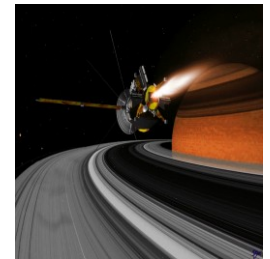
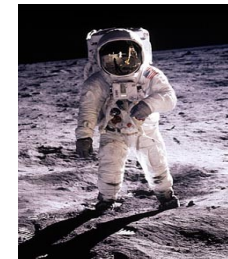
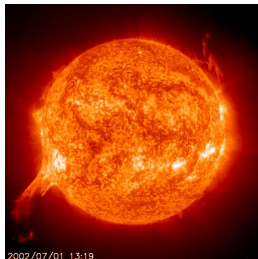




Space Science missions and data services

Dr Peter Allan

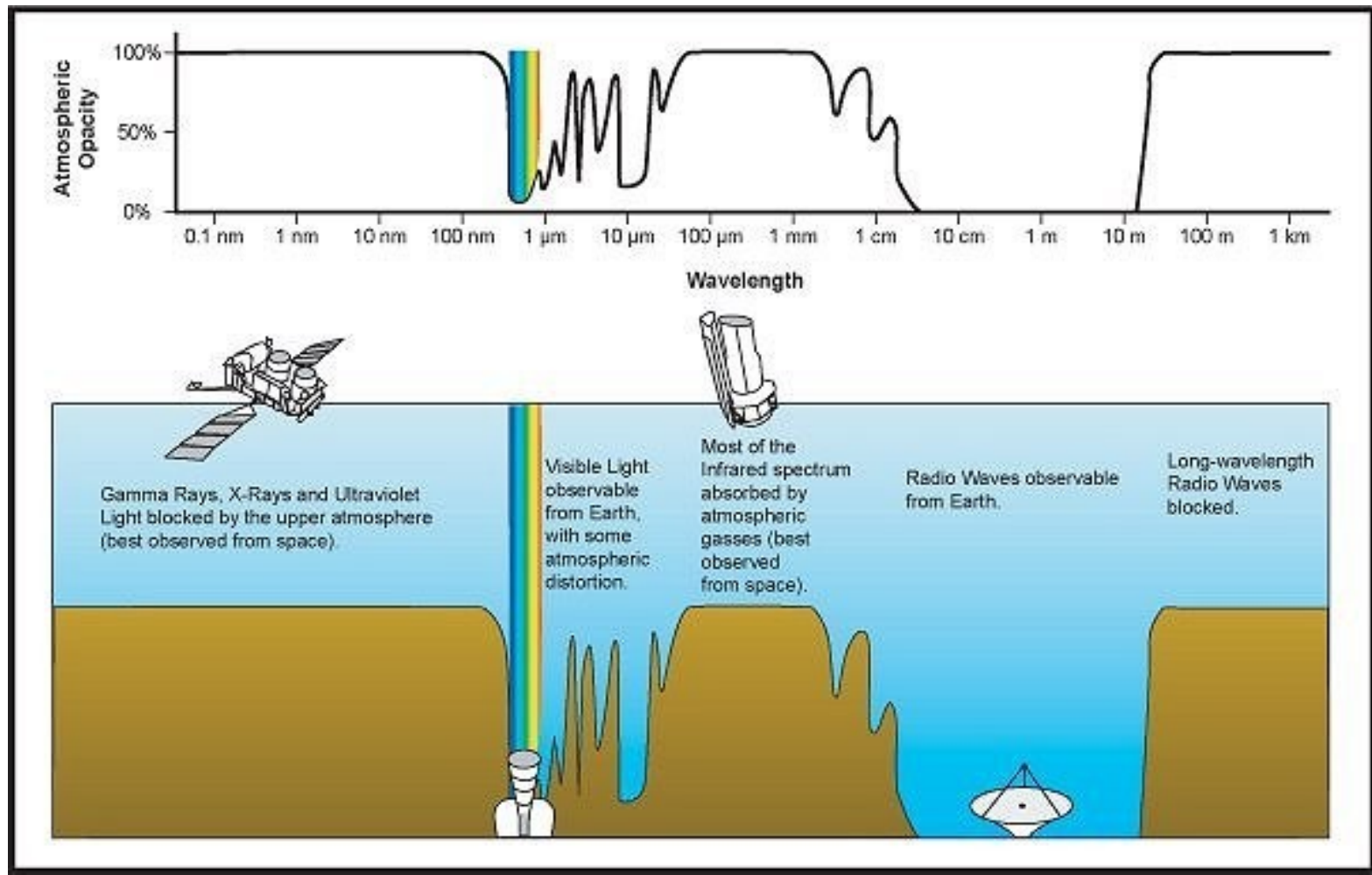


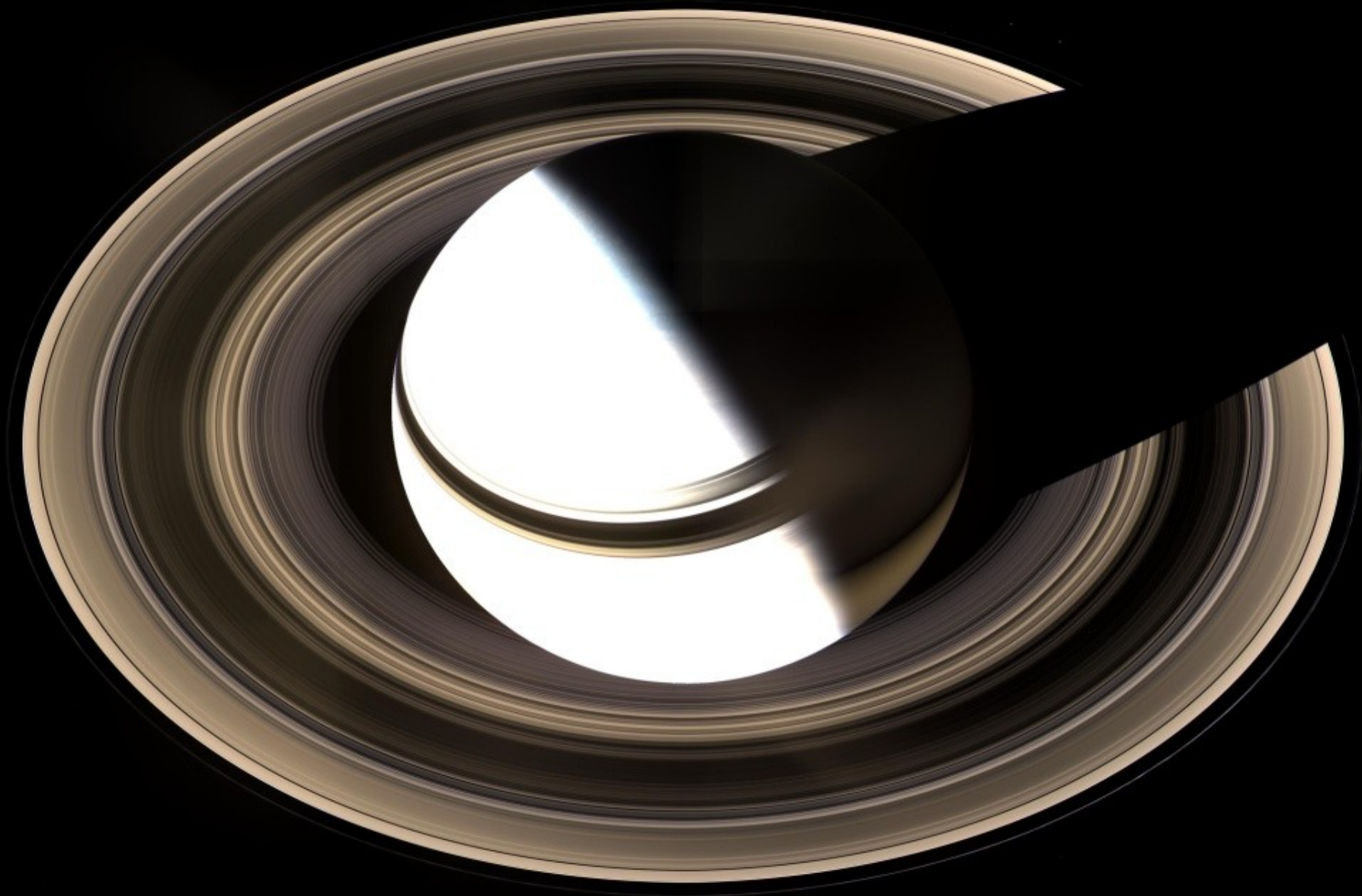
Overview

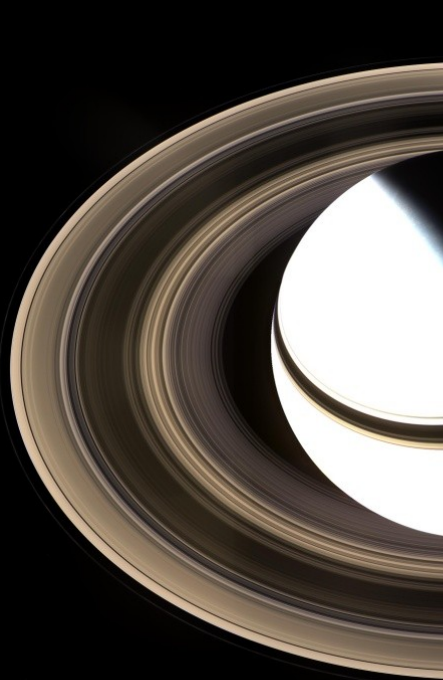
- Preliminaries
- Software and Data Centres
- Space-based Astronomy
- Ground-based astronomy
- Planets
- Space plasmas

