CEOS Visualization Environment (COVE) Status Report and Demo

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September 24-28, 2012
WGISS-34 and WGCV-35 Meeting
Hyderabad, India

CEOS Visualization Environment (COVE)

www.ceos-cove.org

COVE Tool

Displays satellite sensor coverage areas and forecasts satellite coincidences

90+ missions

Recently had some great interactions with users at **IGARSS** in Germany.

2012 MUNICH IGARSS

COVE is FREE !!!

COVE Applications in CEOS

Several CEOS international projects are using **COVE**

- **Deforestation** (GFOI/FCT) … Carbon and Urbanization
- **Agriculture** (GEOGLAM/JECAM) … Food Security
- **Data Access** (SDCG, Portals) … Space Data Use

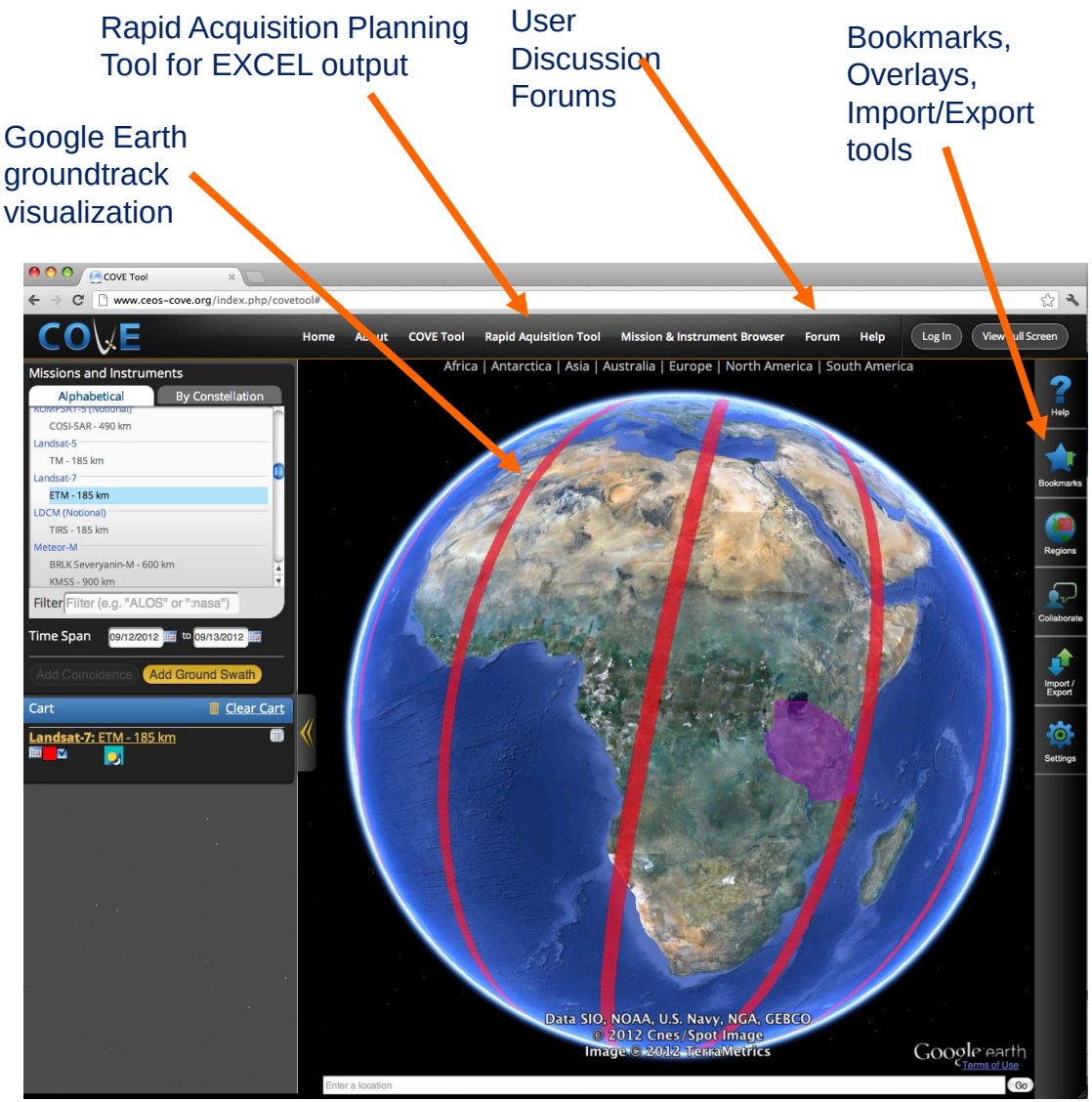
Working Group on Calibration and Validation

- Toz Golu, Turkey Campaign
- Antarctica DOME-C Campaign

There are many other (not shown here) Earth Science COVE users inside and outside the CEOS community using the tool for campaigns, data acquisition studies, etc.

