USGS science for a changing world
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

ANTARCTICA

MISCELLANEOUS INVESTIGATIONS SERIES
MAP I-2560

SOUTH ATLANTIC OCEAN
SCOTIA SEA
WEDDELL SEA
BELLINGSHAUSEN SEA
AMUNDSEN SEA
SOUTH PACIFIC OCEAN
ROSS SEA
INDIAN OCEAN
DAVIS SEA
SOUTH ORKNEY ISLANDS
ORCADAS (ARG)
SIGNY (UK)
SOUTH SHETLAND ISLANDS
ANTARCTIC PENINSULA
PALMER LAND
ALEXANDER ISLAND
WILKINS ICE SHELF
RONNE ICE SHELF
FILCHNER ICE SHELF
Berkner Island
COATS LAND
QUEEN MAUD LAND
NEW SCHWABENLAND
PRINCESS MARTHA COAST
PRINCESS ASTRID COAST
PRINCESS RAGNHILD COAST
PRINCE HARALD COAST
PRINCE OLAV COAST
ENDERBY LAND
KEMP COAST
MAWSON COAST
MAC ROBERTSON LAND
LARS CHRISTENSEN COAST
AMERY ICE SHELF
INGRID CHRISTENSEN COAST
AMERICAN HIGHLAND
LEOPOLD AND ASTRID COAST
WILHELM II COAST
WEST ICE SHELF
QUEEN MARY COAST
SHACKLETON ICE SHELF
KNOX COAST
WILKES LAND
BUDD COAST
SABRINA COAST
BANZARE COAST
CLARIE COAST
ADÉLIE COAST
GEORGE V COAST
OATES COAST
PENNELL COAST
BORCHGREVINK COAST
VICTORIA LAND
SCOTT COAST
HILLARY COAST
SHACKLETON COAST
DUFEK COAST
AMUNDSEN COAST
GOULD COAST
SIPLE COAST
SHIRASE COAST
ROSS ICE SHELF
SAUNDERS COAST
RUPPERT COAST
HOBBS COAST
BAKUTIS COAST
GETZ ICE SHELF
MARIE BYRD LAND
WALGREEN COAST
EIGHTS COAST
ABBOT ICE SHELF
BRYAN COAST
ELLSWORTH LAND
ELLSWORTH MOUNTAINS
ZUMBERGE COAST
ORVILLE COAST
ENGLISH COAST
TRANSANTARCTIC MOUNTAINS
POLAR PLATEAU
AMUNDSEN-SCOTT (USA)
VOSTOK (RUSSIA)
McMURDO (USA)
SCOTT (NZ)
MIRNYY (RUSSIA)
MAWSON (AUST)
DAVIS (AUST)
CASEY (AUST)
DUMONT D'URVILLE (FRANCE)
SYOWA (JAPAN)
HALLEY (UK)
BALLENY ISLANDS
Peter I Island
ANTARCTIC PENINSULA SCALE 1:3 000 000
McMURDO SOUND AREA SCALE 1:1 000 000
ROSS ISLAND
McMURDO SOUND
1. COMMANDANTE FERRAZ (BRAZIL)
2. ADMIRALTY BAY (UK)
3. MACCHU PICCHU (PERU)
4. HENRY K ARCTOWSKI (POLAND)
5. JUBANY (ARG)
6. KING SEJONG (KOREA)
7. ARTIGAS (UR)
8. BELLINGSHAUSEN (RUSSIA)
9. PRESIDENTE EDUARDO FREI (CHILE)
10. GREAT WALL (CHINA)
11. ARDLEY (CHILE)
12. ESCUDERO (CHILE)
See inset for names and locations of King George Island stations
SEE INSET
LOCATION DIAGRAM
AFRICA
SOUTH AMERICA
AUSTRALIA
ANTARCTICA
ATLANTIC OCEAN
INDIAN OCEAN
PACIFIC OCEAN
IMAGE COVERAGE DIAGRAM
USGS Antarctic Program

SATELLITE IMAGE MAP OF ANTARCTICA

By

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Richard S. Williams, Jr., George F. Delinski, Jr., and D'Ann Lear

1996

Reprinted with minor revisions 2000

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This satellite image map was produced by substantially modifying an earlier image map of Antarctica, U.S. Geological Survey (USGS) Miscellaneous Investigations Series Map I-2284, published in 1991. New data have been added to the earlier image base to replace areas where clouds obscured surface features; as a result, the new map base is a nearly cloud-free mosaic. The image data have been digitally enhanced, and geographic place-names and generalized topographic contours have been added.

The satellite images used in this mosaic were acquired by the Advanced Very High Resolution Radiometer (AVHRR) sensors on the National Oceanic and Atmospheric Administration (NOAA) 6, 7, 9, 10, 11, and 12 satellites during the period 1980-1994. Although the AVHRR scans a 2,400-km-wide swath and can image nearly half of the continent of Antarctica on a single orbit, 63 sections of 38 different scenes were needed to compile this nearly cloud-free data set. Most of the remaining cloudy areas have been annotated on the map to minimize confusion between clouds and land-surface features.