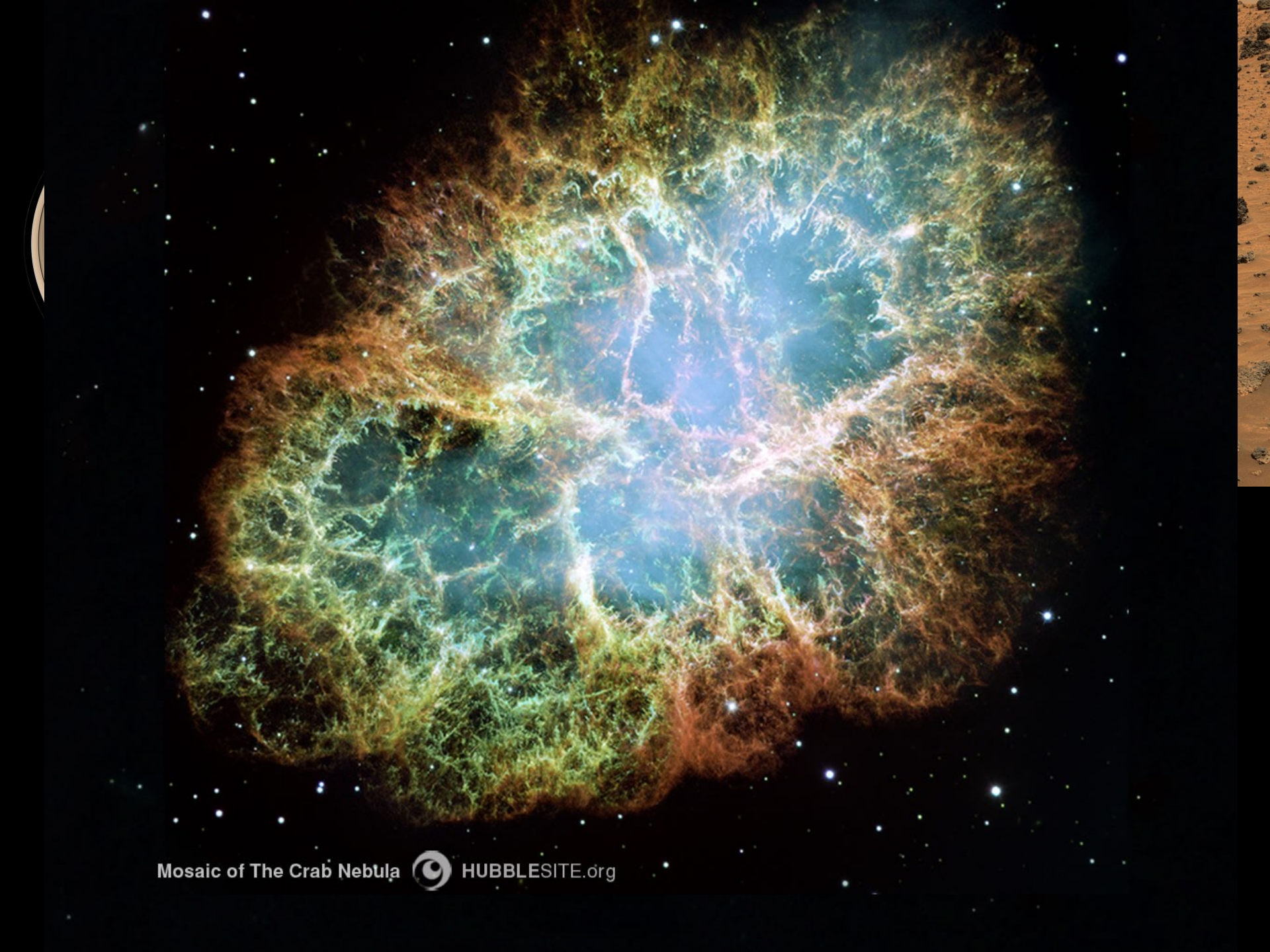


Why go into space?





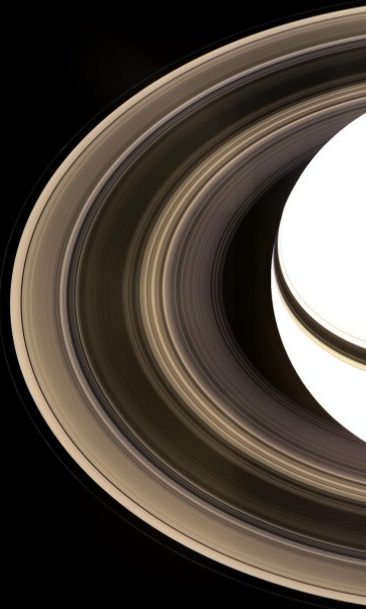


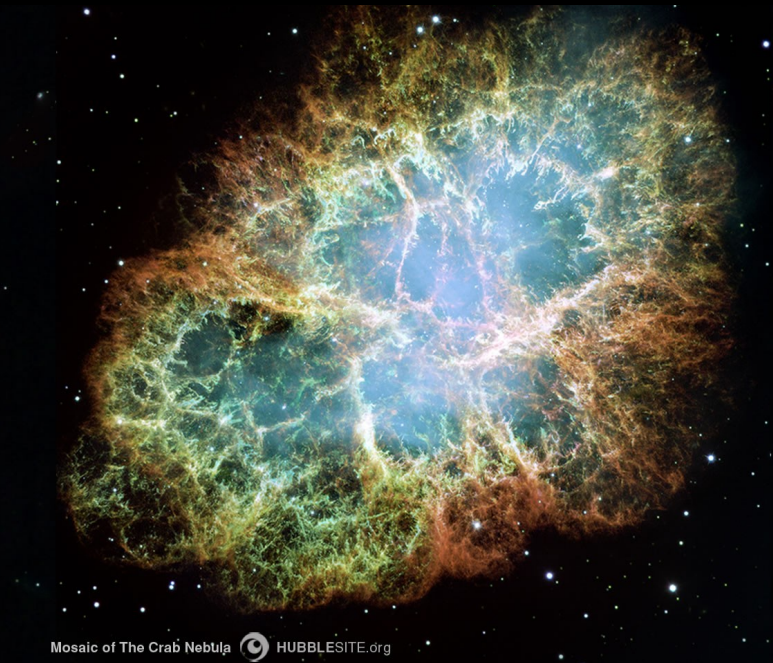
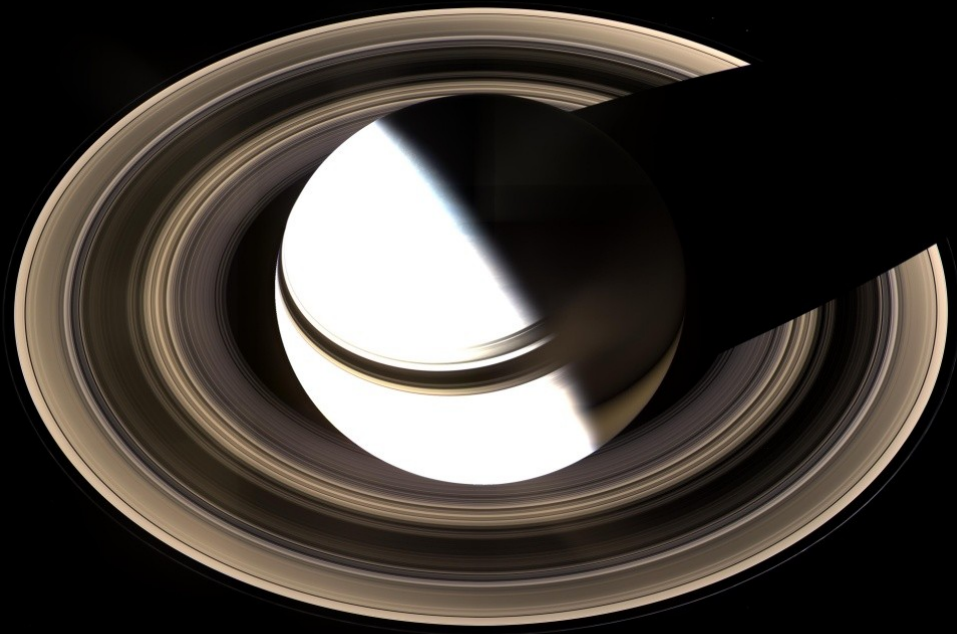


Mosaic of The Crab Nebula



HUBBLESITE.org





Mosaic of The Crab Nebula  HUBBLESITE.org



Coelum
Astronomia

The Cluster of Galaxies Abell 1185 by

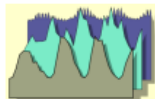


Data Processing & Data Centres

- Then and now

Starlink: Analysis of Astronomical Data





UK Solar System Data Centre

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UK Solar System Data Centre (UKSSDC)