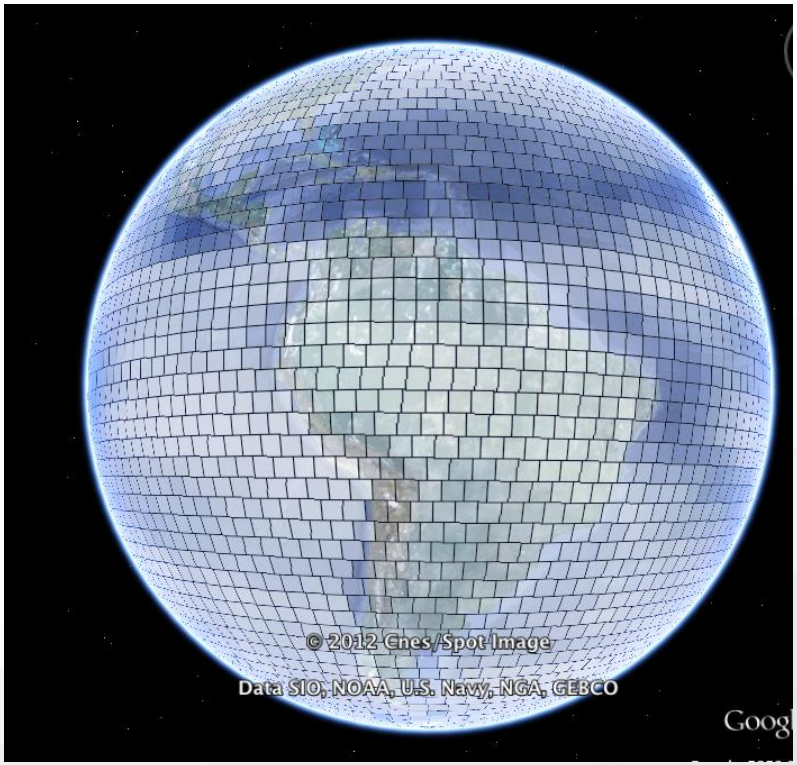
COVE Features and Details

- Automated daily satellite position data from Analytical Graphics Inc. (AGI) **CelesTrak** database
- Saved bookmarks and states, Google-Earth KML and Shapefile compatibility, collaborative sessions
- **Output**: position, UTC time, viewing angles, solar angles, day/night, and EXCEL tables
- Large mission database: **94** missions, **153** Mission-Instrument combinations
- **NEW** Graphical Interface and website design



Cloud Modeling in COVE

- Recently met with NASA Atmospheric Scientists focused on cloud modeling and products. They suggested several past and future cloud datasets.
- **Past datasets** ... Plan to utilize a new NASA-developed CERES SSF dataset (12 year) ready in Jan 2013. Data will include near-global (60S to 60N latitude), hourly, 8-km spacing, cloud products up to 9 months from present. A similar "Flash Flux" product can be used for time periods from NRT to last 9 months. If needed, an AVHRR product (4-km spacing) is available back to 1978.
- **Future forecasts** ... Global average cloud cover can be forecasted from the NASA International Satellite Cloud Climatology Project (ISCCP) dataset (D2 product, 25 years, 280-km, 3-hour sampling, monthly averages). These overlays will be available in October 2012.



