

List of Danish Geodetical and Geophysical Publications 1959

(Compiled by Dansk Geofysisk Forening)

Published in Copenhagen 1959 unless otherwise stated

EINAR ANDERSEN: Transfer of Geographical Coordinates by Means of Clarke's Curve of Alignment. — Geodætisk Instituts Skrifter. 3. Række Bind XXX.

The existence of two different vertical sections between two points P_1 and P_2 of the ellipsoid of rotation has been one of the principal difficulties of the geodesy. The difficulty was surmounted by the introduction of the geodesic and since that time the curve has been used mainly. However, A. R. Clarke in 1858 proposed to use the curve of alignment, the locus of all points having their ellipsoidal normal planes through P_1 going through P_2 also. This curve has the important advantage that the azimuths of the terminals are identical with the measured ones.

In this paper formulas for the length of the curve and for the angles of depression are deduced and a solution of the main problem of geodesy by means of the curve of alignment is found.

Furthermore the paper deals with the difference of azimuth between the two vertical sections, the radius of curvature, and the position of the curve of alignment in proportion to the two vertical sections.

Many numerical examples are given.

EINAR ANDERSEN: Moderne metoder til direkte bestemmelse af store afstande. — Landinspektøren bind 22, pp. 121–128.

The principles of the two electronic distance measuring instruments, the Geodimeter and the Tellurometer are explained, and an auxiliary instrument, a frequency meter, constructed at the Danish Geodetic Institute is mentioned too. Finally the results of some test measurements with the two instruments are given.

H. C. ASLYNG: Shelter and its effect on climate and water balance. — Oikos 9, 1958, pp. 282–310.

Shelter increased the temperature in day hours more than it reduced it at night hours so the average of day and night temperatures was increased. This caused a similar variation in the saturation deficit.

As shelter reduced the wind speed it also reduced the evaporation, but this was partly balanced by increase in temperature and saturation deficit at day hours. In the relatively warm summer 1955 the net reduction in evaporation was less than in the relatively cold summer 1956. For the two summers 1955/56 the potential evaporation was reduced by about one third and one half as much as the wind speed.

H. C. ASLYNG: Climatic aspects of supplemental irrigation. — Report of the conference on supplemental irrigation in Copenhagen 1958. Wageningen 1959, pp. 3–14.

Since 1953 the potential evapotranspiration has been estimated on basis of Penman's theory; recorded incoming and reflected energy; estimated back radiation and recorded wind speed, temperature and dewpoint temperature. Heat flux into the soil was determined.

Evaporation from a 12 m² free water surface in a circular one metre deep ground tank, from screened evaporimeters and from potential evapotranspirometers with a four square metres grass covered surface has been determined 1956 and 1957.

H. C. ASLYNG: Jordbruget og vandbalancen. — Vandbalance, Teknisk Forlag, København, pp. 45–65.

If the water demand of the agriculture is met the evaporation will increase with about 75–125 mm and thus the annual evaporation will be approximately 475 mm. The precipitation in the different regions of the country is about 50 to 250 mm larger than the potential evaporation.

The increased evaporation will reduce the flow-off analogously and in a manner like the water gaining to industrial and urban areas.

J. EGEDAL: On a pseudo-iterating method for reduction of observations of earth-tide for effects from tides of the seas, with an application to observations made at Bergen (Norway) 1934. — *J. Atmosph. Terr. Phys.*, 16, pp. 318–323.

A new method for the reduction of observations of earth-tide for effects from tides of the sea is given for a special case. The method is applicable only when the variation of the effect from the tides of the sea is different from the variation of the earth-tide.

BØRGE FRISTRUP: Foran en ny expedition til Grønlands indlandsis. — *Vor Viden*, pp. 340–346.

A short populare review concerning the plans of the international glaciological expedition to Greenland.

BØRGE FRISTRUP: Nyt fra Antarktis. — *Naturens Verden*, pp. 289–298.

Review of some of the results of the international geophysical year in Antarctic.

