The ASI contribution to Space Science

Enrico Flamini
ASI Chief Scientist
The Second LARES Science Workshop

ASI has been created in 1988 merging two experiences: CNR-SAS and S. Marco program. Both organization basically devoted to research in space.

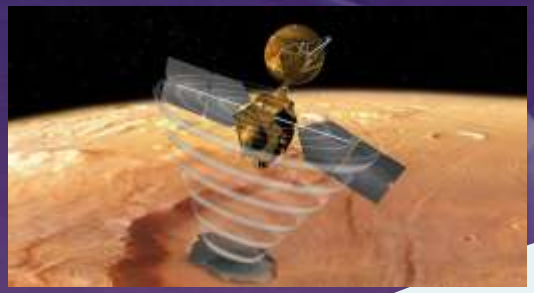
This heritage has been maintained although the programs devoted to the applications in space have gradually increased, playing today an important role.

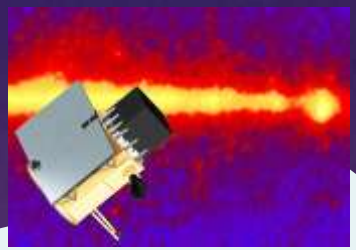
The science programs in ASI follows 3 major branches :

High Energy Astrophisics and Astroparticles
Cosmology and Fundamental Physics
Exploration of the Solar System

Currently ASI has programs either within the mainframe of ESA, either in bilateral cooperation (NASA/RSA/JAXA) or at national level.

Some major steps in ASI science program



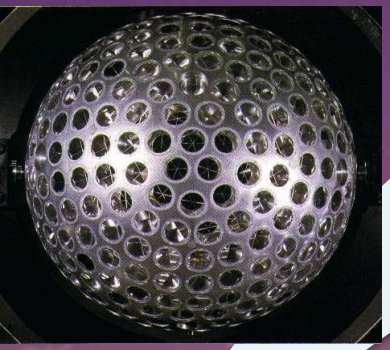


2007 Agile

2005 MRO

1997 Cassini-Huygens

1996 SAX



1992 Lageos2

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Some major steps in ASI science program

