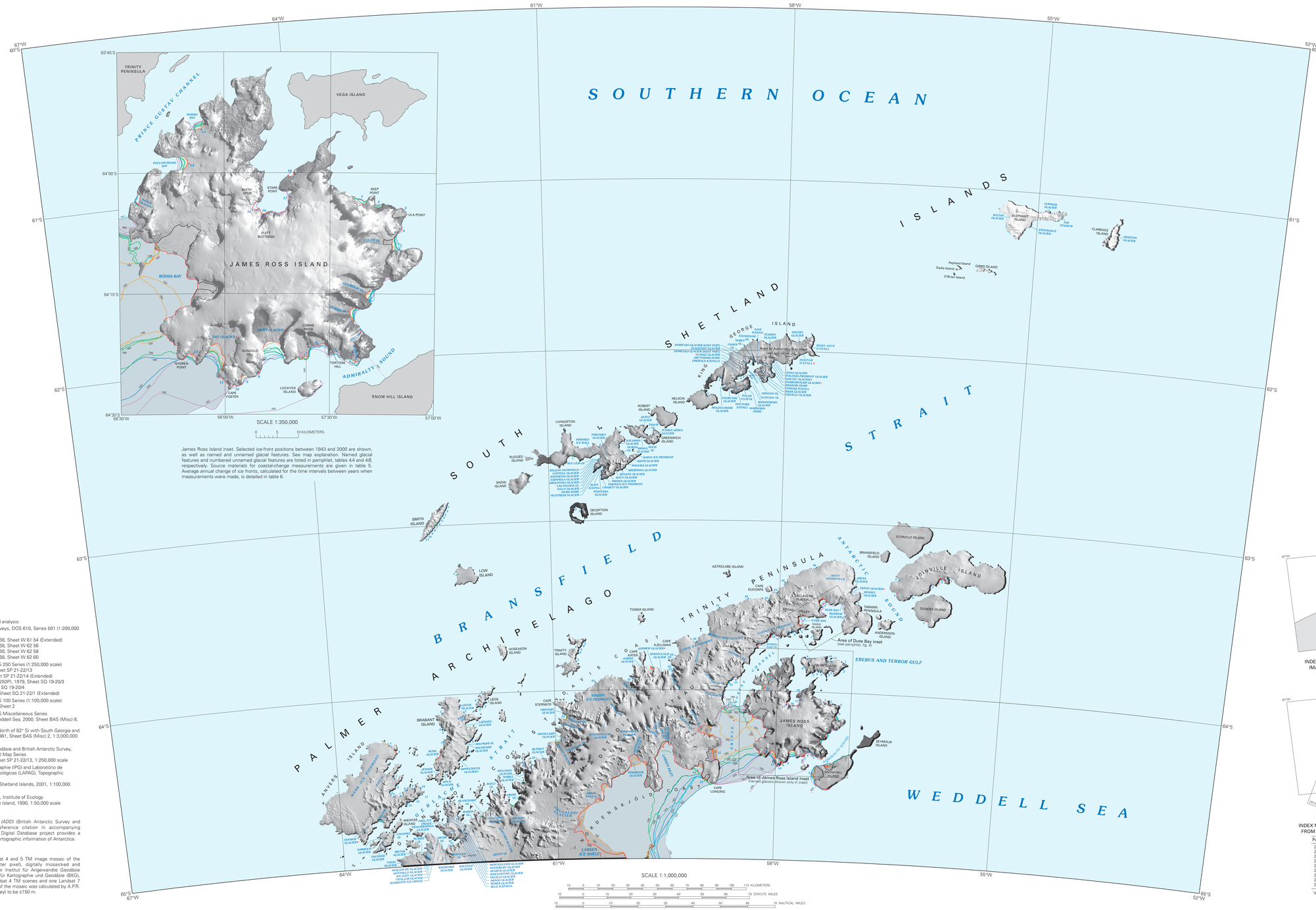
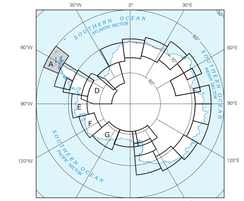
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
BRITISH ANTARCTIC SURVEY, CAMBRIDGE, UNITED KINGDOM
SCOTT POLAR RESEARCH INSTITUTE, UNIVERSITY OF CAMBRIDGE, UNITED KINGDOM
BUNDESAMT für KARTOGRAPHIE und GEODÄSIE, FRANKFURT AM MAIN, GERMANY

