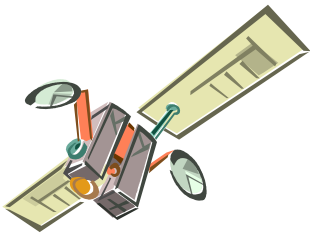


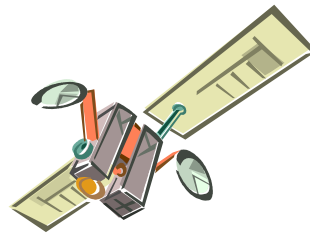
Remote Sensing data and tools for REDD+

Danilo Mollicone FAO Forestry Department

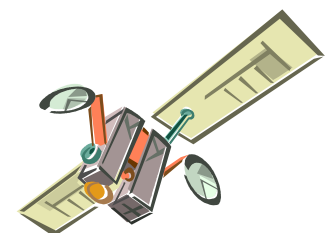
This presentation will provide an overview on **free** resources, data and tools to monitor forest through remote sensing



1990



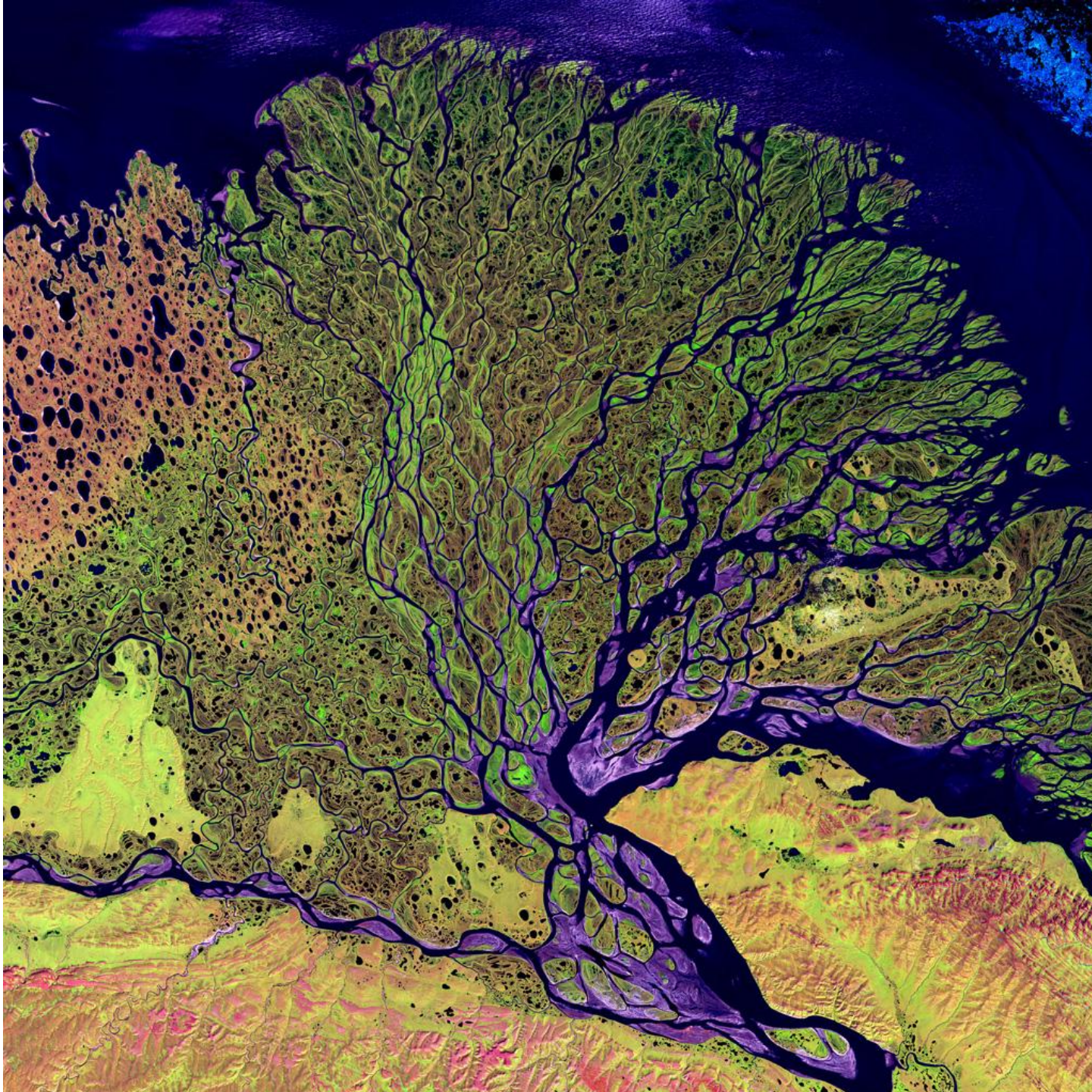
2000



2015



Remote Sensing data





Improved spectral and radiometric properties

Where to download Landsat data: Landsat Look Viewer

<http://landsatlook.usgs.gov/>

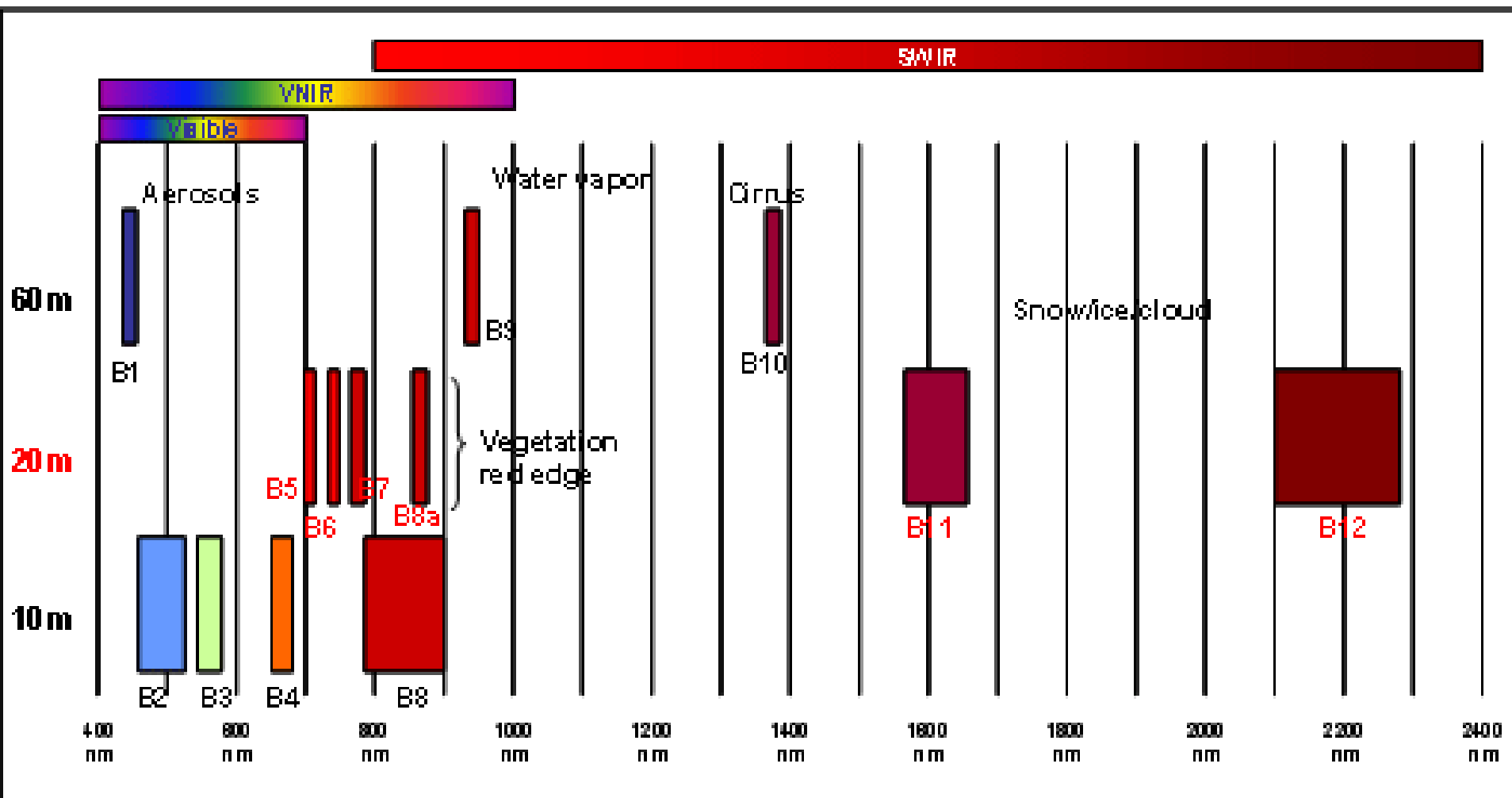


Due to the Federal government shutdown, usgs.gov and most associated web sites are unavailable.

Only web sites necessary to protect lives and property will be maintained.

- Ecosystems
 - [Disease Maps](#)
 - [National Wildlife Health Center](#)
- Imagery and Geospatial Information
 - [USGS Hazards Data Distribution System \(HDDS\) satellite and aerial imagery portal](#)
- Natural Hazards
 - [USGS coastal erosion hazards information](#)
 - [USGS earthquake information](#)
 - [USGS information on geomagnetic activity](#)
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 - [USGS volcano information](#)
- [Water](#)

