

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

Date: 6 Feb 2014

ATTENDING

Bullock	Harter	Knutson	McGoudrick	Romero
Doubek	Hink	Lindsay	Rabellino	Tarr

Guests: None

The meeting opened at 6:05 PM. Those **attending** are listed above.

OLD BUSINESS

Assignments were made at the 23 Jan 2014 meeting to determine wind speeds at least seven different latitudes at five or more evenly-spaced times were as follows:

8 Jul 2004-Bryan; 9 Jul 2004-Michael D.; 10 Jul 2004-Art; 11 Jul 2004-Sarah; 12 Jul 2004-Carlos; 13 Jul 2004-Mark

None of the assignments were completed for a variety of reasons, one of which is that the geographical coordinates have not been computed for any day except several dozen of the 12 Jul 2004 images that were used to produce the SOS movie last fall.

A review of the methodology for computing Venus wind speeds was tabled until more analysts are present.

NEW BUSINESS

Projection on to the wall monitor from individual computers was not possible. Inform Dave Blumenstock.

Mark will demonstrate results for 13 Jul 2004 at the next meeting.

A short discussion followed concerning the need for analysts, who are also experienced programmers, to write code to automate processing of Venus images after conversion from FITS format. Two examples are (a) *contrast matching* and (b) *spectrometer slit removal*.

Art reported on his efforts to determine preliminary sample velocities on the 12 Jul 2004 data set. He had completed observations of nine bright cloud features on frames #0001 and #1600 out of approximately 3200 frames comprising the sequence. He will send those observations to Carlos whose assignment is 12 Jul 2004.

Discussion followed regarding the tracking of a cloud feature over a period of up to three hours. The observation has been made that a target cloud may morph into different shapes over that observational period. One assumption that is commonly made is that the path of a moving cloud feature may be approximated by linking great circle segments with corresponding time intervals. Ideally a cloud feature is chosen so that it has unique identifiable characteristics over a time period of several hours (or sometimes into the next day). In the example that Art researched, most of the bright features changed their shape over a period of about 90 minutes. As the various days in the Jul 2004 observations are completed it will be interesting to compare results determined by different analysts.

A short discussion followed about methods used to compute the wind speeds. If the assumption is made that the wind trajectories are geodesics (or linked segments of geodesics) on a regular sphere, then the cartographic method employing the *oblique orthographic projection* is appropriate. Mark showed an Excel spreadsheet that Art had constructed several years ago that may serve as a starting point for accurate computation of velocities in the near term.

There was a discussion about precise identification of a target cloud's coordinates by displaying the highest (brightest) pixel values. No one knew of a Photoshop technique to perform that function although there might be Photoshop plugins. Another suggestion was to use DS9; Art will try out that option.

The general feeling in the group was that the Venus Winds wiki had become cumbersome to use for some functions, such as saving results of assigned tasks. Mark made several suggestions for improvement that, in effect, would reorganize some of the wiki's pages with emphasis on an easy-to-access Results page.

Mark showed a method for extracting ephemeris tabular data from the JPL Horizons website and loading into an Excel spreadsheet.

Mark announced that a play based on a historical novel by Dava Sobel (*And the Sun Stood Still*) will be presented at the Dairy Center for the Arts in Boulder from March 27 – April 20. Her recently published book is about Nicolaus Copernicus and the human consequences of his publication of *On the Revolutions of the Heavenly Spheres*. Check it out at thedairycenterforthearts.secure.force.com/ticket/#details_a0Si0000001AqUEEA0

The next meeting is on 20 Feb 2004 at 6:00 PM at the Museum.

Submitted by Arthur C. Tarr, Project Coordinator