
ESA ' s activities on
TRMM and GPM

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Main Objectives:

1) to process the TRMM data and products:

a) to provide assimilation data and

b) verification data for the numerical weather prediction (NWP) model

2) to develop and implement assimilation schemes for precipitation data in a NWP model, and to use the precipitation data for testing and tuning schemes for parameterisation of convection.

Success Criteria:

1) good accuracy of precipitation TRMM instantaneous retrievals (using ground- and airborne- based validation data)

2) assimilation improves forecast

3) identification of a 'best' convection scheme in a regional model

‘Processors’:

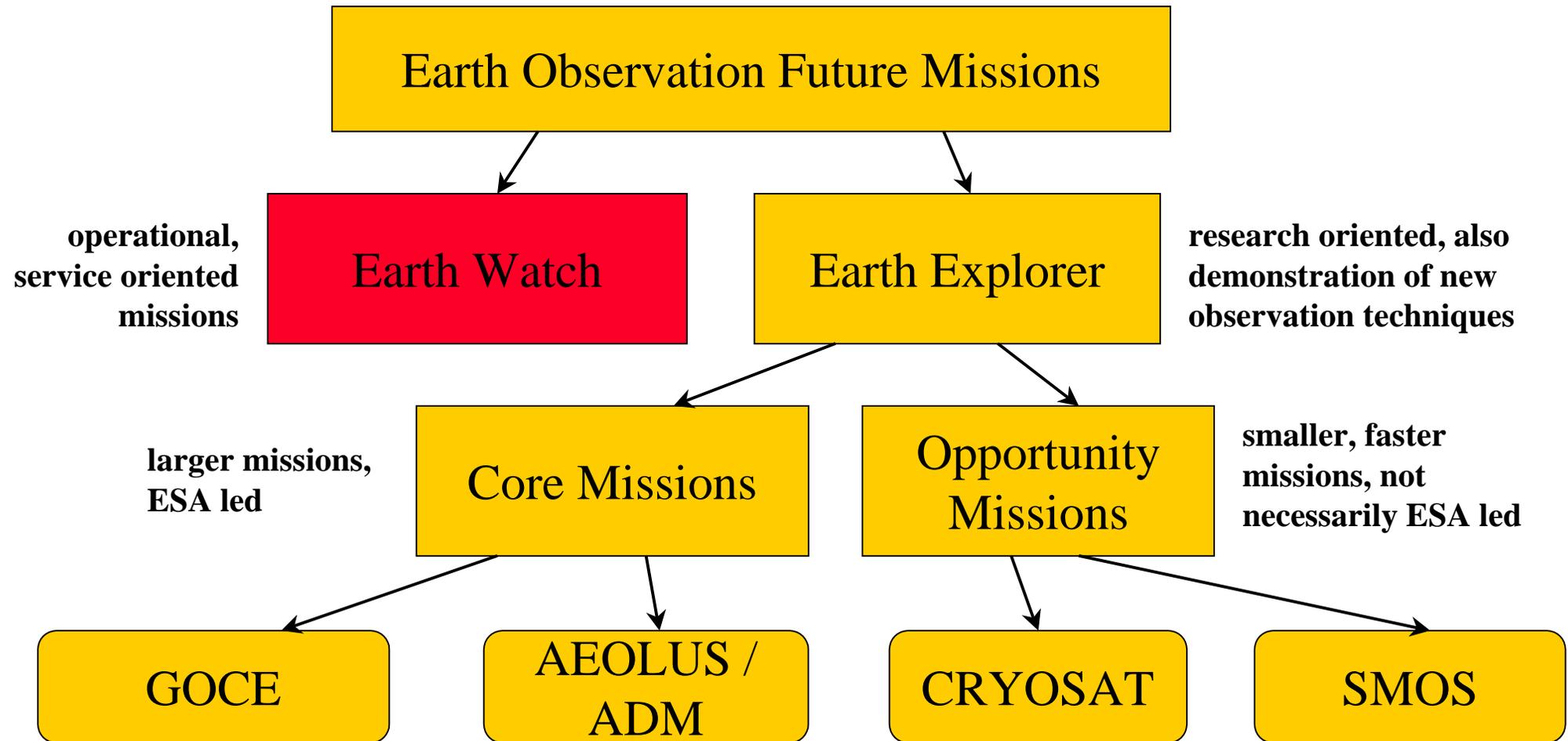
CETP/CNRS (F)	Radar (PR) algorithms, airborne campaigns and validation
IFA (I)	Radiometer (TMI) algorithms
DLR (D)	Radiometer (TMI) algorithms
U. Munich (D)	Imager (VIRS) algorithms
Univ. Essex (UK)	Volume scattering, ground-based radar algorithms
UCL (B)	Sea-surface scattering
RAL (UK)	Ground-based radar validation data
GPCC/DWD (D)	Ground-based rain-gauge data

