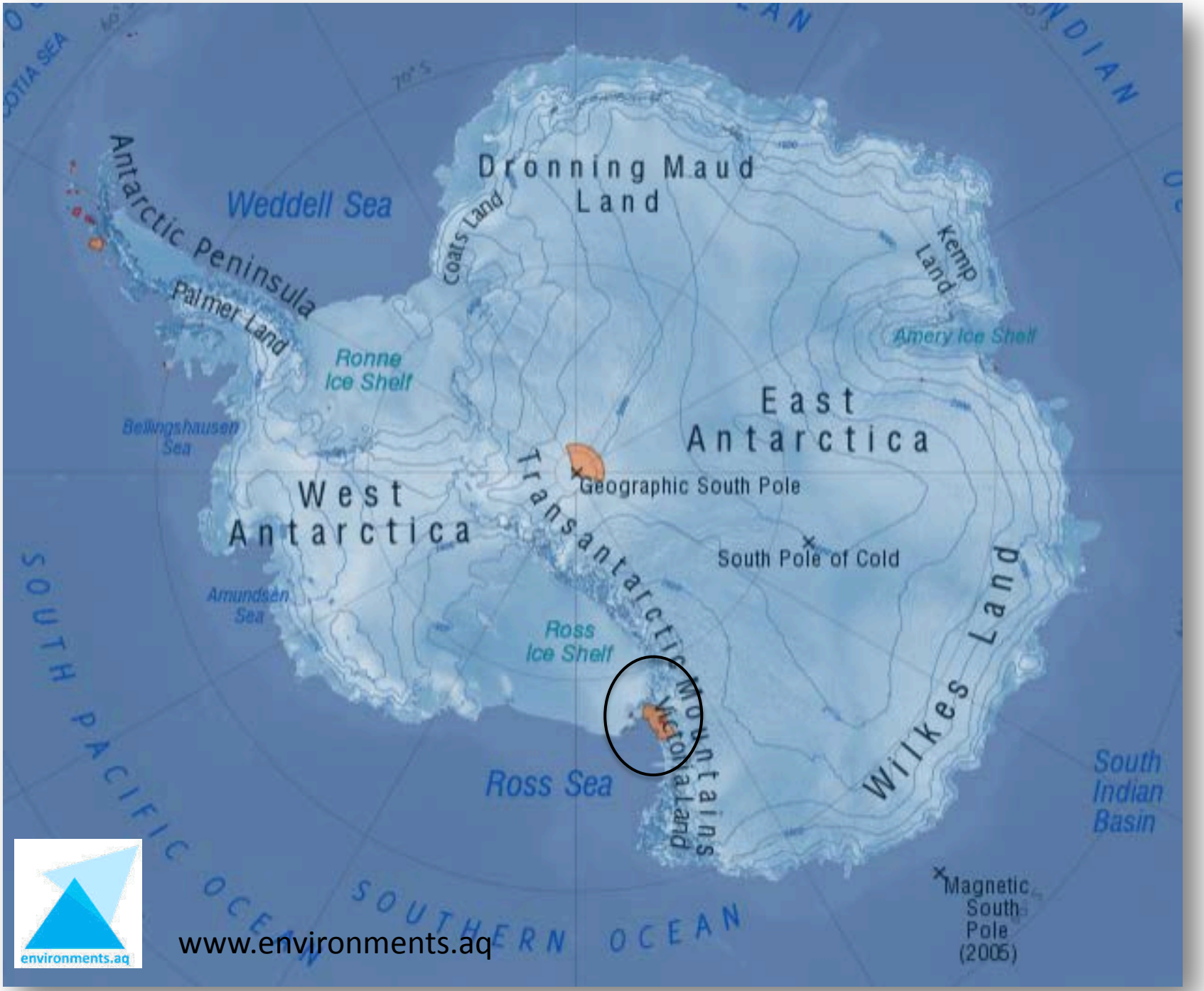
- Any area <u>including any marine area</u> can be designated an ASPA or an ASMA

