



ILMATIETEEN LAITOS
METEOROLOGISKA INSTITUTET
FINNISH METEOROLOGICAL INSTITUTE

Nowcast Server for Geomagnetically Induced Currents

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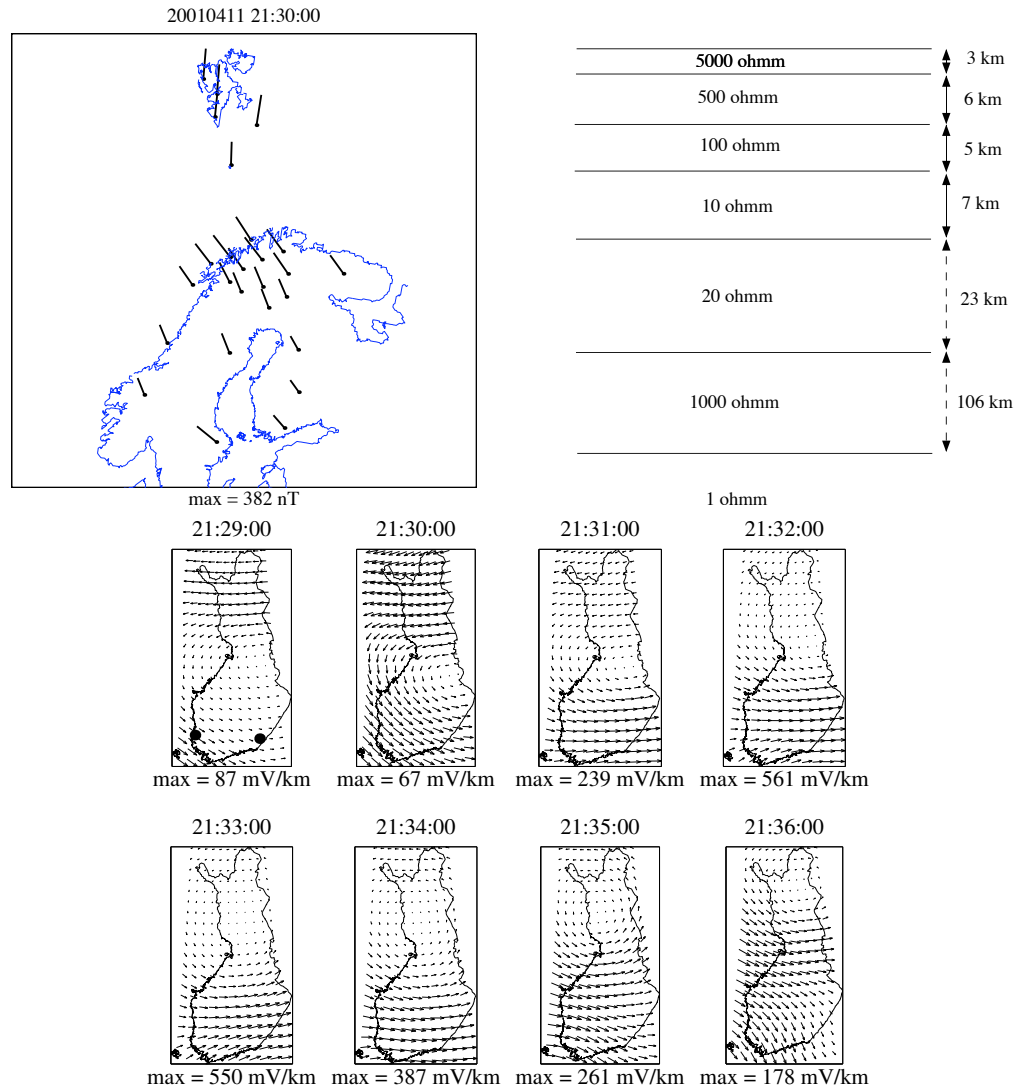
³ Natural Resources Canada, Ottawa, Canada