The digital image base that was used previously was mosaicked, controlled, and geometrically corrected by the National Remote Sensing Center, United Kingdom. Details of the processing can be found in the *International Journal of Remote Sensing* (1989, v. 10, nos. 4 and 5, p. 669-674). The USGS evaluated the geometric accuracy of the mosaic and estimated a root-mean-square error of 2.5 km. The digital image processing that created this modified image base was done at the USGS Flagstaff Field Center, Flagstaff, Ariz. Replacement images were geometrically corrected to the first image base, digitally inserted into the mosaic, and tone matched to blend with the surrounding images. When the entire mosaic was completed, bands 1 (visible, 0.55-0.68 micrometers) and 2 (near-infrared, 0.725-1.10 micrometers) were averaged, and the entire data set was enhanced using a 31 x 31 pixel spatial filter. The results were then contrast stretched. The stretch was designed to expand the mid-tone range of brightness values, where 90 percent of the data were located. Stretching the mid-tones helps to discriminate surface features and optimizes the data for lithographic printing.

Geographic place-names used on the map for local, regional, and topographic features have been approved by the U.S. Board on Geographic Names. Feature names in parenthesis are variant names that more accurately describe the feature. Topographic contours were obtained from the Scientific Committee on Antarctic Research (SCAR) Antarctic Digital Database and modified where necessary to fit the image base. Two insets cover areas of significant scientific interest. The Antarctic Peninsula inset uses a NOAA AVHRR image base enlarged to a scale of 1:3,000,000. The McMurdo Sound Area inset uses a Landsat multispectral scanner (MSS) image base at a scale of 1:1,000,000.

The successful completion of this edition of the AVHRR image map is due to the assistance of many individuals. L.G. Utz and L.G. Matheson of the USGS helped with digital plotting. T.A. Scambos of NOAA's National Snow and Ice Data Center and W.G. Gould and R.J. Derycke of Satellite Systems Applications, Inc., assisted in the search for replacement AVHRR data. P. Skvarca, Instituto Antártico Argentino, and J.W. Thomson, British Antarctic Survey, supplied information on coastal change in the Larsen Ice Shelf area. N.W. Young, Australian Antarctic Division, provided elevation data in the Lambert Glacier basin. In addition, many Antarctic researchers provided formal and informal reviews.

SCALE 1:5 000 000
Polar stereographic projection, standard parallel 71° South

100 0 100 200 300 400 500 MILES
100 0 100 200 300 400 500 600 700 KILOMETERS

EXPLANATION OF MAP SYMBOLS

1000 — Topographic contours on the ice surface—Dashed where interpolated. Modified from the Antarctic Digital Database (United Kingdom). Datum is mean sea level. Contour interval: 500 m from 0 to 2000 m; 100 m above 2000 m. Some contours omitted in areas of steep slopes.

·1247 Spot elevations, in meters above mean sea level

Stations

- ■ Permanent (as of 1999)
- ◩ Summer (as of 1996)
- □ Historic (as of 1996)

…… Selected major changes in ice shelf and (or) coastal margin since image data were acquired

▨ Location of clouds obscuring imagery. Not all clouds are shown.

Antarctic Treaty

The land and its fast (attached) ice south of 60 S. latitude are administered under the Antarctic Treaty, which reserves the region for peaceful purposes and imposes conservation and waste management measures. Some special areas may not be entered without a permit, issued only for compelling scientific purposes. The treaty's member consultative nations of which there were twenty-six at the end of 1999 administer activities of their citizens in Antarctica. Persons intending to enter Antarctica should be familiar with Antarctic Treaty provisions. The United States assures adherence to Antarctic Treaty conservation measures through Public Law 95-541, the Antarctic Conservation Act. For information, or to apply for a permit, contact Permit Officer, Office of Polar Programs, National Science Foundation, Arlington, Virginia 22230.

Any use of trade, product or firm names in this publication is for descriptive purposes only and does not imply endorsement by the U.S. Government

IMAGE IDENTIFICATION

Mosaic area	NOAA satellite	Acquisition Date	Acquisition Time (GMT)	Mosaic area	NOAA satellite	Acquisition Date	Acquisition Time (GMT)	Mosaic area	NOAA satellite	Acquisition Date	Acquisition Time (GMT)
1	10	28 Dec 1987	0901	14	9	29 Jan 1987	1343	27	6	17 Jan 1981	2052
2	6	24 Jan 1981	0946	15	6	15 Feb 1980	0243	28	12	05 Jan 1992	1801
3	12	15 Jan 1994	1051	16	9	21 Jan 1987	0827	29	7	12 Feb 1983	0439
4	6	11 Aug 1980	0823	17	12	15 Jan 1994	0043	30	6	12 Nov 1980	1338
5	6	25 Jan 1980	1028	18	12	13 Jan 1994	0126	31	12	08 Dec 1992	1009
6	6	24 Nov 1980	0908	19	6	18 Jan 1980	2309	32	12	21 Dec 1993	1132
7	9	25 Nov 1986	2208	20	9	11 Dec 1986	1043	33	6	06 Nov 1980	1411
8	10	27 Dec 1987	1104	21	7	16 Feb 1983	1039	34	12	08 Jan 1994	1001
9	6	11 Feb 1980	0740	22	6	04 Nov 1980	2323	35	6	08 Nov 1980	0823
10	6	27 Nov 1980	0258	23	7	14 Jan 1980	2256	36	11	11 Jan 1994	0130
11	7	06 Feb 1983	1747	24	7	29 Nov 1983	0750	37	6	13 Jan 1980	0953
12	7	29 Jan 1983	1602	25	11	01 Dec 1992	1010	38	9	04 Feb 1987	2251
13	9	12 Apr 1986	1524	26	6	12 Jan 1980	1836				

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