- **[World Data Centre for Solar-Terrestrial Physics - \(WDC Data\)](#)**
International archive of STP data.
- **[Solar Archives](#)**
Archives of solar measurement data and modelling.
- **[Virtual Library of Solar-Terrestrial Physics and Chemistry](#)**
An actively maintained collection of space physics links.
- **[Instrument Locator](#)**
Lists and interactive maps of world-wide ground based STP instruments.
- **[Cluster Ground Based Data Centre](#)**
Support facility for the ESA Cluster mission.
- **[Space Environment Database and Analysis Tools](#)**
Facility to support analysis of charged-particle environment data.
- **[Ditton Park Archive](#)**
Home of UK Radio Research 1924 - 1979.
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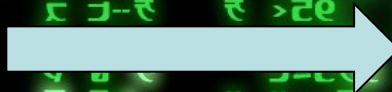
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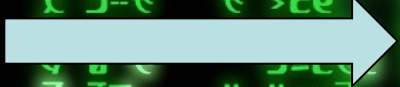
[top of page](#)

Preserving Data

- Preserve the bits
- Preserve the information

STEELEHST@HOTMAIL.COM





Space-based Astronomy

- IR
 - ISO, Herschel
- UV
 - IUE
- X-ray
 - ROSAT, XMM

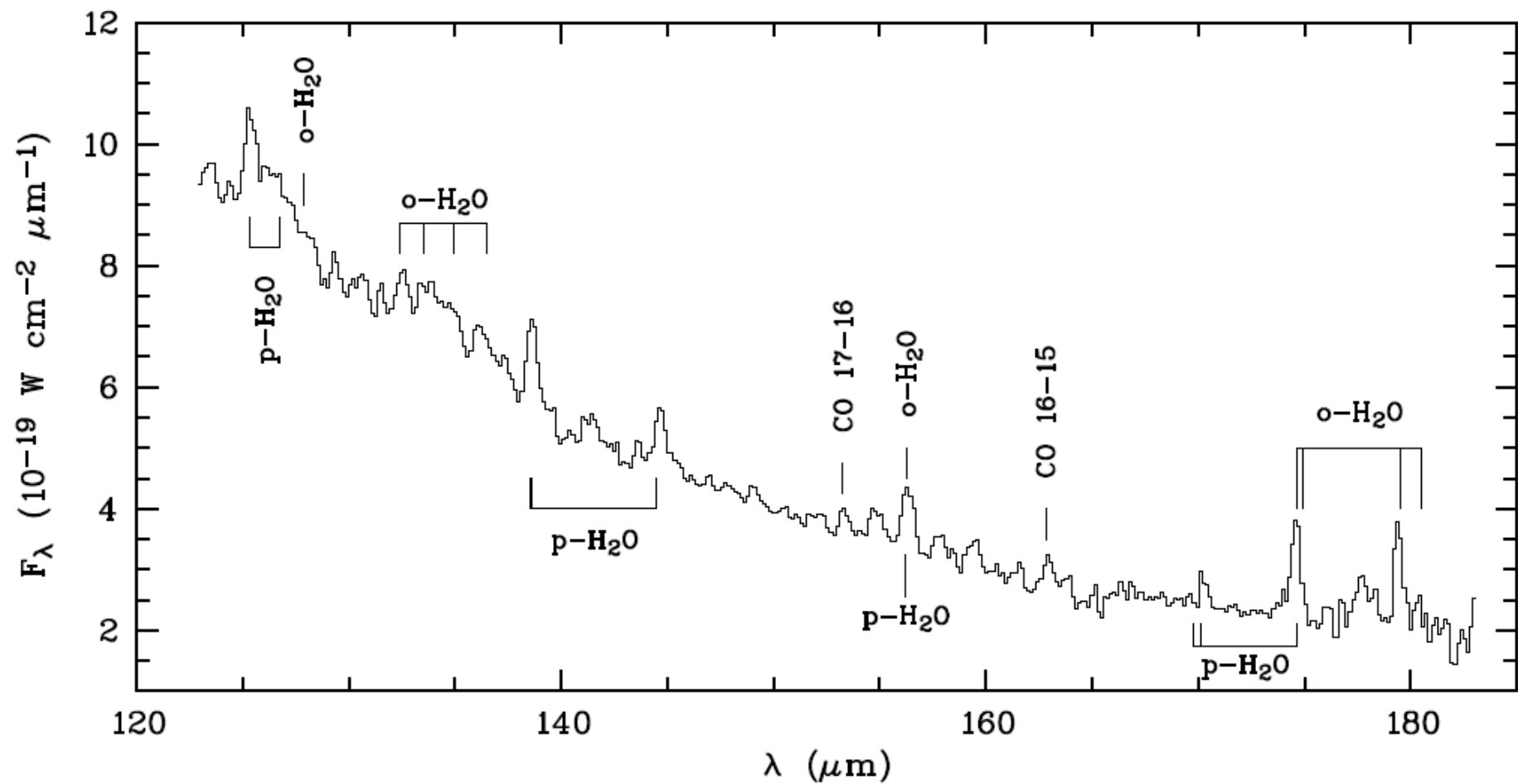
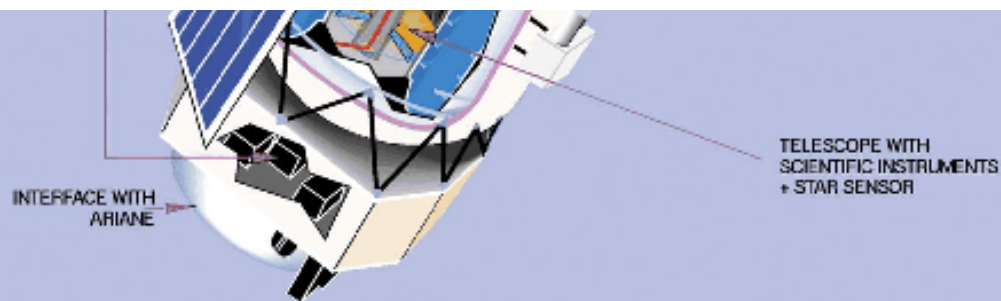
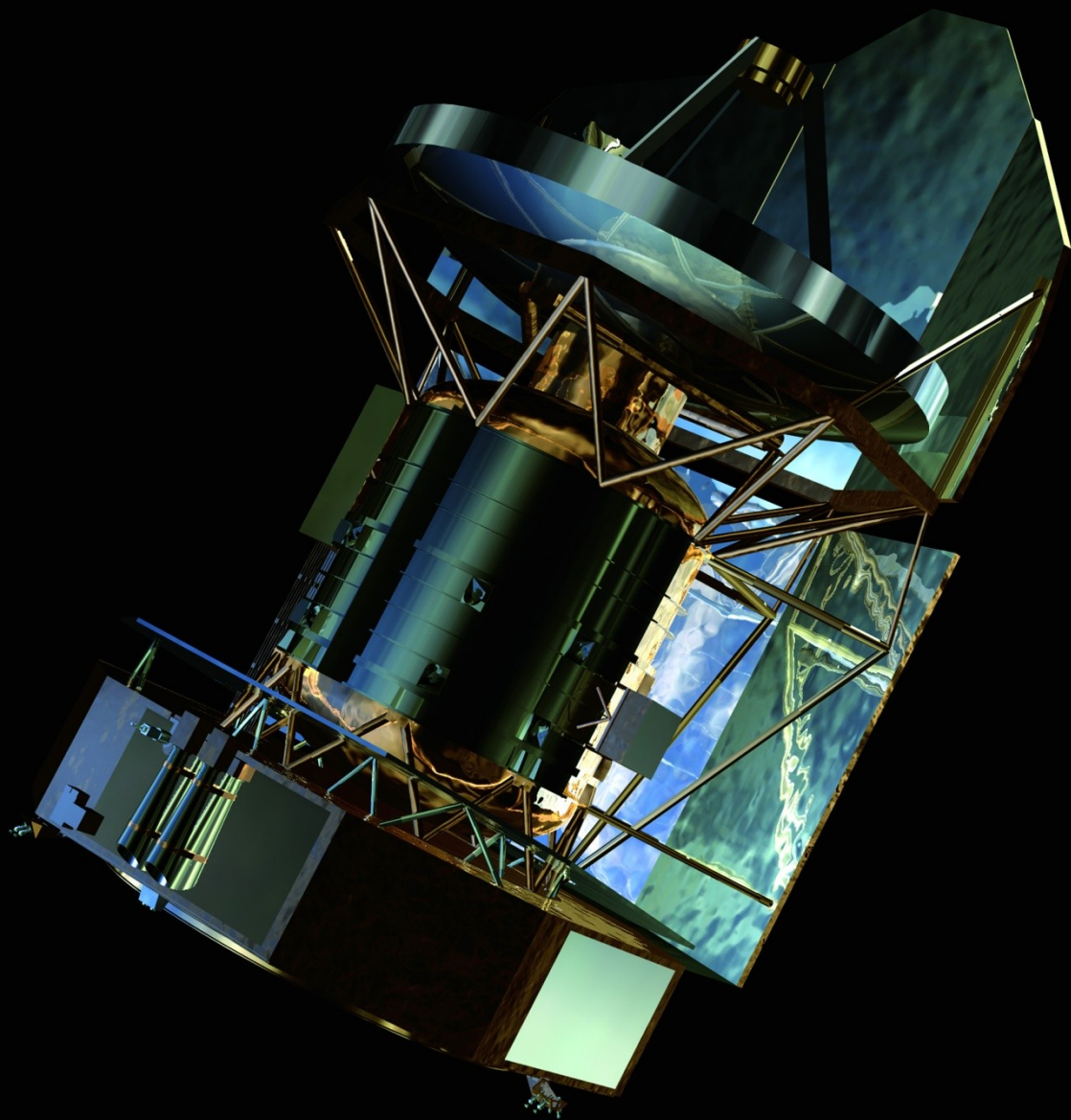
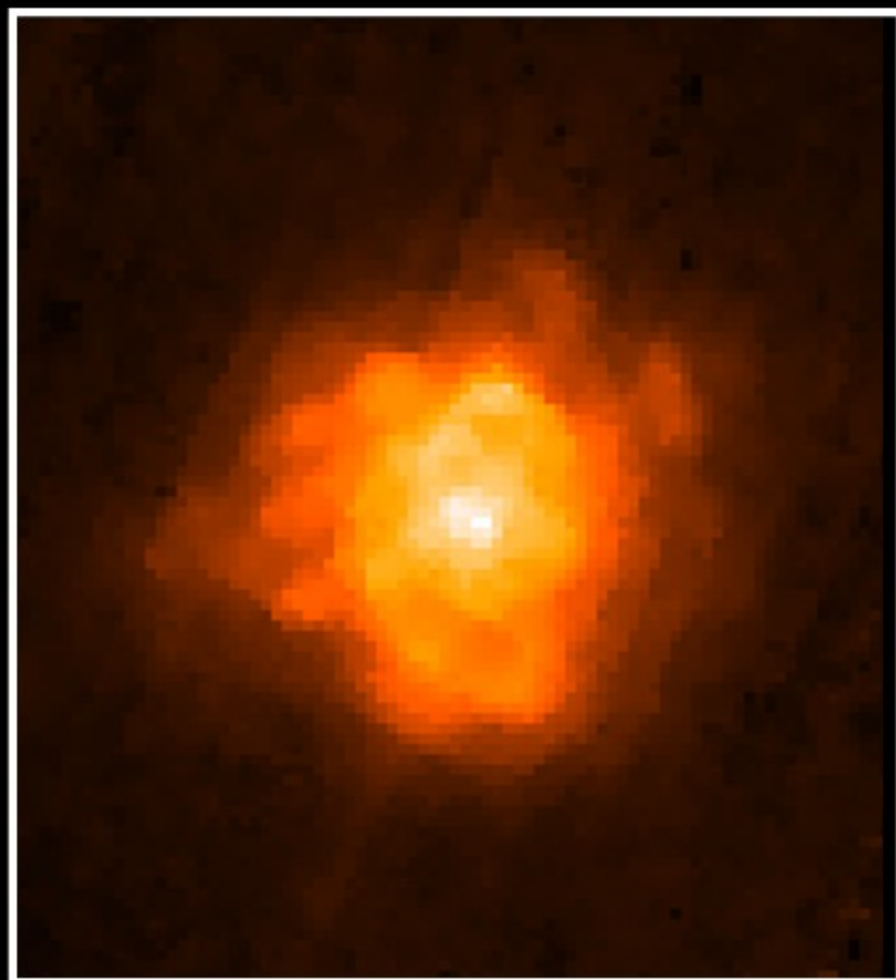


