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Relocated local earthquakes in SE Greenland align on old geological boundaries and structures

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In the Ammasalik region in Southeast Greenland 62 local earthquakes have been analyzed and re-located. Some of the events had formerly been located from distant stations by using a universal earth model. The result of this localization was a scattered distribution of the events in the region. The locations have now been improved by using a local earth model along with phase readings from two local stations not previously included; ANG in Tasiilaq and ISOG in Isortoq. From relocating the events two zones with a higher degree of seismicity than in the rest of the region are observed. The first zone is located by felsic intrusions. The second zone is at the boundary between the Archaean Craton and the Ammasalik region where reworked Archaean gneisses are dominating the geology. During the analysis it was observed that the additional information from the local stations are of great importance for the result. When the earthquakes were located by using the local earth model, but without these additional information, the result did not differ significantly from the one obtained by the universal earth model. The data was analyzed using SEISAN software [Ottemöller and Havskov, 1999]. P-, S- and azimuth phases were read in the waveform data along with readings of the amplitudes for magnitude determination. The events were first located with the hypocenter locating program HYP and thereafter verified by a grid search.