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TOPONYMIC DATA FILES

AUTOMATIC DATA PROCESSING (ADP) SYSTEMS

Digital names data base antarctic as a component of a
landscape data base of the Antarctic **

Paper submitted by the Federal Republic of Germany

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** Prepared by Heinz Schmidt-Falkenberg, Institut für Angewandte Geodäsie,
Frankfurt am Main

The map lettering can be regarded as a component of the map. Names and designations explain its linear or pictorial content. Whereas the graphical design of the lettering, the design and production of the lettering original for map reproduction are cartographic tasks, assigning of names and their orthography go beyond mere cartography. It is essential, however, that the various disciplines mentioned in the following work in conjunction with cartography.

1 Digital Landscape Data Base

In many cases the value of an information depends on its being up to date and readily available in a specific graphical form (e. g. as a map, table, etc.).

If, for instance, recent airphotos or satellite images are available in analog or digital form, it is important that the relevant information can rapidly be retrieved from the image recordings and be represented (and filed) in a form that allows rapid data processing and integration into an information system. At the Institut für Angewandte Geodäsie (Institute for Applied Geodesy) in Frankfurt am Main, the realization of this objective is being worked at with priority. The basis conception for such a geographical information system is shown in figure 1. The aim is to establish a digital landscape model: a digital landscape data base which is linked with digital name data bases and digital "thematic" data bases (geology, etc.) and which allows rapid output of any data in various graphical forms. In its essential parts, the information system (figure 1) has been developed to an operational stage [1]. In the following, the part "Digital Name Data Base Antarctic" will be discussed and its terms of reference, structure and procedure will be described.

2 Terms of Reference

Topographic and chorographic map series constitute a necessary base material for a successful completion of most research projects in the other earth sciences. They further serve as a topographic base for thematic maps (after having been prepared accordingly) to display the results of geoscientific research in a clear and comprehensible form. The Digital Name Data Base Antarctic, by the Institut für Angewandte Geodäsie (IfAG-DNAnt), is to constitute the basis for the lettering of future cartographic representations of the Antarctic (satellite image maps, photomaps, line maps). Moreover, with the aid of this data base and the pertinent data processing programs, the required lettering films are to be produced directly by photoplotting as true-to-scale originals for print (vector or raster data). For the time being, name placing will require interactive operation. The creation and updating of such a name data base is therefore an important contribution towards the cartography of the Antarctic. It is instrumental in achieving that maps of the Antarctic with lettering can be produced faster than had hitherto been possible, so they can be more up-to-date. This increased topicality can be particularly useful with regard to ice kinematics, especially of the shelf ice areas (partly with flow speeds of 3 m/day).