BØRGE FRISTRUP: Gletscherundersøgelser i Grønland under det geofysiske år. — *Grønland*, pp. 161–172.

A short review of the Danish investigations of the Greenland glaciers as a contribution to the international geophysical year.

BØRGE FRISTRUP: Recent Investigations of the Greenland Ice Cap. — *Geografisk Tidsskrift* 58, pp. 1–28.

A review of the scientific results obtained at the Greenland Inlandice since the last world war and an interpretation of a series of morphological problems.

BØRGE FRISTRUP: På Grønlands indlandsis. — *Vor Viden*, pp. 756–761.

A short account of the departure of the international glaciological expedition into the Inlandice in April 1959.

BØRGE FRISTRUP: Flydende isøer omkring Nordpolen. — *Vor Viden*, pp. 397–405.

A review of the drifting iceislands, the formations and the physical properties.

Geodætisk Institut: Bulletin of the seismological station København:

No. 75. Jul–Dec 1958. 105 earthquakes and microseismic readings every 6 hours.

No. 76. Jul–Dec 1958. Additional microseismic readings for IGY days and periods.

Bulletin of the seismological station Scoresbysund:

No. 30. Jan–Dec 1956. 344 earthquakes.

No. 31. Jan–Jun 1957. 296 earthquakes.

No. 32. Jul–Dec 1957. 194 earthquakes and microseismic readings every 6 hours.

No. 33. Jul–Dec 1957. Additional microseismic readings for IGY days and periods.

No. 34. Jan–Jun 1958. 153 earthquakes and microseismic readings every 6 hours.

No. 35. Jan–Jun 1958. Additional microseismic readings for IGY days and periods.

HENRY JENSEN: Daily Determinations of the Microseismic Direction in København during the IGY 1958. — *Geodætisk Institut, Meddelelse No. 38.*

By means of the method of the empty half-plane described by the author in *Geod. Inst. Medd.* 36 daily determinations of the direction of approach of the microseisms in København are undertaken. The result is that most of the microseisms come from the North. The distribution of period, amplitude, and energy over the different octants of the horizon is presented. A measure of reliability is defined and its connection with the probable error of the direction found is given. Some remarks on the nature of the waves are offered.

A. KILERICHT: The Ganges Submarine Canyon. — *Andhra University Memoirs in Oceanography, Vol. II*, pp. 29–32. Bangalore 1958.

Results of echo soundings in 5 sections across the Ganges submarine canyon, carried out from H.M.S. 'Galathea' during the Danish Deep-Sea Expedition round the World 1950–52.

A. KILLERICH: Bathymetric features of the Philippine Trench. — *Galathea* Report, Vol. 1.

K. J. KRISTENSEN: Temperature and heat balance of soil. — *Oikos* 10, pp. 103–120.

Soil temperatures are measured by use of thermistors at different depths from 2.5 to 150 cm under bare soil and from 2.5 to 700 cm under short grass.

The delay in appearance of the highest and lowest temperature is about 18 days per one m depth. An equation for calculating the difference between maximum and minimum temperatures at a given depth is given. This difference is calculated to 0.2 C at 15 m depth.

The diurnal heat exchange in a sunny summer period is found to be 45 cal/cm². The summer accumulation of heat in the soil covered with short grass was in 1955 about 3400, and in 1956 and 1957 about 2700 cal/cm² for the period from April 1 to August 31.

HANS KUHLMAN: Weather and Ablation Observations at Sermikavsak in Umanak District. — *Medd. om Grønland*, 158 no. 5, pp. 19–50.

Meteorological data from Sermikavsak in the 1957 season are given and analyzed. The melted volume is measured and the dependence of the pollution of the ice is discussed. Special investigations were carried out with regard to wind and temperature in certain traverses across the glacier. It is shown that the melting to a large degree depends on the radiation.

HANS VALEUR LARSEN: Runoff studies from the Mitdluagkat Gletscher i SE-Greenland during the late summer 1958. — *Geografisk Tidsskrift* 58, pp. 54–65.

