

ESA Earth Observation Programme

Porsec 2004

Concepción – Chile Nov. 29 – Dec. 3

Pascal Lecomte – Maurizio Fea

ESA Directorate of Earth Observation Programme

ESA Earth Observation Programme

- ESA co-operation activities in Latin America
- Eduspace
- The International Charter
Space and Major Disasters
- GMES
Global Monitoring for Environment and Security

ESA Co-operation in Latin America

It started a longtime ago

- It all started in late 1970', after the European Space Agency was created in 1975
- Initially, the ESA International Relations Office, located at ESA Headquarters in Paris, established contacts with offices and groups that were either responsible of or involved in space activities in Latin American countries
- This co-operation boosted up during the 1980' in the domain of satellite remote sensing applications, following the consolidation of the ESA Earth Observation programmes, in particular after the creation in 1978 of the ESA Earthnet Programme Office at ESRIN, in Frascati, Italy

ESA Co-operation in Latin America

The key institutional directions

- National space agencies and institutions
 - Memoranda of Understanding (MoU)
 - Co-operation agreements
- Space Conferences of Americas (CEA)
 - Co-sponsorship
 - Participation as Observer, as from the 1st CEA in 1990
- Latin American Society of Remote Sensing and Space Information Systems (SELPER)
 - Co-sponsorship (symposia, events and courses, fellowships)
 - Special Capítulo-SELPER at ESA ESRIN, Frascati, Italy
 - Printing of SELPER Journals at ESRIN (1996, 1997, 1998, 2000, 2003; 2001 being printed; 2002 and 2004 to be printed in early 2005)

ESA Co-operation in Latin America

International Framework

- Active collaboration in International Bodies
 - Committee of Earth Observation Satellites (CEOS)
 - World Summit on Sustainable Development (WSSD) Follow-Up
 - Global Earth Observation (GEO) Initiative
- Co-operation with UN Agencies on International Projects
 - UN/ESA Course Follow-on Programme (UN/OOSA – ESA/ESRIN)
 - Regional projects
 - Vietnam (Asia)
 - Argentina, Bolivia, Chile (Latin America)
 - Burkina Faso, Niger (Africa)
 - UNESCO WHC in Latin America and Middle-East
 - Monitoring and Preservation of World Heritage sites (Workshops for Decision Makers, Training Courses for specialists)

ESA Co-operation in Latin America

The main program domains

- Launchers
- Space hardware and sensors
- Telecommunication
- Navigation
- Earth Observation including Risk and disaster management
- Horizontal common aim:
 - Transfer of Technology and Know-how for Capacity building, Education and Training

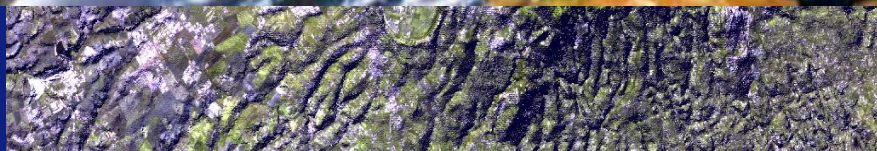
ESA Co-operation in Latin America

Earth Observation opportunities

- ERS and Envisat Announcements of Opportunity
 - Scientific, technical, educational, demonstration projects
(To date: 31 AO projects in the region)
 - Calibration and validation campaigns (e.g. over Amazonian forest)
- Ground Stations – EO activities
 - ERS operations at Cotopaxi, Cuiabá, Córdoba, O'Higgins
 - International Charter for Emergencies (Argentina is a member)
- Events
 - Conferences, Workshops, Thematic seminars
(e.g. XI SELPER Symposium, held last week in Santiago)
 - Education and Training courses
(e.g. Regional Course on SAR Interferometry, held 2 weeks ago in Santiago)
 - Regional Course on Satellite Oceanography – University of Ensenada - Mexico

An Earth Observation Multilingual Web Site for Secondary Schools

<http://www.eduspace.esa.int>



Highlights

- Context:
 - A European project, implemented by ESA/ESRIN under the umbrella of EURISY, through co-operation with space agencies and education authorities
- Assets:
 - A Secondary School teacher was a key member of the web site Implementation Group, and is a member of the Eduspace Operations Team, to ensure site's development according to school requirements.
 - The Eduspace Council of Teachers represents European Secondary School teachers and plays a vital advising role in the Eduspace project

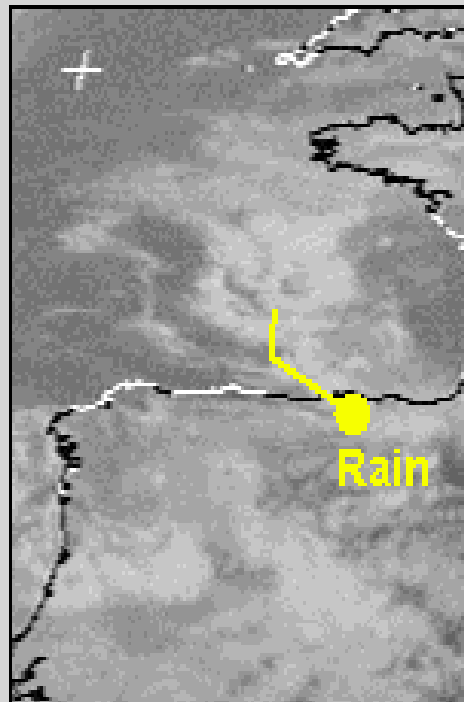
Tools of EDUSPACE

- Introduction to Remote Sensing
- Suitable tools for image processing (LEOWorks)
- Huge searchable image archives (ESA and non-ESA)
- Documented study cases (include schools projects)
- A school network (include a discussion Forum)
- A helpdesk (eduspace@esa.int)
- In-service training of teachers.
- It has six versions:
 - English, French, Italian, Spanish, German,
 - Danish (paid by Danish Ministry of Education).
 - Portuguese and Turkish are next candidates.

School input visible to every one



Interactive METEOSAT



Each day at 09.00 UTC the current METEOSAT image covering Europe will be shown at the project site. Students from participating schools observe the weather and upload their observation to the project. Immediately the observations will be showed on top of the satellite image. When may schools participate and upload information the daily METEOSAT image will show the weather throughout Europe. Thereby enabling an interpretation of the satellite image.

