Antarctica

Schools Pack

Antarctica is a fascinating and beautiful place. It is the world's last great wilderness and also has a profound effect on the world's climate and ocean systems. Antarctica is therefore a unique natural laboratory for the study of global processes, such as climate change and ozone depletion. The study of Antarctica is becoming increasingly popular with UK secondary schools and colleges. However, there is very little educational material available.

The Antarctic Schools Pack is intended for students in the 16–18 age range studying at secondary schools, sixth-form colleges and colleges of further education in the UK. The aim of the pack is to provide students with expert, new and relevant information about Antarctica, and to set this information out in an accessible and exciting way.

The pack is designed to be interdisciplinary and to be used as part of A-level and Scottish Higher studies. It will be of interest to students studying geography,

BAS

The majestic emperor penguin only breeds in Antarctica

There are 15 topics covered by the Antarctic Schools Pack. They are:

1 The nature of Antarctica

2 Discovery of Antarctica

3 Living and working in Antarctica

4 Science in Antarctica

5 The Antarctic Treaty System

6 Geology in Antarctica

7 Antarctic ice

8 The Antarctic climate

9 The ozone hole

10 Geospace

11 Terrestrial and freshwater lake ecosystems

12 Marine ecosystems

13 Management and conservation of marine species

14 Environmental protection of Antarctica

15 Tourism in Antarctica

BAS

Antarctica is the largest wilderness on earth. The continent covers 14 million km^2 – over fifty times the size of the UK

biology, environmental science, physics, chemistry, geology, government and politics, leisure and tourism, and general studies. However, it is likely that the pack will be of the greatest use to A-level geography students studying Antarctica as a wilderness region.

The pack has been devised and written by scientists at the British Antarctic Survey, with the help of an educational consultant and experts at the Scott Polar Research Institute and the Foreign & Commonwealth Office.

Each of the 15 topics comprises a double-sided Worksheet and three double-sided pages of Resources. The Worksheet provides an introduction and narrative to the topic and a series of tasks that can be undertaken by students on their own, in small groups, or as a class. The Resources provide a wide variety of materials, including scientific data, photographs, satellite images, maps, diagrams and written summaries of particular issues. Most of the Resources use materials which are unavailable elsewhere and have been specially prepared by the British Antarctic Survey for the pack. The Worksheet tasks and Resources have been designed to cater for a wide range of student abilities. Some are simple and easy, others are difficult.

The pack is designed to be flexible. One option is for teachers to select a topic and ask students to complete all the tasks in the Worksheet. In this way the pack can be used for independent study. As all the Resources are designed to stand on their own, an alternative option is for teachers to select specific tasks and Resources and then incorporate them into their existing teaching schemes.

To assist teachers in lesson planning, a separate set of Teachers' Notes has been produced to accompany the pack. The notes provide guidance on the key skills and ideas introduced by each topic, summary background information, and answers to the tasks set in the Worksheets.

The Antarctic Schools Pack is provided copyright-free for educational use by schools and colleges. Wherever possible, Worksheets and Resources have been designed for multiple photo-copying.

It is hoped that the Antarctic Schools Pack will enable students to learn about and appreciate this unique and wonderful continent designated as a natural reserve devoted to peace and science.

If you or your students have any comments about the Antarctica Schools Pack or would like further information please write to the Information Office, British Antarctic Survey, High Cross, Madingley Road, Cambridge CB3 0ET.

Useful information

Appendix

Bibliography

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11. Walton, D.W.H. (ed.)1987. *Antarctic Science*. Cambridge University Press, Cambridge.
12. *New Scientist*. Antarctica special issue. 17th April 1999. Vol. 162, No. 2182.

