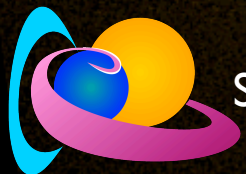


PROBA2: a success story

David Berghmans

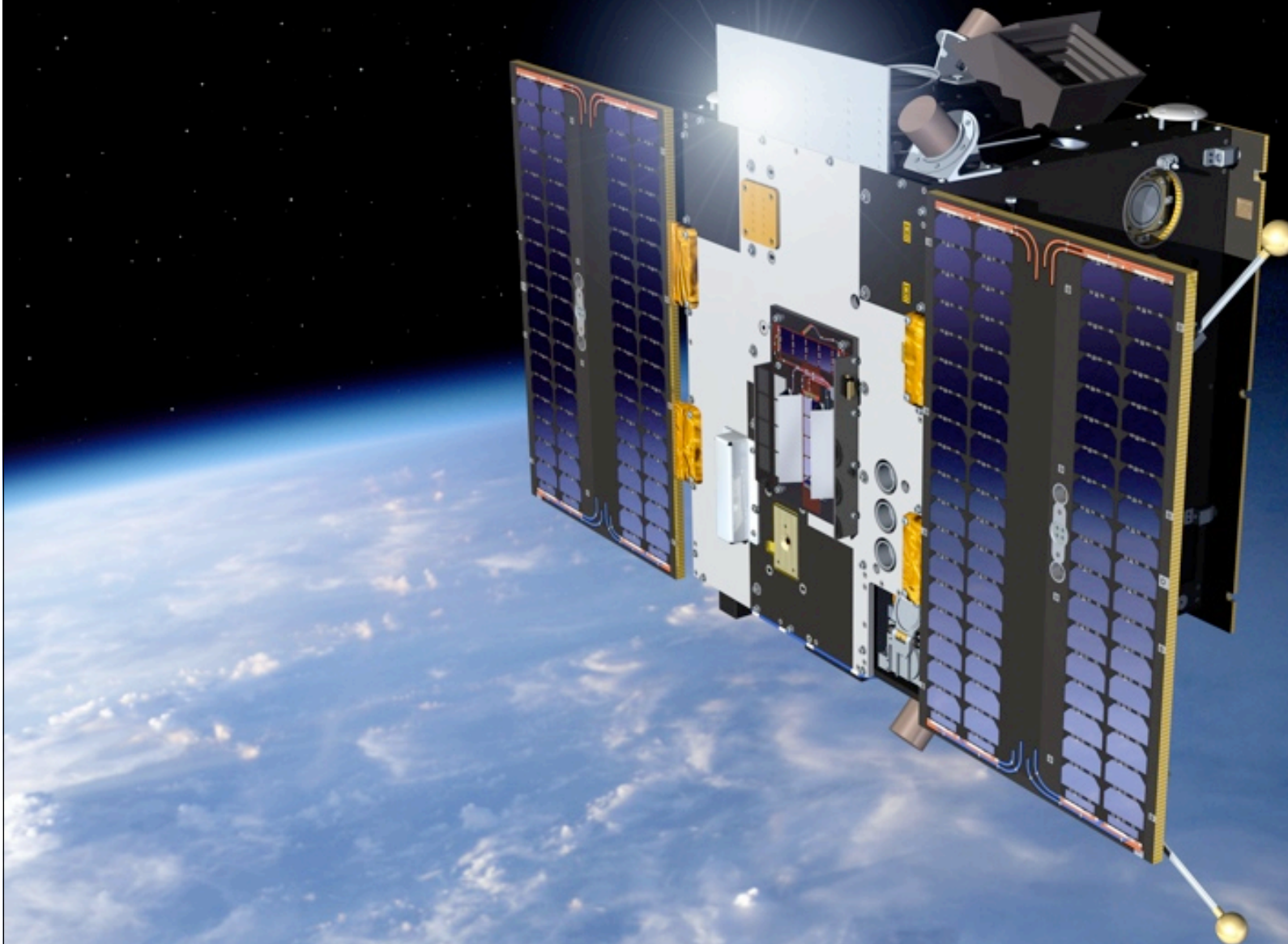
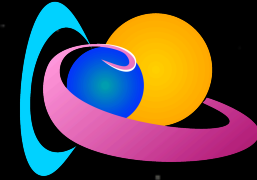


STCE annual Meeting

2012-05-31, ROB Meridian



PROBA2, built in Belgium,
instruments operated at STCE



Is PROBA2 a success?

- *On-orbit degradation of Solar and Space Weather Instruments - Lessons Learned*
A. BenMoussa
- *Science and Space Weather opportunities for PROBA2*
M. Dominique



Why is PROBA2 a success?



- selection
- design
- launch
- operations

Selection

AO: Instruments for PROBA2



ANNOUNCEMENT OF OPPORTUNITY: Instruments for PROBA II

Ref.: IMT-CTE/FM/ss/2002.125

Dear Sirs,

The European Space Agency (ESA) hereby invites you to submit a proposal for the above subject.

The present Announcement of Opportunity refers to the Agency's upcoming PROBA II project (see attached documentation for details): please note that the project's Specification and Mission Design Phase (Phase B) is foreseen to start in end-2002, with the Production, Qualification, Integration and Verification Phase (Phase C/D) starting in 2003.

Please find attached hereto the following document:

"Announcement of Opportunity for PROBA II", Ref. proba/3901/2002/ss, consisting of:

- The Announcement of Opportunity proper Ref. proba/3901/2002/ss;
- A technical summary of the PROBA II reference current status (Annex 1).
- A technical description of the PROBA I satellite (Annex 2).
- A technical summary of the PROBA II foreseen instrument resources allocation (Annex 3).
- The draft Instrument Mission Implementation Agreement for Instruments embarked on PROBA II (Annex 4).
- The PROBA II Instrument Notice of Intent Form (Attachment 1).
- The Announcement of Opportunity Instrument Data Sheet (Attachment 2).

Your proposal shall include:

- Detailed technical, planning and financial information, as further explained in the Announcement of Opportunity.
- A statement of acceptance of the applicable contractual terms and conditions (see Section 3.2 of the Announcement of Opportunity).
- A binding statement whereby the Proposer (with his industrial partners, if any) confirms his availability to communicate with the Agency and/or the PROBA

An ESA call in
the summer
of 2002

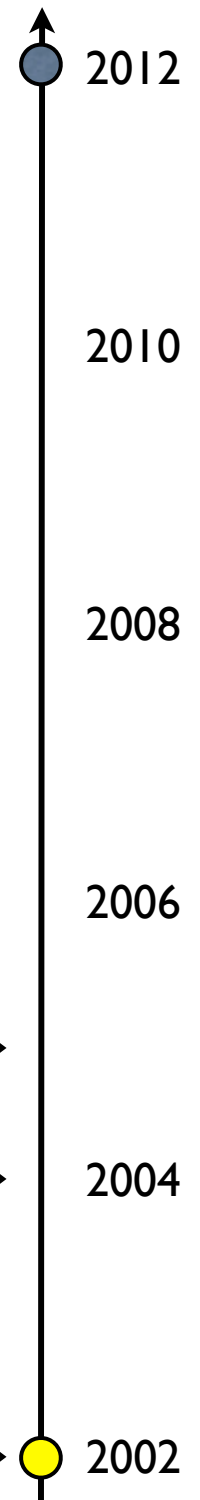
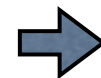
PROBA2
launch



