

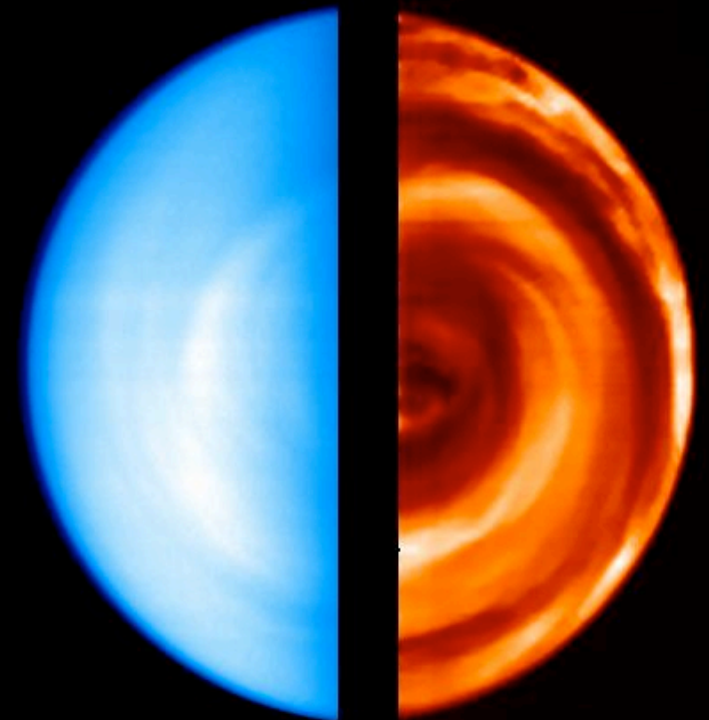
Venus Express Education and Public Outreach



Ms. Rosalyn A. Pertzborn, E/PO Lead
 Space Science and Engineering Center
 University of Wisconsin-Madison
 VEXAG Meeting #5, College Park, MD
 7 May 2008

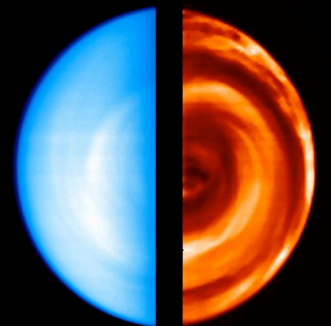
With
 Ms. Hsuan-Yun Pi, Ph.D. Candidate
 and Ms. Kate Abitz, Science Teacher

Presented by: Sanjay Limaye



Venus Express E/PO Program

- Sponsored by NASA, Coordinated with ESA
- First international E/PO Pilot program between NASA and ESA
- Joint efforts providing useful experience and new opportunities
- Your participation?



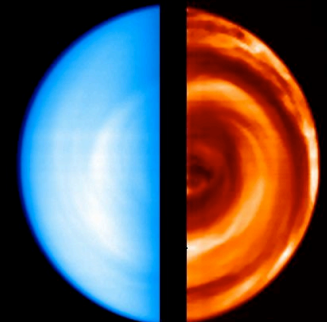
Summary of Efforts to Date: **Public Outreach**

- Launched Amateur observations of Venus in UV and IR through ALPO and BAA - April 2006
- Collecting amateur images since June 2006 for web posting Web Page launched - April 2006. Updated ~ monthly
- EGU 2006 Venus Outreach Presentation - Vienna, Austria, April 2006
- Venus Express E/PO Paper at DPS 2006
- Presentation - Madison Astronomical Society, 9 February 2007
- EGU Presentation on Education and Outreach effort, EGU 2007
- Native Sky Stories conference at Lac du Flambeau reservation - April 2007
- Presentation at the Royal Observatory of Belgium, April 2007 (Limaye)
- Presentation at the Annual Meeting of the Association of Lunar Planetary Observers (June, 2007, Limaye)
- Article in “Ciel et Terra” - January 2008 (Limaye)
- Madison Astronomical Society Presentation, May 2008 (Limaye)



Web Updates:

- Multimedia presentation of Dr. David Grinspoon's talk on Venus during 2006 Solar System Seminar @ DPS including audio and powerpoint with playback and navigation control (made possible by eTeach presentation tool developed by the Engage program at UW- Madison)
- http://venus.wisc.edu/presentation_grinspoon.html