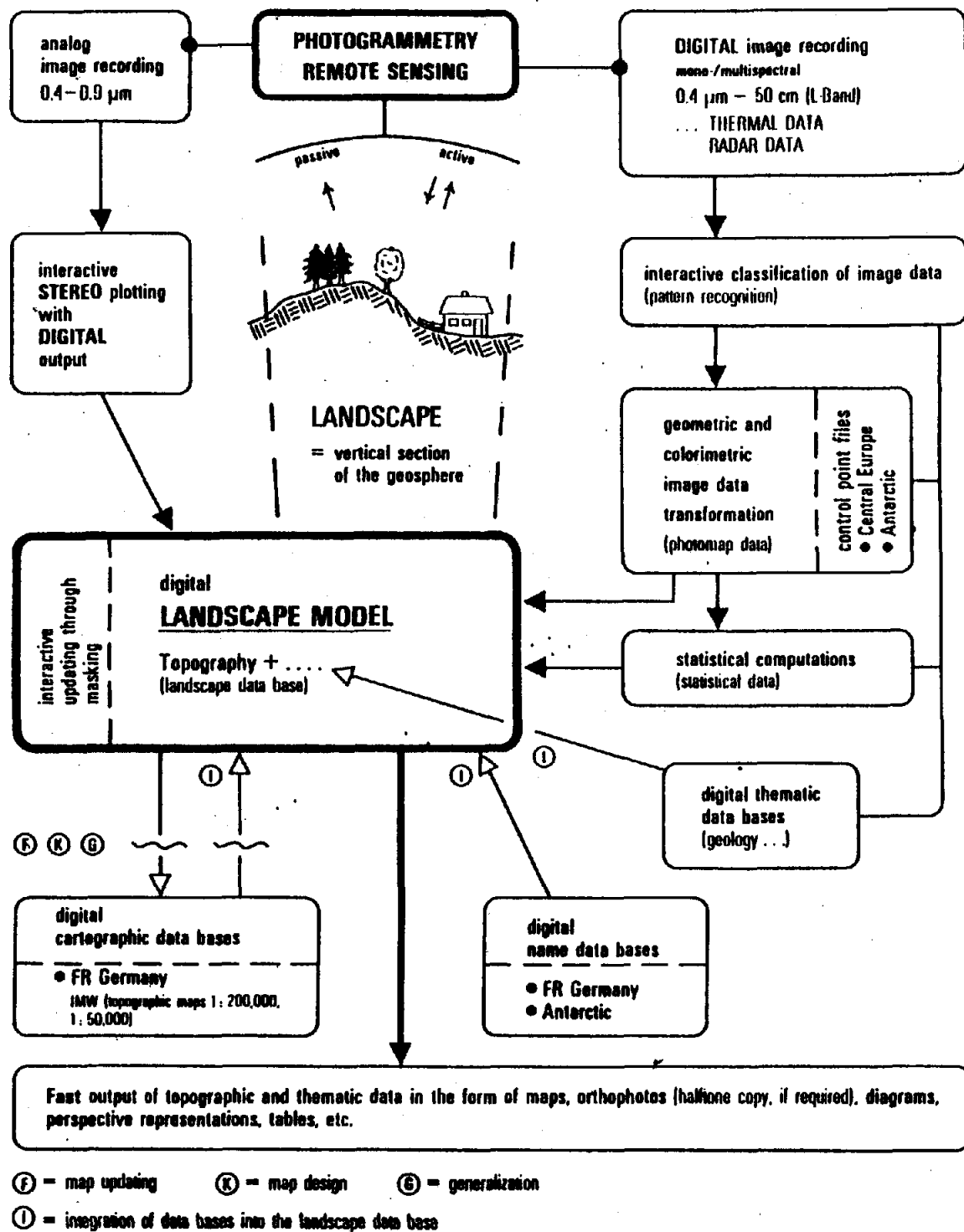


Figure 1

To date, the Institut für Angewandte Geodäsie has participated in the following Antarctic expeditions: 1983/84, 1984/85, 1985/86 (1986/87, planned); so far it has prepared and issued several maps of the Antarctic (photomaps and satellite image maps) [2].

A report on the contributions Germany has until now made to the cartography of the Antarctic has been published in [3].

3 German Names Assigned in the Antarctic until 1945

To begin with, the German names and designations assigned up to 1945 were traced at the Institut für Angewandte Geodäsie (IfAG/Frankfurt am Main), with the assistance of the Deutsche Forschungsgemeinschaft (DFG/Bonn), the sources being the reports of the German Antarctic expeditions listed in table 1. This stock of names remains to be reviewed, though. For point features an unambiguous assignment of name to feature must be given or be established through satellite images/satellite image maps, or else more recent line maps. As far as areal features are concerned, it is for the most part very difficult to determine exactly which area the bestower of a name intended to cover with the name (e. g. a landscape name). It is equally difficult and quite timeconsuming to establish the limits of such an area, as a regional division as yet hardly exists in the Antarctic.

Of the names assigned by Germany to features and areas in the Antarctic until 1945, 427 have been recorded so far. According to table 1 they are subdivided as follows:

1873/74	<i>Dallmann</i>	14 names
1874	<i>v. Reibnitz</i>	3 names
1874-1876	<i>v. Schleinitz</i>	67 names
1882/83	<i>Schrader</i>	33 names
1893/94	<i>Larsen</i>	14 names
1898/99	<i>Chun</i>	3 names
1901-1903	<i>v. Drygalski</i>	138 names
1906	<i>Szielasko</i>	10 names
1911-1912	<i>Filchner</i>	29 names
1925-1927	<i>Merz/Spiess</i>	4 names
1928/29	<i>Kohl-Larsen</i>	15 names
1938/39	<i>Ritscher</i>	97 names

Map No. 1 provides an overview of the expeditions listed in table 1.