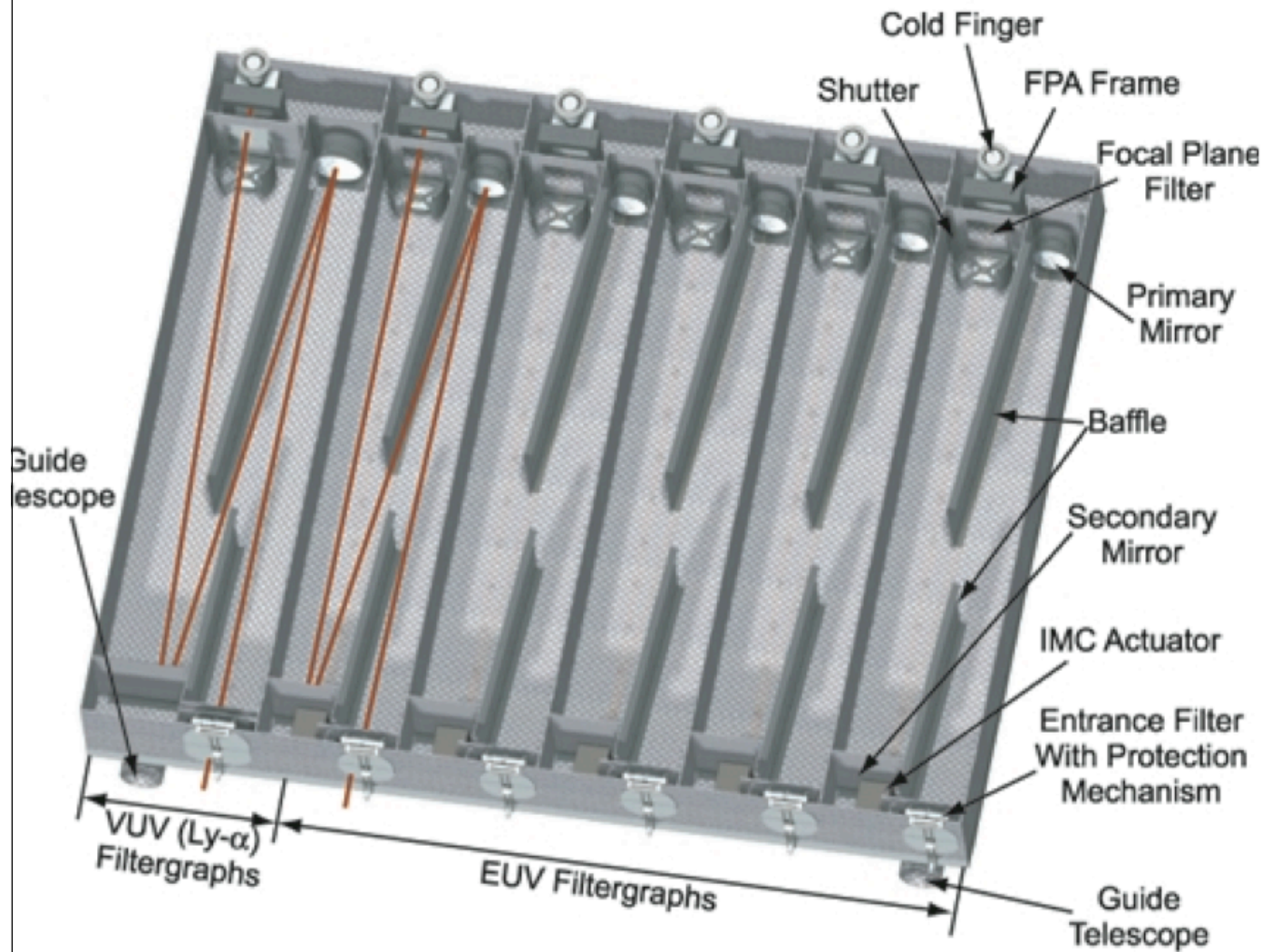
Instrument
delivery



AO



SHARPP: EUV imagers onboard SDO



SDO
launch



PROBA2
launch



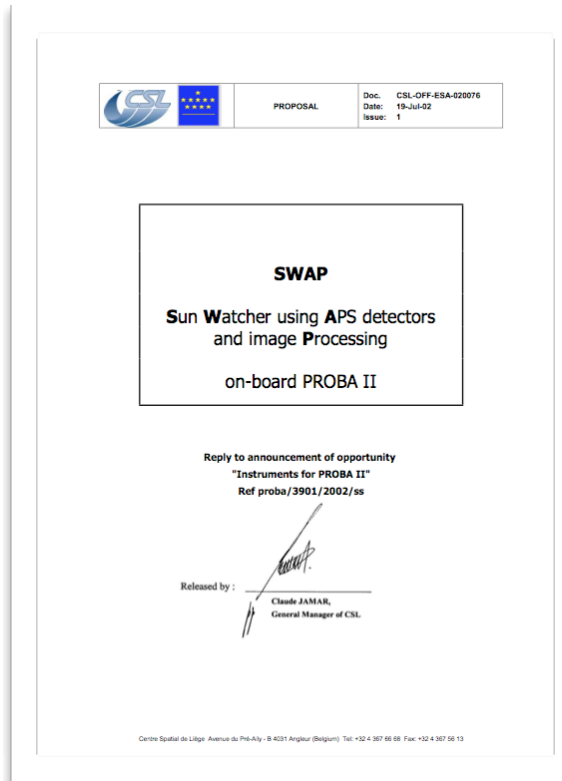
Instrument
delivery



AO

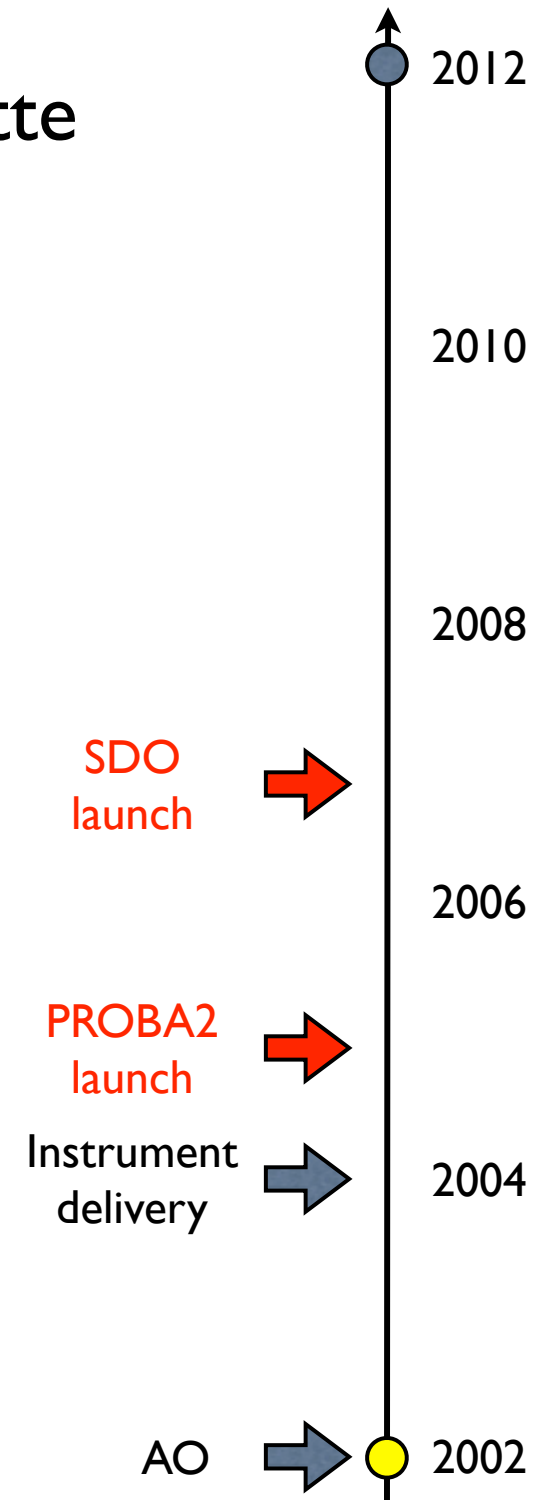


SWAP, a prototype for Magritte

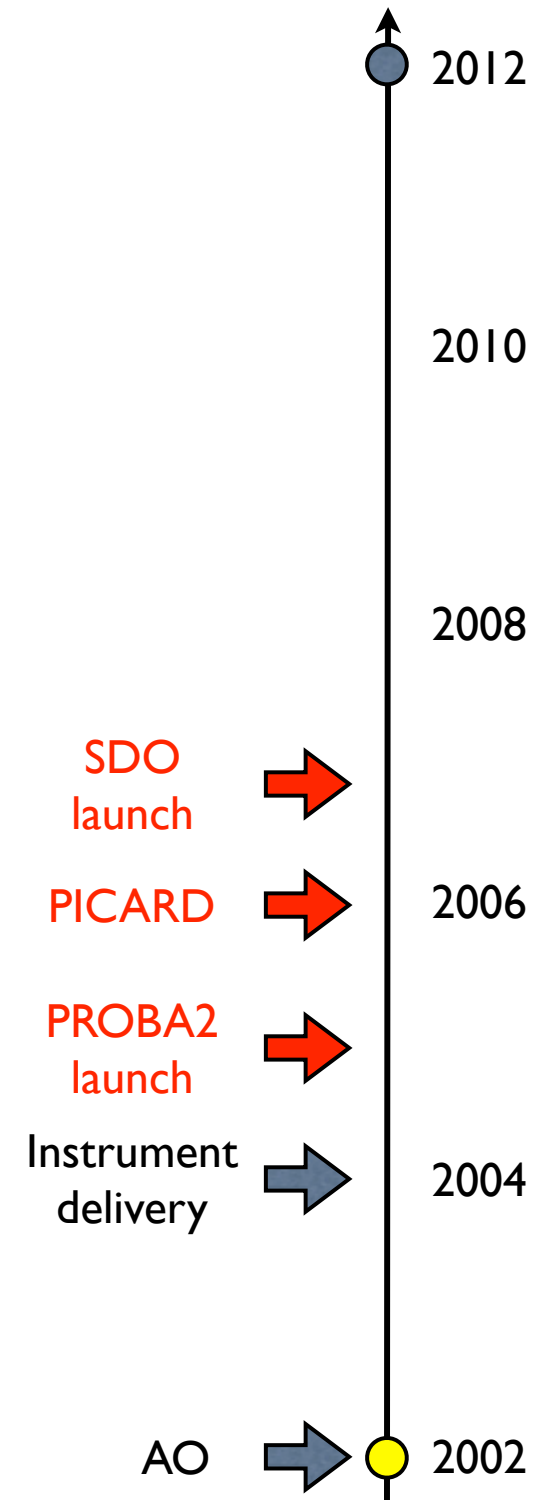
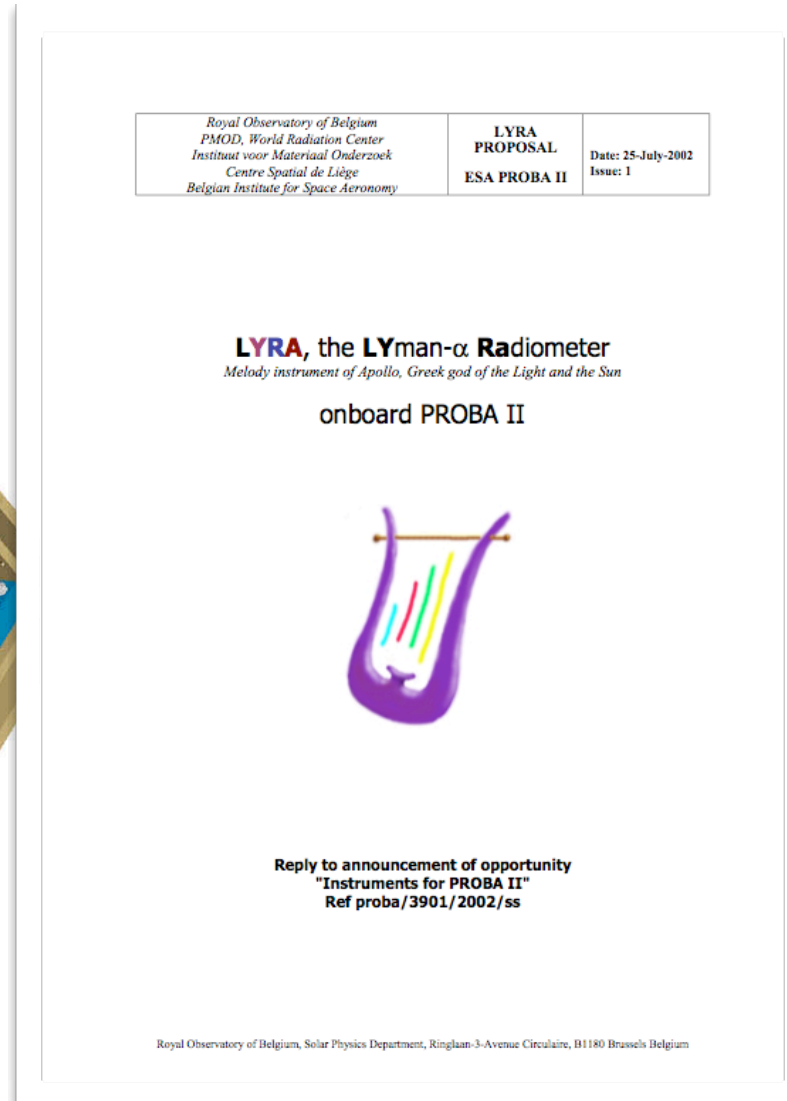
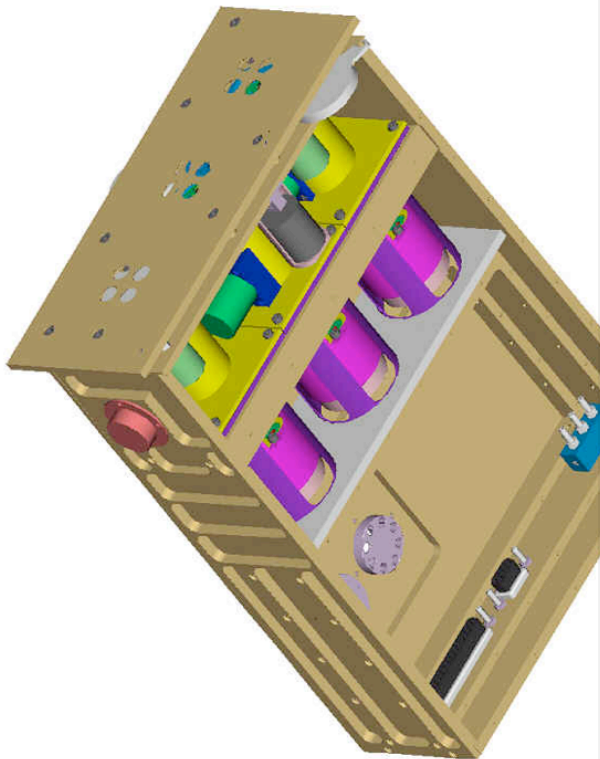


