DENVER MUSEUM OF NATURE AND SCIENCE
VENUS WINDS PROJECT
MINUTES OF MEETING

Date/Time/Location: 3 September 2015 6:00 PM Exploration Studio 102

ATTENDING

Art	**Ashley**	Christian	Cristy	Dave	Drew	Dylan
Elizabeth	Emilie	John	**Kevin**	**Mark**	Marta	Michael D.
Michael L.	Rachel	Terran	**Yvonne**			

Guests: **None**

The meeting opened at 6:00 PM at Exploration Studio 102 in the Morgridge Wing. Those **attending** are listed above.

NEW AGENDA ITEM

Venus greenhouse effect Mark

Mark explained how the greenhouse effect works on Venus in contrast to the Earth's greenhouse. One of the differences is that on Earth, most of the solar energy is deposited on the ground, while on Venus it is deposited in the clouds. Still, while the greenhouse effect increases the Earth's surface temperature by 30°C, it increases Venus' surface temperature by 500°C. The solar energy deposited in the clouds of Venus is what drives the winds that we are measuring. More solar energy is deposited in the equatorial clouds than at the poles. The temperature difference forces the atmosphere to move and redistribute the heat more evenly across the planet. This is also different from Earth, where half the extra heat at the Equator is transported by the oceans, and half is transported by the atmosphere. The atmosphere near the surface is so dense that the temperature is almost the same everywhere, just as in the Earth's oceans.

The behavior of the east-west winds of Venus – how they change with latitude and over time -- is one piece of the puzzle in understanding how atmospheric dynamics and the greenhouse work together to produce the overall circulation of Venus' super-rotating atmosphere.

Because of the length of the **Venus greenhouse effect** presentation and the small attendance, the following **OLD BUSINESS** content will be discussed at the next regular meeting on September 24.

OLD BUSINESS

Wind velocities for analysis of July 4-13, 2004 data Mark, Art

This task was to center each image and to send those ten images to Mark who then converts each image, using a cylindrical map projection, into a rectangular image. A 370px mask was

provided to do the centering step. Several analysts had completed the centering task and sent those images to Mark. Unfortunately an error in the conversion to rectangular coordinates was discovered and corrected. Analysts should redo the centering exercise and send their images to Mark for conversion to the rectangular format.

Art discovered a problem in using a circular mask/circle to center the image before rotation. It happens that a mask/circle diameter of 370px technically works only at one time, in this case July 5 at 1800 UT. In the July 4-13 series, the Venus diameter changes about 0.6 arc-sec every day.

Wind velocities for 10 nights in July 2004 Mark

After Mark has distributed projected rectangular images for the nights of July 4-13, 2004, we will determine velocities for each pair. There are advantages to using rectangular images, rather than raw images, to determine wind speed.

Removing spectrometer slit Mark, Michael L. and Kevin

Mark described how to use Photoshop to eliminate the spectrometer slit; this was originally discovered by Marta. Michael figured out how to do this in Gimp. Instructions for Photoshop and Gimp have been sent by e-mail. Discussion will focus on those analysts who have done this experiment with their results.

Identifying cloud features that repeat six days later Mark

We examined images from July 4–13, 2004 and discovered that features seen on July 4 can be seen on July 10; other features on July 5 can be seen on July 11. This six-day interval is evidently the rotation period of the atmosphere at this altitude. Those who have tried identifying persistent features should discuss their experience.

The next meeting on September 24 will be in Exploration Studio102 at 6 PM. Please note that the next meeting is 3 weeks after the one on September 3, rather than the usual 2 weeks.

Submitted by Arthur C. Tarr, Venus Winds Project Coordinator