

Greenland publications review with listing for 1999

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The primary role of the Geological Survey of Denmark and Greenland is to interpret and record the geology of Denmark, Greenland and the Faeroe Islands and make the information available to government, industry, the international scientific community and the general public. The technological advances of recent years have increased emphasis on digital data and electronic databases leading to a geoscientific information revolution. However, printed reports and maps still remain a significant part of the Survey's publication range designed to provide information for use at all levels. Several of these publications are also available as electronic issues.

Five years ago a ministerial reorganisation led to the setting up of the Geological Survey of Denmark and Greenland (GEUS, established 1995) by the fusion of the Geological Survey of Denmark (DGU, established 1898) and the Geological Survey of Greenland (GGU, established 1946). This necessitated a critical assessment of the publications issued by the two former Surveys and led to substantial reorganisation: in short, some series continued, others were renamed or phased out and new series were launched. The consequences for Survey publications in general, and for Greenland publications in particular, were outlined in the first *Review of Greenland activities* released by the new Survey in 1997, viz. *Greenland, Denmark and the Faeroe Islands, and the national geological Survey (GEUS): 1996, a year of transition for publications* (Geology of Greenland Survey Bulletin **176**, 9–16).

Information on Survey publications can be found on the GEUS homepage (www.geus.dk). For details of all Survey publications on Greenland, see *Catalogue of Greenland publications and data* (Fig. 1).

Scope of this review

This review lists the publications about Greenland released by the Survey in 1999, as well as the scientific and semi-

popular articles by staff and coworkers published in external outlets. Facsimiles of some covers from 1999 are shown in Fig. 2. Geoscientific abstracts, of which 80 were published during the year, are not listed but are available in the annual publication catalogue that is on the GEUS homepage. The Survey's range of scientific publications on Greenland is summarised in Table 1, and the present coverage by standard geological maps at scales 1:500 000 and 1:100 000, as well as geophysical and Quaternary geological maps is given in Fig. 3.

Catalogue of Greenland publications and data

Edited by E.W. Glendal, B. Eriksen & P.R. Dawes, 53 pp. Copenhagen: Geological Survey of Denmark and Greenland (March 1999).



Fig. 1. The front cover of *Catalogue of Greenland publications and data*, 53 pp. For details see the text. The catalogue will be sent free of charge on request.

The catalogue, available free of charge (see under *Availability of Survey publications* below), contains a complete list of the geoscientific publications on Greenland issued by the former and present Surveys going back to the first bulletin released by GGU in 1948. Information on 'how to order' with prices and payment details are included. The catalogue also reviews available maps and graphic services (in addition to the geological and geophysical map coverage shown in Fig. 3), for example geochemical, topographic, bathymetric and satellite maps at varying scales. A data directory specifying the range of data and services available at the Survey is also included: a range that includes various data bases; map, sample and drill-core archives; bibliographic and library facilities include unpublished maps and reports from the Survey's own activities and those of industry.

The catalogue contains an index to selected topics such as *Glaciology and hydropower, Kimberlites/diatremes, Mineralisation, Offshore geophysics, Onshore geophysics, Palaeontology and stratigraphy, Prospecting, Quaternary and permafrost, Sedimentary and petroleum geology*, as well as an author/project index.

Availability of Survey publications

Survey publications can be obtained by contacting the Survey's headquarters in Copenhagen or the Survey's book agent, Geografforlaget ApS, at the addresses given on page 2 of this volume. Of the publications listed here the newsletters to the international mining and oil industries, viz. *Greenland MINEX News* and *Ghexis Newsletter*, respectively, as well as the *Catalogue of Greenland*



Fig. 2. Selected Survey publications on Greenland from the year 1999: for details see listing in the text and Table 1. **A-C:** *Geology of Greenland Survey Bulletin* 182-184; **D:** *Danmarks og Grønlands Geologiske Undersøgelse Rapport* 1999/19; **E:** *Greenland MINEX News* No. 17, June 1999; **F:** *Ghexis Newsletter* No. 15, April 1999.

