DLR contribution and perspectives for JECAM

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TerraSAR-X (1)

- TerraSAR-X
  - Launch: June 2007
  - National x-band radar mission
  - High-resolution radar data for scientific and commercial use
  - Public Private Partnership between DLR and EADS Astrium

TerraSAR-X acquisition modes

Stripmap Mode

- 30 km swath width
- 3 m resolution
- multi-polarimetric

ScanSAR Mode

- 100 km swath width
- 16 m resolution, multi-pol.
- new 200 km swath available

HR Spotlight Mode

- 5 km x 10 km scene
- 1 m resolution

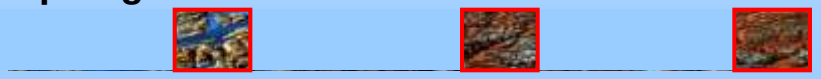
Stripmap

Moderate resolution and swath width

ScanSAR

Low resolution

Spotlight



Small, discontinuous scenes

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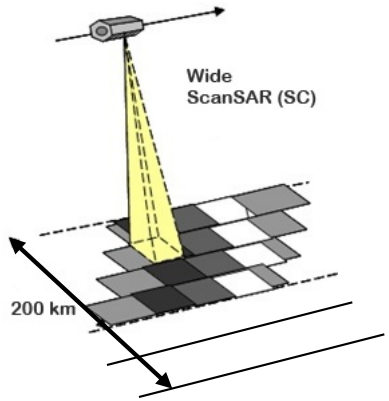
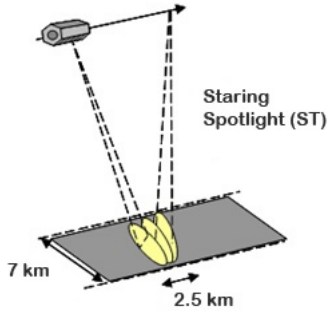
New TerraSAR-X Imaging Modes



Wide ScanSAR Mode – Available since 14th July 2013

	Azimuth:	*Range:*
• Resolution:	40 m	6…10 m
• Scene Size:	200 km	**194…266 km**
• Single Polarization (HH, VV)		



Staring Spotlight Mode – Available since 15th October 2013

	Azimuth:	*Range:*
• Resolution:	**0.24 m**	0.85…1.77 m
• Scene Size:	2.1…2.7 km	7.5…4.6 km
• Single Polarization (HH, VV)		

