



## **GAIA virtual observatory - development and practices**

Mikko Syrjäso (1) and Steve Marple (2)

(1) Finnish Meteorological Institute, Earth Observation, Helsinki, Finland (mikko.syrjasuo@fmi.fi), (2) Lancaster University, Department of Communication Systems, Lancaster, UK

The Global Auroral Imaging Access, or GAIA, is a virtual observatory providing quick access to summary data from satellite and ground-based instruments that remote sense auroral precipitation (<http://gaia-vxo.org>). This web-based service facilitates locating data relevant to particular events by simultaneously displaying summary images from various data sets around the world. At the moment, there are GAIA server nodes in Canada, Finland, Norway and the UK. The development is an international effort and the software and metadata are freely available.

The GAIA system is based on a relational database which is queried by a dedicated software suite that also creates the graphical end-user interface if such is needed. Most commonly, the virtual observatory is used interactively by using a web browser: the user provides the date and the type of data of interest. As the summary data from multiple instruments are displayed simultaneously, the user can conveniently explore the recorded data. The virtual observatory provides essentially instant access to the images originating from all major auroral instrument networks including THEMIS, NORSTAR, GLORIA and MIRACLE. The scientific, educational and outreach use is limited by creativity rather than access.

The first version of the GAIA was developed at the University of Calgary (Alberta, Canada) in 2004-2005. This proof-of-concept included mainly THEMIS and MIRACLE data, which comprised of millions of summary plots and thumbnail images. However, it was soon realised that a complete re-design was necessary to increase flexibility. In the presentation, we will discuss the early history and motivation of GAIA as well as how the development continued towards the current version. The emphasis will be on practical problems and their solutions. Relevant design choices will also be highlighted.