Annex V to the Protocol

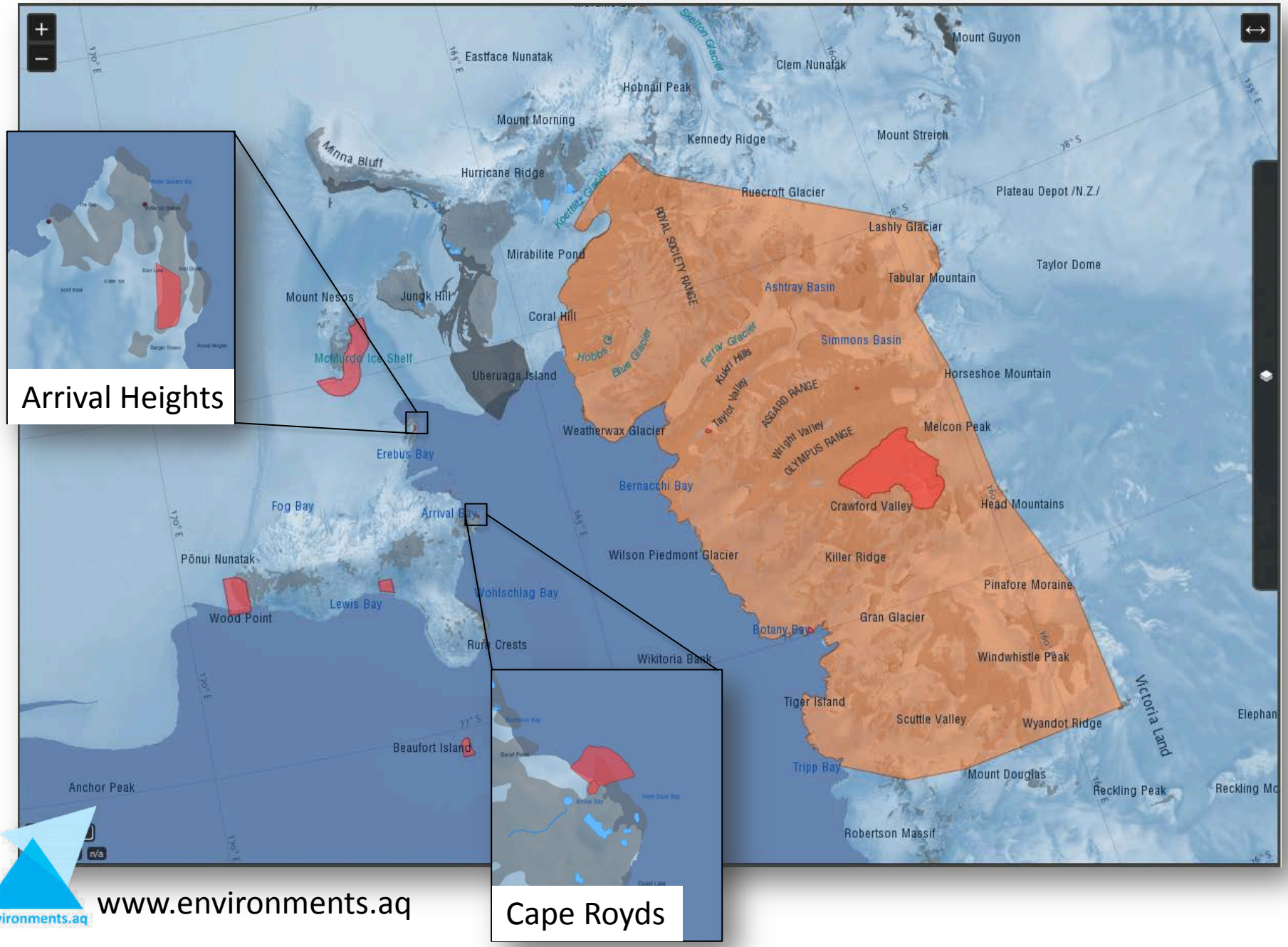
- Antarctic Specially Protected Areas - criteria
  - Inviolate areas
  - Representative examples of major ecosystems
  - Areas with important or unusual assemblages of species
  - Type locality or only known habitat of any species
  - Examples of outstanding geological, glaciological or geomorphological features
  - Areas of outstanding aesthetic or wilderness value
  - Sites or monuments of recognised historic value
  - Important science areas

Antarctic Specially Protected Areas

Reason for designation	Number of ASPAs
Inviolate areas	2
Representative examples of major ecosystems	10
Important or unusual assemblages of species	37
Type locality of known species	0
Areas of interest to science	10
Outstanding geological, glaciological or geomorphological features	6
Outstanding aesthetic or wilderness values	1
Sites or monuments of historic value	6
Total	72



