

NORMALLY MAGNETIZED LOWER TERTIARY LAVAS ON NÛGSSUAQ, CENTRAL WEST GREENLAND

Niels Hald

Koch (1959) suggested that the basal pillow breccia of the volcanic sequence on southwestern Nûgssuaq around Nûk qiterdleg is equivalent to sediments from the Upper Atanikerdluk Formation deposited further east; and also that the tuff horizons found intercalated among the sediments in the Naujat Member of the Upper Atanikerdluk Formation and in the Abraham Member of the Upper Agatdal Formation are equivalent in time to these early breccias. Pedersen (1973) tentatively correlated interbasaltic bituminous shales found 1 km above the base of the volcanic sequence on northern Disko with sedimentary rocks of the Upper Atanikerdluk Formation and Upper Agatdal Formation on Nûgssuaq.

In agreement with these suggestions preliminary magnetic polarity measurements of basaltic lavas from Nûgssuaq indicate that the eruption of breccias and lavas started earlier in the outer Auvfarssuaq valley than in central and northern Nûgssuaq.

Eight profiles through the breccias and the lavas on Nûgssuaq were measured during the field season of 1973: four along the north coast and four along the north side of the Auvfarssuaq valley (fig. 1). Rock specimens with the vertical direction marked were sampled with an interval of 30-50 m. The magnetic polarity of the whole samples was measured in the laboratory. Selected specimens were cored parallel to the vertical direction; the polarity of the cores was determined on a spinner magnetometer before and after partial demagnetization in peak fields of 200-600 Oe.

The measurements have shown that the flat lying basaltic flows on Nûgssuaq east of the Itivdle valley are usually reversely magnetized like most of the Early Tertiary lavas in West Greenland (Kristjansson & Deutsch, 1973, Athavale & Sharma, 1975). An exception is profile 8 (fig. 1) on the north side of the Auvfarssuaq valley 14 km east of Marrait. Here more than 400 m of pillow breccias (base not exposed) are overlain by a 250 m thick sequence of normally magnetized lavas alternating with pillow breccias (580-830 m above sea level). This sequence is followed by reversely magnetized lavas (fig. 2).

According to Athavale & Sharma (1975) the lava pile on northern Disko, which is more than 3 km thick, is made up of a lower reversely magnetized section comprising only a few lava flows just above the pillow breccias; a middle section about 200 m thick of normally magnetized flows; and an upper section comprising the larger part of the pile consisting of reversely magnetized flows. It seems justified to correlate the normally magnetized lavas found in the outer part of the Auvfarssuaq valley on Nûgssuaq with the normally magnetized section on Disko and also with the normally magnetized lavas found by Athavale &

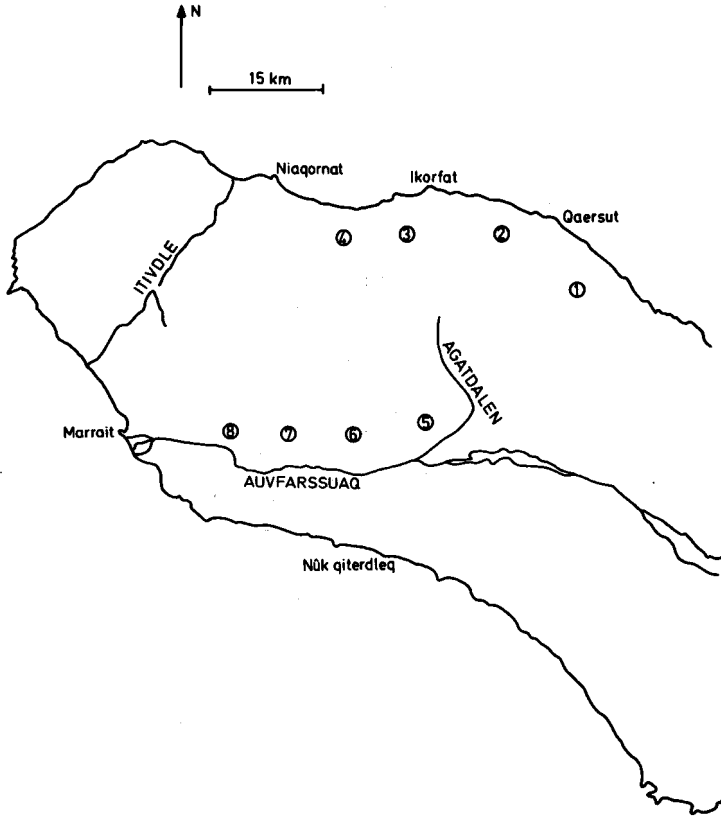


Fig. 1. Sketch map of central and western Nûgssuaq. Measured profiles shown by numbers.

Sharma (1975) in a small fault bounded area west of Marrait on Nûgssuaq approximately 15 km west of profile 8 (Henderson, 1975).

The sequence of basal breccias and normally magnetized lavas in profile 8 is thick compared with the basal breccias of the two eastern profiles in Auvfarssuaq and with the basal breccias in the profiles 2, 3 and 4 along the north coast. It is therefore unlikely that the normally magnetized lavas are represented by the subaqueous breccias in central and northern Nûgssuaq. A hiatus which could be correlated with the normally magnetized lavas was not observed in these profiles.

In agreement with Koch (1959) and Pedersen (1973) it is therefore concluded that the volcanic sequence around Marrait and in the outer Auvfarssuaq valley – and also on northern Disko – was already several hundred metres thick when the sediments in central and northern Nûgssuaq were first covered by lavas or pillow breccias.

