The High Resolution Data Portfolio of DLR in Support of the International Polar Year

DLR's high resolution data portfolio for the IPY comprises products from Germany's TerraSAR-X radar mission. Mission and system details are found in tables 1 and 2. More information, including links to many aspects of data utilization, can be found on the TerraSAR-X website under http://www.dlr.de/tsx/main/mission_ge.htm.

Mission Parameters	
Altitude at equator	514 km
Orbital period	5691 sec
Orbits per day	15 2/11
Repeat cycle	11 days
Inclination	97.44°
Orbit	Sun-synchronous
ANX time	18:00 ± 15 min (local)
Launch	15 June 2007
Mission type	Scientific / commercial

Table 1: TerraSAR-X mission parameters

System Parameters	
Center frequency	9.65 GHz
Normal antenna look direction	right
Polarization	HH, VH, HV, VV (single & dual)
Imaging modes	StripMap
	ScanSAR
	Spotlight

Table 2: TerraSAR-X antenna parameters and imaging modes

The imaging modes listed in table 2 are characterized as described in tables 3-6. The above mentioned webpage http://www.dlr.de/tsx/main/mission_ge.htm shall be used as a repository for obtaining a deeper insight into the modes.

Parameter	Value
Swath width (ground range)	30 km (single pol.), 15-30 km (dual pol.)
Acquisition length	< 1650 km
Full performance incidence angle range	20 ° - 45°
Data access incidence range	15° - 60°
Azimuth resolution	3 m
Ground range resolution	1.7 – 3.5 m (@ 45° - 20° incidence angle)
Polarizations	HH or VV (single)
	HH/VV, HH/HV, VV/HV (dual)

Table 3: Parameters of **Stripmap** Mode **(SM)**

Parameter	Value
Scene extension	5 km (azimuth) × 10 km (ground range)
Full performance incidence angle range	20 ° - 55°
Data access incidence range	15° - 60°
Azimuth resolution	1 m (single pol.), 2 m (dual pol.)
Ground range resolution	1.5 – 3.5 m (@ 55° - 20° incidence angle)
Polarizations	HH or VV (single)
	HH/VV (dual)

Table 4: Parameters of **High resolution Spotlight** Mode **(HS)**

Parameter	Value
Scene extension	10 km (azimuth) × 10 km (ground range)
Full performance incidence angle range	20 ° - 55°
Data access incidence range	15° - 60°
Azimuth resolution	2 m (single pol.), 4 m (dual pol.)
Ground range resolution	1.5 – 3.5 m (@ 55° - 20° incidence angle)
Polarizations	HH or VV (single)
	HH/VV (dual)

Table 5: Parameters of **SpotLight** Mode **(SL)**

Parameter	Value
Swath width (ground range)	100 km
Number of sub-swaths	4
Acquisition length	max. approx. 1650 km
Full performance incidence angle range	20 ° - 45°
Data access incidence range	15° - 60°
Azimuth resolution	16 m
Ground range resolution	1.7 – 3.5 m (@ 45° - 20° incidence angle)
Polarizations	HH or VV (single)
	HH/VV, HH/HV, VV/HV (dual)

Table 6: Parameters of **ScanSAR** Mode **(SC)**

Data access follows the rules of the TerraSAR-X data policy. Scientific and commercial utilization equally share spacecraft resources. DLR is responsible for the scientific use while the Astrium GmbH has the exclusive commercial exploitation rights. The TerraSAR-X *Science Service System* (http://sss.terrasar-x.dlr.de/) is the interface portal for scientific users (fig. 1).

