Jupiter's in 2010-2011

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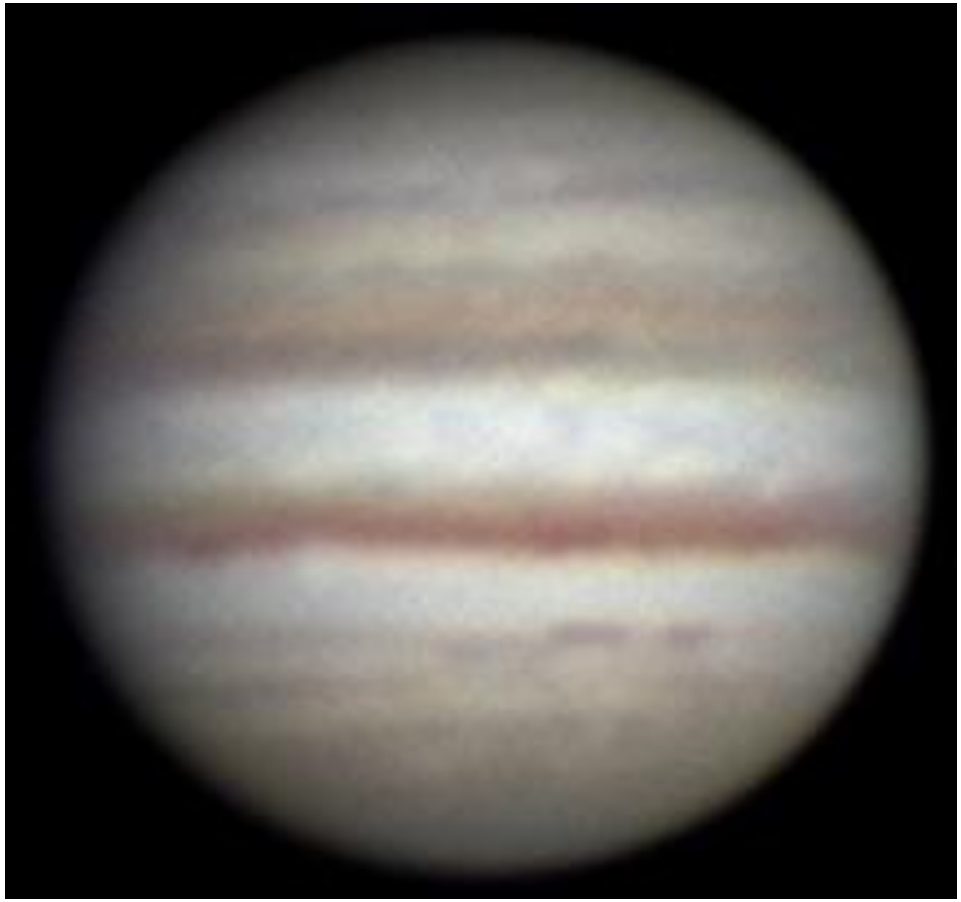
Overview

