Activities going on

F. Baret

Outlook

- Experience after 3 years LPV chair
- Answer to specific questions
- Contribution to constellation

Experience after 3 years LPV chair

- **Very nice experience** (but on top (sometimes bottom) of other activities)
  - Sharing within a community
  - Achievements
    - New structure
    - Collaboration with GOFC-GOLD
    - Validation results
      - LAI, FAPAR
      - OLIVE
- **Difficulties**
  - No proper resources
  - Complexity of landscape (CEOS / GEOSS / GTOS / GCOS / …)
  - Answer from agencies not always timely: recommendation

Recommendations
(the one you missed in Brazil!)

- **Encourage agencies to implement the previous recommendations including:**
  - Recommend agencies to support the continuity and expansion of product validation activities to be able to better quantify the associated uncertainties and allow fusion between similar products
  - Need support for implementing the ‘on line validation tool’ in the CAL/VAL portal (Its done!)

Complexity of the landscape

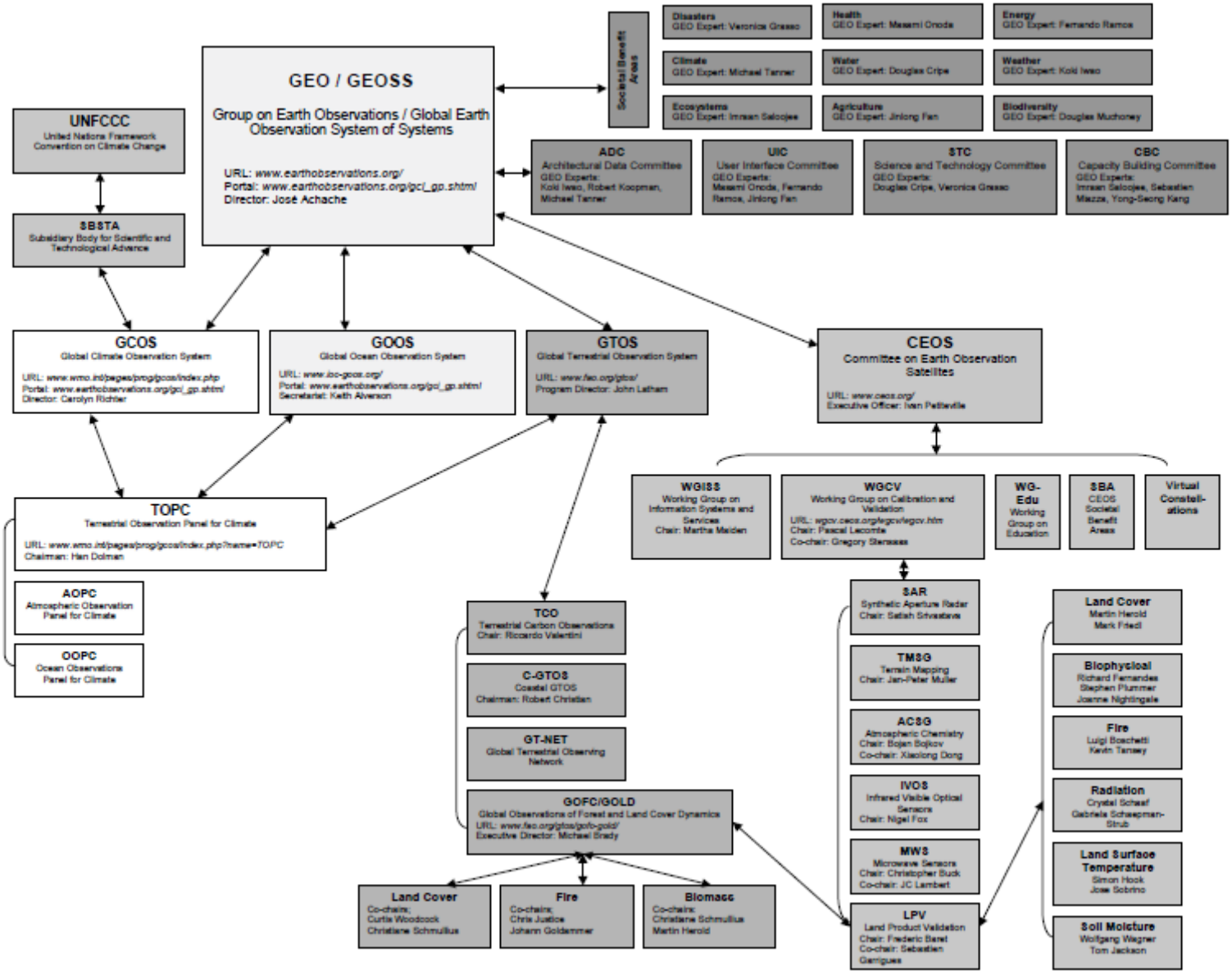


Figure 1. Linkages between international programs concerned with terrestrial Earth observations highlighted at the Global Vegetation Workshop

From J. Nightingale

Answer specific questions

- Action WGCV29-9

  WGCV, WGISS and LSI – put together a study to achieve: coordinated quality index for land cover products.
  Status: Open – Baret to be asked for an update
  Due: WGCV-31

- Action WGCV30-3

  Report on why MERIS fAPAR was not used over the BELMANIP2 sites for work done within GEO task DA-09-01b_1. WGCV Secretariat to ask Baret (task lead).