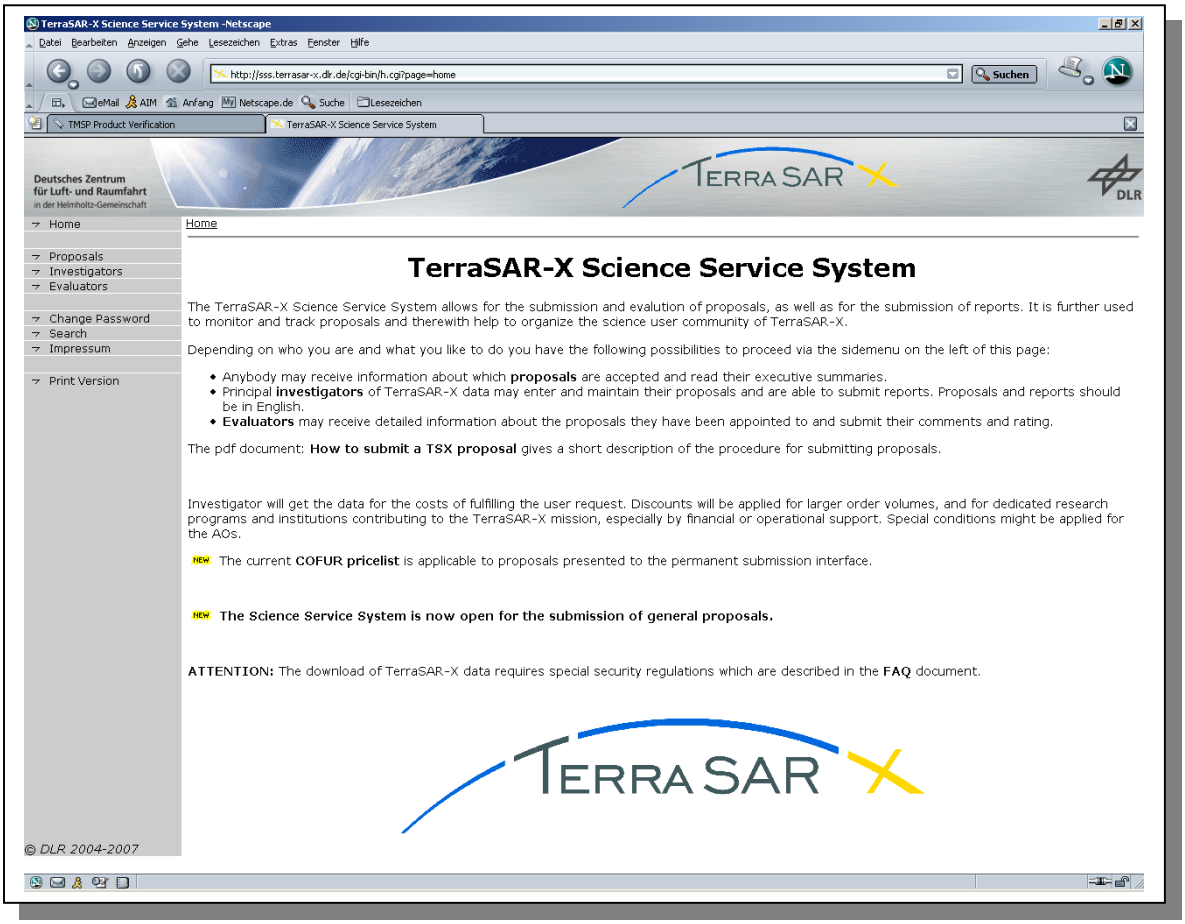

Fig. 1: Entry point of TerrasAR-X science users – the Science Service System

The status *Scientific Use* needs to be gained via a selection process. Every utilization of TerraSAR-X data and products that is not targeting a commercial profit oriented use is a *Scientific Use*. National and international education and research institutions, but also companies involved in research and development projects are invited to submit proposals. All proposals pass an evaluation procedure and accepted those being accepted receive the *Scientific Use* status. This is equivalent to getting access to a specific quota of TerraSAR-X data and products.

The first chance applying for data was the pre-launch Announcement of Opportunity (AO) released in May 2005. The executive summary of the individual proposals are provided in the *Proposals* branch of the *Science Service System*. The general proposal submission – active since October 2007 – allows the formulation of research ideas at any time. It is not restricted to specific themes. The corresponding data will be provided for the costs of fulfilling the user request (COFUR pricelist). Proposals shall be submitted electronically via the *Science Service System*.

TerraSAR-X products can be ordered via DLR's Next Generation EOWEB (EOWEB-NG). Note that only registered users have access to the TerraSAR-X products.