Users:

ECMWF	Data assimilation and forecast
MPI (D)	Convection scheme (regional model)

EuroTRMM

- **very successful activity**
- **ECMWF is planning to assimilate precipitation data operationally from 2003**
- **EuroTRMM finished in February 2001**
- **ESA funding (EuroTRMM 2) assured for 1 additional year with a focussed team (until 2002)**
- **A second year of activities is planned (until 2003)**

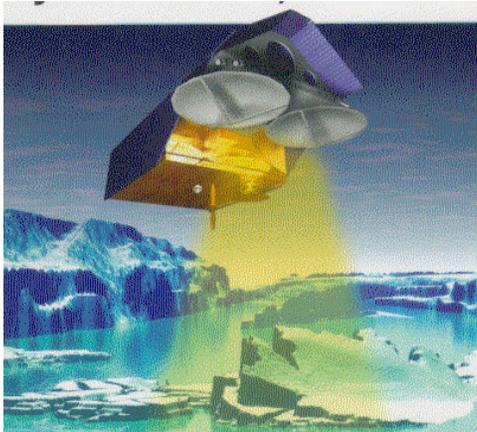


Core:

- **Less than 400 Meuro**
- **First step of selection for this cycle happened in October 2000 (launch in 2008 and 2010)**
- **Second step in 30-31 October 2001 (Granada, Spain)**
- **Next Call in 2004 (launch 2012)**

Opportunity:

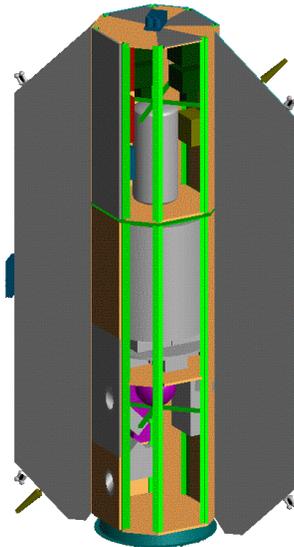
- **Less than 110 Meuro**
- **Call Summer 2001**
- **Deadline Autumn/Winter 2001**
- **Selection first quarter 2002**
- **Launch 2007 and 2008**



CRYOSAT

Variation ice thickness / mass
Ku-band altimeter
Phase B started
Launch 2003

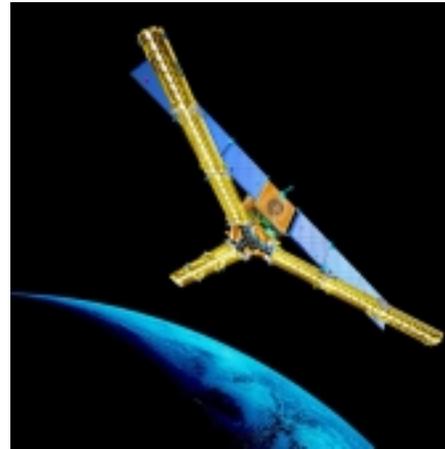
Opportunity



GOCE

Gravity field and geoid
GNSS receiver and
Gradiometer
Phase B started
Launch 2005

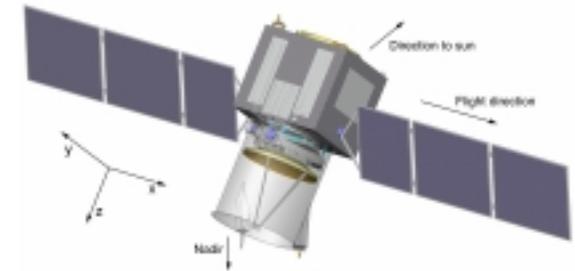
Core



SMOS

Soil Moisture and
Ocean Salinity
L-band radiometer
Extended Phase A
ongoing
Launch 2005