Please see doi.gov for more shutdown information.



Improved spectral, spatial and radiometric properties



Busca:

ok

Talk to Us

CHINA-BRAZIL EARTH RESOURCES SATELLITE

CBERS



:: Tuesday, October 15, 2013

English | Português A A A

CBERS

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São José dos Campos - SP
Brasil

Tel: 55 (12) 3208-6000

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REALIZATION



National Institute For
Space Research



Brazilian Space Agency



Chinese Academy of
Space Technology



China National Space
Administration

IMAGE CATALOG

Catálogo de
Imagens
CBERS



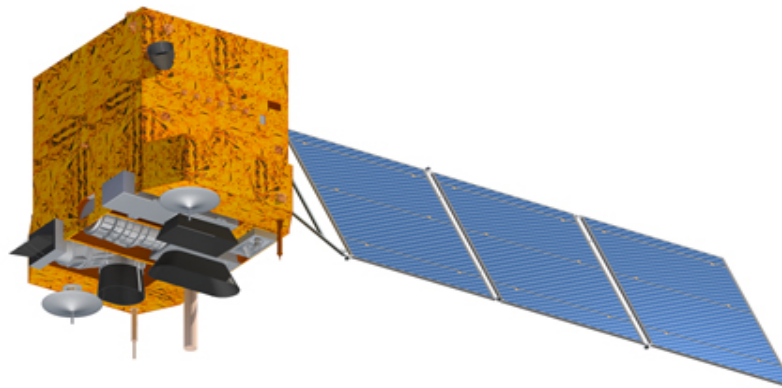
CBERS 3 AND 4 LAUNCHING

Due to the success of CBERS-1 and 2, the two governments decided, in November 2002, to give continuity to the CBERS program by signing a new agreement for the development and launching of two more satellites, CBERS-3 and 4.

Brazilian participation in this program will be enlarged up to 50%. CBERS-3 will be launched at the end of 2012, and CBERS-4 is scheduled to be launched two years later.

CBERS-3 and 4 satellites represent an evolution of CBERS-1 and 2. Four cameras will be present in the payload module, with improved geometrical and radiometric performance.