A study of the Mitdluagkat glacier flow-off and an analysis of the daily sea-level fluctuations. A series of drainage of ice stemmed lakes are listed. The relationships between flow-off at the glacier and similar results in Iceland are given.

K. LASSEN: Local Aurorae in the Morning Hours at Godhavn. — *Publ. fra Det Danske Meteorologiske Institut*, Comm. Magn. No. 24.

A group of aurorae, occurring almost every clear morning near zenith at Godhavn, is described. It is assumed that these aurorae belong to an inner auroral zone, crossing Greenland from Godhavn to Danmarkshavn. The aurorae are correlated with the occurrence of sporadic ionospheric layers, but not with magnetic activity.

K. LASSEN: Existence of an Inner Auroral Zone. — *Nature*, Vol. 184, No. 4696, pp. 1375–1377.

Further details about the above-mentioned aurorae are given. A comparison with auroral logs from other polar stations leads to the conclusion that the inner auroral zone which has been observed to cross Greenland near Godhavn is approximately coinciding with the auroral isochasm through Godhavn, at least from North-East Canada over Greenland to the region of the geographic pole. It is shown that differences in form of the diurnal distributions of frequency of aurorae at polar stations that have not been explained hitherto, may result from the existence of the inner auroral zone.

I. LEHMANN: Velocities of longitudinal waves in the upper part of the Earth's mantle. — *Annales de Géophysique*, t. 15, pp. 93–118. Publications of the Dominion Observatory Ottawa, vol. XIX, no. 10. (Ottava).

Observed European transmission times for longitudinal waves are found to be in good agreement with those derived on the assumption that the velocity gradient is quite small or zero down to a depth of 220 km where there is a sudden increase of velocity and of velocity gradient.

I. LEHMANN: On amplitudes of P near the shadow zone. — *Annali di Geofisica*, vol. XI, no. 3–4, 1958. Lamont Geological Observatory (Columbia University) Contribution no. 319.

51 short-period vertical North American and Canadian records of the Samoa earthquake of April 14, 1957 were examined. The P amplitude was found to be quite small at epicentral distances greater than 100°, but P was still clearly recorded at 103° and there was no abrupt decrease of amplitude at 105° where the shadow zone usually is taken to begin.

I. LEHMANN: The Interior of the Earth as revealed by earthquakes. — *Endeavour*, vol. XVIII, no. 70, pp. 99–105.

ASGER LUNDBAK: Forskningsresultater fra pol til pol i det Internationale Geofysiske År. — Grønland, pp. 415–424.

A summary of some results obtained during the international geophysical year with a special concern to the arctic and antarctic regions.

J. M. LYSHEDE: Danmarks vandbalance. — *Ingeniøren* nr. 18, pp. 553–57, 1958.

The paper intends to elucidate problems of the hydrologic cycle and to disprove some common mistakes.

J. M. LYSHEDE: Nedbørs-, afstrømnings- og fordampningsforhold i Danmark. — Vandbalance, Teknisk Forlag, København.

A contribution to a course on water balance. Some typical hydrologic facts are discussed on basis of variations in the climate and in the physical conditions of the soil.

Meteorologisk Institut: Magnetic Yearbook. Part 1: Denmark (except Greenland) 1956.

Ugeberetning om Nedbør m. m. (nr. 1–52, pp. 104), årgang 1959.
Månedstillæg om Nedbør m. m. (nr. 1–12, pp. 48), årgang 1959.

JENS TYGE MØLLER: Glaciers in Upernivik Ø. With special reference to the periglacial phenomena. — *Geografisk Tidsskrift* 58, pp. 30–53.

The glacial—and especially periglacial—morphology of the glaciers at Upernivik Ø is described. The importance of the solar exposure to the occurrence of ground ice is studied.

JENS TYGE MØLLER: Et tidevandsfænomen i lille målestok. — *Geografisk Tidsskrift* 57, pp. 38–50.