www.environments.aq



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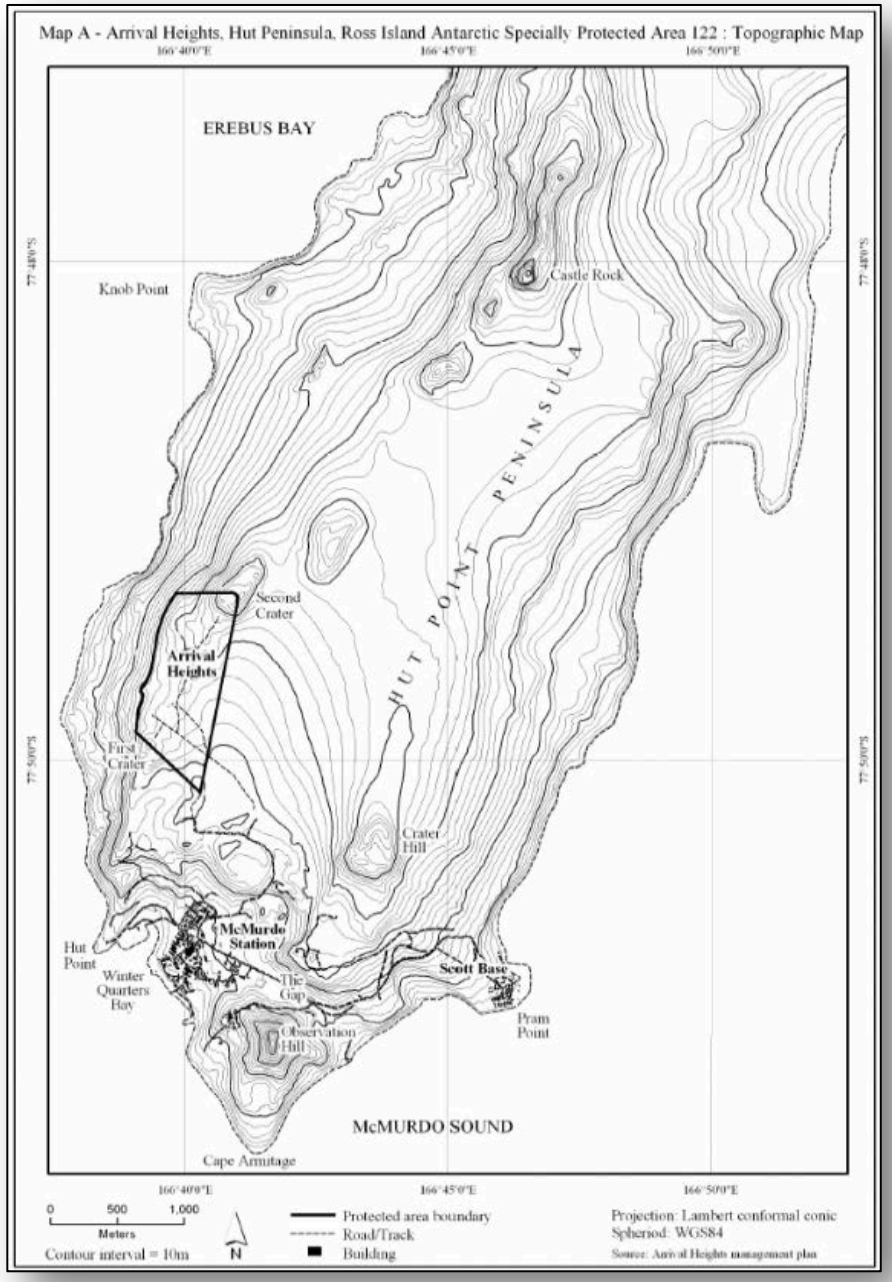
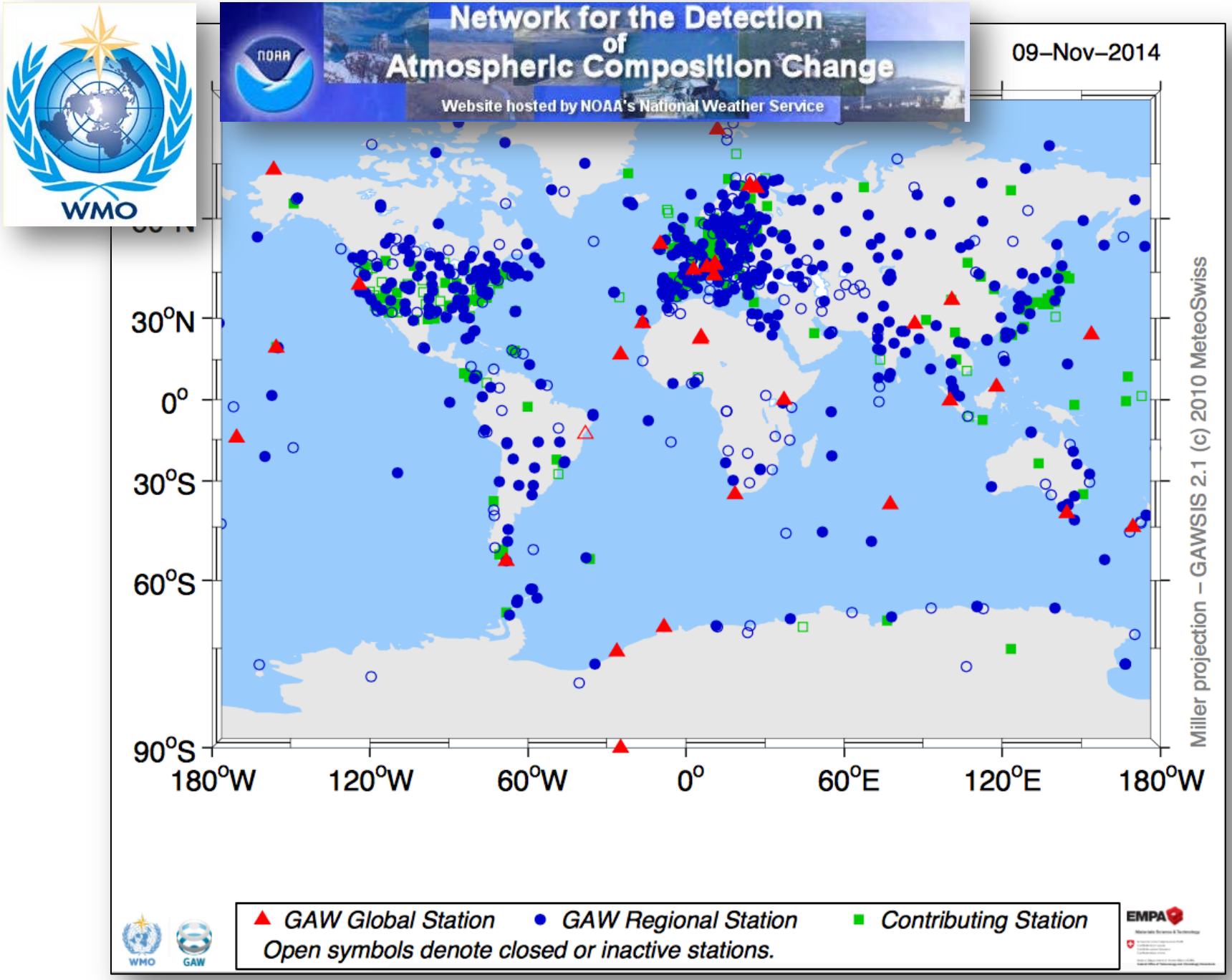

Map A - Arrival Heights, Hut Peninsula, Ross Island Antarctic Specially Protected Area 122 : Topographic Map
166°40'0"E
166°45'0"E
166°50'0"E
77°48'0"S
77°50'0"S
EREBUS BAY
Knob Point
Castle Rock
HUT POINT PENINSULA
Second Crater
Arrival Heights
First Crater
Crater Hill
McMurdo Station
Hut Point
Winter Quarters Bay
The Gap
Scott Base
Pram Point
Observation Hill
McMURDO SOUND
Cape Armitage
0 500 1,000
Meters
Contour interval = 10m
N
Protected area boundary
Road/Track
Building
Projection: Lambert conformal conic
Spheriod: WGS84
Source: Arrival Heights management plan

