Personal info

- **PhD at Paris-Sud (Orsay):** IR spectroscopy and radiative transfer applied to remote sensing of the atmosphere
- **Post-Doc (Bologna):** retrieval methods for remote sensing
- **Work Experience (ESRIN):** data quality control, mission performances assessment, Cal/Val, software engineering, support to scientific and technical projects management
- **Expertise:** optical sensors, FTS, spectroscopy, radiative transfer, retrieval algorithms, atmospheric composition, aerosol and clouds, Cal/Val, image processing
- **IT:** Linux bash scripting, Fortran, IDL, Python
- **Support to ESA missions:** MIPAS, GOMOS, SCIAMACHY, EarthCARE, ADM, currently working for **Proba-V**

Support for Proba-V mission

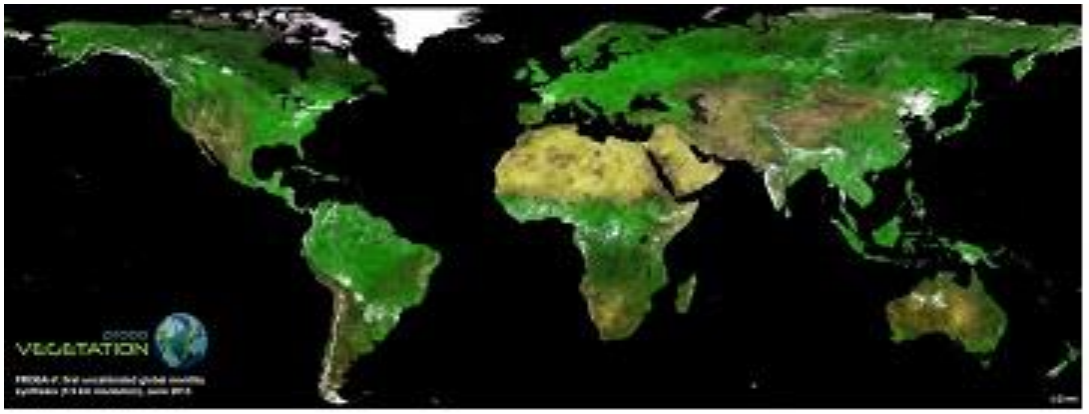
F. Niro

Telespazio
A Finmeccanica/Thales Company

serco

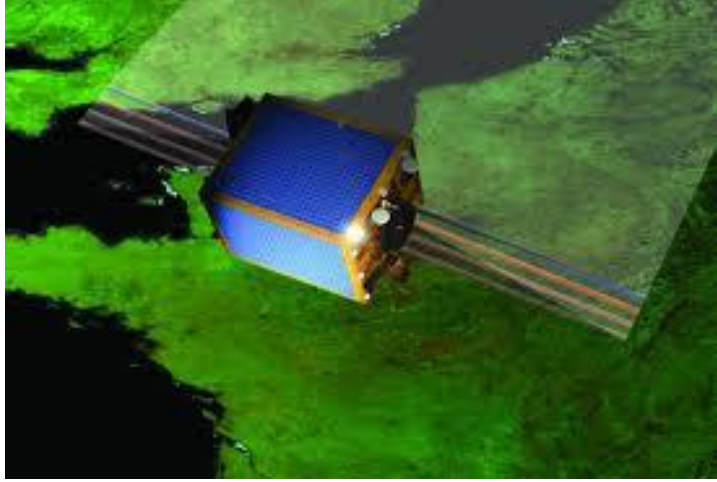
Proba-V key figures

- V stands for **Vegetation**
- Small, less than $1m^3$
- Made in Belgium
- Launch: **6 May 2013**
- 5 years' lifetime