The improved accuracy achieved in the assignment of names to features, and the determination of the extent of the areas to which the German names in the Antarctic apply, is, above all, the result of *H.-P. Kosack's* efforts [4], [5]. Further improvement to this effect, particularly regarding the names given during the German Antarctic Expedition of 1938/39, was commenced at IfAG, with support by the Deutsche Forschungsgemeinschaft (Dipl.-Geograph *K. Brunk*). By means of about 650 paper contact prints of aerial photography from the 1938/39 expedition, the Norwegian topographic maps 1 : 250,000 now published, and the satellite image maps of the Institut für Angewandte

Table 1 — German Antarctic Expeditions until 1945

Year	Command. "Vessel" and others	Activities/Results (Support)
1873—1874	<i>Eduard Dallmann</i> , Captain, Sealer and Whaler, "Grönland" First operation of a (sailing) steamship in the South Polar region	Exploration of the "Bismarck straits", the "Kaiser Wilhelm Archipelago" and others (by order of the Polar Fishing Company in Hamburg).
1874	<i>v. Reibnitz</i> , Captain, "Arkona"	Exploration and determination of a suitable position for the observation of a Venus transit on 9 December, 1874; the observation proper was carried out by <i>Dr. Ladislaus Weineck</i> on the Kerguelen Islands.
1874—1876	<i>Georg Emil Gustav Freiherr von Schleinitz</i> , Captain (later Admiral), "Gazelle"	Oceanographical explorations and surveys in the Kerguelen area. ● Map 1 : 175,000: "Kerguelen Island, from Howe Island to Accessible Bay".
1882—1883	<i>Dr. Karl Schrader</i> , "Moltke" and "Marie"	Participation in the 1 st International Polar Year. Geographical and meteorological measurements. Wintering on South Georgia.
1893—1894	<i>Carl Anton Larsen</i> , Captain, Norwegian sealer "Jason" in company with "Hertha" Captain <i>Evensen</i>	Explorations along the east coast of the Antarctic Peninsula. ● Map 1 : 7,500,000: "Dirck Gherritz Archipelago" (1895), (by order of the Steam Ship Company "Oceana" in Hamburg).
1898—1899	<i>Prof. Dr. Carl Chun</i> , Zoologist, "Valdivia" Captain <i>Sachse</i> ; Captain <i>Krech</i>	Oceanographical and biological explorations between the Kerguelen Islands and Enderby Land. Bouvet-Island rediscovered; crater edge height measurement/Kaiser Wilhelm peak highest point (Government of the Reich).
1901—1903	<i>Prof. Dr. Erich v. Drygalshi</i> , Geographer, Geophysicist, "Gauss I" Captain <i>Hans Ruser</i>	Exploration of the "Kaiser Wilhelm II. Land" and survey of the "Gaussberg" including first application of terrestrial photogrammetry on the part of a German expedition. First time production of aerial photographs of the Antarctic from a captive balloon at 500 m altitude on 29 March, 1902. ● Map 1 : 7,500: "Der Gaussberg", ● Map 1 : 15,000: "Das Inlandeis am Gaussberg", ● Map 1 : 250,000: "Das Schelfeis der Posadowsky-Bai", ● Sketch map: "Posadowsky-Bai mit dem Winterlager des Gauss" (Kaiser Wilhelm II.; Government of the Reich; <i>Graf Baudissin</i> ; <i>Graf Posadowsky</i>).
1906	<i>Dr. med. August Emil Alfred Szielasko</i> , Physician and Ornithologist, "Fridtjof Nansen" Captain <i>Castberg</i>	Researches in the surroundings of Cumberland Bay on South Georgia. ● Map 1 : 125,000: "Karte der Cumberland Bay (Süd-Georgien)".
1911—1912	<i>Dr. Wilhelm Filchner</i> , "Deutschland" Captain <i>Richard Vahsel</i> ; Captain <i>Alfred Kling</i>	Exploration of the "Prinzregent Luitpold Land" and the "Filchner Schelfeis". The vessel was surrounded by ice and drifted for 9 months through the Weddell Sea. ● Map 1 : 450,000: "Prinzregent Luitpold Land" (Government of the Reich; <i>Prinzregent Luitpold von Bayern</i> and others).
1925—1927	<i>Prof. Dr. Alfred Merz</i> , "Meteor" Captain (later Admiral), <i>Dr. h. c. Fritz Spiess</i>	Oceanical explorations around the Bouvet Island (Deutsche Forschungsgemeinschaft under the presidency of <i>Dr. F. Schmitt-Ott</i>).
1928—1929	<i>Dr. Ludwig Kohl-Larsen</i> , "Thorhammer"	Glacier measurements on South Georgia.
1938—1939	<i>Alfred Ritscher</i> , Captain (expedition leader), "Schwabenland" Captain <i>Alfred Kottas</i>	Exploration of "Neuschwabenland" (approx. 600,000 km ²). 11,600 aerial photographs (oblique aerial photographs with Zeiss RMK 21/18) taken from 20 January to 4 February, 1939. ● Maps 1 : 1,500,000; 1 : 500,000; 1 : 50,000 (see par. 2) (Government of the Reich; Deutsche Forschungsgemeinschaft under the presidency of <i>Prof. Dr. Rudolf Mentzel</i>).