<http://www.eurisgic.eu/>

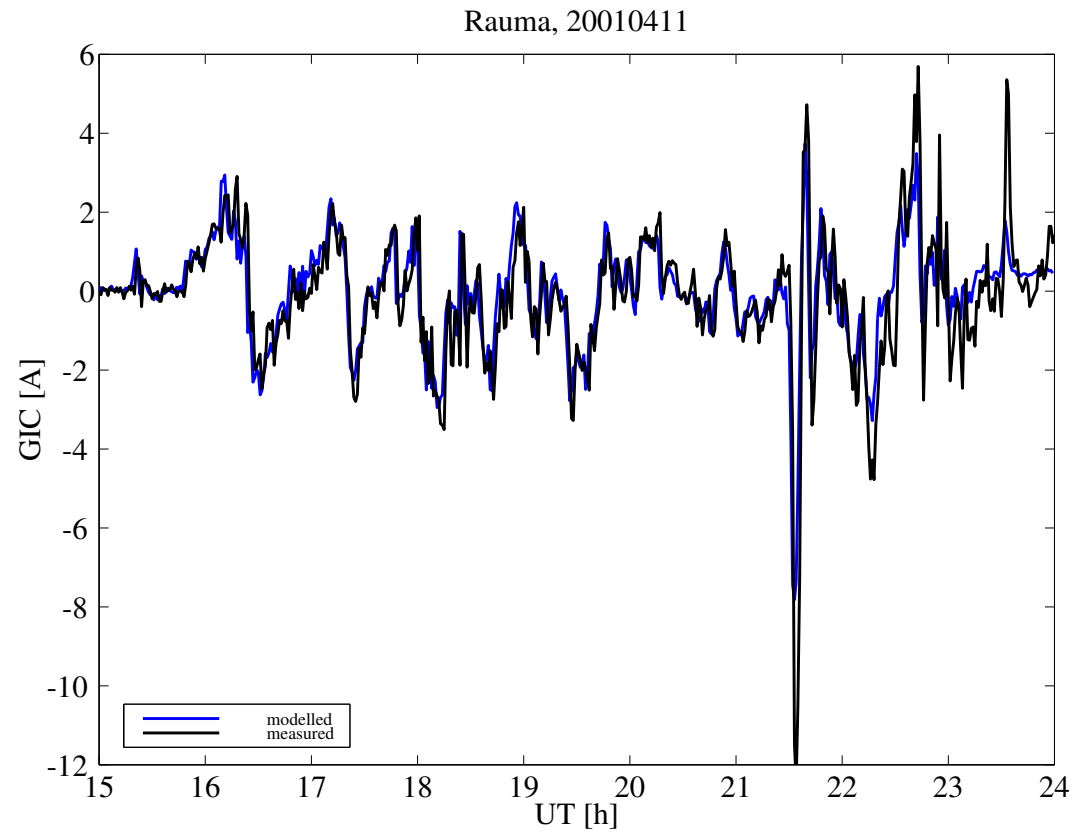
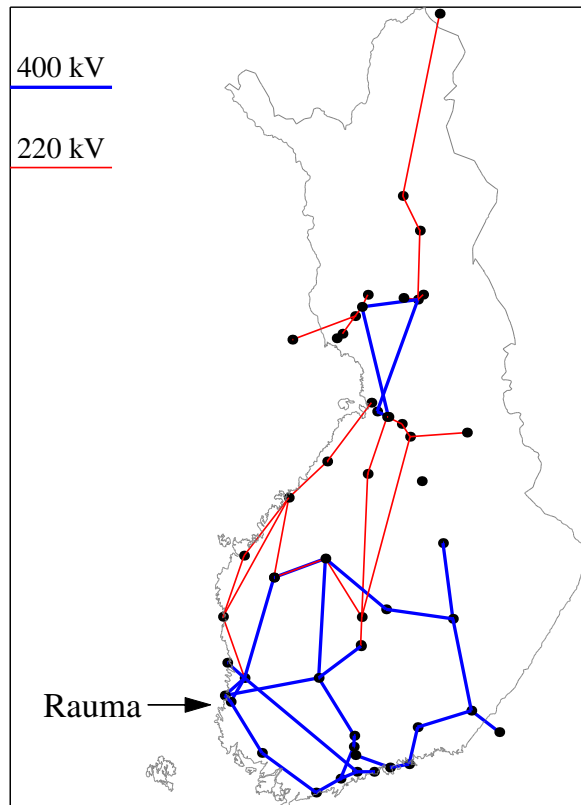