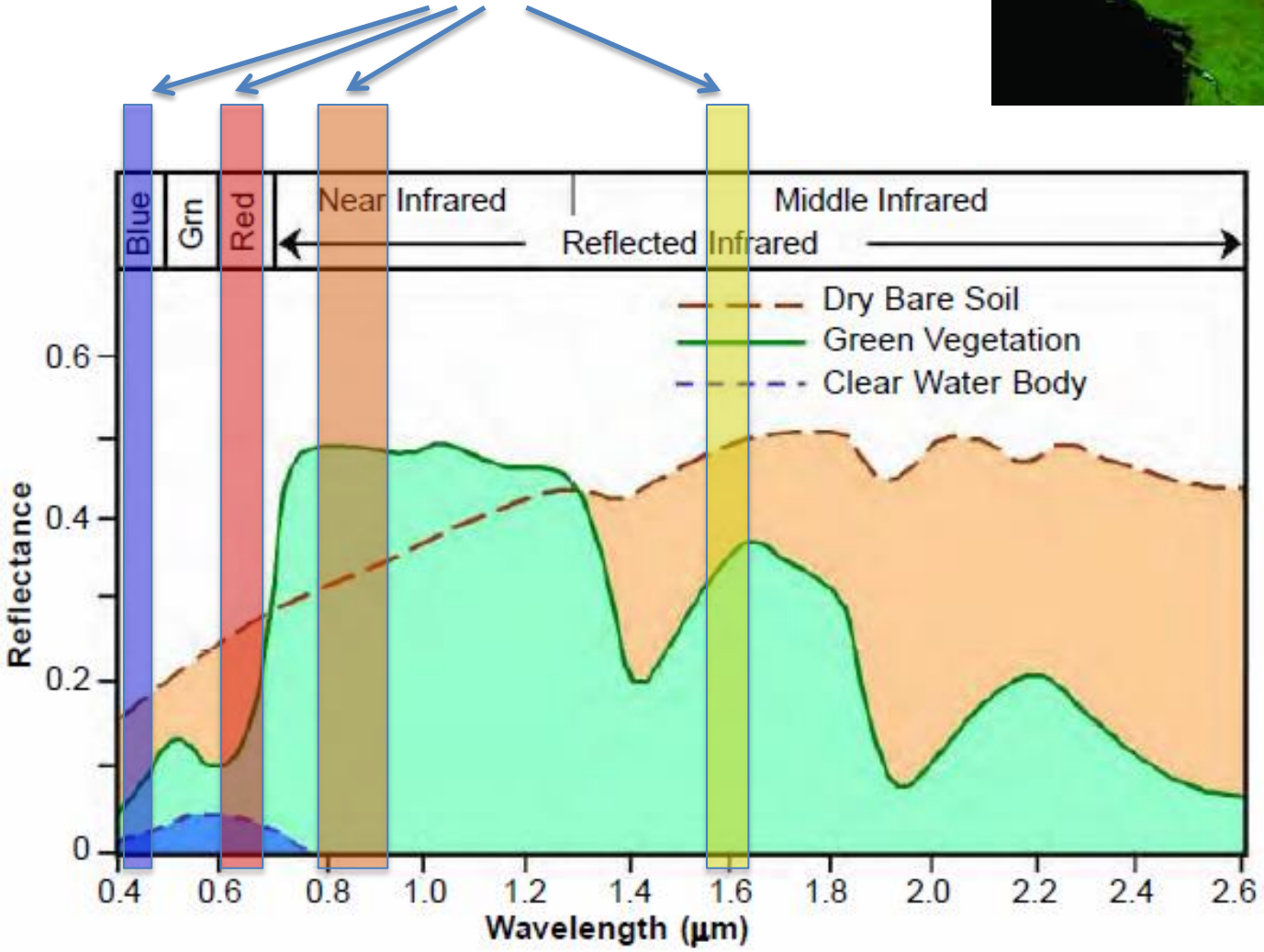


- Nearly daily global coverage of land masses
- Continuity **SPOT-VGT** (15 years data), **gap-filler** to **S3**
  - Same spectral bands (Blue, Red, NIR, SWIR)
  - Same swath (2250 km), but different optics (three cameras)
  - Improved spatial resolution (300m and 100m)