Remember than in winter that is 10.00 MET and 11.00 MET during the summer (MET: Middle European Time).

View the archive of [images and observations](#).

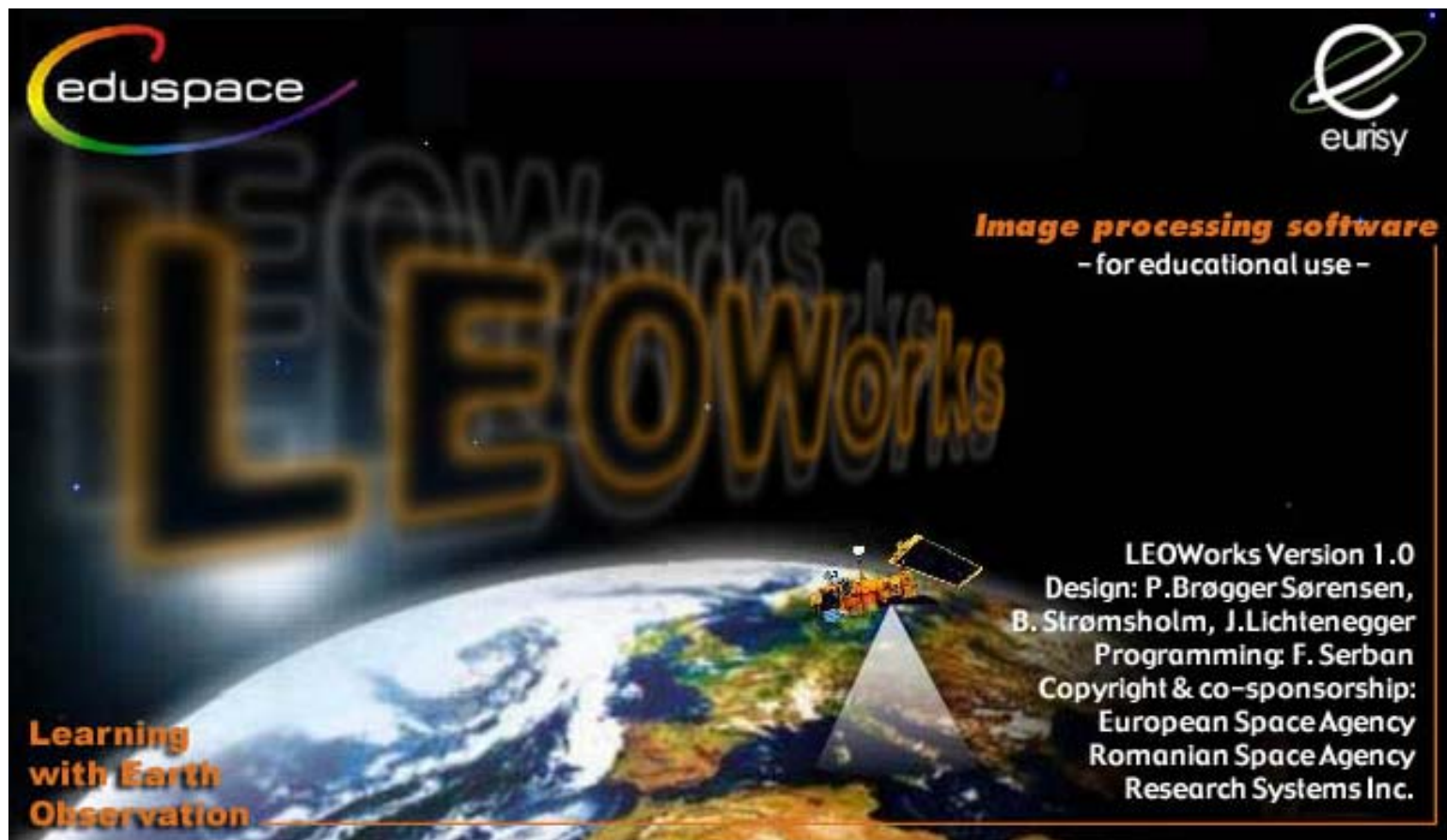
I would like to [register my school](#) to join the project

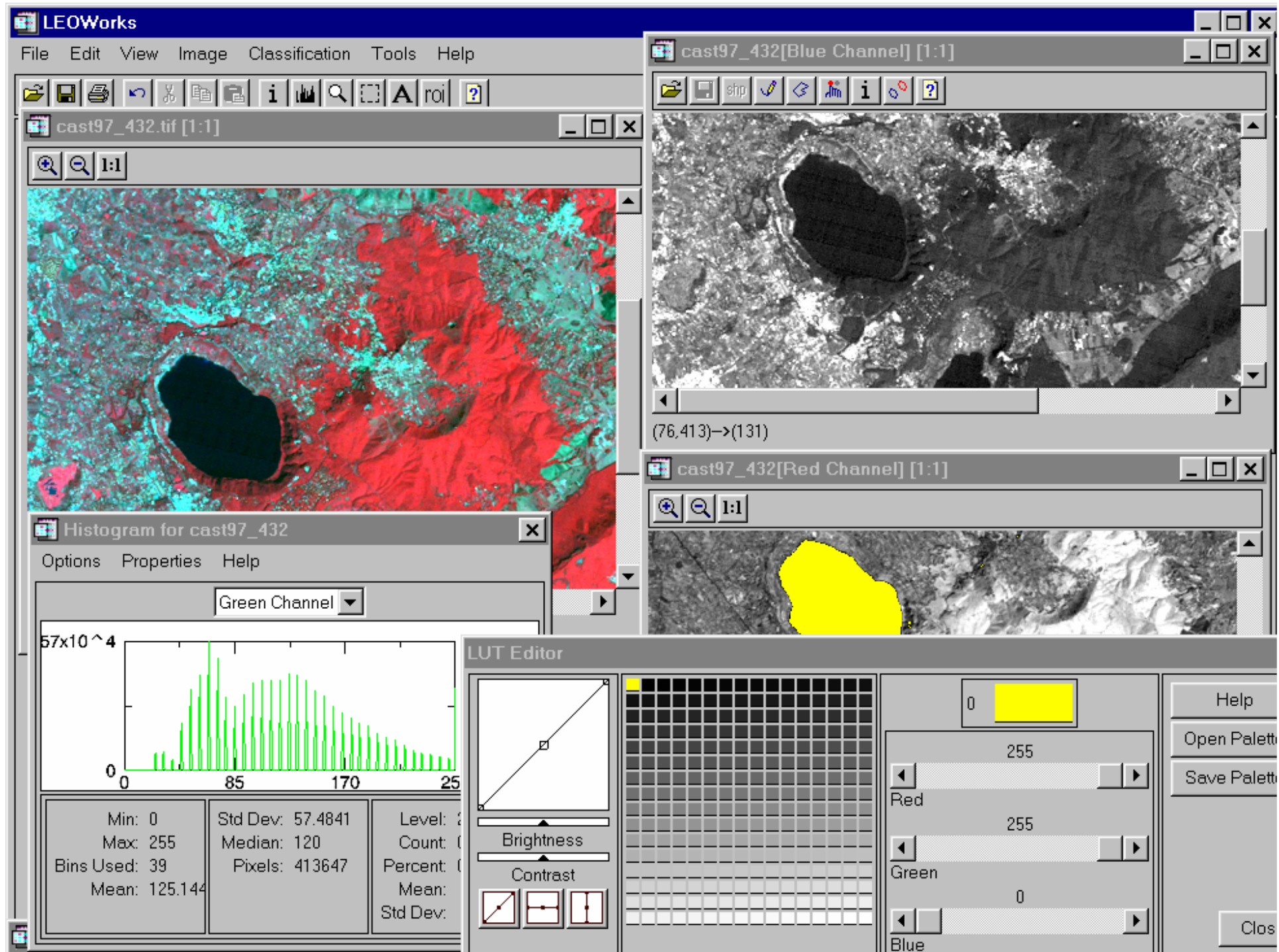
[Background](#)