Antarctica New Zealand


Network for the Detection of Atmospheric Composition Change
Website hosted by NOAA's National Weather Service
09–Nov–2014
30°N
0°
30°S
60°S
90°S
180°W
120°W
60°W
0°
60°E
120°E
180°W
Miller projection – GAWSIS 2.1 (c) 2010 MeteoSwiss
GAW Global Station
GAW Regional Station
Contributing Station
Open symbols denote closed or inactive stations.
WMO
GAW
EMPA

Arrival Heights Measurements of the Antarctic Ozone Hole

Sylvia Nichol[1]*, Dan Smale[2], Karin Kreher[2], Brian Connor[3], John Robinson[2], Paul Johnston[2], Mike Kotkamp[2] and Greg Bodeker[4]
NIWA, Wellington[1] and Lauder[2].
[3] BC Consulting, Alexandra.
[4] Bodeker Scientific
**sylvia.nichol@niwa.co.nz*

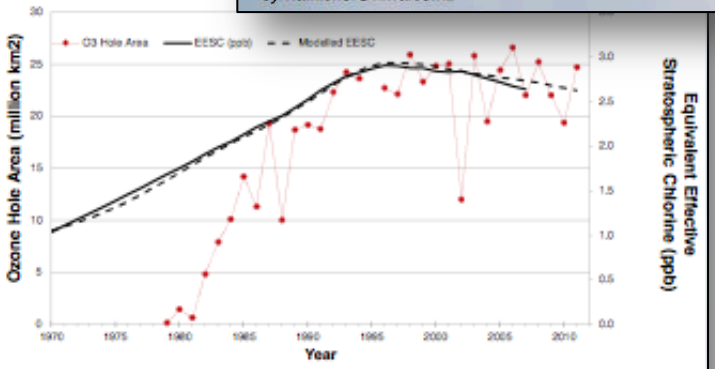


Figure 1: Mean Antarctic ozone hole area (for the period 7 September -- 13 October)*[1], calculated from TOMS and OMI data, and Equivalent Effective Stratospheric Chlorine (measured and modelled)*[2].

Journal of Atmospheric Chemistry **33:** 283–298, 1999.

An Intercomparison of NO_2 and OClO Measurements at Arrival Heights, Antarctica during Austral Spring 1996

R. W. SANDERS[1], S. SOLOMON[1], K. KREHER[2] and P. V. JOHNSTON[2]

[1]*NOAA/ERL Aeronomy Laboratory, Boulder, Colorado, U.S.A.*
[2]*National Institute of Water and Atmospheric Research, Lauder, Central Otago, New Zealand*

(Received: 22 October 1998; accepted: 15 December 1998)