- Introduction
- SEB
- STBn Jetstream
- Other events
- Conclusions

SEB: M. Salway May 1, 2009

SEB: T. Barry September 23, 2010

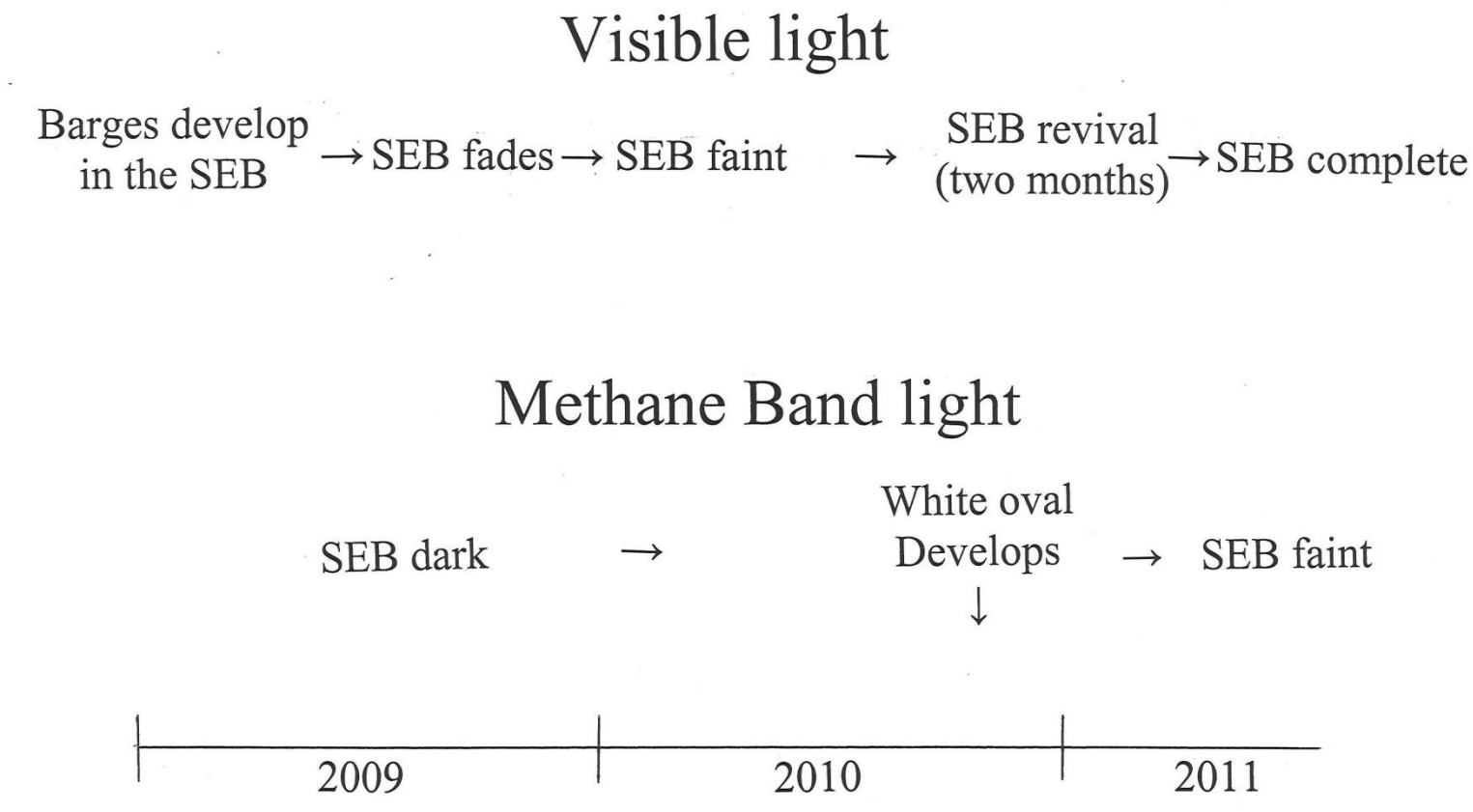
SEB: C. Pellier, July 3, 2011



SEB: 2009-2011

- Dark in May 2009
- Fading in late 2009
- Very faint in first 5/6 of 2010
- Dark in July 2011

