The EO Services Industry in Support of Decision-Making Towards Sustainable Development

perspectives

Earth Observation supports efforts to achieve Sustainable Development

- Expanding global demand for natural resources leads to unprecedented pressure

- Every three seconds, the World looses a football-sized swath of forest. How do we know it for sure?

- Resources such as forests, water as well as agricultural activities are regularly monitored by satellite technologies

- The extent of these resources requires whole-world views, making satellites a unique resource

- Satellite monitoring also used to determine agricultural support and subsidies, to predict production and develop market forecasts

UN Conference on Sustainable Development and the post-2015 Development Agenda

- COPUOS and OOSA contributions to the Rio +20 process also emphasize the importance and benefits of EO and space-derived geospatial data

- As a Summit outcome it is proposed to recognize that Space and space-derived data can be very useful for sustainable development

- OOSA promotes wider use of space science and technology and their applications at national, regional and global level (through capacity-building activities), to support the global development agenda

- There is a need to emphasize that global sustainable development cannot be achieved without a sustainable outer space; OOSA works towards bringing that message to the development agenda debate

Commercial Services Examples of relevance

Input from Google, MDA U.S. (formerly EarthSat)

Major consumers of EO data for providing public visualization tools and commercial services

Long-term service providers or in-kind contributors for UN entities as well

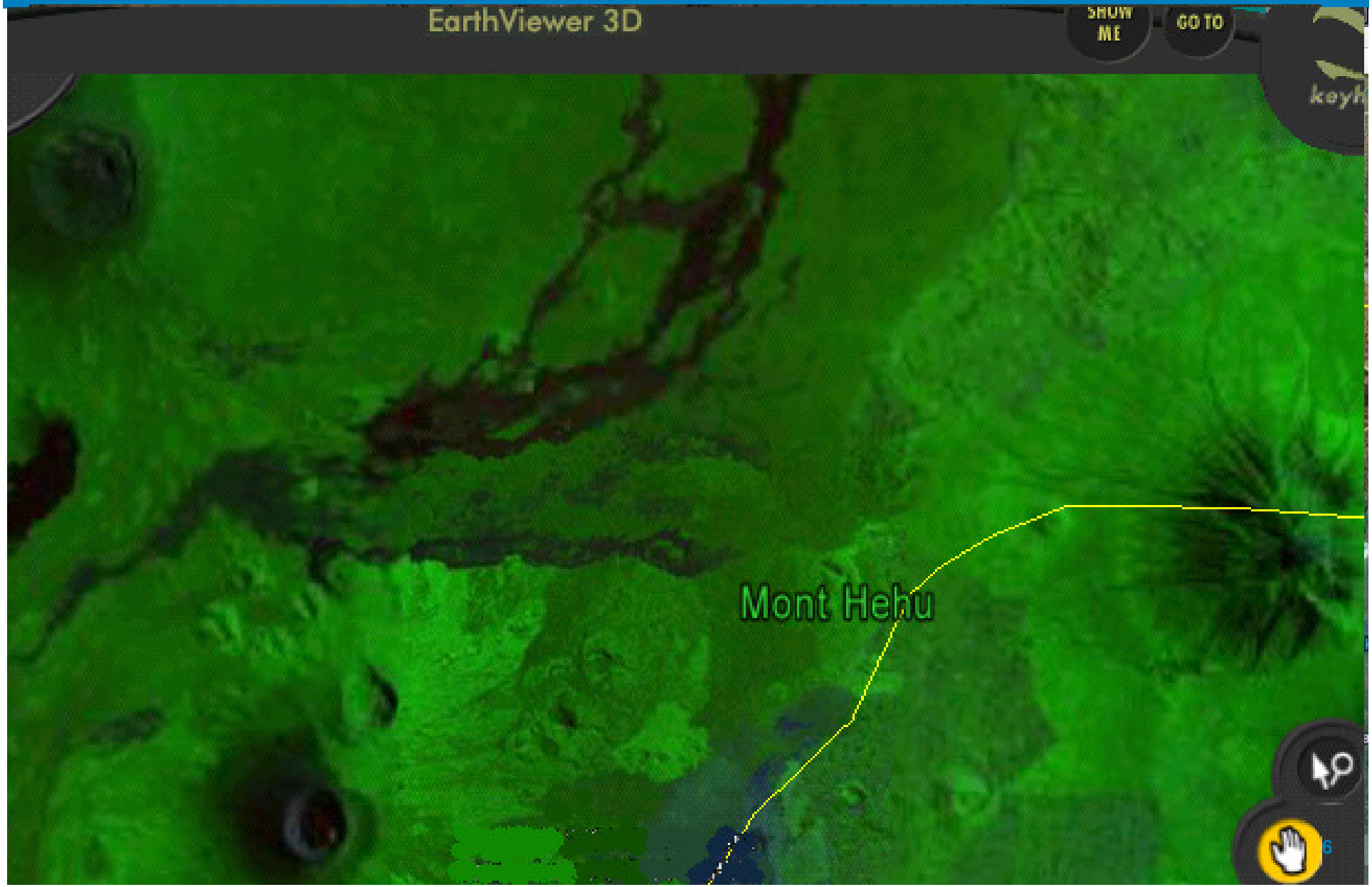
Often used as Decision Support tools today, bringing data closer to the users, and for monitoring too

