COSMO-SkyMed Mission Status

Presented by Fabrizio BATTAZZA (ASI)

COSMO-1 & COSMO-2 LAUNCHES

FIRST SATELLITE OF THE CONSTELL[illegible]
SUCCESSFULLY LAUNCHED

08 June 2007 – 03:35 (GMT)

Vandenberg – U.S.A. *A*[redacted]

SECOND SATELLITE OF THE CONSTELLATION
SUCCESSFULLY LAUNCHED

09 December 2007 – 02:31 (GMT)

Vandenberg – U.S.A. *Air Force Base*

THIRD SATELLITE

THIRD SATELLITE OF THE CONSTELLATION WILL BE LAUNCHED IN SEPTEMBER 2008

WIDE APPLICATION RANGE IN A DUAL SCENARIO

COSMO SkyMed

RISKS MONITORING AND PREVENTION - MANAGEMENT OF EMERGENCIES

- FLOODS
- OIL SPILL
- EARTHQUAKES
- LANDSLIDES
- VOLCANOES
- SEISMIC RISK
- FIRES

OCEAN AND ICE MONITORING

MONITORING AND MANAGEMENT OF COASTLINES AND INLAND WATERS

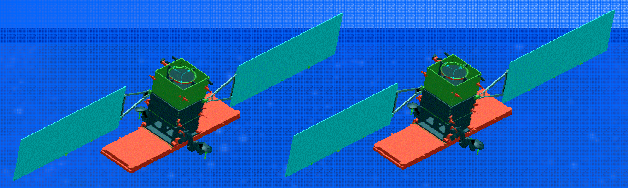
TECHNICAL CARTOGRAPHY - URBAN PLANNING

MONITORING AND MANAGEMENT OF FORESTRY AND AGRICULTURAL RESOURCES

SCIENCE APPLICATIONS

DEFENCE APPLICATIONS

WHERE ARE WE NOW?



CLOSE TO THE COMPLETION OF THE 1st SATELLITE COMMISSIONING PHASE

HUNDREDS OF IMAGES ACQUIRED

BEGINNING OF THE OPERATION QUALIFICATION PHASE

RESULTS EVALUATION

COMPLETION OF THE 2nd SATELLITE COMMISSIONING PHASE

COSMO-SkyMed TIME SCHEDULE

3rd Satellite
PLANNED TO BE LAUNCHED:
September 2008

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PROCESSING AND DISSEMINATION OF PRODUCTS

4 OPERATIVE SATELLITES

SABRINA and
COSMO-SkyMed
2nd GENERATION

2007 2008 2009 ..... 2011 2012 2022

COSMO SkyMed

Web Site address

https://cosmo-skymed-ao.asi.it

- 4 SATELLITES — 90° Separ.
- HEIGHT — 619.6 Km
- INCLINATION — 97.8°

- ORBIT PERIOD — ~ 97 m
- DAWN/DUSK SSO Frozen Orbit
- LTAN — 6 a.m.