Sample ISCCP overlay in COVE showing the 280-km spacing of cloud cover data

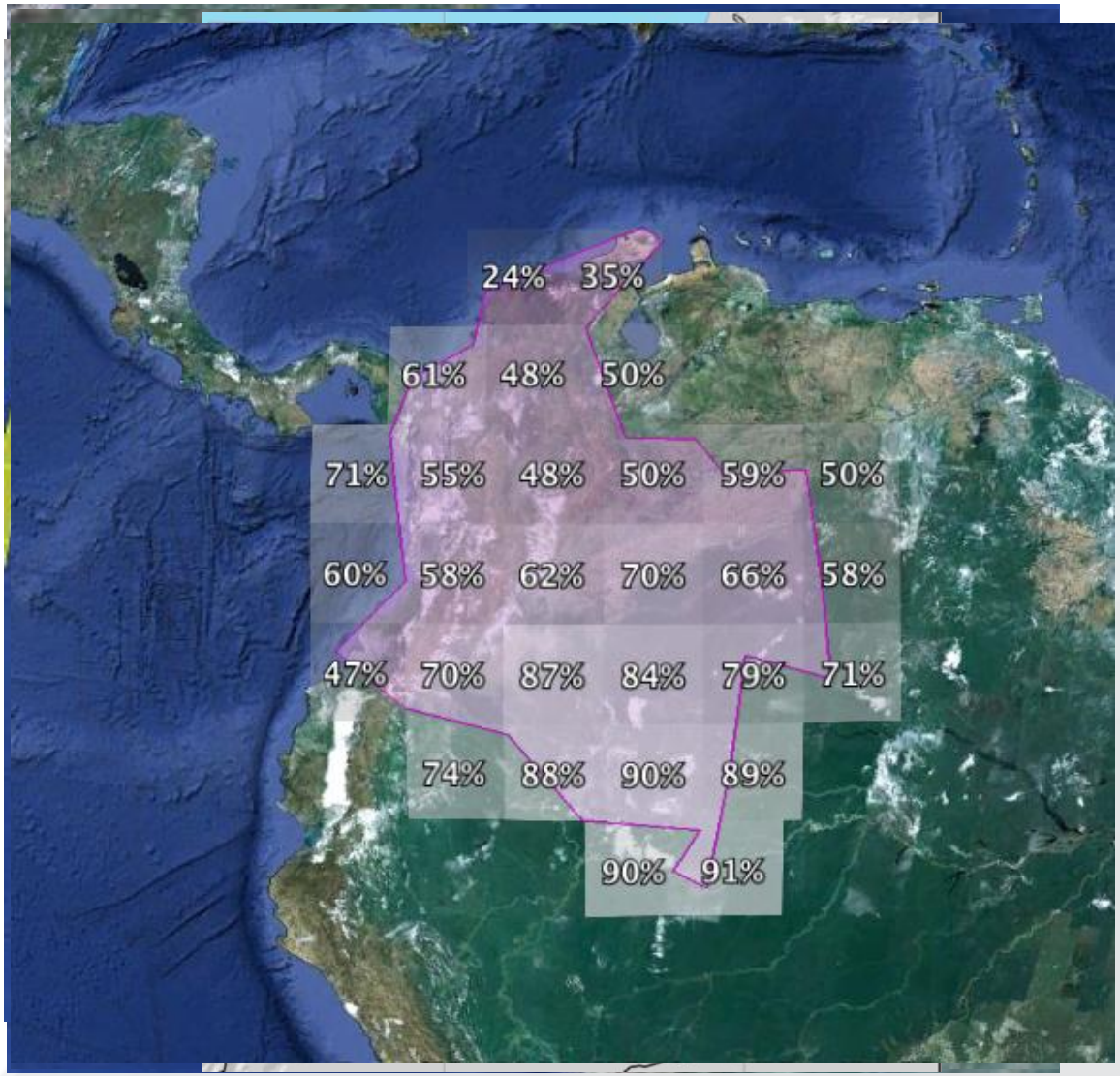
Colombia Example – GFOI Data Planning

Optical Imaging:
Landsat-7, ETM+
185-km swath, 16-day repeat
10:30am crossing

(1) Colombia region
(2) Forested Regions
(3) **1-day** Landsat-7 coverage
(4) **14 days** to cover Colombia (wall to wall)
(5) Average cloudiness 24% to 91%.

Assuming 90% cloudiness in southern region, it will take an average of **140 days** (2.5 times per year) to cover Colombia with clear scenes.

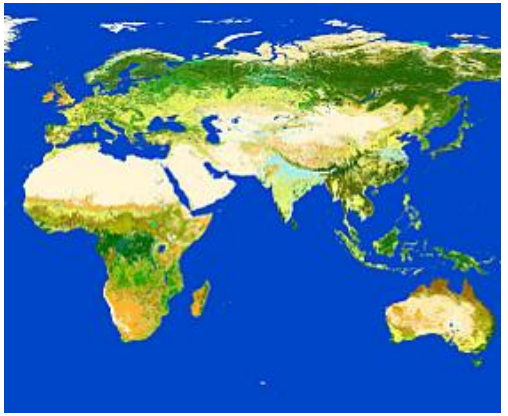
Requirement: 1/year (min) mapping, Monthly (optimal) for Forest Change.



COVE Development Plans

Near-Term (end 2012)

- GlobCover (forested regions) and Cloud Cover (ISCCP monthly averages) overlays to support SDCG and data acquisition planning for GFOI.
- Move COVE to Amazon Cloud servers for improved performance and expansion.



Long-Term (end 2013)

- Expand the COVE mission database with more current and future missions as well as additional instrument modes and swaths.
- Expand the COVE user community for sharing and learning among diverse users. Recent IGARRS Conference in 2012 was a great start.
- Add data overlays for past cloud cover (CERES SSF) and Global DEM.
- Develop a mobile iPhone COVE application
- Create a Spanish version of COVE for Central and South America (sponsored by USGS). Perform training in developing countries to educate users on satellite remote sensing of the Earth.