2007
Dawn

2009
Herschel
Planck

2011
Juno
AMS
NuSTAR

2012
Lares on Vega

2015 Bepicolombo

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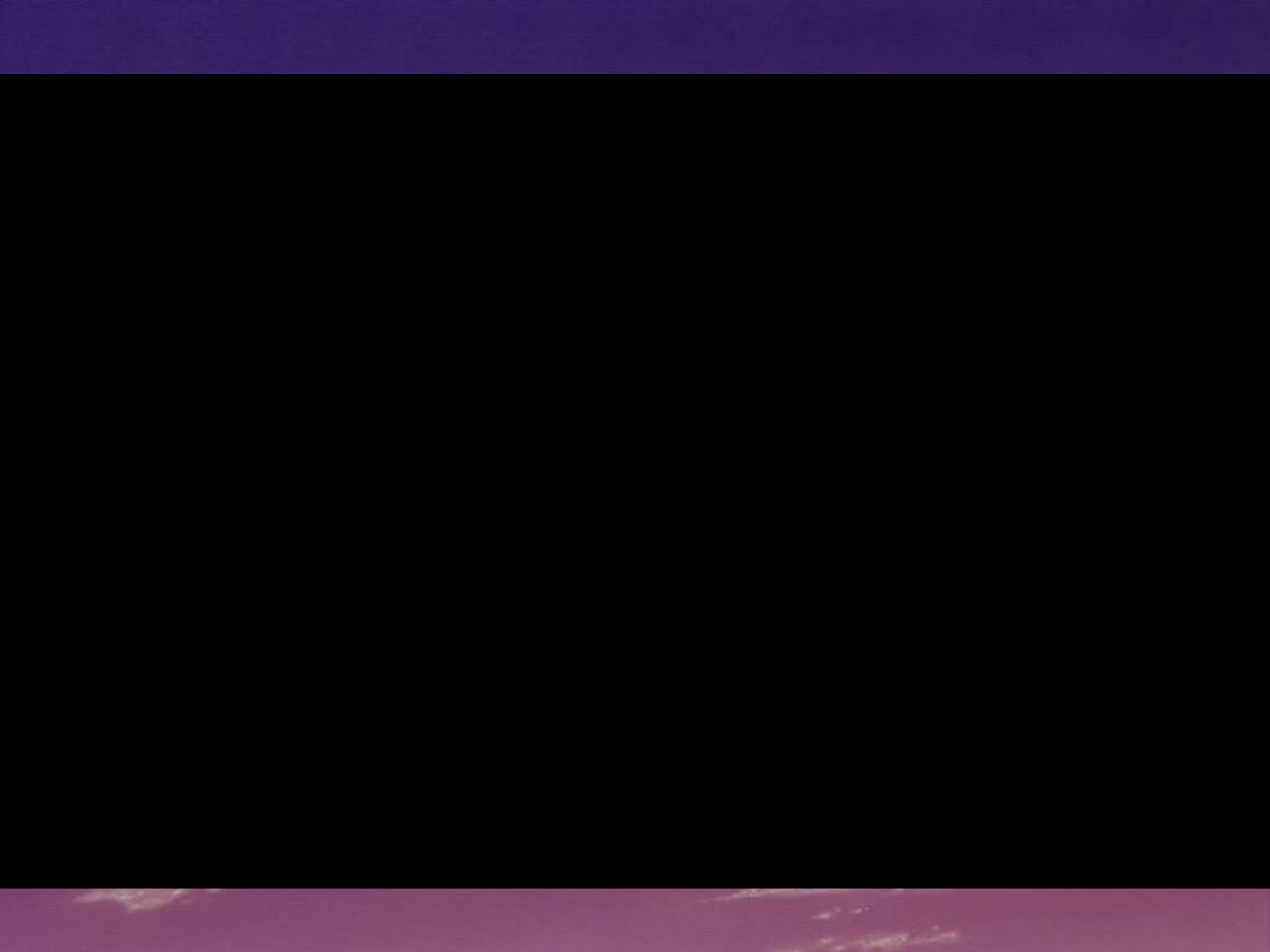
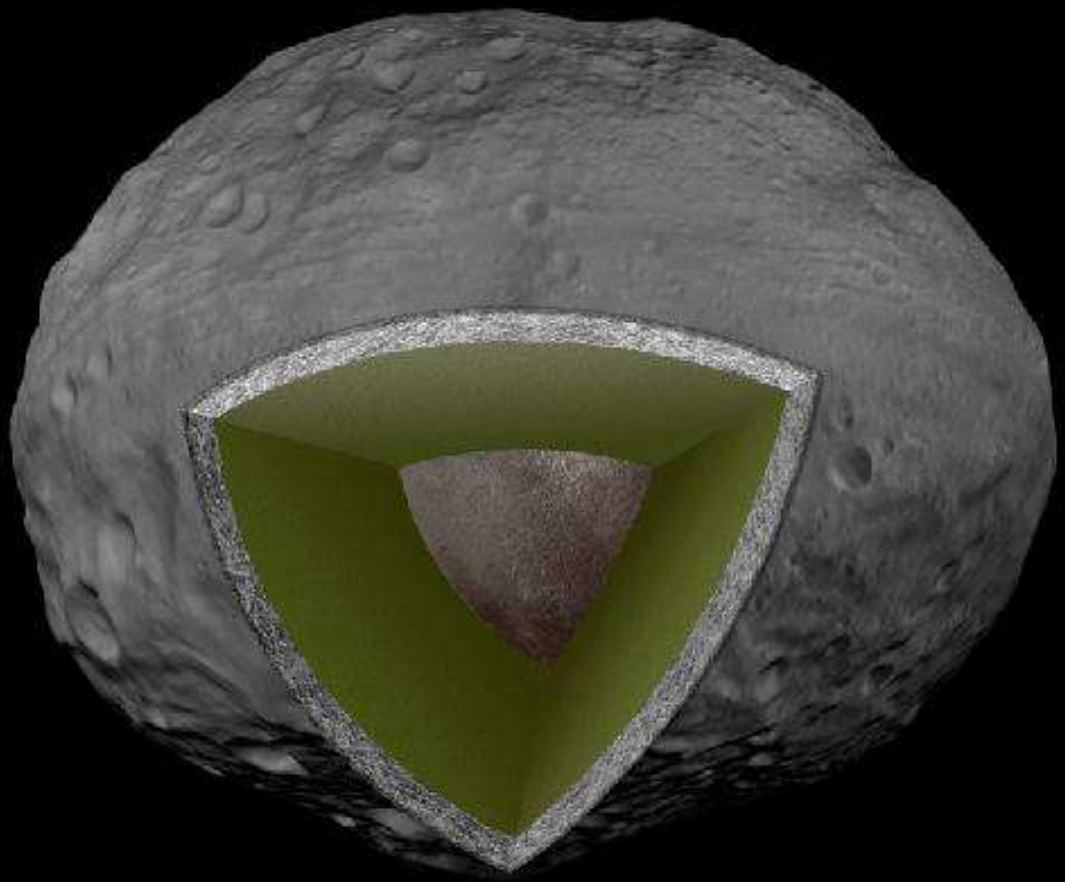
SHARAD on MRO