Table 1. Range of the Survey's geological series

Name	Type	Availability	Issues shown in Fig. 2
Scientific series <i>Geology of Greenland Survey Bulletin</i>	Scientific, internationally-refereed articles in English on research pertaining to Greenland and the relationships to the North Atlantic and Arctic regions. Note that this volume – <i>Review of Greenland activities (RoGa)</i> – is an atypical issue of this series, in that by its nature it is not subject to the international reviewing requirements otherwise applied to the series.	Printed; abstracts on the net. Articles from the annual RoGa on the net.	Volumes 182, 183, 184.
<i>Geology of Denmark Survey Bulletin</i>	Scientific, internationally-refereed articles in English on research relating to Denmark and the Faeroe Islands, and the relationships to surrounding regions.	Printed; abstracts on the net.	-
<i>Geology of Denmark and Greenland Map Series</i>	All types of geoscientific maps of Denmark, the Faeroe Islands and Greenland, including offshore areas; issued with short refereed descriptive texts (max. 16 pages).	Printed and as CD-ROM.	-
Open file-type reports <i>Danmarks og Grønlands Geologiske Undersøgelse Rapport</i>	Cosmopolitan, multidisciplinary, unedited reports in English or Danish produced in limited numbers and presenting data from Denmark, the Faeroe Islands and Greenland, as well as other countries where the Survey operates. The series includes confidential (classified) reports, some of which are released when confidentiality expires.	Printed; some data on CD-ROM.	Rapport 1999/19.
*Newsletters to industry <i>Greenland MINEX News</i>	The name <i>Greenland MINEX News</i> is derived from Greenland M ineral E xploration N ewsletter. It brings up-to-date geological and regulatory information on Greenland to the international exploration and mining industry.	Printed and on the net.	Issue No. 17, June 1999.
<i>Ghexis Newsletter</i>	The name <i>Ghexis</i> is an acronym for G reenland H ydrocarbon E xploration I nformation S ervice. The newsletter brings up-to-date geological and regulatory information on Greenland to the international oil and gas industry.	Printed and on the net.	Issue No. 15, April 1999

* *Greenland MINEX News* and *Ghexis Newsletter* are published jointly by the Geological Survey of Denmark and Greenland and the Bureau of Minerals and Petroleum, Government of Greenland, Nuuk.

publications and data described above, can be sent free of charge.

All Survey publications can be viewed at our headquarters in Copenhagen, Denmark; publications on Greenland are also available at the Bureau of Minerals

and Petroleum in Nuuk, Greenland. For general information, the Survey's homepage (www.geus.dk) should be consulted. The annual *Review of Greenland activities* (this volume) is available on the net, as are the abstracts of all volumes in the scientific series (see Table 1).

Geology of Greenland Survey Bulletin

Bulletin 183 is not externally refereed. Bulletins 182, 183 and 184 are illustrated in Fig. 2.

- 181:** Precambrian geology of the Disko Bugt region, West Greenland. *Edited by* F. Kalsbeek, 179 pp. (14 articles + geological map at 1:250 000).
- 182:** Vertebrate remains from Upper Silurian – Lower Devonian beds of Hall Land, North Greenland. *By* H. Blom, 80 pp.
- 183:** Review of Greenland activities 1998. *Edited by* A.K. Higgins & W.S. Watt, 81 pp. (10 articles, see titles below).
- 184:** Collected research papers: palaeontology, geochronology, geochemistry, 62 pp. (6 articles, see titles below).

Bulletin 181: Precambrian geology of the Disko Bugt region, West Greenland

The region north-east of Disko Bugt contains Archaean greenstone belts which were investigated by industry for mineral deposits in the 1970s and 1980s. In the period 1988–1992 the former Geological Survey of Greenland carried out more detailed field work in order to obtain a better geological understanding of the region.

This bulletin contains 14 articles based on these field investigations and laboratory research. An introductory paper gives a geological overview and a description of the accompanying geological map at 1:250 000. The following articles describe some of the rocks in more detail and treat economic, structural and chronological topics with the aim of presenting an up-to-date account of the Precambrian geology of the region.

Bulletin 182: Vertebrate remains from Upper Silurian – Lower Devonian beds of Hall Land, North Greenland

The microscopic remains of Palaeozoic vertebrates, such as teeth, scales and fragments of jaws, spines and bones, have been shown to be a good complement to the less abundant articulated fossil vertebrates. These 'microvertebrates' increase the knowledge of early vertebrate evolution and are also very useful for dating geological strata.

This bulletin gives an extended description of microscopic remains of jawless and jawed fish from the Upper Silurian and Lower Devonian of Hall Land, western North Greenland. The biostratigraphic utility of these

remains provides data for discussion of the regional stratigraphy and global correlation.