[Worksheet](#)

[Link](#)

Digital Image Processing Tool







The International Charter

« Space and Major Disasters »

European Space Agency
Agence spatiale européenne



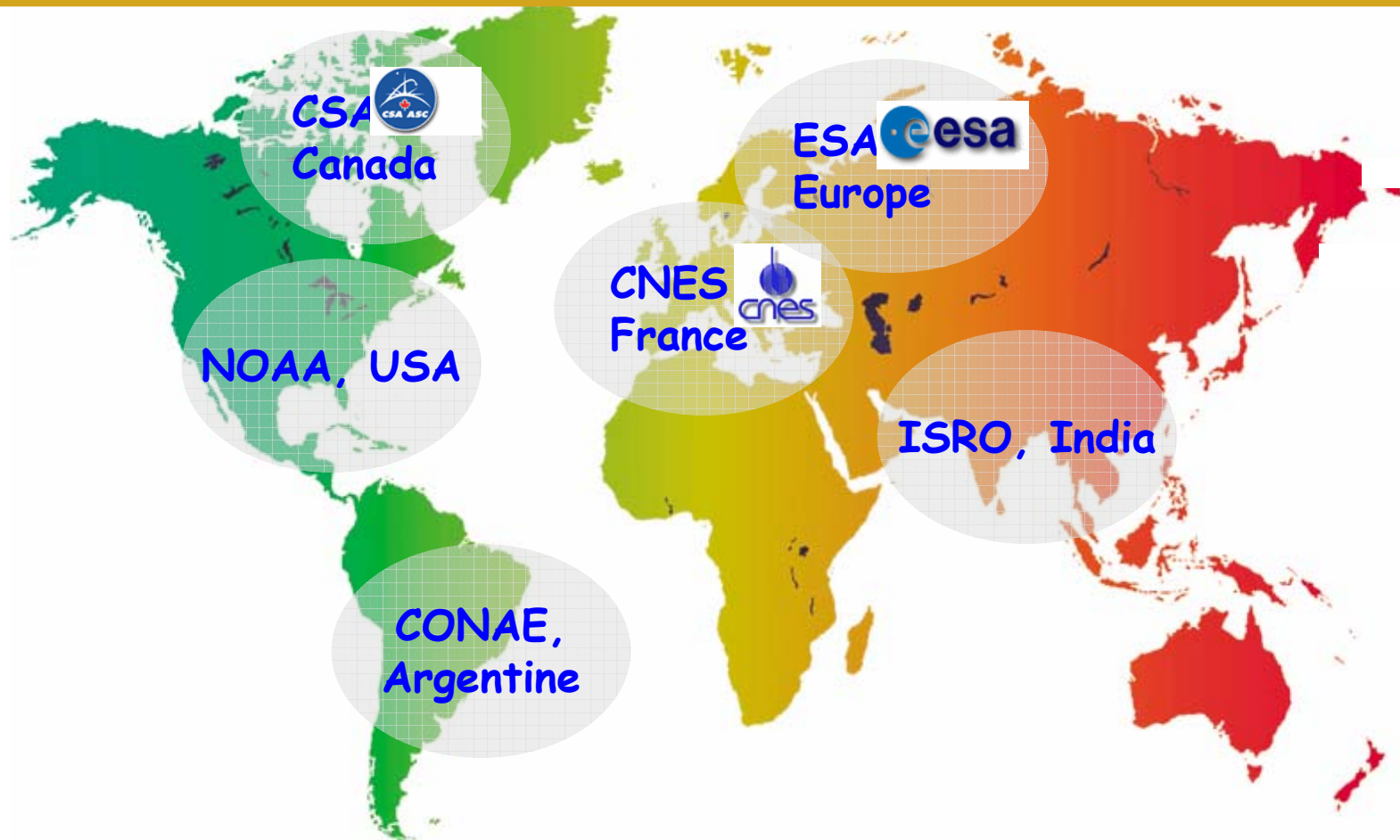


Purpose of the Charter

- To support, by means of space assets and the associated information and services, the organization of emergency assistance or subsequent operations
- To provide a unified and co-ordinated system of space data acquisition and data delivery to those affected by disasters
- To promote cooperation between space agencies and space system operators in the field of disaster management



Participating Space Agencies



European Space Agency
Agence spatiale européenne





Charter Organisation

- **Board** : ruling body of the Charter, one member per partner agency
- **Executive Secretariat** : implementation (creation and maintenance of operational documents) and supervision of Charter operations, one member per partner agency
- **No exchange of funds between members, data and information provided free to the end user**