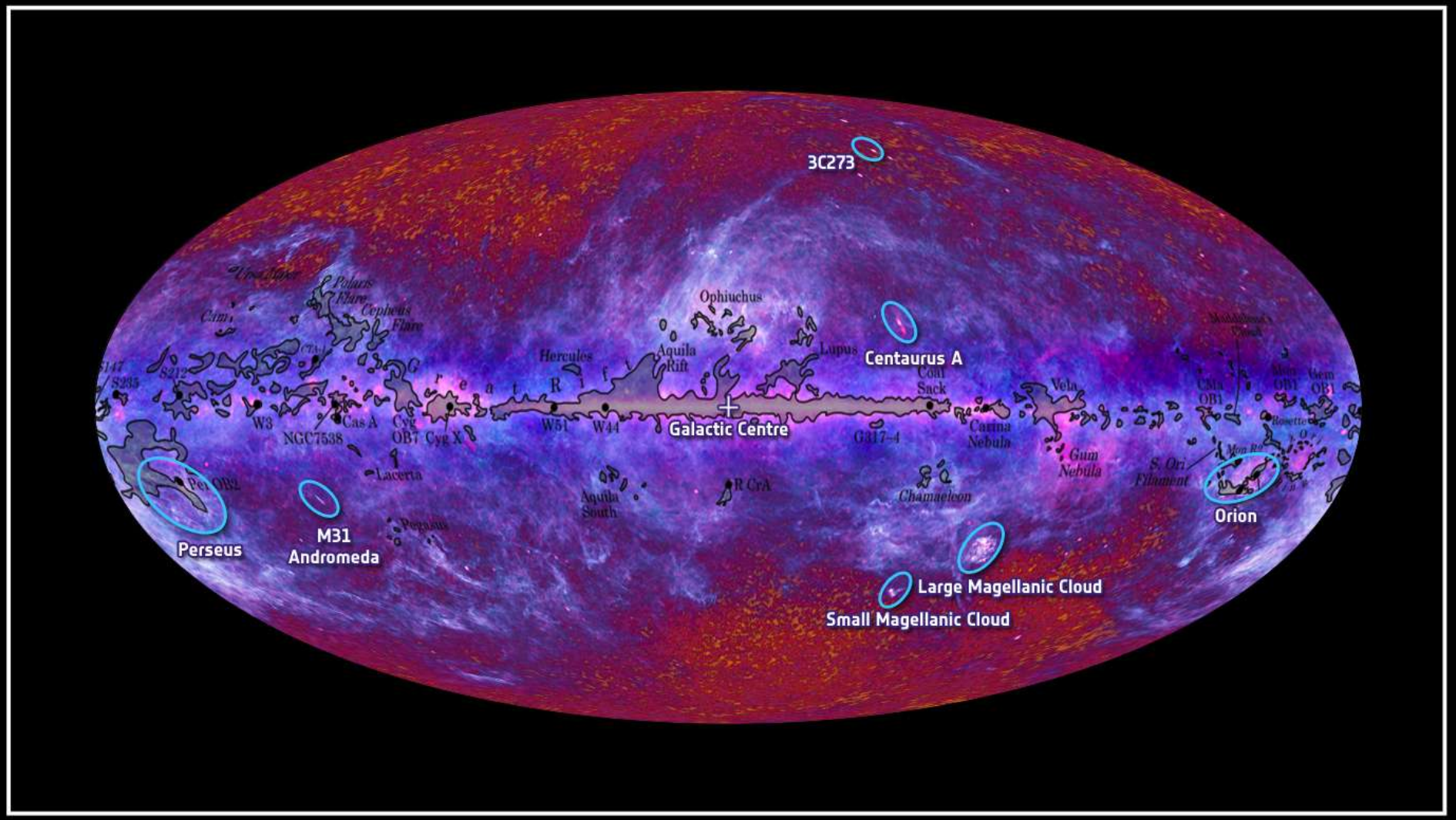


July 2011 : Dawn at Vesta

August 2012 : Dawn leaving Vesta

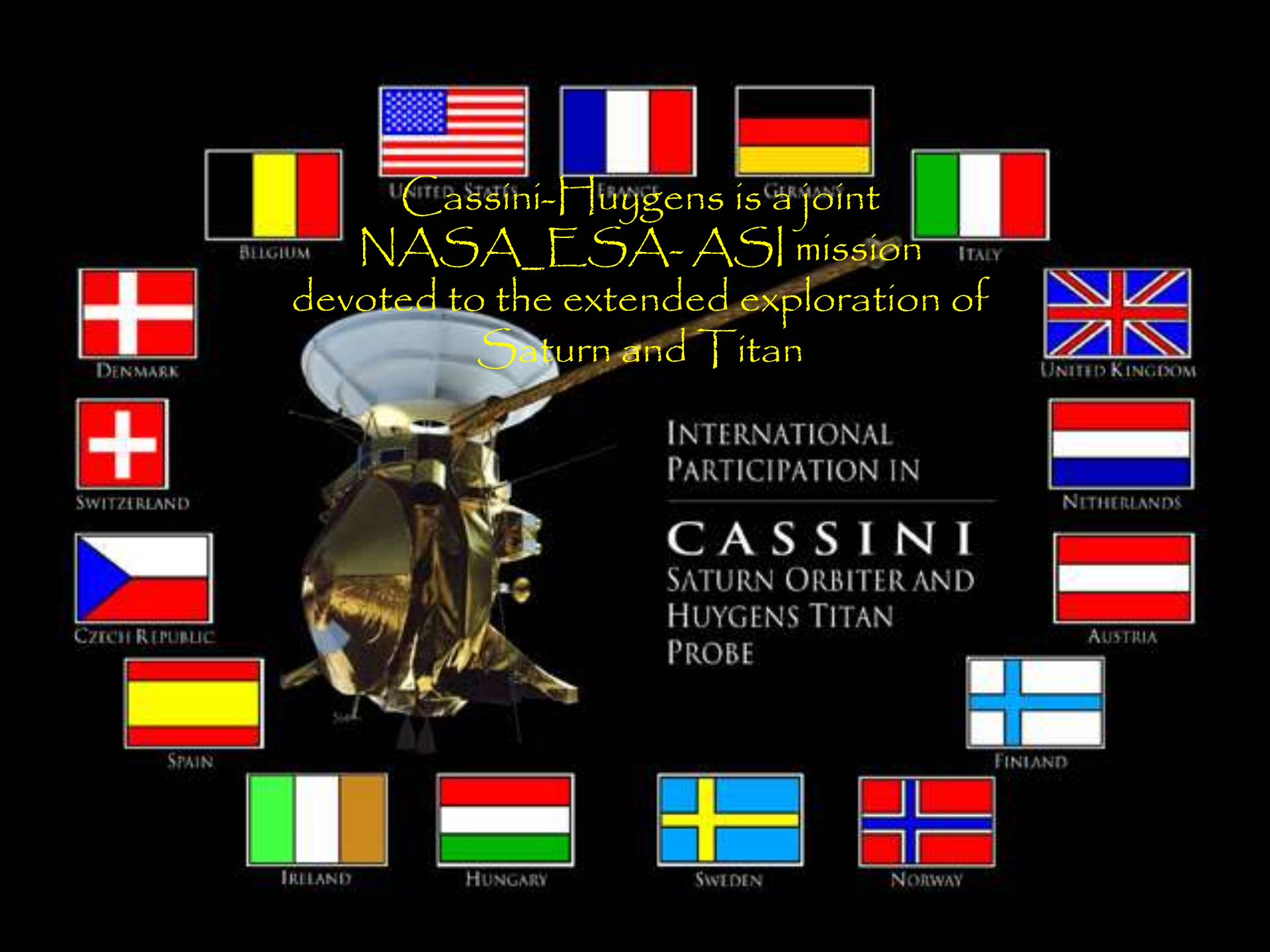


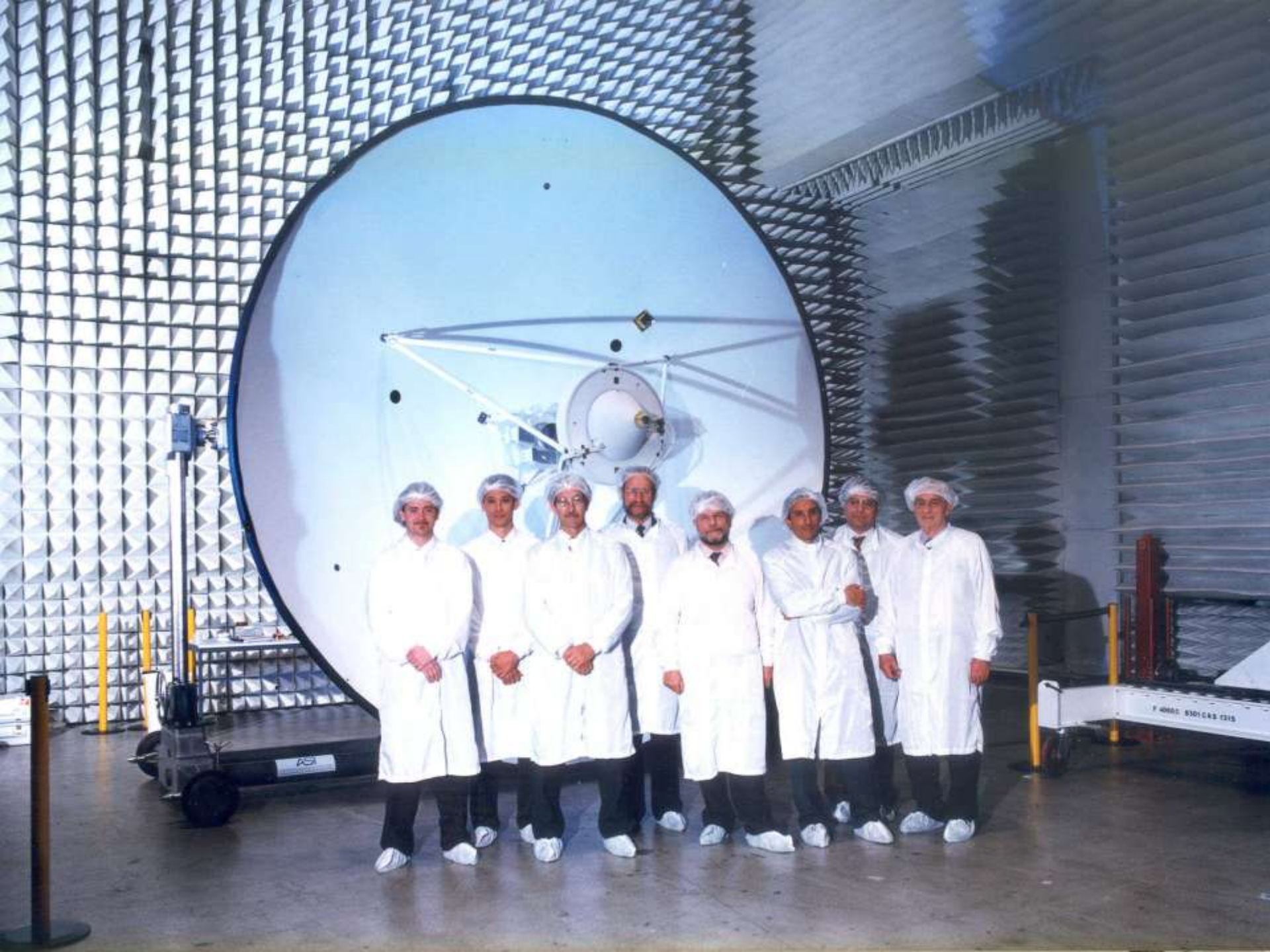