Bulletin 183: Review of Greenland activities 1998

A review of Greenland activities, 1998. *By* K. Sørensen, 7–9.

Conclusion of the 1:500 000 mapping project in the Caledonian fold belt in North-East Greenland. *By* N. Henriksen, 10–22.

New insights on the north-eastern part of the Ketilidian orogen in South-East Greenland. *By* A.A. Garde, J. Grocott & K.J.W. McCaffrey, 23–33.

Airborne geophysical surveys in Greenland in 1998. *By* T.M. Rasmussen & L. Thorning, 34–38.

Upernavik 98: reconnaissance mineral exploration in North-West Greenland. *By* B. Thomassen, J. Kyed, A. Steinfeld & T. Tukiainen, 39–45.

Petroleum geological activities in West Greenland in 1998. *By* F.G. Christiansen, A. Boesen, J.A. Bojesen-Koefoed, J.A. Chalmers, F. Dalhoff, G. Dam, B.F. Hjortkjær, L. Kristensen, L.M. Larsen, C. Marcussen, A. Mathiesen, H. Nøhr-Hansen, A.K. Pedersen, G.K. Pedersen, T.C.R. Pulvertaft, N. Skaarup & M. Sønderholm, 46–56.

Observations on the Quaternary geology around Nioghalvfjærdsfjorden, eastern North Greenland. *By* O. Bennike & A. Weidick, 57–60.

Climate change and the Viking-age fjord environment of the Eastern Settlement, South Greenland. *By* A. Kuijpers, N. Abrahamsen, G. Hoffmann, V. Hühnerbach, P. Konradi, H. Kunzendorf, N. Mikkelsen, J. Thiede, W. Weinrebe and shipboard scientific party of *RV Poseidon*, and surveyors of the Royal Danish Administration for Navigation and Hydrography, 61–67.

Limnological and palaeolimnological studies of lakes in south-western Greenland. *By* N.J. Anderson, O. Bennike, K. Christoffersen, E. Jeppesen, S. Markager, G. Miller & I. Renberg, 68–74.

Publications on Greenland by the Survey, 1998. *Compiled by* B. Eriksen & P.R. Dawes, 75–81.

Bulletin 184: Collected research papers: palaeontology, geochronology, geochemistry

The myodocope ostracode *Entomozoe* from an early Silurian (Telychian, Llandovery) carbonate mound of the Samuelsen Høj Formation, North Greenland. *By* D.J. Siveter & P.D. Lane, 5–12.

The youngest Maastrichtian ammonite faunas from Nuussuaq, West Greenland. *By* W.J. Kennedy, H. Nøhr-Hansen & G. Dam, 13–17.

⁴⁰Ar–³⁹Ar dating of alkali basaltic dykes along the south-west coast of Greenland: Cretaceous and Tertiary igneous activity along the eastern margin of the Labrador Sea. *By* L.M. Larsen, D.C. Rex, W.S. Watt & P.G. Guise, 19–29.

Geochronology of granitic and supracrustal rocks from the northern part of the East Greenland Caledonides: ion microprobe U–Pb zircon ages. *By* F. Kalsbeek, A.P. Nutman, J.C. Escher, J.D. Friderichsen, J.M. Hull, K.A. Jones & S.A.S. Pedersen, 31–48.

Variability of XRF and AAS analyses from the Rock Geochemical Laboratory of the Geological Survey of Denmark and Greenland. *By* A. Steenfelt, 49–57.

Analytical procedures in the Rock Geochemical Laboratory of the Geological Survey of Denmark and Greenland. *By* J. Kystol & L.M. Larsen, 59–62.

Danmarks og Grønlands Geologiske Undersøgelse Rapport

This series comprises unedited reports in limited numbers. Only those numbers dealing with Greenland geological topics are included. Rapport 1999/19 is illustrated in Fig. 2.

1999/4: Mineral resources of the sedimentary basins of North and East Greenland – final report. *By* H. Fougst, S.M. Jensen, K. Kragh, B.R. Langdahl & M. Pedersen, 99 pp.

1999/10: Airborne electromagnetic and magnetic survey in Washington Land and Daugaard-Jensen Land, western North Greenland. Results from project AEM Greenland 1998. *By* T.M. Rasmussen, 19 pp.

1999/11: Airborne electromagnetic and magnetic survey of north-eastern J. C. Christensen Land, eastern North Greenland. Results from project AEM Greenland 1998. *By* T.M. Rasmussen, 17 pp.