TerraSAR-X Basic Product Specification Document, TX-GS-DD-33012, Issue 1.9

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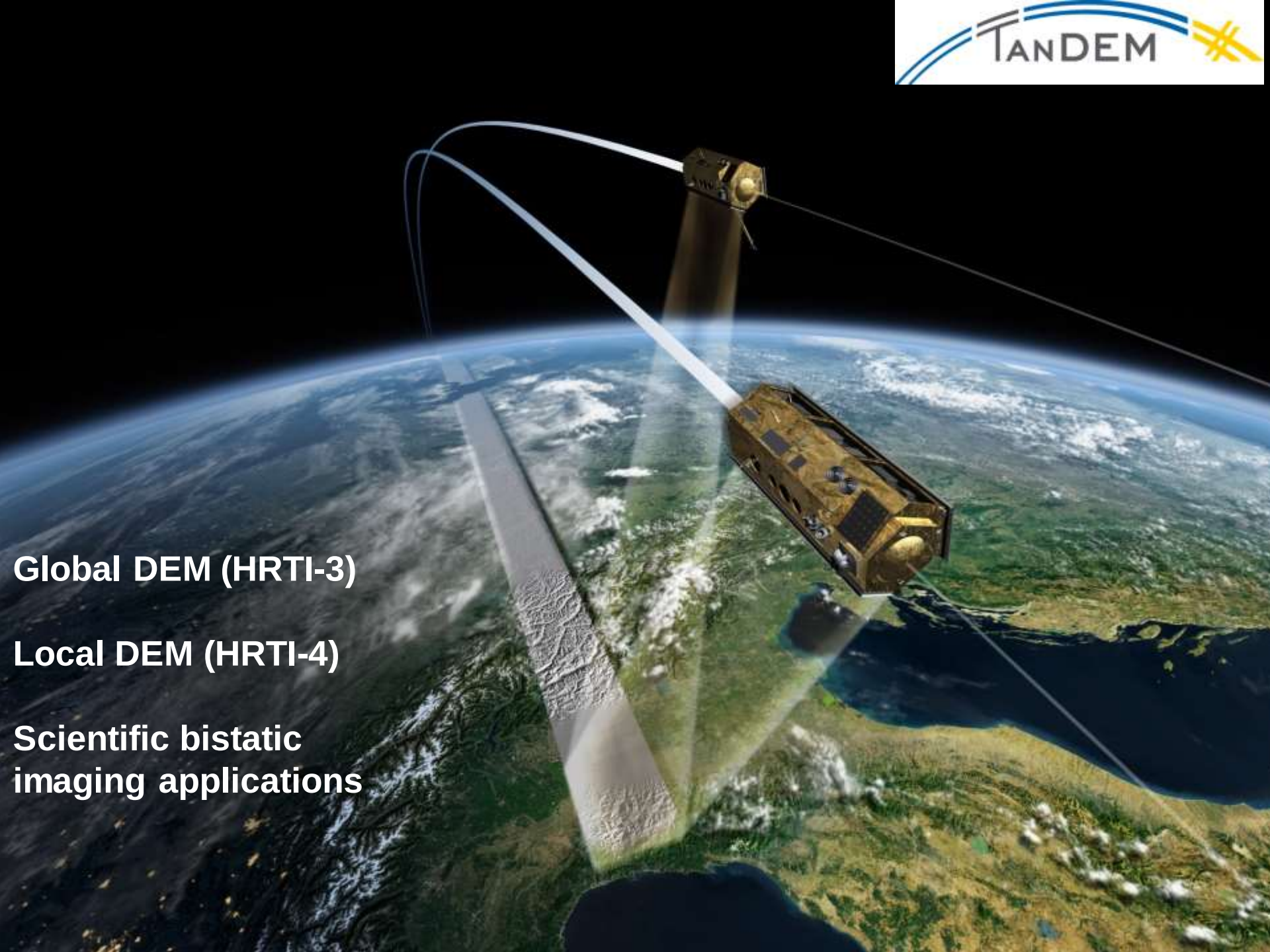
Mode	Product	Size az x rg [km 2]	Spacing [m]	Az-res. [m]	Rg-res. [m]	Az-looks	Rg-looks	Total looks
ST @ 47°	MGD-SE	3.1 x 5.7	0.20	0.35	0.82	1.7	1.0	1.7

