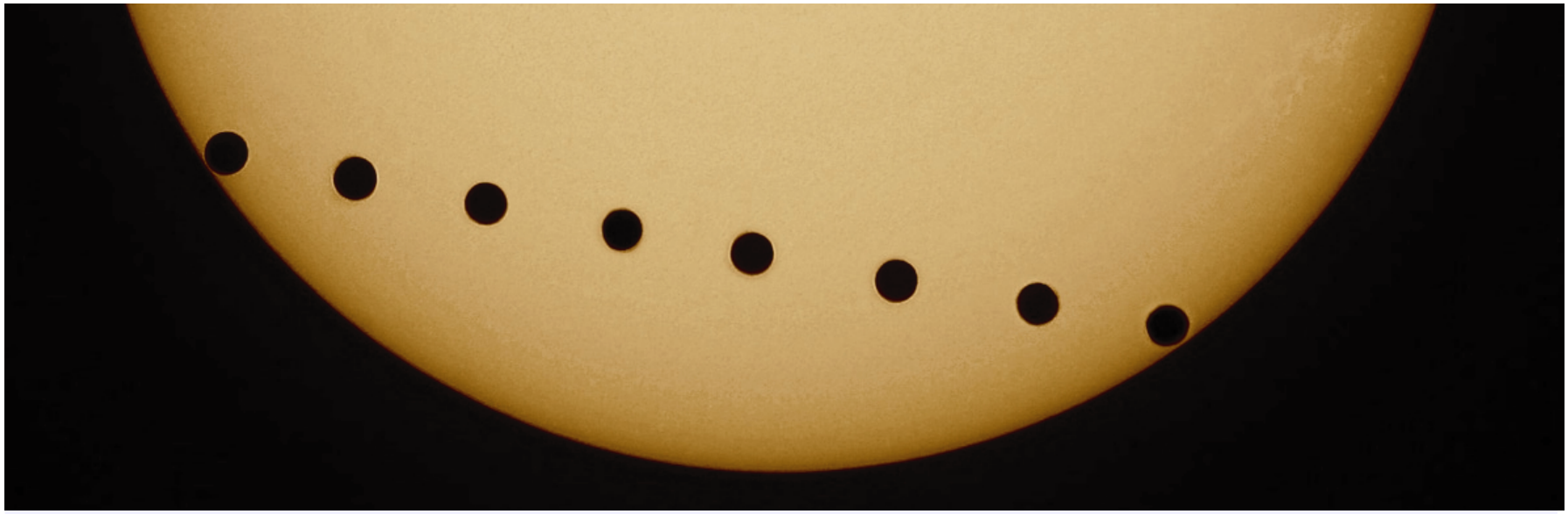

# The Venus Transit

## and other associated activities at IASB-BIRA

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aeronomie.be

# Outreach activities

- Website : http://venus.aeronomie.be/en/transit/
  - Each Friday, a new topic is treated
  - In En, Fr, Ndls
  - Articles, interviews, glossary, …
- Observation from Svalbard (Norway, 78°N)
  - Organized by ESA (Venus Express)
  - Obs. during the complete transit (4 contacts)
  - Linked to US, Japan, … observers
  - 'live' feeds for the Website, Facebook & Twitter

# Scientific activities from the ground

- Maybe a cytherograph operated by IASB-BIRA @ Svalbard
  - Network of observers all around the world

Venus Twilight Experiment

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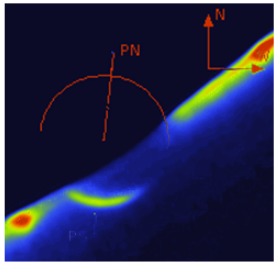
You are here: Venus Twilight Experiment > Main Web > WebHome (24 Apr 2012, PaoloTanga)

Edit Attach

## The Venus Twilight Experiment

### Refraction and scattering phenomena during the transit of Venus on June 5-6, 2012

Planetary transits are a powerful method for discovering and characterizing exoplanets, but no transits can be seen in more details than those involving our own Solar System members, such as the transits of Venus and Mercury in front of the Sun. During and around Venus transits, in particular, interesting phenomena occurs, related to physical and chemical properties of its atmosphere. During ingress and egress a bright and thin luminous arc (the "aureole") is observable, appearing around the circumference of Venus' disk which is partially outside the solar limb. This peculiar aspect of the planet has been observed for the first time in 1761 and then in all the subsequent transits, with varying intensity and aspect. Farther away from the Sun, the aureole - due to light refraction - disappears and Venus shines from the light diffused by droplets dispersed above its thick cloud deck.



A. and S. Rondi - June 8, 2004

We are establishing an international collaboration for deploying specialized instruments in the transit visibility area. We also realy upon the collaboration of observers that will use professional instruments at several sites. The multi-wavelength data will be interpreted thanks to a numerical model capable of reproducing the observations.

Our final aims are a better characterization of these *twilight phenomena* and - in turn - an improved undestarding of the atmosphere of Venus, jointly with the observations obtained by Venus Express, the probe now orbiting the planet.