Series of events: 2009-2011

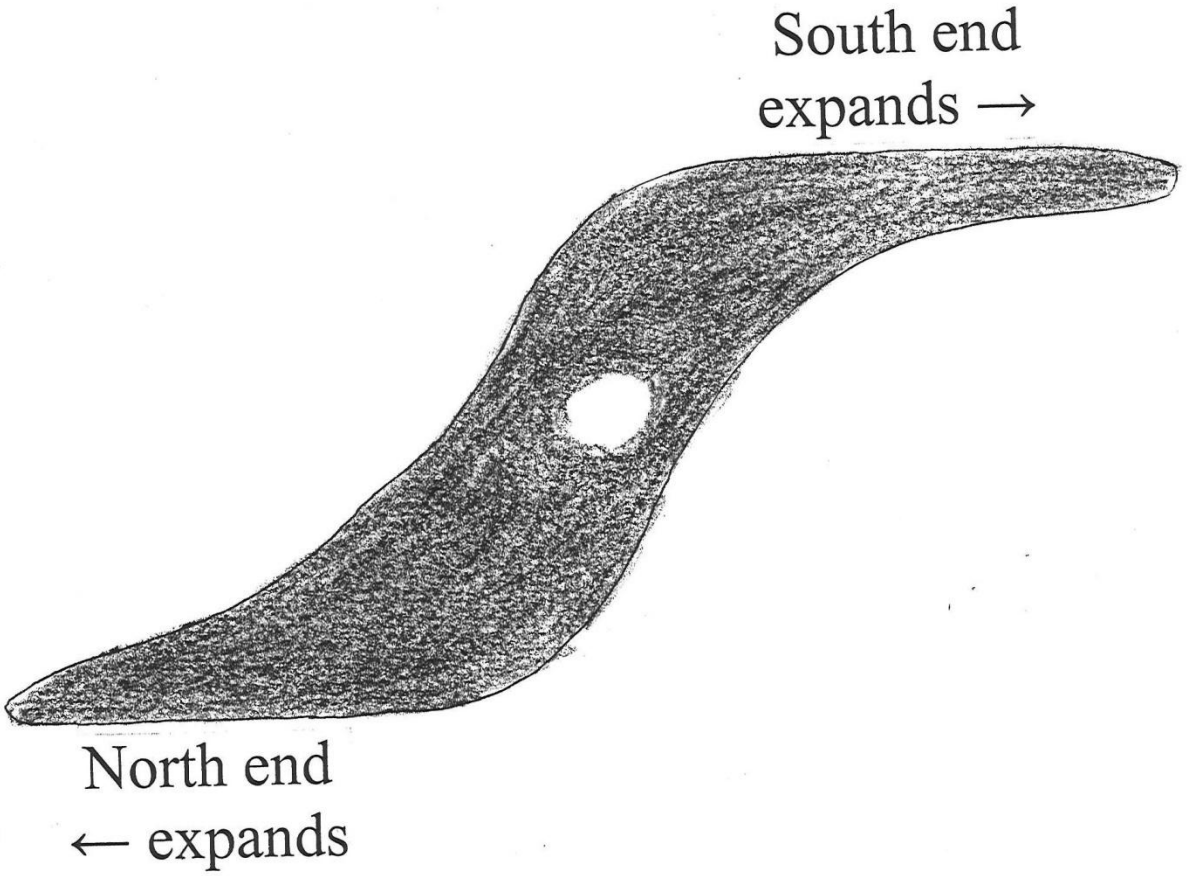


SEB revival: series of events

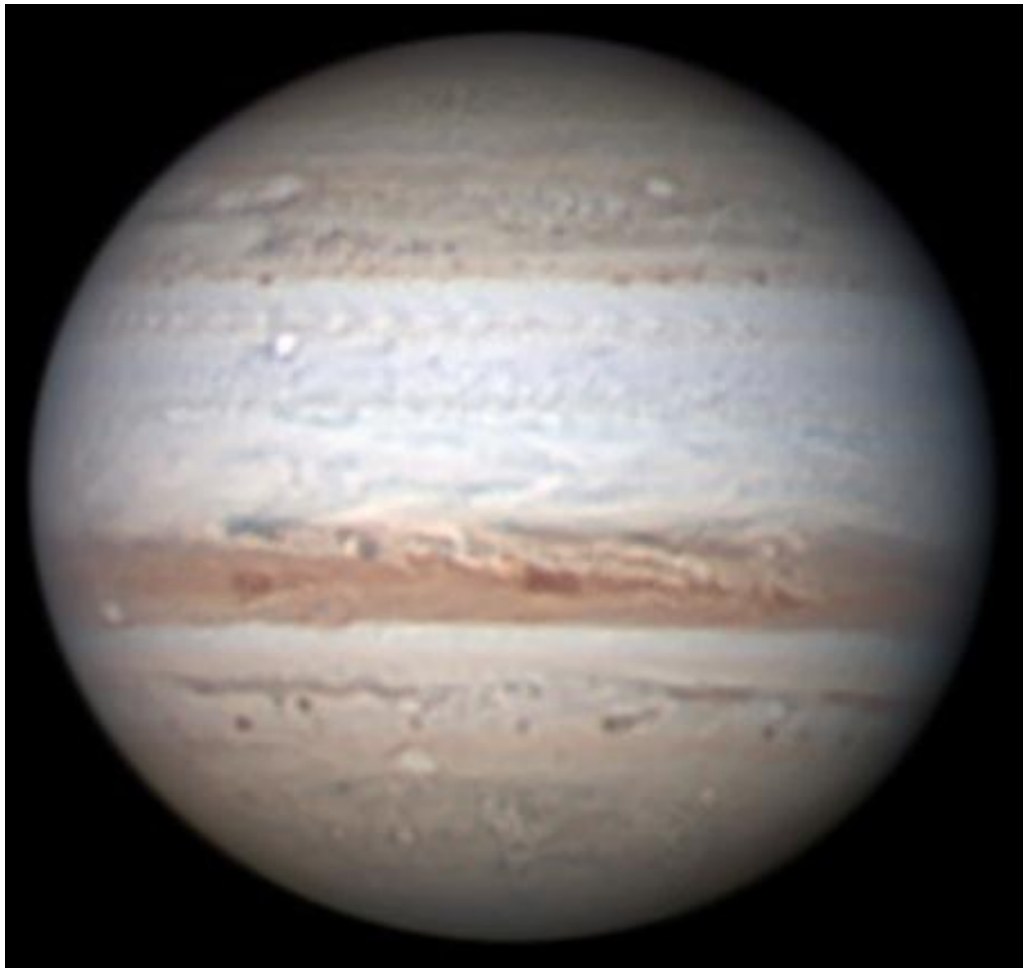
- White oval appears (Nov. 9, 2010)
- Dark area forms around oval
- Dark area expands in two directions
- SEB fully develops