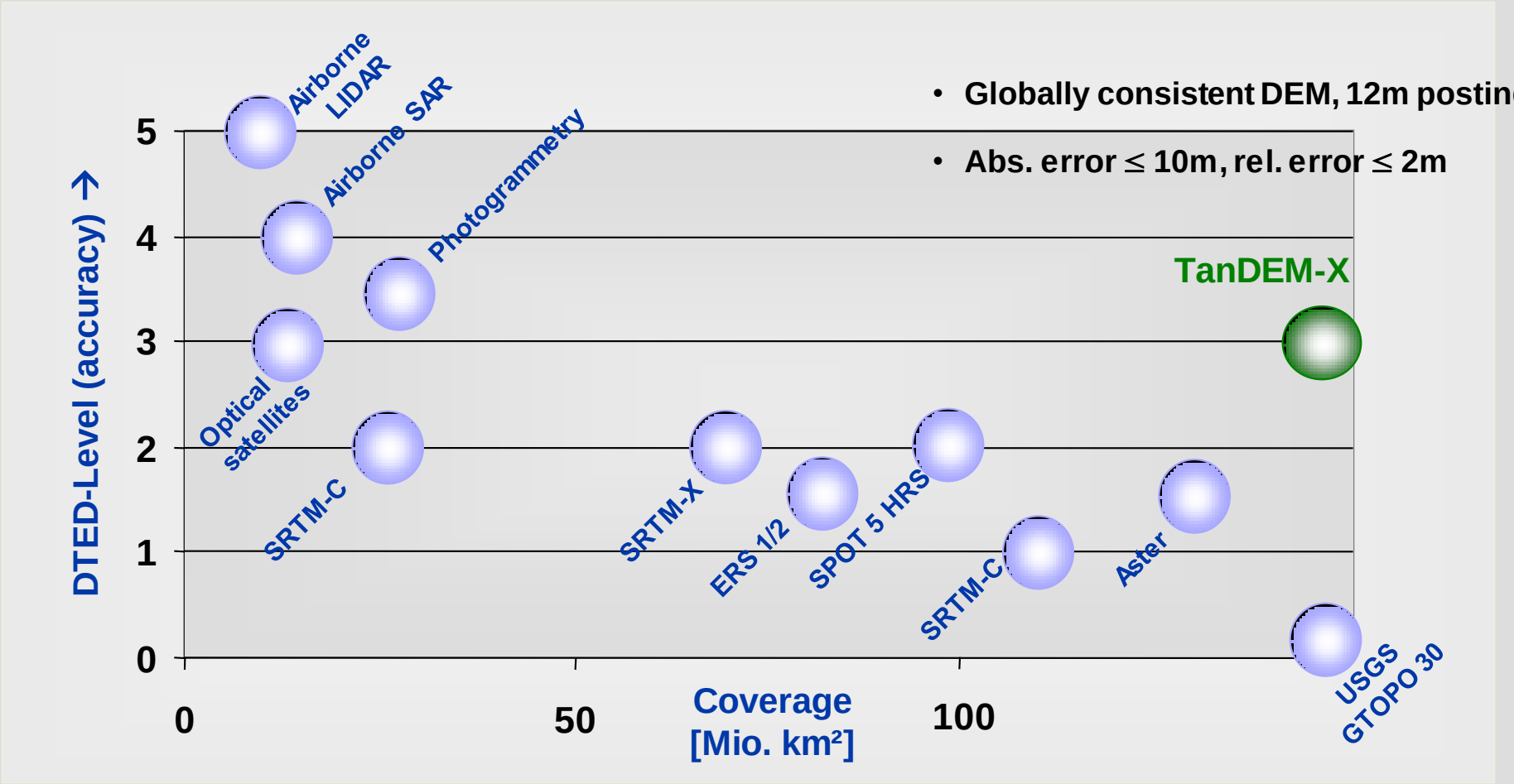


Global DEM (HRTI-3)

Local DEM (HRTI-4)