They are: PanMux Camera-PANMUX, Multi-spectral Camera-MUXCAM, Infrared Scanning Medium Resolution Scanner-IRSCAM, and Wide Field Imaging Camera-WFICAM.



http://www.cbbers.inpe.br/ingles/satellites/launching_cbbers3_4.php

Fig. 1 - CBERS-3 and 4

Remote Sensing tools

The screenshot displays the GRASS GIS interface with three main windows:

- GRASS GIS Map Display: 0 - Location: nc_spm_06**: Shows a topographic map with various colored layers representing terrain and roads.
- GRASS GIS Layer Manager - nc.grc**: Lists the loaded layers:
 - soils_wake@PERMANENT 40
 - roadsmajor@PERMANENT 100
 - slope@PERMANENT 100
- GRASS GIS Attribute Table Manager - vector map layer <roadsmajor@PERMANENT>**: Shows the attribute table for the selected layer with a context menu open over it.

cat	MAJORRDS_	ROAD_NAME	MULTILAN	PROPYEA	OBJECTID	SHAPE_LEN
10	10.0	NC-98	no	0	10	8446.822876
11	11.0	NC-98	no	0	11	14876.323626
12	12.0	NC-98	no	0	12	11610.268716
13	13.0		no	0	13	11828.121704
14	14.0		no	0	14	5524.875869
15	15.0	NC-98	no	0	15	4739.53603
16	16.0	NC-96	no	0	16	8586.517385
17	17.0		no	0	17	12073.33628
18	18.0		no	0	18	10178.42291
19	19.0		no	0	19	4375.530882
20	20.0		no	0	20	6491.037831
21	21.0		no	2025	21	9781.033301
22	22.0		es	0	22	12315.177857

The context menu for the attribute table includes the following options:

- Edit selected record
- Insert new record
- Delete selected record(s)
- Delete all records
- Select all
- Deselect all
- Display selected
- Extract selected
- Reload

At the bottom of the window, there are buttons for "Quit" and "Apply", and a status bar showing "Coordinates" and the value "640595.27,220432.01".

PRODES: the Brazilian system to monitor forest in Amazon

<http://www.dpi.inpe.br/prodesdigital/prodes.php>

The screenshot displays the PRODES web application interface. At the top, the browser address bar shows the URL www.dpi.inpe.br/prodesdigital/prodes.php. The page header includes the logo of the Ministério da Ciência e Tecnologia and the word "PRODES" in large letters. A navigation menu contains options: "Recompor", "Imagens Satélite", "Cartografia", "Mapas Temáticos", and "Tamanho da Tela".

On the left side, there are two main sections for data consultation:

- Consulta Cenas Individuais:** Includes a dropdown for "Seleção Ano" (2000 a 2012), a field for "e/ou seleção Orbital/Ponto", a dropdown for "Estado/Região" (TODOS), and a field for "Município (opcional)". A "Consultar" button is present.
- Consulta Mosaicos Estaduais:** Includes a dropdown for "Seleção Ano" (2012) and a dropdown for "Estado/Região" (Toda Amazonia Legal). A "Download" button is present.

Below these sections are links for "Desmatamento nos Municípios", "Desmatamento nas Unidades de Conservação", "Download dos dados (sem interface gráfica)", and "Acessórios". A "Ajuda..." section contains links for "Descrição das Classes", "Classes Sisprodes x Spring", and "Home PRODES". At the bottom left, contact information is provided: "Dúvidas, comentários e sugestões: prodes@dpi.inpe.br".

The main content area displays a satellite mosaic titled "Mosaico NASA LandSat 2000 (AMS)/Desmatamento ate 2011". The map shows a large area of the Amazon with significant deforestation, indicated by yellow and orange patches. Several municipalities are labeled on the map, including Eureka, Ingavi, Villa Nueva, and Guayaquerin. The map also shows a network of roads and rivers. The coordinates "S08:00:00 O63:00:00" are displayed in the top right corner of the map area.

TerraAmazon: forest and land use monitoring system

<http://www3.funccate.org.br/geo//available/wiki-v01-TerraAmazon/pmwiki.php/Main/Home>



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- TerraView
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editar o menu

Main /
Home

The screenshot displays the TerraAmazon 4.3.0 SFS software interface. The main window shows a map of a region in Brazil, with a prominent red line indicating deforestation. The interface includes a menu bar (File, Show, View, Theme, Process, Attribute, Preferences, Administration, Help), a toolbar with various icons, and a status bar at the bottom showing coordinates (Long: -63:19:42.65, Lat: -6:54:13.17, xi: -63.33, yi: -6.90) and the current layer (EditionLayer: Draft_Layer). On the left side, there are two panels: 'Database/Layers' and 'Views/Themes'. The 'Database/Layers' panel lists several layers, including 'Brazil', 'CELL_LAYER_BRAZIL', 'Draft_layer', 'Landsat_Grid', 'Landsat_Grid_used_in_Sisprodes', 'Non_interactive_Classification', 'OUTPUT', and 'SISPRODES_2011'. The 'Views/Themes' panel shows a list of themes, including 'Data', 'Landsat_Grid_used_in_Sisprodes', 'Brazil', 'CELL_LAYER_BRAZIL', 'Draft_layer', 'SISPRODES_2011', 'OUTPUT', 'OUTPUT_CLOUDS', 'OUTPUT_DEFORESTATION', 'OUTPUT_FOREST', 'OUTPUT_HIDROGRAPHY', 'LandsatSTM_23265_06082011_LL', 'Landsat_2010', 'Landsat_2011', 'Non_interactive_Classification', 'SISPRODES_2011', 'WMS_Data', and 'WMS_DATA2'. The map area is divided into four quadrants by a red horizontal line and a green vertical line. The top-right quadrant shows a significant area of deforestation, indicated by a red line and surrounding red areas.

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TerraAmazon is a GIS tool designed to be a multi-user editor of geographic vectorial data stored in a TerraLib model database in corporate environment.

TerraAmazon keeps work time records for project control. It's functionalities are extensible through plugins, such as the already existing Terralmage (DIP), Cloud Detection and TerraPrint.

TerraAmazon engages land use and land cover classification tools as well as spatial operations between vector data, allowing transitions analysis among other applications.

TerraAmazon is Free.



Search Places, Keywords, Tables, or Asset IDs...