10 years...

Feb 2002, UNEP Governing Council in Cartagena, Colombia

Feb 2012

UNITED NATIONS
Office for Outer Space Affairs



Google Earth

- Google Earth is built from data & information available from a broad range of sources, also available to anyone who licenses or purchases it
- Sources are Public, Government, Commercial and private Sector providers
- Google Earth visualizes such data to deliver on the commitment to create an accurate, comprehensive, and useful digital reflection of the real world
- As of today, Google Earth has been downloaded over one Billion times!
- Also 2x increase in high-res aerial imagery worldwide over the last 12 months alone
- Over 20 million sq km of imagery from the new GeoEye-1 satellite alone was published to date
- In 2010 alone, over 20 million sq km of sub-meter satellite imagery published
- Satellite imagery in Google Earth covers over 25% of the World's land surface and 70% of the World's population in sub-meter high resolution (a 10% gain)
- 50% land mass coverage and 75% population covered at 2.5m resolution or better

Considerations:

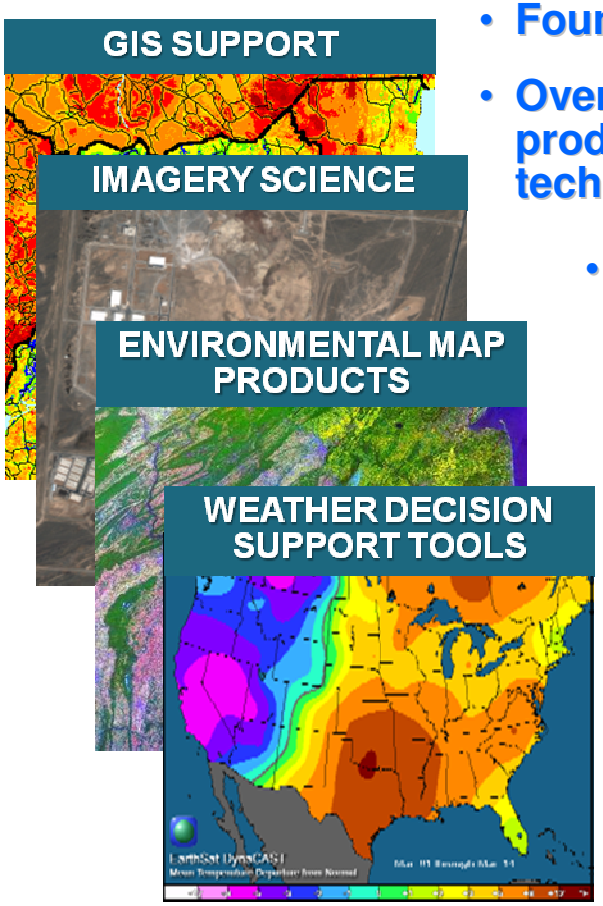
- UNEP supported Keyhole in 2001 as a startup, already appreciating the potential of the tool for many environmental applications

- Tool presented to Ministers of Environment of the UNEP Governing Council as a Decision Support System (DSS) option in Cartagena in 2001

- 795 UN expert users and decision-makers in 15 UN agencies (including UNEP, UNDP, WFP, FAO, UNICEF etc.) use today Google Earth Pro licenses (400$/year/license) in their work (Google.org grant), and can also request VHR coverage of specific areas as needed

- Clear plans to continue to increase and regularly update VHR coverage, further improvements to color balancing, all generating market and business opportunities for other specialized service providers as well