Focus on Vegetation

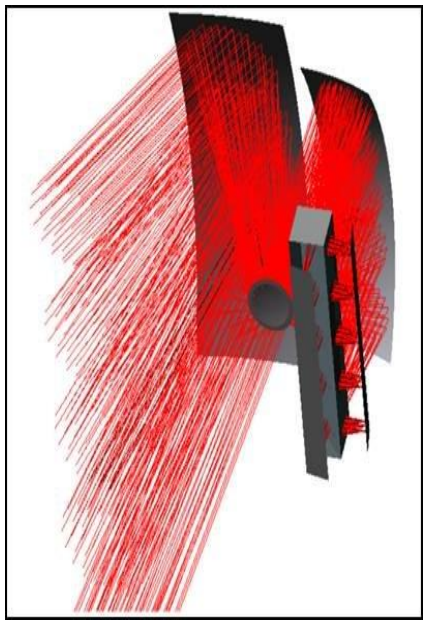


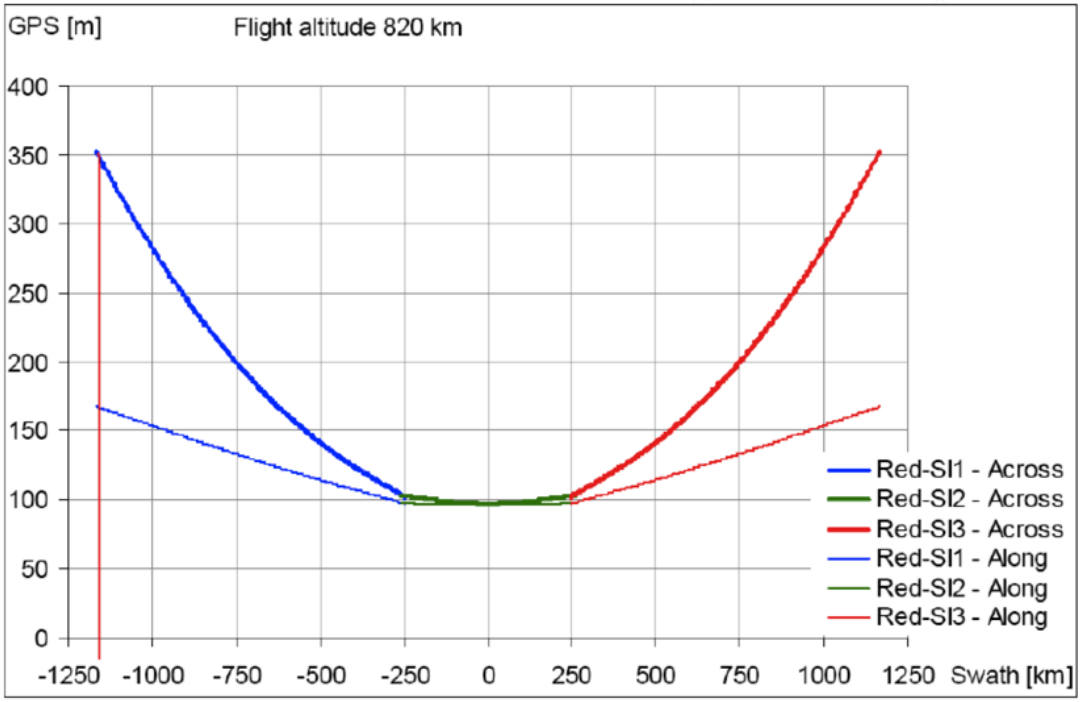
Proba-V spectral bands

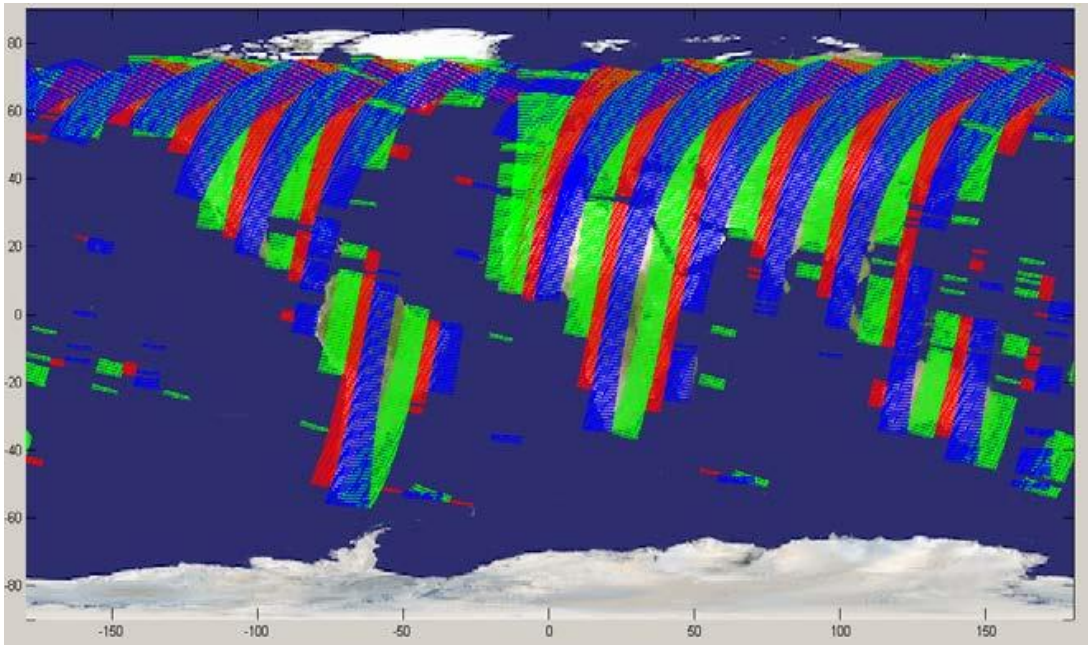


Coverage and Resolution

- Anastigmatic mirrors
- Three cameras to cover 2250km swath
- 100m Resolution in near-nadir