Earth Engine

A planetary-scale platform for environmental data & analysis

Google Earth Engine brings together the world's satellite imagery — trillions of scientific measurements dating back almost 40 years — and makes it available online with tools for scientists, independent researchers, and nations to mine this massive warehouse of data to detect changes, map trends and quantify differences on the Earth's surface. Applications include: detecting deforestation, classifying land cover, estimating forest biomass and carbon, and mapping the world's roadless areas.

To learn more, view [product videos](#) and the Featured Gallery (below). Or visit the [Data Catalog](#) to explore our archive of satellite imagery. Certain features (such as data download) are restricted to members of our trusted tester program.

New! On February 11, NASA launched Landsat 8, the latest in a series of Earth observation satellites which started collecting information about the Earth in 1972. We're excited to announce that on May 30th, the USGS began releasing operational data from the Landsat 8 satellite, which are now [available on Earth Engine](#). Explore the gallery below to see how we've used Landsat data to visualize thirty years of change across the entire planet. Congratulations to NASA and USGS for a successful launch!

Earth Engine Access

Develop, access and run algorithms on the full Earth Engine data archive, all using Google's parallel processing platform.

Access to Earth Engine is currently available as a limited release to a small group of partners. If you are interested in developing on the Earth Engine platform, [let us know](#).

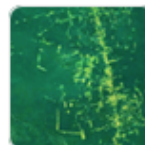
Featured Sites: Landsat Annual Timelapse 1984-2012

Explore different views into this global timelapse built from global, annual composites of Landsat satellite images. Watch change across the planet's surface beginning as early as 1984.



Growth of Las Vegas, Nevada

Interactive Landsat timelapse of urban expansion and water resources in the Nevada desert, 1984-2012.



Amazon Deforestation, Brazil

Interactive Landsat timelapse of deforestation of the Amazon rainforest, 1984-2012.

Google Earth Engine: real time access to all Landsat and Modis data

Manage workspace ▾

Home Data Catalog Workspace

Map Satellite

Landsat 8 Annual Greenest-Pixel TOA ...

◀ ▶

Jump to date

Visualization

1 band (Grayscale) 3 bands (RGB)

B5 B6 B4

Range

Min: 0 Full ▾

Max: 0.51 Stretch

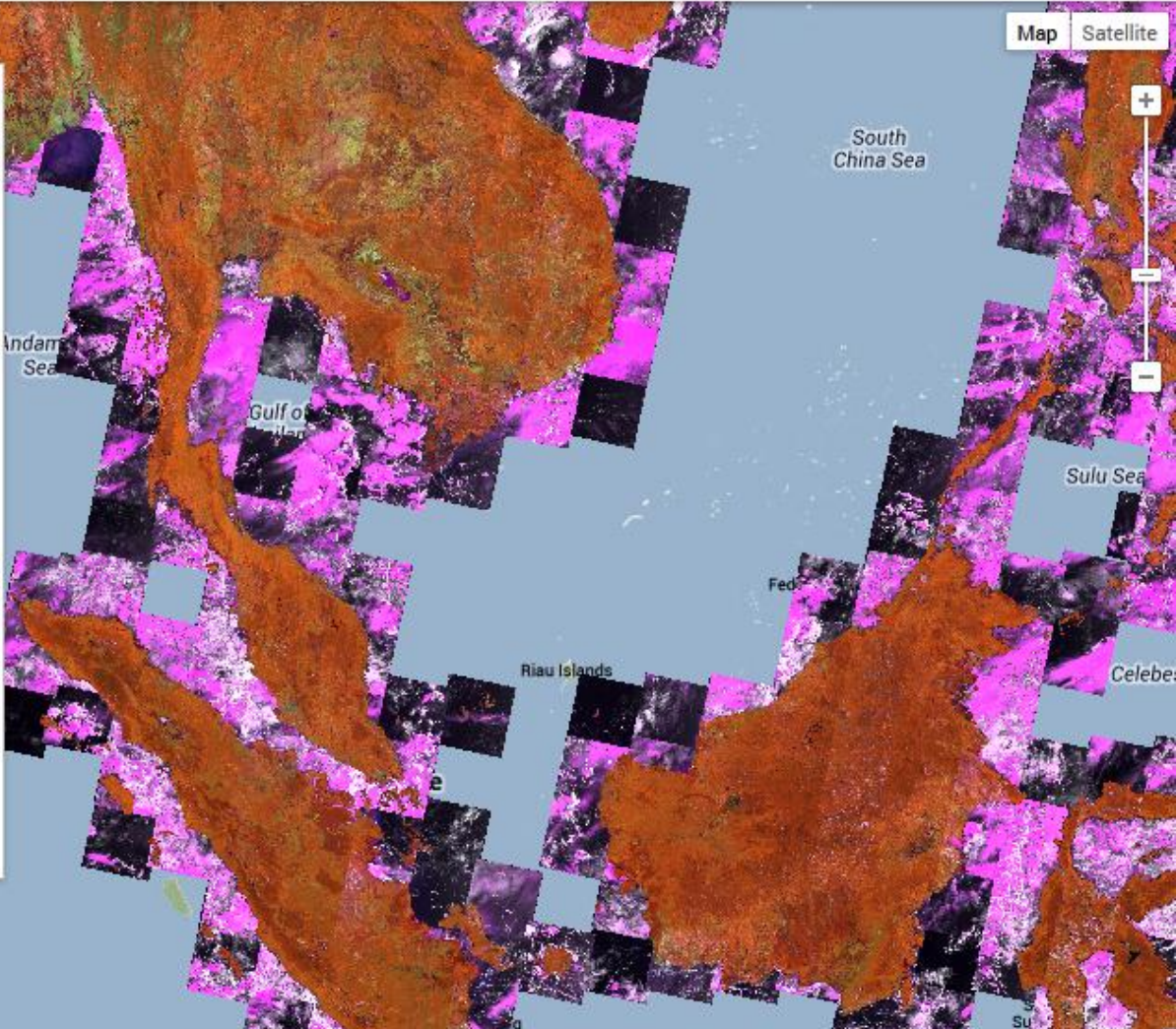
Opacity

1

Gamma Palette

1

Save Apply Cancel [trash] [down] [help]



