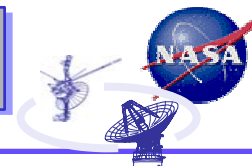


Venus Express

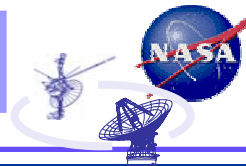
Thomas W. Thompson





Contents

- **Mission Overview**
- **Science Instruments**
- **Science Goals**
- **DSN Support**



ESA's Venus Express Mission will revolutionize our understanding of the evolution of the Venusian atmosphere.

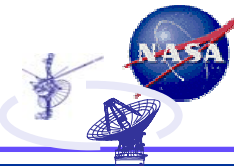
ESA's Venus Express Mission satisfies many of the objectives identified in the Next Decadal Study

Its synergistic set of experiments measure key aspects of Venus encompassing:

- o the surface,**
- o the middle and upper portions of the Venusian atmosphere,**
- o the interaction between the Venusian atmosphere and the solar wind.**

- o Venus Express is an important pathfinder for Venus Sample Return Mission**

JPL Resource Allocation Review Board

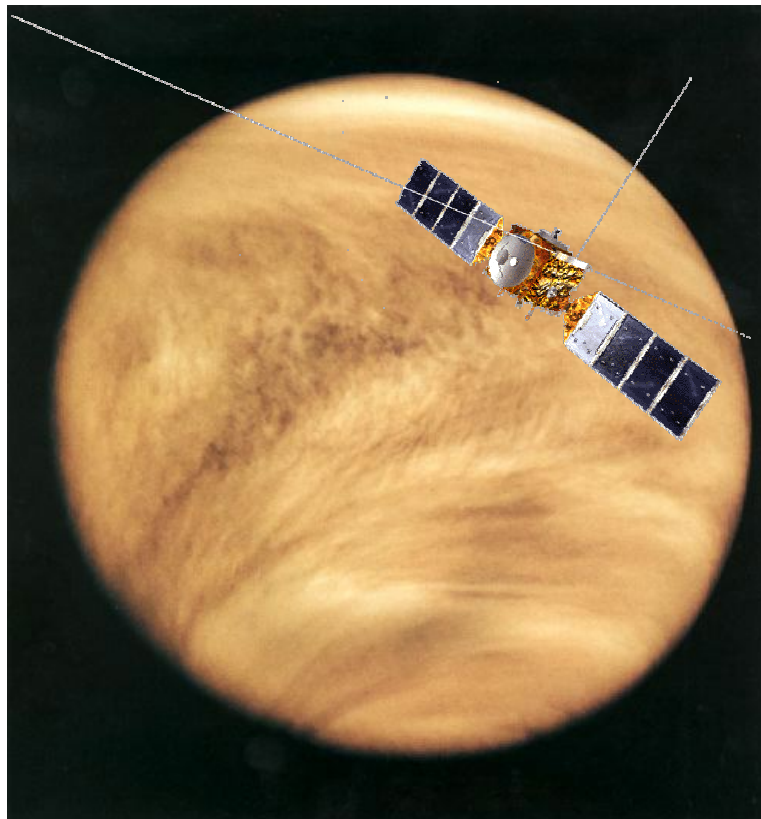


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THE VENUS EXPRESS MISSION



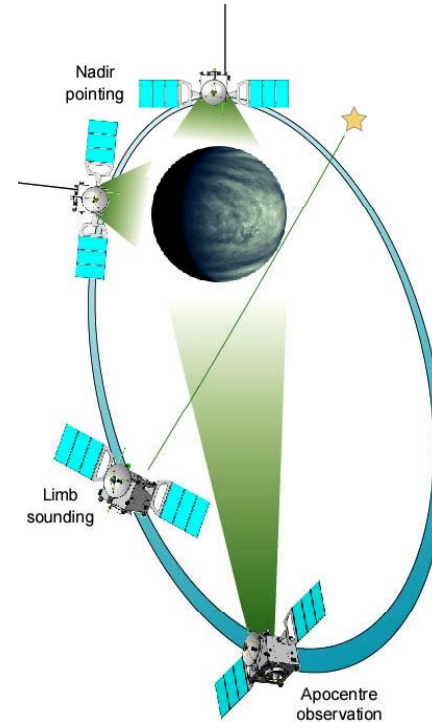
LAUNCH - 11/05



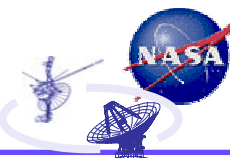
ARRIVAL - 04/06

1 venusian year = Earth 224 days

Prime Mission =
2 Venusian Years

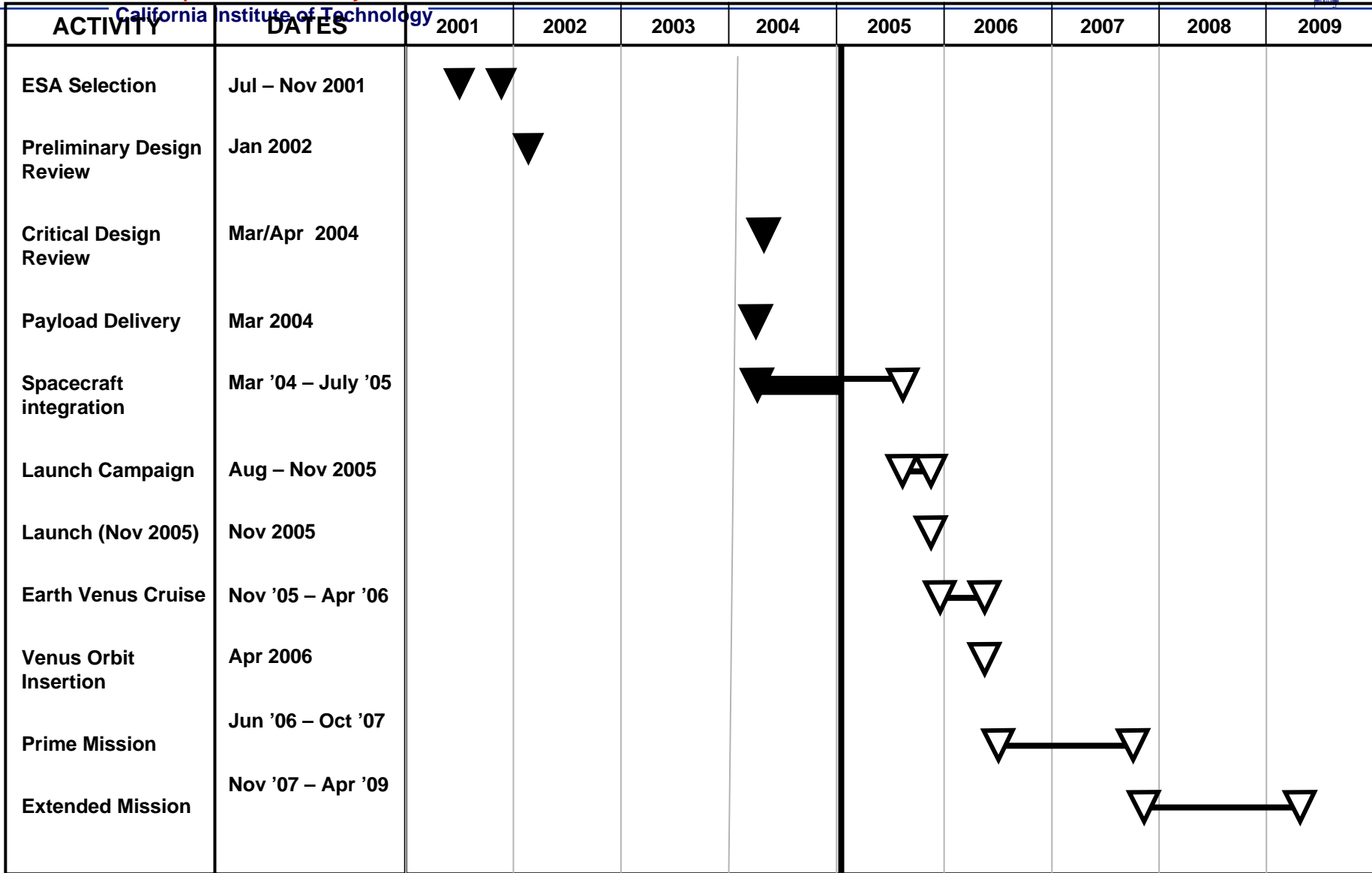


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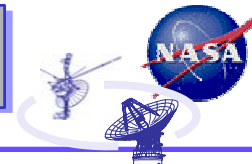


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ACTIVITY	DATES	2001	2002	2003	2004	2005	2006	2007	2008	2009
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VENUS EXPRESS INSTRUMENTS



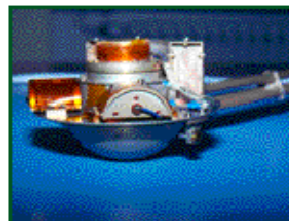
VIRTIS
P. Drossart, Obs. Meudon (FR)



ASPERA
S. Barabash, IRF Kiruna (SE)



PFS
V. Formisano, CNR Rome (IT)



MAG
T. Zhang, OAW Graz (AT)



VeRA
B. Häusler, Univ.BW München (DE)



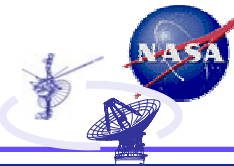
SPICAV
J-L.Bertaux, CNRS Verrières (FR)



VMC
W. Markiewicz, MP Ae Lindau (DE)