REVISIT TIME

FULL CONSTELLATION – RL/LL – EXTENDED INCIDENCE ANGLE RANGE

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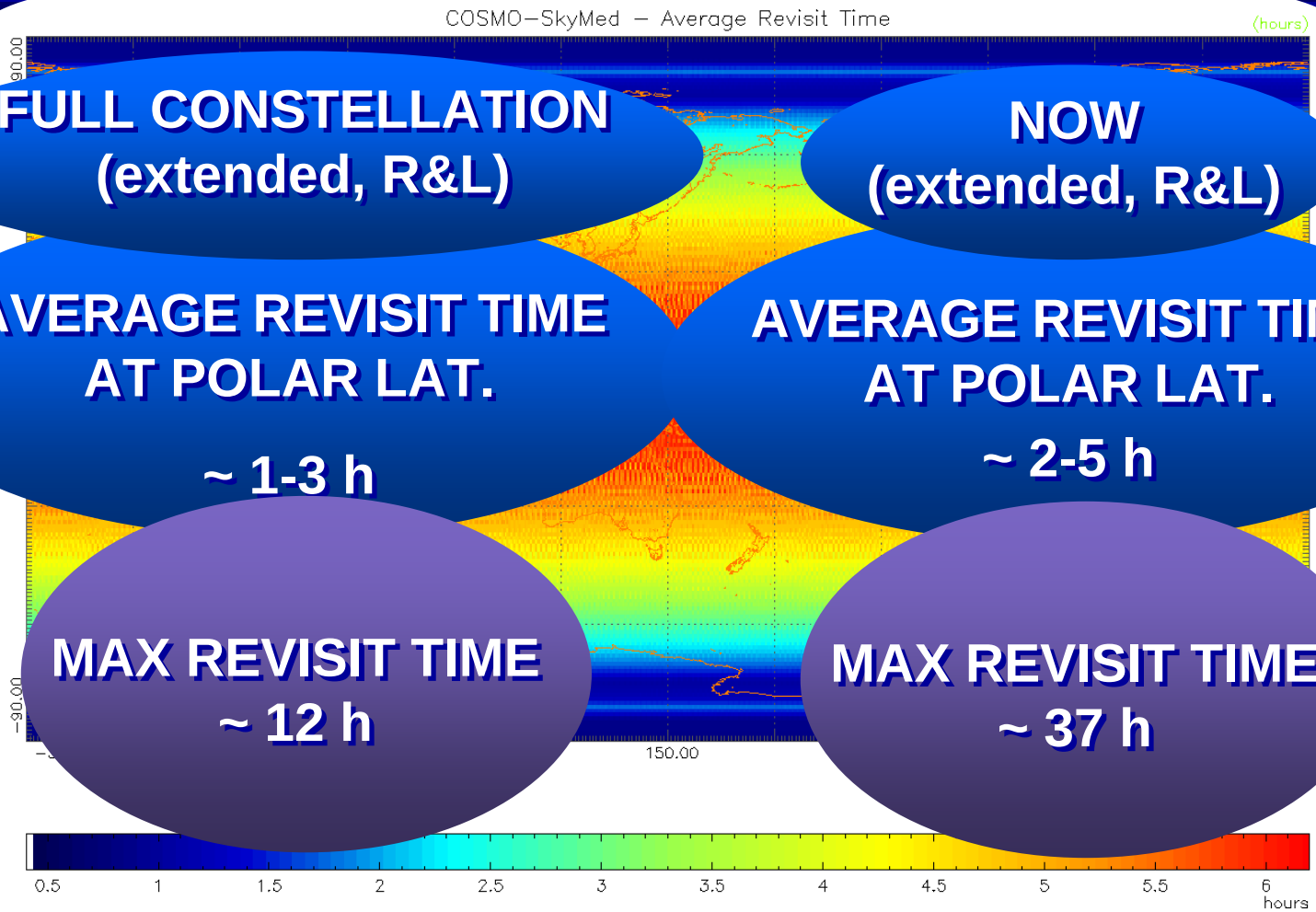

FULL CONSTELLATION (extended, R&L)

NOW (extended, R&L)

AVERAGE REVISIT TIME AT POLAR LAT.

~ 1-3 h

AVERAGE REVISIT TIME AT POLAR LAT.

~ 2-5 h

MAX REVISIT TIME ~ 12 h

MAX REVISIT TIME ~ 37 h

RESPONSE TIME

(from the "deposit of the request" up to the "product delivery")