Task Name	Duration	Start	Finish	Qtr 4, 2002				Qtr 1, 2003				Qtr 2, 2003				Qtr 3, 2003				Qtr 4, 2003				Qtr 1, 2004		
				Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
SWAP phase B	80 days	16 Sep '02	03 Jan '03																							
structure & cover mechanis	220 days	06 Jan '03	07 Nov '03																							
optics and multilayers	200 days	06 Jan '03	10 Oct '03																							
filters design & procuremen	150 days	06 Jan '03	01 Aug '03																							
Detector & scintillator layer	150 days	06 Jan '03	01 Aug '03																							
FPA design & proc.	200 days	06 Jan '03	10 Oct '03																							
Assembly & optical alignme	45 days	10 Nov '03	09 Jan '04																							
Electronics & integration on	230 days	06 Jan '03	21 Nov '03																							
Functional tests	25 days	12 Jan '04	13 Feb '04																							
Acceptance/qualification	20 days	12 Jan '04	06 Feb '04																							
Calibration	40 days	09 Feb '04	02 Apr '04																							
Delivery	0 days	02 Apr '04	02 Apr '04																							

Figure 9: SWAP schedule



LYRA, a sister of PREMOS

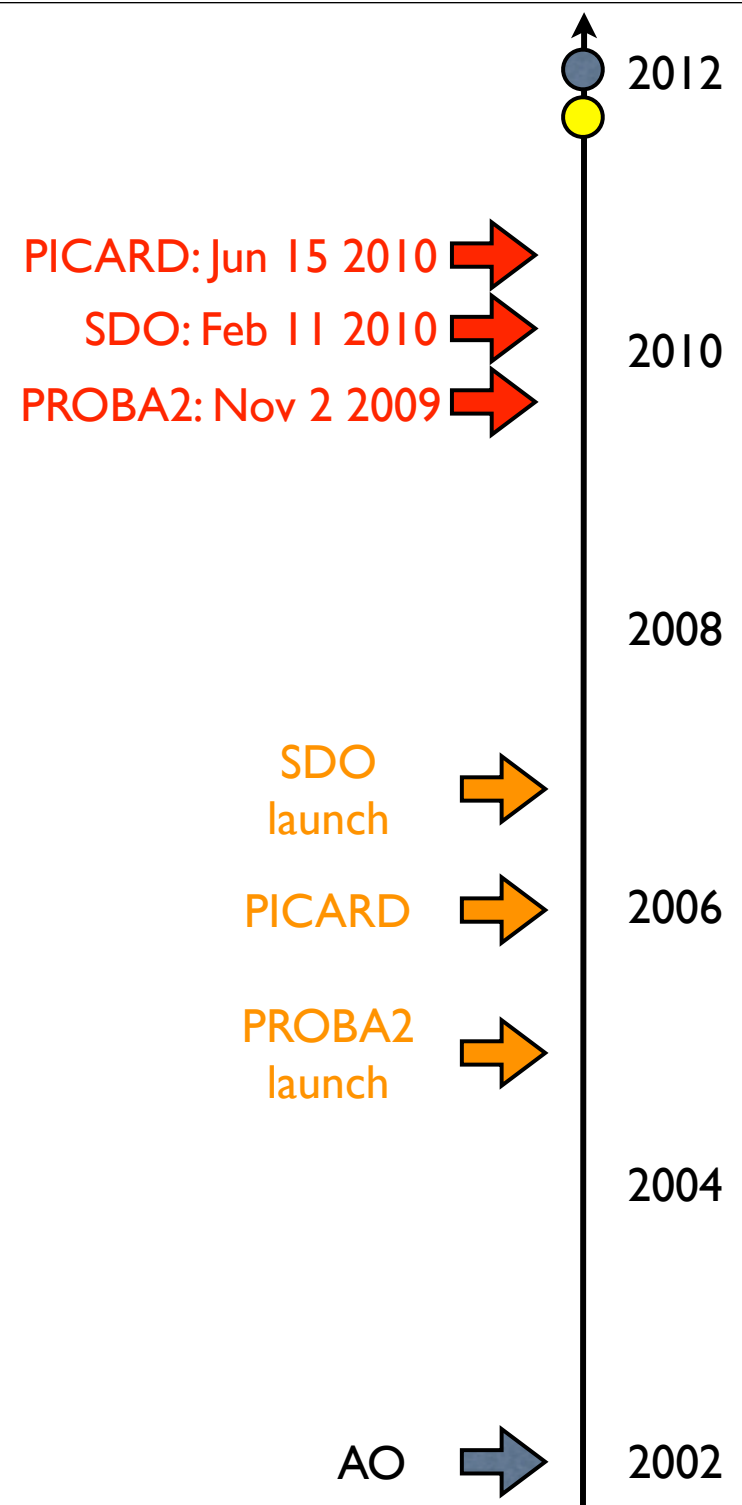


Selection success

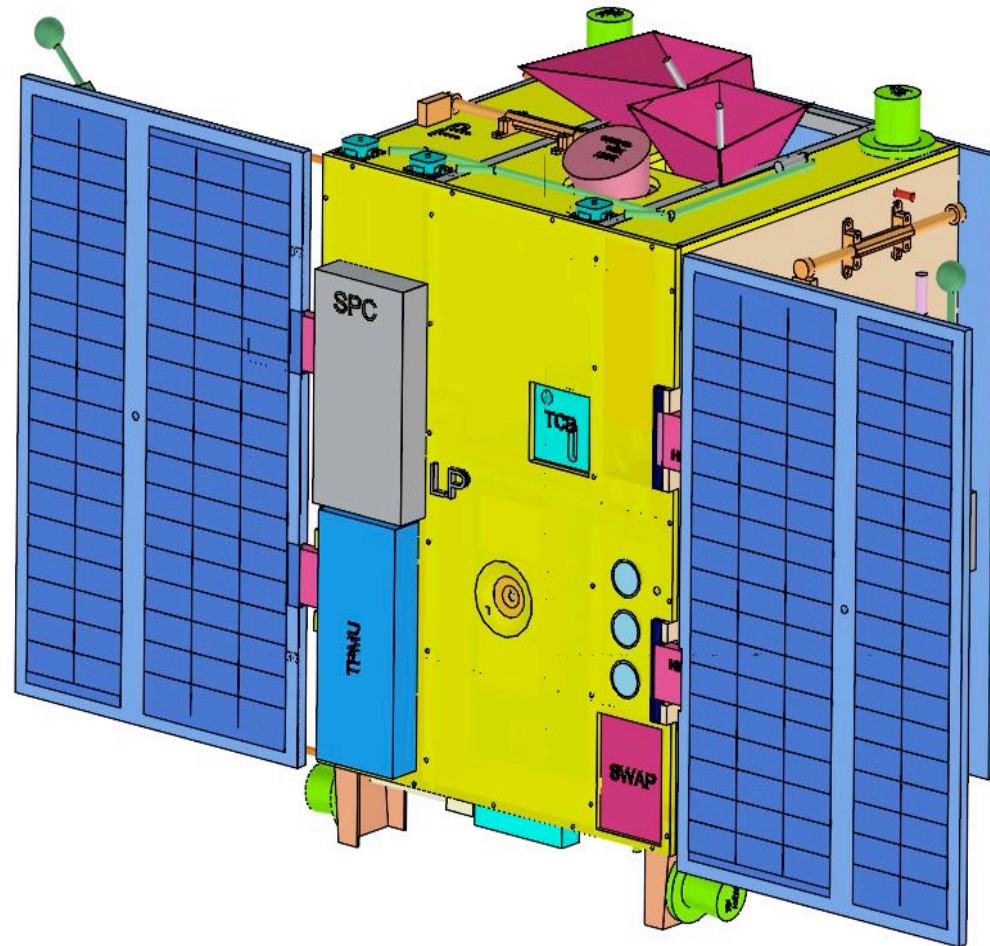
- Lazy: copy existing instrument designs
- Greedy: two solar instruments makes a mission!



Launch = 4 years
later than foreseen
Patience!



