

Data browsing with a geospace data-showcase system

Akinori Saito [Kyoto University, Japan]

Daiki Yoshida [The Kyoto College of Graduate Studies for Informatics, Japan]

Outline

What is data-showcase system?

- Problems of WWW-based data distribution systems
- Data-showcase system using Geobrowsers

DAGIK

- A data-showcase system of the Geospace research
- Databases participating in DAGIK
- Examples of DAGIK

A direct consultation between a provider and users



A text-based menu system

Without certain amount of knowledge on the food and the language, you cannot understand what it is. You must try it or consult with the provider.



A showcase system

You can easily understand the outline of food before you enter the restaurant. If you are interested in it, you can enter and try it. If not, just go to the other.



Big success of WWW-based database systems

- Utilization of various types of data is important because the phenomena in Geosciences are essentially related with multi-parameters. Especially new paradigm emerged from inter-disciplinal studies. Mutual data sharing policy is crucial for the progress of science in this field.
- The WWW system has drastically improved the data distribution of geosciences in the last decade. Before WWW, the data users contacted data providers directly.
- The number of WWW-based databases keeps increasing.

Problems of WWW-based data distribution systems

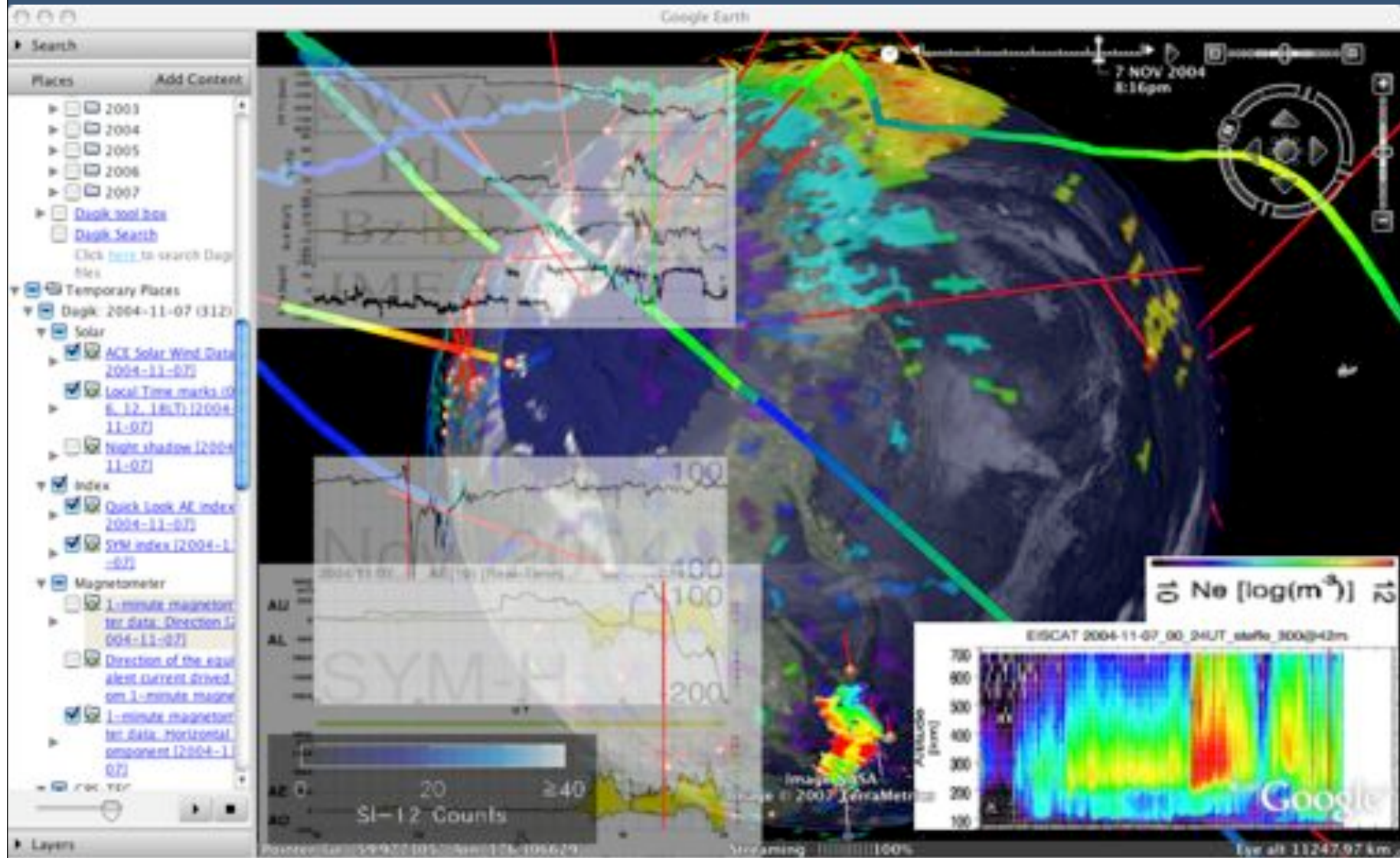
- Meta-database systems, such as virtual observatories, and common data formats, such as CDF, have made data usage much easier.
- Even though, the usage of data on databases requires certain amount of knowledge on the data.
- It is not easy to take time and study the data if the user is not sure the usefulness of the data in their study. As a result, they tend to use the data that they know well.
- A system for casual users is necessary.

Data-showcase system using Geobrowsers

- An easy system to browse various type of geoscience data is necessary.
- Data-showcase system is a showcase of data for users to understand the **outline** of data. The users who are interested in the data will access the WWW-based databases.
- To display various data, the data browser must have **four-dimensional** capability of data presentation with real relative scale.
- Network capability is essential.
- Recent developments of geobrowsers, such as Google Earth and NASA's World Wind, enabled to construct a system with reasonable efforts.

DAGIK: DAily Geospace data In Kml

A data-showcase system for the Geospace



Examples of data on Dagik, and their data-holder and their databases

- All-sky camera: STEL, Nagoya University, <http://stdb2.stelab.nagoya-u.ac.jp/omti/>
- DMSP SSIES: UT Dallas, <http://cindispace.utdallas.edu/DMSP/>
- EISCAT: NIPR, <http://polaris.nipr.ac.jp/~eiscat/eiscatdata/>
- GEONET-TEC: Kyoto University, <http://stegps.kugi.kyoto-u.ac.jp/>
- GEOTAIL footprint: ISAS/JAXA, <http://darts.isas.jaxa.jp/index.html.en>
- Hokkaido Super-DARN radar: UEC & Nagoya University, <http://skdb1.stelab.nagoya-u.ac.jp/hokkaido/>
- IMAGE-FUV: SSL, UC Berkeley, <http://sprg.ssl.berkeley.edu/image/>
- Ionosonde data: NICT, http://wdc.nict.go.jp/IONO/index_E.html
- MIT-TEC: MIT/Haystack observatory, <http://madrigal.haystack.mit.edu/madrigal/>
- Magnetometer data and indices: WDC Kyoto for Geomagnetism, <http://swdcwww.kugi.kyoto-u.ac.jp/>

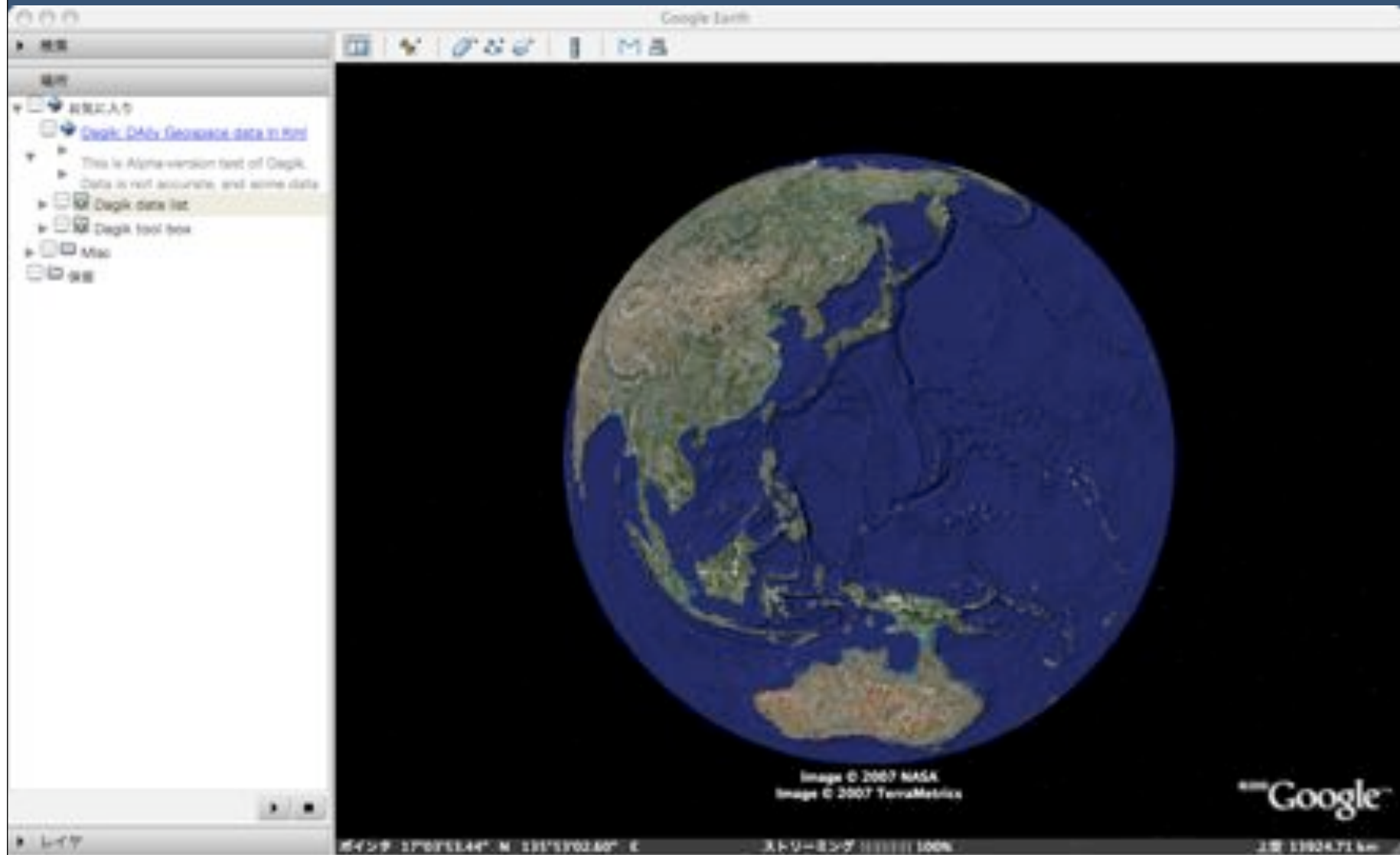
Usage of Dagik: Download KML file from <http://www-step.kugi.kyoto-u.ac.jp/dagik/>



The screenshot shows a web browser window with the title "DAGIK: Daily Geospace data in Kml". The address bar contains the URL "http://www-step.kugi.kyoto-u.ac.jp/dagik/". The main content area features the "Dagik" logo in a blue rounded rectangle, with the text "DAily Geospace data In Kml" below it. Below the logo, there is a blue link "Download 'dagik.kml'". A list of bullet points follows, providing information about the project and how to use the data.