2009 Launch of
Herschel & Planck
©2009 ESA-CNES-ARIANESPACE / Optique Vidéo du CSG - S. MARTIN



The Planck one-year all-sky survey

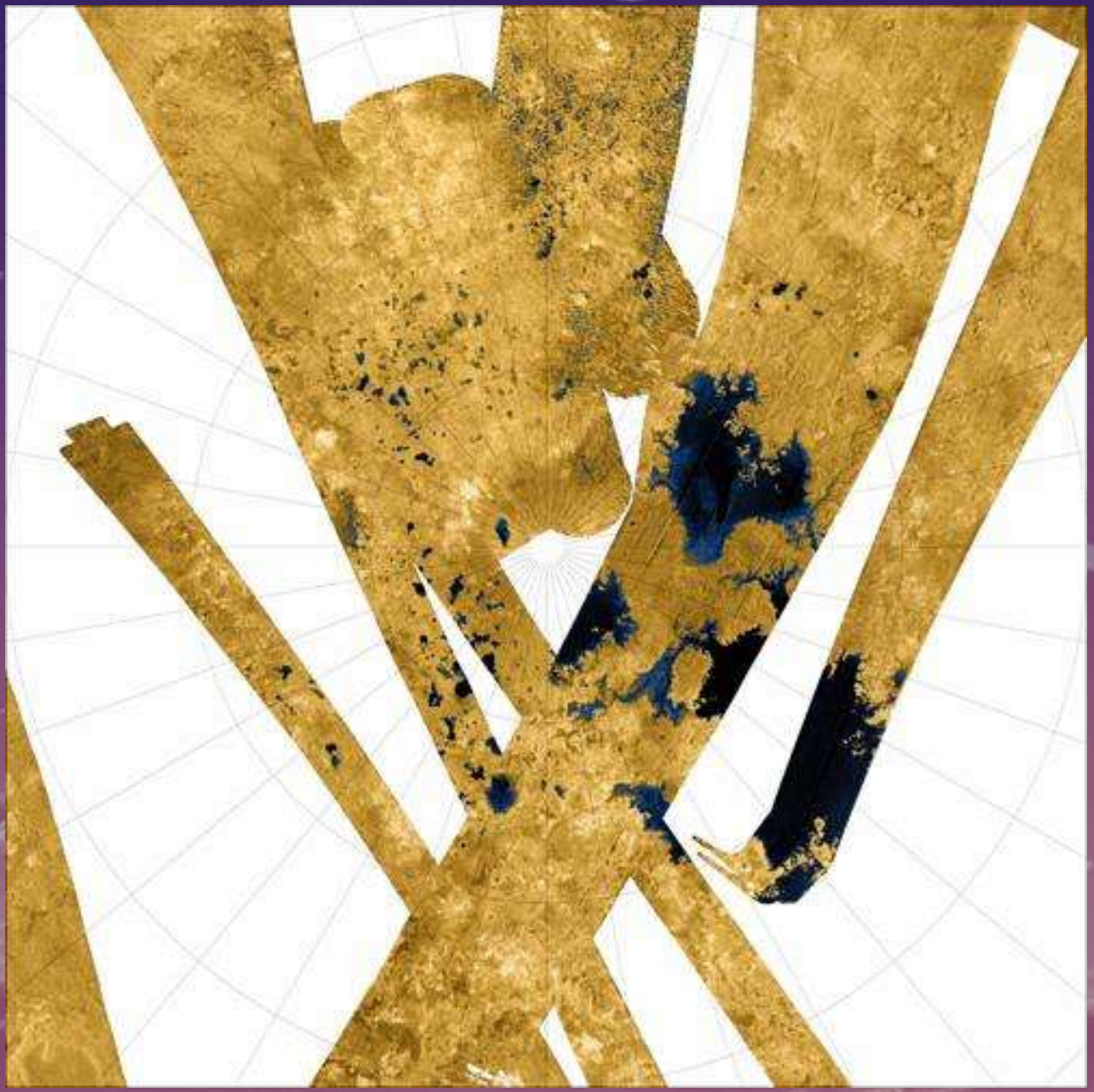
esa


Cassini-Huygens is a joint
NASA_ESA-ASI mission
devoted to the extended exploration of
Saturn and Titan
International
Participation in
CASSINI
Saturn Orbiter and
Huygens Titan
Probe
Belgium
Italy
Denmark
United Kingdom
Switzerland
Netherlands
Czech Republic
Austria
Spain
Finland
Ireland
Hungary
Sweden
Norway

