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## Unexplained Turbulence in Venusian Clouds

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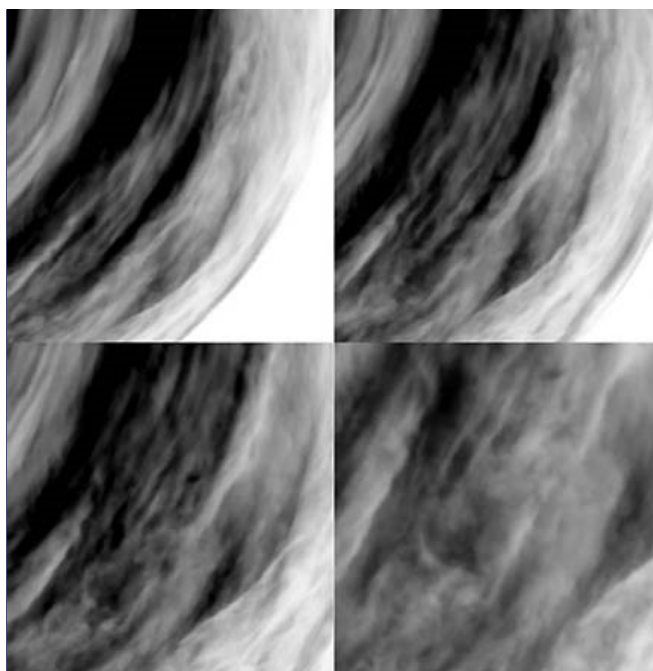
*"It is not yet clear if atmospheric turbulences may be induced by rough topography below the clouds."- ESA*



Artist's impression of European Space Agency's Venus Express orbiting Venus, courtesy ESA.

Earthfiles, news category.

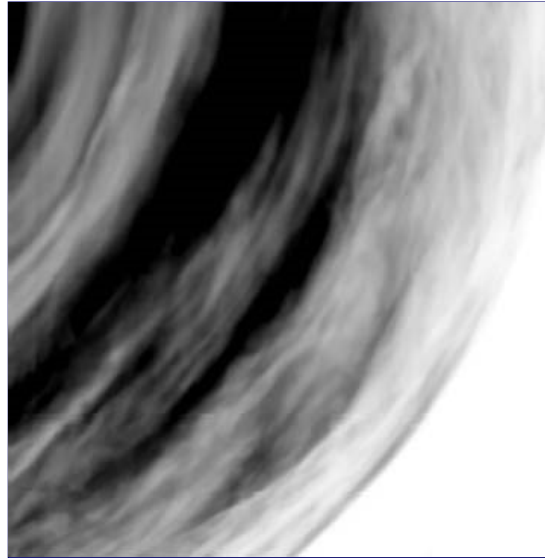
**April 3, 2007 Paris, France** - New images and data from the European Space Agency's mission to Venus provide more details about the turbulent and noxious atmosphere of Earth's sister planet. What causes violent winds and turbulences? Is the surface topography playing a role in the complex global dynamics of the atmosphere?



The images, showing a complex cloud system, were taken on the night-side of Venus at a wavelength of 1.7 micron that allows viewing the deep atmospheric layers. Credits: ESA/VIRTIS/INAF-IASF/Obs. de Paris-LESIA.

ESA reports: "Above is a composite of four different views of the Venusian cloud system. The grey-scale of the images is such that black means more transparency, therefore less clouds, while white means more opacity, therefore more cloud concentration. The images were acquired on September 24, 2006, by the Ultraviolet, Visible and Near-Infrared Mapping Spectrometer (VIRTIS) on board ESA's Venus Express, at distances from the Venusian surface of about 40,398 miles (65,000 kilometers) in top left; 37,290 miles (60,000 kilometers) in top right; 32,940 miles (53,000 kilometers) in bottom left; 22,996 miles (37,000 kilometers) in bottom right."