1999/19: Geology of East Greenland 72°–75°N, mainly Caledonian: preliminary reports from the 1998 expedition. *Edited by* A.K. Higgins & K.S. Frederiksen, 220 pp. (21 articles).

1999/21: Second symposium on East Greenland geology, mainly Caledonian. Abstract volume. *Edited by* K.S. Frederiksen & K. Thrane, 64 pp.

1999/32: A review of geoscientific exploration and geology in the Kane Basin region of Greenland, central Nares Strait. *By* P.R. Dawes, 63 pp. + 3 maps.

1999/35: Upernavik 98: Mineral exploration in the Upernavik – Kap Seddon region, North-West Greenland. *By* B. Thomassen, J. Kyed & T. Tukiainen, 72 pp.

1999/37: See under *Thematic maps on CD-ROM*, p. 103.

1999/38: Ground check of airborne geophysical anomalies in northern Jameson Land, central East Greenland. *Compiled by* M. Pedersen & H. Stendal, 76 pp.

1999/41: Compilation of data sets for a geochemical atlas of West and South Greenland based on stream sediment surveys 1977 to 1997. *By* A. Steenfelt, 33 pp.

1999/43: Geochemical mapping of the Upernavik – Kap Seddon region North-West Greenland. *By* A. Steenfelt, E. Dam & J. Kyed, 21 pp.

1999/54: Resources of the sedimentary basins of North and East Greenland. *By* L. Stemmerik and the TUPO-LAR project group, 35 pp.

1999/69: Evaluation of oil- and gas-related research at the Geological Survey of Denmark and Greenland (GEUS). *By* R. Burwood, R.H. Gabrielsen & A. Hurst, 19 pp.

1999/80: The evidence for episodic tectono-thermal activity in southern Renland, East Greenland Caledonides. *By* A.G. Leslie & A.P. Nutman, 12 pp.

Greenland MINEX News

Page 1 of issue No. 17 is illustrated in Fig. 2.

Issue No. 16, March 1999, 7 pp.

Leading article: NunaMinerals A/S: a new Greenland minerals company. Established by the reorganisation of Nunaoil A/S.

Issue No. 17, June 1999, 2 pp.

Leading article: Changes in mineral exploration licence conditions. Towards alleviating Greenland exploration deflation. Opportunity for new companies.