Fig. 1. The ISO LWS spectrum of W Hya between 122–183 μm , with some of the strongest water vapour lines marked.



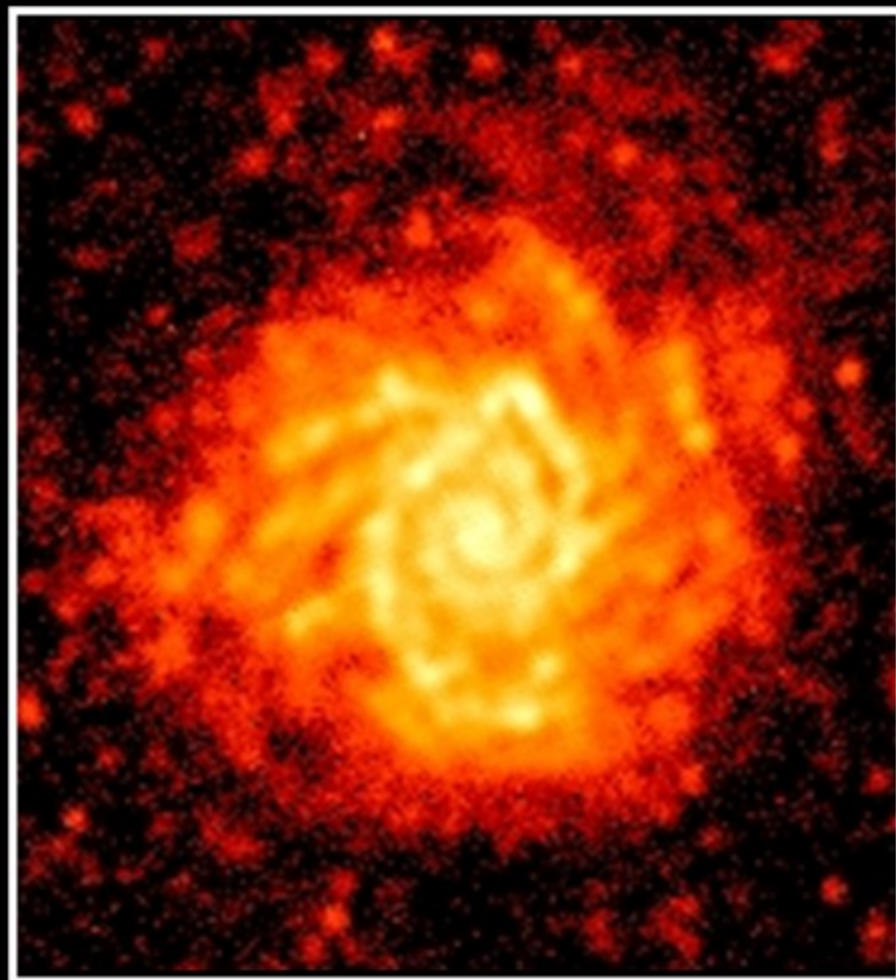


M74 *Spitzer* 160 μm

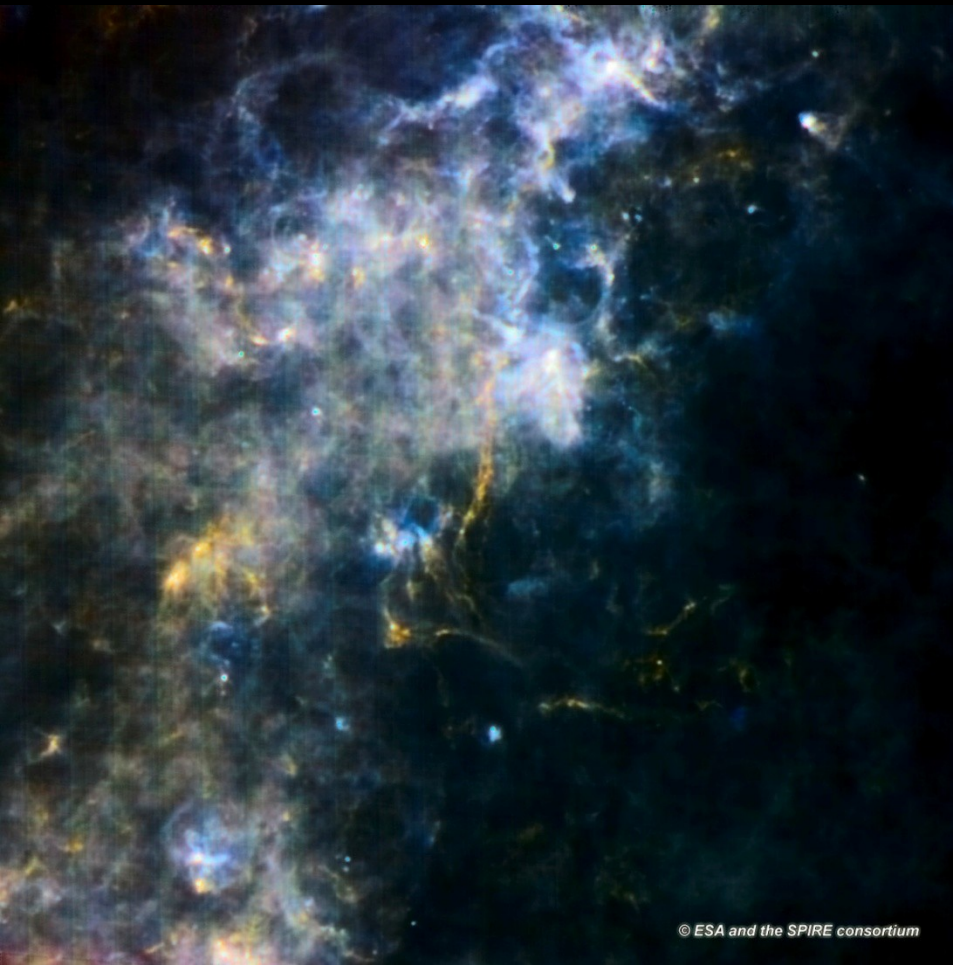


NASA / *Spitzer* SINGS

M74 SPIRE 250 μm



ESA and the SPIRE Consortium

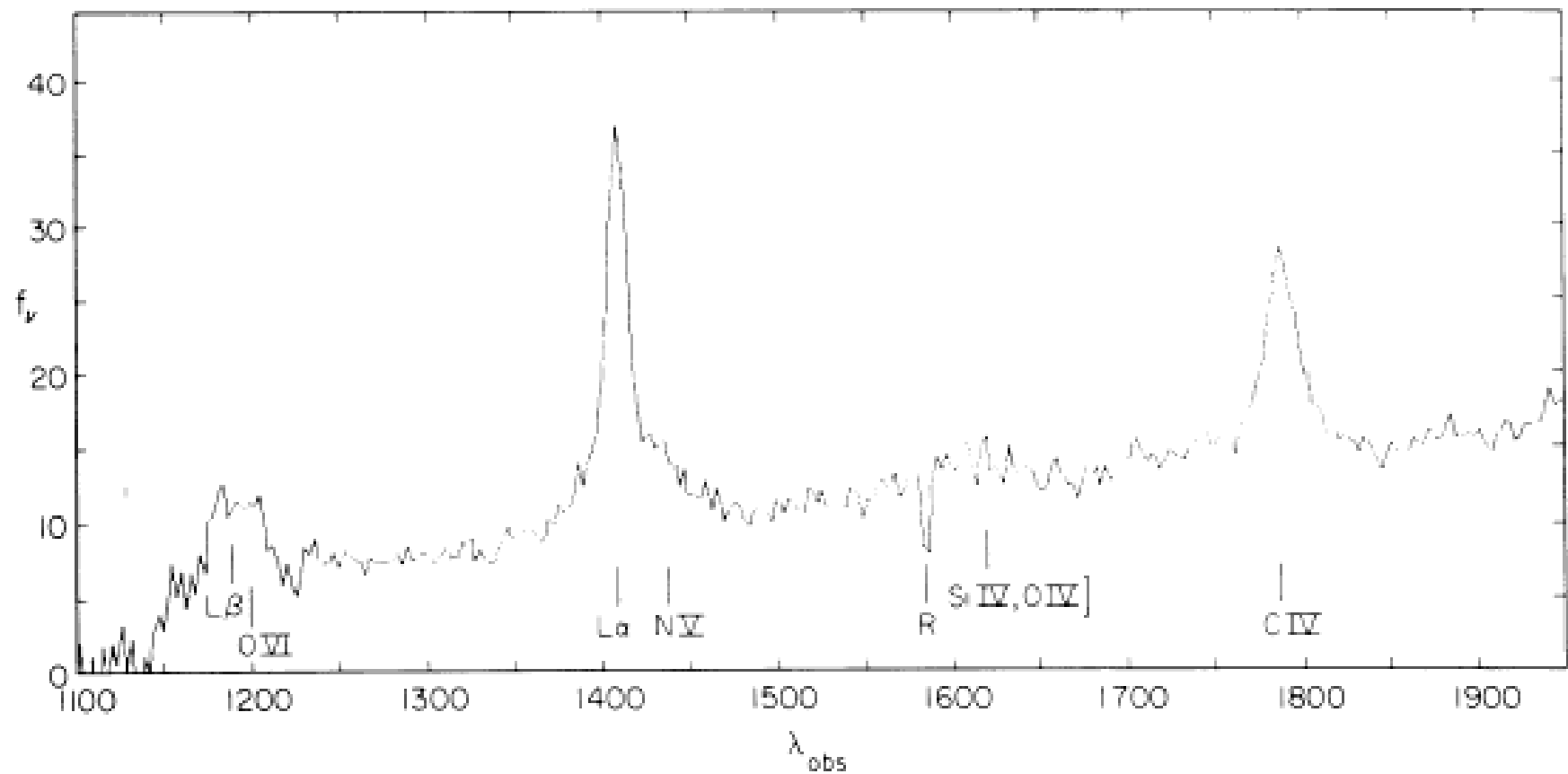


© ESA and the SPIRE consortium



© ESA and the JACOBI consortium

IUE



X-ray missions

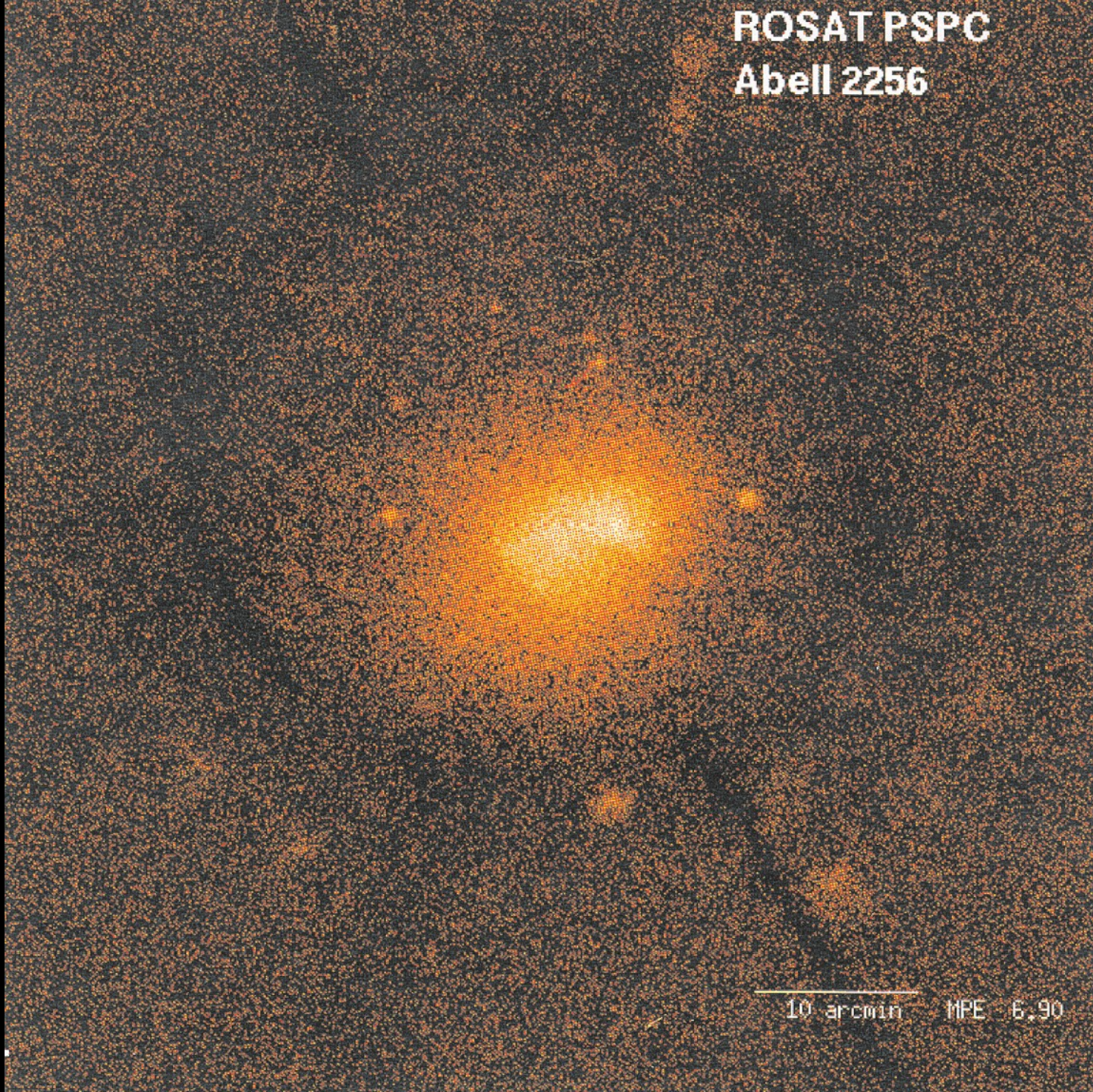
- Hot gas in clusters of galaxies
- Supernova Remnants
- X-ray binary stars