## Venus South Pole Clouds from 65,000 Kilometers

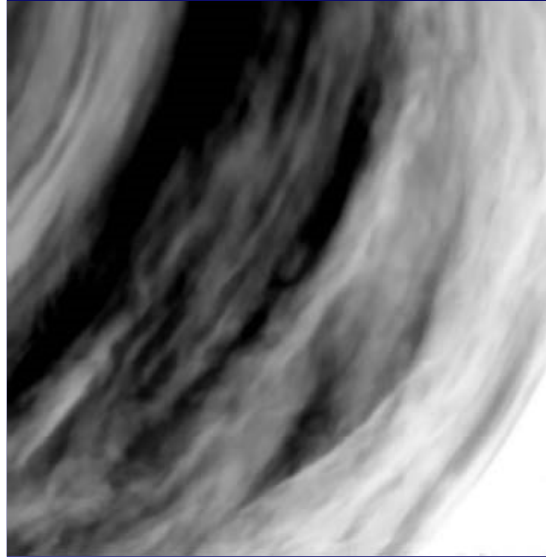


The image, showing a complex cloud system, was taken on the night-side of Venus at a wavelength of 1.7 micron at 65,000 kilometers away that allows viewing the deep atmospheric layers. Image credit: ESA/VIRTIS/INAF-IASF/Obs. de Paris-LESIA.

"This image of the Venusian south polar region was acquired on September 24, 2006, by the Ultraviolet, Visible and Near-Infrared Mapping Spectrometer (VIRTIS) on board ESA's Venus Express, from a distance of about 65,000 kilometers from the planet's surface. The field of view covers an area located at approximately 20 degrees west longitude (diagonal top left to bottom right), spanning from the equator (at the horizon on the right) to 60 degrees southern latitude (top left corner of the image).

"The Alpha Regio area is at the bottom left of the image. This area is characterised by a series of troughs, ridges, and faults that are oriented in many directions, with surface features that can be up to 4 kilometers high. It is not yet clear if atmospheric turbulences may be induced by the rough topography below the clouds. The grey-scale of the image is such that black means more transparency, therefore less clouds, while white means more opacity, therefore more cloud concentration."

## Venus South Pole Clouds from 60,000 Kilometers



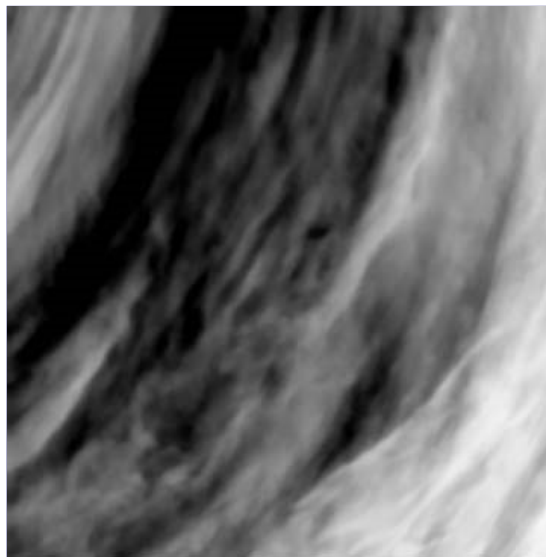
The image, showing a complex cloud system, was taken on the night-side of Venus at a wavelength of 1.7 micron at 60,000 kilometers away that allows viewing the deep atmospheric layers. Image credit: ESA/VIRTIS/INAF-IASF/Obs. de Paris-LESIA.

"This closer image of the Venusian south polar region was acquired on September 24, 2006, by the Ultraviolet, Visible and Near-Infrared Mapping Spectrometer (VIRTIS) on board ESA's Venus Express, from a distance of about 60,000 kilometers from the planet's surface.

The image, taken on the night-side of Venus at a wavelength of 1.7 micron, shows waves structure (faint light vertical streaks at the lower left part of the dark band in the center-left side of the image) and a highly turbulent region (bottom left). The grey-scale of the image is such that black means more transparency, therefore less clouds, while white means more opacity, therefore more cloud concentration.

"The Alpha Regio area is at the bottom left of the image. This area is characterised by a series of troughs, ridges, and faults that are oriented in many directions, with surface features that can be up to 2.4 miles (4 kilometers) high. It is not yet clear if atmospheric turbulences may be induced by the rough topography below the clouds."

## Venus South Pole Clouds from 53,000 Kilometers



The image, showing a complex cloud system, was taken on the night-side of Venus at a wavelength of 1.7 micron at 53,000 kilometers away that allows viewing the deep atmospheric layers. Image credit: ESA/VIRTIS/INAF-IASF/Obs. de Paris-LESIA.