Ground magnetic field and conductivity model → electric field



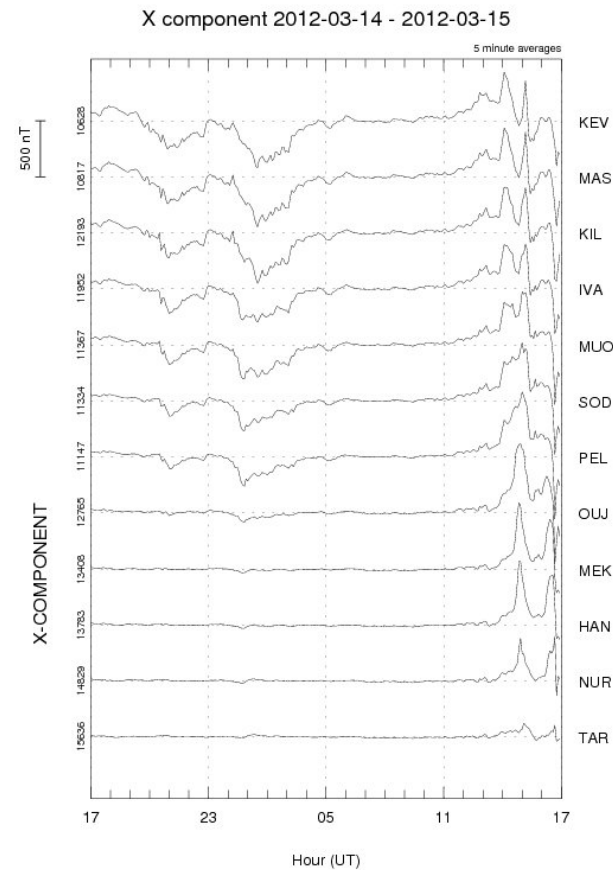
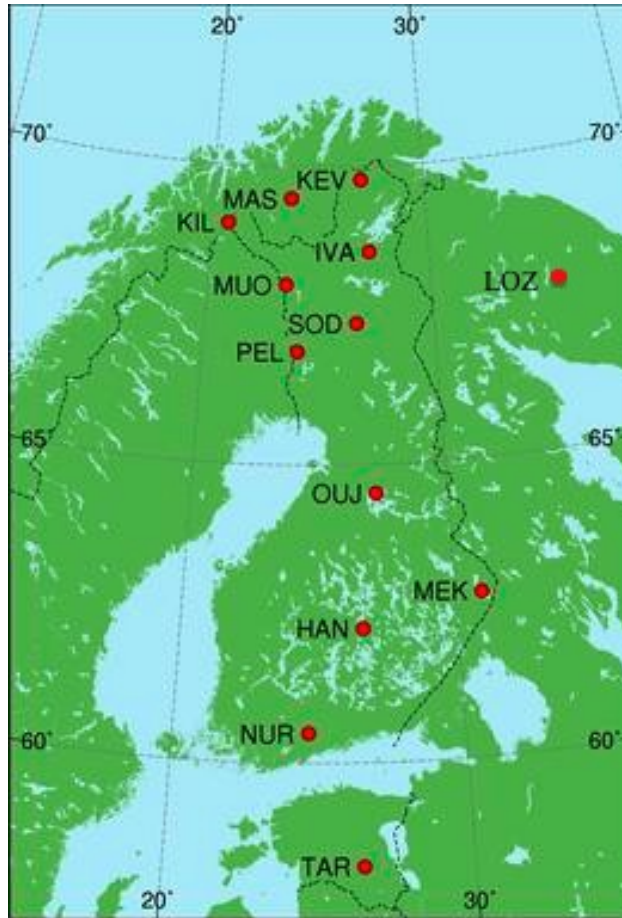