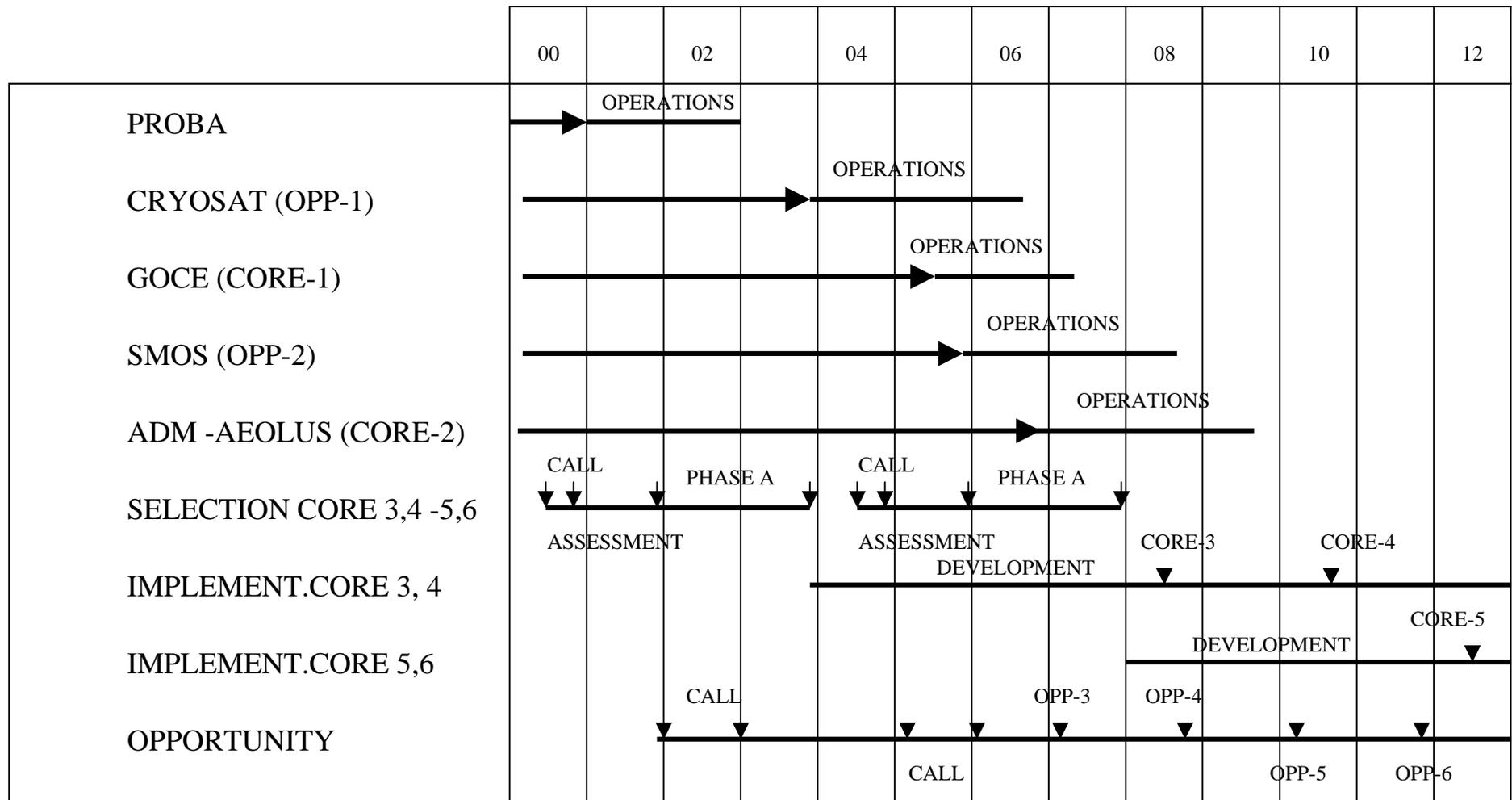
Opportunity



ADM/Aeolus

Wind speed profiles
Doppler wind lidar
Instrument Development
and phase B
Launch 2006

Core



- **ACECHEM** - atmospheric chemistry explorer
- **CARBOSAT** - a mission dedicated to monitoring of the carbon cycle
- **CLOUDS** - a cloud, aerosol, radiation and precipitation explorer
- **EarthCARE** - Earth clouds aerosol and radiation explorer (joint Japan/Europe)
- **GeoSCIA++** - a passive remote sensing experiment assessing the impact of regional tropospheric pollution on global change
- **LICODY** - laser interferometry for core and ocean dynamics
- **SPECTRA** - surface processes and ecosystems changes through response analysis
- **WALES** - water vapour lidar experiment in space
- **WATS** - water vapour and wind in atmospheric troposphere and stratosphere
- **W_WISE** - atmospheric windows and clouds, water vapour, ozone, carbon dioxide, infrared spectral radiation explorer

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- **ESA's Earth Sciences Advisory Committee recommended that ESA should support work in precipitation missions (1996) i.e. TRMM**
 - **NASA & NASDA have invited ESA to join GPM (1999/2000)**

As a consequence,

- **ESA has setup a GPM Science Preparatory Group taken from EuroTRMM (end Oct. 2000)**
- **System studies for GPM drones started (November 2000) with Alenia Spazio (I) and Alcatel (F)**

ESA's contribution could be implemented as Earth Explorer Opportunity!

For ESA to go ahead with GPM a proposal for a Earth Explorer Opportunity Mission has to be submitted and approved

A proposal for an European contribution to GPM is expected (see www.precipitation.org) in the frame of the Earth Explorer Opportunity

Expected European specific objectives are:

- **Improvement of NWP**
- **Mid/high-latitude precipitation (rain and snow)**
- **Covering observational gap in the Mediterranean**