Image courtesy of D. Fabbini

XMM-Newton preparation

ROSAT PSPC
Abell 2256

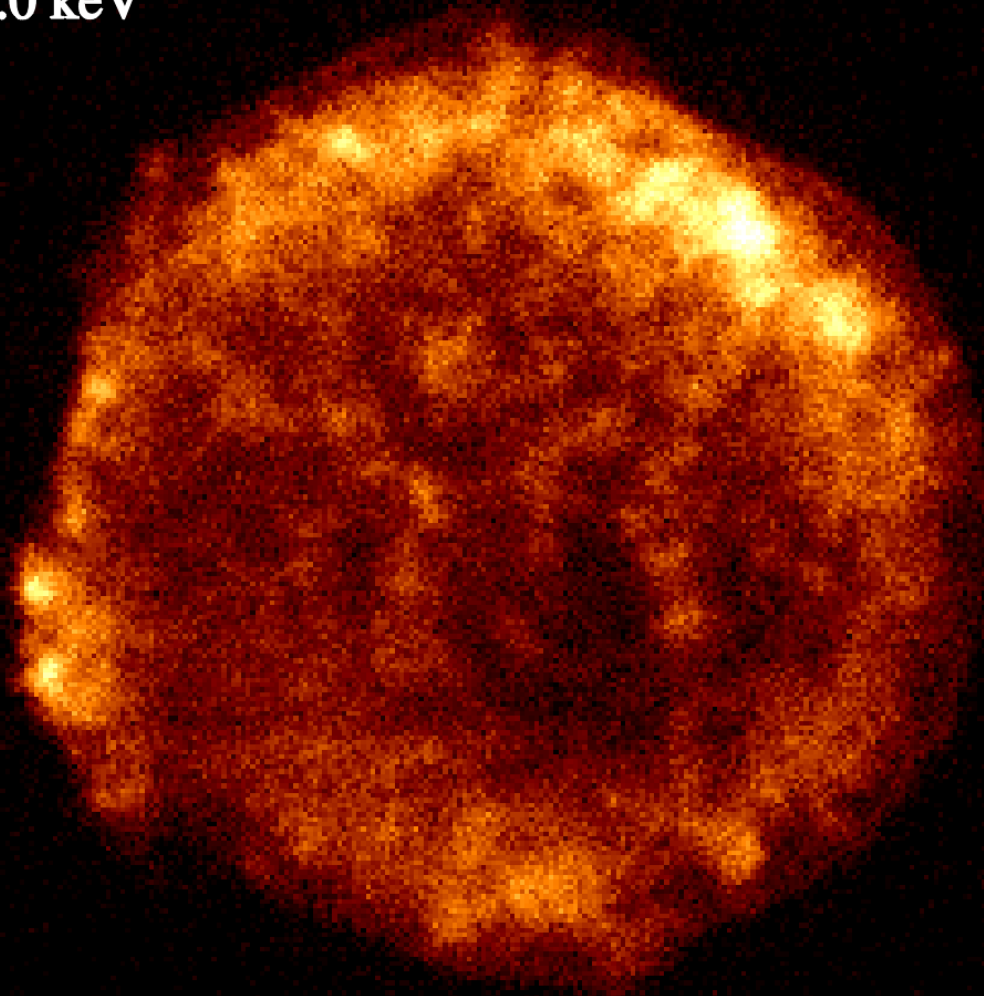


10 arcmin MPE 6.90

SNR 1572 (Tycho)

