

Digitalization workshop: Historical geomagnetic data recovery and magnetic shield

Otto Kärhä, Shabnam Nikbakhsh, Eija Tanskanen

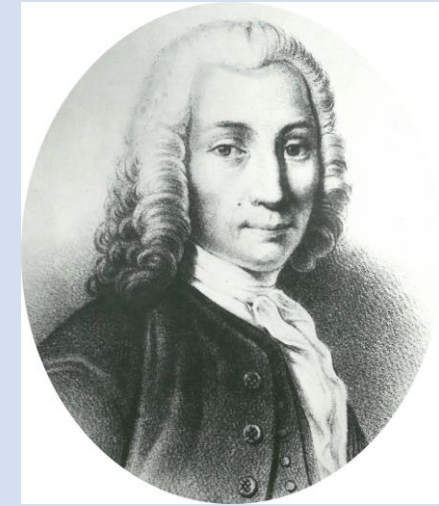
◆ The connection between the northern lights and magnetic disturbances was discovered in 1740s

◆ Helsinki magnetic-meteorological observatory operated 1844-1911

◆ Sodankylä Geophysical Observatory has made geophysical measurements and research since 1914



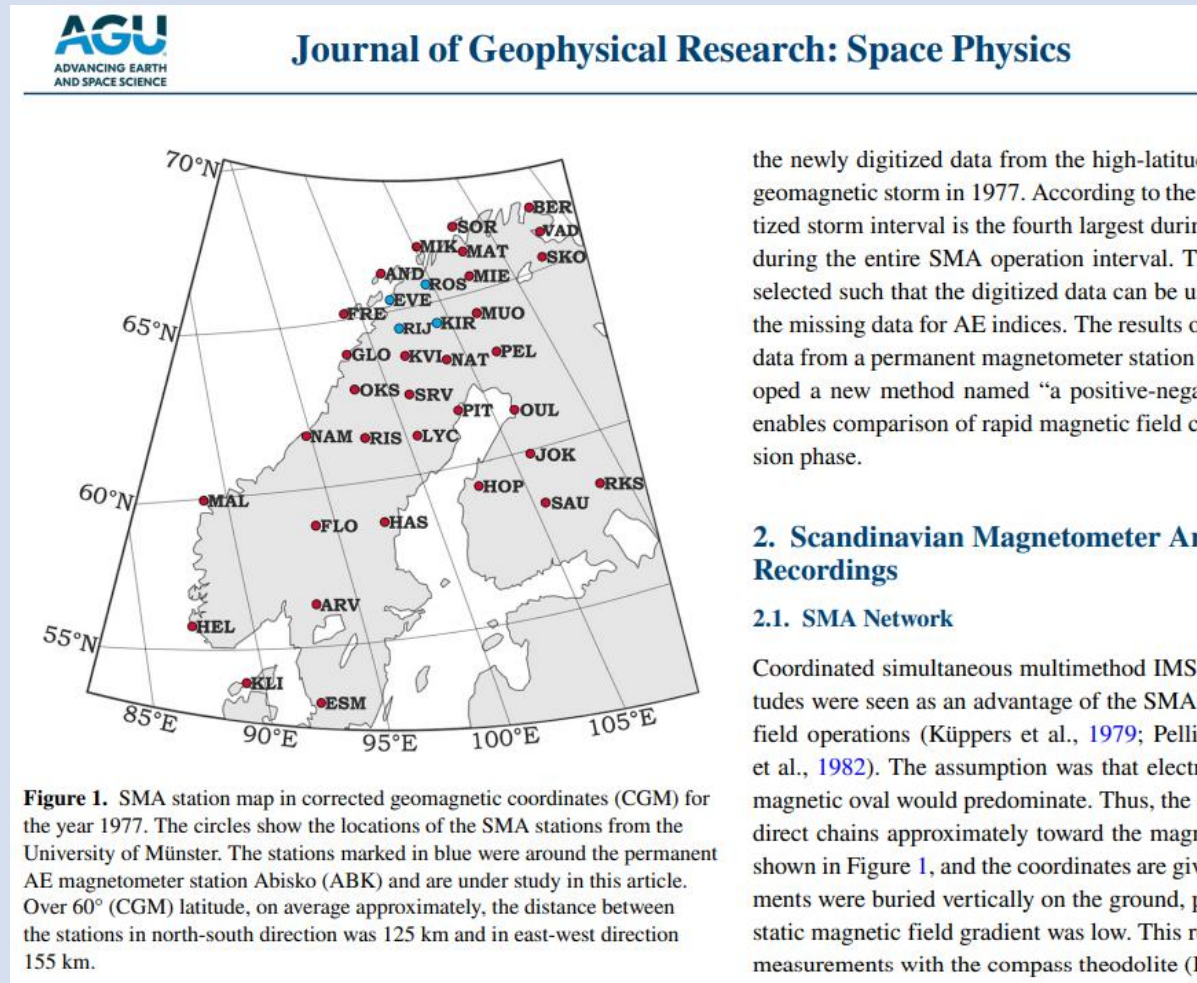
Figure 3. The main building of the Helsinki magnetic observatory in the 1930s. The building was set up in 1841 and demolished in the early 1960s. A new building for the Institute was set up in 1966 (Photo: FMI).