Electric field and DC model of a conductor system → GIC





Real-time application

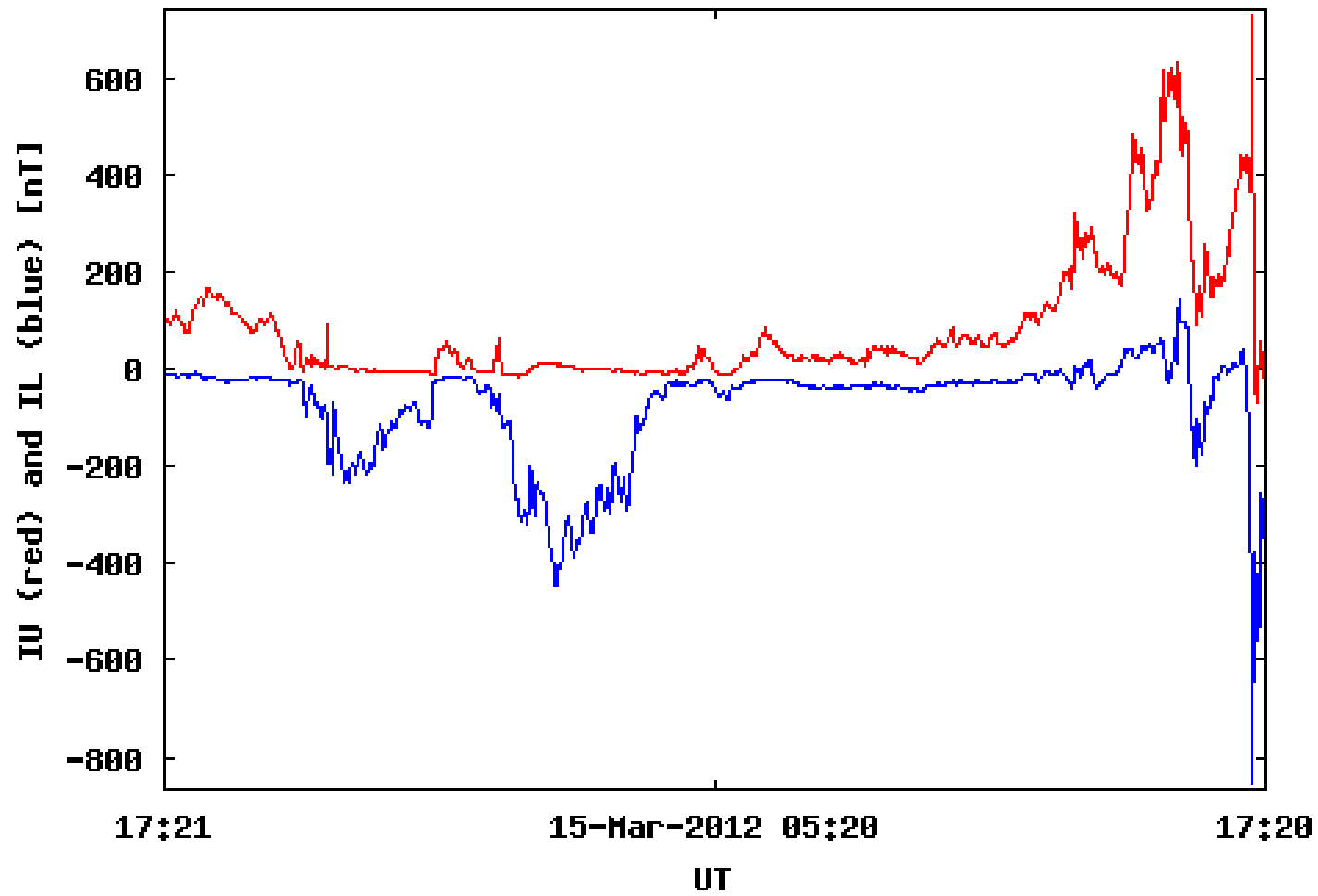


<http://space.fmi.fi/image/realtime/UT/>
<http://space.fmi.fi/image/realtime/eurisgic/>