Ghexis Newsletter

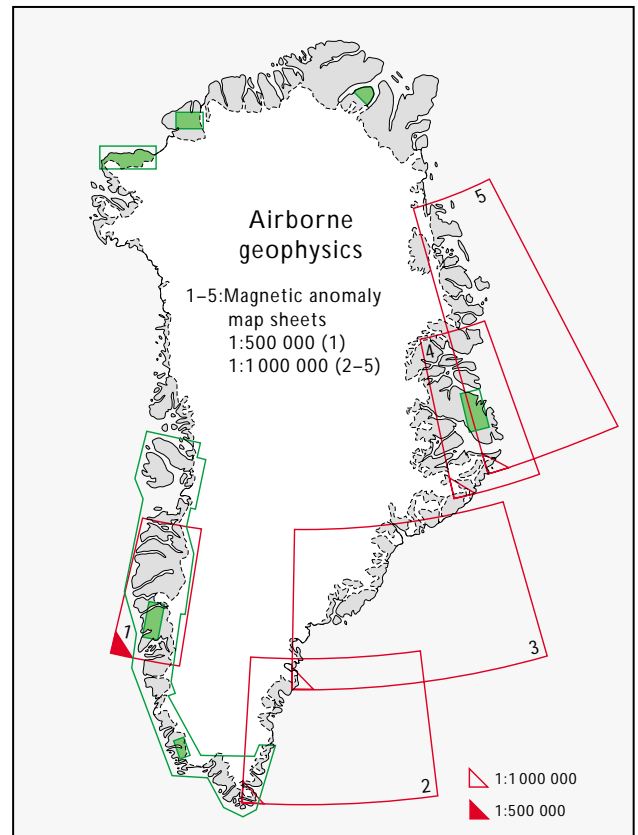
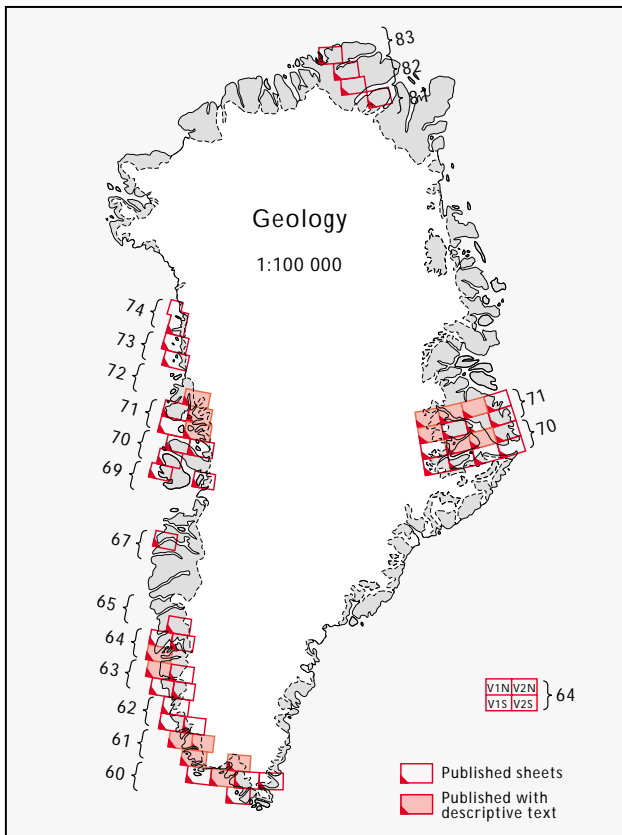
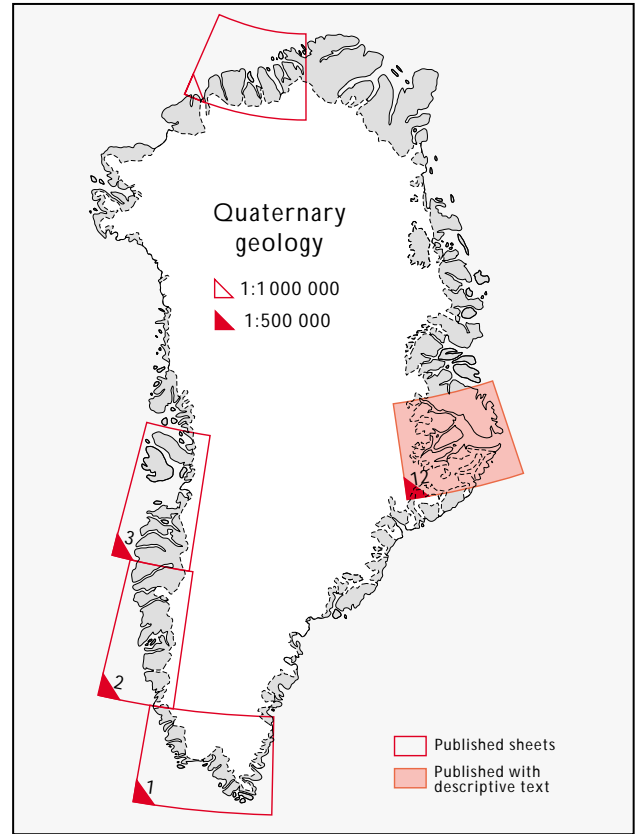
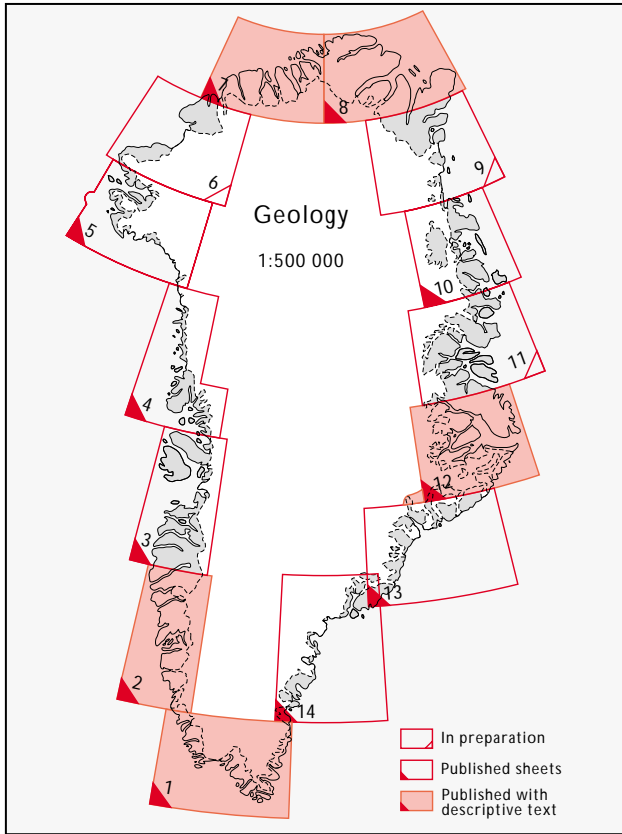
Page 1 of issue No. 15 is illustrated in Fig. 2.

