

## *MRV Joint Workshop*

*22-24 June 2010, Guadalajara, Jalisco Mexico*

# Data acquisition and access for the Congo Basin

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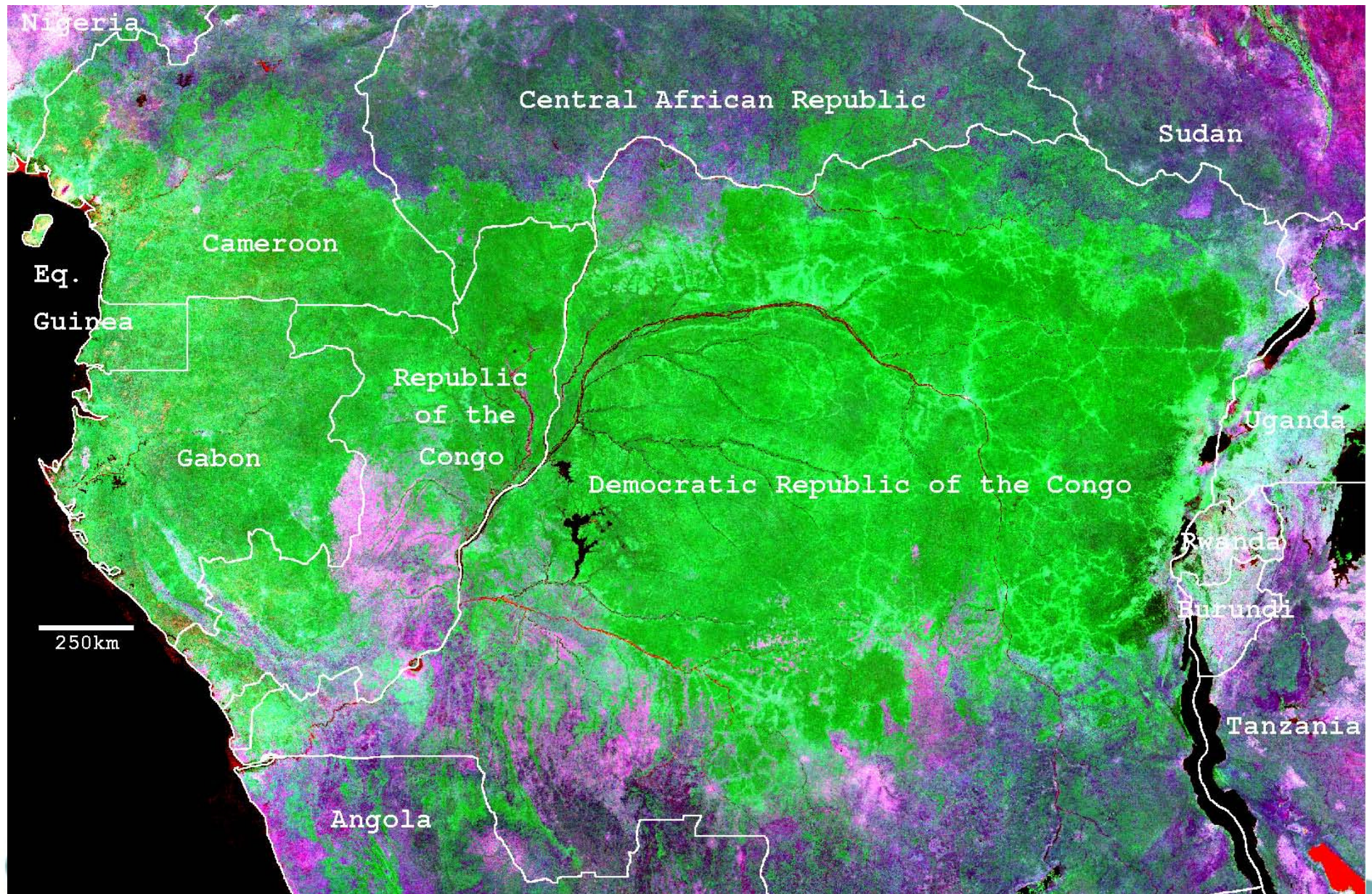
## Presentation of Congo Basin