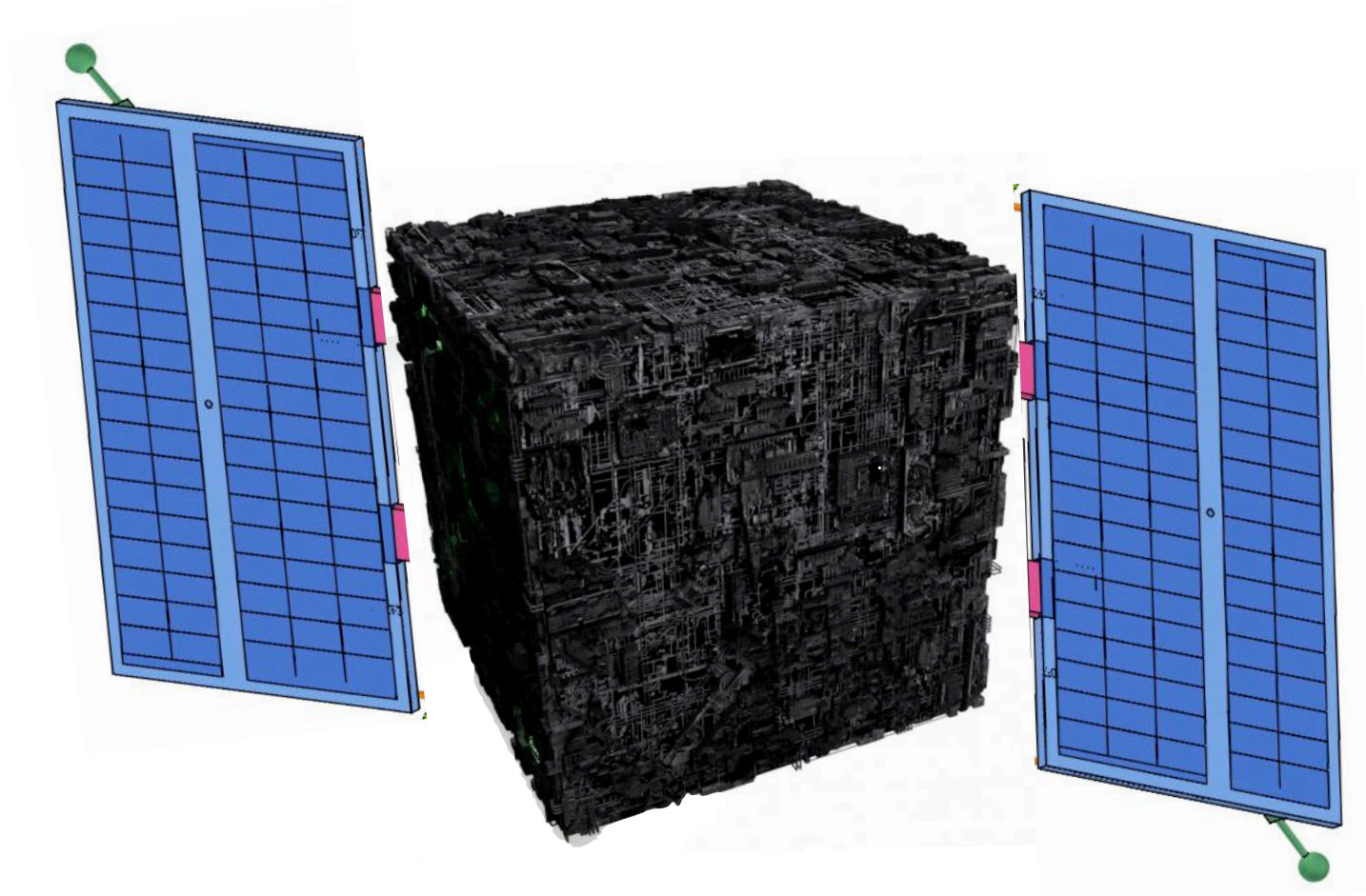
Successful design



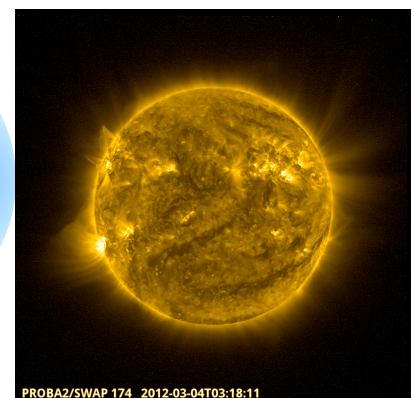
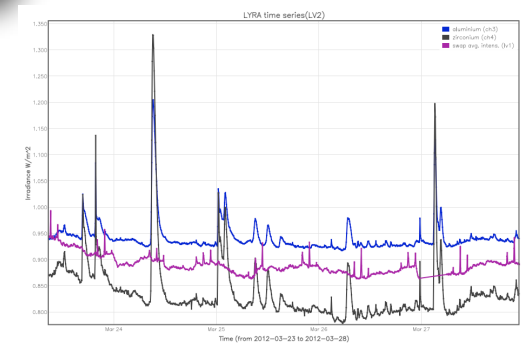
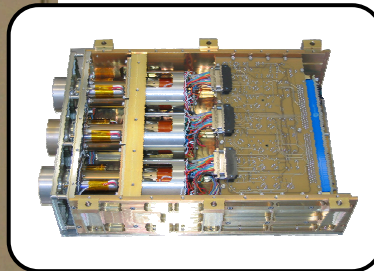
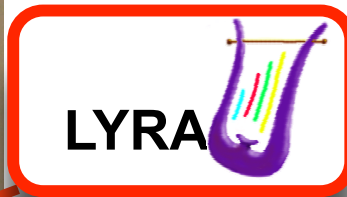
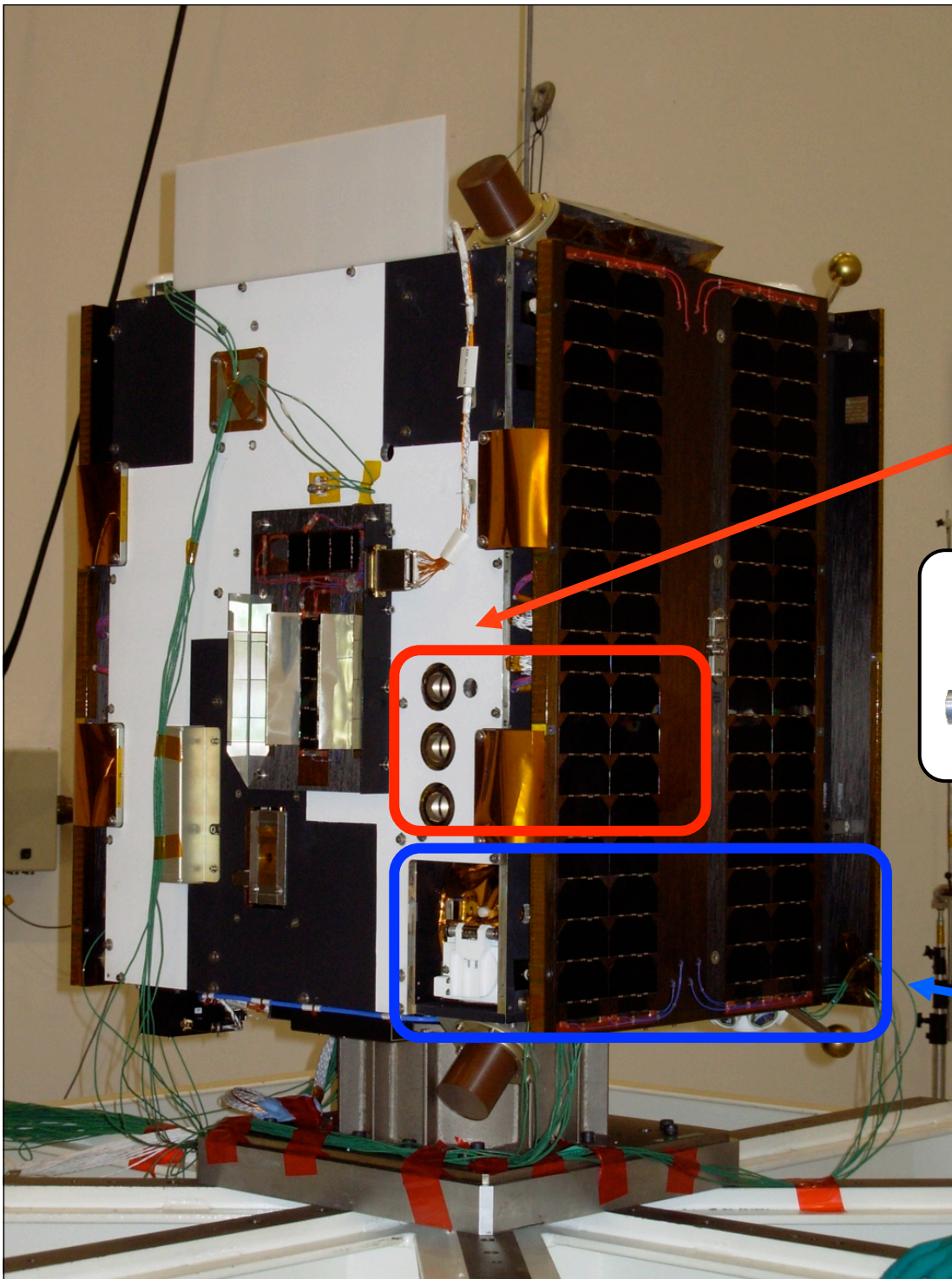


Miele

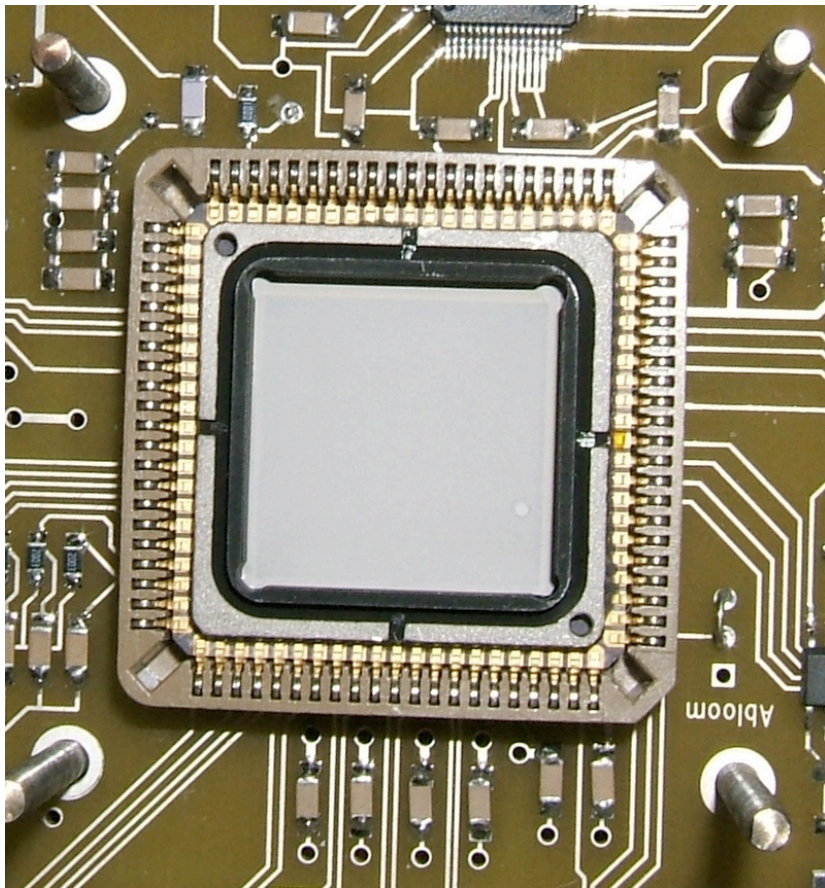
Built to last



Resistance is futile

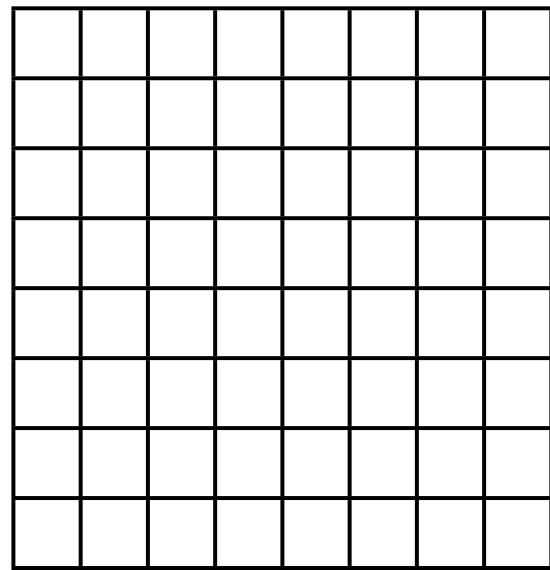


SWAP: CMOS APS detector

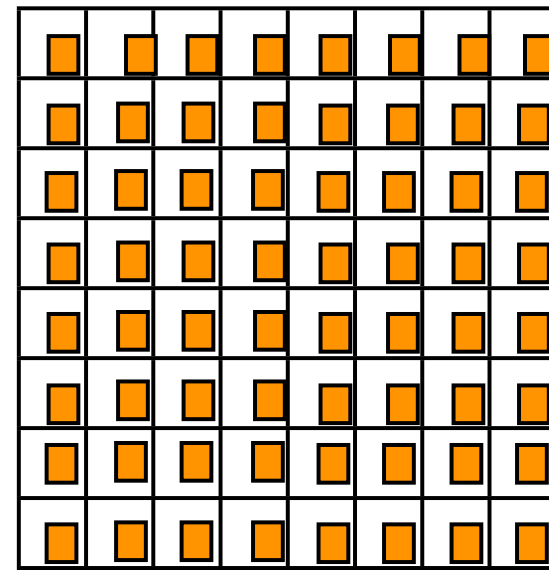


- “High Accuracy Star Tracker” by Fillfactory (B), now Cypress (US)
- 1024x1024 pixels
- low power consumption
- no charge transfer, non-destructive read-out