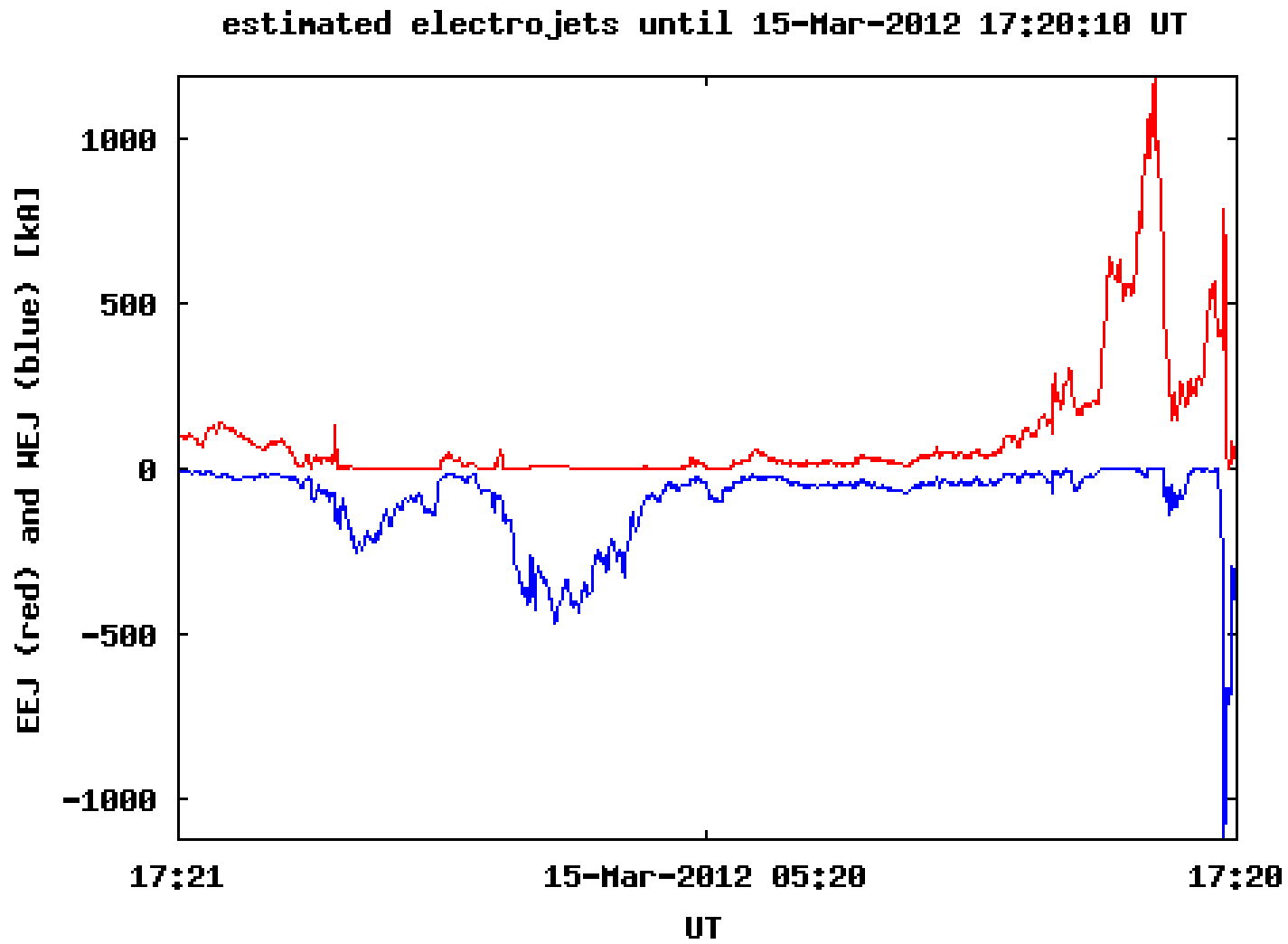
Envelopes of **northward** and **southward** magnetic field variations