The movements of the sea-waves originating from turned-over icebergs have been studied at the base at Upernivik Ø. It is shown that the wave-lengths are much longer than the usual ones. Moreover the erosion at flow-in and flow-out has been examined. The results obtained have been used in the interpretation of the banks and the passages at the Grådyb tidal water region.

JENS TYGE MØLLER: A West Greenland Glacier Front. — *Medd. om Grønland* 158 no. 5 pp. 3–17 + 1 plate.

A summary of the geodetic survey of the Sermikavsak glacier front with a view to future investigations.

K. NYGAARD: Geodimeter Measurements. An Evaluation of Results and Mean Error. — *Geodætisk Instituts Skrifter* 3. Række, Bind XXXI. 1960.

Electro-optical distance measurements from two experimental base lines are given.

Certain details in the instrumental equipment are discussed, with special regard to the various sources of random errors and systematic ones.

A method of computation is shown. Finally a further development of the principles of an electro-optical distance measuring is proposed.

SVEND SAXOV: Variation of the Worden Gravimeter Small Dial Scale Factor with Time. — *Geophysical Prospecting* 7, pp. 147–157.

A series of repeat observations during a period of 5 years reveal a variation with time of the Worden gravimeter. No. 142 small dial spring system. A possible change in the gravity difference concerned is ruled out. It is shown that the small dial scale factor has diminished by about 0.25 % within the last two years against about 0.5 % four to five years ago. The ratio of L.D. to S.D. has been analysed and the results obtained show confirmation of the change in the small dial system and prove a consistency in the large dial system.

SVEND SAXOV: Listed Diabas Dike, Density and Gravity. — Meddelelser Dansk Geologisk Forening 14, pp. 133–140.

Gravimetric transverses have been established across the diabas dike near Listed, the dike outcropping on the coast and at Tamperdal in Paradisbakkerne; the width is 30 m and 20 m, respectively. The standard error of the gravimetric measurements is 0.021 mGal. Density determinations of the diabas and the surrounding granites have been undertaken. The gravimetric results reveal the course of the dike.

SVEND SAXOV: Nyere geofysisk litteratur. 2. — Meddelelser Dansk Geologisk Forening 14, pp. 159–171.

The textbooks by Eve and Keys, and Sorokin are reviewed. The different collocations in advances and progress of geophysics are discussed. The Vening Meinesz homage volume is likewise dealt with.

O. SIMONSEN: Report on Establishment and Adjustment of European Levelling Networks. — Association Internationale de Géodésie. Commission Permanente Internationale des Nivellements Européens. Report stencilled by the Danish Geodetic Institute, Copenhagen 1959.

This report concerns

(a) Historical remarks on an adjustment comprising 48 polygons within Germany, the Netherlands, Belgium, France, Switzerland, Italy, Austria and the area of Czechoslovakia and being performed by A. Börsch and F. Kühnen and presented in 1891 in Florence by F. R. Helmert. Preliminary determinations of the heights of the Mean Sea Level have been compared by the aid of this levelling net.

(b) A report by T. J. Kukkamäki: The Work of the Special Study Group No. 5 (Brussels 1951) on Adjustment of European Levelling Networks after a simplified Method according to Resolutions No. 9 (Brussels 1951) and No. 11 (Rome 1954). (See Bulletin Géodésique No. 22 1951, pp. 482–485, No. 35 1955, pp. 90 and 99).

(c) Report on Establishment 1955–1958 and Adjustment performed during 1958 of the United European Levelling Network U.E.L.N. (or Réseau Européen Unifié de Nivellement, R.E.U.N.) comprising contributions from Austria, Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland.

At 43 tidal stations attached to U.E.L.N. local and annual heights of Mean Sea Level have been used for calculation of a local height M_{Ca} of Mean Sea Level referred to epoch 1950.0; and by the aid of U.E.L.N. the heights M_{Ca} have been used for calculation of levelling heights (in a common European Levelling system) h_{MSL} of Mean Sea Level for epoch 1950.0, however, without allowance for correction for secular movement of the levelling network itself except within Finland, Norway Sweden.