MDA Information Systems, Geospatial Division



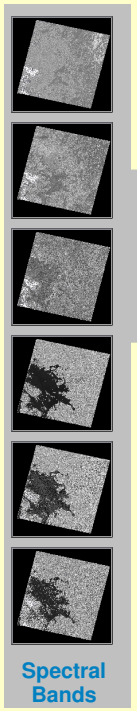
- Founded in 1969 as Earth Satellite Corp (EarthSat)
- Over 250 professionals providing geospatial information products and services employing remote sensing and GIS technology
  - Support US government, private industry, and international organizations
    - Maintain 24/7/365 commercial weather operation
      - Assist energy, agricultural and other industries in managing their weather related risk
        - Provide all source satellite imagery acquisition, value-added processing, and analysis
        - Quality Management System Certified to ISO 9001:2008

Utilizing Landsat Data

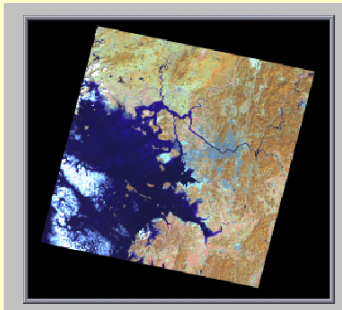
GeoCover Ortho[1]

Orthorectified Landsat Imagery

1970's, 1990's, 2000



Spectral Bands



Landsat Image (4,5,3)

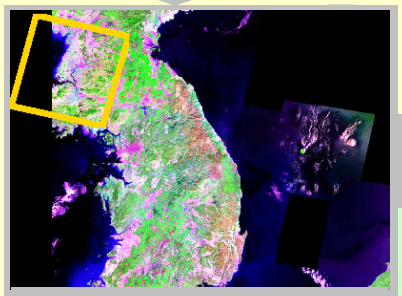
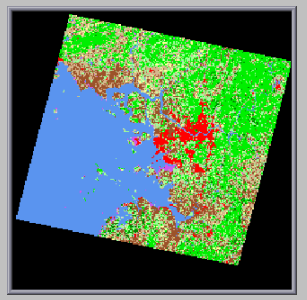


Image Mosaic (7,4,2)

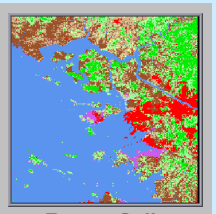
GeoCover LC[2]

Land Cover and Landcover Change

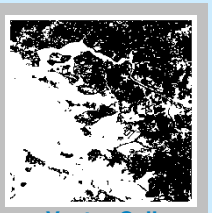
1990's, 2000



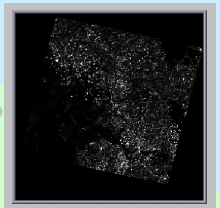
Land Cover



Raster Cell



Vector Cell



Change Products

NaturalVue[3]

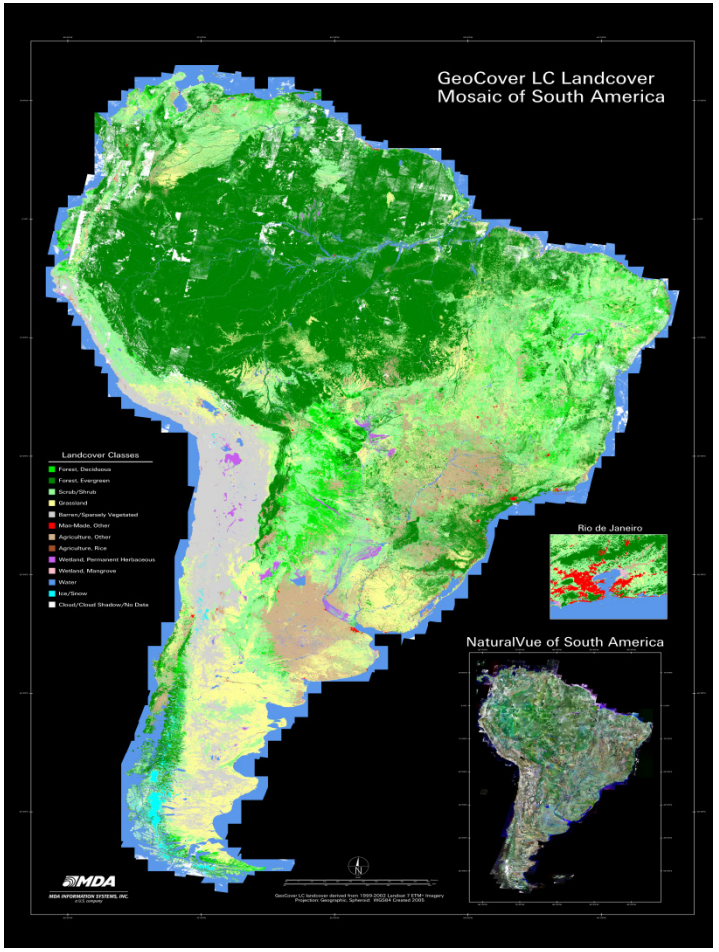
Pan Sharpened (14.25m)
Simulated Natural Color