South China Sea

Andam Sea

Gulf of Thailand

Sulu Sea

Riau Islands

Celebes

Map data ©2013 AutoNavi, GBRMPA, Google, Kingway, MapIT, SK planet, ZENRIN | 200 km | Terms of Use

ESRI free web tools

<http://www.esri.com/software/landsat-imagery/viewer>

changematters.esri.com/compare

landsat esri

ChangeMatters - Healthy Vegetation

Search: Select Image Map: **Healthy Vegetation** Select Dates: **1990 - 2010**

1990 Full Screen **2010** Full Screen **NDVI Change for 1990 to 2010**

esri® esri® esri®

Snow/Ice	Urban	Water	Clouds	Wetlands
Agriculture	Conifer Forest	Desert	Broadleaf	

Veg Increase Veg Decrease

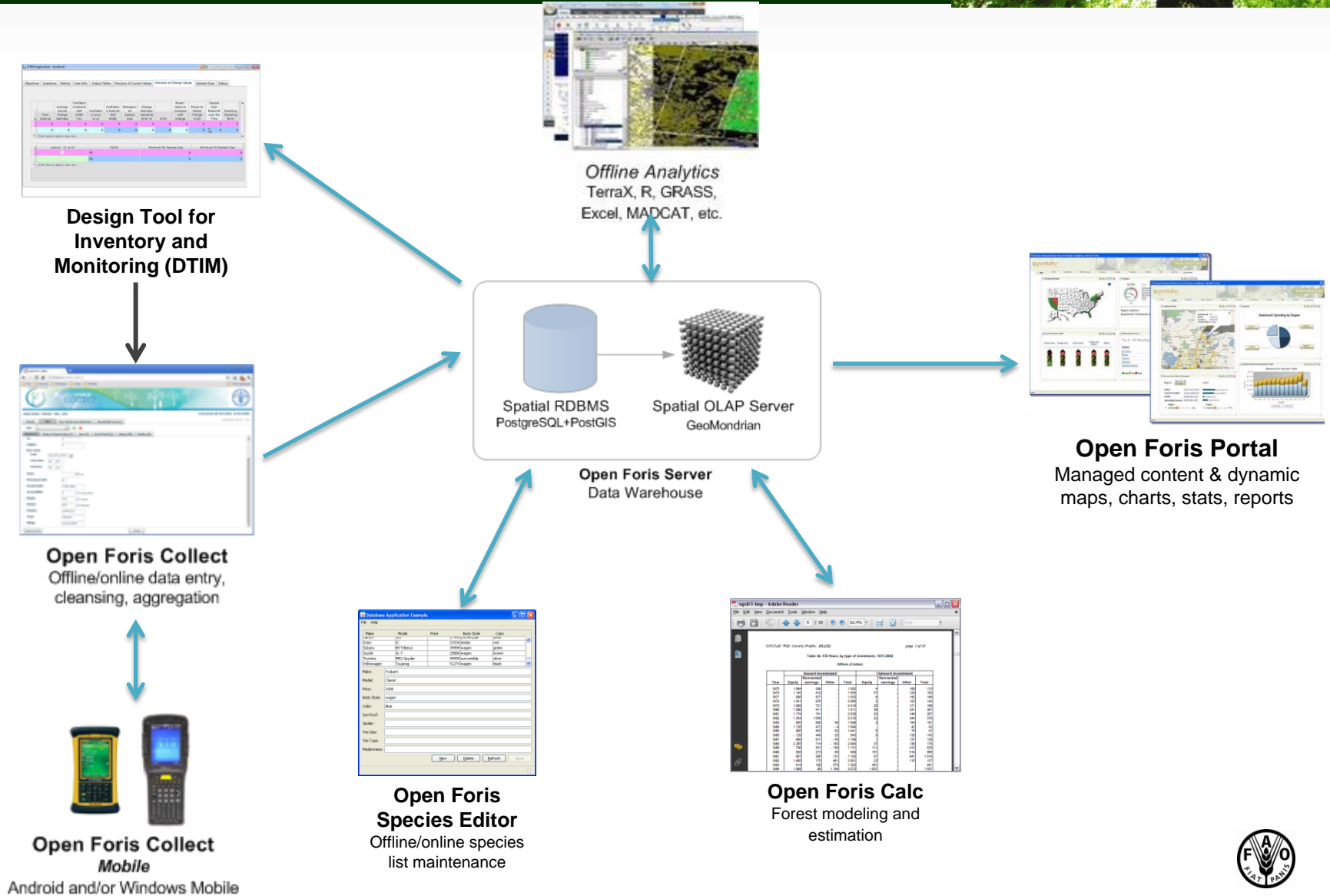
[How to interpret a change image](#)