Science background

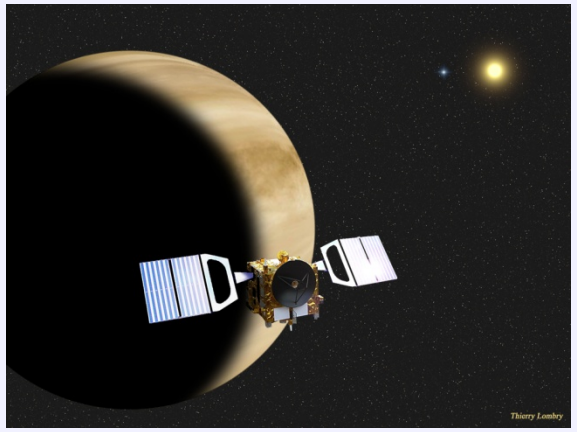
Sites for the Venus Twilight Coronagraphs

About us

Collaborations

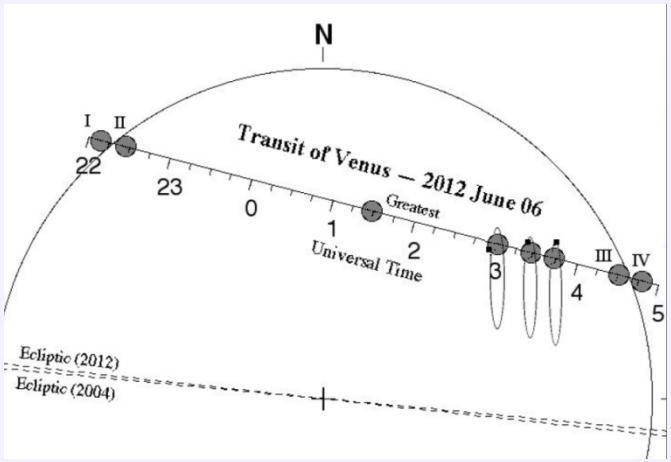
# Scientific activities from space

- Observations by SOIR on-board Venus Express
  - SOIR performs solar occultation in the IR (2.2-4.3 μm)
  - Measures vertical profiles (70-165 km) of
    - Densities ($CO_2$, CO, HCl, $H_2O$/HDO, $SO_2$, …)
    - Temperature
    - Aerosols OD/extinction



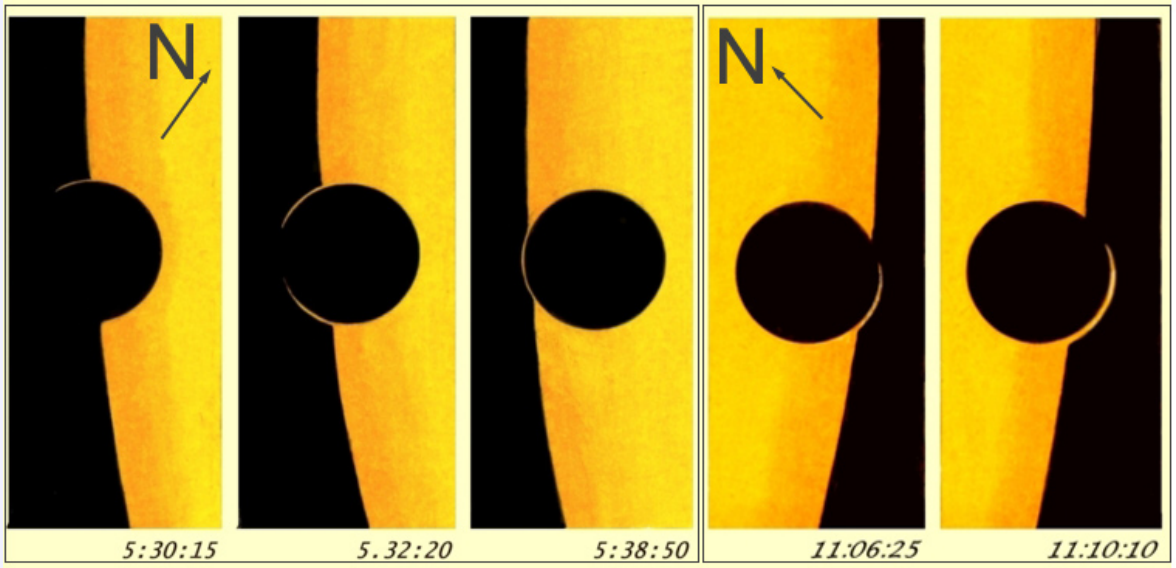
- Only instrument on VEX that will be operated during the transit

- Will help constrain temperature and aerosols in the modeling of the aureole



# Venus as an exoplanet

- Use the transit 5-6 June 2012
- Transmission of the Venus atmosphere during the transit
  - Can we detect the atmosphere of an Earth-size exoplanet ?
  - What atmospheric signatures can we expect ?
  - Is it habitable ?
  - Proxy for future missions




Tanga et al., Icarus 218 (2012) 207-219

# Outreach activities – Planetary Aeronomy Unit

- Conferences in schools, institutes, observatories….
- Website : http://planetary.aeronomie.be/en/outreach.htm
- Thanks to the team for writing/translating/filming:

  **S. Delanoye, R. Drummond, A. Mahieux, S. Robert, V. Wilquet**

- and to the Communication Cell for their support

  **S. Fratta, T. Somers**