

Abstract Submitted
for the DFD08 Meeting of
The American Physical Society

Sorting Category: 14. (C)

**Velocity Fields of Jovian Dynamical Features using the
Advection Corrected Correlation Image Velocimetry Method**

XYLAR ASAY-DAVIS, PHILIP MARCUS, MICHAEL H. WONG,
IMKE DE PATER, UC Berkeley — We present the Advection Corrected
Correlation Image Velocimetry (ACCIV) automated method for produc-
ing velocity fields from satellite and spacecraft image pairs of planetary
atmospheres. The method combines a laboratory technique for tracking
fluid motion, Correlation Image Velocimetry (CIV), with simulations of
cloud advection to produce velocity fields with uncertainties as small as
 3 ms^{-1} . On Jupiter, ACCIV has been most successful when applied to
sets of images in which some image pairs are separated by short peri-
ods of time (~ 1 hour) and some image pairs are separated by longer
periods (~ 10 hours). Given appropriate sets of images, ACCIV achieves
unprecedented accuracy by combining the very large numbers of data
points that automated techniques provide with the ability to track cloud
features over long periods of time (~ 10 - 12 hours), previously only at-
tainable by manual tracking methods. We present the application of
ACCIV to the Great Red Spot, the Red Oval BA and several other
dynamical features on Jupiter. We also present a velocity map of the
entire Jovian cloud deck between 60° N and 60° S latitude produced
from Cassini approach images from December 2000.

- Prefer Oral Session
 Prefer Poster Session

Xylar Asay-Davis
xylarstorm@gmail.com
UC Berkeley

Date submitted: 05 Aug 2008

Electronic form version 1.4