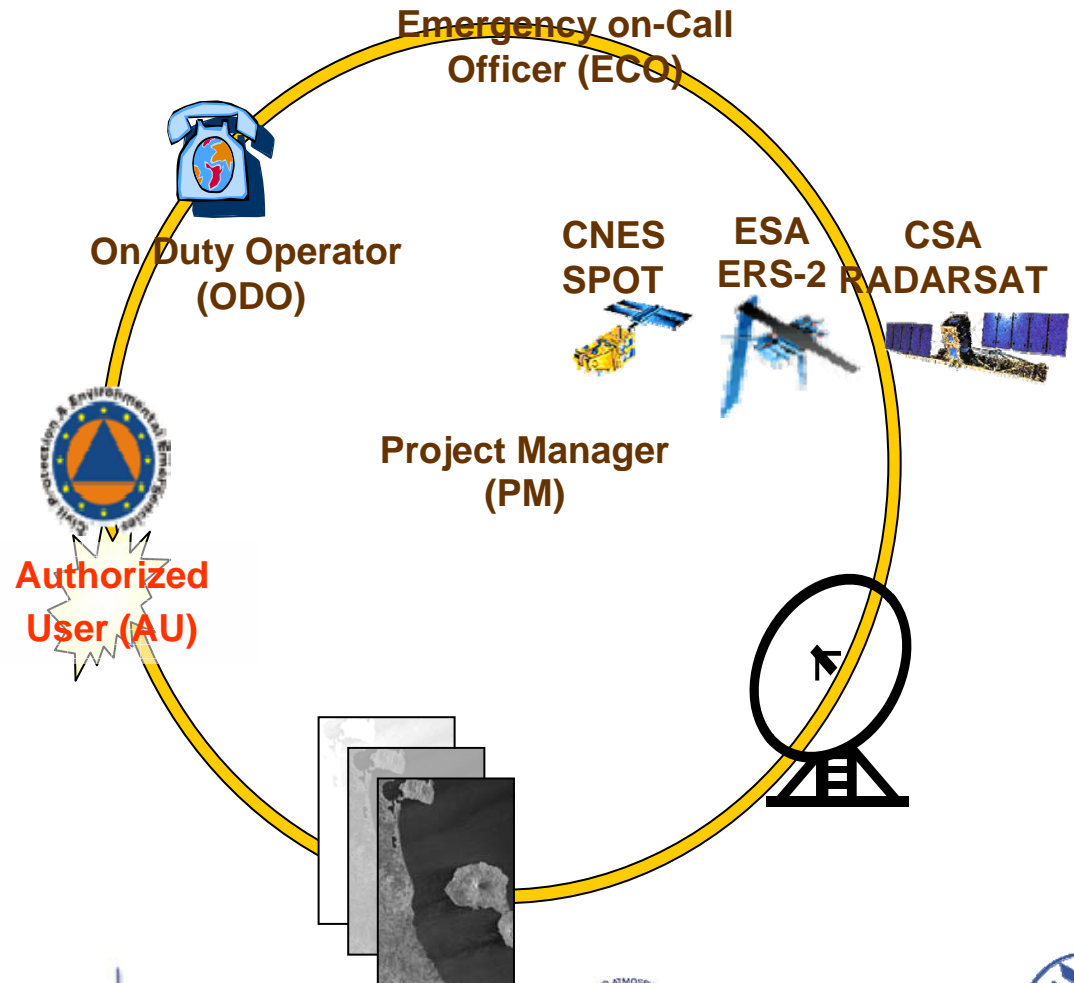
Charter Implementation

- 1st official Board meeting : September 2000
- The Charter has been officially in operation since November 1, 2000
- Documentation available :
 - Charter Policies and Procedures
 - Operational Qualification Requirements and Procedures
 - Charter Implementation Plan
 - Operational Procedures (On-Duty Operator, Emergency On-Call Officer, Project Manager)
 - Authorized User List



Charter Call Mechanisms

- They are the only Bodies authorised to request services
- They usually represent the national Civil Protection Authorities (CPA) of the partner agencies
- If not member of the Charter a bilateral agreement with these CPAs is needed





Cases of Charter Activation to date

- **Since its implementation, the International Charter was triggered 13 times over a period of 17 months :**
 - earthquakes : 3 times
 - oil spill : 3 times
 - flooding : 4 times
 - volcanic eruption : twice
 - landslides : once
- **Seven different organizations initiated the calls (Belgium, British, French, German, Italian, Slovenian CPAs and EC Civil Protection Unit)**