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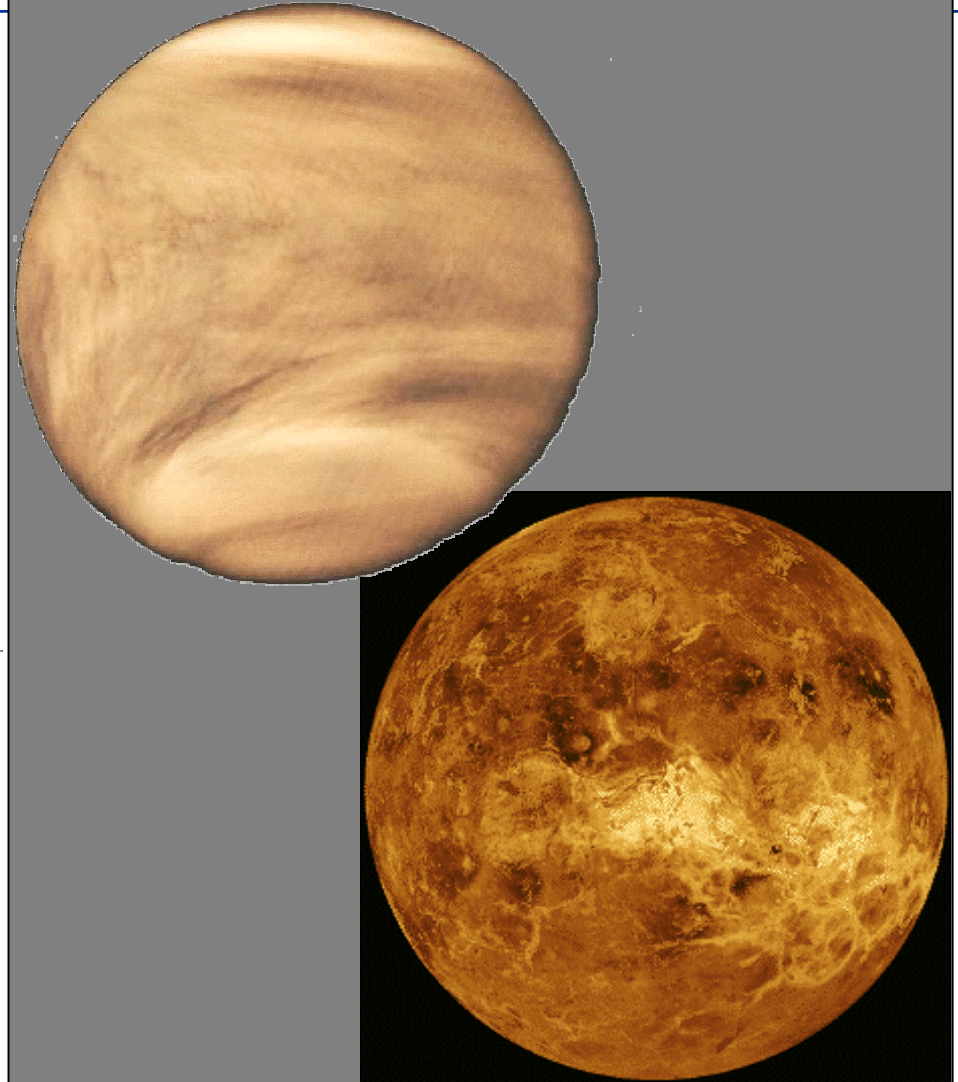
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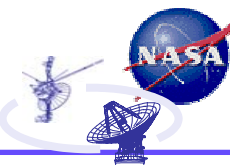
MA RS EXPRESS PAYLO AD		VEN US EXPRESS PAYLO AD	
Acrony ms	Instruments	Acrony ms	Mo difications
Orbiter			
HR SC	High-resolutio n stereo imager		
OM EGA	IR m ineralogic al m apper		
MARSIS	Subsurface sou nding rada r		
PFS	Planeta ry Fou rier Spectrom eter	PFS	Identica l inst rument
SPICA M	UV and IR atmosphe ric spectrom eter	SPICAV	Impr oved IR ch annel
ASPERA	Energeti c neut ral atom analys er	ASPERA	Identica l Inst rument
Ma RS	Radio science	VeRA	Upgraded with USO
		VIRTIS	VNIR -SW IR spec tral image r (Ro setta)
		VMC	UV-V IS global image r (new)
		MAG	Ma gneto me ter (new)
Lander			
BE AGL E-2	Suite of image rs, chem ical analys ers, robo tic devices , & meteo sensors	(H) Potential repla cement by de scent probe under evaluati on, as a collabo ration with Russia	
TOTAL MASS (kg)	175	104	