  Responsible: WGCV Secretariat / Baret

  Due: 1 July 2009

Action WGCV30-3: Report on why MERIS fAPAR was not used over the BELMANIP2 sites for work done within GEO task DA-09-01b_1

- Difficulties in getting large amount of MERIS data
  - Example: to get over 10 sites (10x10 km²) for 3 years
    - 3 hours for MODIS
    - 3 months for MERIS!!
  - Action undertaken to develop a data extraction tool within the GRID facility at ESA: project submitted but stopped because of incompatibilities with the BEAM tool …
- Reciprocally, JRC/FAPAR
  - was not using actually available ground data (VALERI)
  - Was rarely intercompared with 'other' products (MODIS/CYCLOPES)
- But FAPAR validation is going on

Action WGCV30-3: Report on why MERIS fAPAR was not used over the BELMANIP2 sites for work done within GEO task DA-09-01b_1

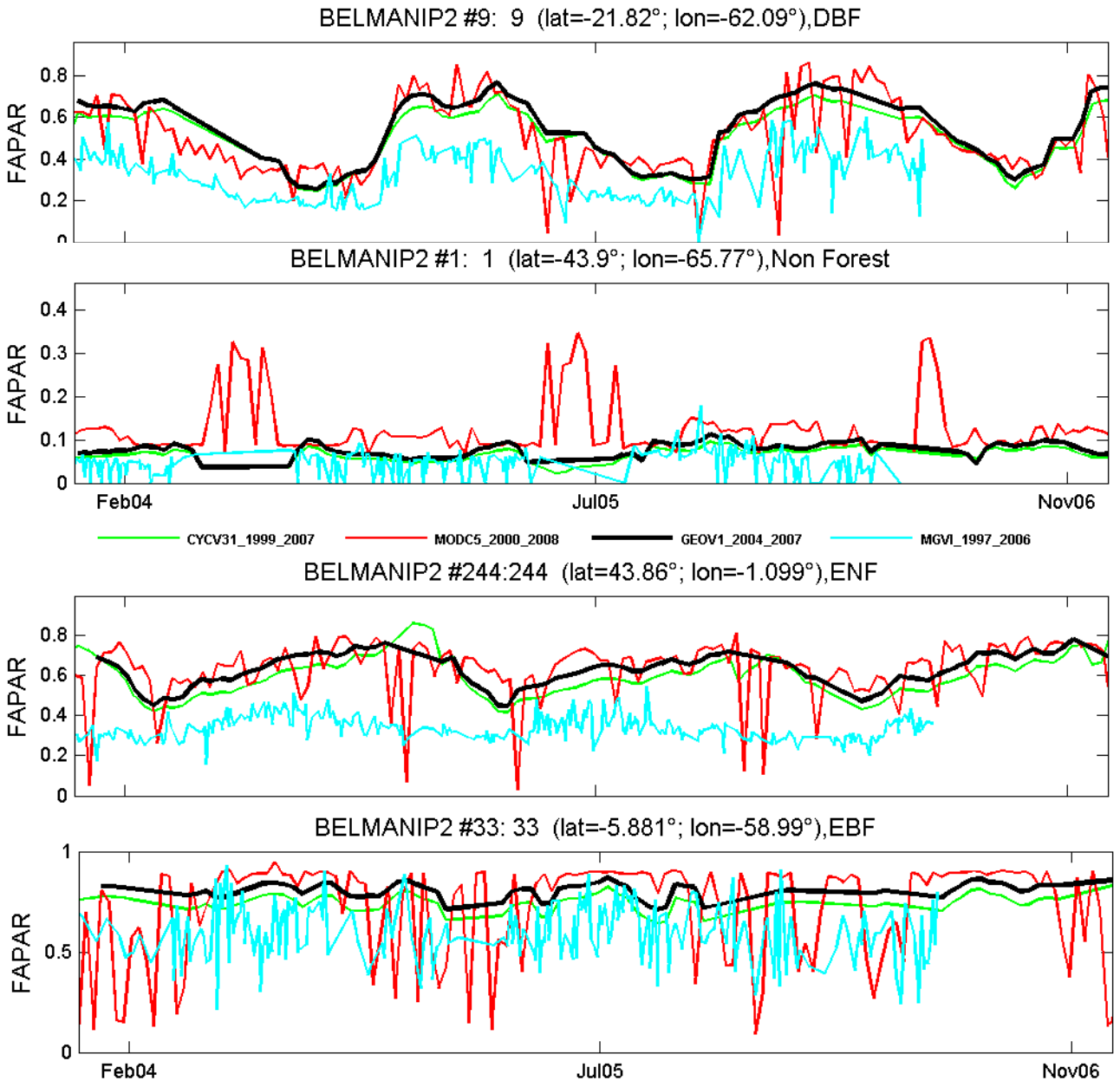
- MODIS
- CYCLOPES
- GEOLAND2
- JRC/FAPAR (SEAWIFS)
- GLOBCARBON (coming soon)

Name	Version	Sensor	Spatial				Temporal		
			Sampling	Resolution	Domain	Projection	Sampling	Resolution	Domain
MODIS	C5	MODIS (Terra)	1km	?	Global	sinusoidal	8 days	8 days	2000-2008
CYCLOPES	V3.1	VEGETATION (1 & 2)	1/112°	?	Global	lat/lon	10 days	30 days	1999-2007
GEOLAND2	V1.6	VEGETATION (1 & 2)	1/112°	?	Global	lat/lon	10 days	30 days	2004-2007
JRC/FAPAR	V2.0	SEAWIFS		?	Global	lat/lon	daily	daily	1997-2006
GLOBCARBON	V3 .1	VEGETATION (1 & 2) / AATSR	1/112°	?	Global	lat/lon	daily	daily	2000-2007

