

Stormy season on Saturn?

Amateur astronomers using telescopes with apertures of 8" or larger now are able to document weather phenomena in the atmosphere of the gas giant planet Saturn. To do this, they use highly sensitive black/white CCD cameras and filters in different wavelengths.

Hurricanes with diameters of several thousand km can be observed continuously for weeks or months. The position of the storms within the individual cloud bands of Saturn can be determined by precise measuring of the acquired CCD images.

In November 2007 a single, small storm area appeared in the Southern Tropical Zone (STrZ) of Saturn. Until the end of January the storm remained constant in brightness and size and its measured drift [rate] of 1 degree per week corresponds to earlier observations of storms on Saturn.

However, beginning in the first week of February 2008 the measurement of the position showed surprising results. The storm appeared brighter and brighter along the "Storm Alley" on the southern hemisphere. In the beginning of March 2008 a further hurricane formed at a distance of about 20 degrees, following the first storm. Bad weather over Germany prevented the observation of Saturn, but observers in Spain, America and the Pacific area could do further observations. The observations were published via the internet and Saturn was nearly continuously observed.

During the first half of March the first storm reduced its brightness, whereas the new emerged storm increased in brightness and extent. New small storms emerged and merged into one larger storm. During some days in April 2008 all three storms could be observed several times under good viewing conditions on the disc of Saturn. In May occasionally even five storms were observed.

At present, Saturn approaches the ring plane crossing position, when the rings are seen edge-on. It is an open question whether the resulting change in flux of sunlight thereby supplies the energy for the accumulated appearance of the hurricanes. Since this is still unknown at present more coordinated observations are required.

During the last ring plane crossing in 1995/96 amateur astronomers had no possibility to observe Saturn with sensitive CCD cameras. Visual observing of hurricanes in Saturn's cloud belts had been very difficult at that time and the few available drawings did not allow precise measurement.

It is planned to observe Saturn during the next years and collect statistic data of all storms and their drift rate. A comparison with radio astronomical observations from the space probe Cassini is planned to show whether the storms can be located within the radio range by wide band disturbances of lightnings and the drift rates of the individual storm areas agree with the CCD observations.

This presentation will provide a detailed analysis of the storm positions as measured from the author's and other observers' Saturn images.

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