- What is [Dagik](#)? A [data-showcase](#) for geospace science, and geophysics.
- How to [use](#) Dagik? [Demo movie \(Flash: 3.2MB\)](#) [Screen shots](#)
 1. Install [Google Earth](#).
 2. Download [dagik.kml](#), and open it with Google Earth.
 3. Select date and data type.
- How to [find](#) Dagik files? [Search of Dagik](#) (List of data types)
- [More information on Dagik](#)

Open dagik.kml with Google Earth



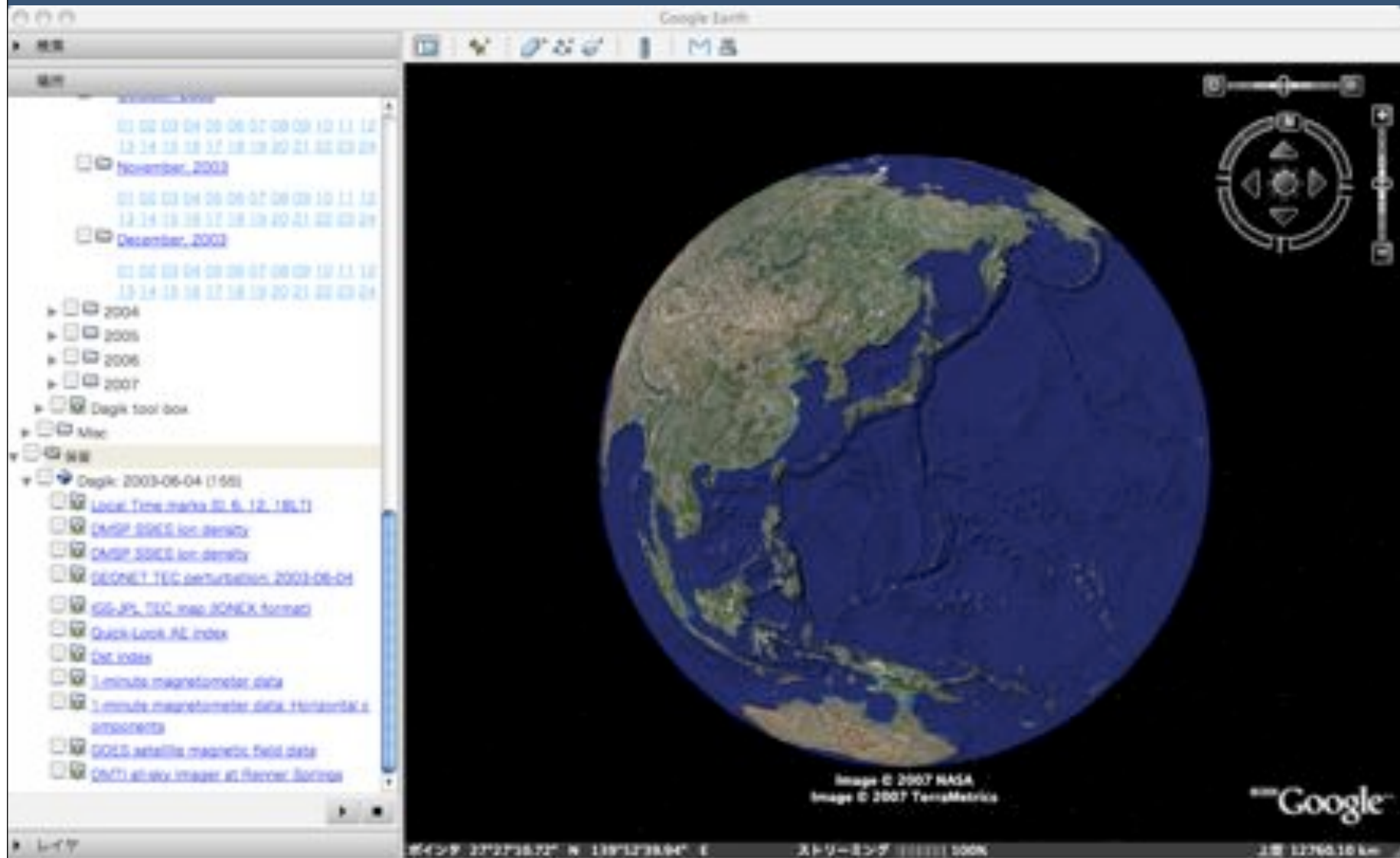
Select Year, Month and Day

The screenshot shows the Google Earth interface with a data list on the left and a globe view on the right. The data list is titled 'Degk Daily Geospace data 31.html' and includes a warning: 'This is Alpha-version test of Degk. Data is not accurate, and some data could be dummy data.' The data list is organized as follows:

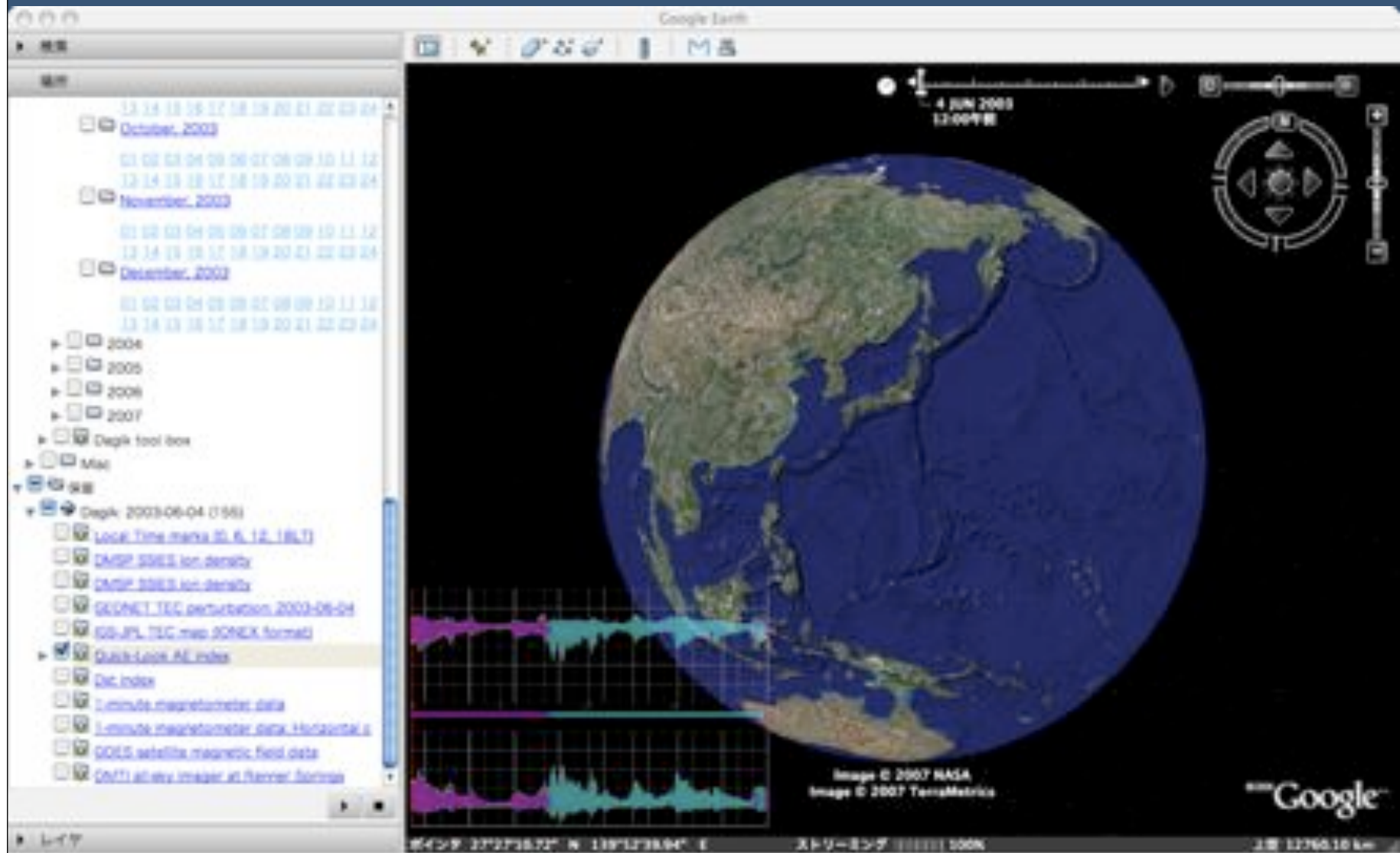
- ▼ Degk data list
 - ▶ 1995
 - ▶ 1996
 - ▶ 1997
 - ▶ 1998
 - ▶ 1999
 - ▶ 2000
 - ▶ 2001
 - ▶ 2002
 - ▶ 2003
 - ▶ January, 2003
 - 01 02 03 04 05 06 07 08 09 10 11 12
 - 13 14 15 16 17 18 19 20 21 22 23 24
 - ▶ February, 2003
 - 01 02 03 04 05 06 07 08 09 10 11 12
 - 13 14 15 16 17 18 19 20 21 22 23 24
 - ▶ March, 2003
 - 01 02 03 04 05 06 07 08 09 10 11 12
 - 13 14 15 16 17 18 19 20 21 22 23 24
 - ▶ April, 2003
 - 01 02 03 04 05 06 07 08 09 10 11 12
 - 13 14 15 16 17 18 19 20 21 22 23 24
 - ▶ May, 2003
 - 01 02 03 04 05 06 07 08 09 10 11 12
 - 13 14 15 16 17 18 19 20 21 22 23 24

The globe view shows the Earth with a navigation interface on the right. At the bottom, the status bar displays coordinates: 'ポインツ 37°27'36.72" N 139°52'38.94" E', a scale of '500M', and a distance of '28 12760.16 km'. The Google logo is visible in the bottom right corner.

