

Magnetic Susceptibility Measurements on FAR-DEEP cores

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Explanation of columns:

Hole

Number of borehole.

Core

Core run number

Section

Number of core section

Top Depth

Corrected driller depth of measuring point in m

Date

Date and time of measurement

Processor

Initials of personnel doing the measurement

Sensor

Name and diameter of the Bartington Sensor used for measurement.

Reading

The value K' directly read from the MS2 instrument. These readings must be corrected for two independent effects:

1) $K' \rightarrow K^*$

Correcting for the volume of measured material in relation to the sensor characteristic. Different core diameters integrate over different volumes. The corresponding correction factor can be obtained from the instrument manual and depends on d/D , where d is the core diameter, and D the sensor diameter.

Here $D = 68$ mm and $d = 51$ mm, such that $d/D = 0.75$ and $K^* \sim K' / 1.4$

For $D = 133$ mm $d/D = 0.383$, and $K^* \sim K' / 0.33$

Correction factors (1.4 and 0.33) are taken from Fig. 4 of the "MS2 Magnetic Susceptibility System" manual.

2) $K^* \rightarrow K$ (final value)

Correcting for the specific sensor properties which depend on fabrication, environment and time. These influences are compensated through calibration using materials of known susceptibility, e.g. plastic tubes filled with pure water ($K = -9.05 \times 10^{-6}$ SI). This calibration must also take into account effects from 1) if the calibration tubes have diameters d_{cal} , different from the FAR-DEEP cores. This last calibration step is still missing.

Susceptibility

This currently gives the value K^* in 10^{-6} SI (microSI). Finally it will contain K

Calibration

Information about the performed calibration procedure, including calibration factors.

Measured Time

Duration of the measurement. This gives information about the precision. The MS2 allows for either 10 s or 1s integration times. For low susceptibilities, 10s data are more reliable.