2000

Global Mosaic 14.25m

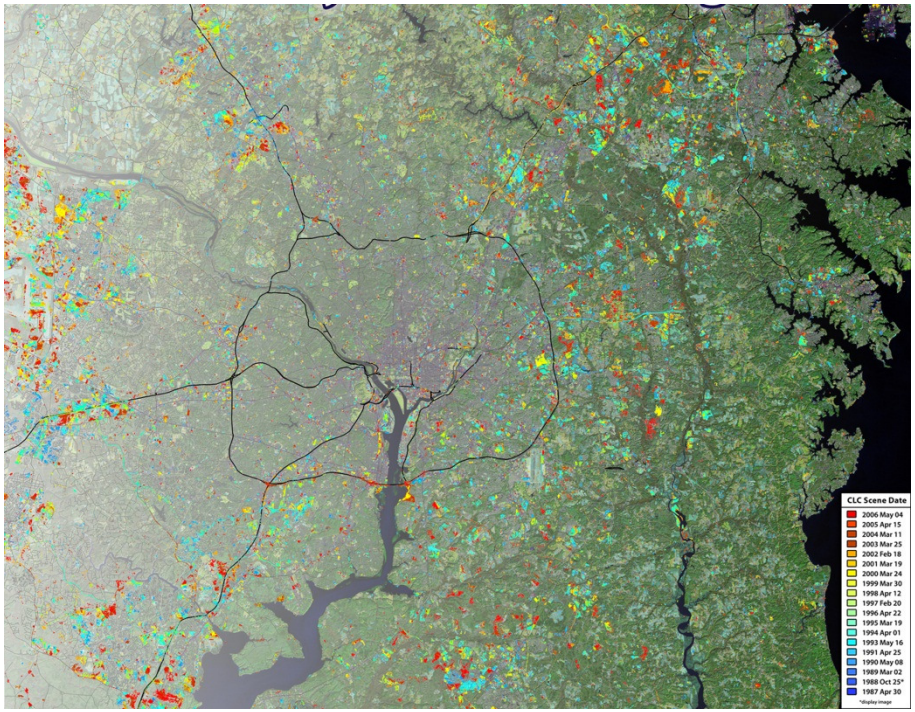
Landsat for GeoCover

- Land Classification System with 13 distinct classifications
- Global Coverage
- 12,000 Landsat scenes used
- 1990-2000
- Use Landsat scenes for cloud removal



Landsat for Correlated Land Change (CLC)

- Contract work
- Uses medium-resolution, multi-date, multispectral image data and an automated change detection methodology
- 105,000 Landsat scenes used
- 100+ million sq. km
- Landsat images used go back more than a decade



What is also evident:

- Large amounts of archived EO data exist, much of it still unexploited
- Demand for new and VHR data exists in a range of applications, but costs can be prohibitive
- New creative ways of distributing data through standard interfaces and online are developed (such as FirstLook by DG, EyeQ by GeoEye)
- New VHR imagery providers cannot always easily establish themselves in the market (RapidEye)
- Public-Private Partnerships model seems to be often preferred, though also limiting access to data
- Wider data sharing and data democracy could lead to more demand, while also allowing data and service providers to generate income
- Better capacities and expertise of users to consume such data still needed, as well as online analysis service alternatives

What could boost market while also contributing to sustainability:

- Improved global internet bandwidth for archive access, data transfers, online services access
- Wider adoption of interoperability standards (ISO/TC211, OGC)
- Development and adoption of more interoperable services and applications, also of analysis tools (CEOS/WGISS, GEO efforts)
- More open access to EO data, multi-user licensing schemes (GEO Data Sharing WG efforts)
- Continue to stress to decision-makers the value of EO data and of space-derived geospatial data as well
- Highlighting these aspects clearly in the final Rio +20 Declaration document as possible

THANK YOU

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