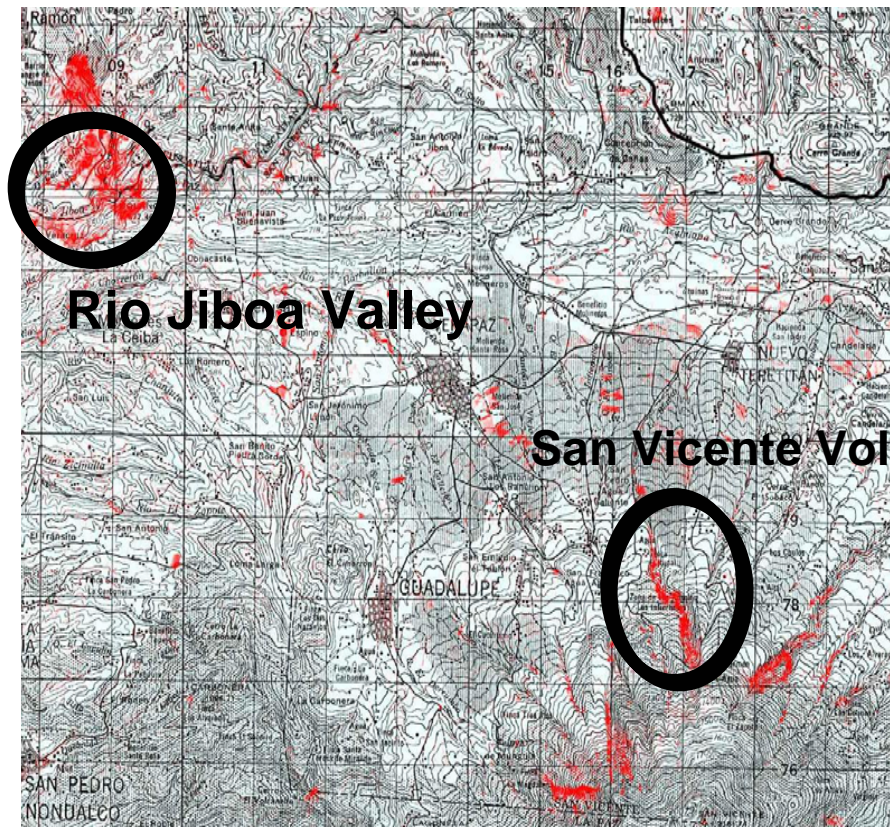


Cases of Charter Activation to date

- Slovenia, Landslides, 27/11/00
- El Salvador, Earthquake, 15/01/01
- Galapagos, Oil spill, marine pollution, 26/01/01
- India, Earthquake, 29/01/01
- El Salvador 2, Earthquake, 14/02/01
- France, Saône river flooding, 22/03/01
- Lebanon, oil spills, 30/03/01
- Denmark, oil spills, 30/03/01
- Siberia, Lena river flooding, 22/05/01
- Italy, Etna volcanic eruption, 26/07/01
- Indonesia, flooding and landslides, 01/08/01
- France, Meuse/Moselle flooding, 31/12/01
- RD Congo, Nyiragongo volcanic eruption, 21/01/02



El Salvador 2nd Earthquake, 14/02/01

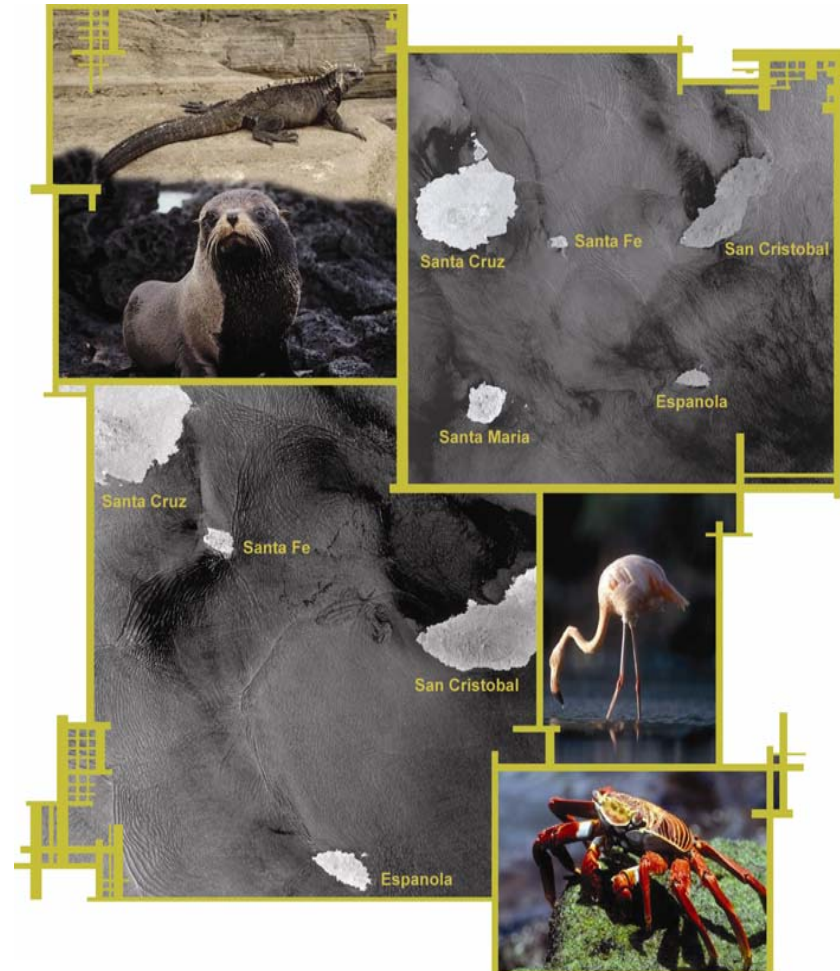


The Rio Jiboa valley blocked by huge landslides originating on both sides of the valley. The soil is made volcanic ash (powdery and unstable)