MAJOR SCIENCE GOALS

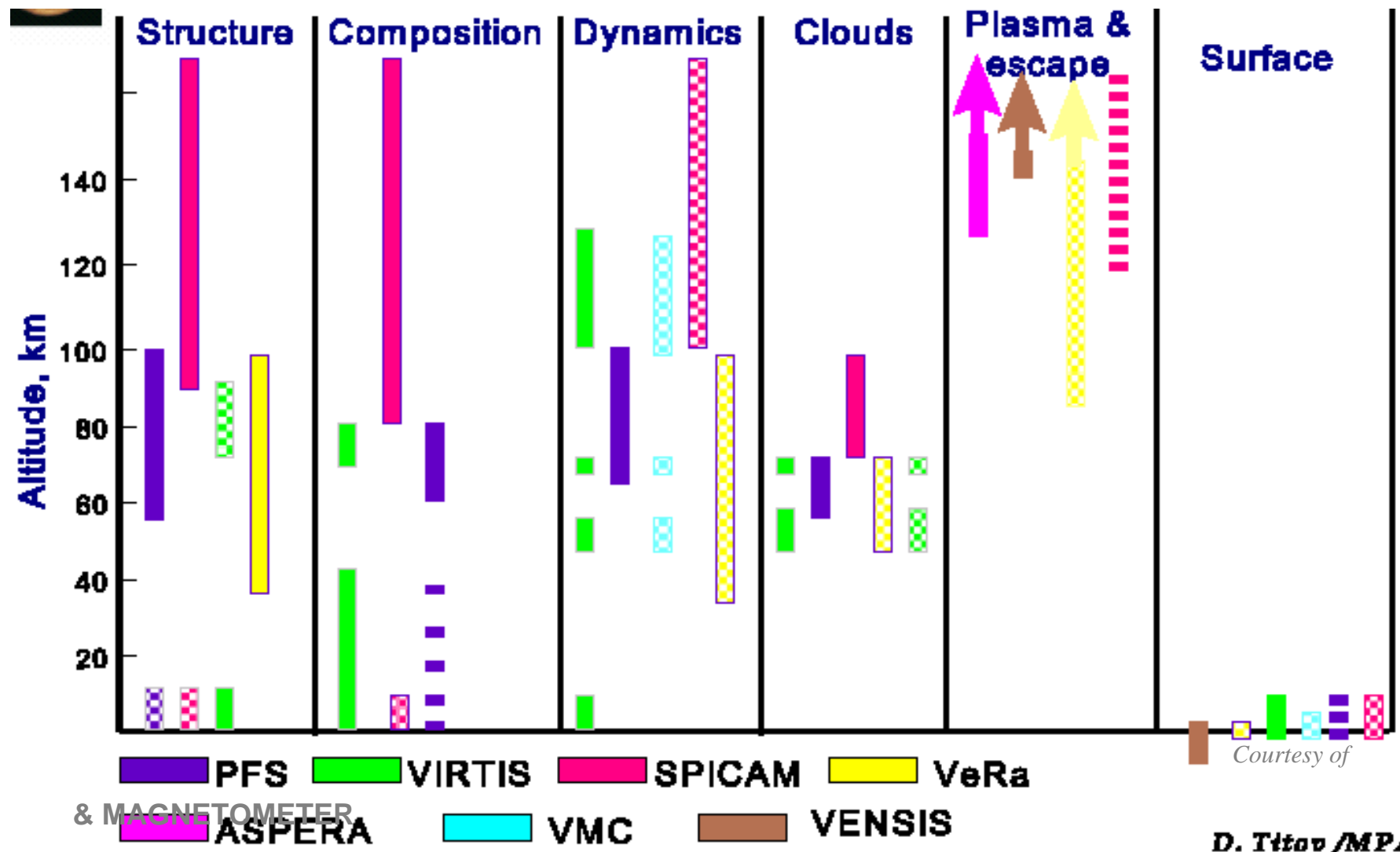
- ◆ Space environment:
 - Ionised plasma environment
 - Interaction with solar wind
- ◆ Atmosphere:
 - Mechanisms of general atmospheric circulation
 - Greenhouse effect
 - Physics & chemistry of cloud layer
 - Composition & chemistry of lower atmosphere
 - Atmosphere-surface interaction
- ◆ Solid planet:
 - Surface IR topography



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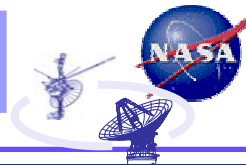


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Courtesy of

D. Titov /MPAe/



DSN support to the Venus Express Mission

- **Post Launch Tracking**
(assure round-the-clock coverage)
- **Cruise and Approach Navigation Tracking**
(Delta-DOR, VLBI technique for location in plane of sky)
- **VOI Support**

- **Radio Science Occultation Observations**
(2 wavelengths, S- and X-band, to separate ionosphere from neutral atmosphere)
- **Radio Science Bistatic Radar Observations**
(provides S-Band and larger aperture, stronger echoes)
- **Conduct Solar Corona Observations**
(Use 34-m and 70-m)

- **Augment Data Downlink during Science Campaigns**
(Venus Movies - Use 70-m)