ROSAT HRI

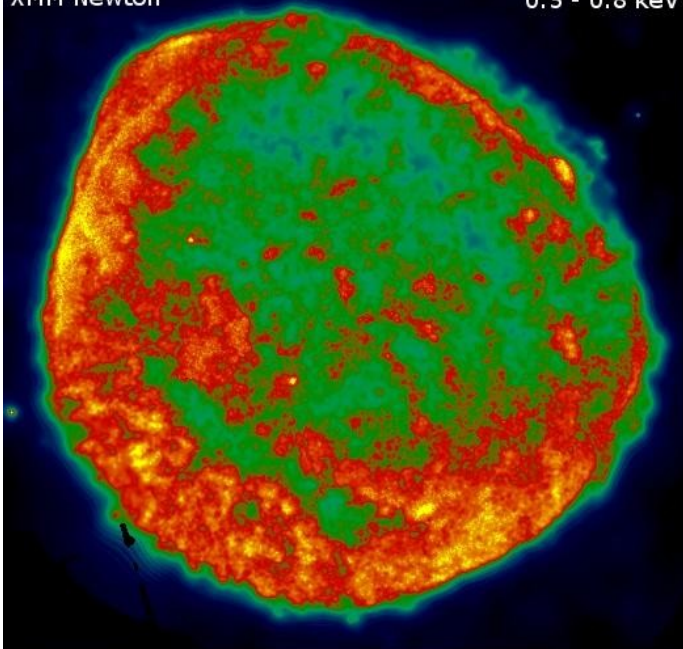
0.1-2.0 keV



2 arcmin

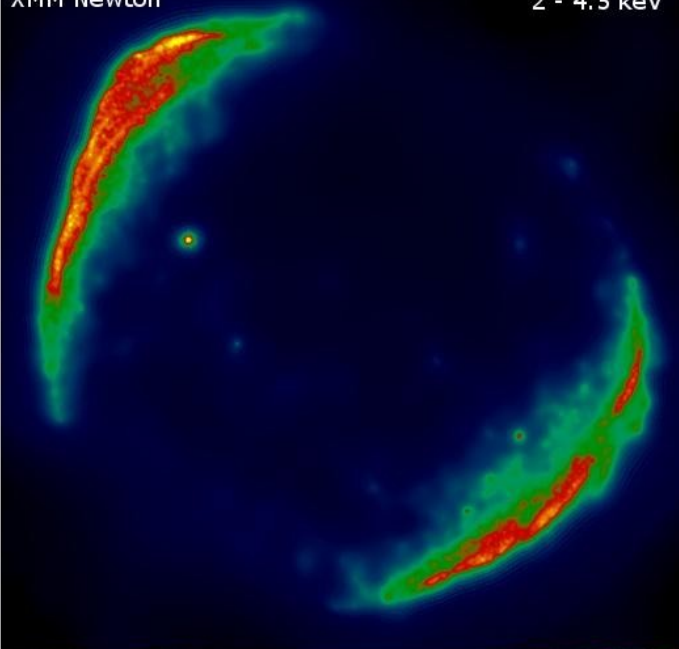
XMM Newton

0.5 - 0.8 keV



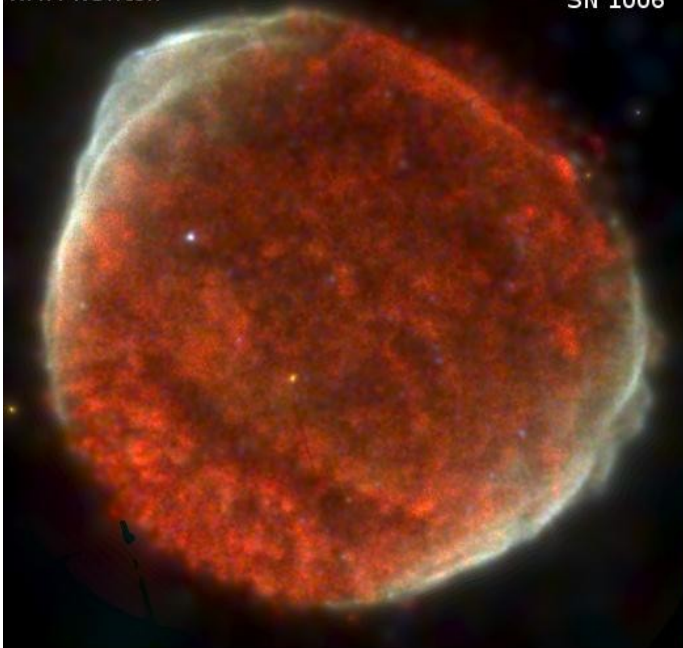
XMM Newton

2 - 4.5 keV



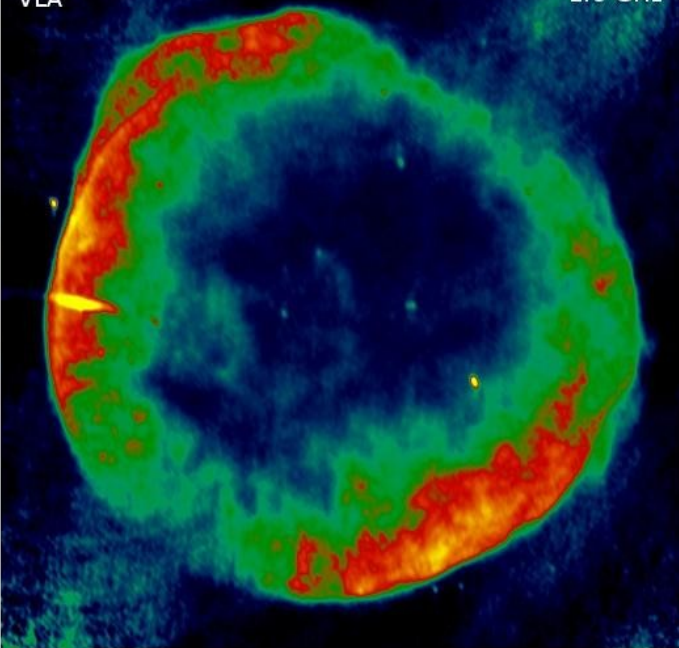
XMM Newton

SN 1006



VLA

1.5 GHz



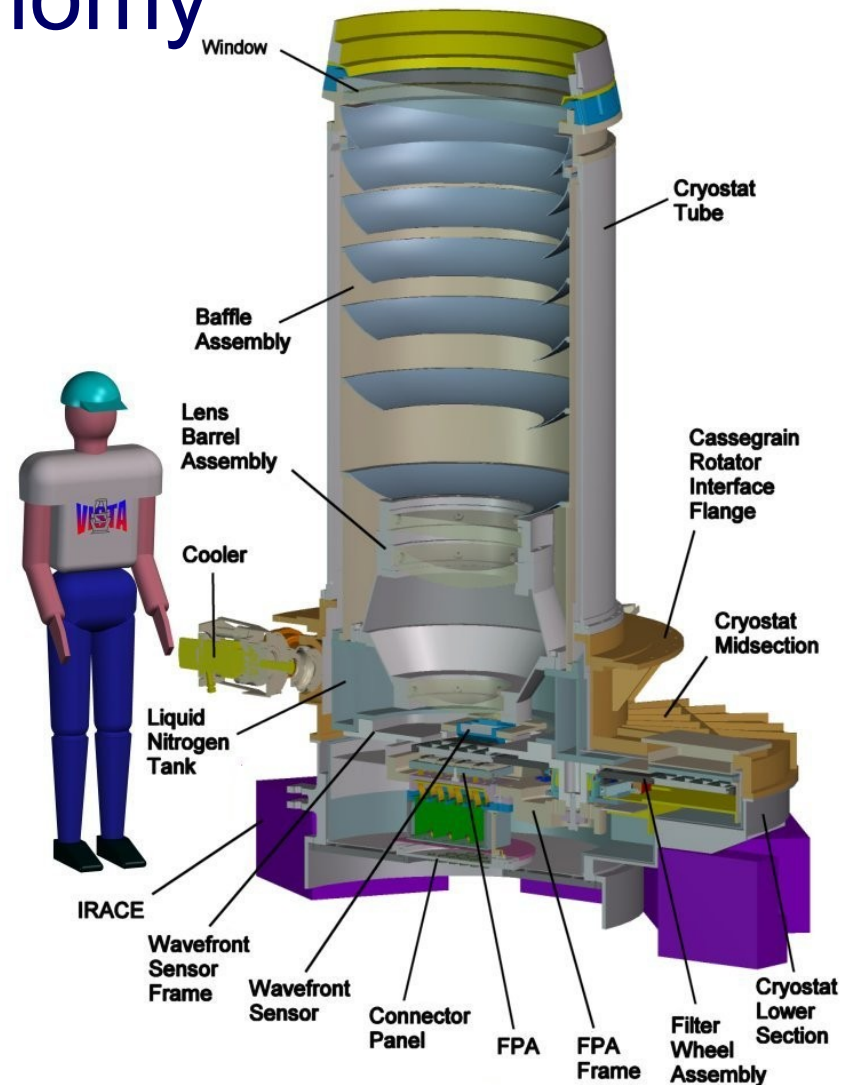