- ❖ Approximately 200 million hectares
- ❖ Congo Basin forest constitute the second blocks of dense and wet tropical forest in the world
- ❖ These forest play a big role for the conservation of biodiversity and others ecological services (biomass, carbon stock, etc.)
- ❖ Congo Basin countries : Cameroon, Gabon, Central Africa Republic, Equatorial Guinea, Republic of Congo, DR Congo





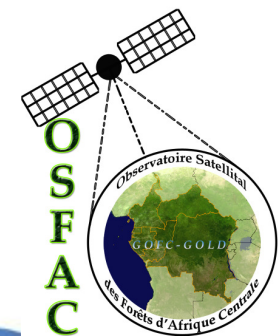
# Congo Basin forest





## Satellite Data accessibility for forest monitoring in Central Africa

- ❖ Earth observation data are a necessity for the successful monitoring of forest cover and execution of programs relating to REDD
- ❖ Satellite data used for forest cover monitoring vary in spatial resolution (1 km to sub-meter)
- ❖ Image acquisition frequency (daily to monthly)



Satellite	Sensor(s)	Spatial Resolution	Revisit Frequency	Application Scale
Optical				
NOAA	AVHRR	1 km	daily	Global NDVI
SPOT	VEGETATION	1 km	daily	Global
Terra / Aqua	MODIS	250 m – 1 km	daily	Global, Regional
Envisat	MERIS	300 m – 1 km	3 days	Global, Regional
CBERS-2	CCD, IRMSS, WF	20 – 260 m	5 / 26 days	Regional, Local
IRS-P6 <sup>10</sup>	LISS, AWiFS	5.8 – 56 m	5 / 24 days	Regional, Local
Landsat 5 / 7	TM / ETM+	15 - 60 m	16 days	Regional, Local
SPOT- 4 / 5	HRVIR / HRG	10 – 20 m	26 days	Regional, Local
Terra	ASTER	15 – 90 m	On demand	Local
EO-1	ALI <sup>1</sup>	10 – 30 m	16 days	Local
Radar			Orbit overpass	
ERS-2	SAR (C-band)	30 m	35 days	Regional
Envisat	ASAR (C-band)	30 m	35 days	Regional
ALOS	PALSAR (P-band)	7 – 88 m	46 days	Regional
RADARSAT	SAR (C-band)	25 m	24 days	Regional



## What are the difficulties with satellite data access?

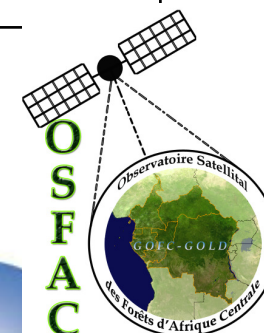
A general observation is access to satellite data remain limited in many regions of the world. The main constraints include :

- ❖ High cost of Earth Observation data,
- ❖ Lack of satellite receiving stations in many regions,
- ❖ Limited access to internet...



*Availability of global Landsat scenes in the US Landsat archives and percentage that are over the Africa continent* (as of September 2009) (Roy et al 2010).

Sensor	Archive Total	Images over Africa	Percent
MSS 1-3	288,874	10,580	3.66
MSS 4-5	225,432	18,099	8.03
TM 4-5	795,711	47,519	5.97
ETM	930,271	117,247	12.60
<b>Total</b>	<b>2,240,288</b>	<b>193,445</b>	<b>8.63</b>



## Some initiatives to improve the availability and accessibility of satellite data (1)

### ❖ *DMC International Imaging :*

DMC International Imaging Ltd (DMC) promotes and sells imagery from several earth observation satellites.

The service has started the acquisition and the provision of the satellite data covering the Congo Basin.

### ❖ *SPOT Image Initiative*

In support to international programs on climate change and particularly to REDD, the French government plans to open the archives of SPOT imagery.