IMAGE near-real-time data until 15-Mar-2012 17:20:10 UT



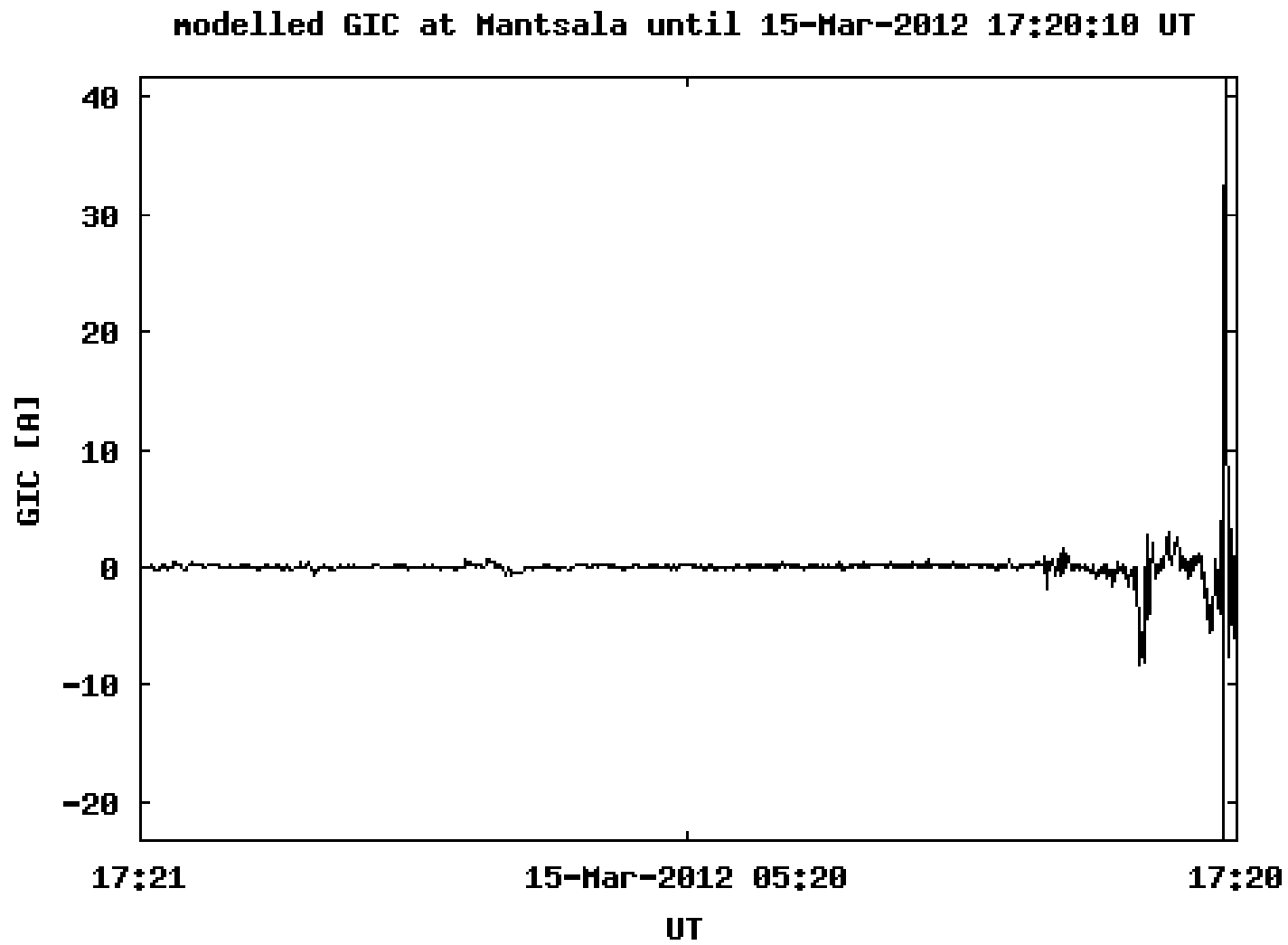


Estimated amplitudes of **eastward** and **westward** electrojets





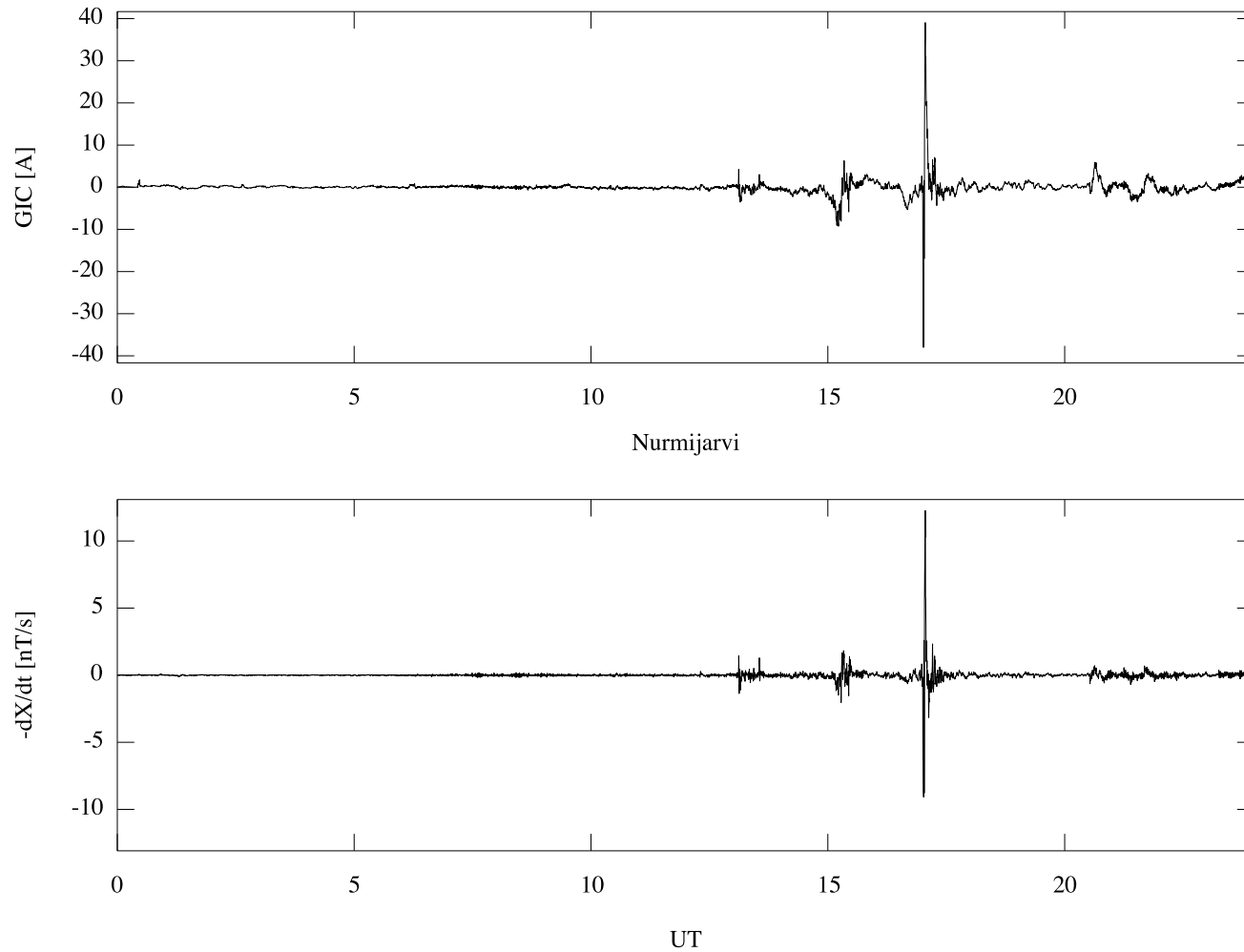