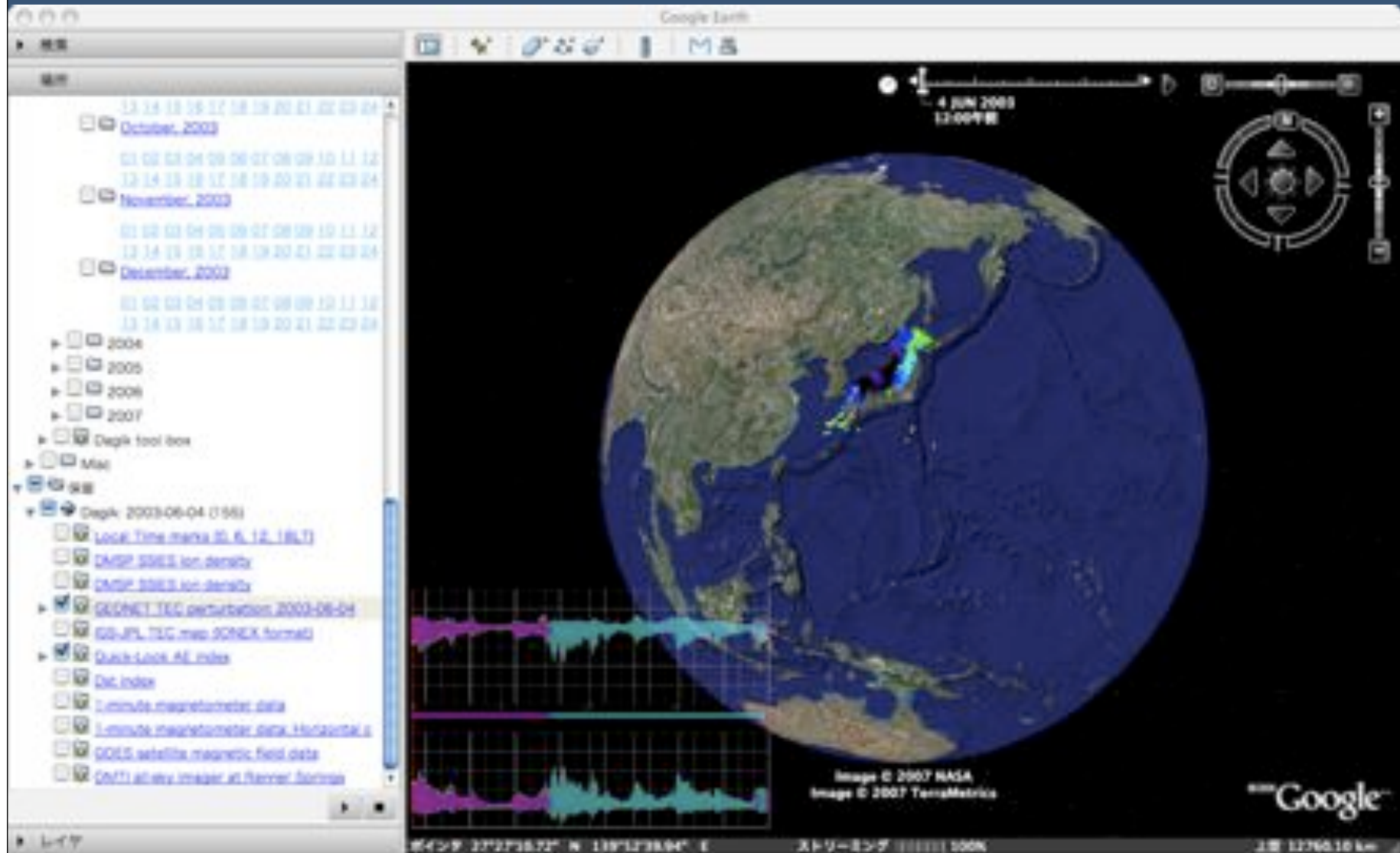
Select Data Type



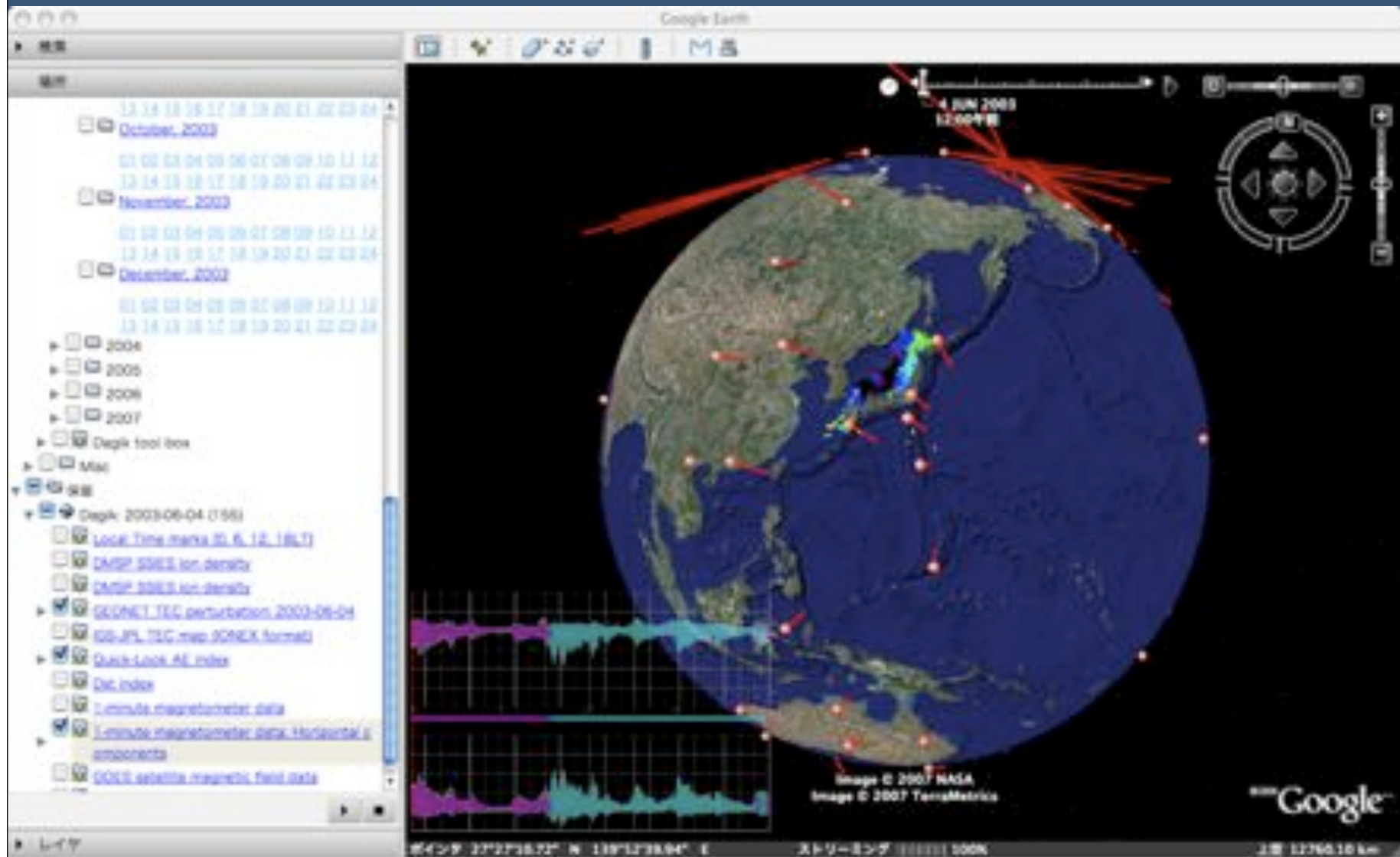
AE index



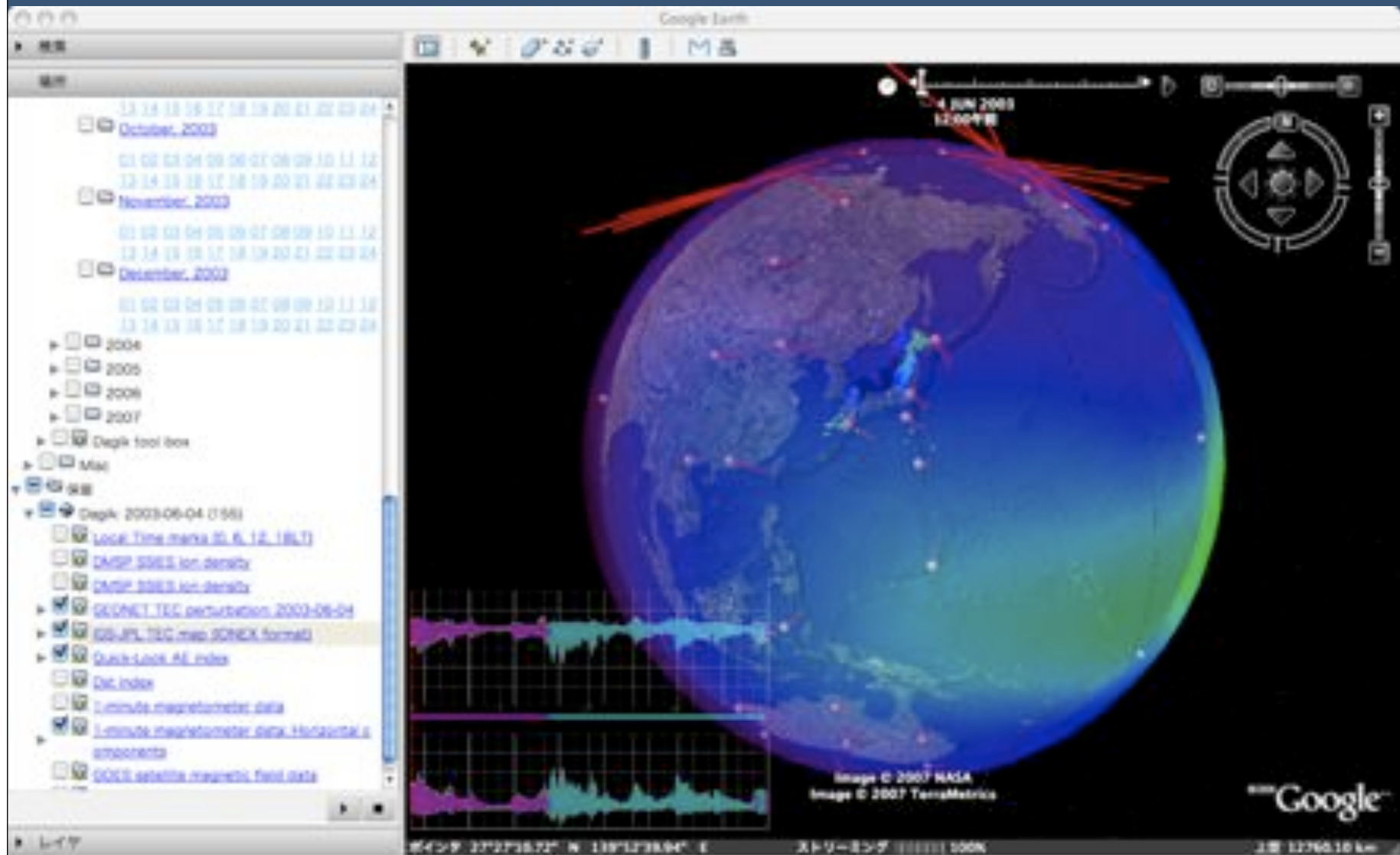
GEONET Total Electron Content



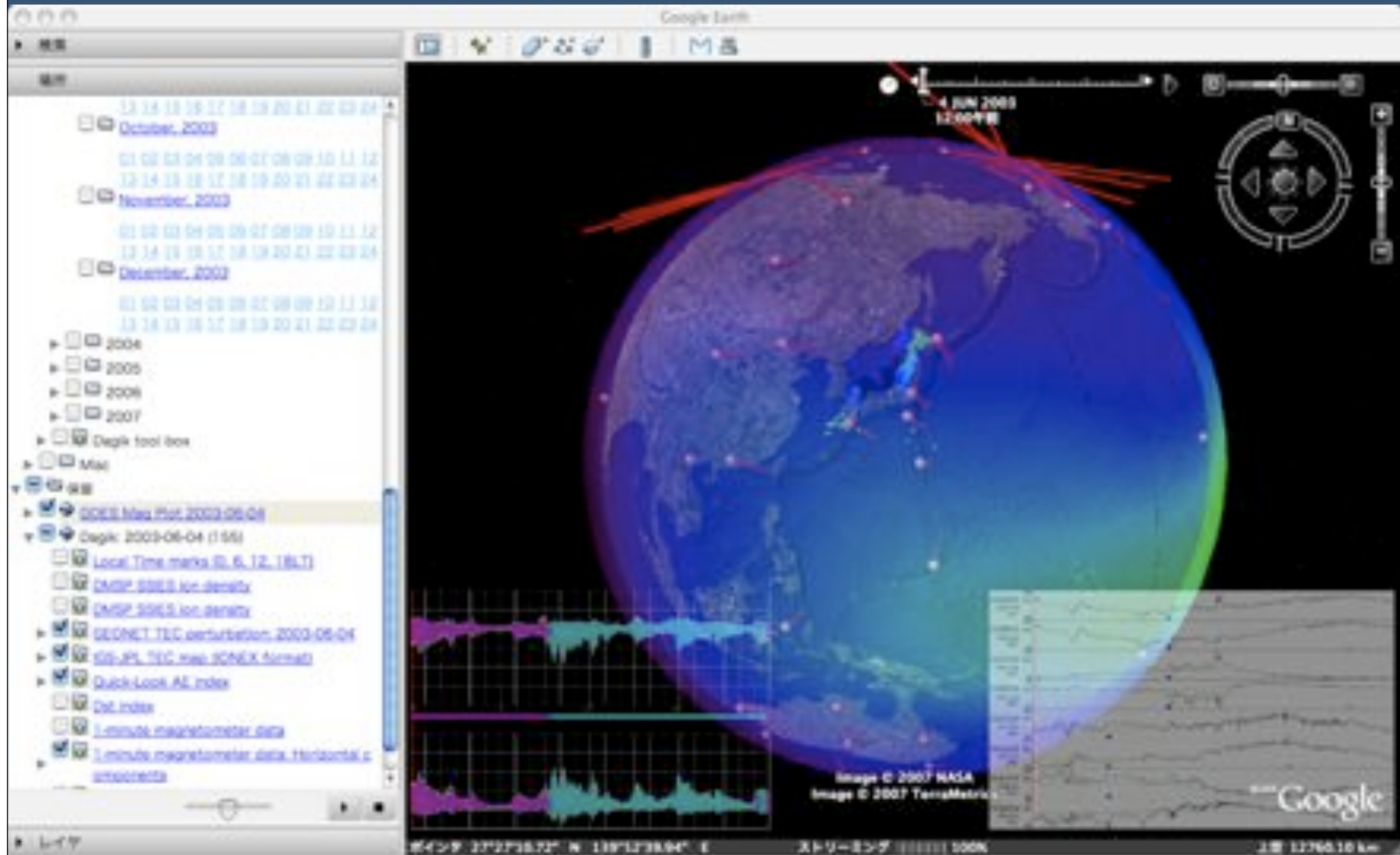
Ground-based magnetometer (Horizontal)