Open Foris Initiative

<http://www.fao.org/forestry/fma/openforis/en/>

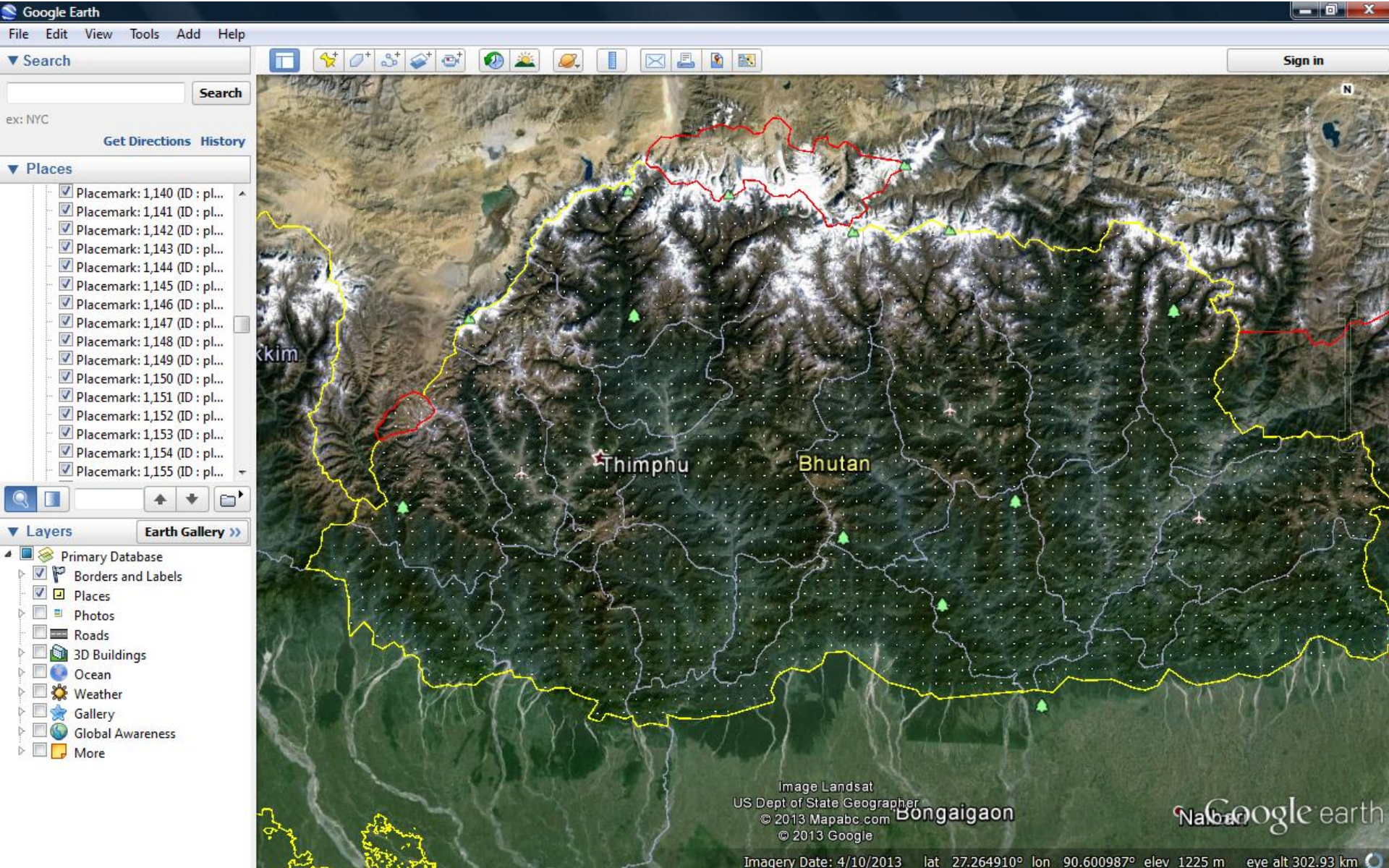


Potential architecture



Open Foris Collect Earth:

sampling with open source software and free Google internet resources



Open Foris Collect Earth Papua New Guinea: support to 1st phase NFI and LULUCF REDD+ activity data assessment

The screenshot displays the Google Earth web interface. On the left, a 'Places' list shows a grid of sampling units from ID 362 to 391. Unit 386 is highlighted. A white box on the satellite imagery highlights a 5x5 grid of these units, with the center unit (386) marked with a red dot. On the right, a 'Collect Earth' data entry panel is open for unit 386. The panel includes the following information and options:

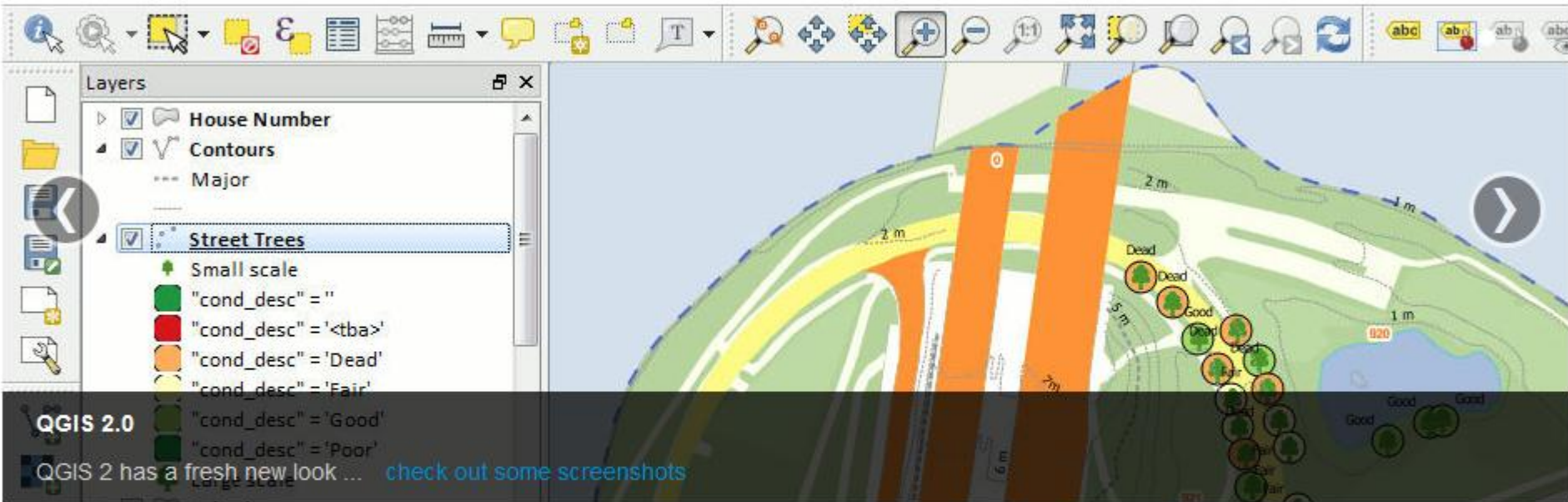
- Collect Earth** (with logos for OPENFORIS, PNG, and FAO)
- ID:** 108422 - **Elevation:** 39m, **Aspect:** 97°, **Slope:** 2°
- Land use categories:** Forest, Grassland, Cropland, Wetland, Settlement, Other, No Data, Accuracy, YES, NO
- Land use sub-category:** FL > FL, Other > FL, Accuracy, YES, NO
- Land use sub-division:**