Geodäsie as well as LANDSAT imagery of the area, the geodetic positions of the 1938/39 flight paths were verified and corrected [6]. This allows better orientation across the areas covered by the individual oblique aerial photos of 1938/39 and, consequently, improvement of the name assignments described above, as well as elimination of double feature designation and other inconsistencies in name assignments.

4 German Names Assigned after 1945

The Federal Republic of Germany acceded to the Antarctic Treaty in 1979 and in 1981 became a member of the "Consultative Group" of the Antarctic Treaty. The activity of the German National Committee to the Scientific Committee on Antarctic Research (LA-SCAR), established at the Deutsche Forschungsgemeinschaft, eventually led to an "Antarctic Research Programme of the Federal Republic of Germany", now working on about 70 projects [7]. In the scope of these post-1945 activities, names for features and areas have been suggested by various institutions, particularly the "Bundesanstalt für Geowissenschaften und Rohstoffe (BGR/Hannover). In connection with its German North Victoria Land Expeditions GANOVEX I (1979/80) and GANOVEX III (1982/83, the latter has proposed 55, respectively 73, names.

The German Democratic Republic acceded to the Antarctic Treaty in 1974. The activity of the National Committee for Antarctic Research, established at the Zentralinstitut für Physik der Erde at Potsdam, led to a series of Antarctic expeditions which were conducted in conjunction with the USSR. The names assigned by Antarctic researchers of the GDR were also included in the Digital Name Data Base Antarctic.

Austria and Switzerland are as yet not members of the Antarctic Treaty. It is planned to record the German-language names assigned by these countries in the Antarctic.

The German names assigned by other countries (USA, USSR, a. o.) will, in the course of time, also be recorded and integrated into the data base.

5 The Orthography of the Topographic/Geographic Names in the Antarctic

The existing German names in the Antarctic need revision, not only as to their assignment to features and the extent of the area to which they apply, but also as to their spelling. Should writing in one word be preferred to hyphenated writing, e. g. "Ritscher-Hochland" or "Ritscherhochland", "Wohlthatmassiv" or "Wohlthat-Massiv", "Gaussberg" or "Gauss-Berg", etc.?

The "Ständige Ausschuss für geographische Namen" (StAGN/Standing Committee on Geographical Names), which is composed of representatives of the Federal Republic of Germany, Austria, and Switzerland, is concerned with this problem. Its members come from various disciplines and institutions, such as the Austrian Academy of Sciences, the "Gesellschaft für Deutsche Sprache" (Society for the German Language), from surveying and mapping, the university departments, private cartography, etc. The office of StAGN is managed by the Institut für Angewandte Geodäsie.

A first part of the German names in the Antarctic recorded so far has already been checked in a great effort on the part of StAGN, and subsequently the spelling of the more than 600 Antarctic names was laid down.

In the production and editing process, not only German, but also foreign names and designations will have to be entered in the Antarctic maps. The considerations of the problem of "translation" have not been concluded yet. Specific rules are to be set up for this purpose, taking into account international procedures such as are employed in the USA, the USSR, and other countries. A method of indicating translated names will be discussed in detail in section 6.