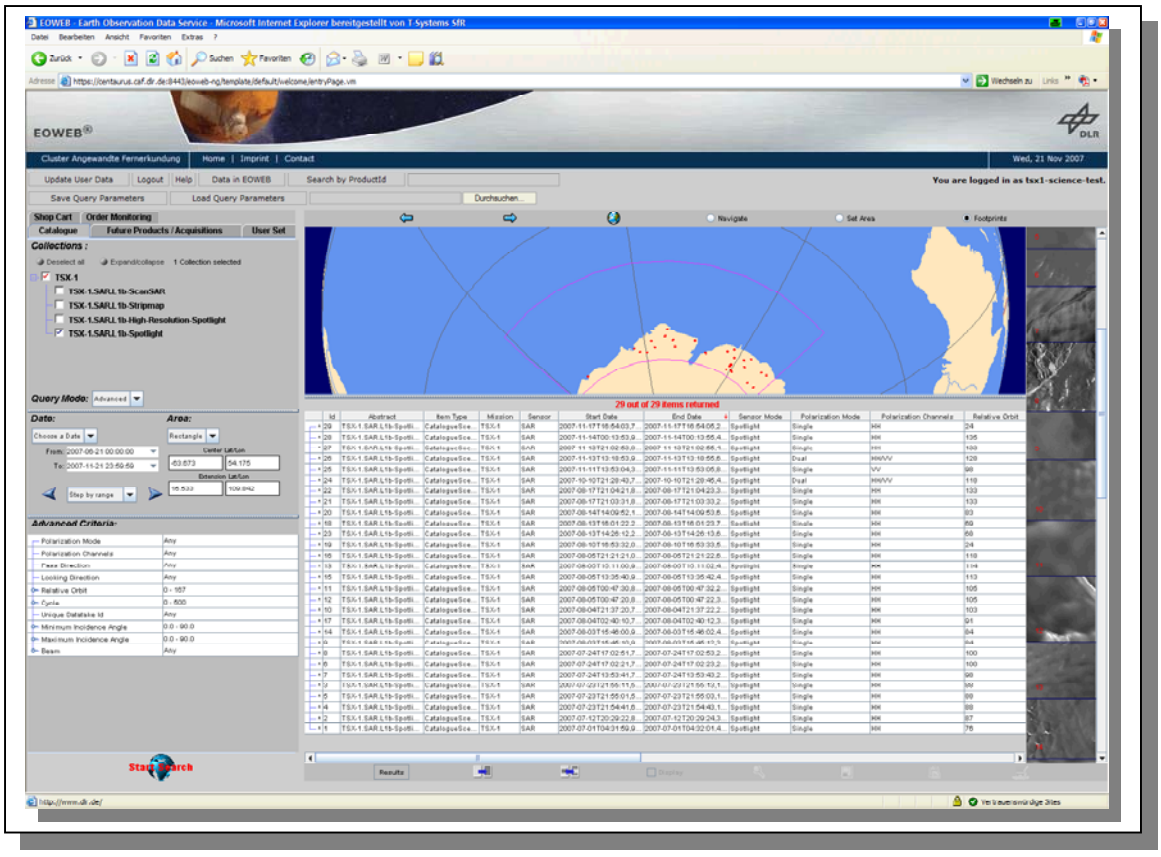

Fig. 2: EOWEB-NG example 1 – browsing TerraSAR-X spotlight products

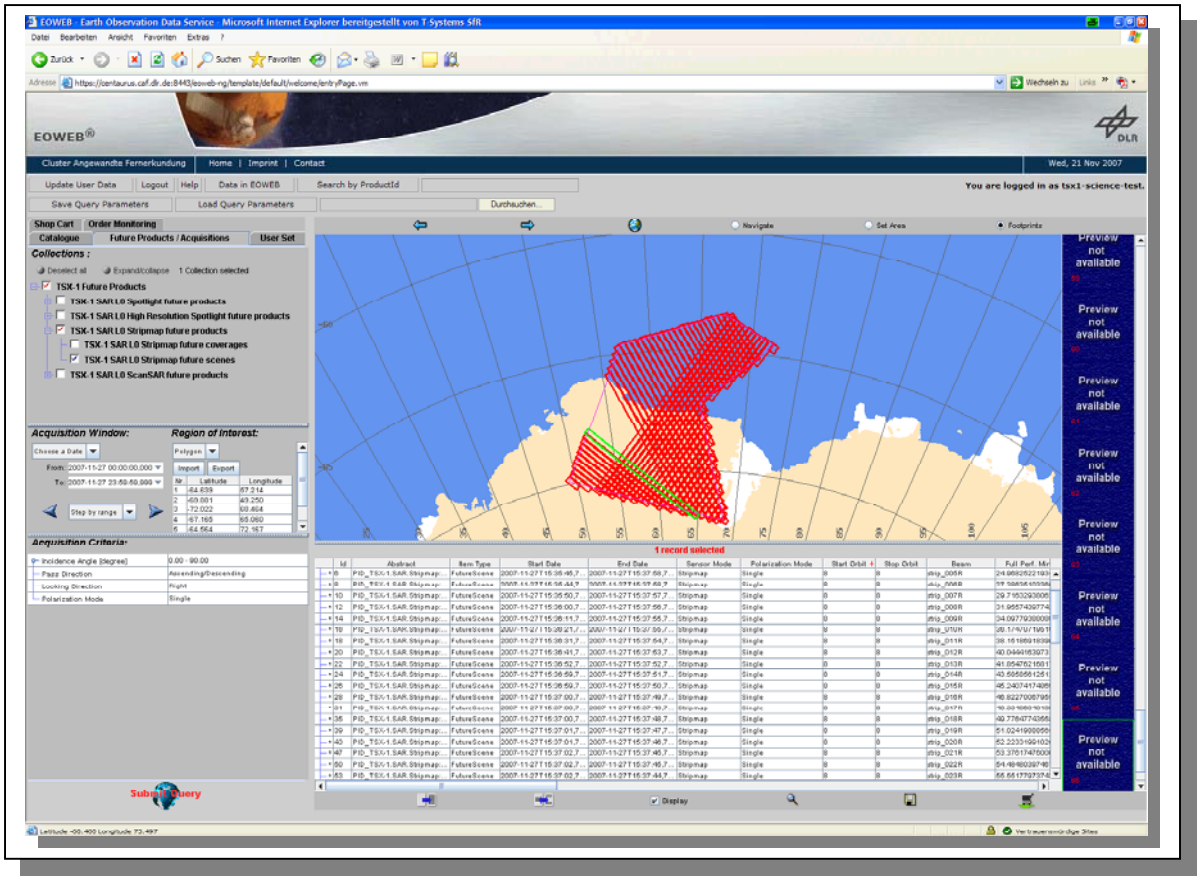

Fig. 3: EOWEB-NG example 2 – browsing TerraSAR-X stripmap future products