Arrival Heights – ASPA 122

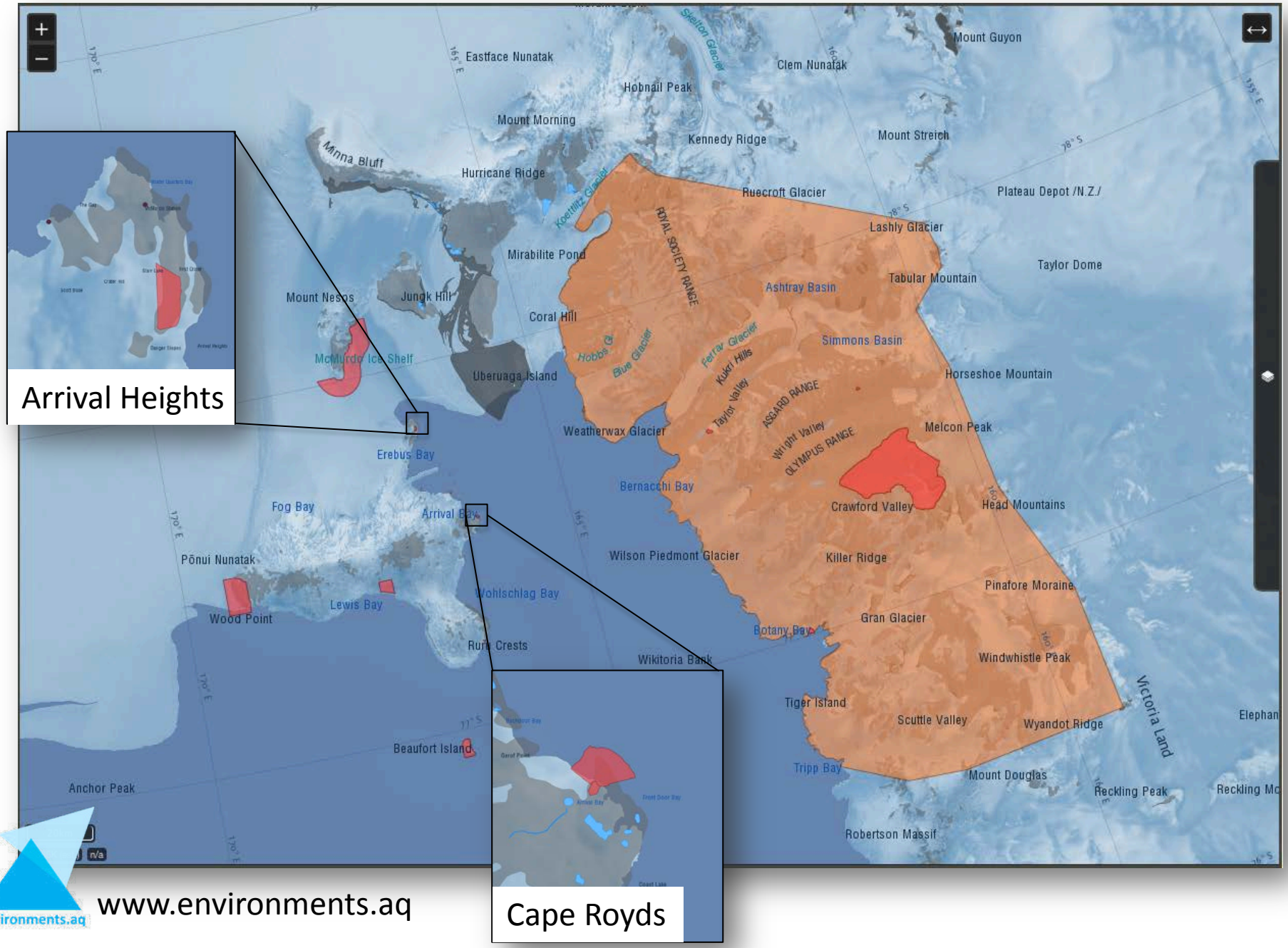
Value

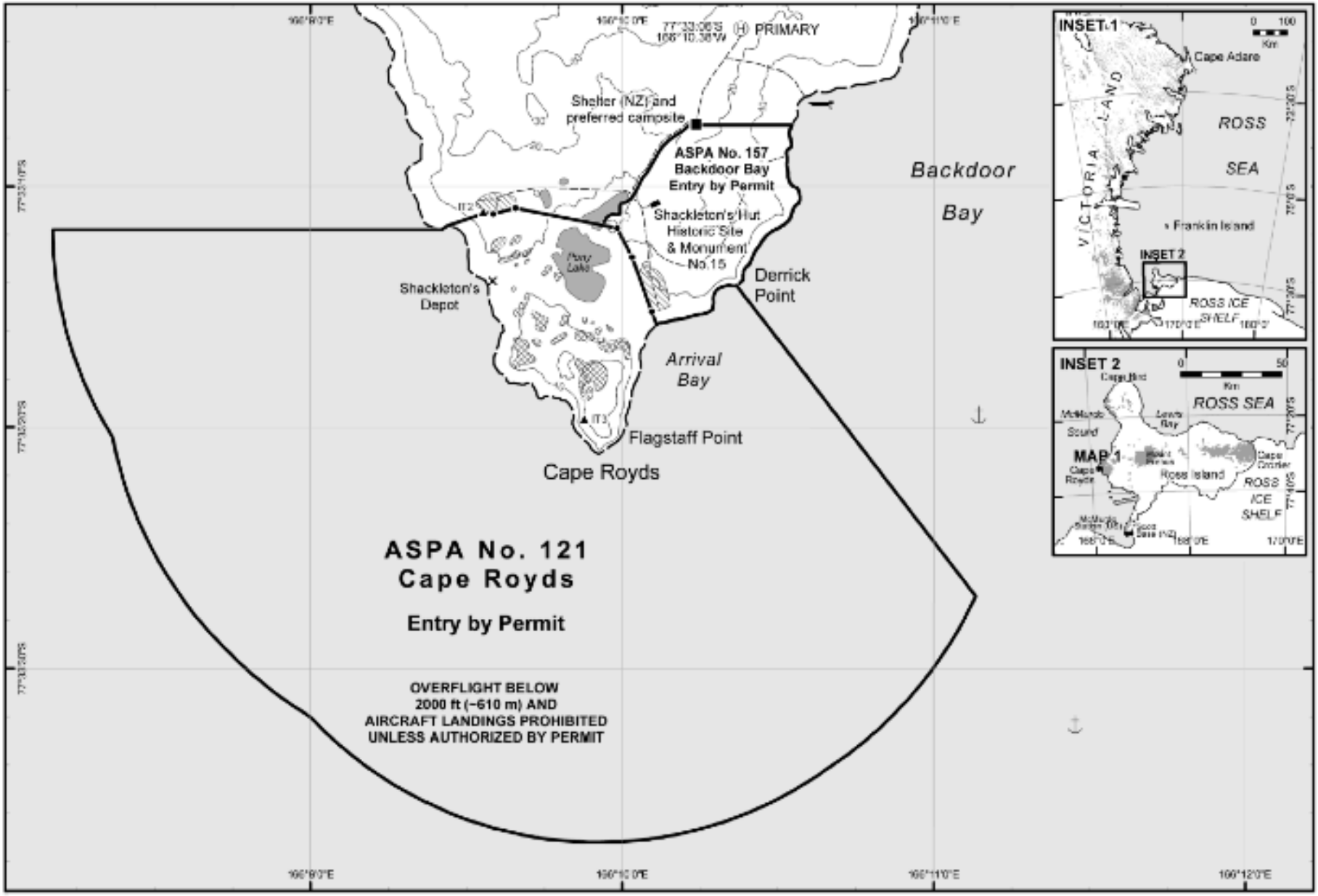
- An electromagnetic and natural ‘quiet site’ offering ideal conditions for the installation of sensitive instruments for recording minute signals associated with upper atmosphere [research] programs

Management aims

- Prevent unnecessary human disturbance to the Area
- Ensure protection from incompatible uses and uncontrolled equipment installation that may jeopardize research
- Minimize generation of excessive electromagnetic noise interference within the Area