Issue No. 15, April 1999, 4 pp.

Leading article: Licensing round off West Greenland 2001. Open door procedure re-established.

Issue No. 16, December 1999, 10 pp.

Leading article: Doors open for West Greenland exploration.



Maps

The national geological map sheet coverage is shown in Fig. 3, together with those regions covered by geophysical maps.

Airborne geophysical maps

Nuuk–Maniitsoq region, southern West Greenland (Aeromag 1998)

Maps of magnetic field intensity and associated vertical derivative, flight path and digital elevation model derived from radar measurements. Maps in scale 1:50 000 and 1:250 000. Aeromagnetic survey flown by Sander Geophysics Ltd., Ottawa, Canada.

Disko Bugt region, central West Greenland (Aeromag 1998)

Maps of magnetic field intensity and associated vertical derivative and flight path. Maps in scale 1:50 000. Aeromagnetic survey flown by Sander Geophysics Ltd., Ottawa, Canada.

Washington Land – Daugaard-Jensen Land, western North Greenland and J.C. Christensen Land, eastern North Greenland (AEM Greenland 1998)

Maps of electromagnetic anomalies, conductance, magnetic field intensity and associated vertical derivative, flight path and digital elevation model derived from radar measurements. Maps in scale 1:50 000 and 1:250 000. Maps in scale 1:20 000 for part of the Washington Land – Daugaard-Jensen Land area. Combined electromagnetic (GEOTEM) and magnetic survey flown by Geoterrex-Dighem Ltd., Ottawa, Canada.

Facing page.

Fig. 3. Geological and geophysical map sheets by the Survey (**red frames**) with regions covered by airborne geophysical surveys 1992–1999 outlined in **green**. Ten sheets (1–5, 7, 8, 12–14) of the 1:500 000 geological coverage are available on CD-ROM in the *Geology of Denmark and Greenland Map Series*. Of the three 1:500 000 sheets in preparation, sheet 9 is scheduled to be released in 2000. Magnetic maps and data reports are available for all geophysical surveys; in addition, electromagnetic maps and data are available for the six areas with **green shading**. For location of the individual geophysical surveys 1992 to 1999 see the article by T.M. Rasmussen & J.A.M. van Gool (this volume, Fig. 1, page 73).

Thematic maps on CD-ROM

GIS compilation of geoscience data: an ArcView GIS version of partly unpublished data from Wegener Halvø, central East Greenland. By M. Pedersen. Danmarks og Grønlands Geologiske Undersøgelse Rapport **1999/37**, 14 pp. + CD-ROM.

Semi-popular articles

Contains titles from both the Survey's own series and external outlets.

Appel, P.W.U. 1999: Ny fokus på jordens ældste bjergarter. GEUS Årsberetning for **1998**, 48–57. København: Danmarks og Grønlands Geologiske Undersøgelse.

Christiansen, F.G. 1999: Forskningsdrevet olieeftersforskning i Vestgrønland i 1990erne. GEUS Årsberetning for **1998**, 89–97. København: Danmarks og Grønlands Geologiske Undersøgelse.

Garde, A.A. 1999: Guldfund og pladetektonik. Den ketilidiske bjergkædedannelse i Sydgrønland. GEOLOGI – Nyt fra GEUS **3**, 19 pp. København: Danmarks og Grønlands Geologiske Undersøgelse.

Mikkelsen, N. 1999: Grønlands klimahistorie geologisk set. In: Lorentzen, J., Jensen, E.L. & Gulløv, H.C. (eds): Inuit, kultur og samfund – en grundbog i eskimologi, 152–163. Aarhus, Danmark: Forlaget Systime A/S.