SYSTEM OPERATIVE MODES

Maximum Values

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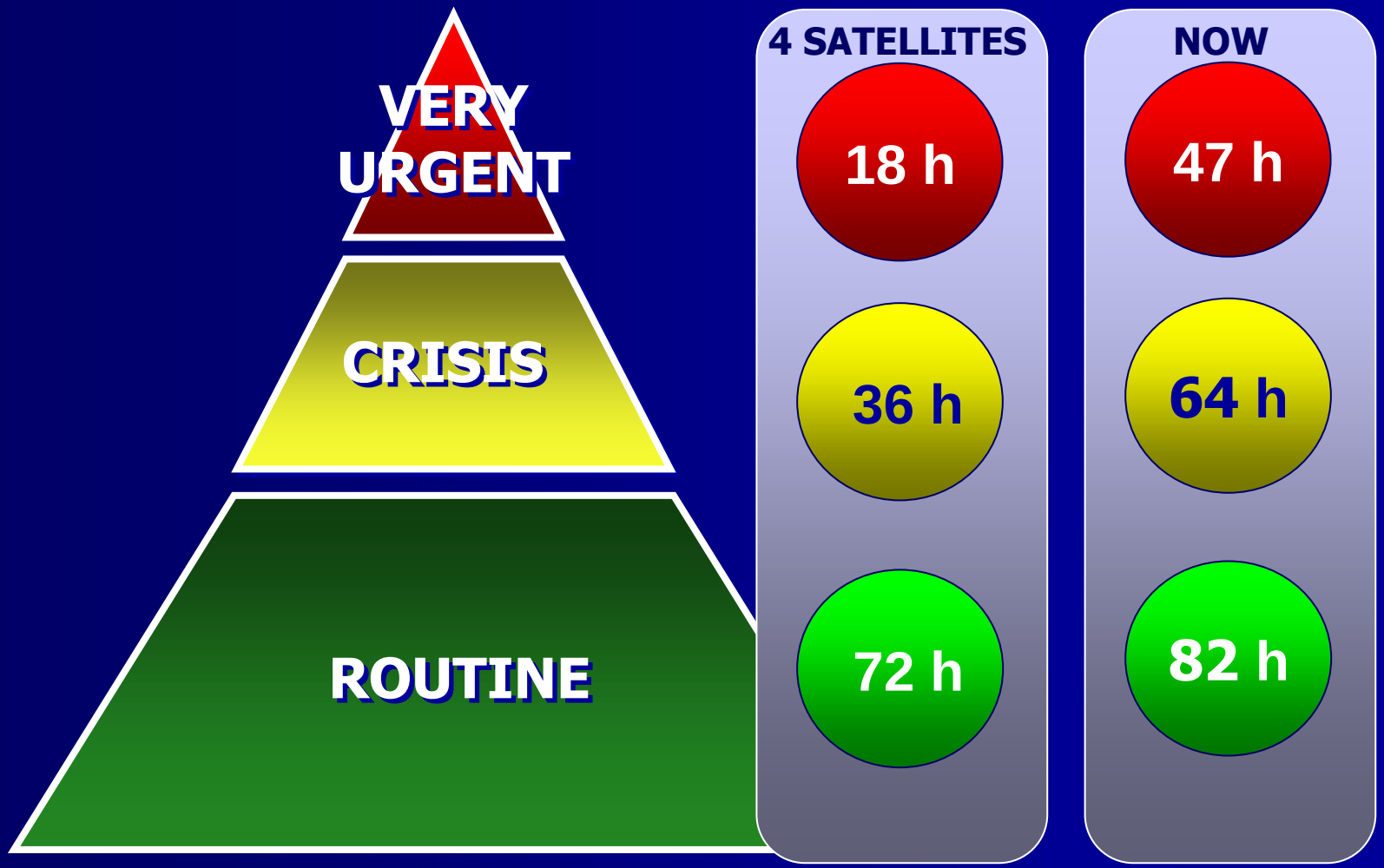


MULTI-MODE ACQUISITION CAPABILITY

COSMO SkyMed

NARROW FIELD

SPOTLIGHT
1 m Resol.
(10 km X 10 km)