Image: www.cires.colorado.edu


Arrival Heights
Cape Royds
Eastface Nunatak
Hobnail Peak
Mount Morning
Kennedy Ridge
Mount Streich
Mount Guyon
Clem Nunatak
Shelton Glacier
Minna Bluff
Hurricane Ridge
Koettlitz Glacier
Ruecroft Glacier
Plateau Depot /N.Z./
Lashly Glacier
Taylor Dome
Tabular Mountain
Ashtray Basin
ROYAL SOCIETY RANGE
Mirabilite Pond
Mount Nessos
Jungk Hill
Coral Hill
McMurdo Ice Shelf
Uberuaga Island
Hobbs Gl
Blue Glacier
Ferrar Glacier
Kukri Hills
Taylor Valley
ASGARD RANGE
Wright Valley
OLYMPUS RANGE
Simmons Basin
Horseshoe Mountain
Melcon Peak
Weatherwax Glacier
Erebus Bay
Bernacchi Bay
Fog Bay
Arrival Bay
Crawford Valley
Head Mountains
Pōnui Nunatak
Wilson Piedmont Glacier
Killer Ridge
Pinafore Moraine
Wohlschlag Bay
Lewis Bay
Wood Point
Gran Glacier
Botany Bay
Windwhistle Peak
Wikitoria Bank
Tiger Island
Scuttle Valley
Wyandot Ridge
Victoria Land
Beaufort Island
Tripp Bay
Mount Douglas
Reckling Peak
Anchor Peak
Robertson Massif
www.environments.aq
environments.aq



Map 1: ASPA No. 121 Cape Royds - boundaries and topography

Coastline (approx) · Contour (10 m) · Ice free ground · Ocean · Lake / pond · Antarctic Specially Protected Area (ASPA) boundary · Penguin nesting area (2005 approx.) · Penguin viewing area · Path · Building · Survey marker · Signpost / boundary point · Helicopter landing site · Small boat landing site · Ship anchorage

Meters

Projection: Lambert Conic Conformal. Spheroid and horizontal datum: WGS 84.
Data sources: ASPA boundary: ERA (Jan 2014); Topography & infrastructure data supplied by Gateway Antarctica (2008); Penguins: digitised by ERA from geo-referenced aerial image (2005) provided by Landcare Research.

Vol. 405: 287–302, 2010
doi: 10.3354/meps08514

MARINE ECOLOGY PROGRESS SERIES
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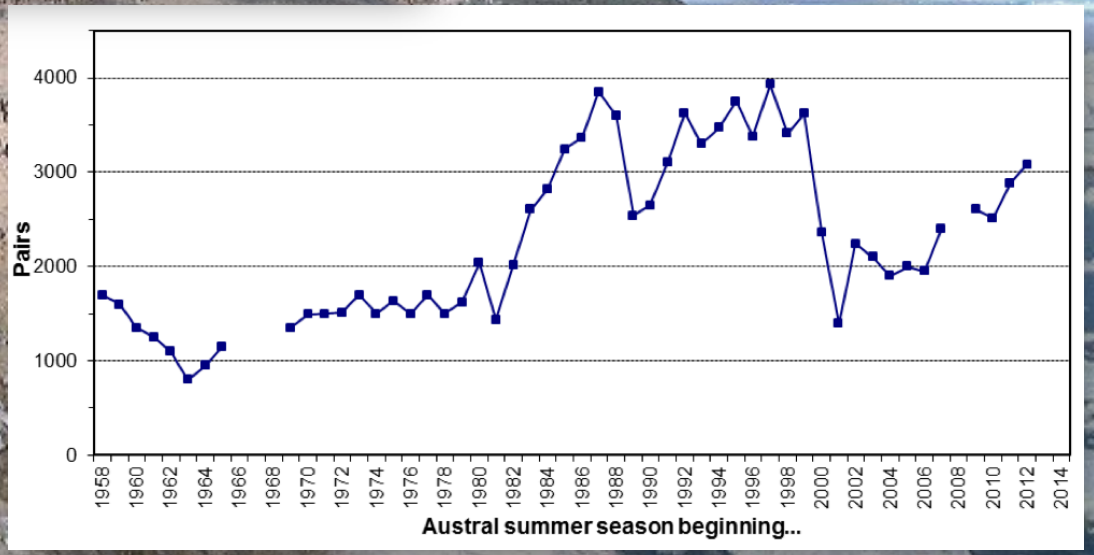
Published April 29

OPEN ACCESS

Foraging strategies of Adélie penguins: adjusting body condition to cope with environmental variability

Grant Ballard[1,2,*], Katie M. Dugger[3], Nadav Nur[1], David G. Ainley[4]

[1]PRBO Conservation Science, 3820 Cypress Drive #11, Petaluma, California 94954, USA
[2]School of Biological Sciences, University of Auckland, Auckland, New Zealand
[3]Oregon State University, Department of Fisheries and Wildlife, 104 Nash Hall, Corvallis, Oregon 97331-3803, USA
[4]H. T. Harvey & Associates, 983 University Avenue, Bldg. D, Los Gatos, California 95032, USA