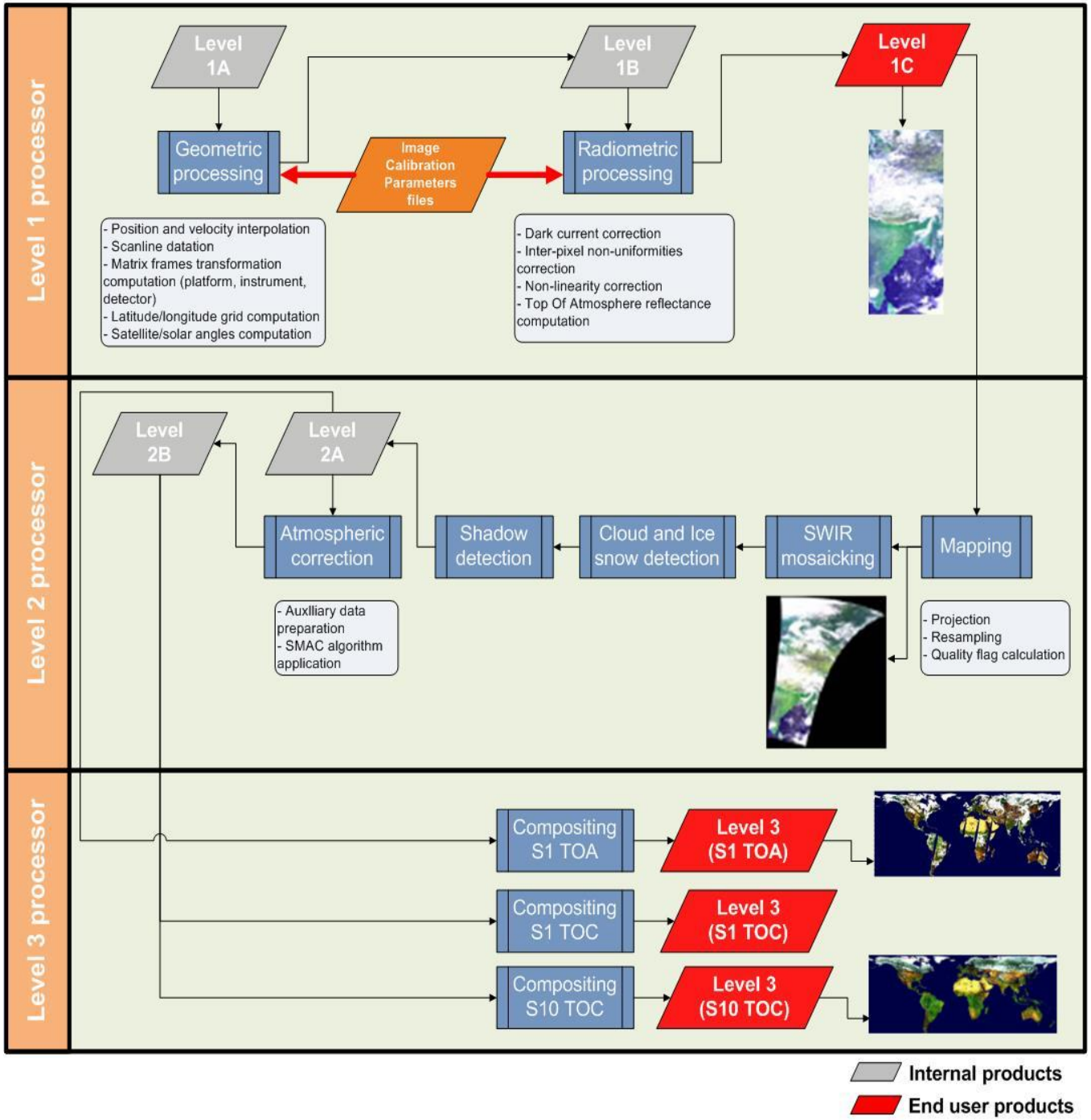






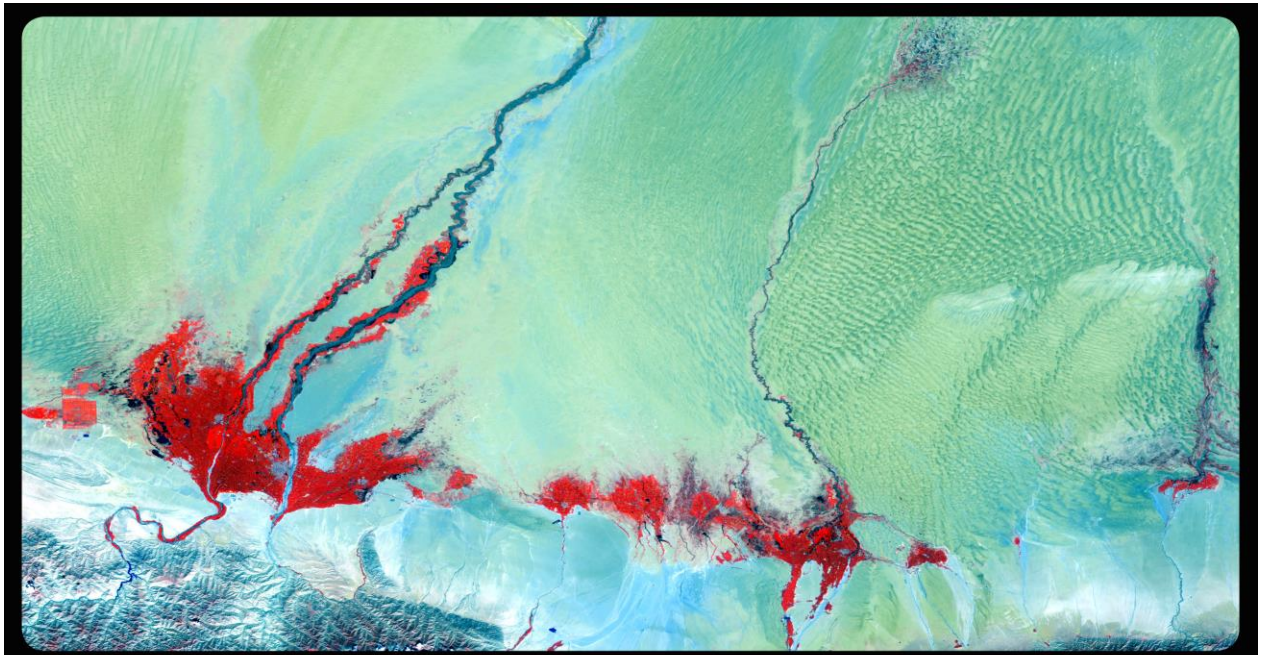
End-users Products

- Level 1c
- Synthesis (S1, S10) at 1km and 300m
- Synthesis (S1, S5) S5 at 100m

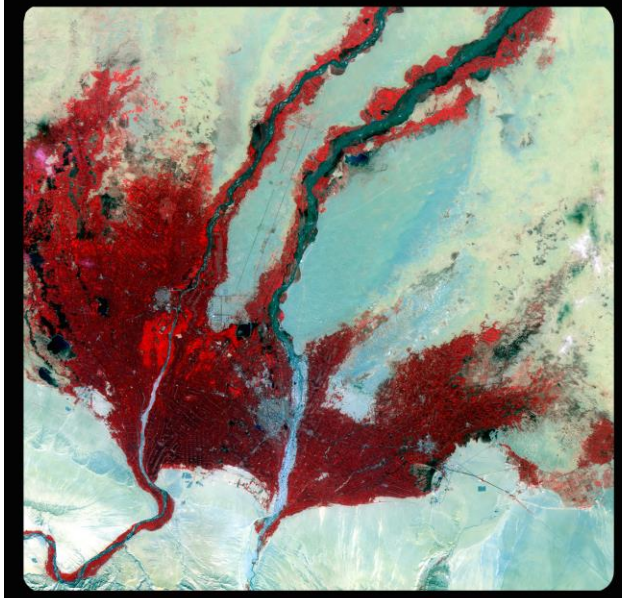


100 m products

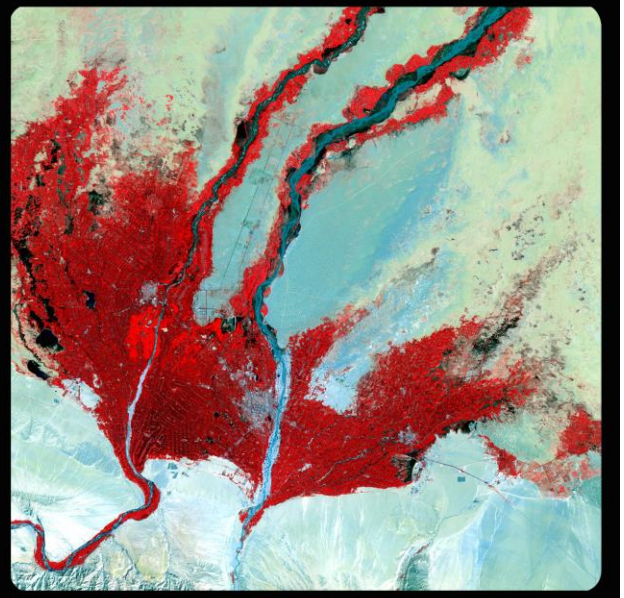
- Near nadir camera
- 500 km swath
- 5 days revisit
- Image quality comparable to high-resolution sensors (Landsat-8)



PROBA-V 100 m image, 20/08/2014 - Hotan, China



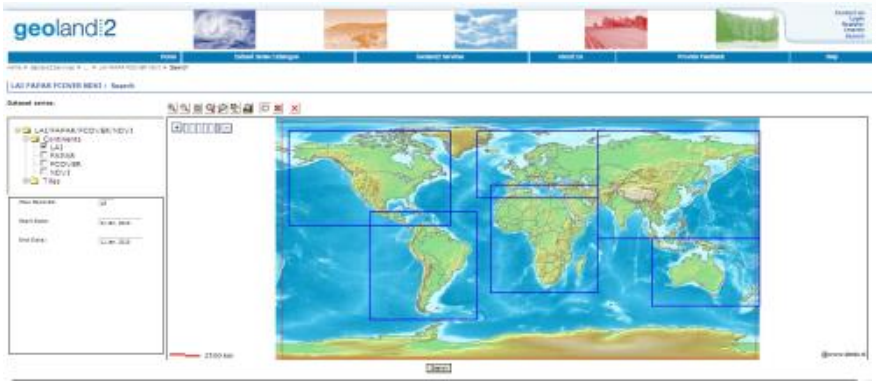
Gaofen-1 (16 m, 15/09/2014) - Hotan, China



Landsat-8 (30 m, 20/08/2014) - Hotan, China

Proba-V Users/Applications

- Users community
  - Well established VGT community
  - 10 000+ users worldwide
- Applications
  - Agricultural monitoring
  - Drought monitoring
  - Vegetation dynamic
  - Forest / Land cover monitoring



- Copernicus Global Land Service
  - Timely production of **14 Global Biophysical parameters** (Vegetation, Radiation, Water). **Based on FP7 GEOLAND-2** processing chains
  - Proba-V will be used for: NDVI, LAI, Fcover, FAPAR, VCI, VPI, TOC, BA
  - Most of Proba-V products are “in development” transition from VGT

Proba-V team

- BELSPO, Luxottica, ESA
  - Funding
- VITO
  - Mission Prime
  - Calibration
  - Image Quality
  - Data processing
  - Data dissemination
- ESA-REDU
  - Flight Operations
- ESA-ESTEC, QuinetiQ
  - Satellite maintenance
- ESA-ESRIN
  - Mission Management
  - Operations Management
  - Support Mission Performances

IDEAS+ support for Proba-V

- Started 1st Oct 2014
- Main duties:
  - Act as **Interface** with various stakeholders (VITO, BELSPO, ESA)
  - Support **Mission Performances Assessment**
  - Support **QWG** management
  - Support **Performance Review and Program Board Meetings**
  - Support Mission **Science Exploitation**
  - Support and Contribute to **Products Evolution and Validation**
  - Support **Sentinel-3 SYN VGT** products definition