Particle acceleration in SN 1006

Ground-based Astronomy

VISTA camera

2.5m x 1.5m

2.9 tonnes







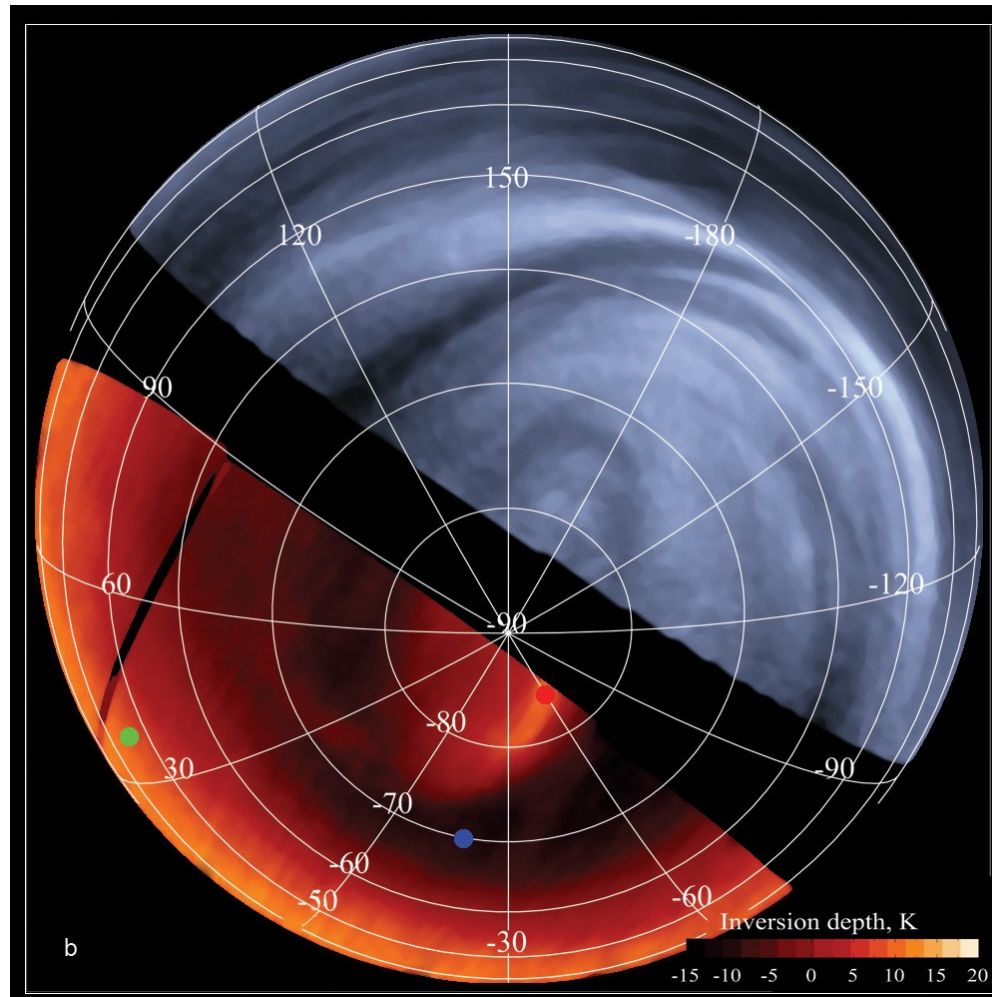
Planets

Mars Express





Venus Express

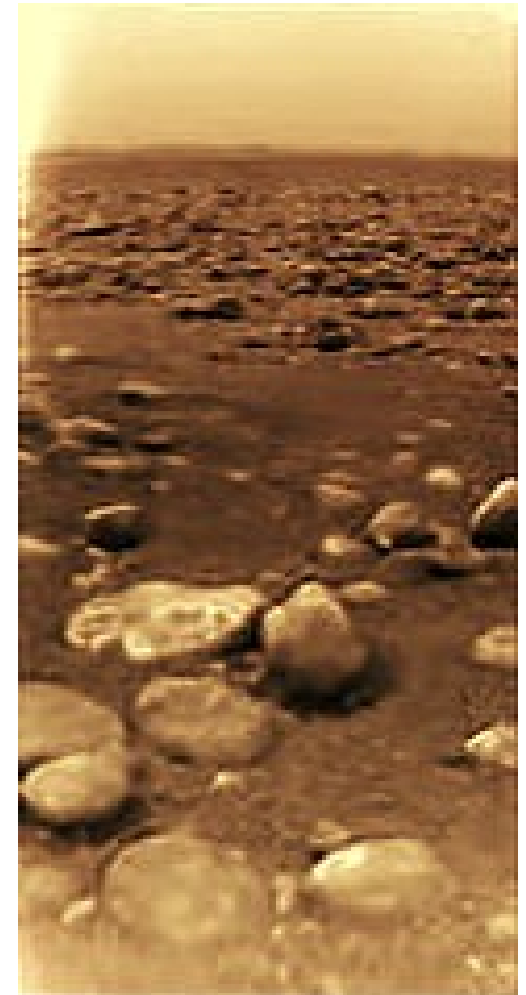
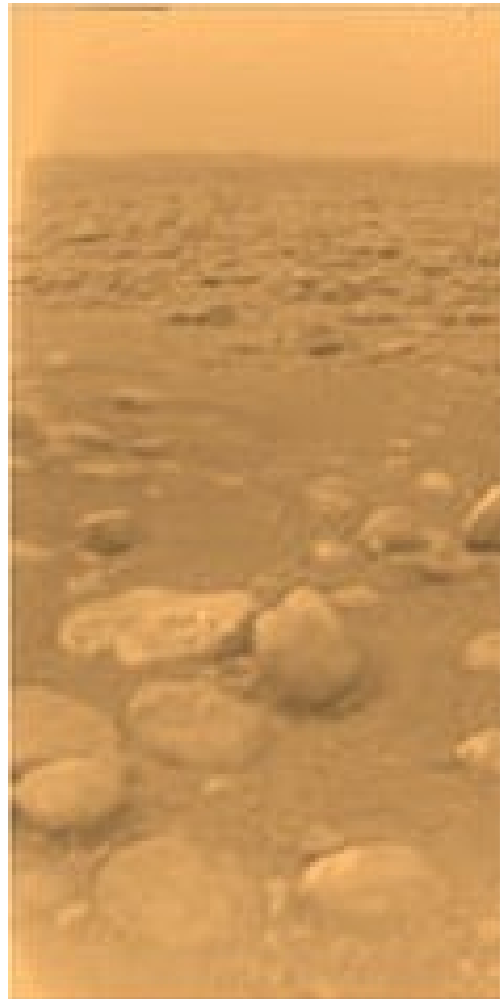
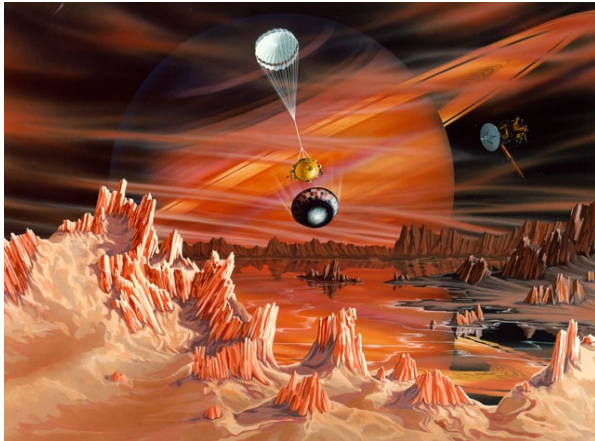


