

Jupiter 2010: A Busy Year

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Abstract

2010 has been an active year on Jupiter. Jupiter's South Equatorial Belt (SEB) faded then on June 3, a meteor impact was observed on the SEB.

This paper will discuss the dynamics of the SEB cycle and the report on the findings of the impact on Jupiter. Images from the Hubble Space Telescope and other observatories, along with images from amateur astronomers will be presented.

1. Introduction

This paper will present:

- a. A short overview of the SEB cycle.
- b. The 2010 SEB Fade
- c. Details on the June 3, 2010 impact on Jupiter including images, light curves, nature, and properties of the impact object.

2. The SEB Fade

On July 2009, the outbreak activity of the SEB ceased. The author predicted that the SEB would fade.¹

The first sign of the fade was that wake activity following the Great Red Spot shut down. This was followed by a slow change in the albedo of the SEB from dark brown to almost white.²

Probable scenarios on how the revival will most likely occur and how the revival will take place will be discussed.³

3. The June 3, 2010 Impact on Jupiter

At 20:31UT on June 3, 2010, an object struck Jupiter. This was recorded on live video simultaneously by two amateur astronomers. After the impact, no visible remnant was observed.

This indicates that the object probably burned up before penetrating the cloud deck. It may have been similar to the smallest Shoemaker-Levy 9 fragments. More information will be presented during the final paper.



Figure 1: Jupiter Impact Strike

4. Summary and Conclusions

The current fade of the SEB will provide opportunities in understanding the SEB cycle.

The June 3 impact has also opened a new field in Jupiter observations. It may be possible for amateurs to establish the frequency of these 'small' impacts in Jupiter.

Constant observations by amateurs and follow up observations by Planetary Astronomers will help us better understanding these phenomena.

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References

¹<http://alpo-j.asahikawa-med.ac.jp/kk09/j090619z.htm>

²C. Go et al, *Jupiter's South Equatorial Belt Outbreak Spots and the SEB Fade and Revival Cycle, DPS 2008 (Ithaca, NY), Poster 41.17*

³A. Sanchez-Lavega, et al, *The Southern Equatorial Belt of Jupiter, I: Its life cycle. Icarus 112, (1996) Article No. 0067*