The whole process takes about two months

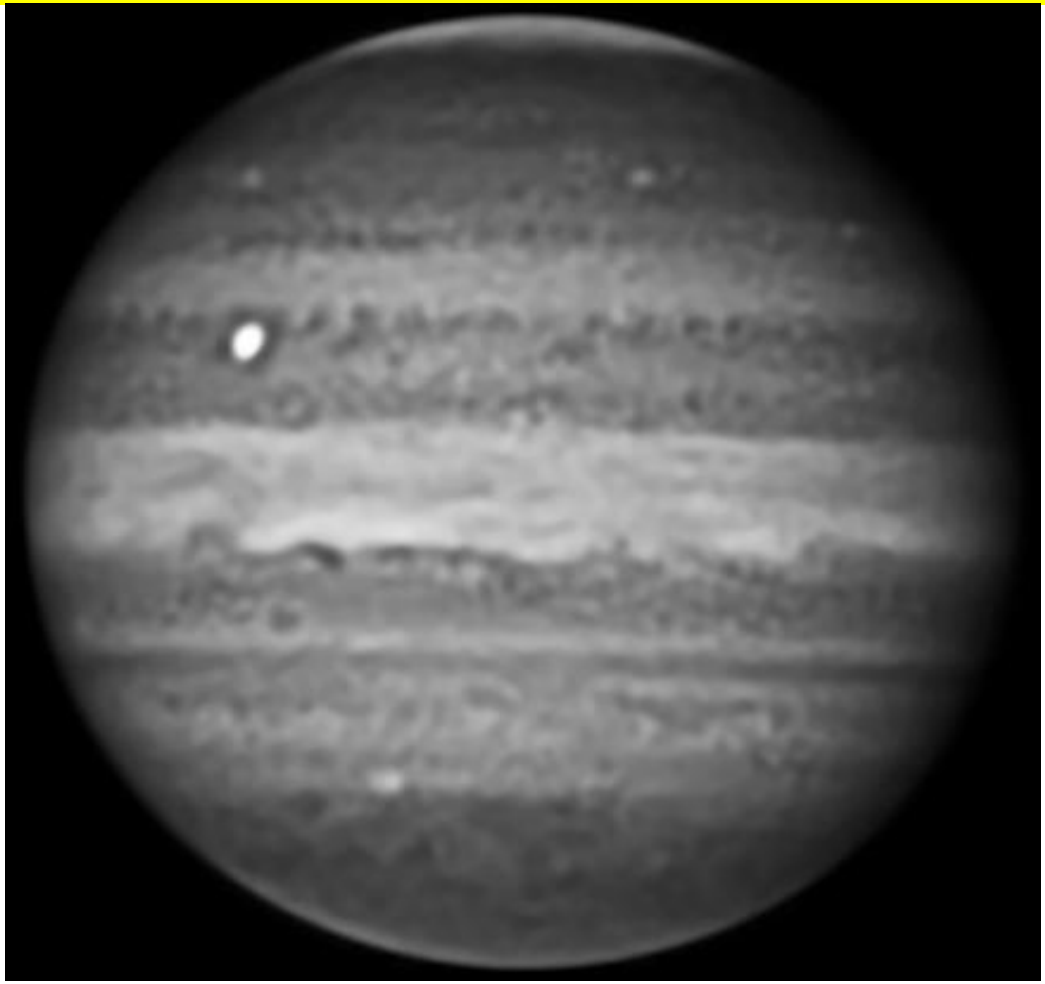
SEB revival early stage



November 10, 2010: Don Parker RGB



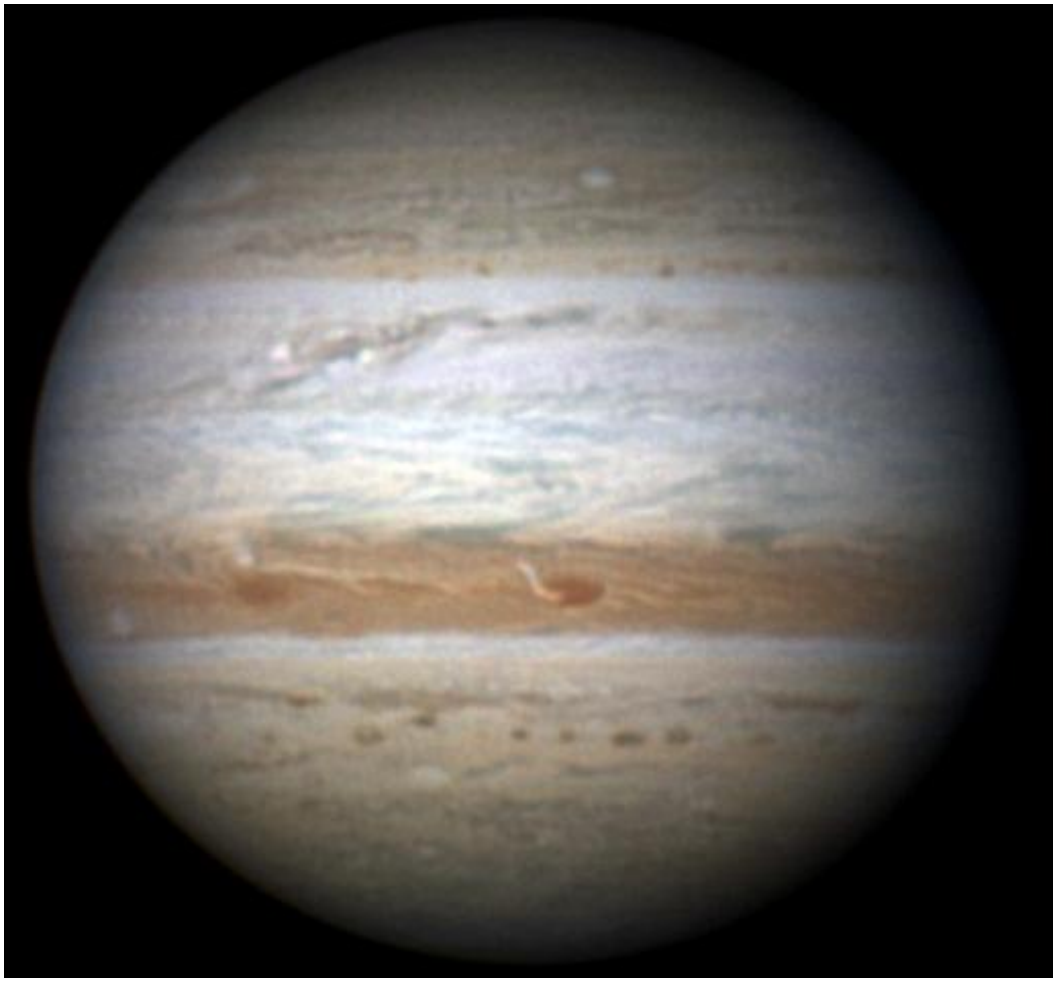
November 10: Don Parker
CH_4



November 14: T. Barry
RGB

November 17: D. Parker

November 24: C. Go



December 13: T. Barry

SEB Revivals in the past

- Past revivals: 2007*, 1993, 1990, 1975, 1971, 1964, 1962, 1958, 1955, 1952, 1949, 1946-7, 1943, 1938, 1928, 1919 Rogers (1995, 173)