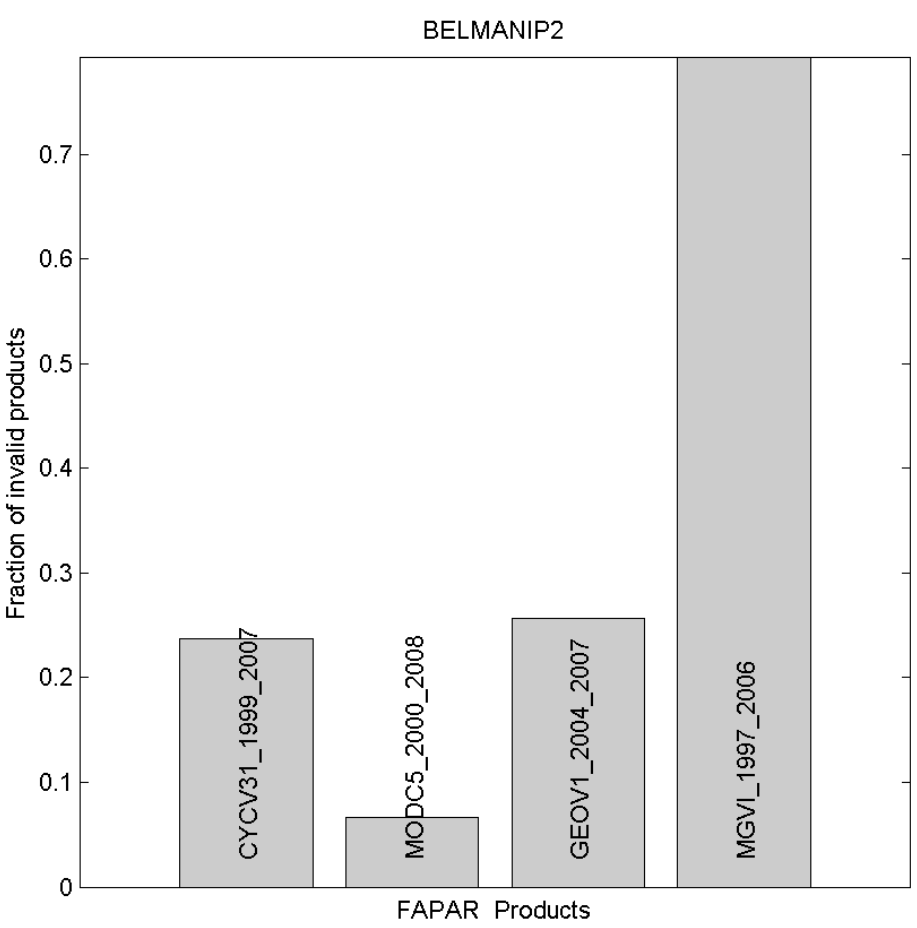
Ongoing FAPAR validation … Following LPV recommendations

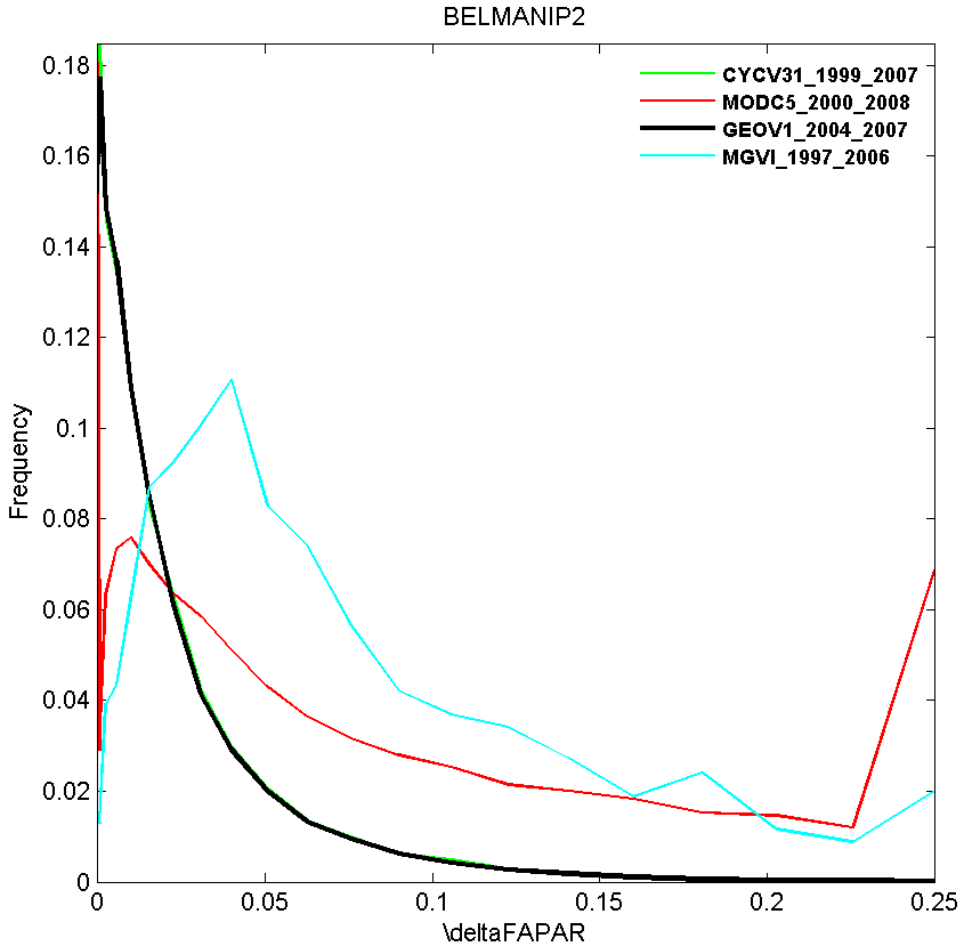
- **Consistency of products**
  - Temporal profiles
  - Temporal continuity
  - Temporal smoothness
  - Temporal stability
- **Intercomparison**
  - Statistical distribution
  - scaterplots
- **Accuracy assessment**
  - Comparison with ground measurements