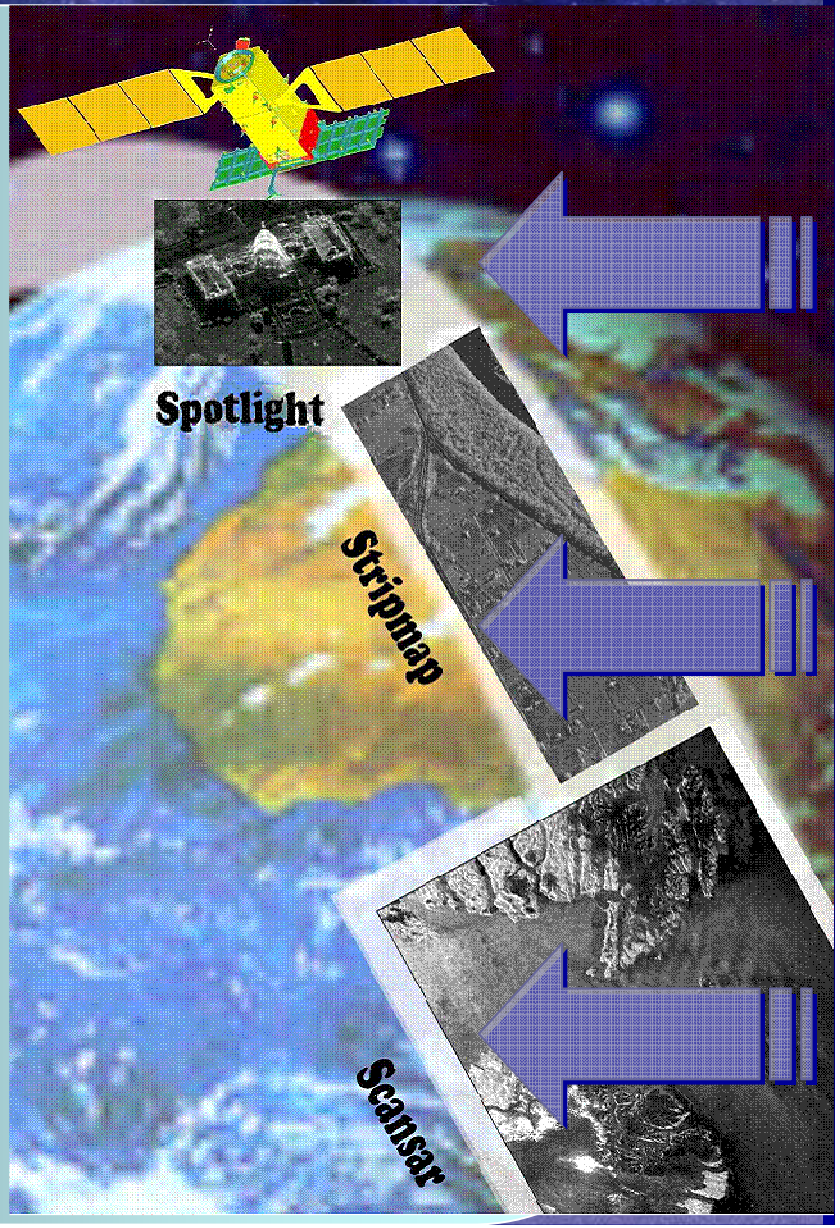
WIDE FIELD

HIMAGE
3x3 – 5x5 m Resol.
(40 km X 40 km)

PINGPONG
15x15 m Resol.
(30 km X 30 km)

WIDEREGION
30X30 m Res.
(100 km X 100 km)

HUGEREGION
100X100 m Res.
(200 km X 200 km)