Supernovae are a blast

Black holes are out of sight

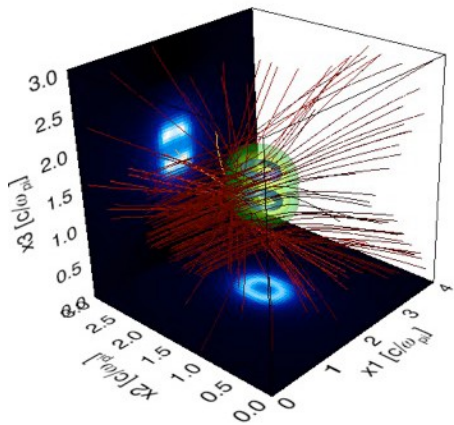
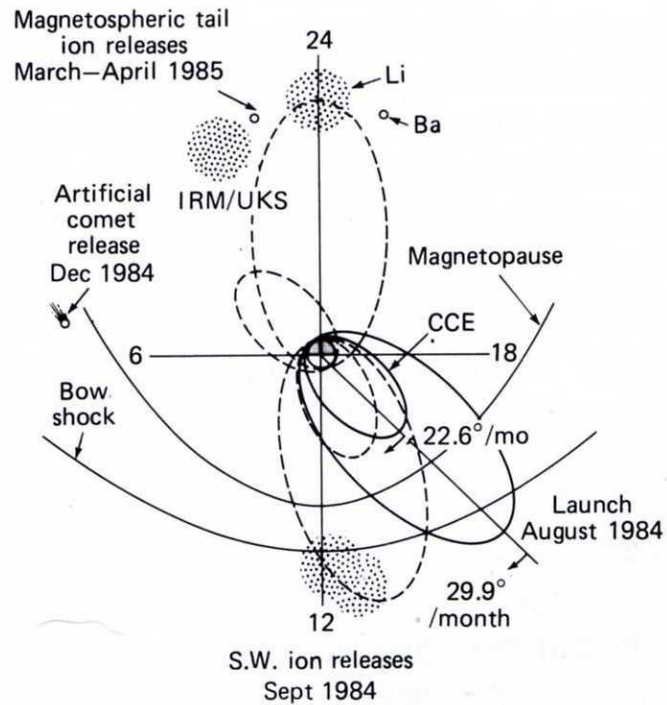
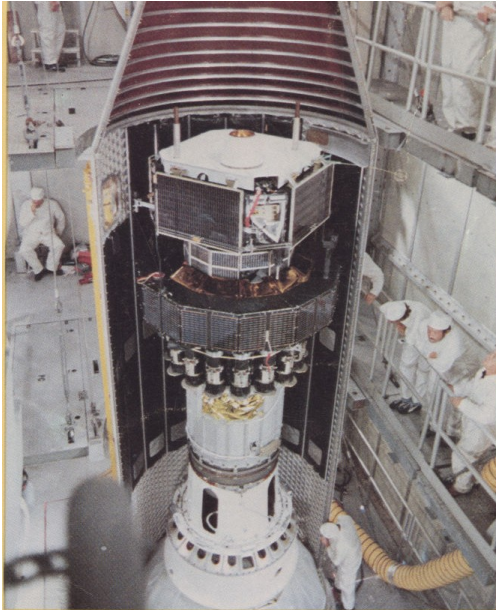
Titan has atmosphere

Cassini / Huygens

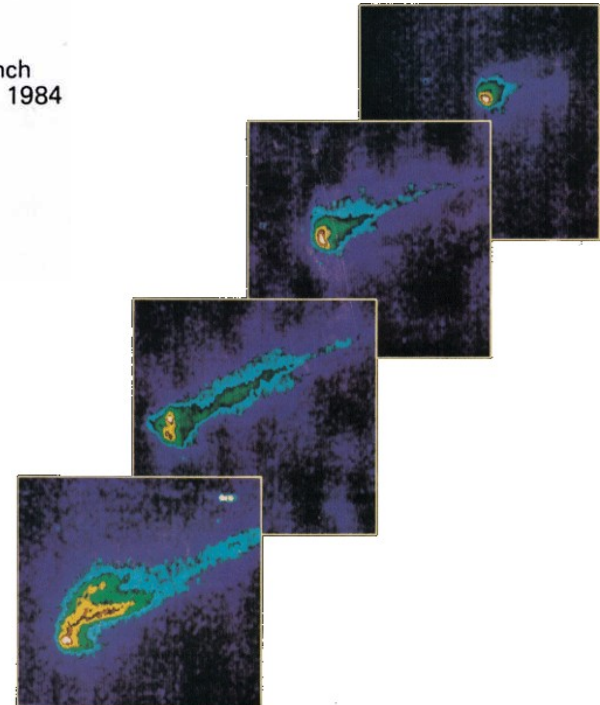


Space Plasmas

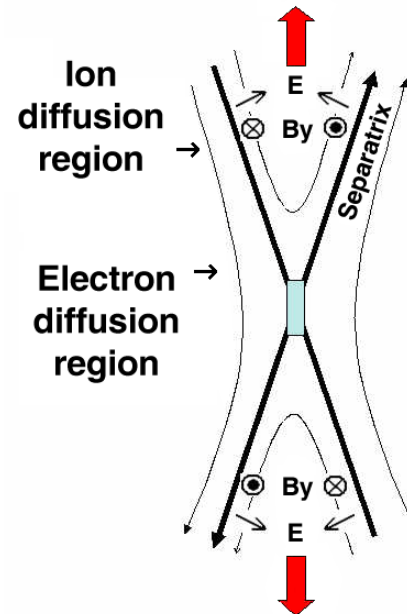
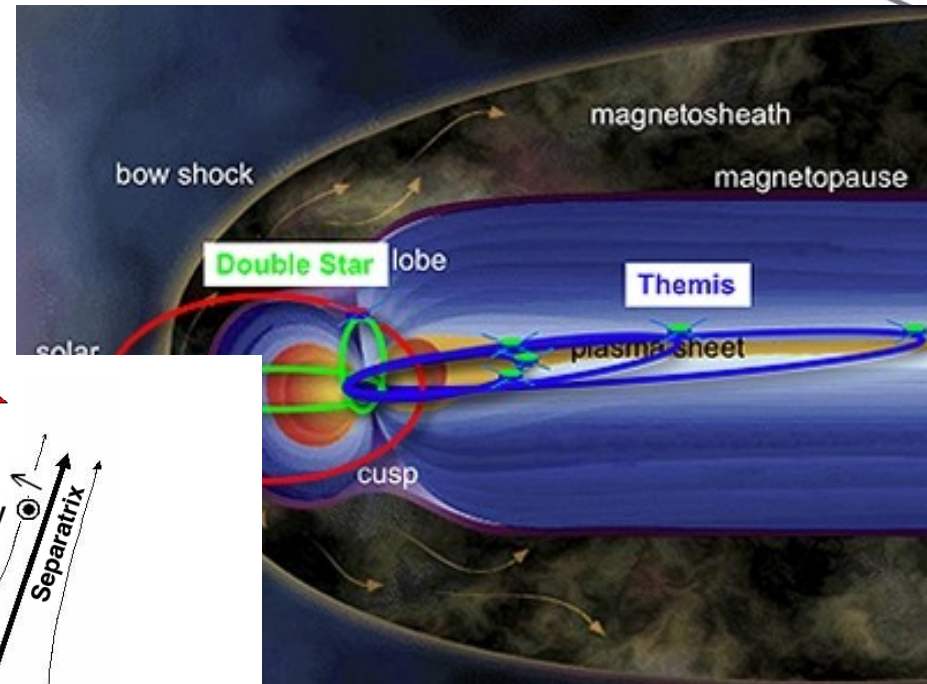
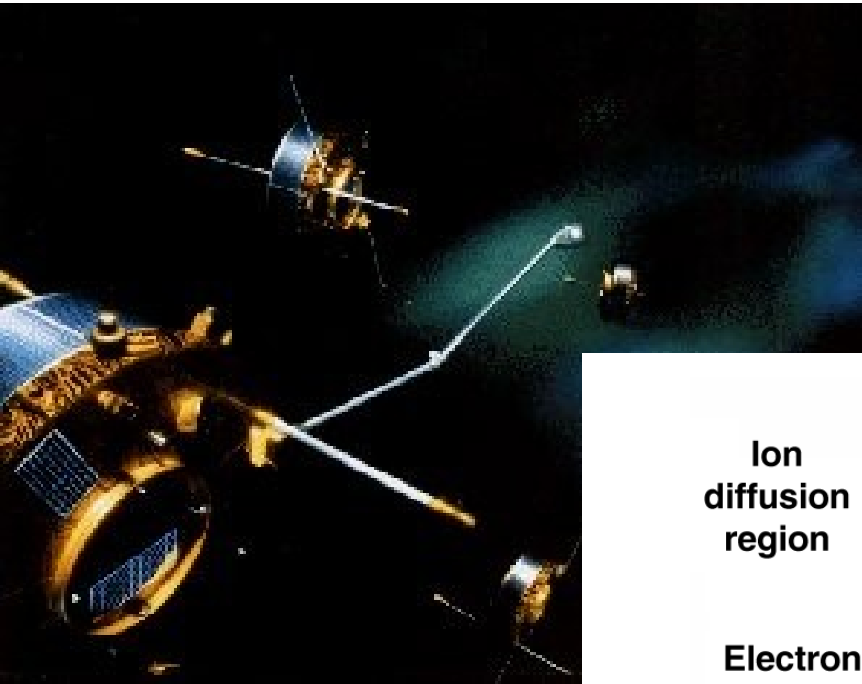
AMPTE



dHybrid simulation box



Cluster & Double Star



To be continued ...