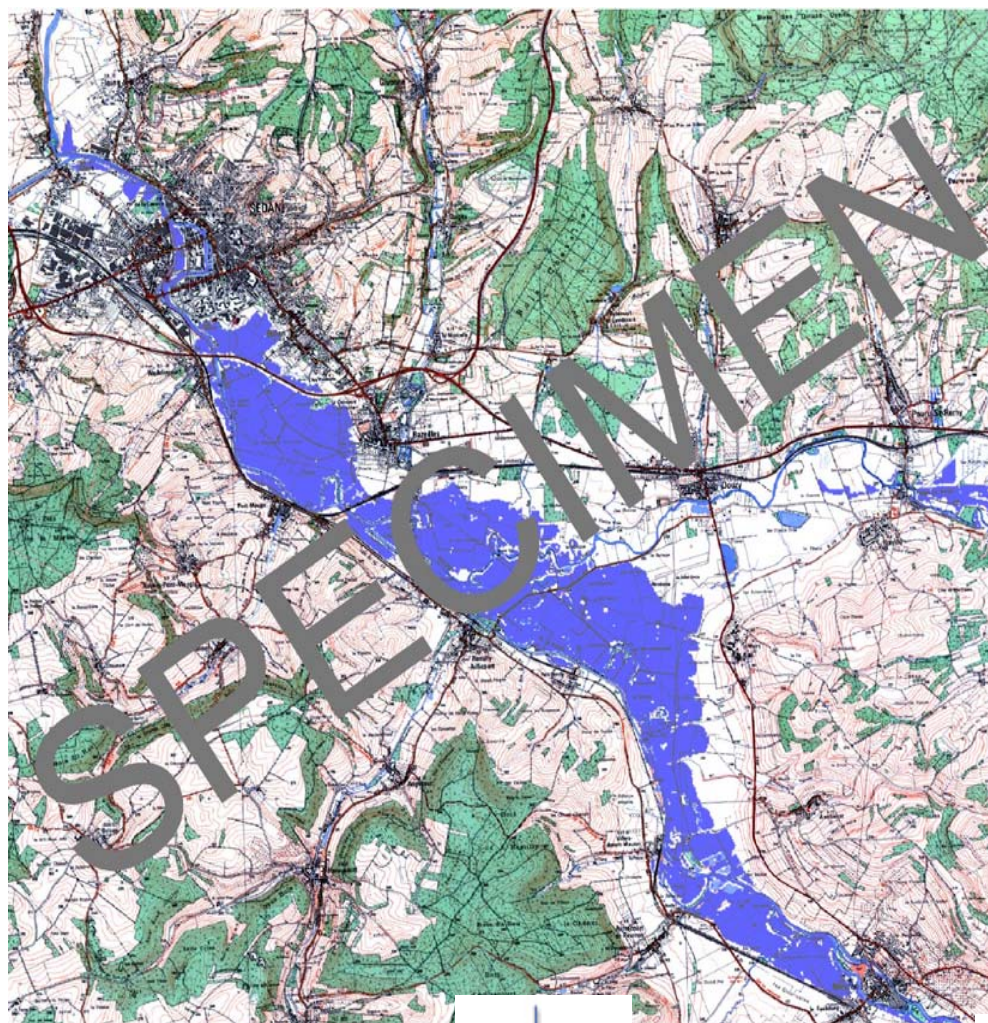
Galapagos Oil spill, 26/01/01

- On Jan 16, a major oil spill occurred near the Galapagos Islands
- AU EC Civil protection Unit
- PM CSA
- These are two images of RADARSAT which were used to monitor the spill. The spill can be seen radiating (21/01) from the western tip of San Cristobal Island and moving northwest. The top image (30/01) shows the spill moving away northward





France Meuse river flooding, 31/12/01



**Extension du champ d'inondation
de la Meuse en amont de Sedan
le 4 janvier 2002**

Exemple de représentation cartographique
sur fond de carte IGN de l'extension de
l'inondation de la Meuse, observée en
amont de Sedan, à partir d'imagerie satellite

NE PAS DIFFUSER



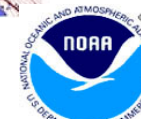
1:50 000

Projection Lambert II Etendu

Sources : imagerie SPOT
fond cartographique IGN scanné



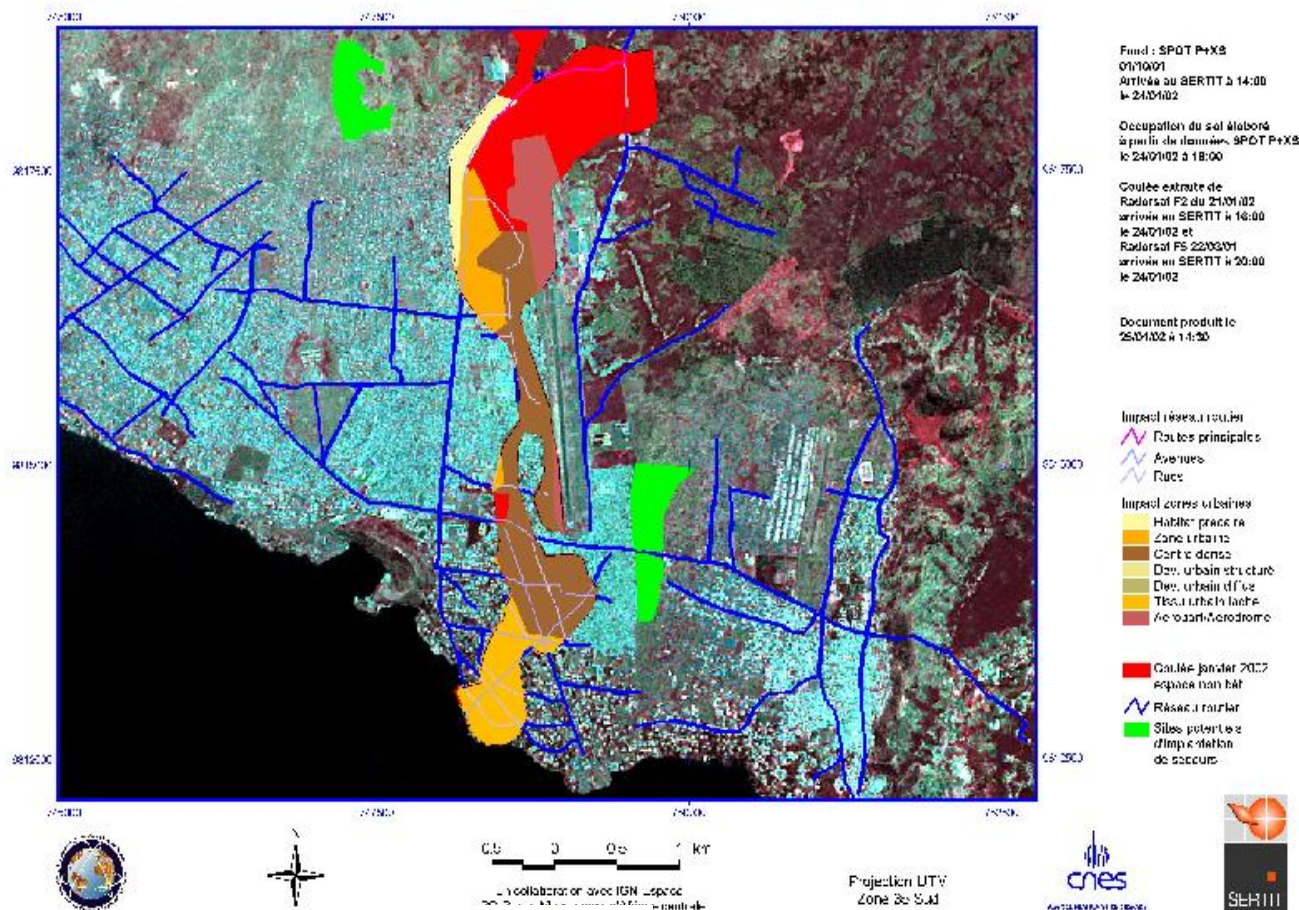
**European Space Agency
Agence spatiale européenne**





Nyirangongo eruption, 21/01/02

Cartographie de la coulée de lave sur la ville de Goma, RDC - janvier 2002
Impact sur le tissu urbain et sur le réseau routier



European Space Agency
Agence spatiale européenne





“Global Monitoring for Environment and Security”