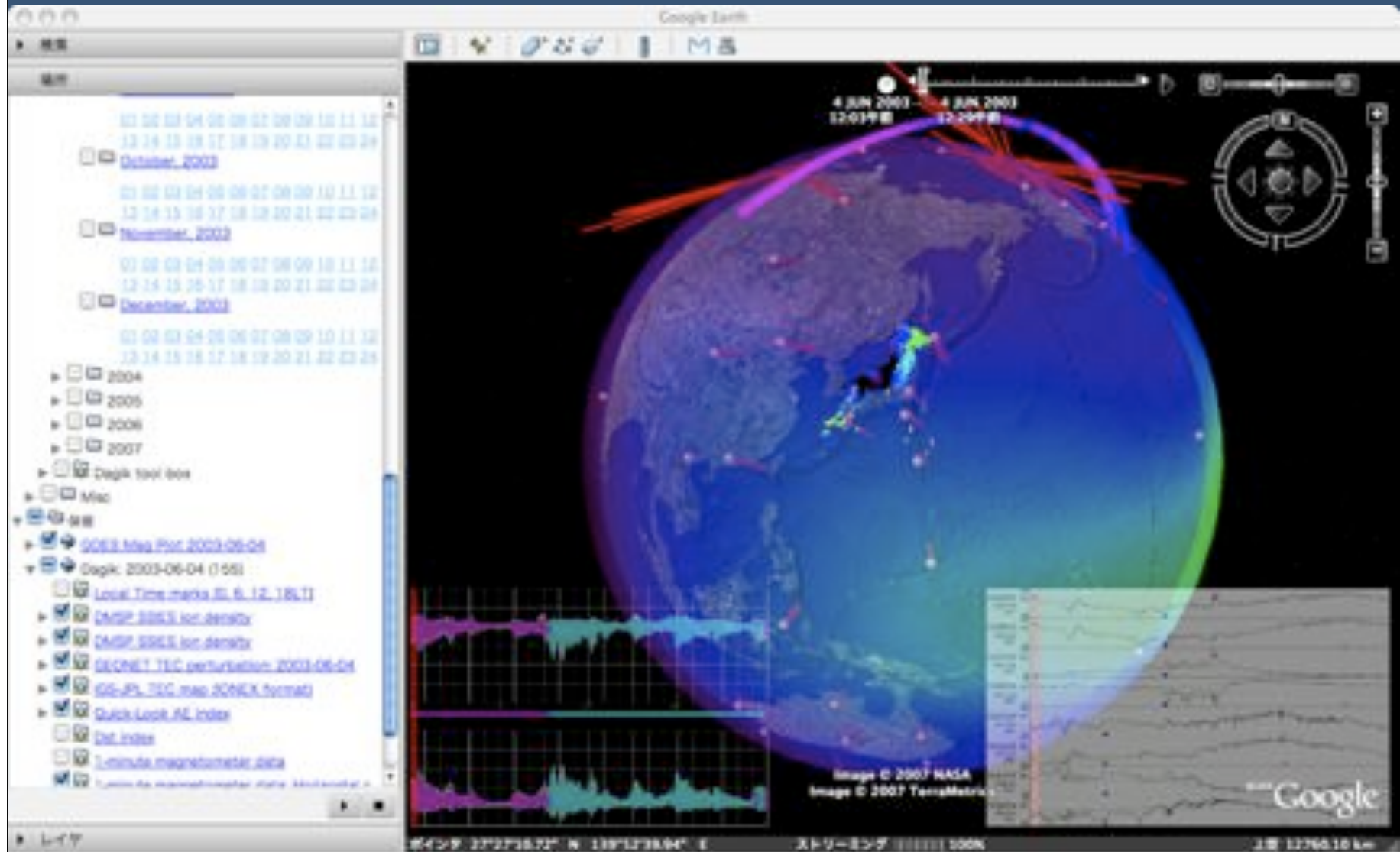
Global Total Electron Content by JPL

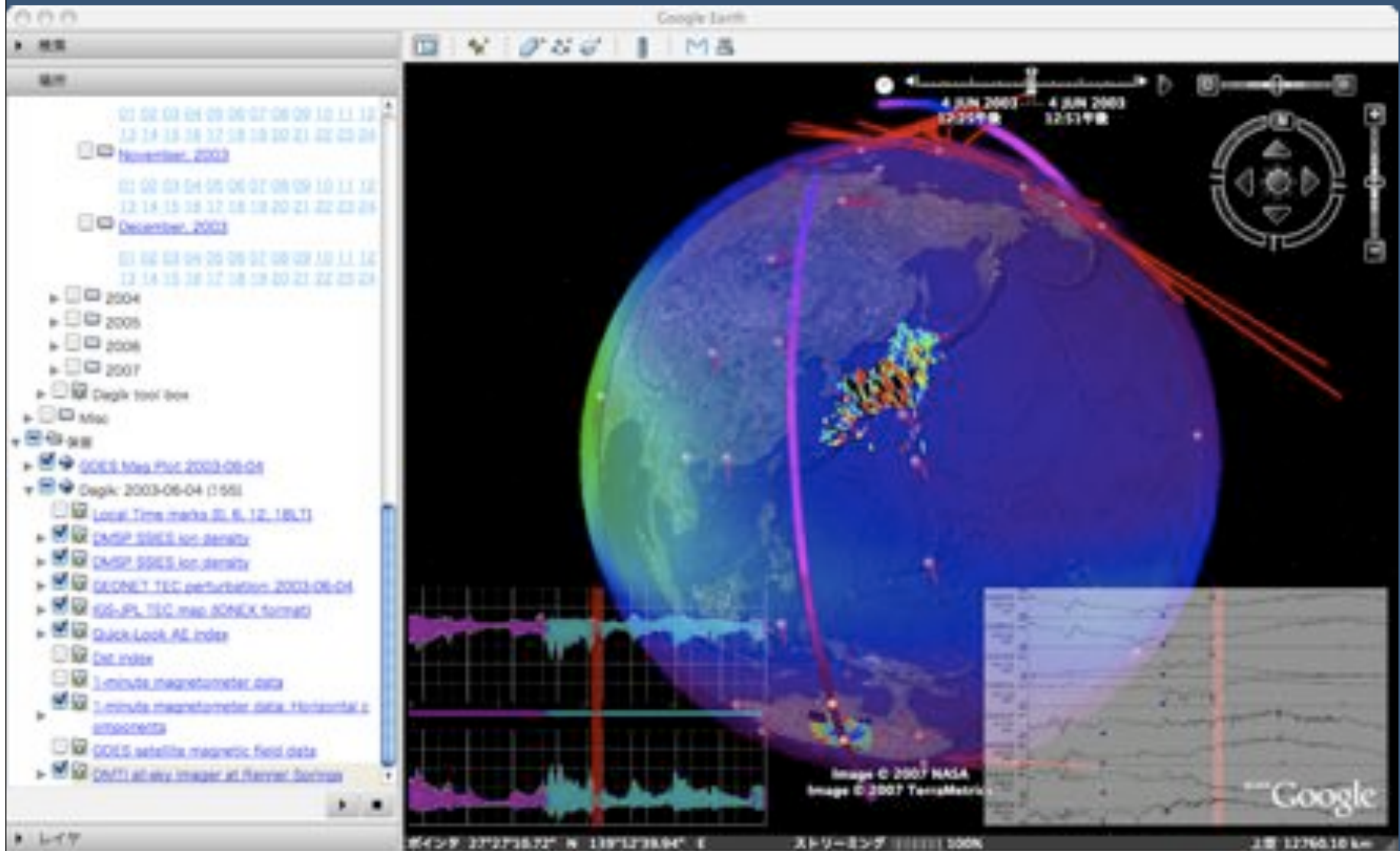


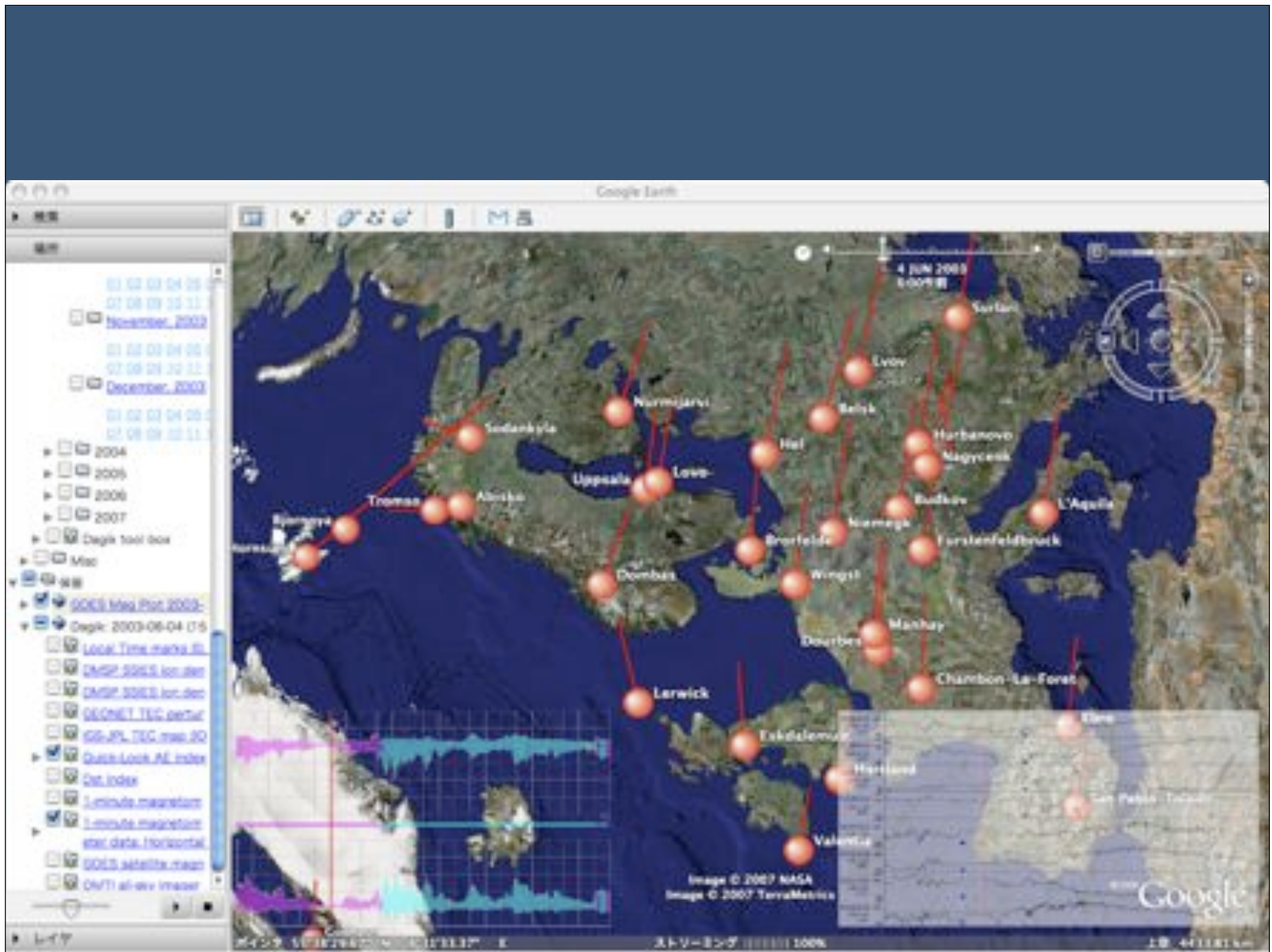