## Some initiatives to improve the availability and accessibility of satellite data (2)

### ❖ *Libreville Satellite Data Receiving Station:*

The governments of Gabon, France and Brazil plan to install, before the end of 2012, a satellite data reception station at Libreville, Gabon.

The station will allow the systematic reception of data from several satellites like SPOT, CBERS, etc.

### ❖ *GeoNetCast Initiative*

The initiative involves the EUMETSAT, the United States, China, and the World Meteorological Organization. The GEONETCast system will hold a central place in the cost-effective data distribution system via a satellite network.

# GOFC GOLD tries to improve satellite data accessibility and quality

- ❖ By creating eight regional networks in : South America, Asia and Africa
  - **Africa Zone** : Miombo, SAFNet, OSFAC and WARN
  - **Asia Zone** : NERIN, SEARIN, CARIN
  - **South America Zone** : RedLaTIF
- ❖ By collaborating closely with the US Geological Survey in the Regional Network Data Initiative to improve Earth Observation Data access around the world.



# GOFC-GOLD Regional Network Data Initiative

(2)

## Pilot for Africa

- Involves 5 regional networks
- Network representatives received data and training over 3 weeks at USGS EDC and South Dakota State University (SDSU) in early 2009
- Support provided by NASA, START, USGS, UNEP, SDSU and CFS



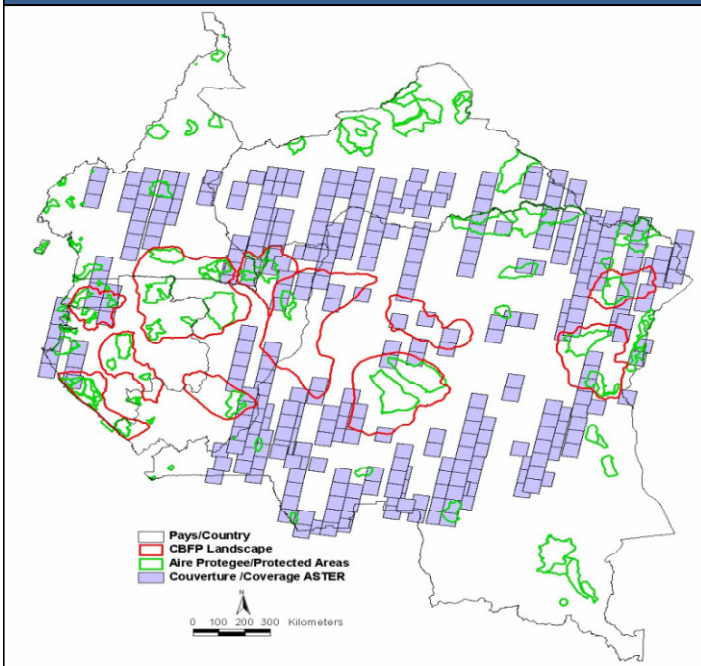
## Data sharing and distribution in Congo Basin by OSFAC (Satellite Observatory of the Forest of Central Africa) <http://www.osfac.net>

- ❖ In the sphere of the Regional Data Initiative, OSFAC (Satellite Observatory of the Forests of Central Africa), represents GOFC GOLD in Central Africa, provides satellite data and available by-products for free.
- ❖ START supports OSFAC to have Focal Points for satellite data sharing and distribution in Congo Basin, mainly in : Gabon, DRC, RoC, Cameroon, CAR and Equatorial Guinea.