Ciel et Terre

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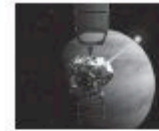
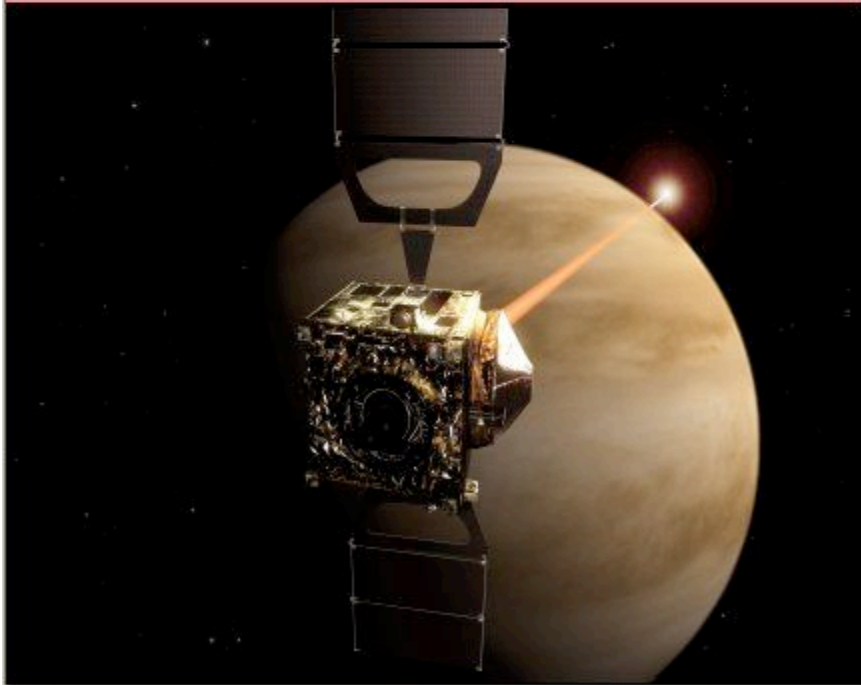


Bimestriel

Vol. 123, n° 6, novembre - décembre 2007

Avec l'appui de l'Administration générale de l'Enseignement et de la Recherche scientifique,
Service général du Pilotage du système éducatif du Ministère de la Communauté française

Bureau de dépôt: Bruxelles X - P401158



Venus Express de l'ESA a été lancé depuis Baïkonour le 9 novembre 2005 et est arrivé à destination le 11 avril 2006. Depuis, les instruments à son bord n'ont cessé de fournir de nouvelles données qui permettent de mieux comprendre cette planète complexe. Cette image illustre Venus Express en train d'effectuer des mesures dites en occultation stellaire. C'est un des modes d'observation de l'instrument SPICAVISOR. L'instrument enregistre le rayonnement émis par une étoile (dont le Soleil, on parle dans ce cas d'occultation solaire) lorsque celle-ci disparaît derrière la planète. Lorsque la lumière traverse l'atmosphère de Vénus, elle est absorbée à certaines longueurs d'onde caractéristiques des espèces présentes. L'analyse détaillée des spectres permet de déterminer les concentrations de nombreux composés, mais aussi de déduire la température des différentes couches sondées. Crédits: ESA

Ciel et Terre

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A noter dans vos agendas :

Visite du laboratoire souterrain européen de géodynamique de Walferdange (S.D. Luxembourg)

le 24 mai 2008

(renseignements utiles en page192)



Curriculum Activity updates: **Measuring Winds by Tracking Clouds**

- Original Version of Curriculum (presented November 2007) has been redesigned
- Design changes accommodate evaluation input provided by Grade 9-12 Teacher participants in UW School of Education Graduate Seminar
- A Teacher's Guide is under development
- Curriculum to be piloted at 2008 ALII Summer Workshop for Teachers in Honolulu, HA (Kadooka)
- Workshop planned for Livermore Unified School District in Summer/Fall 2008



Web Updates

- Added the first draft of curriculum
- Continue with current updates using the most recent Venus Express images from ESA's image gallery

Venus Express
Education & Public Outreach

Home | What's New | The VEX Mission | Education | About Venus | Women of VEX | Amateur Images | Contact

Recent Data from Venus Express

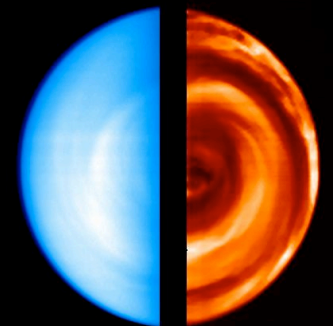
'Eye of the hurricane' on Venus. (VIRTISA, August 2007)	The south polar dipole, a complex atmospheric vortex-like feature situated over the south pole of the planet. (VIRTIS, August 2007)	A mosaic of the southern hemisphere of Venus seen at different wavelenghts. (VIRTIS, May 2006)	A false-colour movie was built with ultraviolet images. (VMC, 22 May 2006)

Welcome !!

