Activities on planetary data issues at UoA

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ARC-Space/The University of Aizu

The University of Aizu and ARC-Space

- Aizu-Wakamatsu city: ~300 km NE from Tokyo
- Small university ~1000 students and ~100 staffs
  - Specialized to Computer Science and Engineering
- Established a research group for planetary science and explorations
  - Aizu Research Cluster for Space Science (ARC-Space)
  - 6 staffs (all are from planetary science community)
  - close cooperation with JAXA
  - Hayabusa, Kaguya (aka. SELENE), and future Japanese planetary exploration missions

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Experimental Projects in ARC-Space/UoA

- 3D-GIS for irregular shaped bodies
- Lunar GIS of Kaguya map data

3D-GIS for irregular shaped bodies

- Visualize 3D shape models of asteroids
  - change a viewing point and a scale
- Overlay and switch multi-layered data
  - change color attributes
- Analyze the data
  - extract a cross-section with overlaid data
- Multi-platform with OpenGL and GTK+ libraries
  - Win, MacOSX, Linux...

LunarGRID (Lunar GIS of Kaguya map data)

- A conceptual model of web-GIS for the Moon
  - Expand scenes where GIS is utilized by researchers to the early phase of missions
  - Even in the early phase, data integration on GIS is important
- Utilization of open technologies
  - MapServer
    - publishing geospatial data with WMS
  - OpenLayers
    - JavaScript library for constructing dynamic WMS client with transparent layering features
  - GRIDSite
    - Single sign-on system for authentification of users and/or services with X.509 certificates
    - Originally developed for Grid Computing of Earth Observation data

Future Plans

- 3D-GIS
  - converting to a Java-based web application
  - collaboration with the PDAP fly-by products
  - implementation of the SPICE shape model subsystem
  - standardization of map data of small bodies
- LunarGRID
  - supporting wider products from Kaguya and other existing WMS servers
  - collaboration with PDAP or PDS4?