Cape Royds – ASPA 121

Value

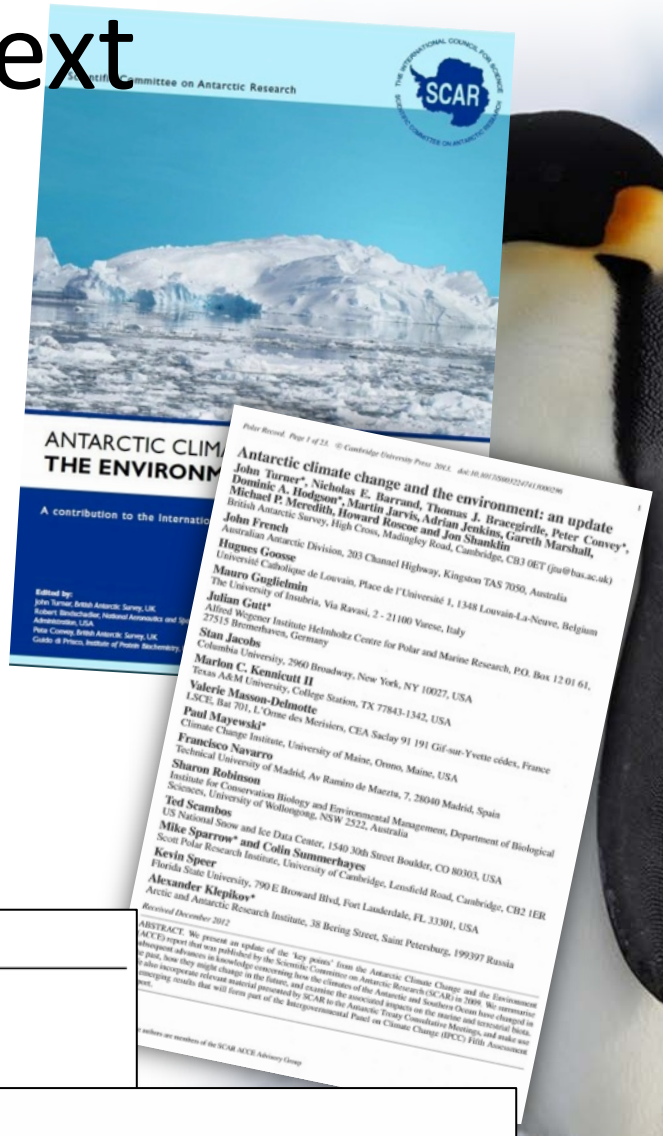
- The most southerly established Adélie penguin colony, for which there exists a long time series of population data that is of unique and outstanding scientific value

Management aims

- Prevent unnecessary human disturbance to the Area
- Allow scientific research provided it will not compromise the values for which the Area is protected
- Minimize the possibility of introduction of alien plants, animals and microbes to the Area
- Minimise the possibility of the introduction of pathogens that may cause disease in faunal populations within the Area

Changing context

- Climate change
  - Difficult to predict at a regional scale
  - Likely to be relative rapid with significant implications for regional ecosystems and biodiversity



NATURE CLIMATE CHANGE | LETTER

Projected continent-wide declines of the emperor penguin under climate change

Stéphanie Jenouvrier, Marika Holland, Julienne Stroeve, Mark Serreze, Christophe Barbraud, Henri Weimerskirch & Hal Caswell

Affiliations | Contributions | Corresponding author

Nature Climate Change (2014) | doi:10.1038/nclimate2280

Received 08 October 2013 | Accepted 27 May 2014 | Publish

Polar Biol (2011) 34:1625–1627
DOI 10.1007/s00300-011-1108-9

EDITORIAL

Global change and Antarctic terrestrial biodiversity

Ian D. Hogg · Diana H. Wall

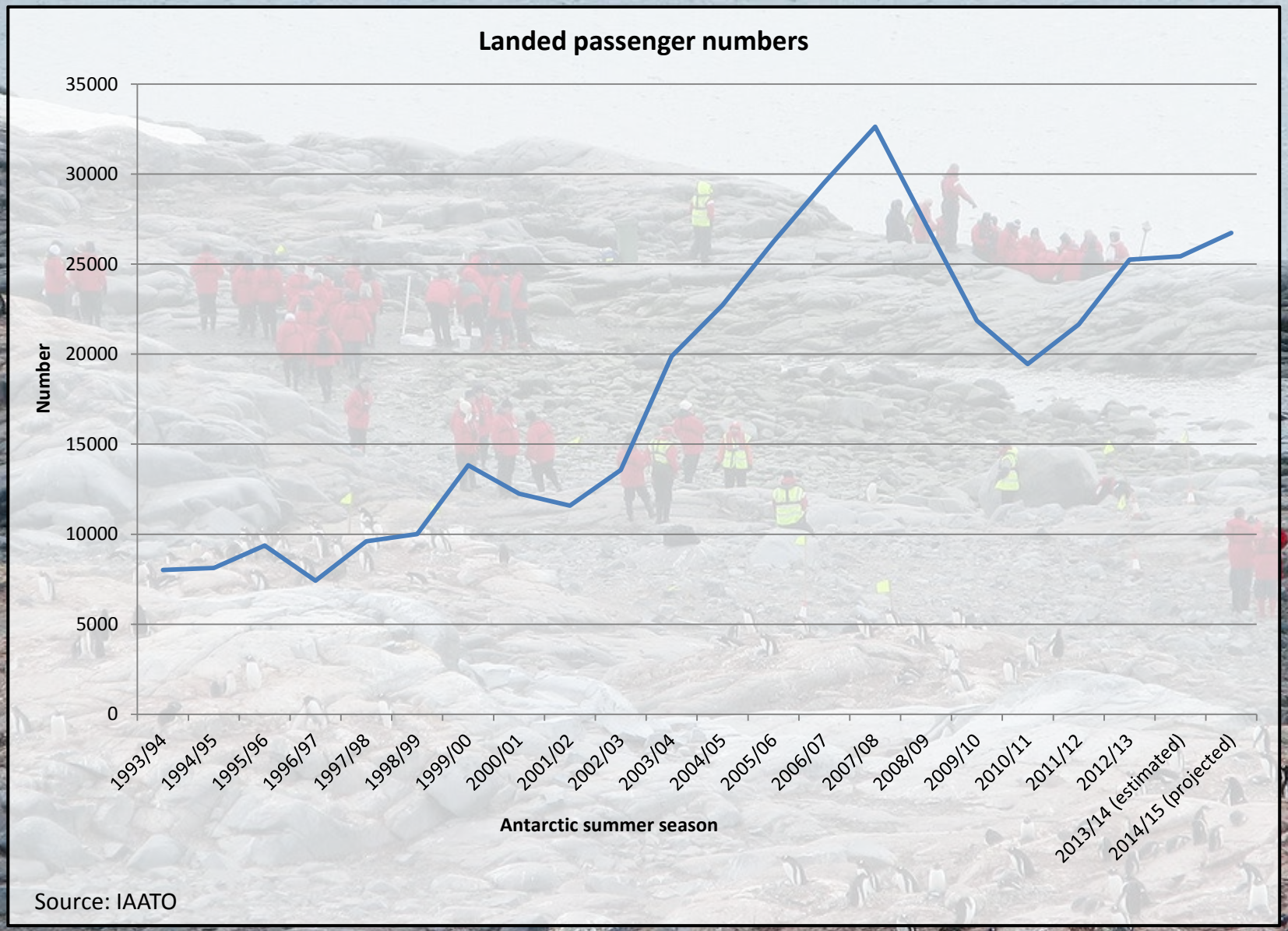
Polar Biol (2011) 34:1629–1641
DOI 10.1007/s00300-011-1068-0