Support to Mission Management

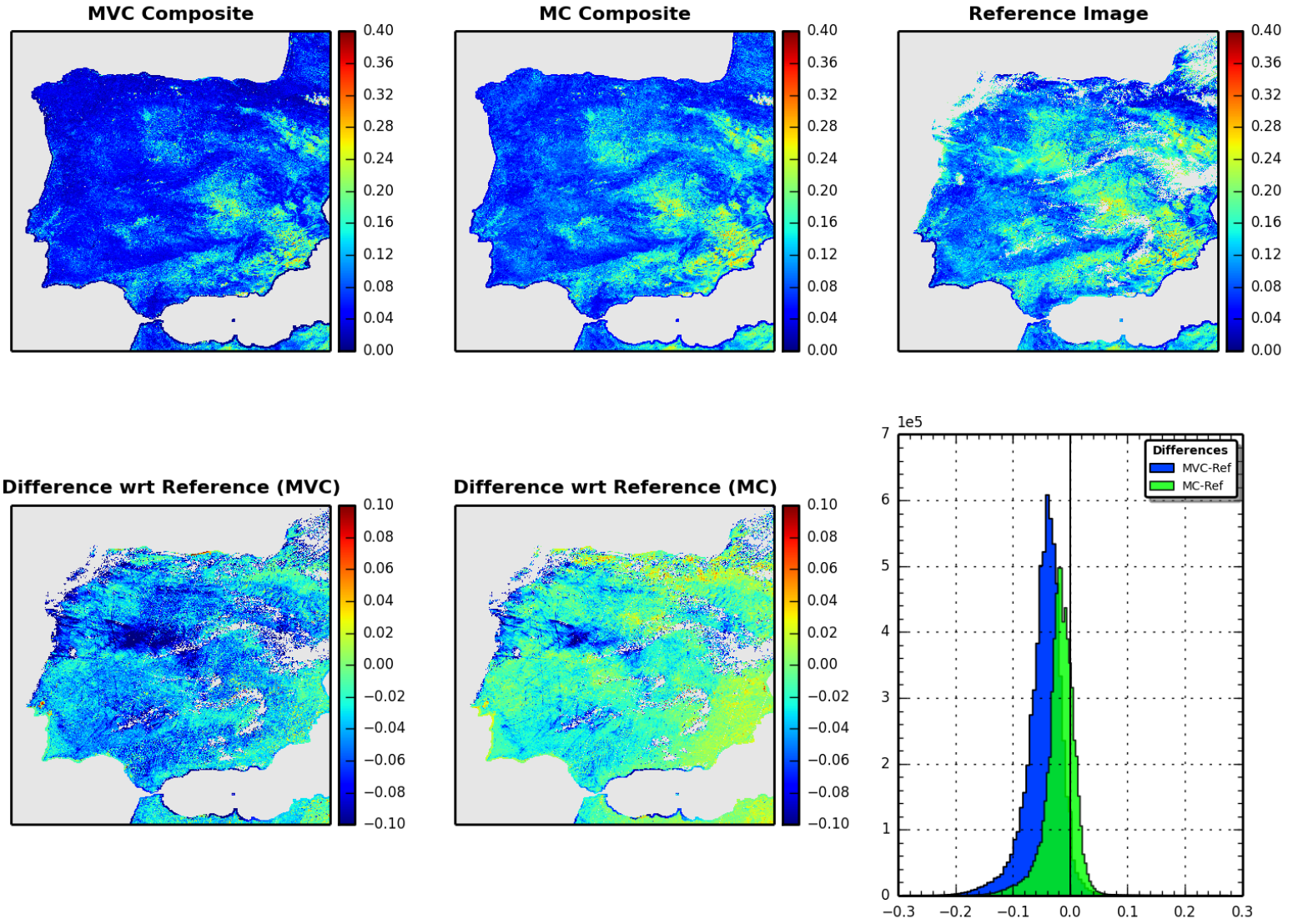
- Performances Review Meetings
  - Preparation and attendance to **Ops Meeting**
  - Preparation and attendance to **Joint Program Board Meetings**
  - Investigation on relevant mission performances issues, e.g., analysis of impact of on-board data compression on image quality, results presented during Ops Meeting
- QWG
  - QWG set-up and Terms of Reference
  - Support QWG management
  - Preparation and attendance to QWG Meetings
  - **1st QWG Meeting to be held in ESTEC: 28 – 29 April**

Support to Mission Science Exploitation

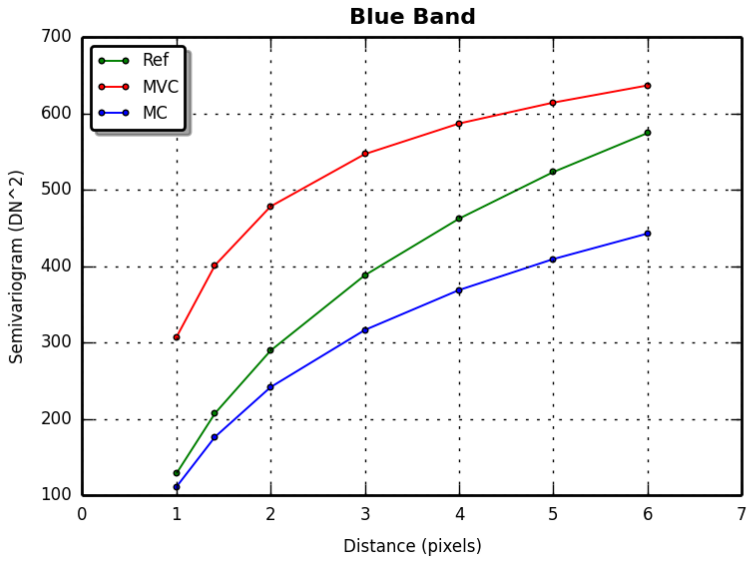
- PV-LAC: advanced Land, Aerosol and Coastal products for Proba-V
  - Demonstrate interest for **100m land classification and coastal OC**
  - Investigate algorithm evolution, in particular **aerosol retrieval**
  - **Statement of Work** prepared and issued
  - Contract to be kick-off during **Q2 2015**
  - **Belgian** Companies (VITO, UCLo, MUMM, Rayference)
- Proba-V Symposium (ESA-BELSPO)
  - Venue and date agreed: **Ghent (Belgium), 26 – 28 Jan 2016**
  - Organizing and Scientific Committee appointed
  - Symposium topics and draft program prepared
  - Support to logistic (web-site, flyers, organization)

