

Update on IGOL

September 2008

Current Status

- Final report is on the IGOL web site.
- Print version about to appear.
- Note IGOL does not map simply onto any one SBA.
 - Concentration on a limited number of efforts.
- Significant effort being put into the Agricultural sub-Theme (see below).
- Providing input into CEOS LSI effort.
- GOFC-GOLD is responsible for several implementation tasks.
- Progress hindered by continuing weakness of GTOS as an overall organizing framework for terrestrial observations.

Recommendations arising from initial activities

- Identification of existing spaceborne assets and infrastructure needed for agricultural monitoring **which must be continued.**
- GEO and the UN FAO and its member national agricultural agencies should give increased attention to the use of satellite data
 - to improve the efficiency of traditional methods for national agricultural survey and monitoring
 - leading to timely, accurate, and verifiable reporting of national agricultural statistics.
- GEO and the WMO and its Members (NMHSs) should recognize the critical need for improving the availability of meteorological station data and resultant products
 - to enable improved prediction and monitoring of crop condition,
 - shortfalls in agricultural production and
 - associated famine early warning.
- Need to develop an international agreement on, and implementation of, a data policy that includes free and open access to data sets and products contributed by the space agency members of GEO, to meet the objectives of the GEO Agricultural Monitoring System of Systems.

GEO Workshop on “Developing an Agricultural Monitoring System of Systems”

25-27 February 2009 Beijing, China

- Workshop organized under the GEO Global Agricultural Monitoring (GEOSS Task AG0703) and Agricultural Risk Management (GEOSS Task AG0702)
 - Co-sponsored by the Institute of Remote Sensing Applications (IRSA), Chinese Academy of Science (CAS) Chinese Academy of Agriculture Science (CAAS) and CMA.
- Main goals:
 - Identify current best practices and generate manuals.
 - Identify near time enhancements to observing capabilities.
 - Definition of the “ultimate” Global Agricultural Monitoring System of Systems

Overall implications from IGOL report for Land Surface Imaging Constellation

- Mid resolution requirements for *land cover change* – 16 day repeat cycle satisfies many requirements.
 - Goal is annual land cover change.
- Mid resolution requirements for *agriculture* likely at least 8 day repeat cycle.
- For *Agricultural NPP* probably daily coverage required.

Delivering what the user needs

- Simply acquiring data and making it available is not enough.
- Standardization of metadata
 - Single metadata format
- Spatially explicit integrated data catalogs
- Single portal for access to data sets
 - Ordering data from different missions from a single portal
- Standardization of data formats
- Replace DNs Consistent time series of geophysical data
 - Ground leaving radiance/Surface reflectance

Ensuring maximal use of data from LSI

- Simple interfaces;
 - hide the complexity from the users.
- Multiple ordering mechanisms
- Single scene and bulk ordering possible
- Comprehensive data sets
- Keep data on line
- Appropriate formats - GeoTIFF
- Large bandwidth.
- Scientifically informed operators of system
- The right price: \$0

What is the LSI system we really want?

- Many alternative constellations now feasible:
 - More frequent observations needed and possible –
16day>8day>4day>2 day
- In the future many other possibilities
 - Non Sun-synchronous orbiters
 - Geostationaries with mid resolution resolution.
- To start designing the system Working Group on Regional Data Set Compilation set up under LSI – IGOL co-chairing

Terms of Reference for CEOS LSI Constellation Working Group on Regional Data Set Compilation

- Select one or more regions (up to sub-continental in size) for which mid-resolution optical LSI data sets will be compiled from data acquired in 2008, or from data yet to be acquired, by CEOS member agency satellite systems.
- Develop an Implementation Plan for accomplishing this goal.
 - define the strategy for determining what systems appropriately can contribute to the selected regional compilation(s).
 - outline a plan for determining what existing data can contribute to the compiled data sets.
 - propose a strategy and schedule for acquiring data needed to complete the regional compilation(s) and for making those data available to the science and applications user communities.
 - identify technical and practical issues that likely will arise during the course of the project work, and propose strategies for dealing with them.
- Carry out the Implementation Plan.
- Participate with the LSI Constellation Study Team in developing the arrangements with CEOS agencies to 1) provide existing data and 2) acquire needed data to complete the regional compilation(s).
- Based on results of regional data set compilation, including lessons learned, propose logical next steps for acquiring new data to contribute to GLS2010.
- Other tasks as necessary and appropriate.

Selection of Regions

- Regional approach proposed so that various technical issues can be solved ahead of the global data set compilation.
- Select one or more regions (up to sub-continental in size) for which mid-resolution optical LSI data sets will be compiled from data acquired in 2008.
- Then request that agencies “contribute” data for this/these areas.
 - Contributions can be for whole area or for any subset.
 - Data need not be sent to a central facility but should be remotely accessible.
 - Probably should be unrestricted access to the data by members of WG (may require some relaxing data policy for these areas only and the selected areas.)
- Possible characteristics of areas
 - Variety of land cover and terrain conditions.
 - Leaf on
 - Several data sets known to be available.
- Some suggestions
 - South America (from Brazilian Rain Forest south to Bolivia and Argentina and to include parts of Andes)
 - Parts of SE/E Asia possibly to include China, Vietnam, Laos, Thailand.
 - Africa (already a commitment for CBERS data for continent has been made).

Candidate Region



GLS 2010 Planning

- **WGRDSC is also being used to prepare for Global Land Survey 2010 (global mid resolution ortho-rectified data set.**
- **Successful GLS2005 effort has stimulated interest in GLS2010 dataset development**
- **GLS 2010 supports three tasks identified by the Group on Earth Observations (GEO):**
 - **Task DA-07-02 (Global Land Cover), which includes a subtask to “Coordinate 2010 Dataset with Contributions from Available International Assets”**
 - **Task AG-07-03 “Global Mapping of Agricultural Areas at 30m...Undertaken at 5 year intervals for 2005 and 2010”**
 - **Task DA-07-03 “Virtual Constellations,” specifically the Land Surface Imaging (LSI) Constellation**