**GMES builds upon existing
capacities and expertise**

*European Space Agency
Agence spatiale européenne*

GMES

***European
Commission***

***European
Space
Agency***

***European and national
user agencies***

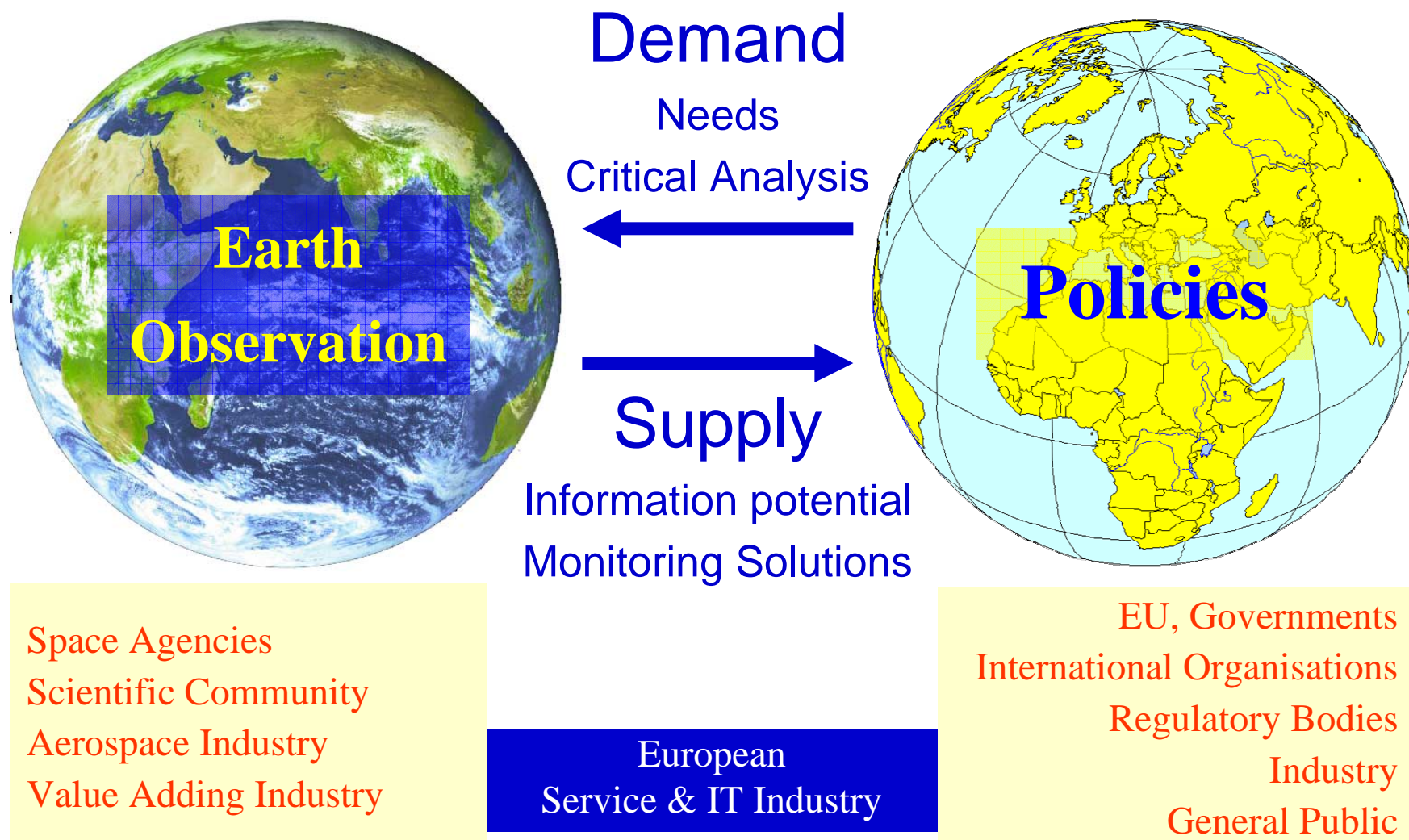
***European and national
space organisations***

Industry

R&D institutions

and other partners





GMES preparatory Programme

- Earthwatch Programme Element
- Approved by ESA C(Min) Nov 2001
- Total Budget 83 MEuro
- Duration 5 years 2002-2006
- Started Jan 2002

GMES Preparatory programme

Scope:

Ease and provide low-cost access to recent and archived Earth Observation data in an environment enabling the setting up of strategic partnerships for providing synergic services are the key factors to the development of EO services.

The Agency is establishing the following elements:

- Facilitate access to EO data from ESA and other missions
- Increase sustainability of EO data provision, by widening the range of offered data sources
- Make the operations of EO missions more efficient