GEOLOGIC INVESTIGATIONS SERIES
MAP I–2600–A
Explanatory pamphlet accompanies map



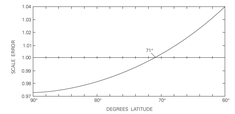
James Ross Island inset. Selected ice-front positions between 1843 and 2000 are shown, as well as named and unnamed glacial features. See map explanation. Named glacial features and numbered unnamed glacial features are listed in pamphlet, tables 4A and 4B, respectively. Source materials for coastal-change measurements are given in table 5. Average annual change of ice fronts, calculated for the time intervals between years when measurements were made, is detailed in table 6.



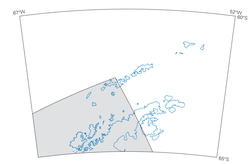
Index map of the planned 23 coastal-change and glaciological maps of Antarctica at 1:1,000,000 scale. Trinity Peninsula area and South Shetland Islands map is shaded. Maps published to date are indicated by letter and are described in table 9 of the accompanying pamphlet.

EXPLANATION

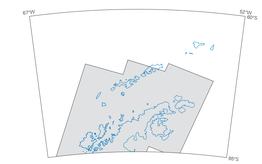
- **Ice front—2000s**
- **Ice front—1990s**
- **Ice front—1980s**
- **Ice front—1970s**
- **Ice front—1960s**
- **Ice front—1950s and 1940s**
- **Ice front—1843**
- **Grounding line**
- **Location of fluctuating unnamed glacier or ice front**—Number corresponds to numbered listing in table 4B in pamphlet
- **Named and unnamed glaciers and (or) ice fronts that have fluctuated an average of more than 75 meters per year (m a⁻¹) during some time interval since the 1940s**—Named and unnamed features are listed in pamphlet, tables 4A and 4B, respectively
  - Retreat
  - Advance
  - Retreat and advance
- **Former Prince Gustav and northern Larsen Ice Shelves**—Farthest extent observed since the 1950s



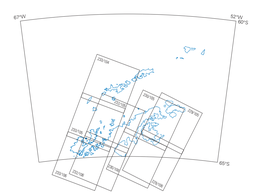
Graph showing scale error of polar stereographic projection with standard parallel at 71°S. Modified from Sievers and Bennat (1989).



INDEX MAP OF COVERAGE AREA OF CORONA IMAGE DS09058A014MC115, 29 AUG 1963, USED FOR FEATURE ANALYSIS



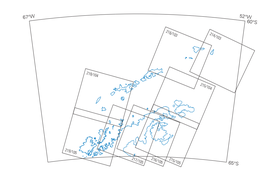
INDEX MAP OF COVERAGE AREA OF IAAG MOSAIC OF LANDSAT IMAGES, USED FOR MAP BASE AND FOR ANALYSIS OF FEATURES



INDEX MAP OF LANDSAT 1, 2, AND 3 MSS IMAGES FROM THE 1970s, USED FOR FEATURE ANALYSIS

Path/Row	EDC[1] Entity No.	Date
229/105	2229105007703190	31 Jan 77
229/106	2229106007703190	31 Jan 77
230/105	2230105007703290	01 Feb 77
230/106	2230106007703290	01 Feb 77
232/105	3232105007805190	20 Feb 79
232/106	3232106007833890	04 Nov 78
233/104	1233104007304790	16 Feb 73
233/105	1233105007400690	06 Jan 74
233/106	1233106007304790	16 Feb 73

[1]EROS Data Center, U.S. Geological Survey.