ACCESSA AREA

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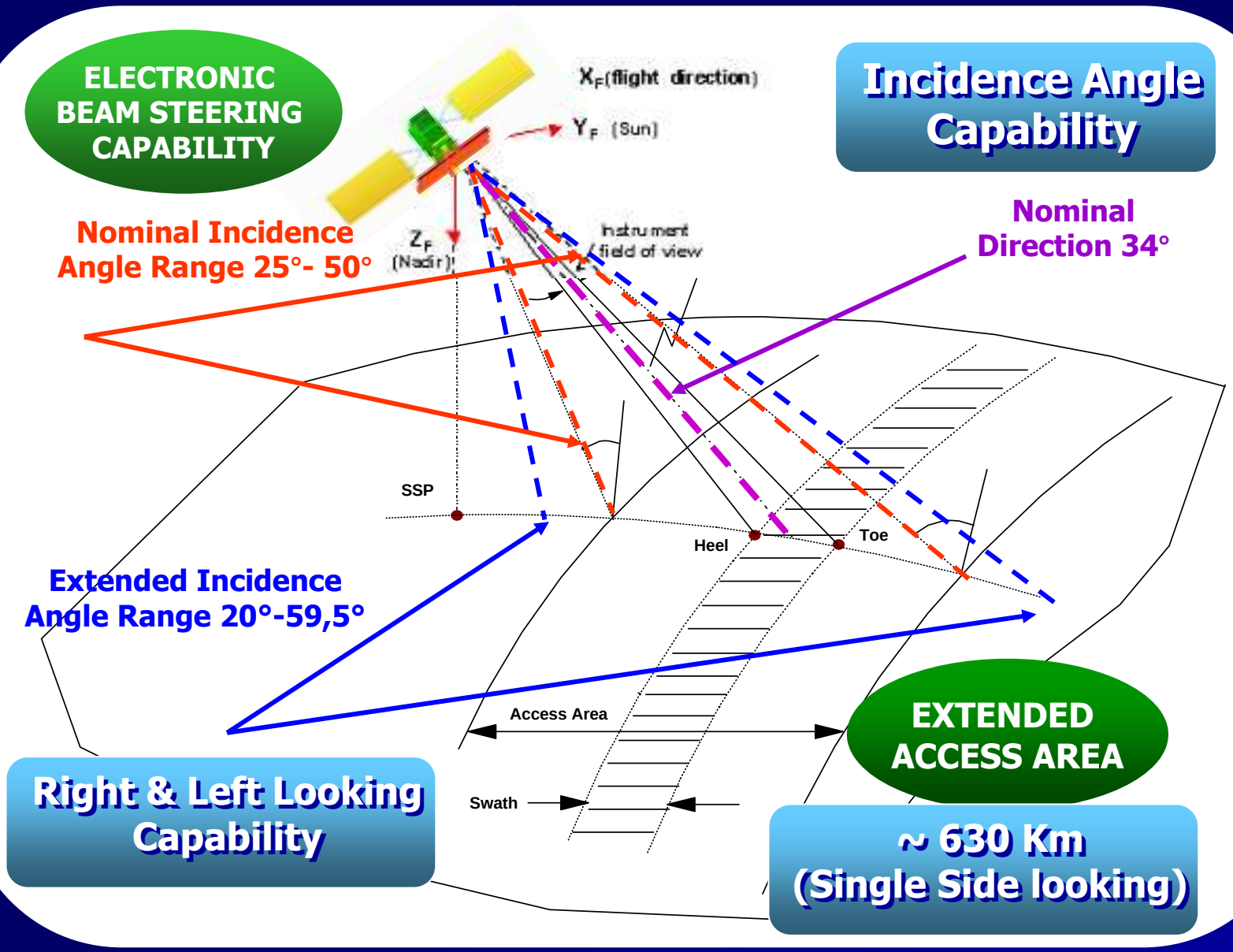