Temporal Product Consistency



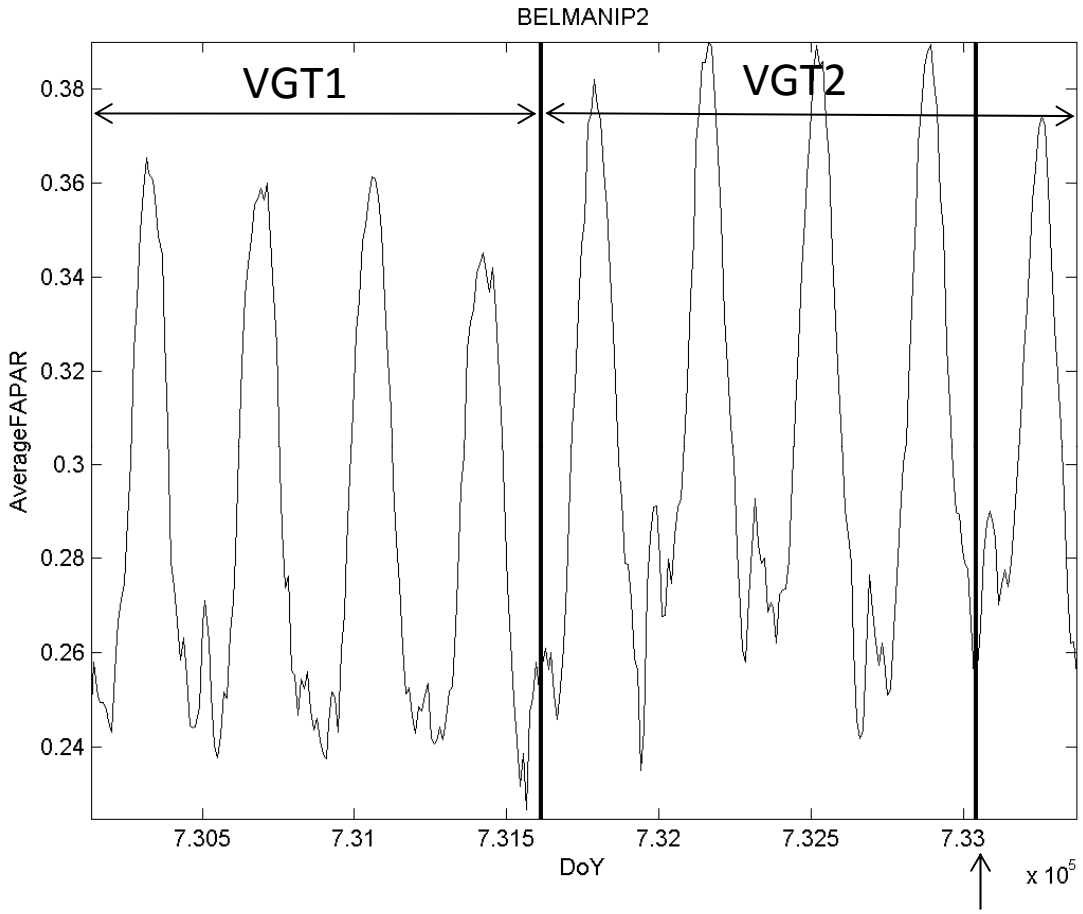
Consistency of FAPAR products
Temporal continuity and cmoothness