6 The Structure of the Digital Name Data Base Antarctic of the Institut für Angewandte Geodäsie (IfAG-DNAnt)

In coordination with the German National Committee of SCAR (Federal Republic of Germany) and the Alfred-Wegener-Institut für Polar- und Meeresforschung (Alfred Wegener Institute for Polar and Marine Research) (AWI/Bremerhaven) the Institut für Angewandte Geodäsie has begun to set up the Digital Name Data Base Antarctic, IfAG-DNAnt. Proceeding on the experiences won with the compilation of the "Gazetteer of the Federal Republic of Germany" (which is available in digital form), IfAG-DNAnt was structured such as to allow outputting its current state at any time as alphabetic name lists and in a few other formats. The structure of IfAG-DNAnt can be seen in figure 2.

The name data as it is collected from the respective expedition report or the like are considered "source version". It is identified by the figures .00 (preceded by the name number). Any subsequent modifications of the source or .00-version are identified as .01, .02, .03, etc., version. A printout of all versions will document the historical development of all name data. Figure 3 shows such a complete printout for one name. It is also possible to output the latest version only.

In order to readily identify the "designating country", the official letter symbol for the country precedes the four-digit source number.

The statement of reasons for the name assignment are also entered in a fixed order, namely:

- in case of German Antarctic expeditions before 1945, the entry starts with "DAE (and the date) ..." (e. g. DAE 1873/74 ...);
- in case of German Antarctic expeditions after 1945 and non-German Antarctic Expeditions, it starts with "AE (and the letter symbol for the country) ..." (e. g. AE (D) ..., or AE (DDR) ..., or AE (USA) ...)

Names translated into German are followed by <Ü> and the name in the source language in [], together with a reference to their origin, for instance [source language (french)].

Name	Breite Begründung	Länge	Synonym Höhe NN	Datum Quelle	Grenzbreiten	Grenzlängen	Obj.kz.	Key Vst.QuNr.
<u>Bollingers*</u>		+ 6° 10'		1954				00052.03 D* .0005
	72° 18'							
	STAGN-0030, LASCAR-0031, DAE 1938/39: Herbert Bolle, deutscher Flugzeugmechaniker							
<u>Borras</u>		- 3° 57'	+ 220 m	1986				00079.03 D* .0025
	71° 18'							
	STAGN-0030, LASCAR-0031, DAE 1938/39: Nunatak, benannt nach einem der beiden Flugboote vom Dornier-10t-Wal-Typ							
<u>Brandtberg*</u>		+ 1°		1954				00075.03 D* .0005
	72° 13'							
	STAGN-0030, LASCAR-0031, DAE 1938/39: Emil Brandt, Matrose, rettete einem zwischen das Packeis ins Wasser gefallenem Kameraden das Leben							
<u>Bruntsberge*</u>		+ 1°		1954				00077.03 D* .0005
	72° 05'							
	STAGN-0030, LASCAR-0031, DAE 1938/39: Herbert Bruns, Ingenieur auf dem Expeditionsschiff							
<u>Buddenbrockkette</u>		+ 5° 25'	+ 2725 m	1986	71° 57'	71° 49'	+ 5° 07'	+ 5° 37'
	71° 52'							
	STAGN-0030, LASCAR-0031, DAE 1938/39: Freiherr v. Buddenbrock, Atlantikflugbetriebsleiter der Deutschen Lufthansa							
<u>Bundermannketten</u>		+ 4° 30'	+ 2695 m	1986	72° 05'	71° 51'	+ 4° 24'	+ 4° 41'
	72° 00'							
	STAGN-0030, LASCAR-0031, DAE 1938/39: Max Bundermann, Luftbildphotograph der Expedition							
<u>Conradfjelle (norv.)</u>								00062.03 D* .0025
	siehe Conradgebirge							
<u>Conradgebirge</u>								00042.03 D* .0025
	71° 50'		+ 3053 m	1986	72° 02'	71° 40'	+ 9° 30'	+ 10° 00'
	71° 50'							
	STAGN-0030, LASCAR-0031, DAE 1938/39: Conrad (+1943), Konteradmiral und Leiter der meteorologischen Abteilung der ehemaligen Marineleitung							
<u>Dallmannberge</u>		+ 10° 30'	+ 2565 m	1986	71° 56'	71° 40'	+ 10° 10'	+ 10° 48'
	71° 48'							
	STAGN-0030, LASCAR-0031, DAE 1938/39: Edvard Dallmann(1830-1896), Kapitän der "Grönland", Leiter der Antarktisexpedition 1873/74							