Natural Forest		Forest Plantation
Low alt. plainsa	Low alt. uplands	Teak
Lower montane	Montane	Eucalyptus
Montane conifer	Dry seasonal	Balsa
Littoral	Seral	Klinki
Swamp	Savanna	Hoop
Woodland	Scrub	Pine
Mangrove	Not Sure	Acacia
		Terminalia
		Undetermined
- Accuracy:** YES, NO

At the bottom of the interface, the status bar shows: Imagery Date: 7/8/2013, lat -8.639922°, lon 148.240741°, elev 35 m, eye alt 437 m.

QGIS

A Free and Open Source Geographic Information System



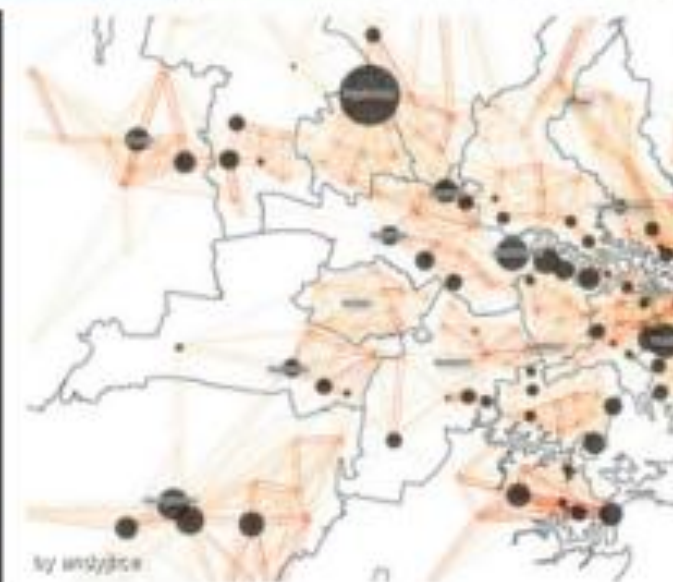
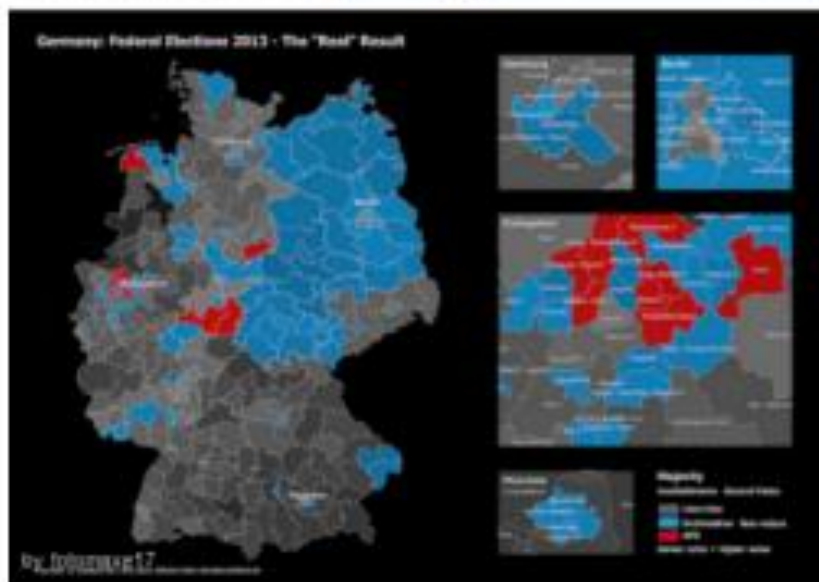
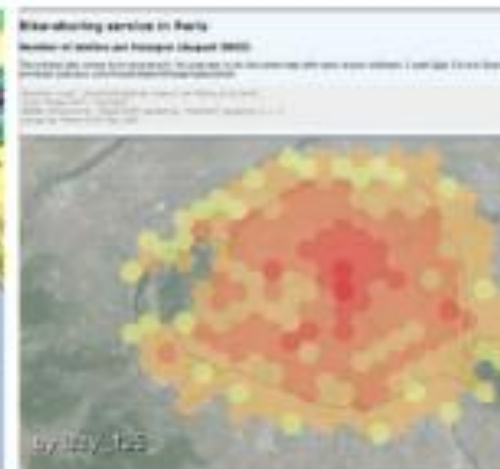
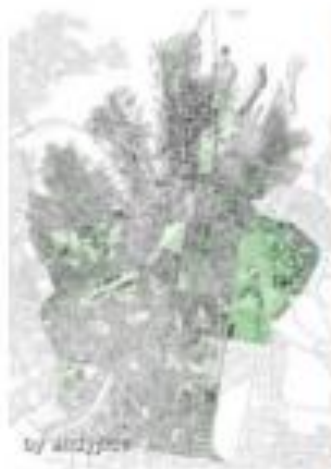
Create, edit, visualise, analyse and publish geospatial information on Windows, Mac, Linux, BSD (Android coming soon)

For your desktop, server, in your web browser and as developer libraries

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<http://www.qgis.org/en/site/>



Gallery

Check out images and videos of interesting maps and projects from the Global QGIS Community.