Refinement in the criterions needed to cope for various temporal sampling

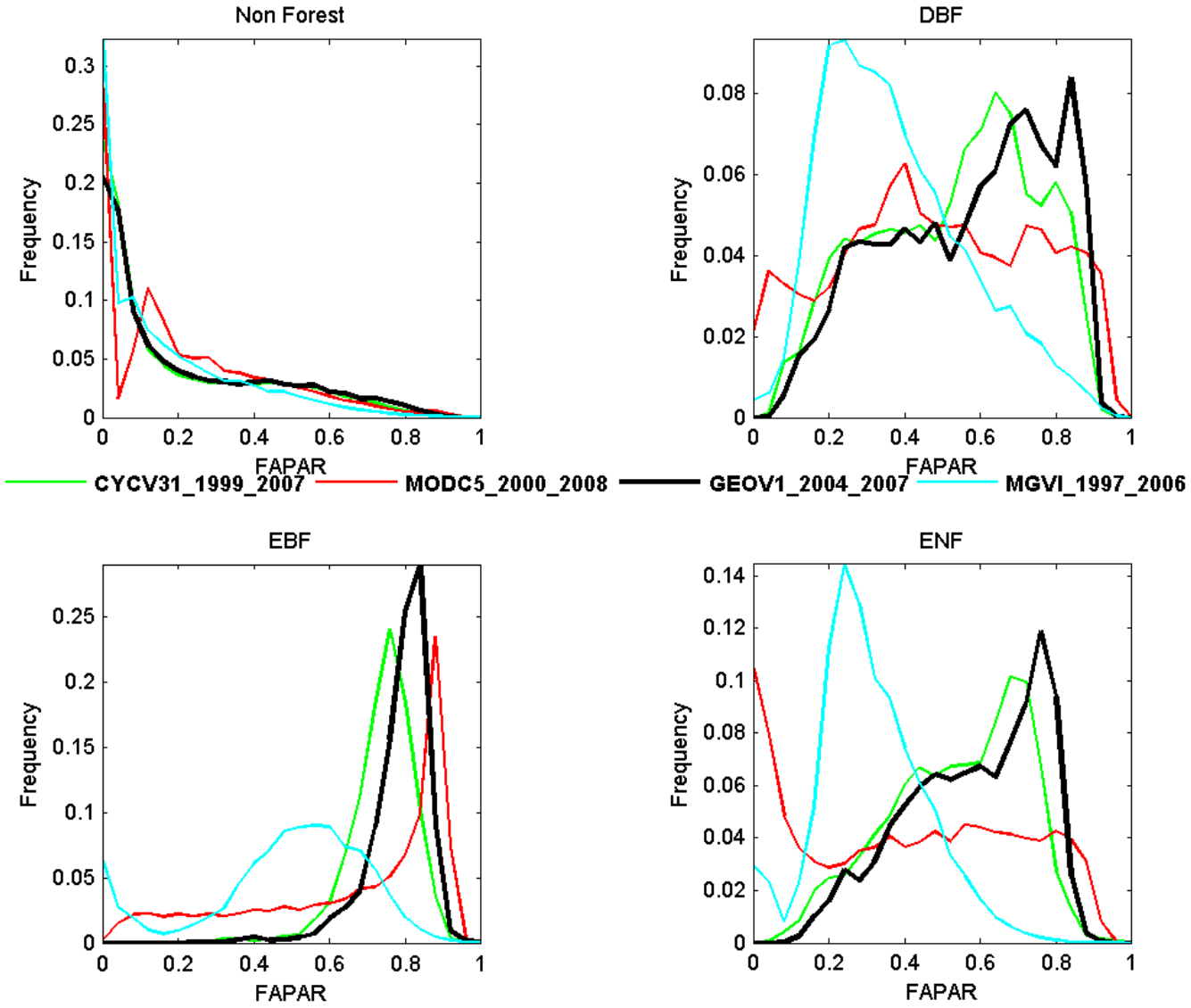
Stability of products



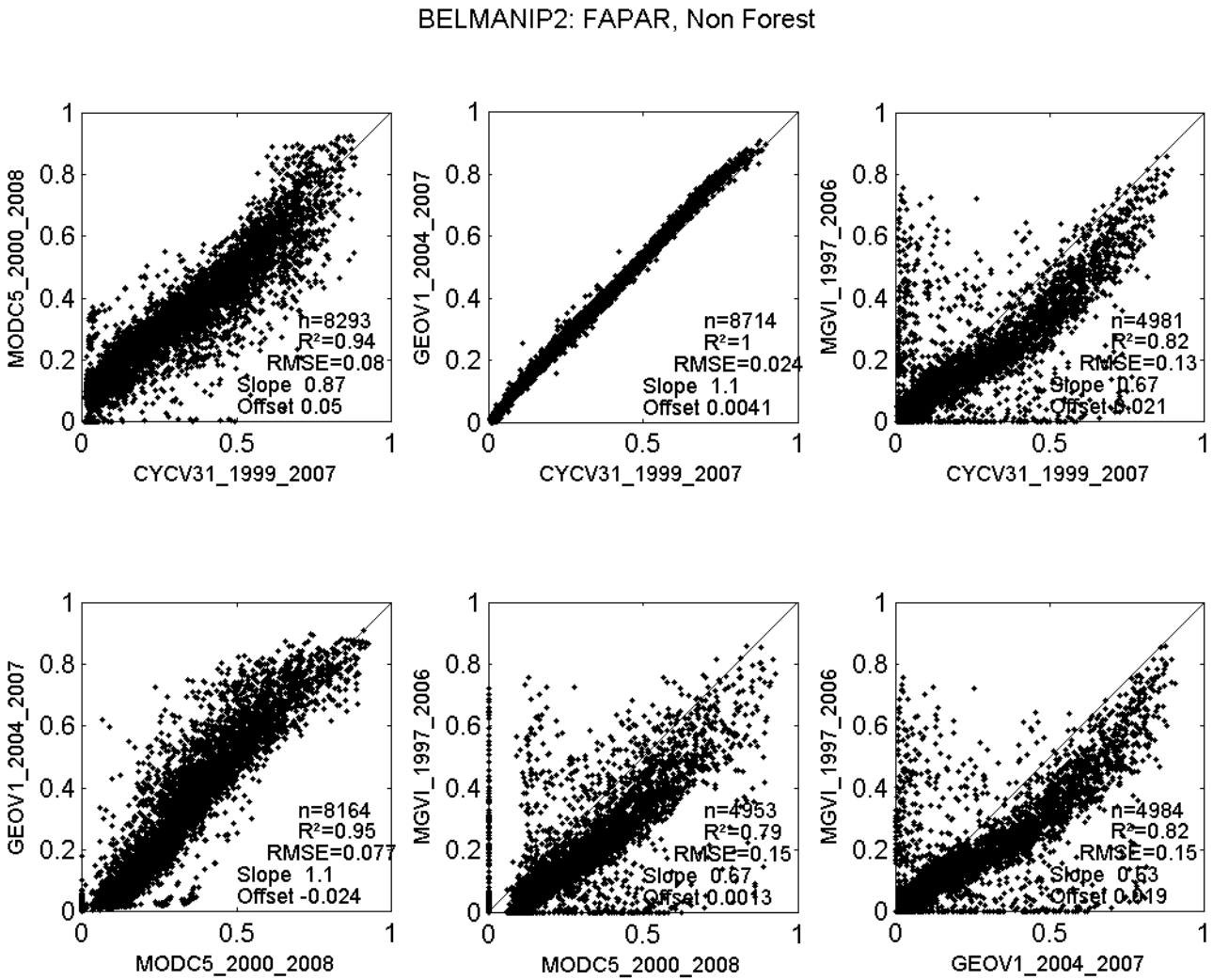
Example with CYCLOPES products: effects of