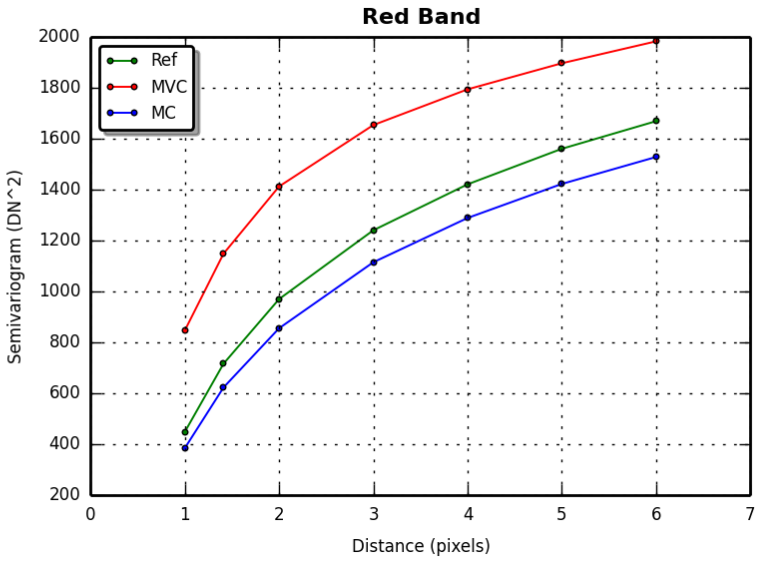
Support to Algorithm Evolution
Investigation on Compositing Methods

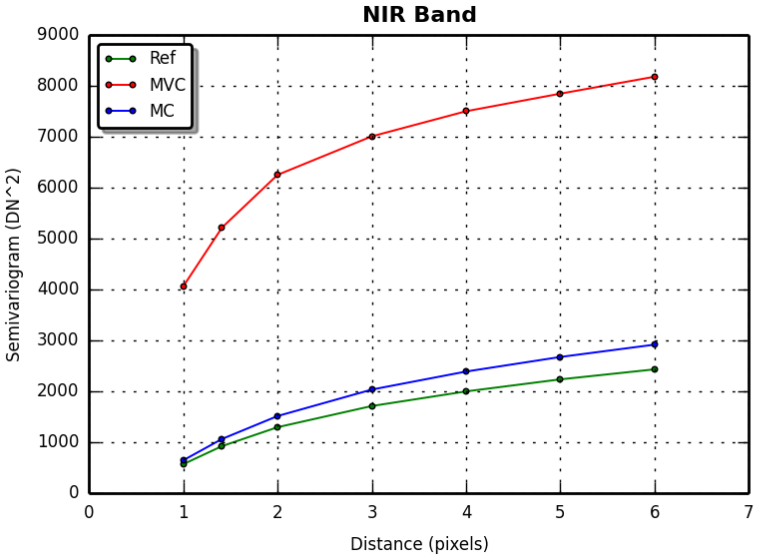
PROBA-V 1st decade of May 2014: Red band

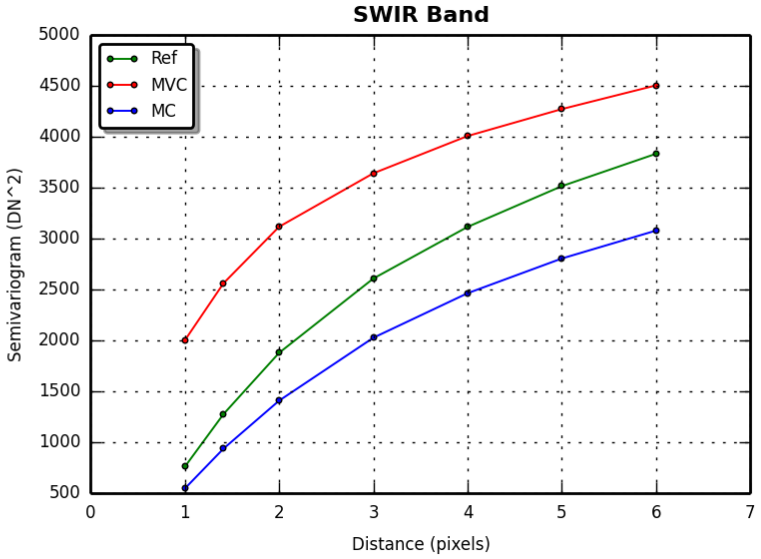


Support to Algorithm Evolution
Investigation on Compositing Methods









Future Plans and Perspectives

- Support to Mission management, performances
  - Proba-V **QWG** management
  - Proba-V **Symposium** preparation
  - Performance Review and Program Board Meetings
  - Support Mission Performances Assessment
  - **SPPA web pages**
- Support to algorithm and products evolution
  - **PV-LAC** science projects coordination
  - Compositing algorithms evolution
  - Support **Sentinel-3 SYN VGT** products definition
- Side projects
  - **Mission Exploitation Platform (MEP)** for Proba-V
  - Long Term Database consolidation for **AVHRR**