ORIGINAL PAPER

Antarctic terrestrial biodiversity in a changing world

Peter Convey

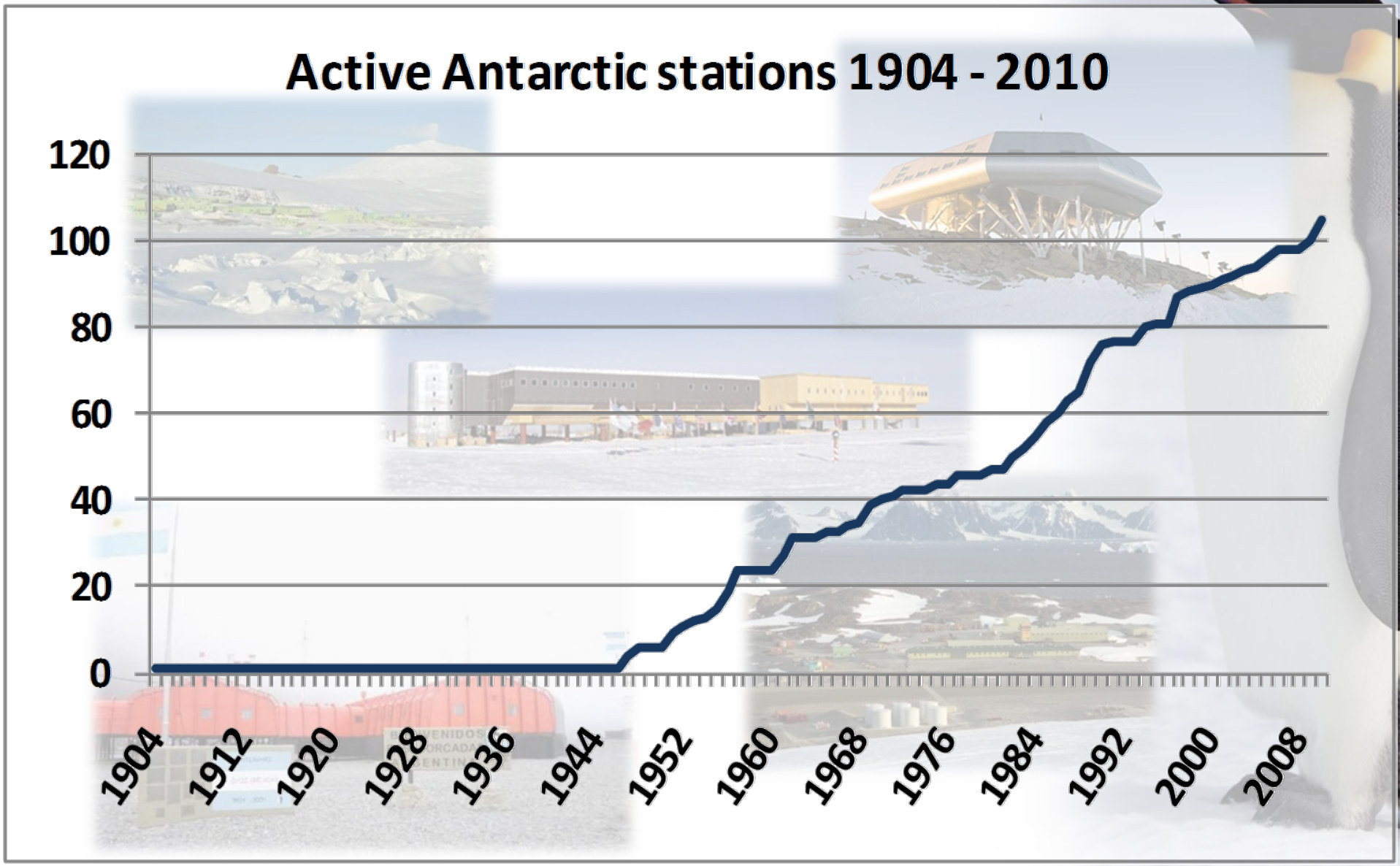
Changing use



Source: IAATO

Image: asoc.org

Changing use



Why bother?

- Antarctic Treaty System founded on peaceful cooperation, scientific research and environmental protection
- Area protection plays a central role in supporting wise environmental management including protecting science values
- Antarctic is experiencing increasing pressures
- Protected area tool will (must) play a central role if the region's value as a global scientific laboratory is to be preserved


Questions?