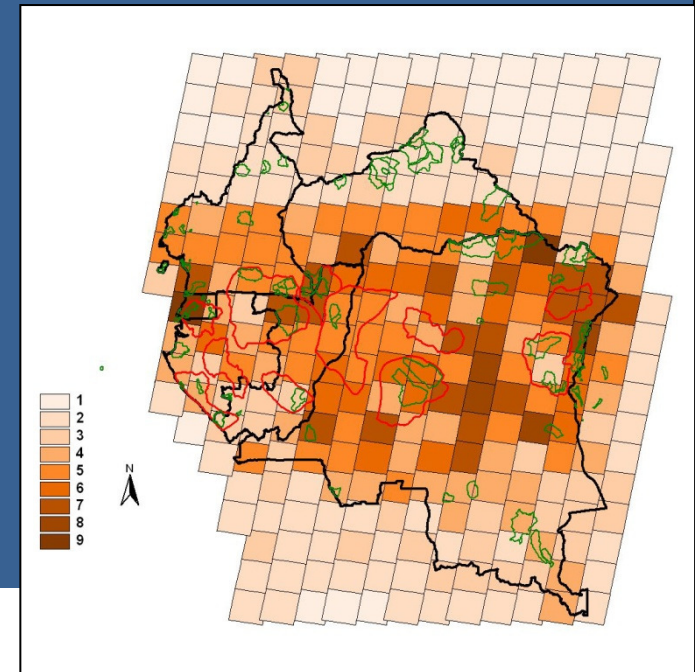
# Data available through OSFAC



**ASTER 2000-2008**  
Around 2600 granules

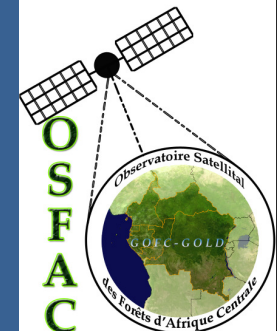
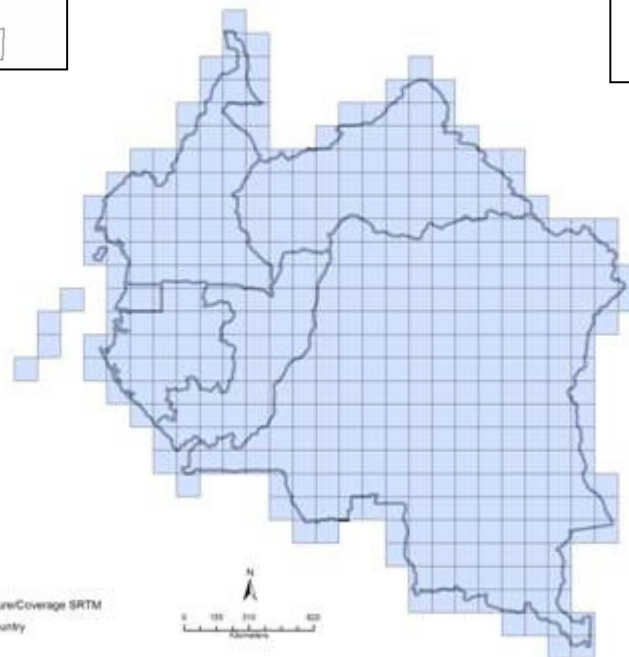
## Others :

- MODIS Data
- LANDCOVER maps
- Etc.



**LANDSAT 1984-2008**  
Around 5000 scenes

**SRTM 2000**  
Around 600 granules



# *CONCLUSION & RECOMMENDATIONS*



# Conditions to improve the accessibility of satellite data (1)

- Data providers continue to make access to satellite data easier in favorable conditions (e.g, preprocessed) for users
- An effective data distribution system is created within regional centers, such as GOFC GOLD OSFAC Regional Network, which will facilitate collaboration with others networks such as GEONETCAST, OFAC-FOAF, GLCN, etc.
- Radar data and associated training in its use, is available in zones with persistent cloud cover, as a supplement to optical data.
- Satellite data reception stations are established in the Congo Basin region where there is active demand for earth observation data



# Conditions to improve the accessibility of satellite data (2)

- Agencies are encouraged to consider free and open distribution of data and overcome the current to data access, with consideration of the limitation of Internet network access and lower bandwidth in Africa
- Installation of new fibre-optic cables continues, which will open up access to broadband connectivity and Internet use.
- Donors and international projects are encouraged to coordinate their various satellite and in situ forest mapping and measurement activities to minimize duplication and maximize sharing of information in Congo Basin.



# Thank You