GOES satellite Magnetic Field

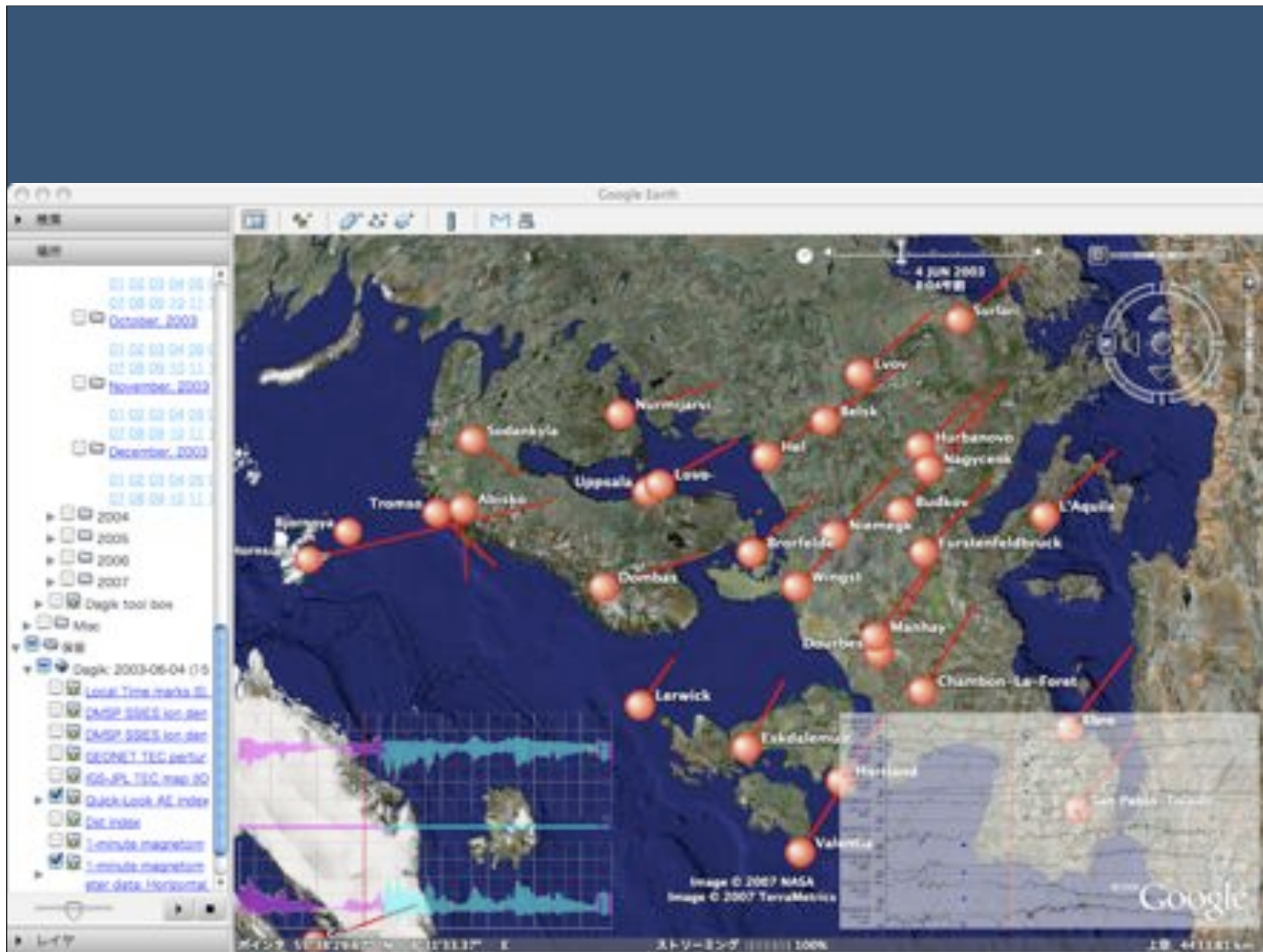


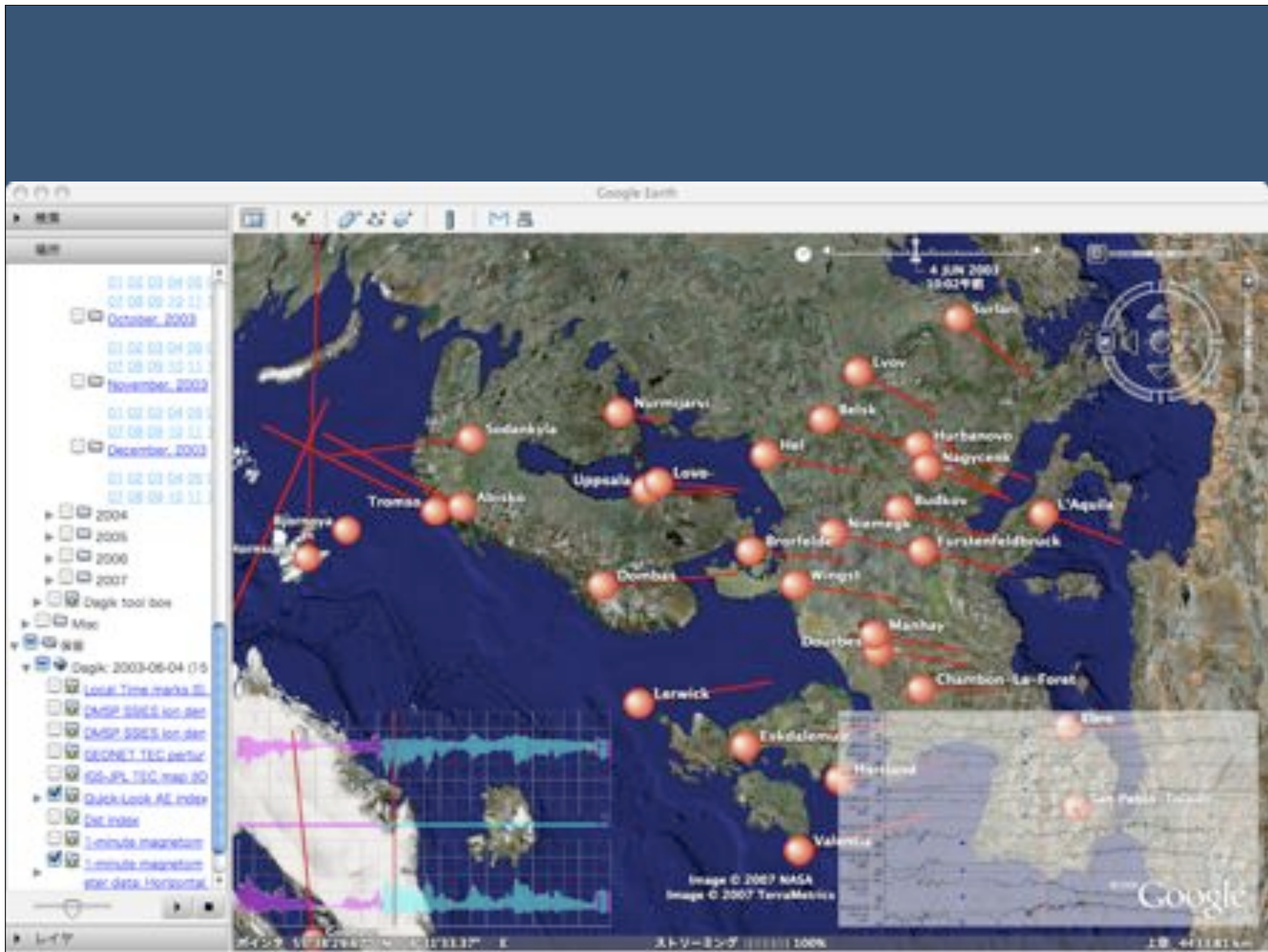
DMSP satellite Ion Density