Scientific bistatic imaging applications

Comparison with other digital elevation models



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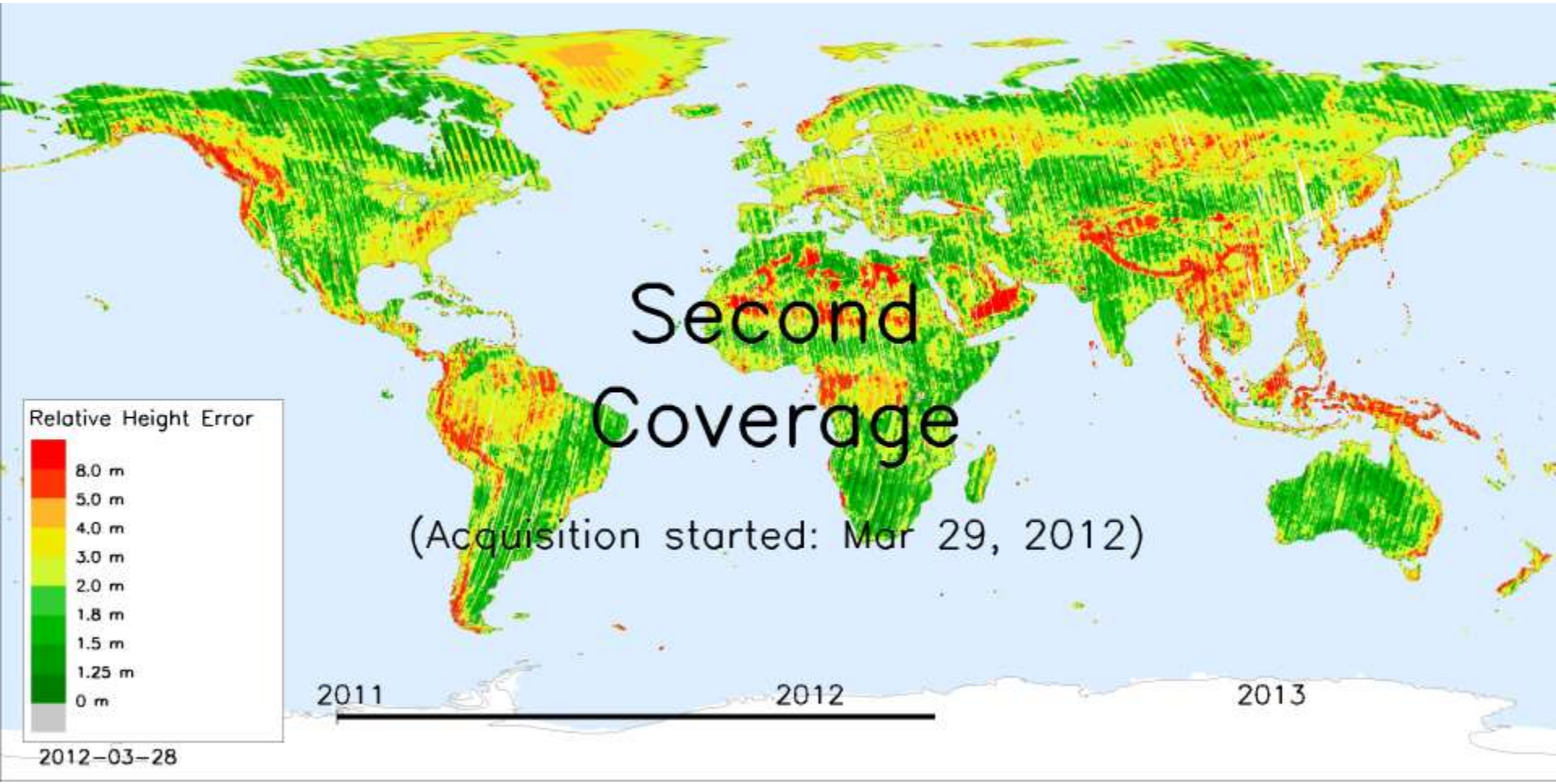
Relative Height Error



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DEM Data Access

- First AO for **Intermediate DEM (IDEM)** last March
- AO for **Final DEM** expected for autumn 2014.

- Limits for data volumes:
  - 0.4 arcsec (12m at equator) up to 100.000 km²
  - 1.0 arcsec (30m at equator) up to 100.000 km²
  - 3.0 arcsec (90m at equator) – no limit

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TanDEM-X science phase 2014/2015

Antarctica 2nd & Recovery

April 2014	Summer 2014	Autumn 2014	Winter 2014/2015	Spring/Summer 2015	Autumn 2015
	Science CP	**Forest & Ocean Currents**	**Ice Caps**	**Crop Cycle / Agriculture**	**Forest after one Season**
		High resolution DEM Gap Filling Geology: Volcanoes, Urban Areas			
		DRA, Small AlongBL	Pursuit Monostatic	3-4 km Cross-BL	Close For., DRA

https://tandemx-science.dlr.de/pdfs/TD-PD-PL_0032TanDEM-X_Science_Phase.pdf

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TerraSAR-X and TanDEM-X Data Access

Public Private Partnership between DLR and Airbus DS Germany

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- Project & Mission Management
- G/S Development & Ops
- System Engineering Support
- Science Coordination/Exploitation

Airbus DS

- Service Infrastructure
- Information Products
- Commercial Exploitation

JECAM Contribution, some GEOGLAM Phase 1

- JECAM sites as background mission
- Data access based on scientific proposal (can be grouped)

Potential GEOGLAM operational contribution

Both satellites – TerraSAR-X and TanDEM-X – are in very good health
Continue/optimize acquisition for validation sites, support scientific exploitation of data, continuity (Constellation with Paz, TerraSAR-X NG) planned