◆ Scandinavian Magnetometer Array (1977-1979)

◆ 36 instruments were buried in the ground

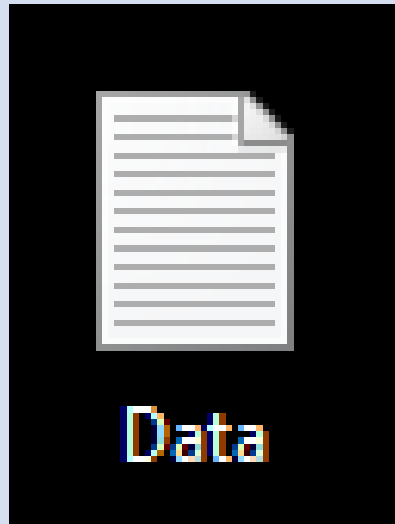
◆ Instruments were based on modified Gough-Reitzel magnetometer with three wire-suspended magnets and a camera



Old data does not look like this!!

◆ The problem with historical data is that it cannot be used before digitization

◆ It's difficult to make science without numerical values



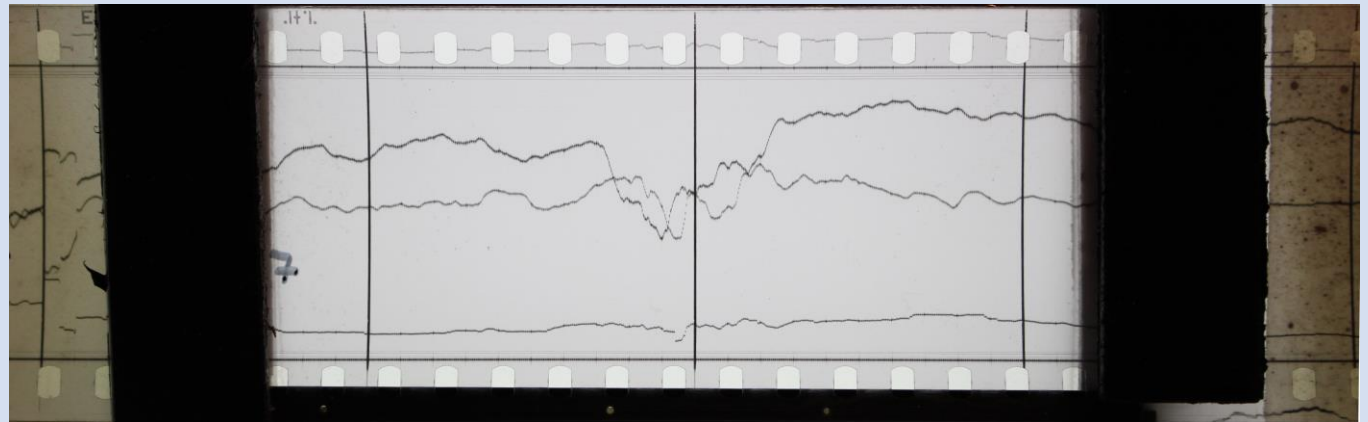
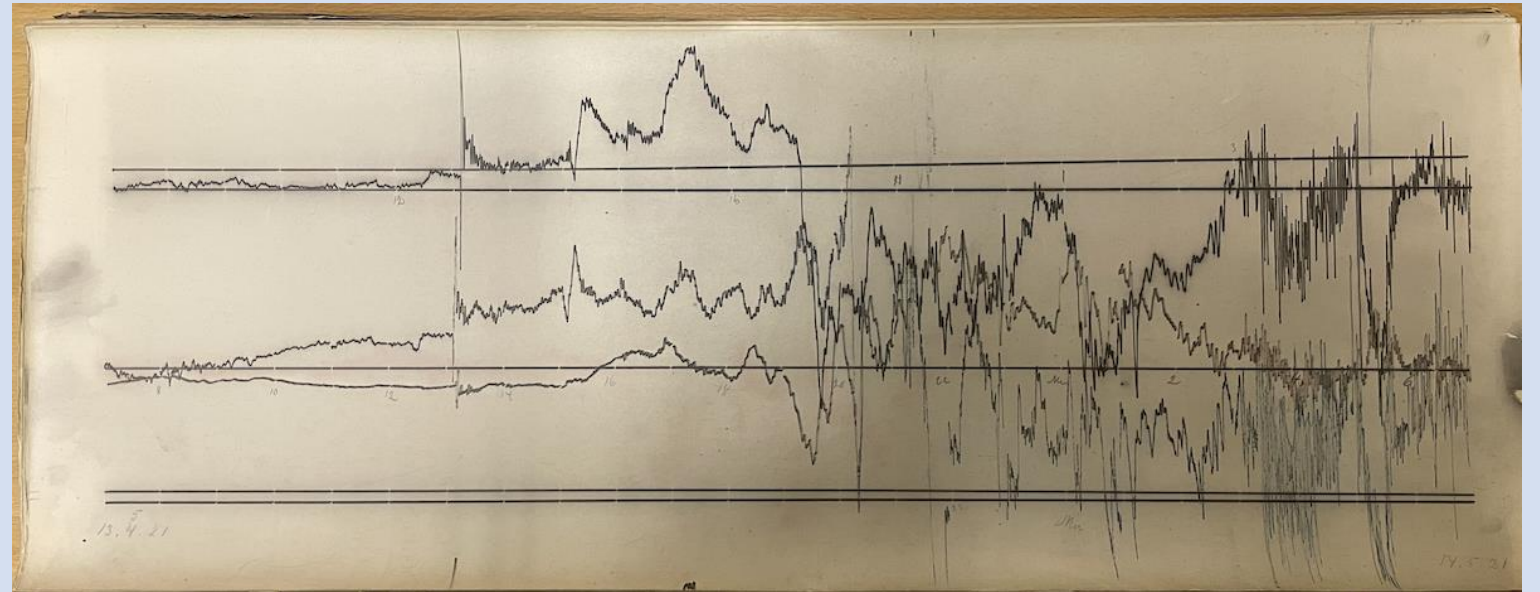
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0	0	0	19771210	121200	344
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1	0	4	19771210	122400	344
-1	0	1	19771210	123000	344
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2	-5	4	19771210	140000	344
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2	-3	1	19771210	141200	344
4	0	1	19771210	141800	344
6	1	4	19771210	142400	344

Old data look like this!!

◆ Data recorded on paper or film becomes unreadable over time

◆ Current or future researchers cannot use the data after this

◆ In future data could be maybe used to study phenomena that we don't even know yet



Q: Why would I use old data if it takes so much time?

- ◆ Data recorded on paper or film becomes unreadable over time

- ◆ Current or future researchers cannot use the data after this

- ◆ In future data could be maybe used to study phenomena that we don't even know yet

1. The magnetic environment changes over time. For example, the strength of the field has shown signs of weakening.

2. You cannot study past solar cycles with current cycle magnetometer data

3. Modern data is often already researched when it's published for everyone

4. You can be the first researcher of old data

5. Breaks in magnetic indices cannot be patched with modern data. There are no auroral electrojet indices for the year 1977 because the existing data has not been digitized.

◆ Digitized photos and numerical values should be properly archived

◆ The National Archives of Finland is a good option for original recordings after digitization

◆ Recordings will remain readable for a long time if stored correctly (temperature, humidity)



THE NATIONAL ARCHIVES
OF FINLAND



Thank you!

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