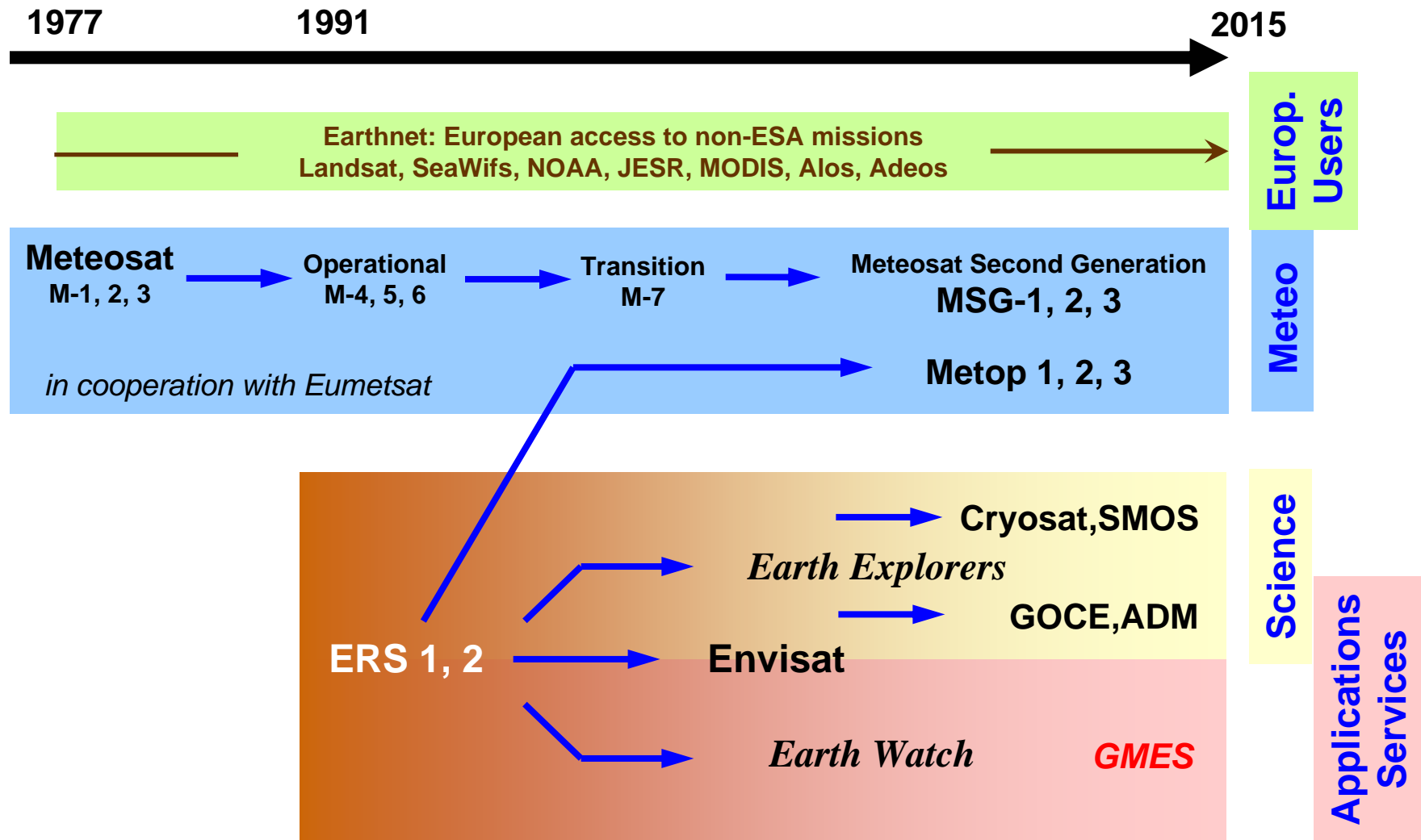
In practice the contractual procurements planned are along of the following lines:

- Architecture
- Ground Segment
- Sentinelle-1

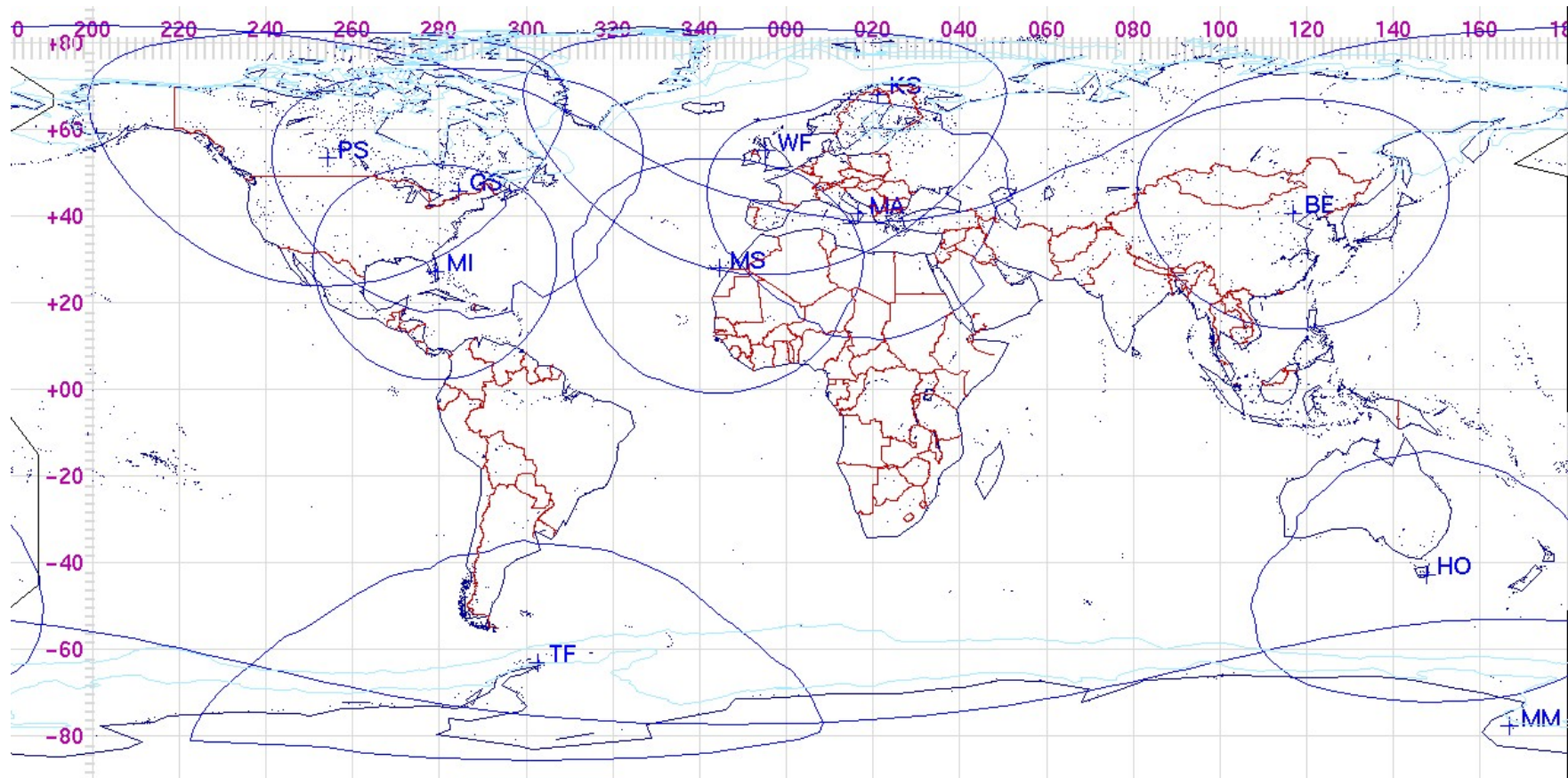
Space Council

- First Space Council held at Brussels on November 25th, 2004.
 - Council of European Union
 - Council of European Space Agency at ministerial level

Missions handled by the Earth Observation Programme



ERS-2 mission extended for another year



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Concepción Chile