Largest storm of the present solar cycle (so far) – top 4 since 1999





Measured GIC and dX/dt

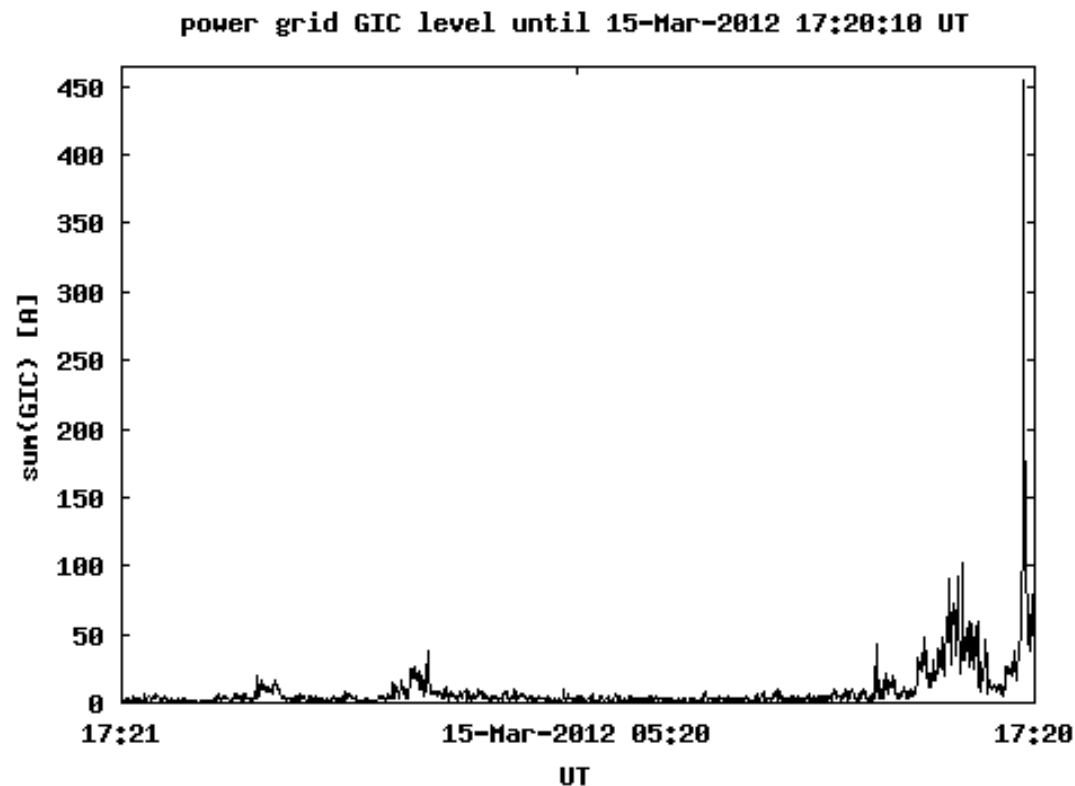
Mantsala 20120315 (10-s values)





