Introduction

Geomagnetically induced currents (GICs) in northern Europe during the April and July storms in 2000

Two severe magnetic storms in April and July 2000 caused major events of geomagnetically induced currents (GICs) in northern Europe. Besides data, we present some modelling results:

- Empirical equivalent currents with the method of elementary current systems.
- Calculations of GIC using geomagnetic recordings.
- Spectral analysis of GIC.

The paper deals with the April 7, 2000 storm. Corresponding material about the July storm is available on PC.

There is another poster about the April storm with global MHD simulations.

Figure 2: GIC measuring sites in the Scottish high-voltage power system and natural gas pipeline in 2000. GIC is recorded on the following: 44 kV transformers, PB = Poltalloch; RAU = Romania; VISA = Ylidissi; and in the pipeline at Hamina (MAN).

Ground magnetic field

Figure 4: Difference of the minima and maxima of B (in nT) at BHAG magnetometer stations (upper panel) and at UK observatories (lower panel) on April 7, 2000.

Ionospheric currents

Figure 6: GIC and dB/dt in Scotland on April 7, 2000.

From B to GIC

Figure 8: Snapshot of the animation of ionospheric equivalent currents determined by the spherical elementary current method. Black dots are magnetic observatories whose data were used. The white triangle is located exceptionally well.

Ionospheric currents

Figure 7: Snapshot of the animation of ionospheric equivalent currents determined by the spherical elementary current method. Black dots are magnetic observatories whose data were used. The white triangle is located exceptionally well.

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