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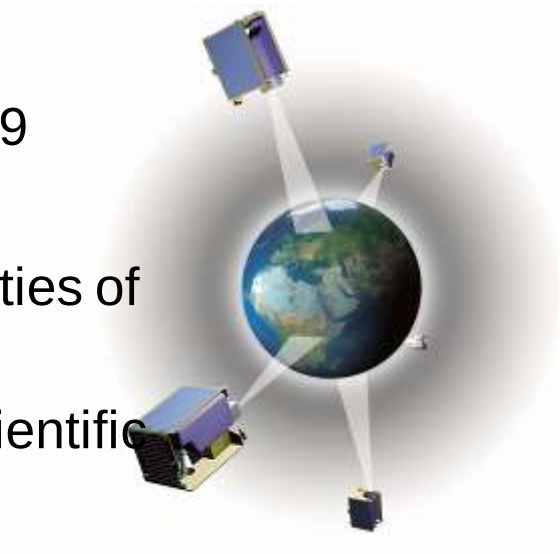
RapidEye

- Commercial initiative with DLR share
  - Five identical small satellites in one orbital plane
  - Nominal revisit time: 1 day
  - 5 spectral bands (Vis – NIR)
  - Spatial resol.: 6.5 m, Swath width: 78 km
  - Launch: 08/2008, operational since 02/2009
  - Nominal life-time: 7 yrs, good health status
  - Global Agricultural Monitoring among priorities of RapidEye
  - DLR has a contract with Blackbridge on scientific exploitation.
  - Biweekly coverage scheme for DEMMIN site
  - Next Generation planning initiated



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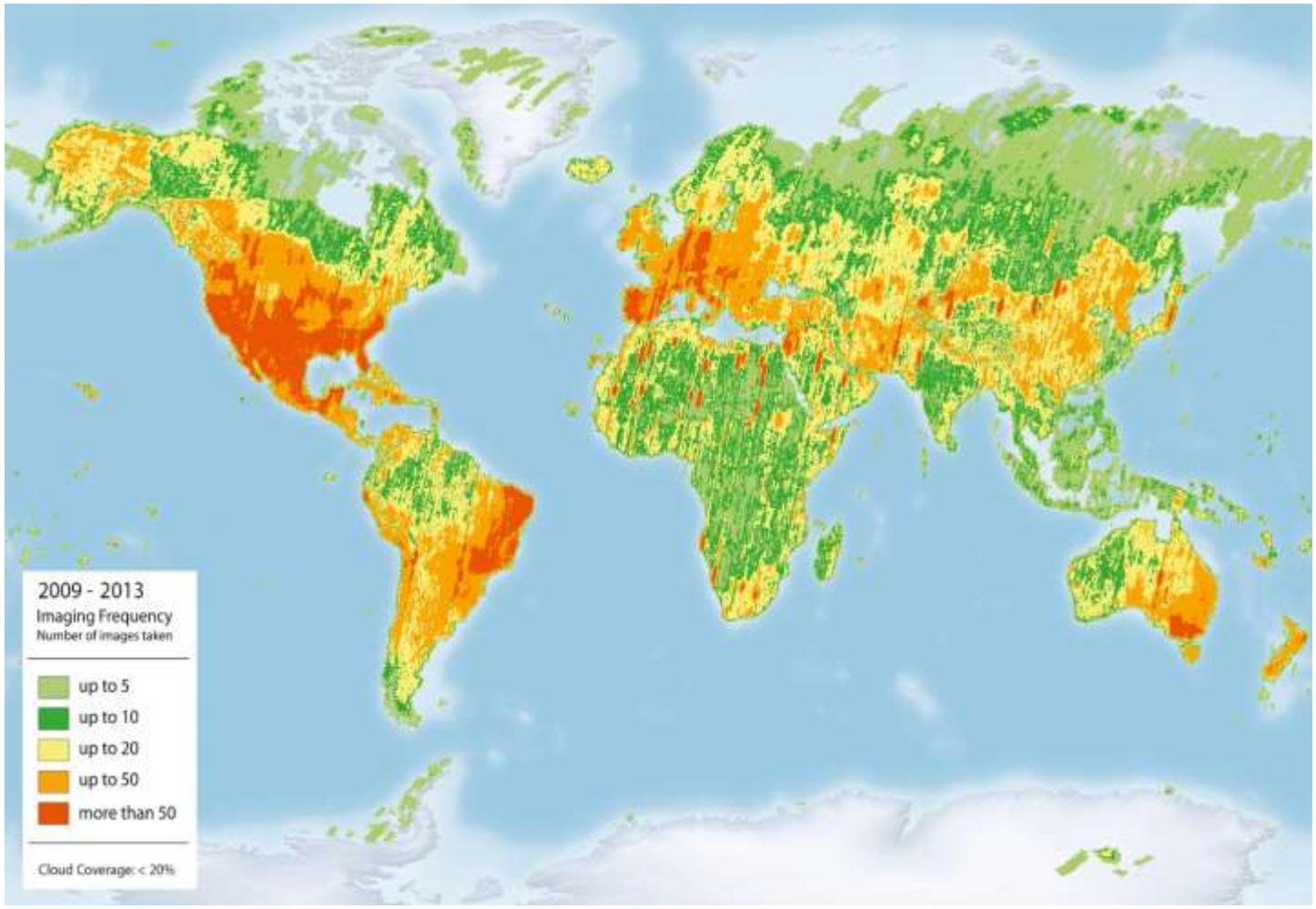
Huge Imagery Archive incl. multitemporal coverages