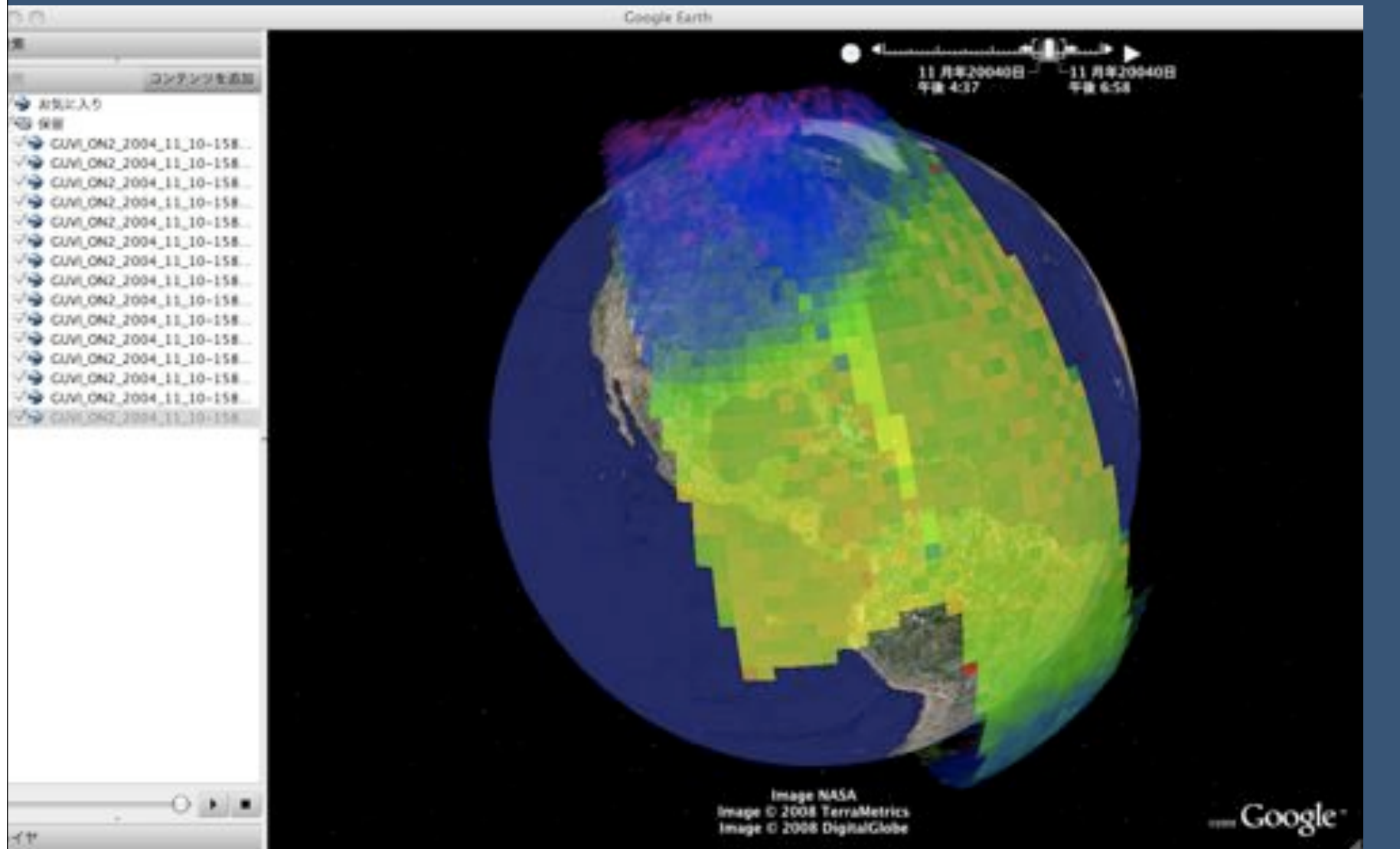




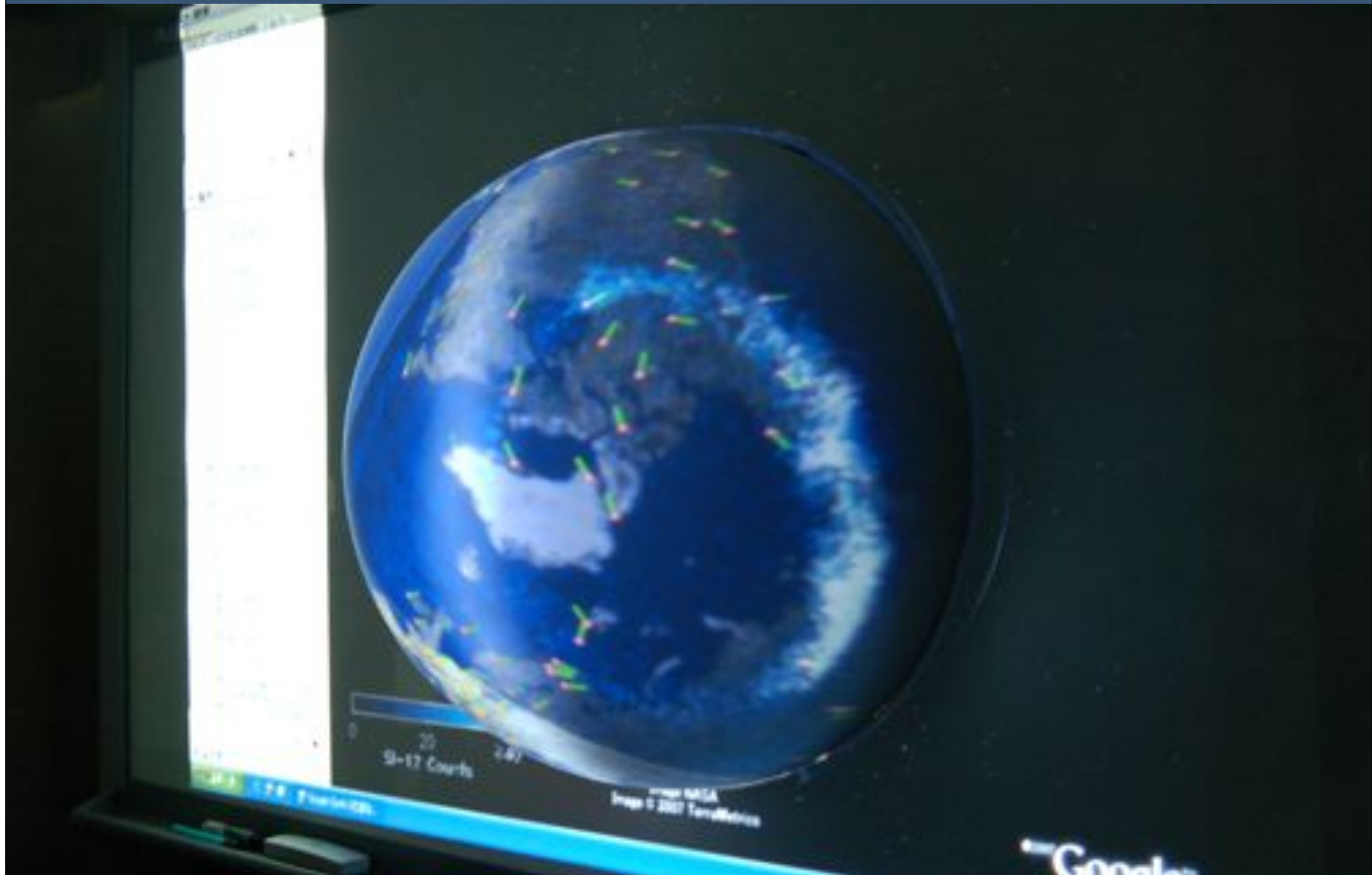
Examples of Dagik data in development phase