Herstellung: KF 3 Stand: 11. 9. 1986 Bearbeitung: K. Brunk, Dr. K. Niemez, K. Wegener Seite 2

Figure 2

Name	Breite Begründung	Länge	Höhe NN	Datum	Quelle	Grenzbreiten	Grenzlängen	Objektkennzeichen	Key Vst.-QuNr.
	Dat.-Koor.	Dat.-Höhe	Dat.-Entd.	Dat.-Best.	Azimet	Teilk.	Synonym		
<u>Dallmann-Berg</u>	72° 09'	+ 12° 30'	+3200 m	1939					00041.00 .0001
DAE 1938/39: Juni 1939			30. Jan. 1939						
<u>Dallmann-Berge</u>	71° 50'	+ 10° 50'	+3000 m	5. Aug. 1952	72° 00'	71° 42'	+ 10° 30'	+ 11° 00'	00041.01 .0004
DAE 1938/39: Mai 1950			Kapitän der Handelsmarine, erforschte 1873/74 die Westküste von Graham-Land 30. Jan. 1939 12. Juli 1952						
<u>Dallmann-Berge</u>	72°	+ 10° 10'		1954	72° 10'	71° 50'	+ 9° 55'	+ 10° 25'	00041.02 .0005
DAE 1938/39: Aug. 1952			Kapitän der Handelsmarine, erforschte 1873/74 die Westküste von Graham-Land 30. Jan. 1939 12. Juli 1952						
<u>Dallmannberge</u>	71° 48'	+ 10° 30'	+2565 m	1986	71° 56'	71° 40'	+ 10° 10'	+ 10° 48'	00041.03 .0025
STACN-0030, LASCAR-0031, Leiter der Antarktisexpedition 1873/74 1968			DAE 1938/39: Eduard Dallmann (1830-1896), Kapitän der "Grönland", 30. Jan. 1939 12. Juli 1952						

Figure 3

7 The Procedure of Assigning Names, as Employed in the Federal Republic of Germany

For the assignment of names and designations to topographic/geographic features and areas in the Antarctic, a procedure has been worked out in the Federal Republic of Germany which breaks down into the following steps:

