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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 producing 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 periods of time ($\sim$1 hour) and some image pairs are separated by longer periods ($\sim$10 hours). Given appropriate sets of images, ACCIV achieves unprecedented accuracy by combining the very large numbers of data points that automated techniques provide with the ability to track cloud features over long periods of time ($\sim$10-12 hours), previously only attainable 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 $^\circ$ N and 60 $^\circ$ S latitude produced from Cassini approach images from December 2000.

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