Quantum GIS User Map

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Search:

QGIS Users Map

- >> Community map
- >> Add yourself!
- >> Update your details

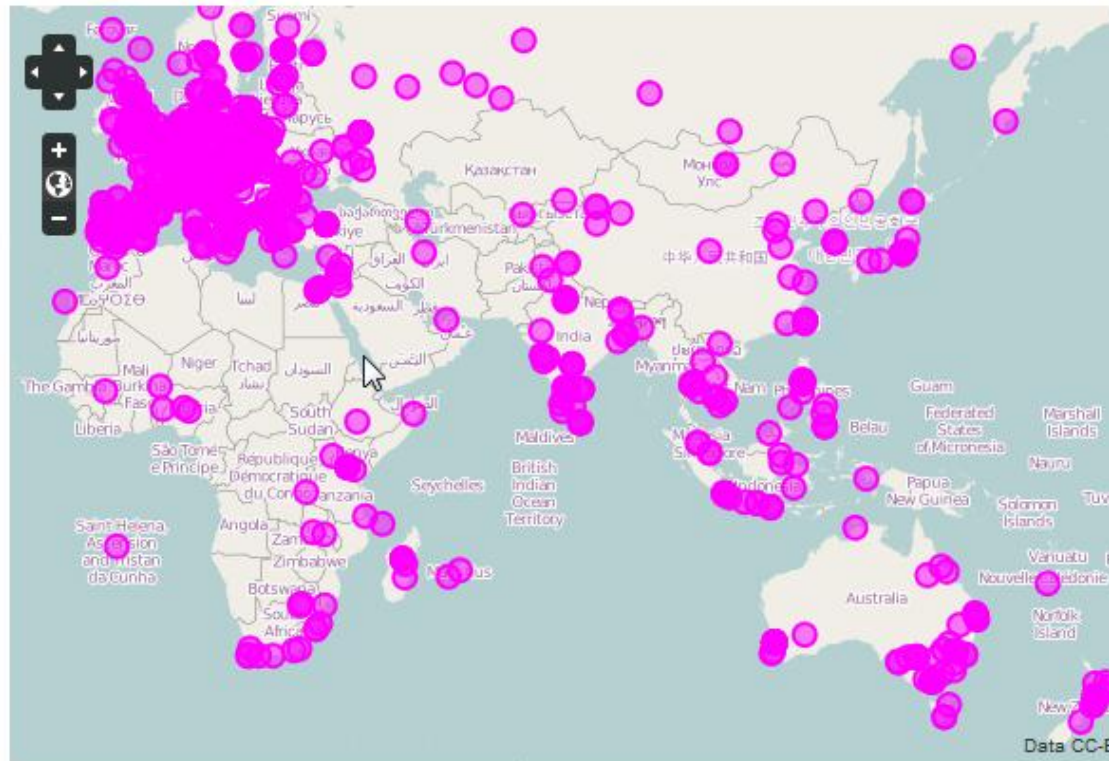
1306 users mapped

Meet a user

To appear here you must have uploaded an image.



Simon Nitz





SAGA

System for Automated Geoscientific Analyses

Donate

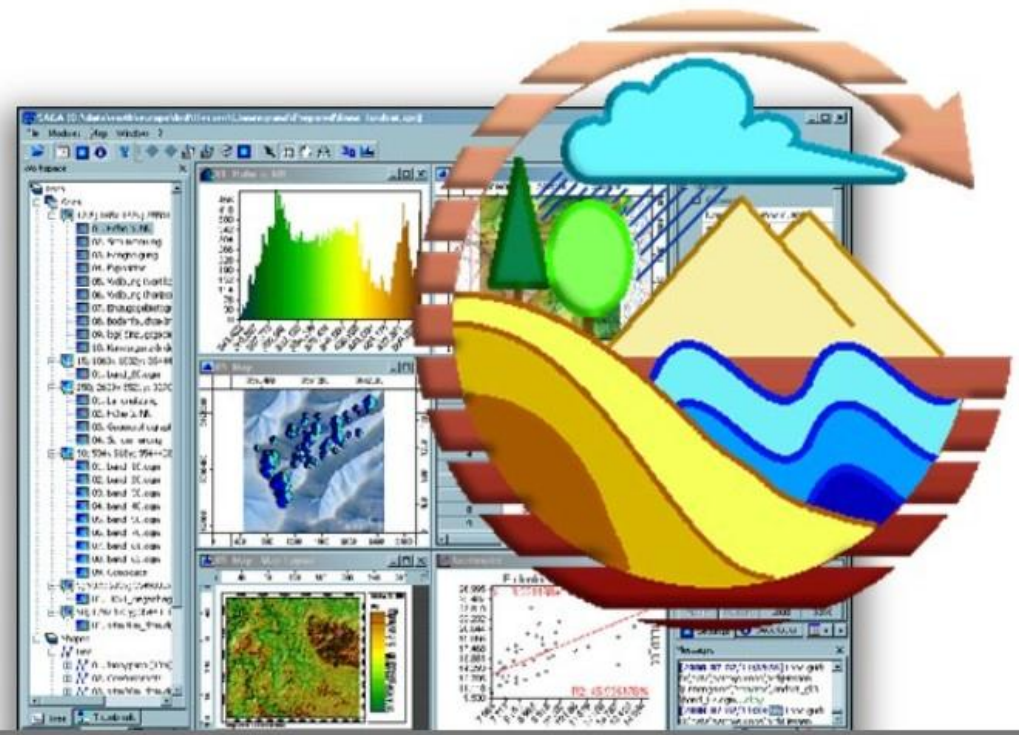


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<http://www.saga-gis.org/en/index.html>

Global Forest Watch: a little excursion into the future

www.gfw-beta.org

The screenshot shows the Global Forest Watch website interface. At the top left is the logo "GLOBAL FOREST WATCH". A navigation menu includes "HOME", "COUNTRIES", "STORIES", "MAP", "BLOG", "DATA", and "ABOUT". A language selection dropdown is labeled "SELEZIONA LINGUA". On the right, a statistics box displays "ALERTS IN THE PAST YEAR" and "3 NEW FOREST STORIES". The main content area features a world map with red dots indicating forest clearing alerts. A large green circular callout is centered over the map, containing the text "2,931 Forest clearing alerts in the last 16 days" and a flag icon. The map is powered by Google CARTO and includes a "FEEDBACK" button on the right side.



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Partners

Funders



Support & data

Website team





Thank you for your attention