Useful web sites

1. Alfred Wegener Institute (AWI).
   http://www.awi-bremerhaven.de
2. Antarctic and Southern Ocean Coalition (ASOC).
   http://www.asoc.org
3. Antarctic Treaty Consultative Meetings (ATCM).
   The venue changes country each year – 1999 meeting is in Lima, Peru.
   http://www.antarctica-rcta.com.pe
4. Australian Antarctic Division (AAD).
   http://www.antdiv.gov.au
5. British Antarctic Survey (BAS).
   http://www.nerc-bas.ac.uk
6. Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).
   http://www.ccamlr.org/english
7. Council of Managers of National Antarctic Programmes (COMNAP).
   http://www.delm.tas.gov.au/comnap
8. Dundee Heritage Trust.
   http://www.rollos.co.uk/discovery.html
9. International Association of Antarctica Tour Operators (IAATO).
   http://www.iaato.org
10. International Centre for Antarctic Information and Research (ICAIR).
    http://www.icair.iac.org.nz/icair
11. National Aeronautical and Space Agency (NASA).
    http://www.nasa.gov
12. New Zealand Antarctic Heritage Trust (NZAHT).
    http://www.heritage-antarctica.org/ahtnz/index.htm
13. Scientific Committee on Antarctic Research (SCAR).
    http://www.scar.org
14. Scott Polar Research Institute (SPRI).
    http://www.spri.cam.ac.uk
15. South African National Antarctic Programme (SANAP).
    http://home.intekom.com/sanae
16. US Office of Polar Programs (OPP).
    http://www.nsf.gov/od/opp
17. Adventure Network International (ANI).
    http://www.adventure-network.com

Useful addresses

1. British Antarctic Survey,
   High Cross, Madingley Road, Cambridge. CB3 0ET.
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   Scott Polar Research Institute,
   University of Cambridge, Lensfield Road,
   Cambridge. CB2 1ER.
3. Scott Polar Research Institute,
   University of Cambridge, Lensfield Road,
   Cambridge. CB2 1ER.
4. Polar Regions Section,
   Foreign & Commonwealth Office,
   King Charles Street, London. SW1A 2AH.
5. United Kingdom Antarctic Heritage Trust,
   The Blue House, East Marden, Chichester,
   Sussex. PO18 9JE.

Acknowledgements

Appendix

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Designed by Lyn Henry.
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Worksheet 1. The nature of Antarctica
N3 (top and bottom): Scott Polar Research Institute; N5 (both): Department of the Environment, Transport and the Regions.

Worksheet 2. Discovery of Antarctica
Page 1: National Maritime Museum; D1: National Library of Australia; D2 (both): American Geographical Society; D4 (both) and D6: Scott Polar Research Institute.

Worksheet 3. Living and working in Antarctica
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Page 2 (upper three graphs): Climate Research Unit – University of East Anglia in Warburton, P. (1995), *Atmospheric Processes*. Collins, London; Page 2 (lower graph): Department of the Environment, Transport and the Regions and the Meteorological Office; C2: reprinted by permission of Pearson Education Ltd for Addison Wesley Longman Ltd; C3: Department of the Environment, Transport and the Regions; C5 (both): Intergovernmental Panel on Climate Change.

Worksheet 9. The ozone hole
OZ1 (page 1 centre): Department of the Environment, Transport and the Regions; OZ1 (page 2, right): Dr K. Newsham/BAS; OZ2 (left): NASA/Goddard Space Flight Center; OZ5: Department of the Environment, Transport and the Regions.

Worksheet 10. Geospace
Page 2: NASA/Goddard Space Flight Center; GS1 (inset): K Endo/Nikkei Science; GS3: Professor Louis A. Frank/ University of Iowa; GS4 (page 1, left): Telesat, Canada; GS4 (page 1 right): Electrical Power Research Institute; GS4 (page 2, centre): NASA; GS5: National Oceanographic and Atmospheric Administration/United States Air Force.

Worksheet 11. Terrestrial and freshwater lake ecosystems
TL3 (page 2): NASA.

Worksheet 12. Marine ecosystems
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Worksheet 13. Management and conservation of marine species
Page 2: Commission for the Conservation of Antarctic Marine Living Resources: MC2 (page 1, both): Scientific Committee of the Commission for the Conservation of Antarctic Marine Living Resources; MC2 (page 2. left): Foreign & Commonwealth Office; MC2 (page 2, right, upper and lower): Commission for the Conservation of Antarctic Marine Living Resources; MC3: Dr G. Robertson/Australian Antarctic Division; MC3: text reproduced by permission of the Commission for the Conservation of Antarctic Marine Living Resources; MC4: text reproduced by permission of the Antarctic and Southern Ocean Coalition; MC5 (left): reprinted by permission of Pearson Education Ltd for Addison Wesley Longman Ltd; MC5 (right): International Whaling Commission.

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