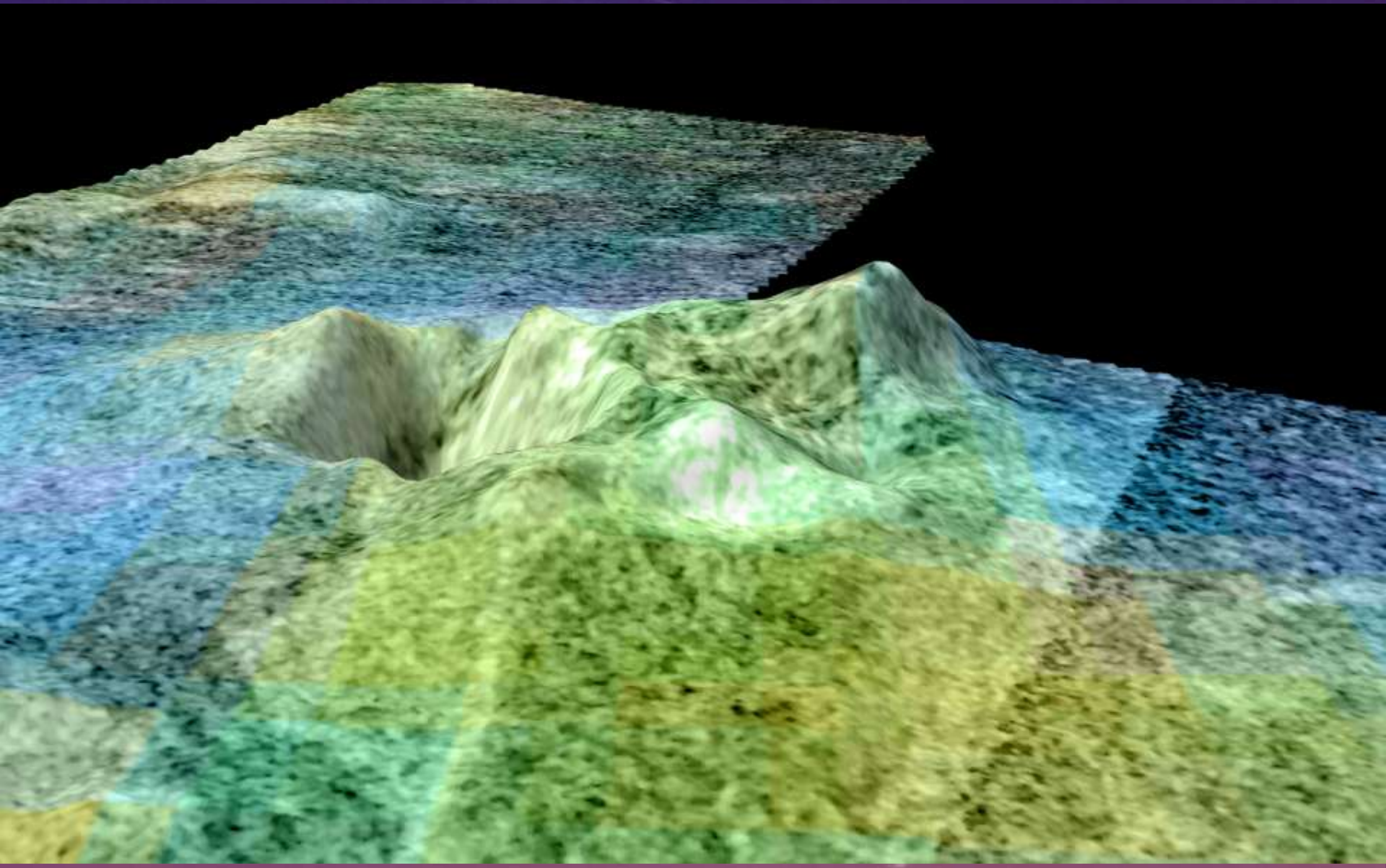


Geisers on Enceladus

North Polar Region Mosaic



A Crio-Volcano on Titan



B.Bertotti, L.Iess, P.Tortora:

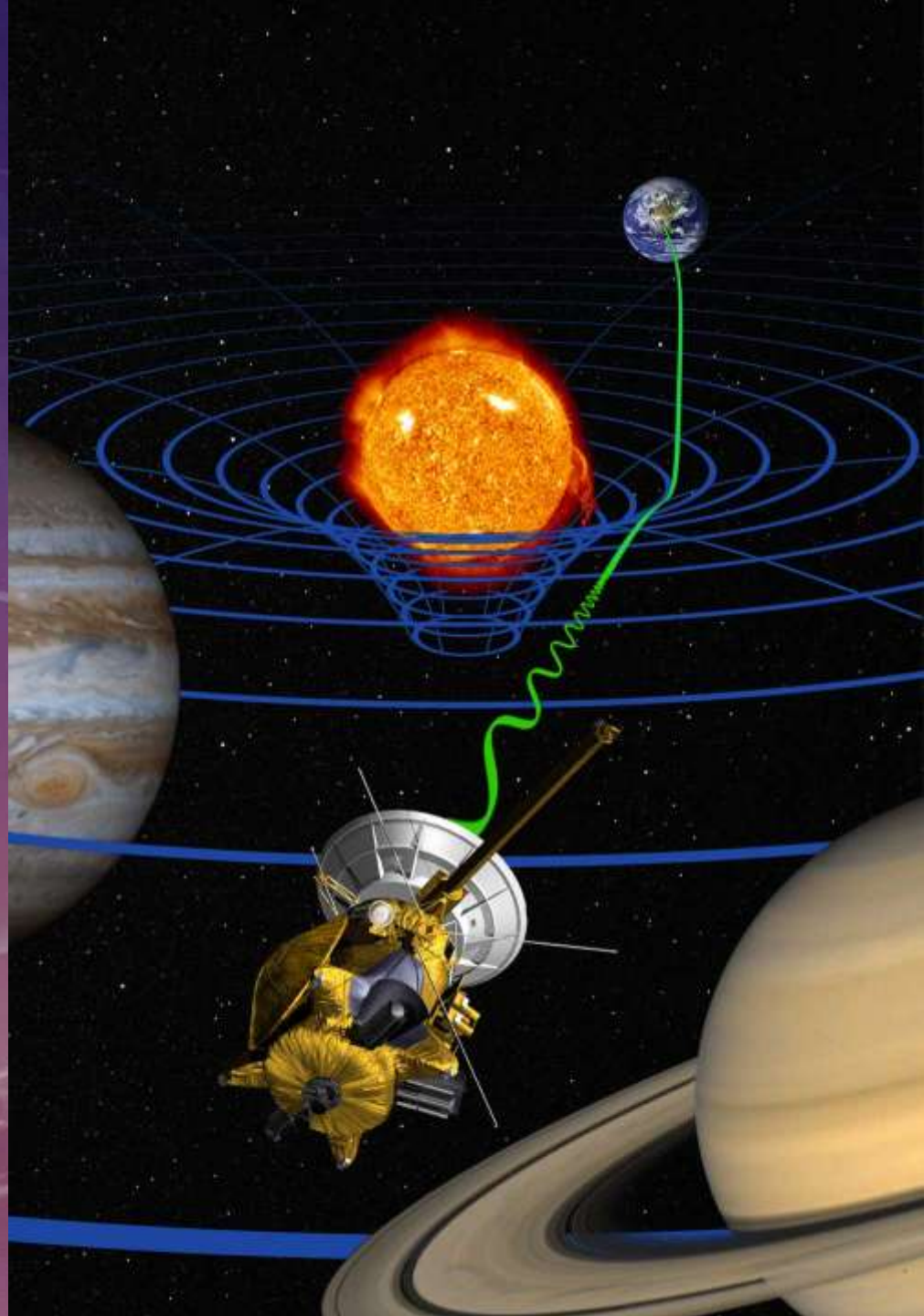
"A test of general relativity using radio links with the Cassini radio spacecraft"

Nature, 425, 374 (2003)

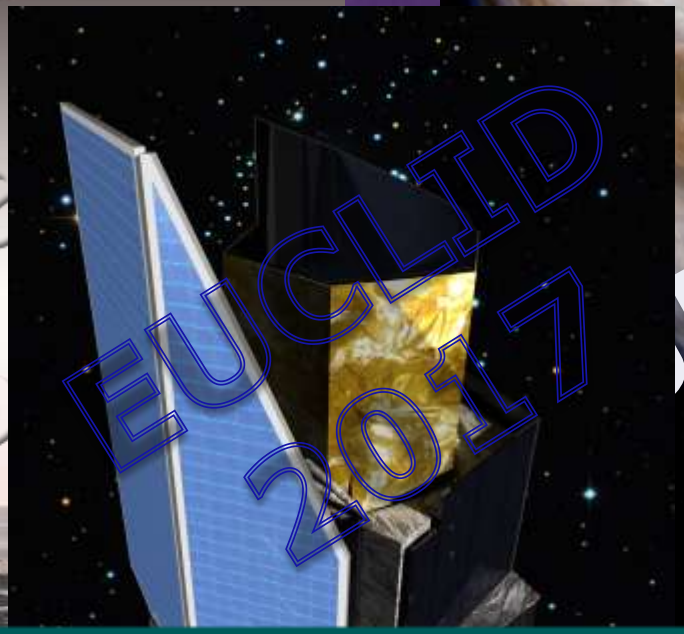
Relativistic frequency shift

$$y_{gr} = 1\times10^{-5}(1+\gamma)\frac{1}{b}\frac{\mathrm{d}b}{\mathrm{d}t}$$

$\approx 8\times10^{-10}$ for a grazing beam



The planned future in Europe



ESA Small Missions 2016

26 proposal => 10 in short list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italiana


TD
TU
H0
DIRECTEUR DU CSG
SDO
OHB
ARS1


Thanks