



Dynamics of Saturnian thunderstorms

Georg Fischer (1), Joseph Pagaran (2), Ulyana Dyudina (3), and Marc Delcroix (4)

(1) Space Research Institute, Austrian Academy of Sciences, Graz, Austria (georg.fischer@oeaw.ac.at), (2) Institute of Physics, University of Graz, Graz, Austria, (3) 150-21, Geological and Planetary Sciences, Caltech, Pasadena, USA, (4) Commission des observations planetaires, Societe Astronomique de France, France

Thunderstorms on Saturn usually last much longer than their terrestrial counterparts. The Cassini spacecraft has observed Saturnian lightning storms with durations of a few days up to several months. During these long storms the lightning flash rate measured by the Cassini RPWS (Radio and Plasma Wave Science) instrument is waxing and waning or sometimes even going down to zero for a few days before rising up again. Dyudina et al. (2007, *Icarus* 190, 545-555) observed three bright storm cloud eruptions in 2004 correlating with high Saturnian lightning flash rates.

To gain more insight into the dynamics of the thunderstorms we will further compare the distance-normalized lightning flash rate with contemporaneous images from the Cassini camera complemented with images of Saturn storms from amateur astronomers taken on Earth. We will show that the decrease of lightning flash rates in late January 2008 can be explained by a corresponding splitting of the thunderstorm cell. This led to two storm cells, a weaker one with probably no lightning activity that drifted westward, and a stronger one that kept its drift rate and developed large lightning activity again by mid-February 2008. We will show other examples of storm cell splitting suggesting that this process might be an important factor in the dynamics of Saturnian thunderstorms.