Thorning, L. & Rasmussen, T.M. 1999: Geofysisk kortlægning af Grønland fra luften. GEUS Årsberetning for **1998**, 99–107. København: Danmarks og Grønlands Geologiske Undersøgelse.

Weidick, A. & Dawes, P.R. 1999: W.E. Davies, hans arbejde i Nordgrønland og hans systematiske kortlægning af de istidsgeologiske aflejringer. Tidsskriftet GRØNLAND **7/8**, 270–282. Charlottenlund, Danmark: Det Grønlandske Selskab.

Scientific articles in external publications

The list contains two types of article: (1) from peer review international journals and (2) from proceedings volumes. Articles written by non-survey staff, where the basic work was initiated under the Survey's auspices, are also included, as well as those by staff attached to the Danish Lithosphere Centre, Copenhagen.

Appel, P.W.U., Bigi, S. & Brigatti, M.F. 1999: Crystal structure and chemistry of yuanfuliite and its relation-

- ships with warwickite. *European Journal of Mineralogy* **11**(3), 483–491.
- Appel, P.W.U. & Moorbath, S. 1999: Exploring Earth's oldest geological record in Greenland. *Eos, Transactions American Geophysical Union* **80**(23), p. 257 (cont.), p. 261 (cont.), p. 264.
- Bennike, O. 1999: Colonisation of Greenland by plants and animals after the last ice age: a review. *Polar Record* **35**(195), 323–336.
- Bennike, O., Björck, S., Böcher, J., Hansen, L., Heinemeier, J. & Wohlfarth, B. 1999: Early Holocene plant and animal remains from North-east Greenland. *Journal of Biogeography* **26**(3), 667–677.
- Bøggild, C.E. & Knudsen, M.B. 1999: Vertical changes in preferential flow through cold snow packs. In: Eliasson, J. (ed.): Northern research basins. Proceedings of the twelfth international symposium and workshop, 1999, 1–12. Reykavik: Engineering Research Institute, University of Iceland.
- Bøggild, C.E., Knudby, C.J., Knudsen, M.B. & Starzer, W. 1999: Snowmelt and runoff modelling of an Arctic hydrological basin in west Greenland. *Hydrological Processes* **13**(12/13), 1989–2002.
- Bojesen-Koefoed, J.A., Christiansen, F.G., Nytoft, H.P. & Pedersen, A.K. 1999: Oil seepage onshore West Greenland: evidence of multiple source rocks and oil mixing. In: Fleet, A.J. & Boldy, S.A.R. (eds): Petroleum geology of Northwest Europe. Proceedings of the 5th conference, 305–314. London: Geological Society.
- Chalmers, J.A., Pulvertaft, T.C.R., Marcussen, C. & Pedersen, A.K. 1999: New insight into the structure of the Nuussuaq Basin, central West Greenland. *Marine and Petroleum Geology* **16**(3), 197–224.
- Chalmers, J.A., Whittaker, R.C., Skaarup, N., Pulvertaft, T.C.R., Geoffroy, L., Skuce, A.G., Angelier, J., Gelard, J.P., Lepvrier, C. & Olivier, P. 1999: Discussion on the coastal flexure of Disko (West Greenland), onshore expression of the 'oblique reflectors'. *Journal of the Geological Society (London)* **156**(5), 1051–1055.
- Dam, G., Larsen, M., Nøhr-Hansen, H., Pulvertaft, T.C.R., Clift, P.D., Carter, A. & Hurford, A.J. 1999: Discussion on the erosional and uplift history of NE Atlantic passive margins: constraints on a passing plume. *Journal of the Geological Society (London)* **156**(3), 653–656.
- Frei, R., Bridgwater, D., Rosing, M. & Stecher, O. 1999: Controversial Pb-Pb and Sm-Nd isotope results in the early Archean Isua (West Greenland) oxide iron formation: preservation of primary signatures versus secondary disturbances. *Geochimica et Cosmochimica Acta* **63**(3/4), 473–488.
- Grocott, J., Garde, A.A., Chadwick, B., Cruden, A.R. & Swager, C.[P.] 1999: Emplacement of rapakivi granite and syenite by floor depression and roof uplift in the Palaeoproterozoic Ketilidian orogen, South Greenland. *Journal of the Geological Society (London)* **156**(1), 15–24.
- Hansen, H. & Nielsen, T.F.D. 1999: Crustal contamination in Palaeogene East Greenland flood basalts: plumbing system evolution during continental rifting. *Chemical Geology* **157**(1/2), 89–118.
- Harrison, J.C., Mayr, U., McNeil, D.H., Sweet, A.R., Eberle, J.J., McIntyre, D.J., Harington, C.R., Chalmers, J.A., Dam, G. & Nøhr-Hansen, H. 1999: Correlation of Cenozoic sequences of the Canadian Arctic region and Greenland; implications for the tectonic history of northern North America. *Bulletin of Canadian Petroleum Geology* **47**(3), 223–254.
- Hoffmann, G., Kuijpers, A., Thiede, J. & shipboard scientific party of RV *Poseidon* 1999: Climate change and the Viking-age fjord environment of the Eastern Settlement, SW Greenland. *Poseidon* cruise no. 243. Reykjavik–Greenland–Reykjavik 24.08.–11.09.1998. Berichte zur Polarforschung **331/1999**, 34 pp. Bremerhaven, Germany: Alfred Wegener Institute for Polar and Marine Research.
- Kalsbeek, F. & Manatschal, G. 1999: Geochemistry and tectonic significance of peridotitic and metakomatiitic rocks from the Ussuit area, Nagssugtoqidian orogen, West Greenland. *Precambrian Research* **94**(1/2), 101–120.
- Larsen, L.M., Fitton, J.G. & Saunders, A.D. 1999: Composition of volcanic rocks from the southeast Greenland margin, Leg 163: major and trace element geochemistry. In: Larsen, H.C. *et al.* (eds): Proceedings of the Ocean Drilling Program, Scientific Results **163**, 63–75.
- Larsen, L.M., Waagstein, R., Pedersen, A.K. & Storey, M. 1999: Trans-Atlantic correlation of the Palaeogene volcanic successions in the Faeroe Islands and East Greenland. *Journal of the Geological Society (London)* **156**(6), 1081–1095.
- Larsen, M., Hamberg, L., Olausson, S., Nørgaard-Pedersen, N. & Stemmerik, L. 1999: Basin evolution in southern East Greenland: an outcrop analog for Cretaceous–Paleogene basins on the North Atlantic volcanic margins. *American Association of Petroleum Geologists Bulletin* **83**(8), 1236–1261.
- Larsen, M., Hamberg, L., Olausson, S., Preuss, T. & Stemmerik, L. 1999: Sandstone wedges of the Cretaceous – Lower Tertiary Kangerlussuaq Basin, East Greenland – outcrop analogues to the offshore North