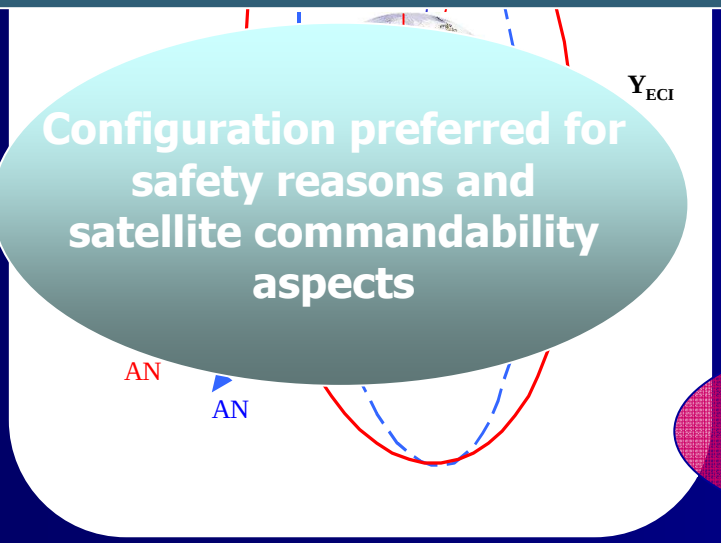
INTERFEROMETRIC MISSIONS

CURRENT CONSTELLATION DECORRELATION TIME = 8 DAYS
The two satellites are equi-phased (180°)

TANDEM INTERFEROMETRY MISSION

SAME GROUND TRACK

The two satellites are separated both in phase and in LTAN, with two different orbital planes with slightly different nodes, such to obtain the "same" ground-track. It implies that the distance between ground tracks is not null, but adjusted to the interferometric baseline (in the order of hundreds of meters)



Configuration preferred for safety reasons and satellite commandability aspects

151 km along track
0.08 deg.
plane separation

20″
separation

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IMAGING CAPABILITY

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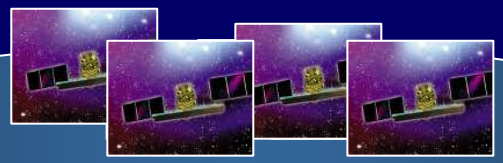
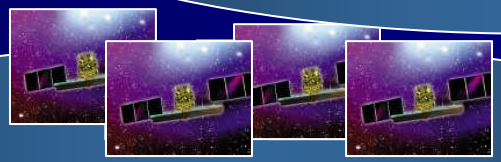


EACH SAR SATELLITE CAN ACQUIRE UP TO

450 IMAGES/DAY



1800 IMAGES / DAY

1500 WIDE FIELD

300 NARROW

NOW → 900 IMAGES / DAY

750 WIDE FIELD

150 NARROW FIELD

200 PRODUCTS / DAY

INTEROPERABILITY – EXPANDABILITY – MULTI-SENSORIALITY

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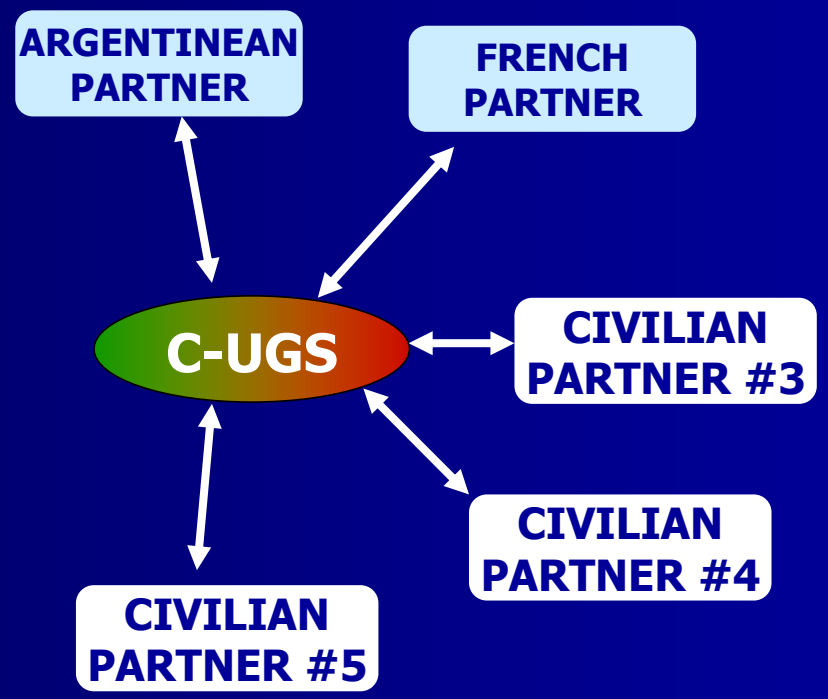
COSMO-SkyMed SYSTEM UPGRADING CAPABILITY