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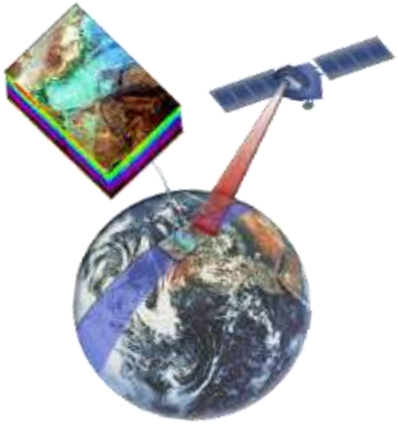
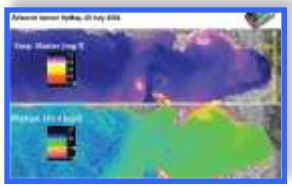
EnMAP

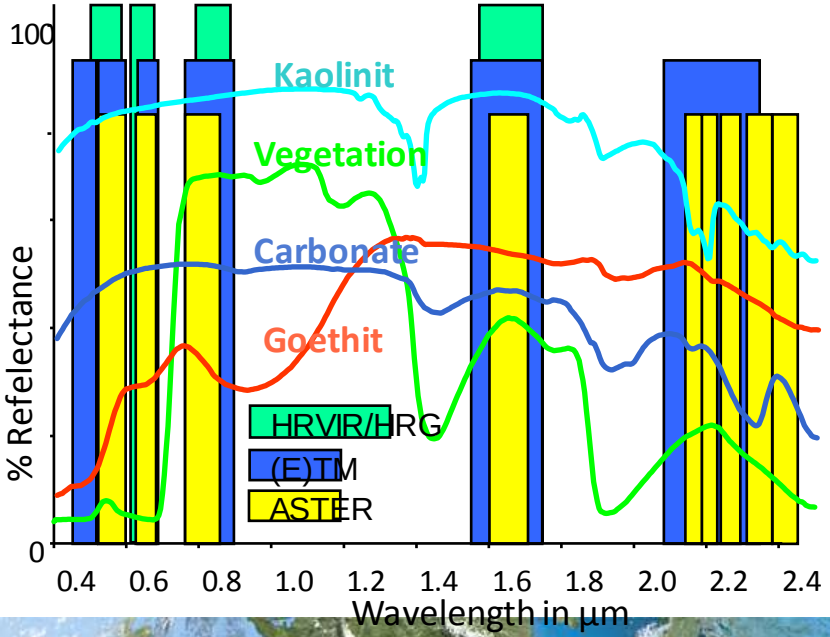
- National Science Mission
- Mission objective: Research on ecosystem parameters (Vegetation, Geology, Water…)
- Cutting-edge Hyperspectral Imager, > 200 Channels, Vis/NIR & SWIR
- 30 m x 30 m spatial resolution
- Launch in 2017



Geology



Water quality



Summary – Data access for JECAM/GEOGLAM

- TerraSAR-X and TanDEM-X (DEM) data access: DLR Service to Science. DLR ready to explore more coordinated and open approach with respect to JECAM, if needed.

- TerraSAR-X and TanDEM-X (DEM) data for GEOGLAM available mainly through Airbus DS. Specific Evaluation licences for pre-operational phases possible.

- RapidEye data available for selected sites (DEMMIN, ESA Take 5 Initiative), otherwise through Blackbridge company directly

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Thanks for Your Attention