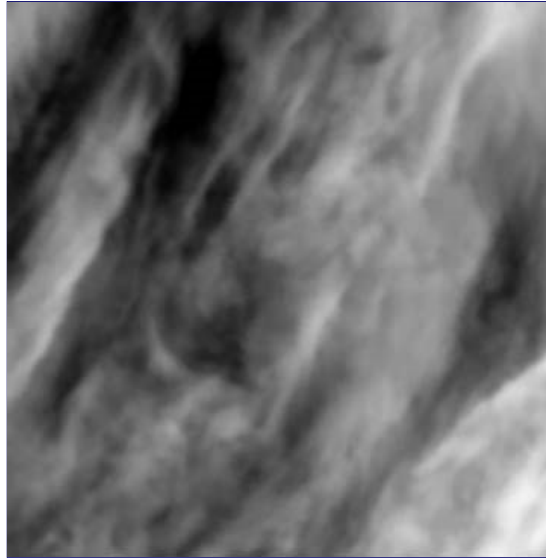
"This image of the Venusian south polar region was acquired on 24 September 2006 by the Ultraviolet, Visible and Near-Infrared Mapping Spectrometer (VIRTIS) on board ESA's Venus Express, from a distance of about 53,000 kilometers from the planet's surface.

The image, taken on the night-side of Venus at a wavelength of 1.7 micron, shows waves structure (faint light vertical streaks at the lower left part of the dark band in the centre-left side of the image) and a highly turbulent region (bottom left). The grey-scale of

the image is such that black means more transparency, therefore less clouds, while white means more opacity, therefore more cloud concentration.

"The Alpha Regio area is at the bottom left of the image. This area is characterised by a series of troughs, ridges, and faults that are oriented in many directions, with surface features that can be up to 2.5 miles (4 kilometers) high. It is not yet clear if atmospheric turbulences may be induced by the rough topography below the clouds.

## Venus South Pole Clouds from 37,000 Kilometers



The image, showing a complex cloud system, was taken on the night-side of Venus at a wavelength of 1.7 micron at 37,000 kilometers away that allows viewing the deep atmospheric layers. Image credit: ESA/VIRTIS/INAF-IASF/Obs. de Paris-LESIA.

"This image of the near-equatorial region of Venus was acquired on September 24, 2006, by the Ultraviolet, Visible and Near-Infrared Mapping Spectrometer (VIRTIS) on board ESA's Venus Express, from a distance of about 37,000 kilometers from the planet's surface.

The image, taken on the night-side of Venus at a wavelength of 1.7 micron, provides a close-up view of a highly turbulent region, with irregular and warped clouds, which is common at these low latitudes. This is different from what happens at higher latitudes (pole-ward) where clouds are generally streaky and more regularly shaped. The grey-scale of the image is such that black means more transparency, therefore less clouds, while white means more opacity, therefore more cloud concentration.

"The gray 'bubble' slightly below the centre of the image is located at about 27 degrees southern latitude and 7 degrees western longitude, and has a diameter of about 186 miles (300 kilometers).

"The Alpha Regio area is at the bottom left of the image. This area is characterised by a series of troughs, ridges, and faults that are oriented in many directions, with surface features that can be up to 2.5 miles (4 kilometers) high. It is not yet clear if atmospheric turbulences may be induced by the rough topography below the clouds."

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### More Information:

For further information about Venus and solar system, please see reports below in the **Earthfiles Archives:**

- 03/30/2007 -- Fastest Orbiting Object in Our Solar System is One of Strangest
- 01/13/2007 -- Confusing Sun: Will Solar Cycle 24 Be Most Intense On Record?
- 12/19/2006 -- First Stars - Or First Black Holes - in Universe?
- 12/15/2006 -- Stardust Comet Mission Reports New Kind of Organics
- 12/08/2006 -- NASA Wants Permanent Moon Base by 2024
- 12/01/2006 -- Deep Impact and Stardust: Are Comets Made of the Same Stuff?
- 11/27/2006 -- Namibia Telescopes Find First "Gamma Clock" in Milky Way Galaxy
- 10/23/2006 -- One, Maybe Two, More Mysterious Radio Bursts from Galactic Center
- 10/06/2006 -- Viewer Letters About Mayan "Lamat"
- 10/05/2006 -- U. K.'s Last 2006 Wheat Formation - A Mayan "Lamat"?
- 08/23/2006 -- Solar Cycle 24 - Headed for Intense X Flares by 2010-2012?
- 07/25/2006 -- Giant Hydrocarbon Lakes Found On Saturn Moon, Titan
- 06/15/2006 -- "Extraterrestrial Life" in Red Rain of Kerala, India?