CIVILIAN DOMAIN



CURRENT COOPERATIONS

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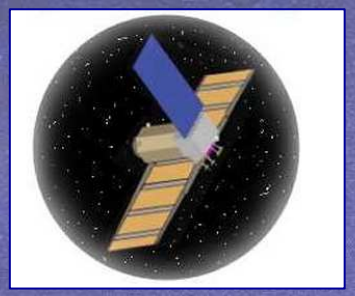
At the time being, COSMO-SkyMed System is envisaged to manage the following "external" Sensor Data:

In the frame of ITALY-FRANCE EO COOPERATION:

- **ORFEO** FEDERATE SYSTEM WITH THE FRENCH OPTICAL CONSTELLATION **PLEIADES**

In the frame of ITALY-ARGENTINE EO COOPERATION:

- **SIASGE** OPERATIONALLY COORDINATED SYSTEM WITH THE ARGENTINEAN L-BAND SAR CONSTELLATION **SAOCOM**



INSTITUTIONAL/SCIENTIFIC AND COMMERCIAL CSK DATA EXPLOITATION

COSMO SkyMed

ASI supports the SCIENTIFIC and INSTITUTIONAL data exploitation

www.asi.it

e-GEOS

e-GEOS supports the COMMERCIAL data exploitation

www.e-geos.it

DATA POLICY

Due to the intrinsic system "duality" nature and to the national and international co-operations, access and use of COSMO-SkyMed system and data are ruled by a specific regulation for data distribution.

ASI has the main goal of ensuring the availability of data to national and international civil users.

Issued a Document concerning

National Data Policy

&

Resource Sharing

COSMO SkyMed

USER CLASSES

a) SYSTEM OWNERS: ASI and Italian Ministry of Defence

b) INTERNATIONAL PARTNERS: Defined on the basis of agreements relative to the data/products utilisation

c) NATIONAL INSTITUTIONAL USERS: National Institutional Administration for the data/products utilisation

d) PRIVILEGED USERS: National and International, defined on the basis of specific agreements for the data/products utilisation

e) GENERIC USERS: All the other users.

BACKGROUND MISSION

The Background Mission (BM) of a remote sensing system can be roughly defined as the plan to be implemented at the lowest level of priority.
(i.e. when no further activity - so called foreground activity - is defined)

- **Development of mission objectives**

  COSMO-SkyMed mission objectives cover the following primary fields:

  - ✓ Risk Management Applications (the guideline field)
  - ✓ Cartography and planning applications
  - ✓ Agriculture
  - ✓ Forest
  - ✓ Hydrology
  - ✓ Geology
  - ✓ Marine domain
  - ✓ Archaeology

- **Inputs from**

  Scientists (e.g. already approved Announcement of Opportunity, IPY?)
  Institutional Users
  Commercial users

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First COSMO-SkyMed Announcement of Opportunity

The project proposals cover the exploitation of COSMO-

The First CSK Announcement of Opportunity highlighted a wide interest of the international community on the COSMO-SkyMed Mission