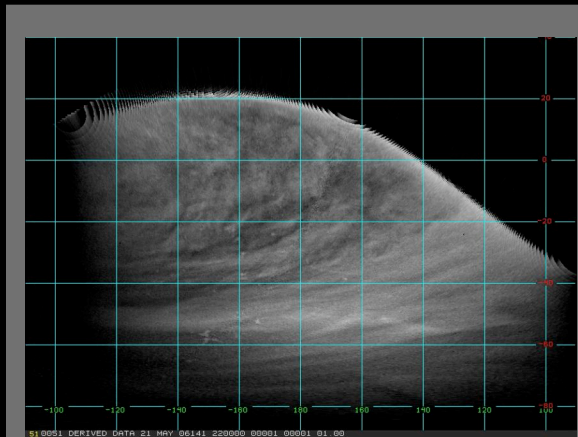
On November 9th of 2005, Venus Express was successfully launched from the Baikonur Cosmodrome in Russia. Successful insertion into Venus' orbit took place on April 11, 2006 and data analysis is well underway. Venus Express achieved its desired orbit in May and has been sending routine data from its science instruments. Results are being announced as they become available. The mission is expected to provide data on the Venus atmosphere for several of the planet's days.

Venus Express News

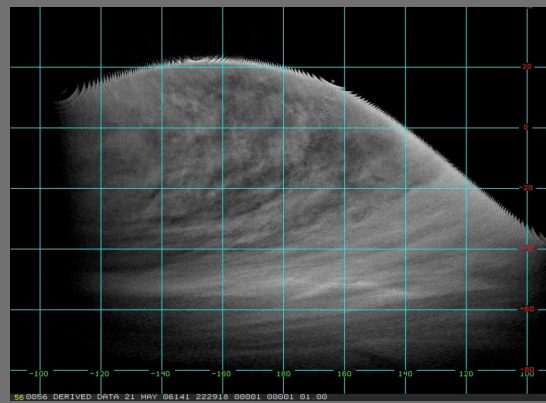
May 2008
Multimedia Presentation on Venus by Dr. David Grinspoon is now available to view on the website



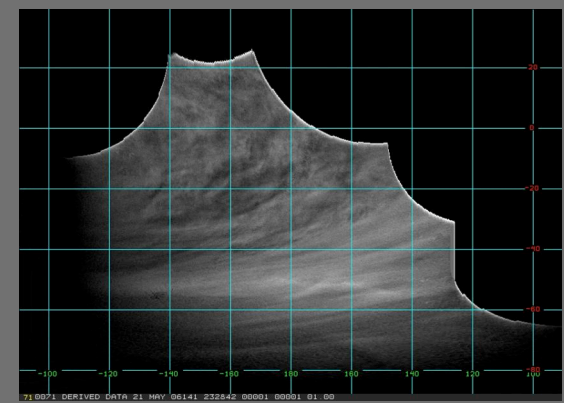
Curriculum Activity updates: Measuring Winds by **Tracking Clouds**



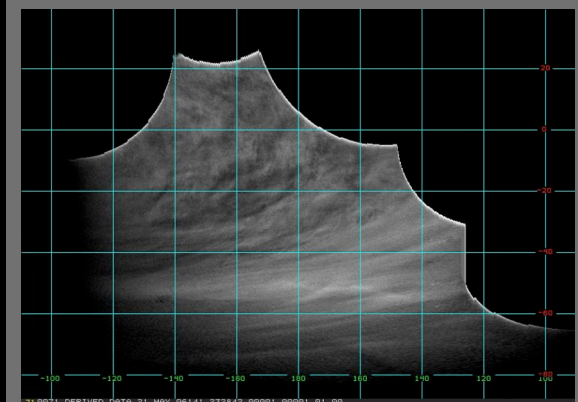
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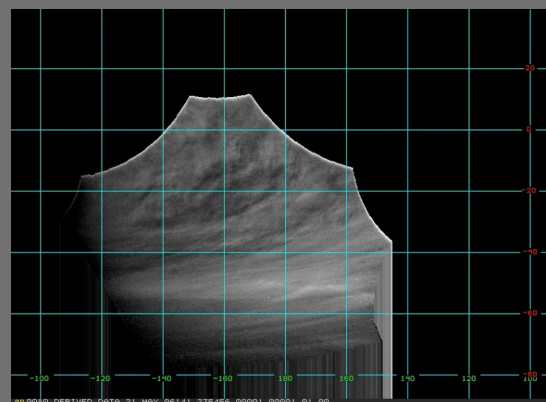
2) 223331 UT