INDEX MAP OF LANDSAT IMAGES USED FOR FEATURE ANALYSIS: LANDSAT 4 AND 5 MSS AND TM IMAGES FROM THE MID-1980s TO EARLY 1990s AND LANDSAT 7 ETM+ IMAGES FROM THE EARLY 2000s

Path/Row	EDC[1] Entity No.	Date
214/103	7214103000005450	23 Feb 00
215/104	7215104000002950	29 Jan 00
215/104	4215104009004910	18 Feb 90
215/105	4215105008690610	29 Feb 88
216/103	4216103008930910	05 Nov 89
216/105	4216105008930910	05 Nov 89
216/105	7216105000005250	21 Feb 00
217/105	5217105008406690	01 Mar 86
219/104	4219104009004510	14 Feb 90
219/105	4219105008933310	26 Nov 89

[1]EROS Data Center, U.S. Geological Survey.

Maps used in compilation and analysis:
Directorate of Overseas Surveys, DOS 610, Series 501 (1:200,000 scale)
South Shetland Islands, 1968, Sheet W 61 54 (Extended)
South Shetland Islands, 1968, Sheet W 62 56
South Shetland Islands, 1968, Sheet W 62 58
South Shetland Islands, 1968, Sheet W 62 60
British Antarctic Survey, BAS 250 Series (1:250,000 scale)
Trinity Peninsula, 1974, Sheet SP 21-22/13
Joinville Island, 1973, Sheet SP 21-22/14 (Extended)
Anvers Island (Series BAS 250P), 1979, Sheet SQ 19-20/3
Graham Land, 1974, Sheet SQ 19-20/4
James Ross Island, 1974, Sheet SQ 21-22/1 (Extended)
British Antarctic Survey, BAS 100 Series (1:100,000 scale)
James Ross Island, 1995, Sheet 2
British Antarctic Survey, BAS Miscellaneous Series
Antarctic Peninsula and Weddell Sea, 2000, Sheet BAS (Misc) 8, 1:3,000,000 scale
British Antarctic Territory (North of 82° S) with South Georgia and South Sandwich Islands, 1981, Sheet BAS (Misc) 2, 1:3,000,000 scale
Institut für Angewandte Geodäsie and British Antarctic Survey, Topographic (Satellite Image) Map Series
Trinity Peninsula, 1996, Sheet SP 21-22/13, 1:250,000 scale
Instituto Geográfico Militar (IPG) and Laboratório de Pesquisas Antárticas e Glaciológicas (LAPAG), Topographic (Satellite Image) Map
King George Island, South Shetland Islands, 2001, 1:100,000 scale
Polish Academy of Sciences, Institute of Ecology
Admiralty Bay, King George Island, 1990, 1:50,000 scale

Other information source:
Antarctic Digital Database (ADD) (British Antarctic Survey and others, 1993; see full reference citation in accompanying pamphlet). The Antarctic Digital Database project provides a digital coastline and other cartographic information of Antarctica.

Image base from the Landsat 4 and 5 TM image mosaic of the Antarctic Peninsula (30-meter pixel), digitally mosaicked and georeferenced by the former Institut für Angewandte Geodäsie (IfAG), now the Bundesamt für Kartographie und Geodäsie (BKG), and augmented by two Landsat 4 TM scenes and one Landsat 7 ETM+ scene. The accuracy of the mosaic was calculated by A.P.R. Cooper (British Antarctic Survey) to be ±150 m.

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COASTAL-CHANGE AND GLACIOLOGICAL MAP OF THE TRINITY PENINSULA AREA AND SOUTH SHETLAND ISLANDS, ANTARCTICA: 1843–2001

By
Jane G. Ferrigno,[1] Alison J. Cook,[2] Kevin M. Foley,[1] Richard S. Williams, Jr.,[3] Charles Swithinbank,[4] Adrian J. Fox,[2] Janet W. Thomson,[2] and Jörn Sievers[5]

2006

ISBN 0-607-96442-1
Printed on recycled paper

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