- 05/19/2006 -- Simple "Binocular" Telescope Finds Another Planet Beyond Solar System
- 05/05/2006 -- Saturn's Titan Moon Has Puzzling Dunes
- 04/11/2006 -- Hot Venus Now Studied by ESA's Venus Express
- 11/18/2005 -- Is the Sun Heating Up?
- 11/09/2005 -- Dust Storm On Mars, Cosmic First Light and Black Hole At Our Galaxy's Center
- 10/19/2005 -- Saturn's Icy Moon, Dione, Up Close
- 09/23/2005 -- 9 X-Class Solar Flares Between September 7 - 19, 2005.
- 09/16/2005 -- "Planet X" and the Kuiper Belt's Oddballs, "Santa" and "Easterbunny"
- 09/09/2005 -- Rock Stars and Extraterrestrials
- 08/12/2005 -- Deep Impact Spectra: Carbonate, PAHs and Some Amino Precursors in Comet Tempel I
- 07/30/2005 -- Astronomers Report 10th Planet Far Beyond Pluto
- 07/10/2005 -- First Data from Deep Impact Crash Into Comet Tempel I
- 06/29/2005 -- July 3-4, 2005: NASA "Deep Impact" Spacecraft to Blast Hole in Comet Temple I
- 05/07/2005 -- Did Milky Way Gas and Dust Turn Earth Into Icy Snowball Four Times?
- 05/06/2005 -- What Are The Straight Lines on Saturn's Titan Moon?
- 04/01/2005 -- What's Killing Off Marine Life Every 62 Million Years?
- 03/25/2005 -- Glow of Distant Worlds Seen For First Time
- 03/20/2005 -- Astronaut John Young: "The Moon Can Save Earth's Civilization."
- 03/03/2005 -- What Made Five Strong Radio Bursts At the Center of Our Galaxy?
- 02/17/2005 -- Iapetus and Enceladus: Baffling Moons of Saturn
- 01/22/2005 -- Titan - A Moon Where It Rains Methane Into Seas and Soils of Hydrocarbons
- 01/13/2005 -- NASA "Deep Space" Craft Will Hit Comet On July 4, 2005
- 12/17/2004 -- Is Our Solar System's Red, Mysterious Sedna An Alien Planetoid?
- 11/17/2004 -- European Space Agency's SMART-1 Satellite Begins Moon Orbit
- 06/25/2004 -- Wild 2, An Amazing Comet
- 06/07/2004 -- Mayan Priest in Guatemala Writes About Rare Venus Transit
- 02/14/2004 -- More High Strangeness in the Michigan Sky
- 02/03/2004 -- Planet 150 Light Years from Earth Has Oxygen and Carbon Atmosphere
- 01/05/2003 -- What Are the Grooves in the Martian South Pole?
- 06/16/2001 -- Beyond Stonehenge with Astronomer Gerald Hawkins
- 06/06/2001 -- Another Unusual "Face" On Mars
- 03/18/2001 -- Can Earth Plants and Bacteria Grow On Mars?
- 03/11/2001 -- Are the "Tubes" On Mars from Lava, Water, or Wind?
- 02/12/2001 -- NEAR Shoemaker Spacecraft's Historic First Landing On Eros Asteroid
- 01/14/2001 -- An Australian Zircon Crystal is 4.4 Billion Years Old
- 01/07/2001 -- Dinosaur-Killing Asteroid Punched 22 Miles Through Earth's Entire Crust
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- 12/03/2000 -- Bacteria from Outer Space?
- 10/09/2000 -- Astronomy Updates
- 10/01/2000 -- A Search for Earth's First Life
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- 06/26/2000 -- 250 Photographs of Mars Show Signs of Water
- 04/24/2000 -- A Black Hole in the Big Dipper?
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- 02/16/2000 -- 433 Eros, Orbiting An Asteroid Up Close
- 01/28/2000 -- Black Hole Mystery at the Center of the Andromeda Galaxy
- 01/17/2000 -- Chandra Telescope Helps Solve X-Ray Mystery
- 12/01/1999 -- Six More Planets Discovered 60 to 190 Light Years Away
- 11/18/1999 -- Short Environmental Updates
- 11/06/1999 -- Leonids - and Linearids? - Light Up November Skies
- 10/25/1999 -- A Mysterious "Perturber" at the Edges of Our Solar System
- 09/24/1999 -- New Photos from NASA's Chandra X-Ray Observatory
- 08/28/1999 -- Oddball Quasar and Salt Water Inside Meteorite
- 06/15/1999 -- Current Brightest Binocular Comet and Upcoming Solar Eclipse
- 03/14/1999 -- Africa Stone Circle and Triangle of Lights over Tucson, Arizona

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## Website:

European Space Agency: <http://www.esa.int/esaCP/index.html>

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