- REIMEI satellite Auroral imaging by MAC
- NICT realtime Magnetosphere-Ionosphere-Thermospere simulation: electron density, neutral wind etc.
- MU radar Incoherent scatter observation
- Equatorial Atmospheric Radar (EAR) coherent observation
- NOAA global cloud map
- TIMED satellite GUVI instrument
- Hinode satellite Solar X-ray image
- MIT/Haystack Madrigal database

TIMED/GUVI O/N2



Dagik ball: Public outreach using Dagik contents



Dagik ball: Public outreach using Dagik contents



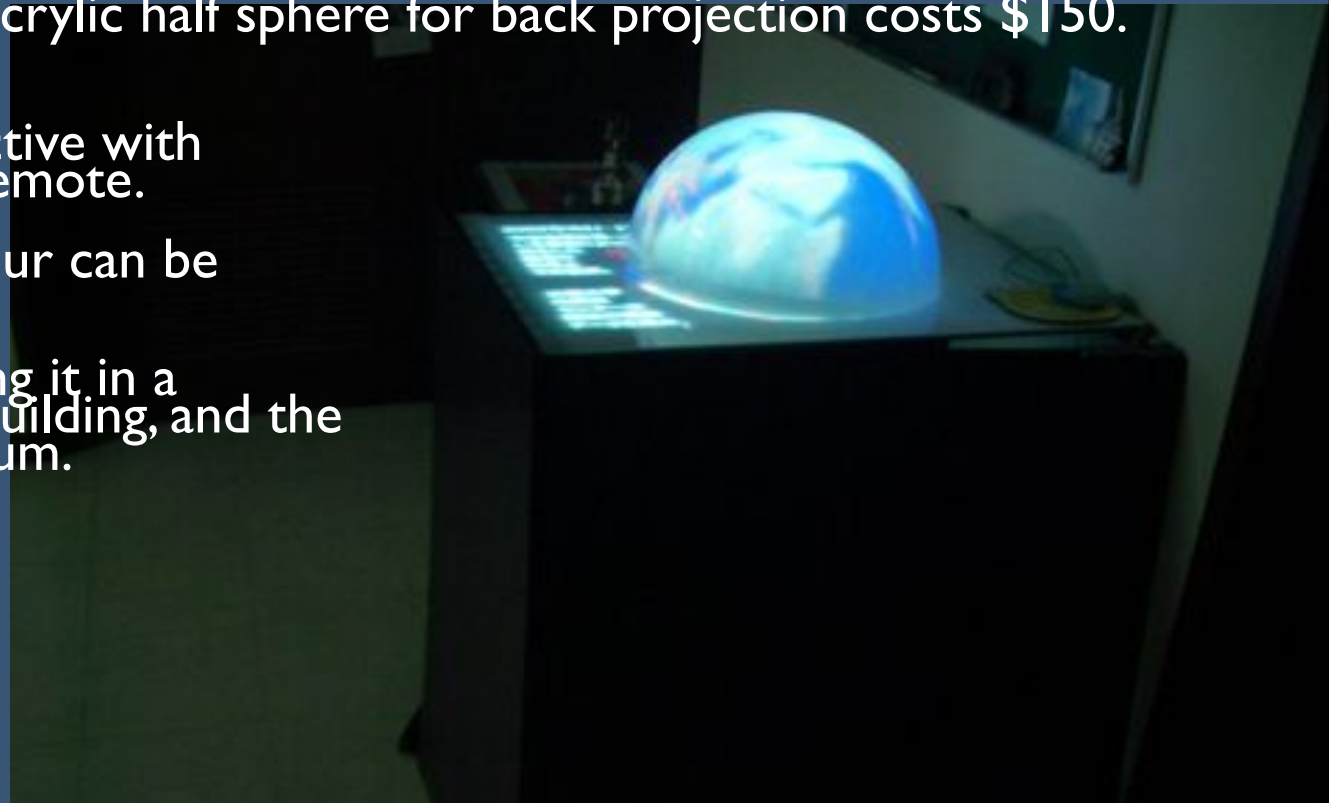
Dagik ball: Public outreach using Dagik contents

- 3D presentation using PC, PC projector and plastic half sphere
- Cheap, easy, and fun.

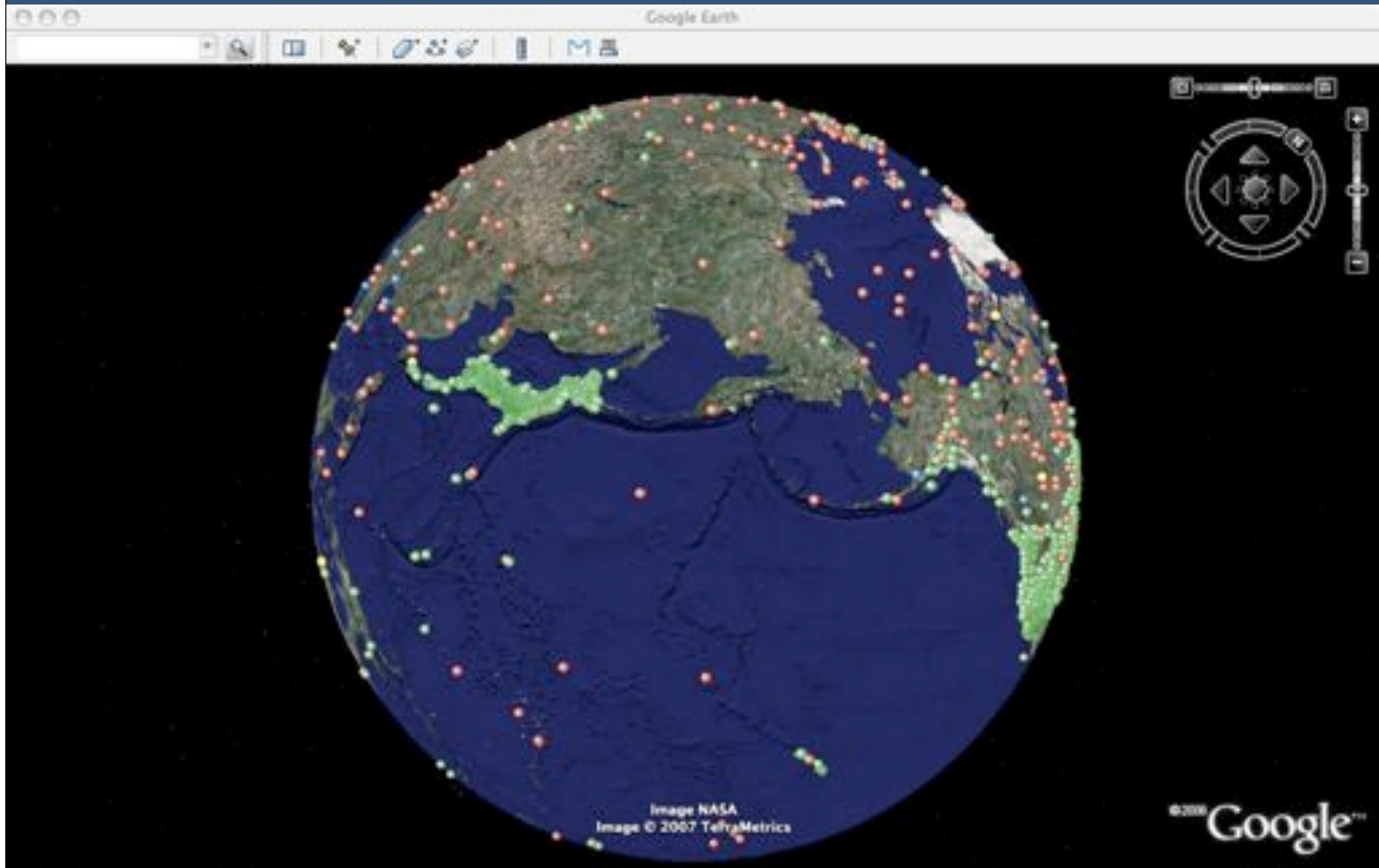
60cm diameter styrene half sphere for front projection costs \$40.