- Calibrations procedure
- Spectral characteristics of the sensor

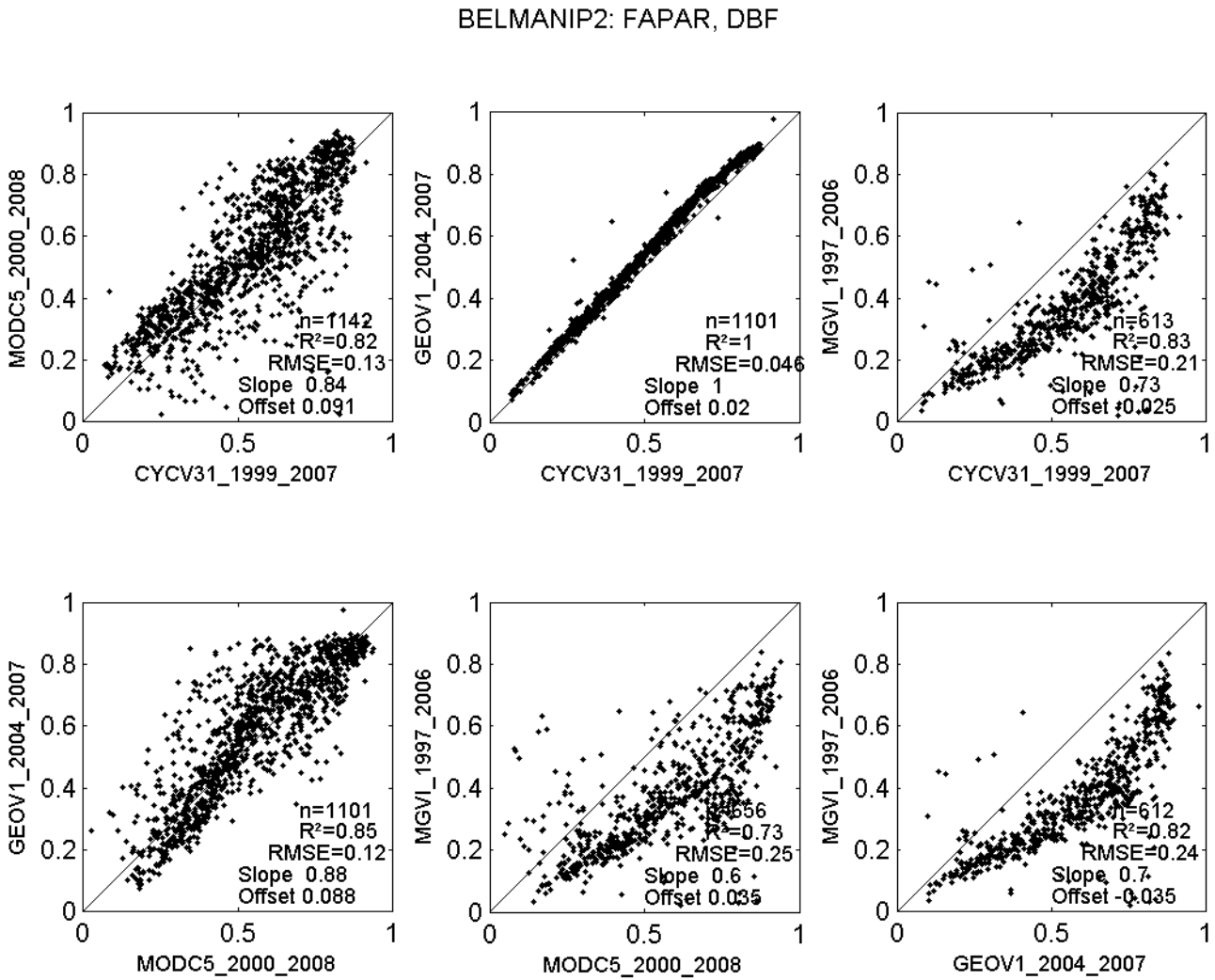
Intercomparison: statistical distributions



