

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

Date/Time/Location: 24 March 2016 6:00 PM Studio 102

ATTENDING

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

Guests: None

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

ASSIGNMENT FOR NEXT MEETING

Each assignment is a step toward the goal of generating your own wind velocity vs. latitude plot for one night's observations or pair of nights. One plot from each of you (with error bars) will be a figure in the paper. It may take more than one interval between meetings to complete an assignment.

The assignment for the April 12 meeting will be to browse the images from the December 2010-January 2011 and September 2015 runs and pick a night that you want to work with. There are 8 to 10 nights to choose from. Find 16 sharp images from your selected night, approximately equally spaced in time, and center each one. Please email me the night you've chosen to work with, and your 10 centered images. Several of you have already done this with 10 images from either July 2004 or December 2010. If that is the case, please choose a new night to work on.

Meeting schedule changes – Mark and Art

It was decided that most future Venus Winds Project meetings will be held on Tuesday evenings beginning with April 12. Tuesday was the day of the week that had the fewest complications with personal schedules reported in a Doodle poll conducted several weeks ago. The personal schedule conflicts ranged from one meeting per month to two meetings every other month. We regret that all active members' personal schedules could not be accommodated. We plan to set the schedule by consensus in 3-month blocks, in order to reserve Exploration Studios 102 or 106 for their high quality projection systems.

OLD BUSINESS

Navigating the new file system – Mark

Mark showed results of previous volunteers' analyses that are now on the data server. These were brief movie clips of co-registered images, matching frame contrasts by scaling images by their background sky values, and overlaying semi-transparent cloud layers on to Venus surface base images. Many of these movie clips are still on the Space Odyssey Science on a Sphere system.

NEW BUSINESS

Data required for proposed journal article -- Mark

Mark discussed in detail the necessary data analyses required to prepare an article for submission to a journal. These included uniform data processing of the highest-quality Venus images acquired by Mark and Eliot Young at the NASA telescope in Hawaii. Mark emphasized the importance of consistent data processing procedures that ensure the highest quality of images and hence, the resultant data quality.

Global Venus observation project -- Mark

Mark discussed a proposed multi-national collaboration of observatories capable of recording daily sequences of Venus images that, in effect, would close the ~21 hour gap between daily images acquired in Hawaii. The collaboration would result in a smoother daily transition of cloud features and potentially over longer periods of time, such as the six-day rotation of Venus.

Processing Steps -- Mark

The important issue of the order of the initial processing steps was discussed. Cleaning up the images (bad pixel removal) and removing the spectrometer slit are best done before any centering. However, centering is the critical step that requires a lot of practice to get right. So it is best to get to the centering right away. One way to 'keep your work' when centering is to record how many pixels in x and y each image had to be shifted. That way, you can return to the raw images, perform the clean up and spectrometer slit, and just shift each one by the x- and y-shift values that you recorded. This can be done automatically with a simple program, re-creating the time-consuming centering work that you did earlier.

POSTPONED

Centering images demos – Ashley and Yvonne

These analysts will discuss their own image centering techniques using Photoshop and GIMP.

Spectrometer slit removal - Michael Logan

Michael will show how he uses GIMP to remove the spectrometer slit and other artifacts

Wind Velocity Error Analysis –Mark

Mark will go over the error budget for the wind velocity calculations using existing spreadsheet data. We will compare our error bars to those published for winds derived by Venus Express.

The next meeting will be on 12 April 2016 at 6 PM. Location to be announced.

Submitted by Arthur C. Tarr, Venus Winds Project Coordinator