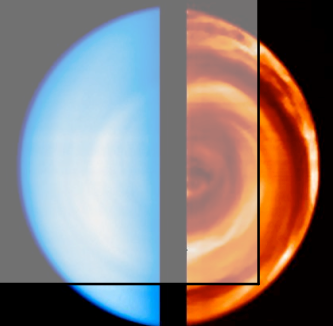
3) 230000 UT



4) 233231 UT



5) 235456 UT



Curriculum Activity updates: Measuring Winds by **Tracking Clouds**

- Added “Teacher’s Guide” section on how to use the Table for Computing Cloud Motions on Venus

**Table for Computing Cloud Motions on Venus:
Venus’ Circumference at different latitude degrees**

Assumed radius at the cloud top level : 6120 km

Latitude	Circumference (km)	Km per 1 degree of longitude	Latitude	Circumference (km)	Km per 1 degree of longitude
0	38453	106.8	31	32961	91.6
1	38447	106.8	32	32610	90.6
2	38430	106.7	33	32249	89.6
3	38400	106.7	34	31879	88.6
4	38359	106.6	35	31499	87.5
5	38307	106.4	36	31109	86.4
6	38242	106.2	37	30710	85.3
7	38166	106.0	38	30301	84.2
8	38079	105.8	39	29884	83.0

Teachers Guide:

How to Calculate Wind Speed

1. To put the images in order

- Look for cloud features in each image that are distinct (easy to see).
 - Focusing on one feature, try to find that feature in another picture and then another.
 - Do this for several features; until you have an order that makes sense, all features are moving consistently.

2. To find the scale of the image

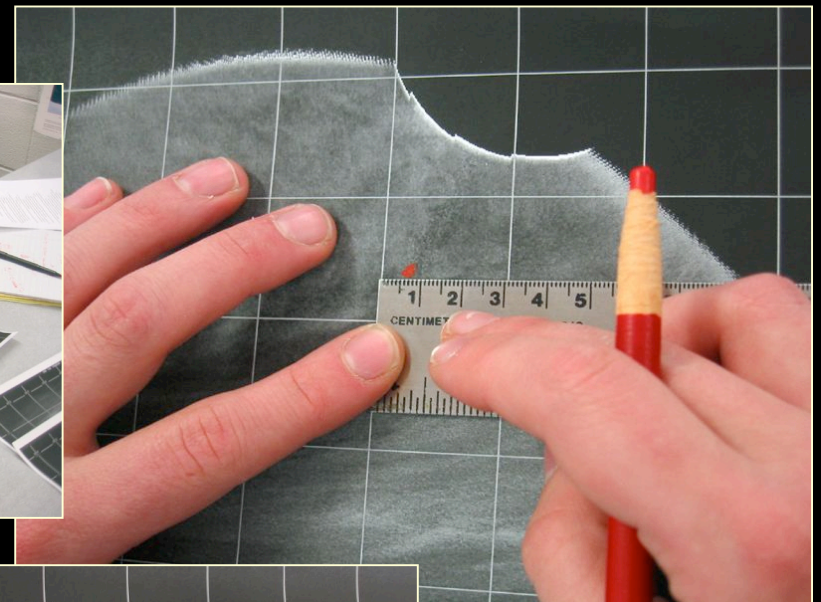
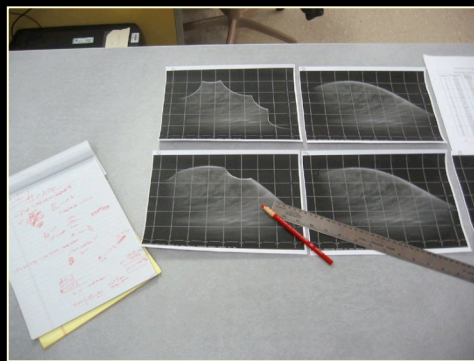
- Using the cm side of a ruler, measure the distance between any two given latitude lines. Note the number of degrees between the two lines. Then divide the number of degrees by the measured distance in **mm**.
 - For example: If you measure the distance between 30° and 60° and it is 46 mm. Take 60-30 and divide by 46 to get 0.65.
 - The scale for latitude is 0.65 mm to 1°
- To find the longitude scale, follow the same procedure, but measure the distance between any two given longitude lines.

