

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

Date/Time/Location: 23 April 2015 6:00 PM Admin 1 (Museum basement)

ATTENDING

Art	Ashley	Cristy	Dave	Drew	Dylan	Emilie
John	Kevin	Nick H.	Nick Z.	Mark	Marta	Mica
Michael D.	Michael L.	Rachel	Ricardo	Terran	Yvonne	

Guests: None

The meeting opened at 6:00 PM in ADM 1. Those **attending** are listed above.

OLD BUSINESS

Sub-group *Slit Removal* (Proposer: Dylan)

Dylan and Mark discussed potential algorithms to automate slit removal from the images. Dylan will build upon existing program code. However, also see below regarding Marta's efforts on this issue.

Sub-group *Improved Online Tools* (Proposer: Ricardo)

Ricardo and an associate have been improving the coordinate recording tool that Ricardo demonstrated at an earlier meeting (November 6). The tool is available for testing at <http://venuswindsproject.org/>.

Sub-group *Automated Co-Registration* (Proposer: Dave)

Dave has been researching available applications employing auto-correlation algorithms that would be employed in automated co-registration of images. He is planning to continue this research.

Progress in using Gimp as a substitute for Adobe Photoshop All

Recently we proposed that analysts who do not have access to Adobe Photoshop use open-source application Gimp. Several of those who have experimented with Gimp told of their experience.

Wind velocity computations for 12 July 2004 images Mark

Mark has distributed a new Excel workbook containing a series of nine images from the 12 July 2004 series and instructions on how to track nine selected features on the first image through the remaining eight images. Wind speed profiles were calculated automatically on a separate spreadsheet. Mark displayed a workbook prepared by Art to demonstrate tracking the nine features. Unfortunately several profiles were flawed due to transcription errors and an unnecessary constraint that the first data point always be at (0,0). Also, the large rectangular image with tracking points indicated by red '+' signs has some errors in it. This is on the second

page of the Workbook, called 'Points'. Mark will send out a corrected Workbook, with the tracking points correctly identified.

Slit removal using Adobe Photoshop Mark

Mark demonstrated Marta's method of removing the dark vertical slit in Venus images using Adobe Photoshop. The slit is four pixels wide and captures data for spectral analysis. The new method smoothly replaces the four columns of pixels by interpolation with few artifacts.

Availability of ALL Venus images Marta

On the **Research/Datasets** tab of the Project web page, Marta has a link, in yellow, to all the Venus images. This is a password protected site. The username and password have been discussed at a previous meeting; temporary username is **mark** and default password is **venus**.

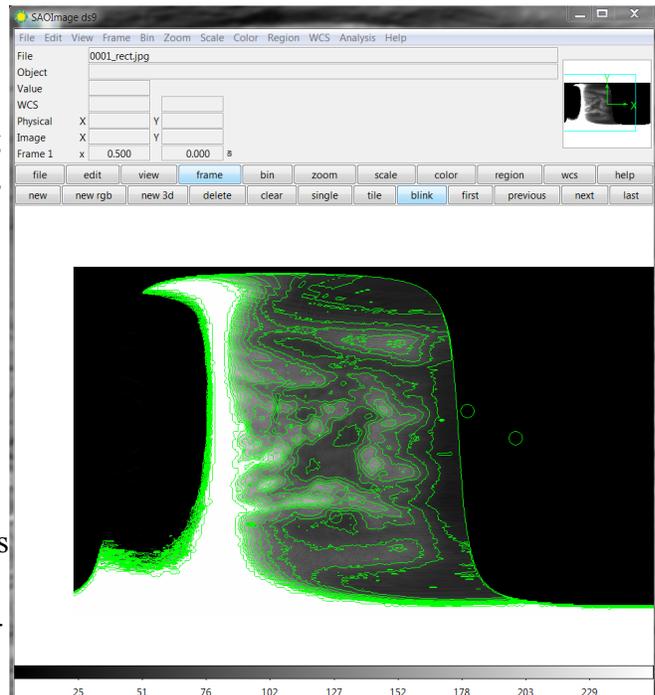
NEW BUSINESS

New Analysis Tool: DS9 Mark

Mark discussed and demonstrated **SAOImage DS9**, an analysis tool that is widely used by the astronomical community to extract the maximum usable information from astronomical images. One potential **DS9** operation on Venus images would be to locate the maximum pixel values of cloud/gap features much more precisely than an analyst could locate them. The website is located at <http://ds9.si.edu/>. It is free and available for PCs, Macs, and Linux machines.

Mark demonstrated a possible use for **DS9**, creating contour maps of the clouds/gaps, thus precisely determining the coordinates of maxima and minima pixel values corresponding to clouds and gaps. Under the 'Analysis' menu, choose 'Contours'. Analysts are encouraged to download **DS9** and the accompanying documentation to try it out.

Open the image to the right. Expand it so that you can look carefully at the areas of closed contours. Some enclose areas of higher pixel values and some enclose areas of lower pixel values. Remember that the light areas are gaps between the clouds and dark areas are the clouds themselves. These high and low spots have the potential to be ideal for locating the target spots. Enjoy!



The next meeting on May 14 will be in Exploration Studio 102 at 6 P.M. in the Morgridge wing.

Submitted by Arthur C. Tarr, Venus Winds Project Coordinator