- Atlantic. In: Fleet, A.J. & Boldy, S.A.R. (eds): Petroleum geology of Northwest Europe. Proceedings of the 5th conference, 337–348. London: Geological Society.
- Nutman, A.P., Kalsbeek, F., Marker, M., van Gool, J.A.M. & Bridgwater, D. 1999: U-Pb zircon ages of Kangamiut dykes and detrital zircons in metasediments in the Palaeoproterozoic Nagssugtoqidian Orogen (West Greenland). Clues to the pre-collisional history of the orogen. *Precambrian Research* **93**(1), 87–104.
- Petersen, H.I. & Vosgerau, H. 1999: Composition and organic maturity of Middle Jurassic coals, North-East Greenland: evidence for liptinite-induced suppression of humanite reflectance. *International Journal of Coal Geology* **41**(3), 257–274.
- Riisager, P. & Abrahamsen, N. 1999: Magnetostratigraphy of Palaeocene basalts from the Vaigat Formation of West Greenland. *Geophysical Journal International* **137**(3), 774–782.
- Samuelsson, J., Dawes, P.R. & Vidal, G. 1999: Organic-walled microfossils from the Proterozoic Thule Supergroup, Northwest Greenland. *Precambrian Research* **96**(1), 1–23.
- Saunders, A.D., Kempton, P.D., Fitton, J.G. & Larsen, L.M. 1999: Sr, Nd, and Pb isotopes and trace element geochemistry of basalts from the southeast Greenland margin. In: Larsen, H.C. *et al.* (eds): Proceedings of the Ocean Drilling Program, Scientific Results **163**, 77–93.
- Smith, M.P., Soper, N.J., Higgins, A.K., Rasmussen, J.A. & Craig, L.E. 1999: Palaeokarst systems in the Neoproterozoic of eastern North Greenland in relation to extensional tectonics on the Laurentian margin. *Journal of the Geological Society (London)* **156**(1), 113–124.
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