3. Tracking a cloud feature

- Pick three images (from the five)
 - The best three images to pick are those that are farthest apart in time. It will make everything easier to measure and calculate.
 - If you have images ABCDE (in that order). It would be best to pick images ACE to work with here.
- Find a distinct cloud feature that you can see in all three images
- Mark that cloud feature on each successive image with a colored dot from a pen tip.

Curriculum Activity updates: Measuring Winds by **Tracking Clouds**

Adding visual instruction to guide teachers and students through the activities...

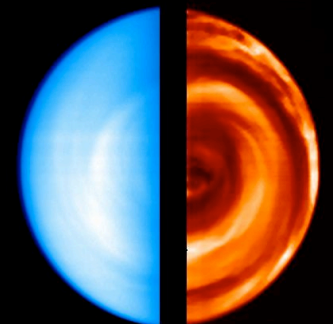
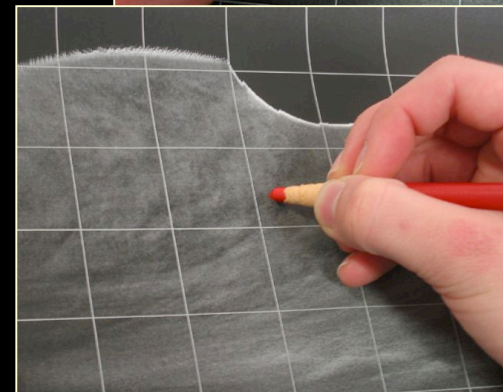


Handwritten notes and a table for cloud motion calculations.

Handwritten notes include:

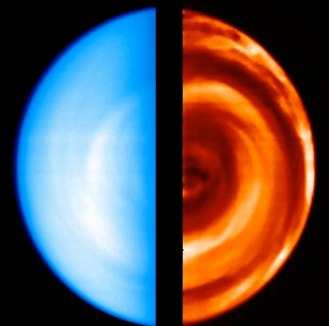
- $15^\circ \text{ latitude} = 13076 \text{ km circumference}$
- $13^\circ \text{ latitude} = 2000 \text{ km}$
- 10.4° lat
- $u = 0.05 \text{ km/h}$
- $u = 0.050 \text{ km/h}$
- $70 \text{ km} / 66 \text{ km} = 1.045 \text{ km}$
- 4273 km
- 4273 km

Assumed radius at the cloud top level: 6120 km				
Latitude	Circumference (km)	Km per 1 degree of longitude	Latitude	Circumference (km)
0	38453	106.8	31	32961
1	38447	106.8	32	32810
2	38430	106.7	33	32649
3	38400	106.7	34	31879
4	38369	106.6	35	31499
5	38337	106.6	36	31109
6	38302	106.5	37	30710
7	38262	106.5	38	30311
8	38219	106.4	39	29912
9	38168	106.4	40	29513
10	38109	106.2		
11	38079	106.2		
12	38060	106.2		
13	38069	106.2		
14	38093	106.2		
15	38131	106.2		
16	38183	106.2		
17	38249	106.2		
18	38329	106.2		
19	38423	106.2		
20	38531	106.2		
21	38653	106.2		
22	38789	106.2		
23	38939	106.2		
24	39103	106.2		
25	39281	106.2		
26	39473	106.2		
27	39689	106.2		
28	39929	106.2		
29	40193	106.2		
30	40481	106.2		



Planned Future Efforts

- Web page updates, new material
- Maintain Amateur image archive
- Collateral programs:
 - Venus GCM/UCLA & Livermore Joint Unified School District: Planning meeting with teachers - May 2008
 - ALII (Honolulu, HA) 2008 Summer Workshop for Teachers - July 2008



Send feedback to:

RoseP@ssec.wisc.edu

Thank you...