SWAP: CMOS APS detector

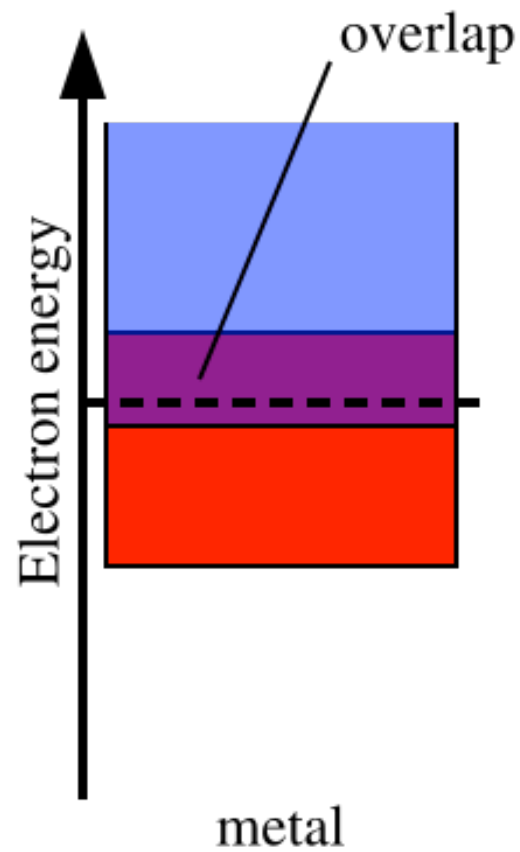


ADC

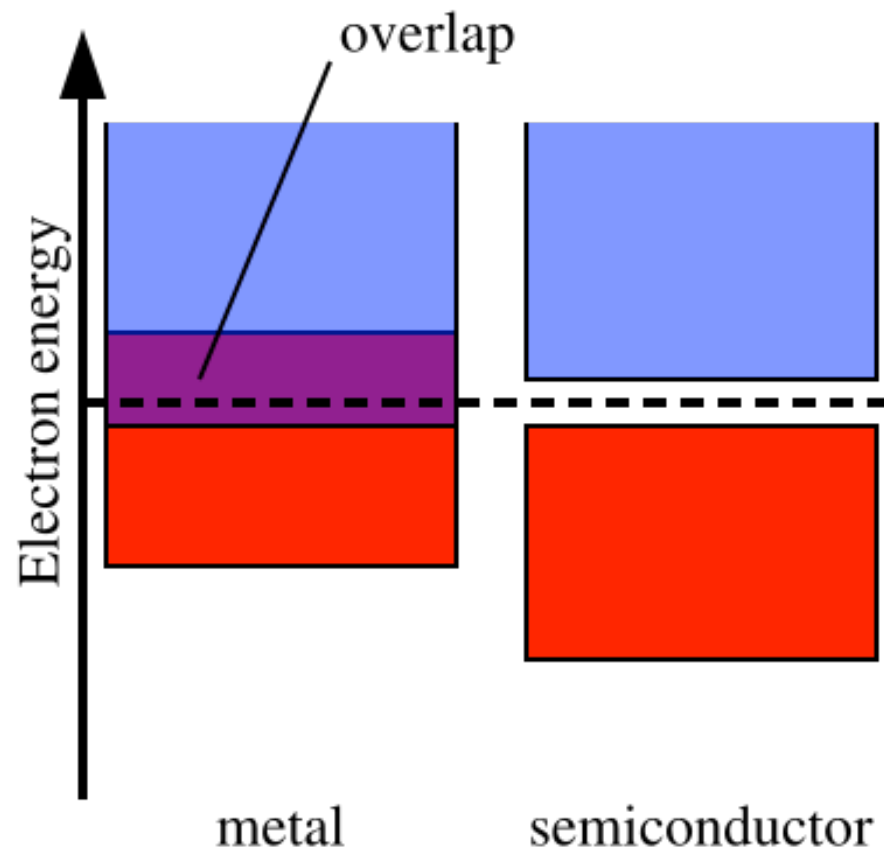


ADC

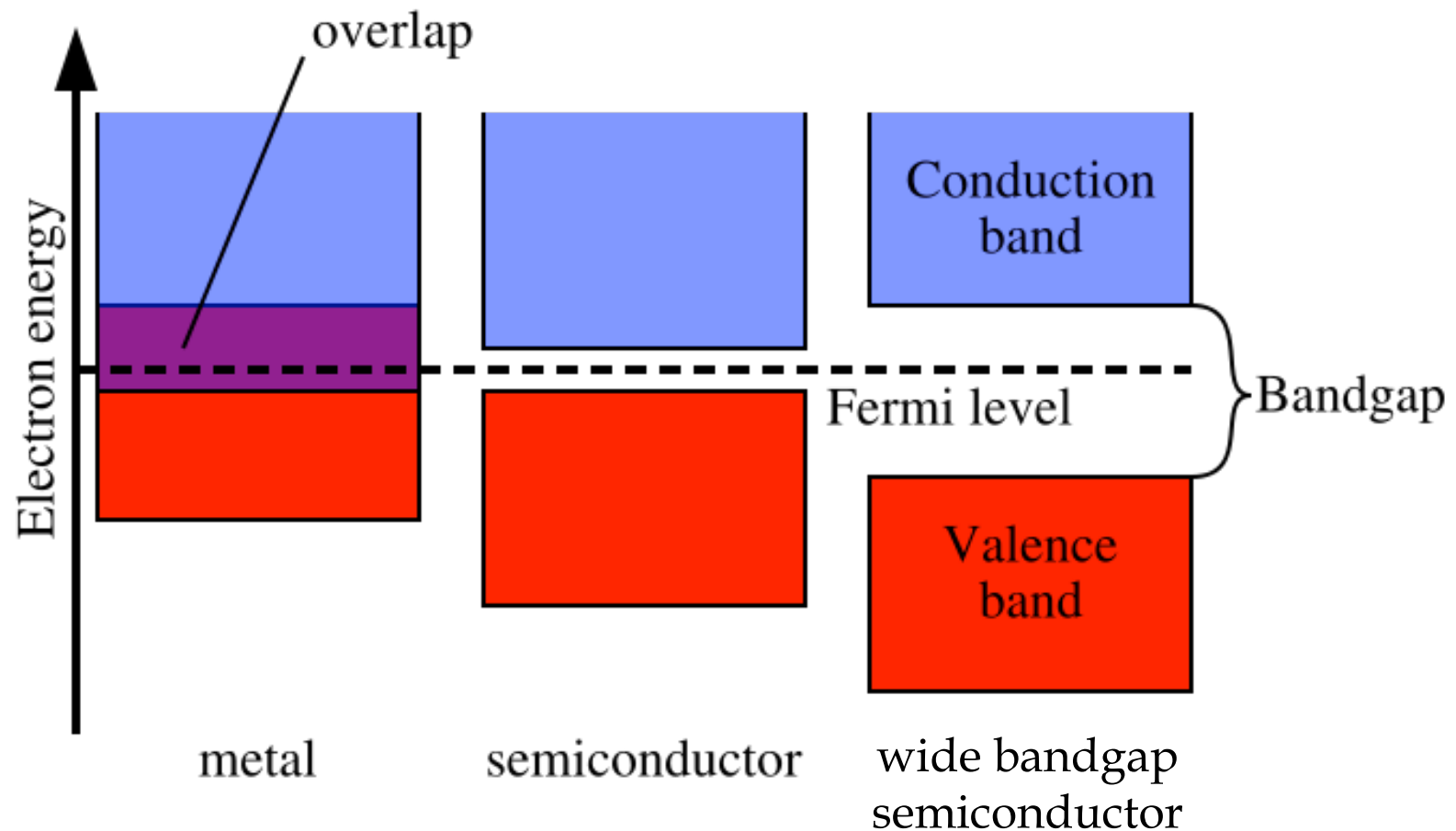
LYRA: diamond detectors



LYRA: diamond detectors

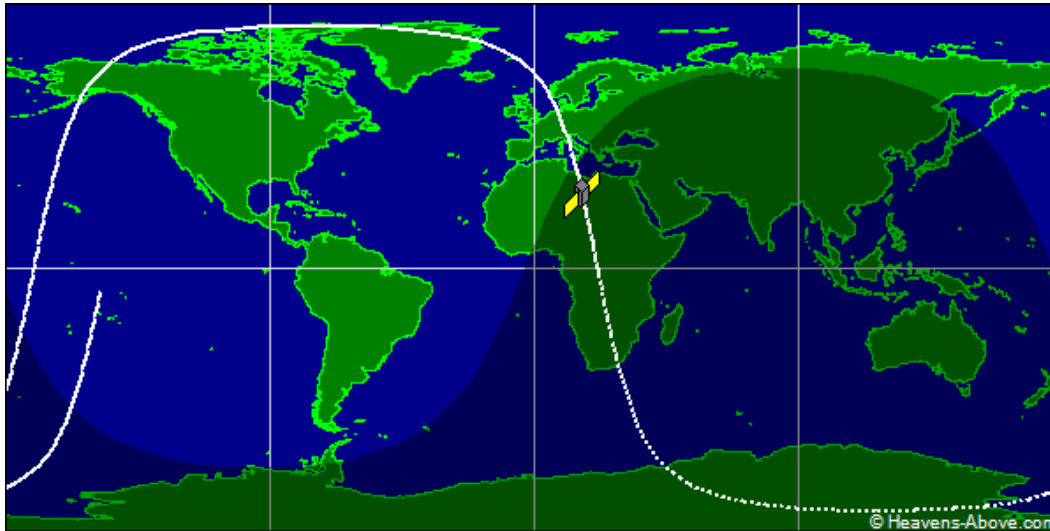


LYRA: diamond detectors



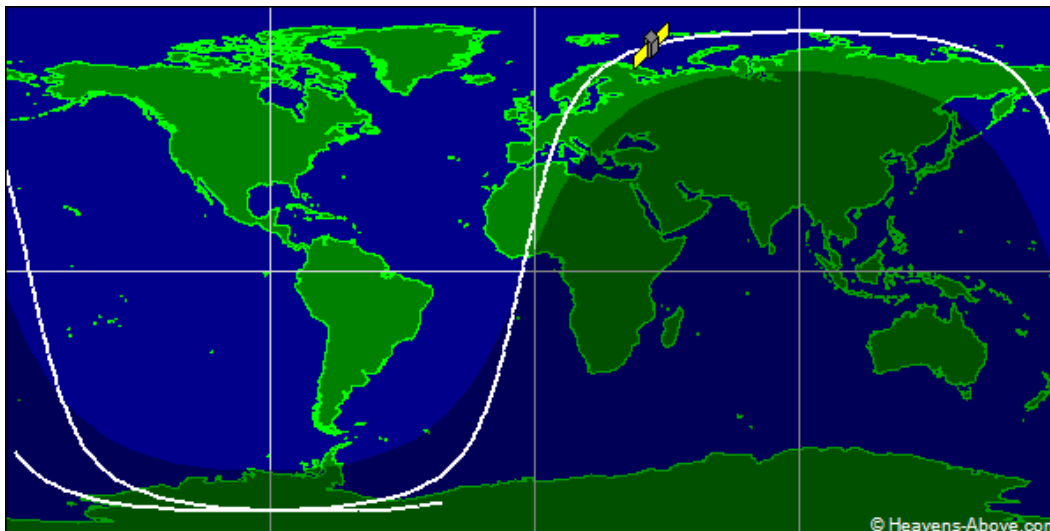
Successful launch

PROBA I: noon-midnight orbit



Earth observation:
Small shadows on Earth

PROBA2: dawn-dusk orbit



Solar observation:
'Permanent' Sun



SMOS

Soil Moisture and Ocean Salinity mission



SS-19 145/148
Operational
Russian Space
Forces

Identical
SS-19
booster
stage (1/2)