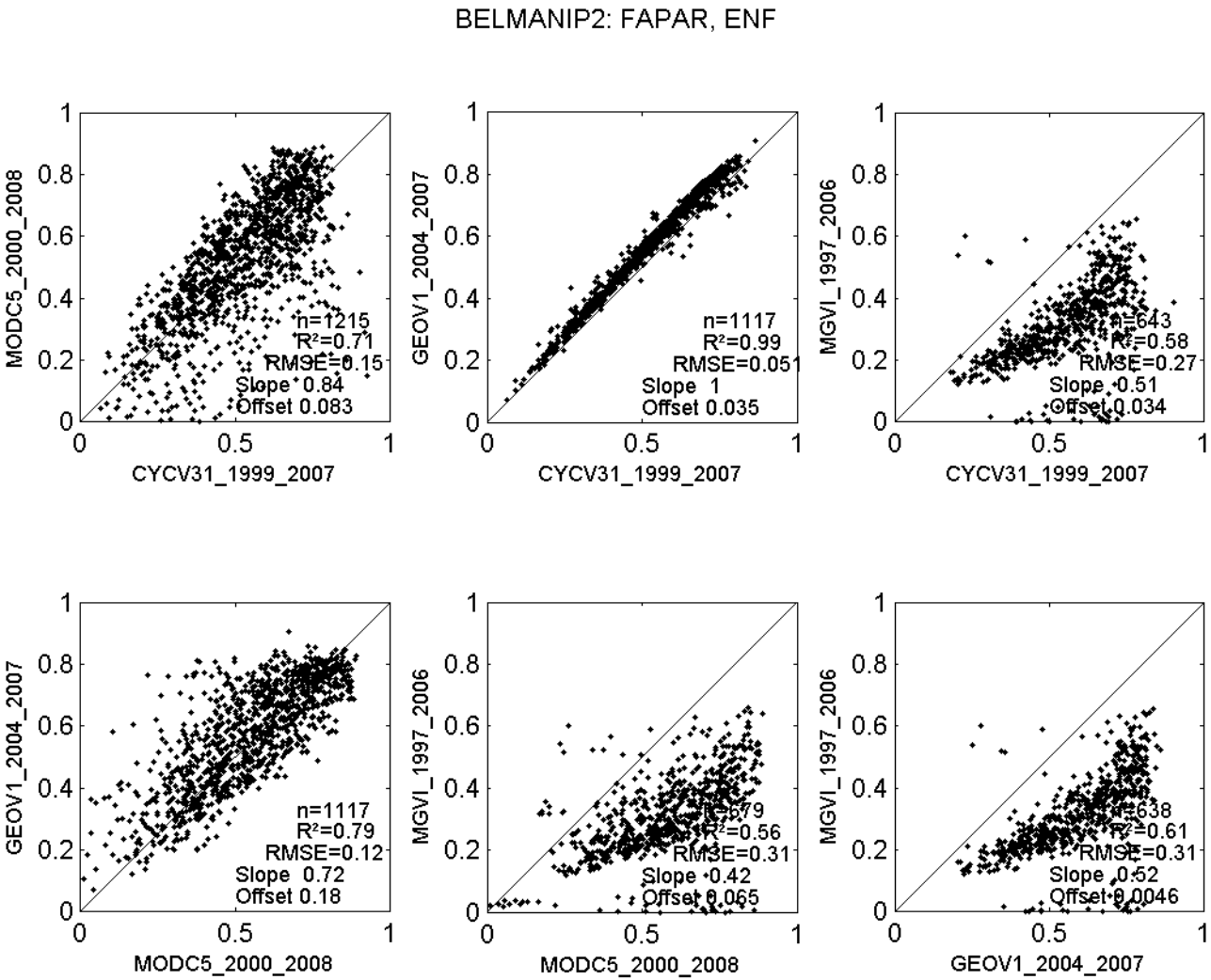
Intercomparison: scatterplot



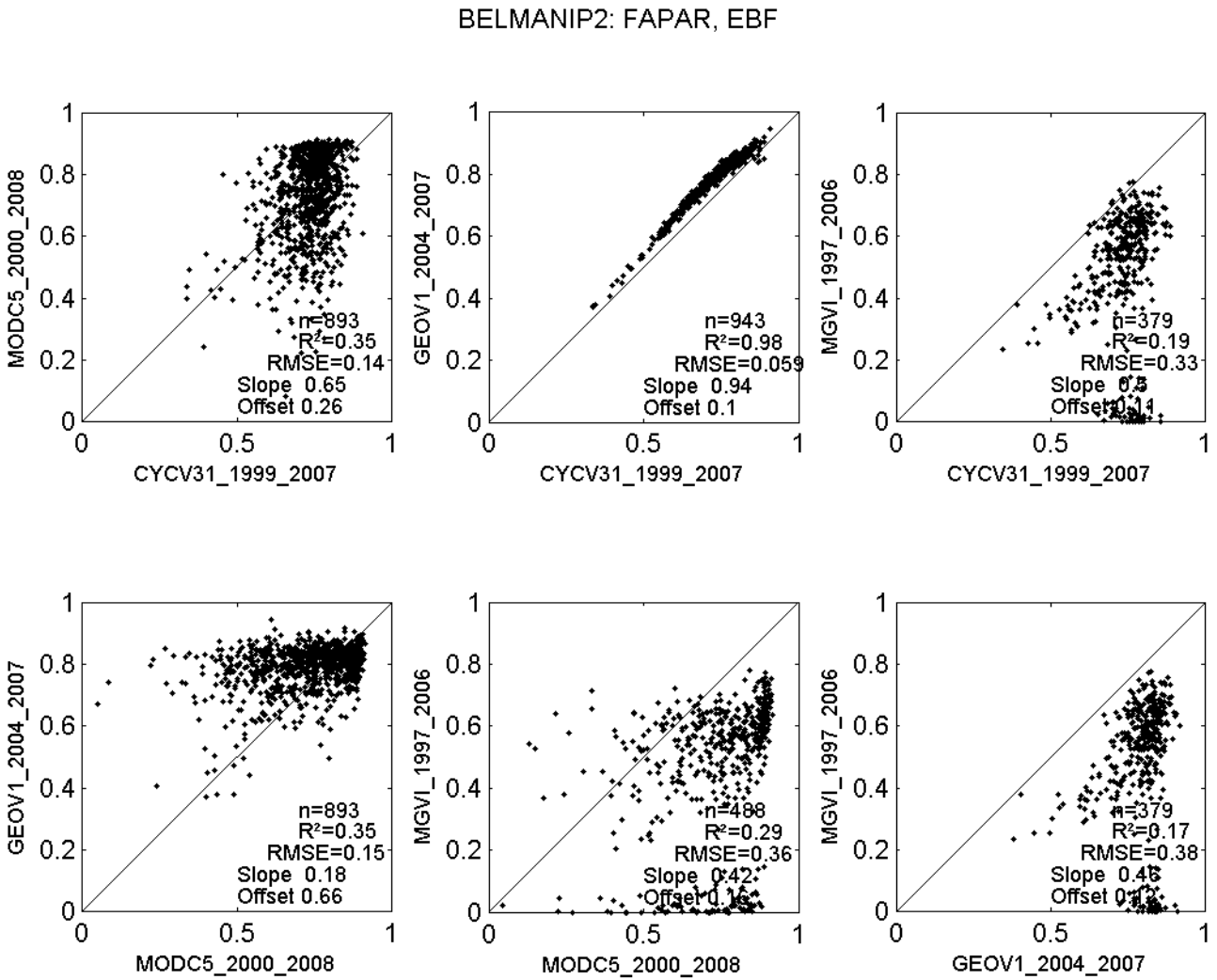
Intercomparison: scatterplot



Intercomparison: scatterplot

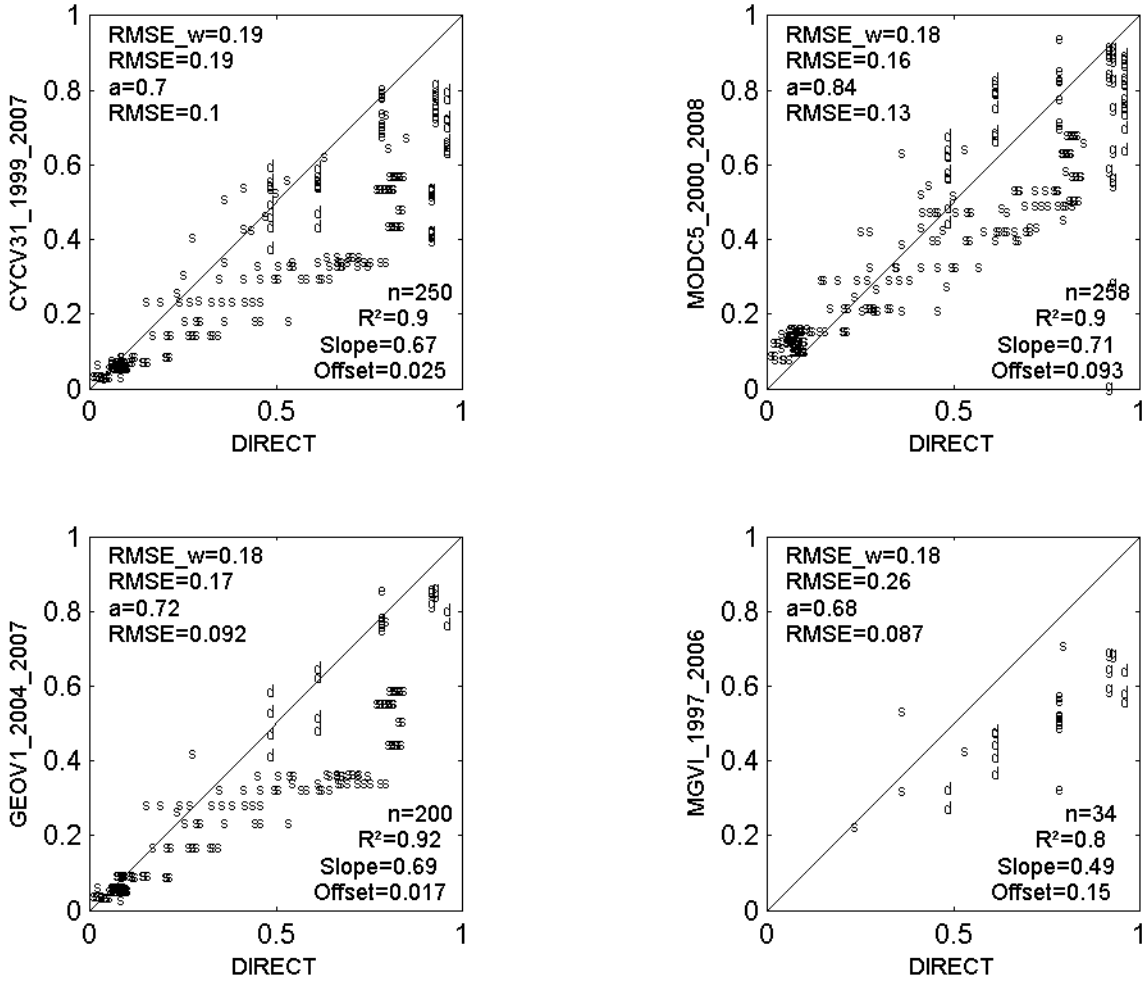


Intercomparison: scatterplot



Accuracy assessment

FAPAR: nearest observation



Still some work on data (ground) selection and inerpolation

Contribution to constellation

Meta analysis of existing ground measurements for the validation/calibration of land products derived from decametric satellite observations

Proposal submitted to CNES

Background

- **Existing satellite observations**
  - Decametric sensors (SPOT, LANDSAT, DMC, Rapid-eye …) monitor surfaces back to the 80's
  - Combining these sensors in a consistent way would allow to get a retrospective description of vegetation dynamics over long time series (30 years), with continuation up to present time.

- **Need for understanding vegetation trends, functioning and land cover for environmental assessment and decision making**

- **Interest of biophysical products**
  - Biophysical variables accessible from these sensors (fAPAR, fCover, LAI) provide a convenient way to get a consistent and meaningful metrics for vegetation monitoring and characterization.
  - These variables are measurable from ground allowing the corresponding to be 'validated' (as opposed to vegetation indices)

- **No operational biophysical product is currently available for such sensors**

Objectives

- **Calibrating and Validating biophysical products** derived from decametric sensors
  - fAPAR
  - fCover
  - LAI
- Focusing on SPOT and LANDSAT (but extensible to other sensors)
- **Contribution to CEOS/GEO activities**:
  - Validation of products
  - Ways to build virtual constellations for decametric sensors

Approach

- A significant set of ground measurements have been collected in the past over a wide range of canopy types and conditions… and still going on!
- A meta analysis of these data is proposed to calibrate empirical algorithms and validate them.

Existing ground data sets

- Currently, around 80 sites/dates of 3km² have been sampled for the validation of kilometric products. All these sites are based on 30-50 elementary sample units representing a patch of few decametric pixels. There are therefore potentially 3200 elementary points available with ground measurements of LAI, fAPAR and fCover
- Additional sites may be incorporated including flux towers were regular ground measurements of LAI or fAPAR are also performed.

Existing satellite observations

- SPOT (1986 …)
- LANDSAT (1982 …)
- Atmospheric correction
  - Possible autonomous atmospheric correction for LANDSAT (blue band) or implicit correction (calibration with TOA values including blue band)
  - Atmospheric correction for SPOT derived from VEGETATION/MODIS (starting from 1999/2000)


That's all Folks!