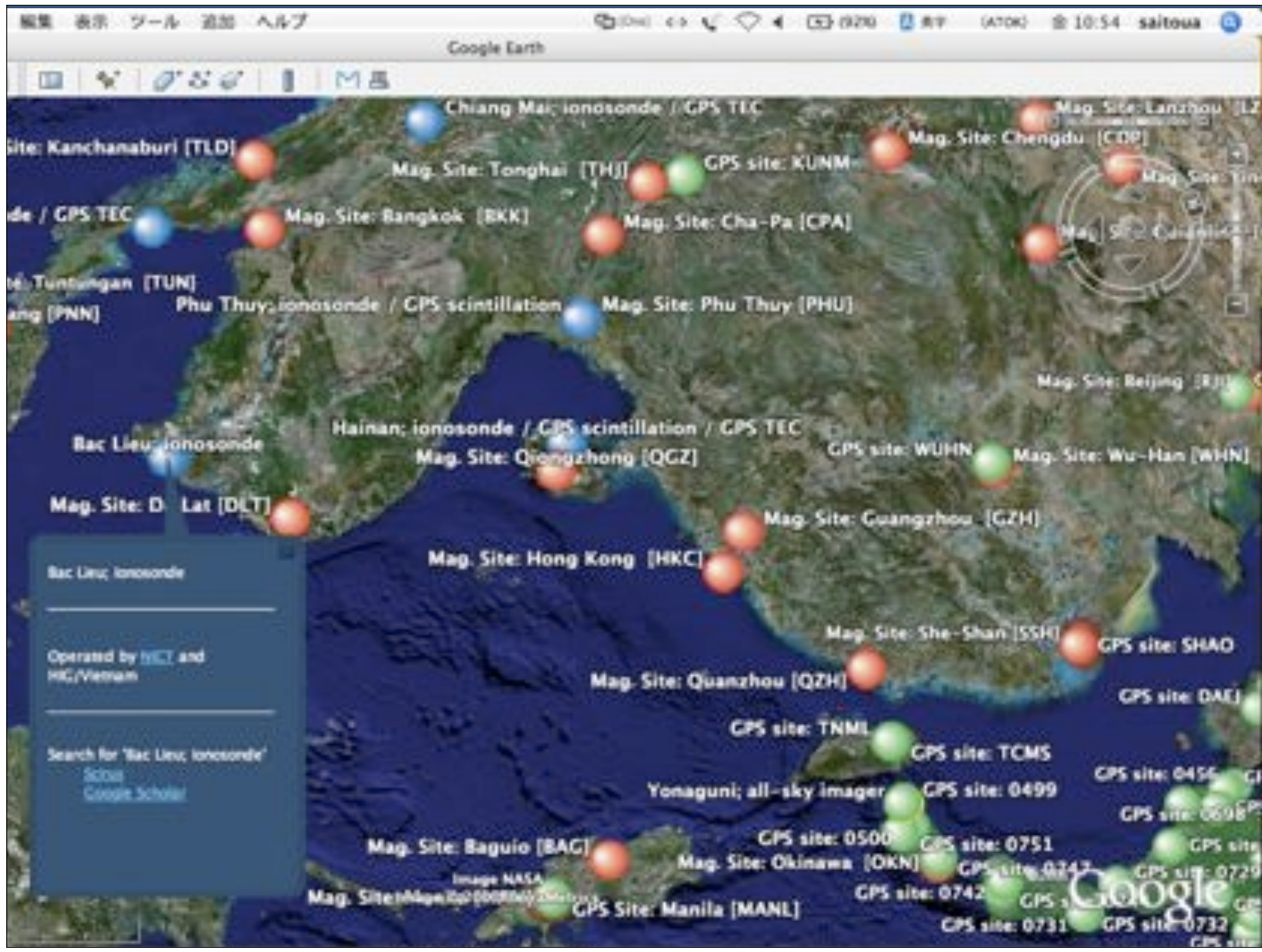
40cm diameter acrylic half sphere for back projection costs \$150.

- It can be interactive with mouse or Wii remote.
- Audio guided tour can be made.
- We are displaying it in a hallway of our building, and the university museum.

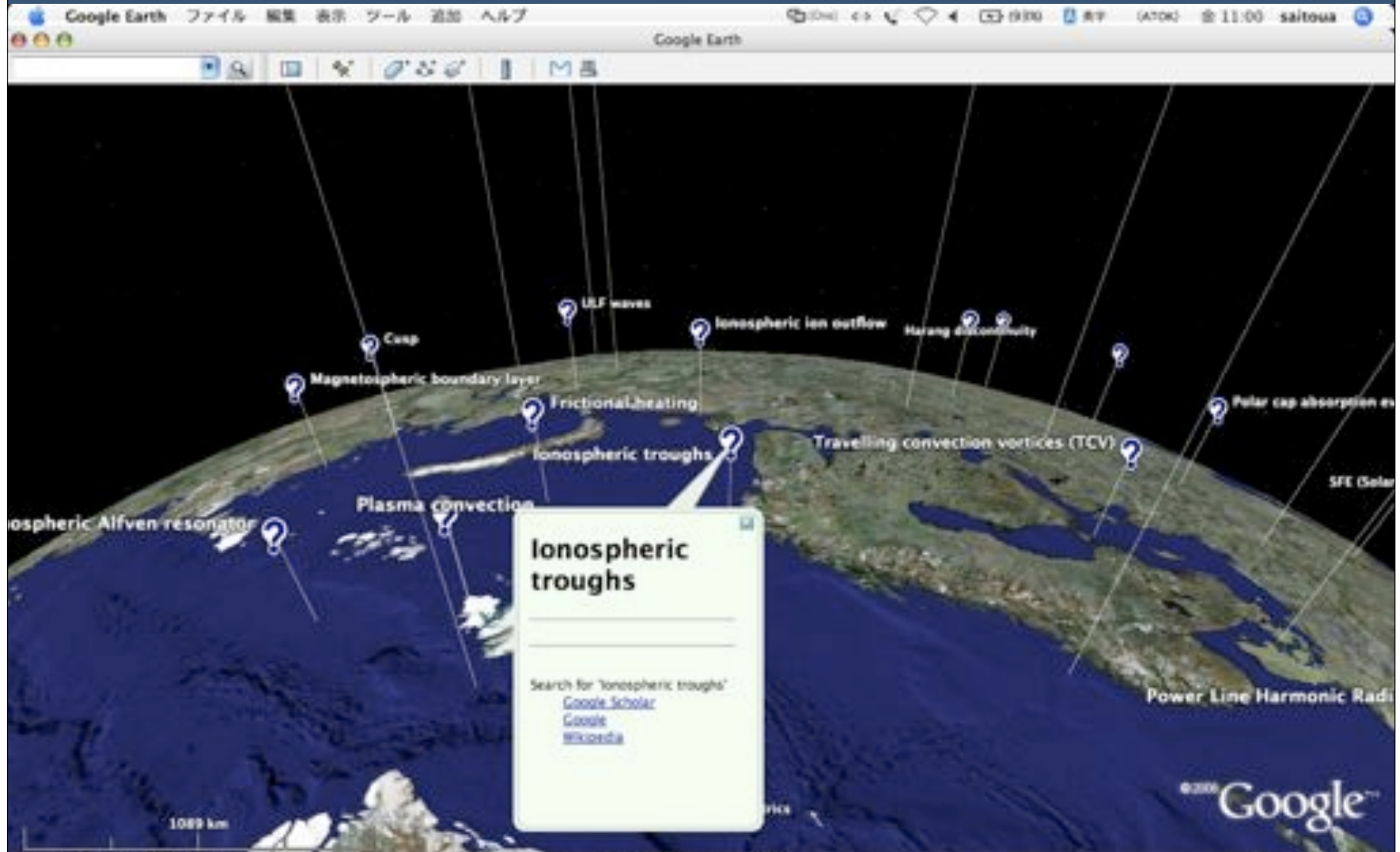


Dagik tool box : Locations of Observatories, Coordinates, etc.

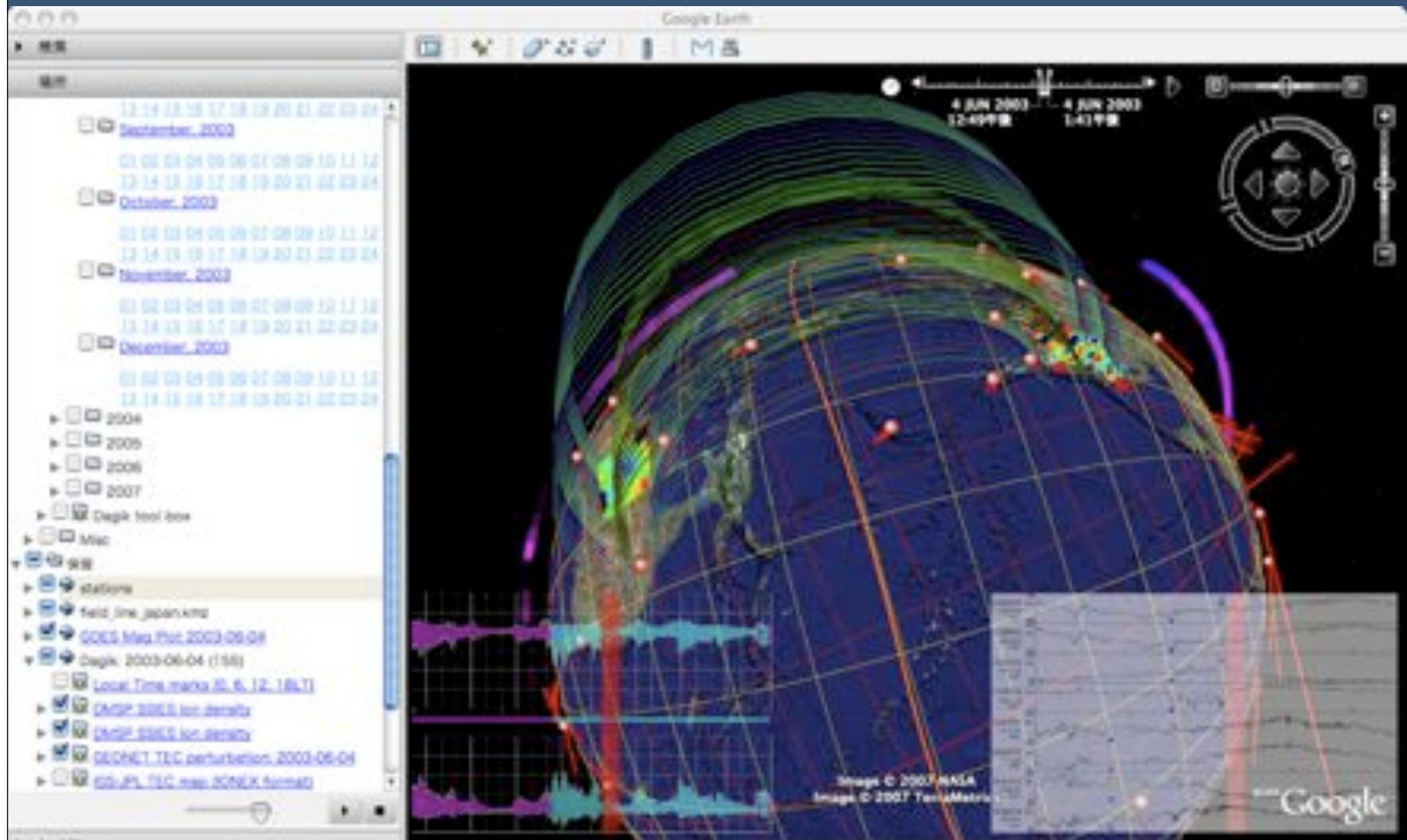




Glossary



Geomagnetic Field Lines, Coordinates



Summary

- We are developing a data-showcase system for the Geospace, DAGIK.
- This is a system that is supposed to be used before users access to the databases, like showcase of food is browsed before people enter restaurants.
- This system is expected to lower the barrier of data usage for outsiders.
- Collaborations of data-holders are very welcome. We are willing to help them to convert their observational or model data in KML format, and make them open on DAGIK.
- Comments and suggestions from users are also very welcome.