Rockot KM 5/5
Operational
Commercial LEO LV
operated by Eurockot

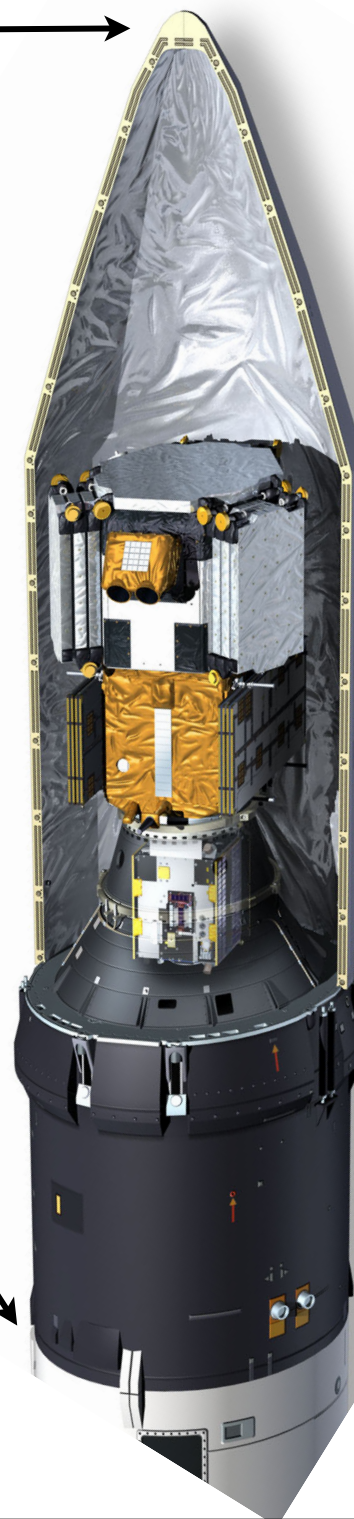


SS-19 145/148
Operational
Russian Space
Forces

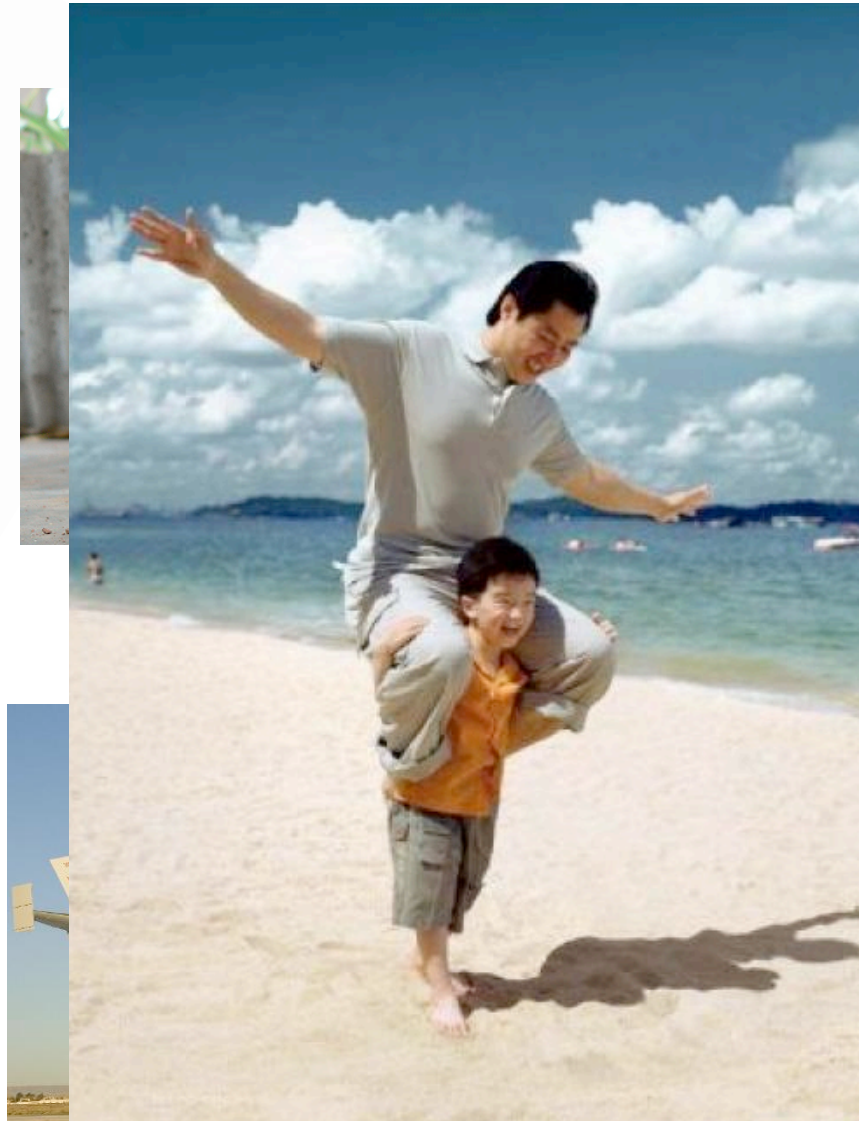
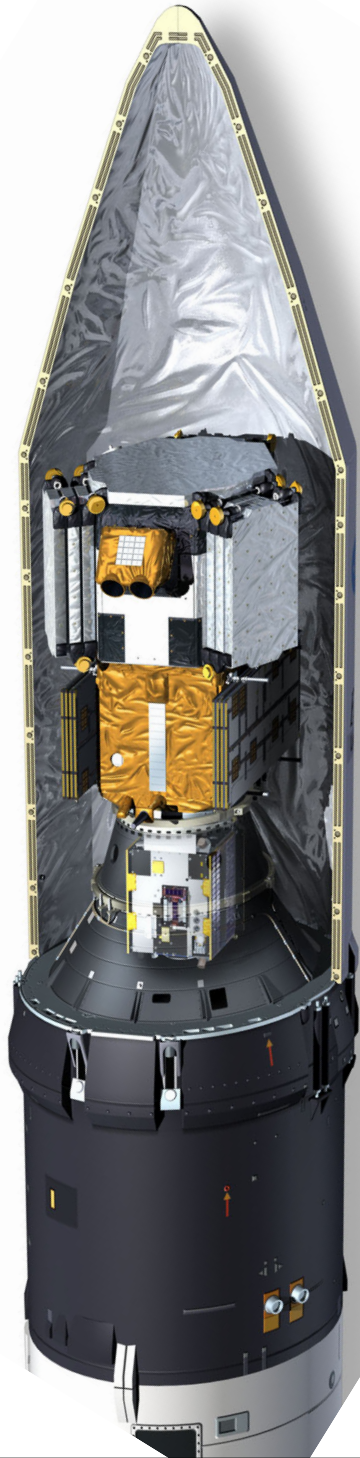
Identical
SS-19
booster
stage (1/2)