JENS SMED: Synoptic Hydrographic Charts, March–September 1958.

Monthly charts showing surface water temperature and salinity for the North Sea and adjacent waters; for the Cattegat, Belts and western Baltic also wind and current. For details see the 1953 list.

JENS SMED: Monthly Anomalies of the Surface Temperature of the Sea West of South Greenland 1876–1956. — Annales Biologiques, Vol. XIV, p. 11.

Over the years mentioned monthly anomalies of the surface water temperature (the period 1876–1915 being taken as standard) are given for the area 60°–70°N., 50°–58°W.

JENS SMED: Monthly Anomalies of the Surface Temperature in Areas of the Northern North Atlantic in 1957. — Monthly Anomalies of the Surface Temperature in an Area off the Eastern Coast of Scotland in 1957. — Annales Biologiques, Vol. XIV, pp. 12–14 and p. 60.

Positive anomalies (the period 1876–1915 being taken as standard) are still highly predominant. In the northern North Atlantic region as a whole the average anomaly over the year is 0.7°C., i.e., 0.2°C. higher than in 1956. In the Scottish area the average anomaly is 0.8°C., as compared with 0.1°C. only in 1956.

TH. SORGENFREI: Vandbalance. — Teknisk Forlag, København 1959, pp. 22–44, Geologiske forholds betydning for vandindvindingen.

A brief outline is given of the geology of Denmark with emphasis on permeable formations and the equilibrium of fresh and salt ground water. Salt water is found at various depths under practically the whole of Denmark. It is derived either from salt bearing formations below the Cretaceous Deposits or from connate water. The potential of the salt water at depth may occasionally exceed the normal hydrostatic pressure. Under special conditions permeable zones may have been established between the deep lying salt water and the shallow fresh ground water due to structural displacements. The fresh ground water may in such areas be contaminated with salt water. A few case histories of ascending salt water in water supply areas are discussed.

BJ. SVEJGAARD: Gravity Measurements in Western Greenland 1953 and 1955. — Memoires de l'Institut Géodésique de Danemark. 3^{me} série, Tome XXXII.

The author has carried out measurements in 89 new stations between 69°N and 78°N. The volume contains these measurements, their calculations and results. The final gravity value, the free-air anomaly and Bouguer anomaly are given for each station, and Bouguer anomaly contours are drawn. A simplified method for the calculation of the influence of the sun, the moon and the tide is described.

A. WEIDICK: Glacial Variations in West Greenland in historical Time. — Meddelelser om Grønland bd. 158, 4, 1959.

The glacier fluctuations in the districts of Julianehåb, Frederikshåb, and Godthåb in western Greenland is elucidated by an interpretation of literature and archive materials. Information has been found available for glaciers at 29 localities. In most cases changes in the glacier positions can be traced back to about 1875, however, in a few cases back to the 18th century. The present recession of the glaciers in the regions dealt with seems to take place in time with the glacier movements in Iceland and Scandinavia.

A. WEIDICK: Gletscherændringer i Grønland og Europa i historisk tid. — Tidsskriftet »Grønland« 1958, pp. 137–145.

The glacier fluctuations in western Greenland are compared with the conditions in the Alps and Scandinavia during the years 1800 to 1950. For this period there seems to be a good agreement between the two regions thus it may be presumed that the glaciers in Greenland as well as in Europe initiated their thrusts after about 1500.

A. WEIDICK: Frontal variations at Upernaviks Isstrøm in the last 100 Years. — Meddelelser fra Dansk Geologisk Forening 14, pp. 52–60, 1958.

Changes in the Upernavik glacier brook front has been proved during the last 100 Years by means of literature, archive material, and air photographs (from the Danish Geodetic Institute). A comparison with the well known Jacobshavn glacier indicates that during the period under discussion the frontal changes of the glaciers are agreeing.