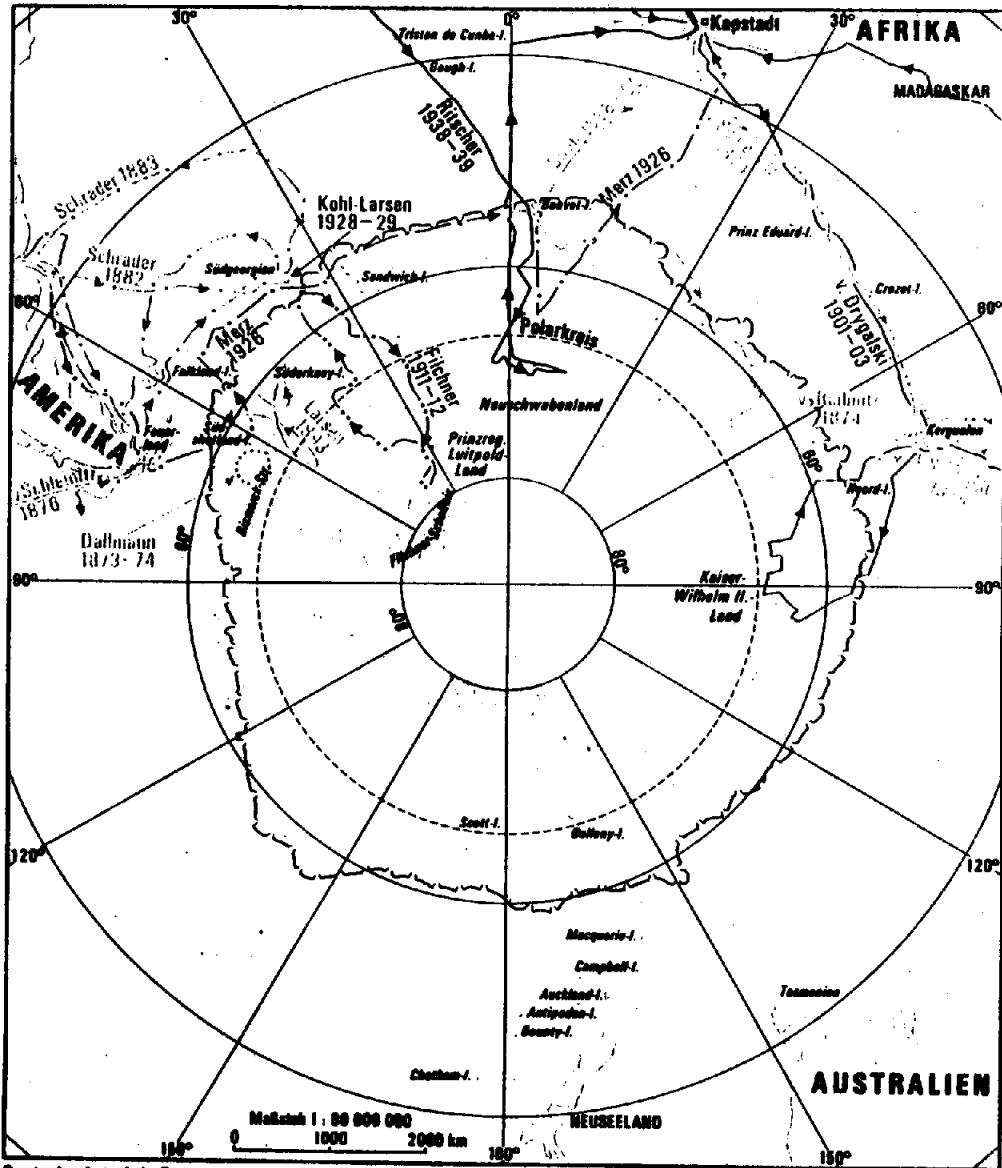
1. Assignment of "working names" (provisional assignment) by the expedition on location, by the competent map editing agency, and others. Preparation of a reference document in the form of lists and maps (preliminary drawing/sketch).
2. These name data are passed on to the Institut für Angewandte Geodäsie (IfAG) in Frankfurt am Main.
3. The data are edited at IfAG and then submitted to the "Ständige Ausschuß für geographische Namen (StAGN) which reviews the orthography of the names and lays down the results by resolution (StAGN resolution). After that, the data are returned to IfAG.
4. After coordination with the agencies concerned and the Alfred-Wegener-Institut für Polar- und Meeresforschung (AWI) at Bremerhaven, IfAG submits the reviewed name data to the German National Committee to SCAR (LA-SCAR). The latter decides by resolution whether the provisional name assignment shall become final (LA-SCAR resolution). If so, IfAG enters the then "final data" into the Digital Name Data Base Antarctic, IfAG-DNAnt.
5. The (newly) assigned names and designations will be published from time to time in conjunction with the current National Antarctic Report to SCAR by the Federal Republic of Germany.

Note: The names assigned during the German Antarctic Expedition of 1938/39 were published in 1952 in the Federal Gazette No. 149 (4th year), issued by the government of the Federal Republic of Germany.

8 Present State of the Project

As indicated in section 5, more than 600 recorded Antarctic names in the German language have so far been checked through by StAGN as to their spelling and have been laid down by the StAGN resolution of 5 March 1985. The German National Committee has, by LA-SCAR resolution of 19 April 1985, declared these names definite assignments. Publication of the set of names so processed is planned.

In the meantime, further German names in the Antarctic have been recorded and translations have been made, as the publication of certain maps of the Antarctic required it (for purposes of documenting research results). They have been filed as "preliminary assignments" in the name data base. They will be processed as described in section 7.



Deutsche Antarktis-Expeditionen bis 1945
German Expeditions to the Antarctic until 1945

Karte/Map 1

9 Literature

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