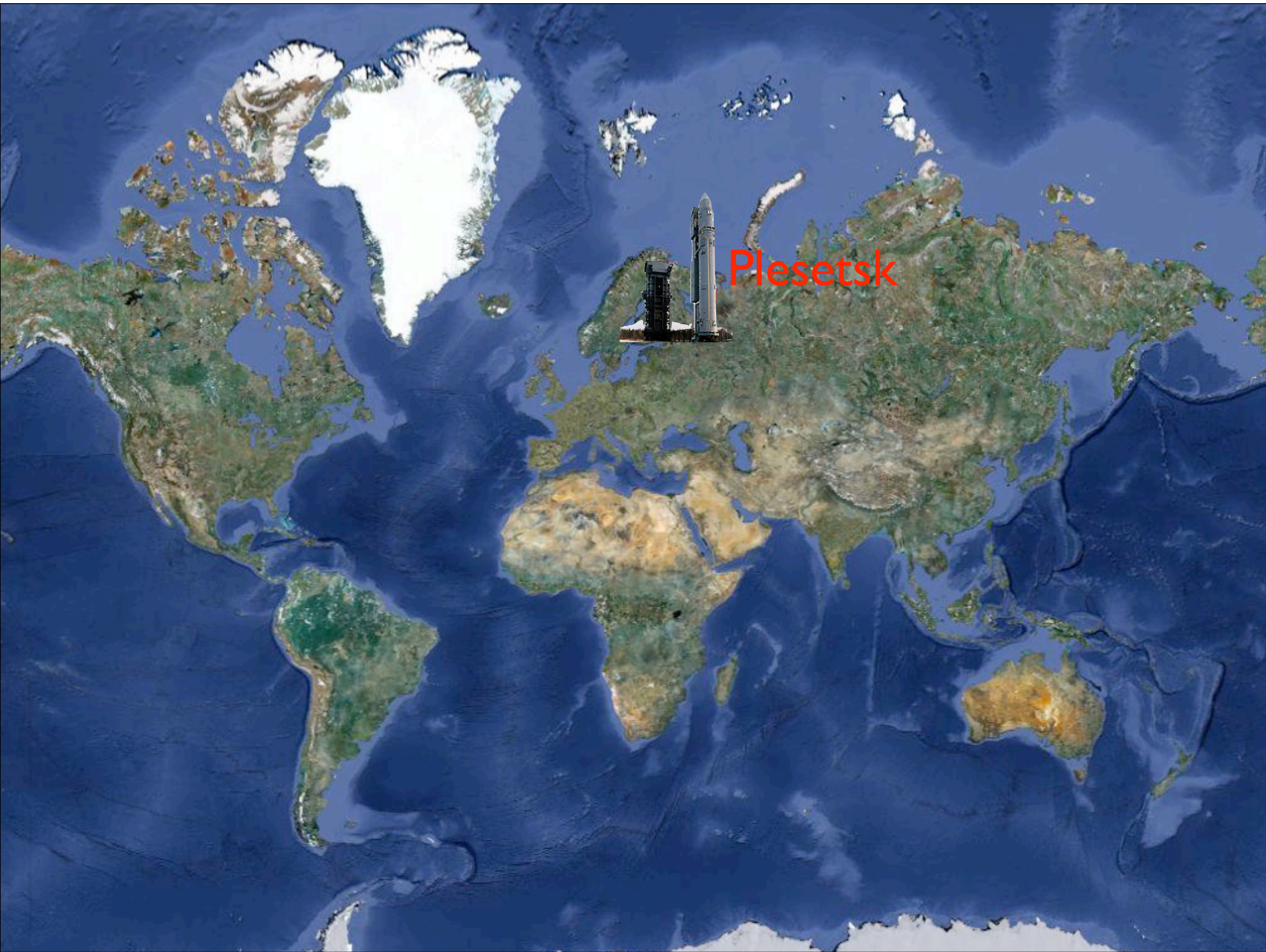


Rockot KM 5/5
Operational
Commercial LEO LV
operated by Eurockot



Piggy-backing





**Arrival in
nearby airport**



**Transport to
Plesetsk**



27 okt 2009

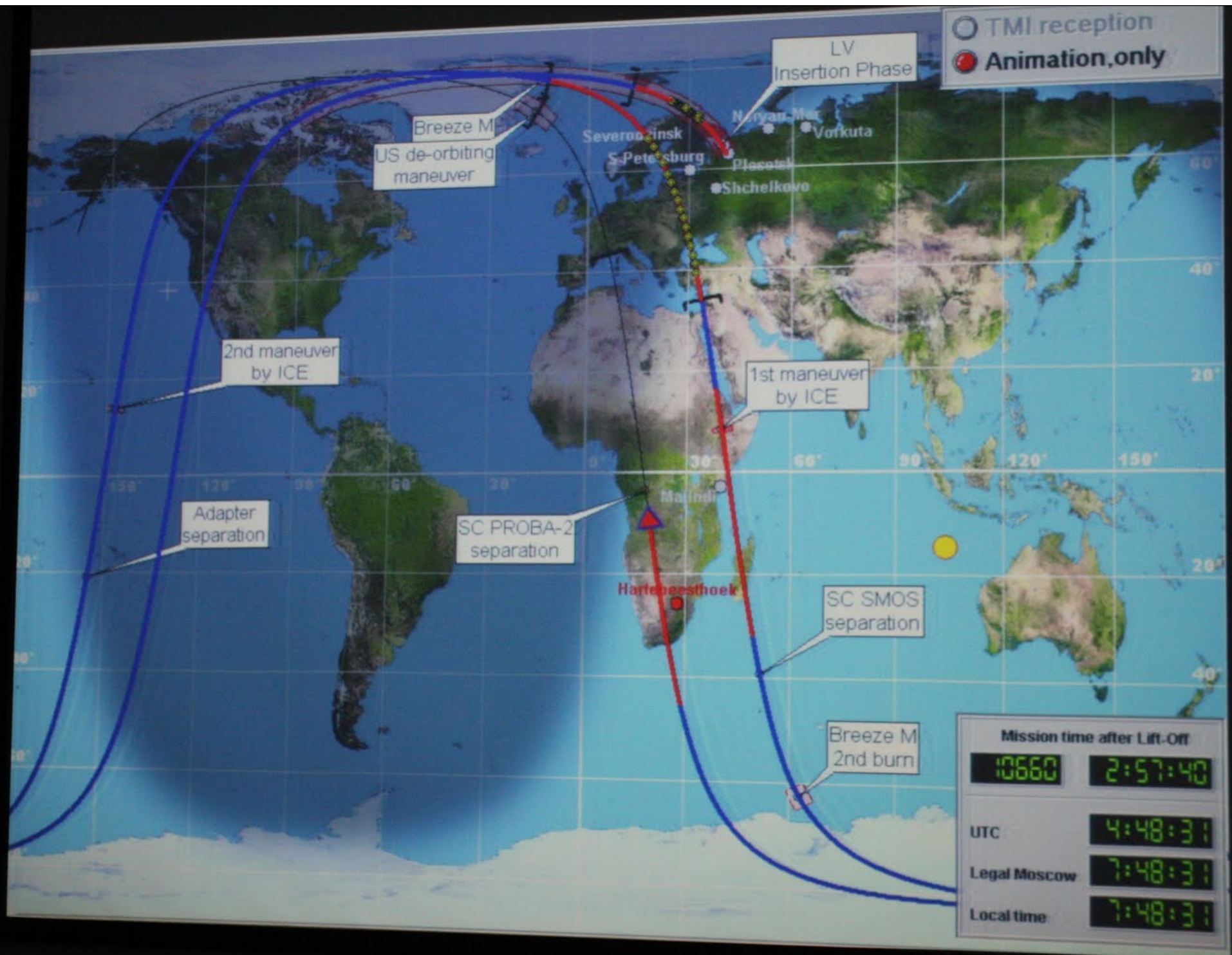


2 nov 2009











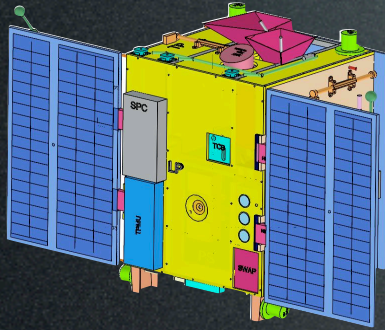
Successfull launch!

- Lobbying & patience
- Shear luck: piggy-backing on SMOS
- Cheap, no thrills: Eurockot launches
- Professionalism at Plesetsk

Successful operations



Proba2 science center (PB2SC)



telemetry



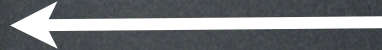
science products



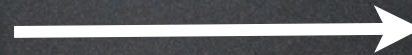
Redu



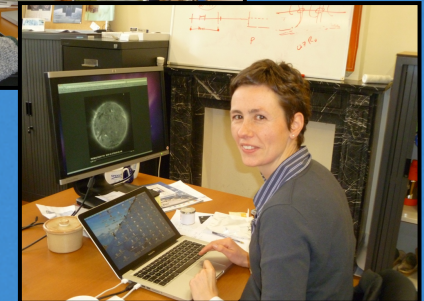
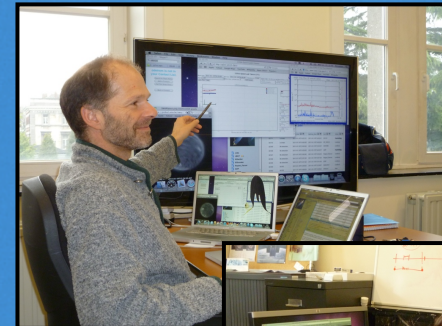
commanding