Back-up slides

Proba-V Operations

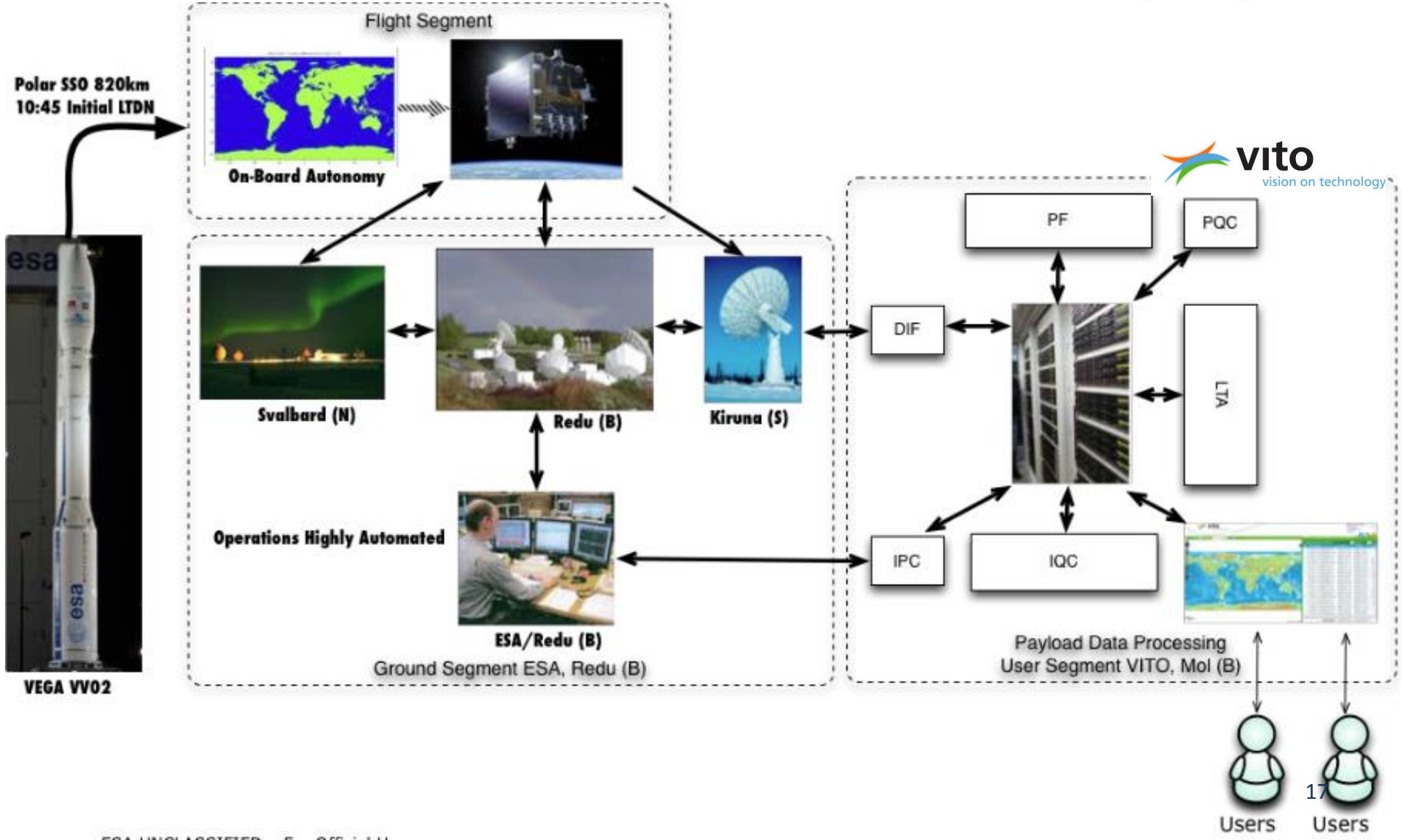
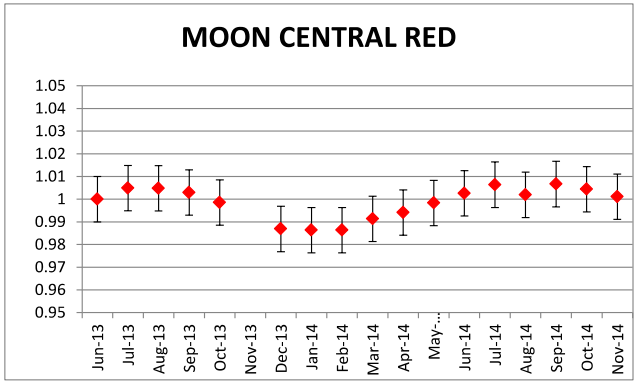


Image quality

- No on-board calibration device, only vicarious
- Very good calibration accuracy:
  - Radiometric: (5% absolute, 3% relative)
  - Geometric: (60m absolute)



Support to Mission Performances Assessment

Investigation on on-board data compression