~200 project proposals

domains of GMES service elements and GEO Program

- New Ideas for System Exploitation

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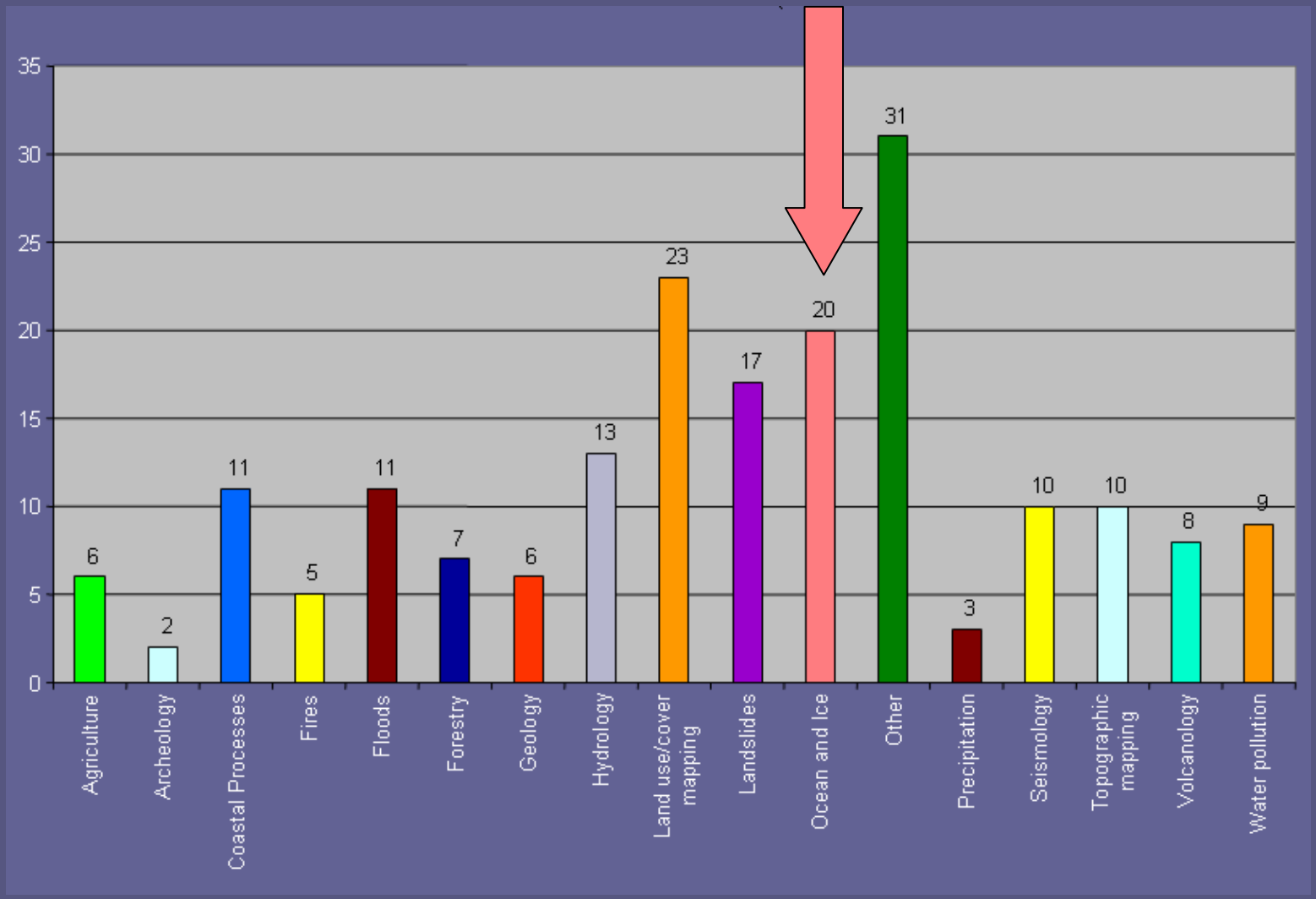
ANNOUNCEMENT OF OPPORTUNITY



COSMO SkyMed

COSMO-SkyMed

ANNOUNCEMENT OF OPPORTUNITY

Web Site address

https://cosmo-skymed-ao.asi.it

Announcement and opening web for submission of proposals	T0 *(20th of May 2007)*
Deadline for submissions	T0 + 4 months *(15 Sept. 2007)*
Deadline [illegible]	T0 + 12 m *(end of May 2008)*
[illegible]	T0 + 15 m *(Aug. 2008)*
[illegible] reports	T0 + 38 m *(July 2010)*

Second CSK AO at the beginning of 2009