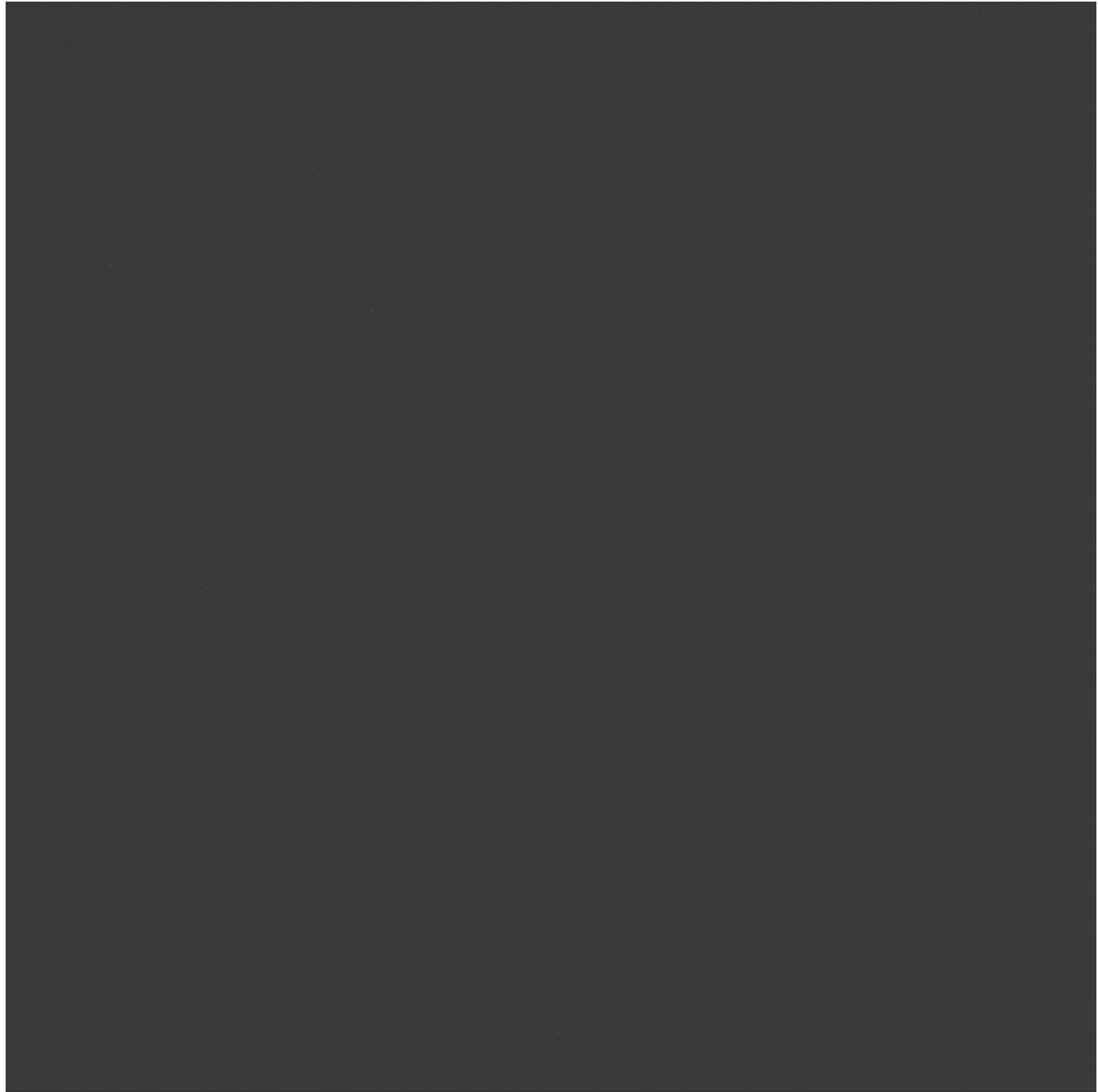
data



P2SC



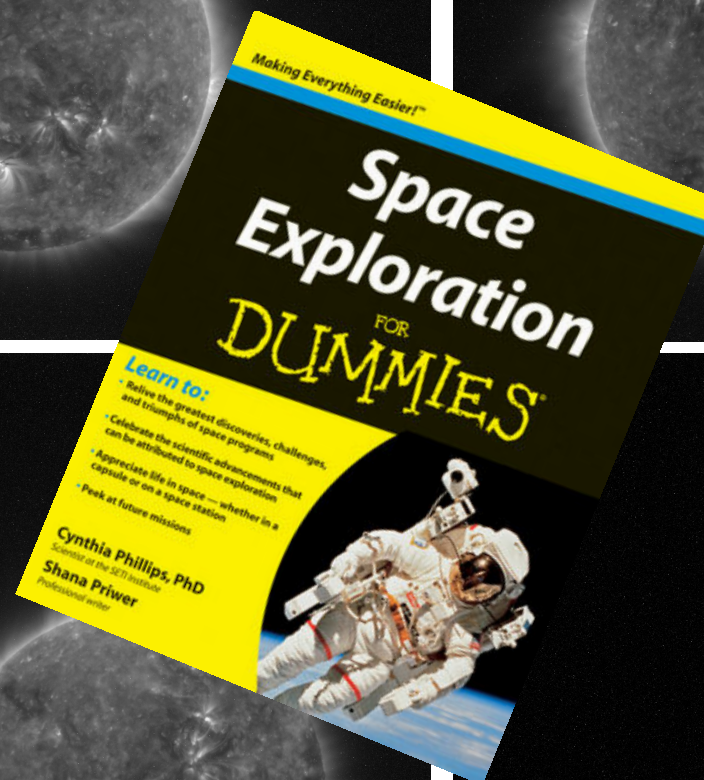
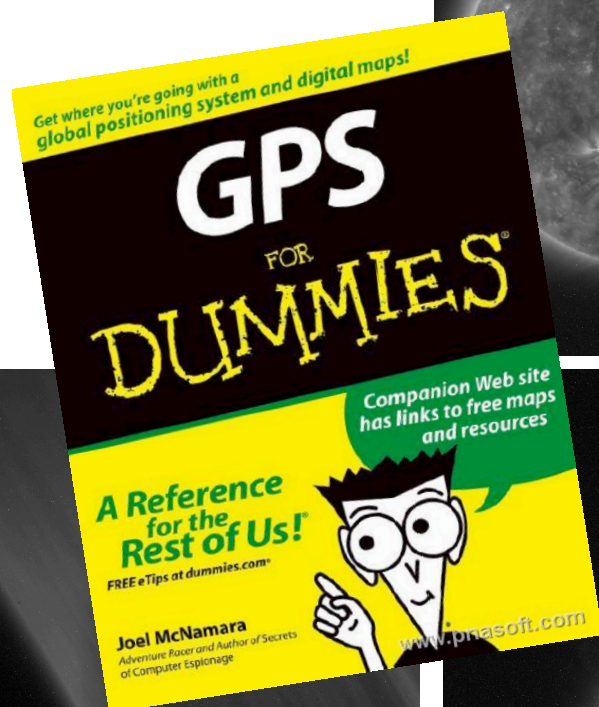
20 nov 2009, to+18d



14 dec 2009, to+42d



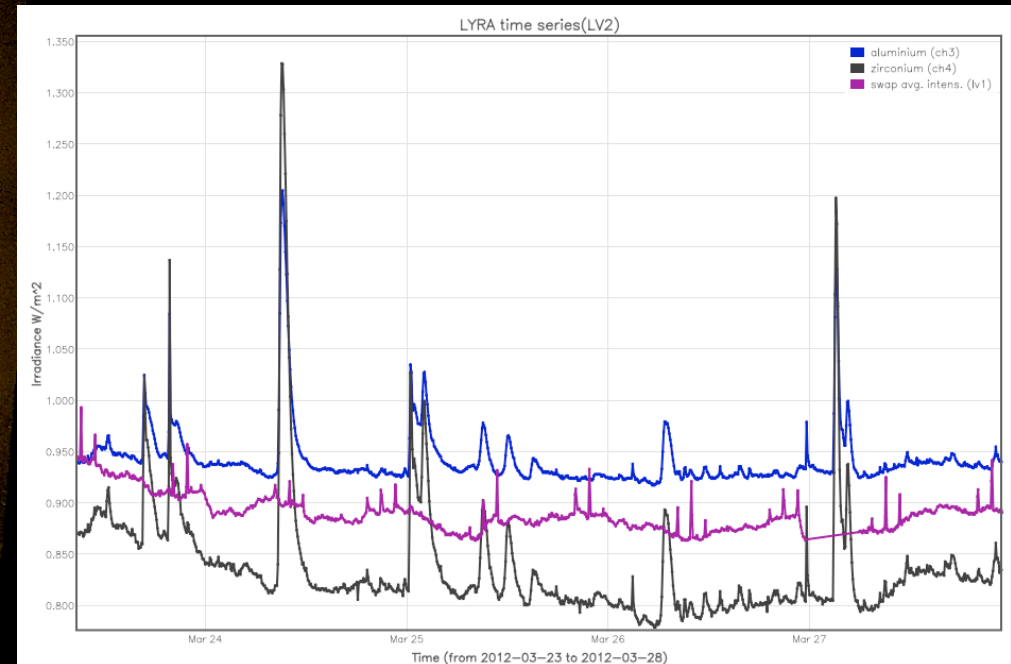
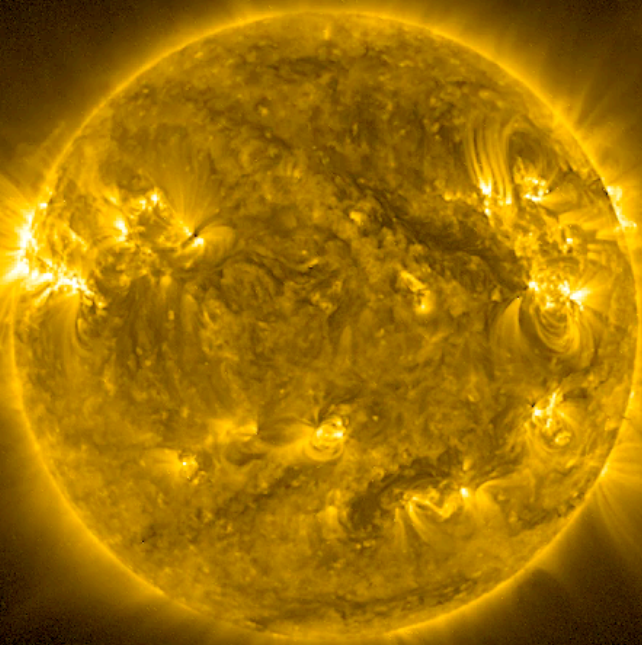
eind dec 2009



PROBA2 2.5 years

>560 000 EUV images

>320 Gbyte UV timelines



ESA Science & Technology: Proposals invited for the PROBA-2 Guest Investigator Programme

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esa Science & Technology Science Programme European Space Agency

SOLAR SYSTEM ASTROPHYSICS FUNDAMENTAL PHYSICS ADVANCED STUDIES & PAYLOADS MISSIONS

PROBA-2

30-May-2012 18:56:42 UT

Proposals invited for the PROBA-2 Guest Investigator Programme

01 May 2012

The Royal Observatory of Belgium is soliciting proposals for analysis of data from PROBA-2's two solar observation instruments, SWAP and LYRA, under its Guest Investigator Programme. Proposals in response to this Third Call for Ideas are due by 15 June 2012.

(Note that the deadline for receipt of proposals has been extended to 15 June 2012.)

The PROBA-2 Guest Investigator Programme is designed to share detailed knowledge of the SWAP and LYRA instruments - their calibration, handling and operations - with scientists outside the core Principal Investigator (PI) teams.

The selected proposers will be invited to visit the PROBA-2 Science Center and to spend time with the SWAP and/or LYRA teams. They will develop expertise with the instruments and participate in routine operation of the instruments to set up a dedicated observation campaign in accordance with the needs of their proposal.

The visits shall be scheduled between September 2012 and June 2013. Each Guest Investigator will be expected to write a report on the activities performed. The primary goal for every selected proposer is a publication in a peer-reviewed journal arising from their research carried out under this programme.

Proposals from senior researchers are welcome, and early-stage postdoctoral and PhD students are particularly encouraged to apply.

Proposals should be submitted in pdf format by email to swap_lyra@oma.be

Submission deadline: 15 June 2012

Mission Home

- Summary
- Fact Sheet
- Mission Team

Spacecraft

- Science Payload
- Technology Demonstrations

Science Operations

- Operations and Planning
- Science Centre

Services

- Publications
- Conferences
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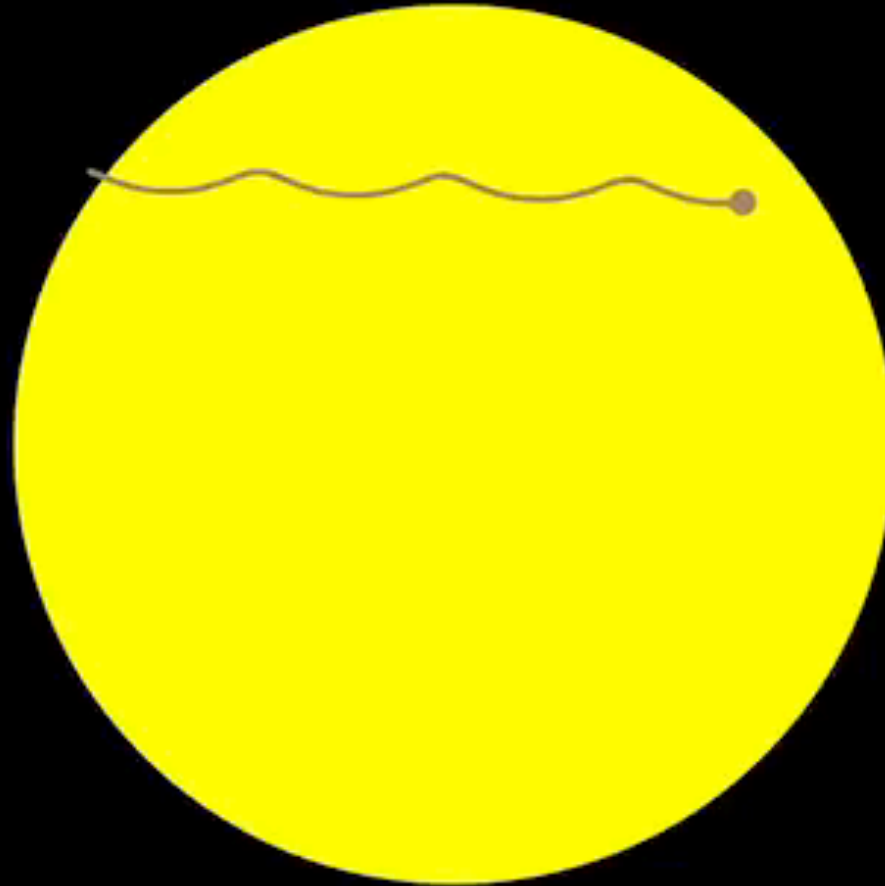
RELATED LINKS

- PROBA-2 Third Call for Ideas
- PROBA-2 Science Center
- PROBA-2 guest investigator programme

10s

Venus transit

1000.0km



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