Estimated sum of GIC

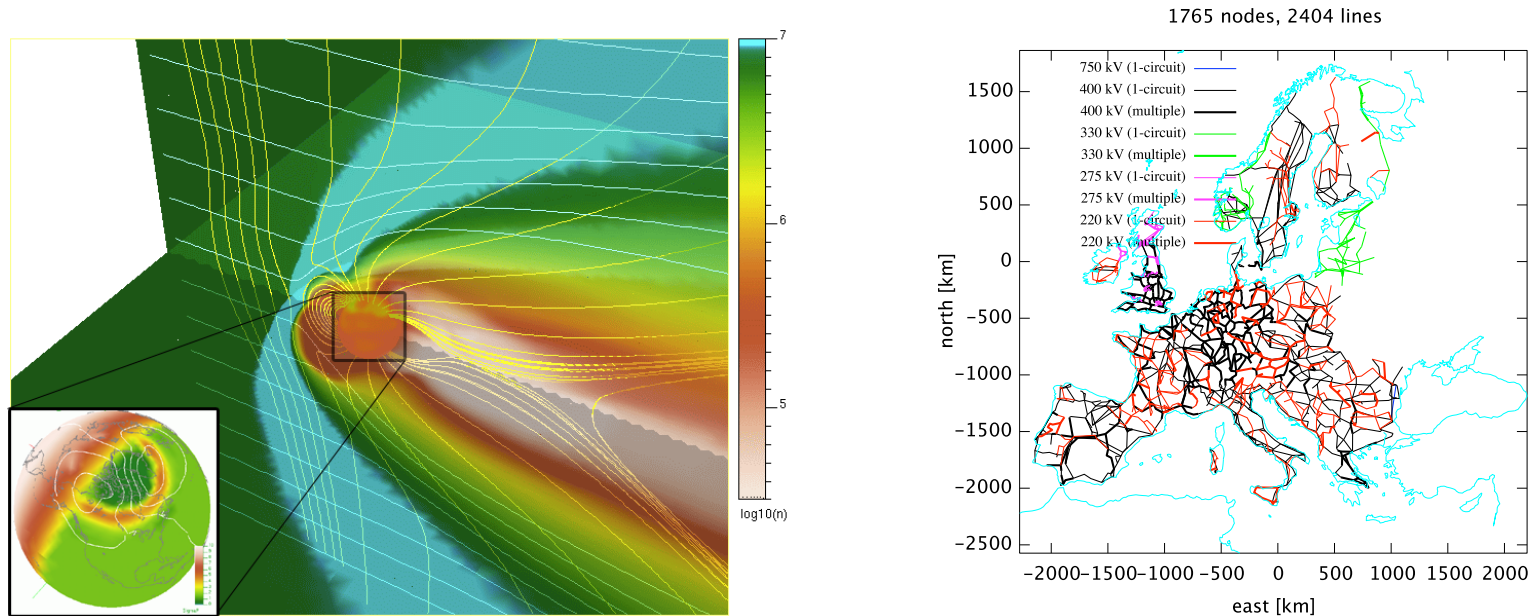
Demonstration with the model of the old Finnish 400 kV power grid
GIC activity can be quantified based on statistics of 1996-2008



15 Mar 2012 was a 'once per year' event



Next step: Prototype forecast server for whole Europe based on space plasma simulations using in-situ solar wind data



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