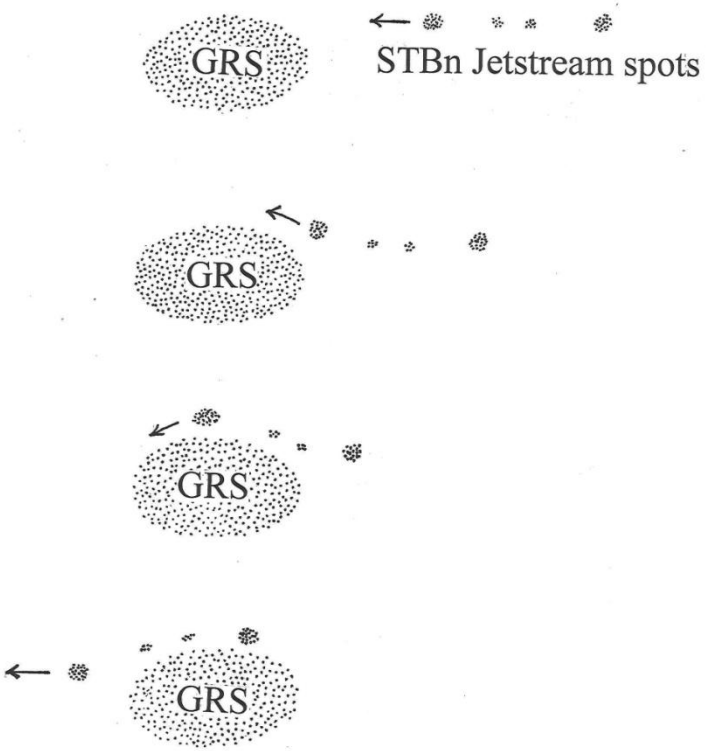
- *partial revival

STBn Jetstream

STBn Jetstream

- Latitude 25° S to 28° S
- Drift Rate: -75 to -130 degrees/30 days
- Dark Spots
  - Circular or oval
  - Length: 700 to 1,700 miles

STBn Jetstream



STBn Jetstream

STBn Jetstream

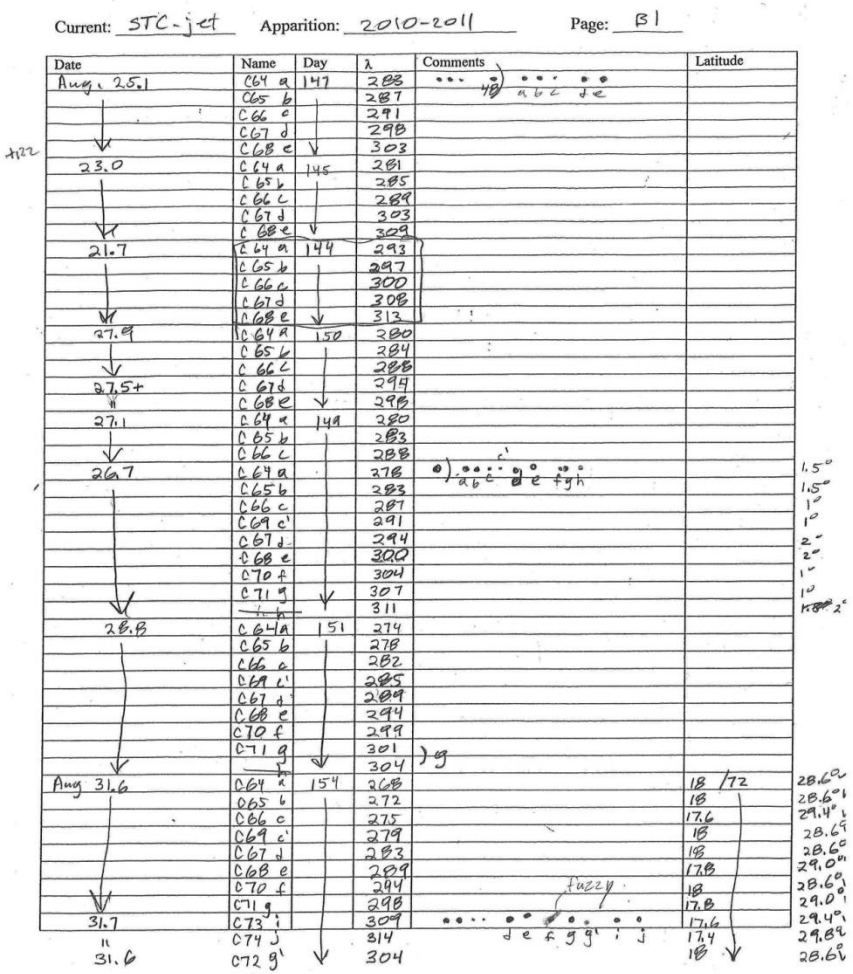
Time	Drift Rate (deg./30 days)
1931-1938	-120
1941-1942	-140
1965-1969	-107
1980-1981	-90
1990-1991	-84

STBn Jetstream

- How features were tracked
  - Look for a pattern
  - Measure longitudes every day or so
  - Follow about 12 spots at a time

STBn Jetstream

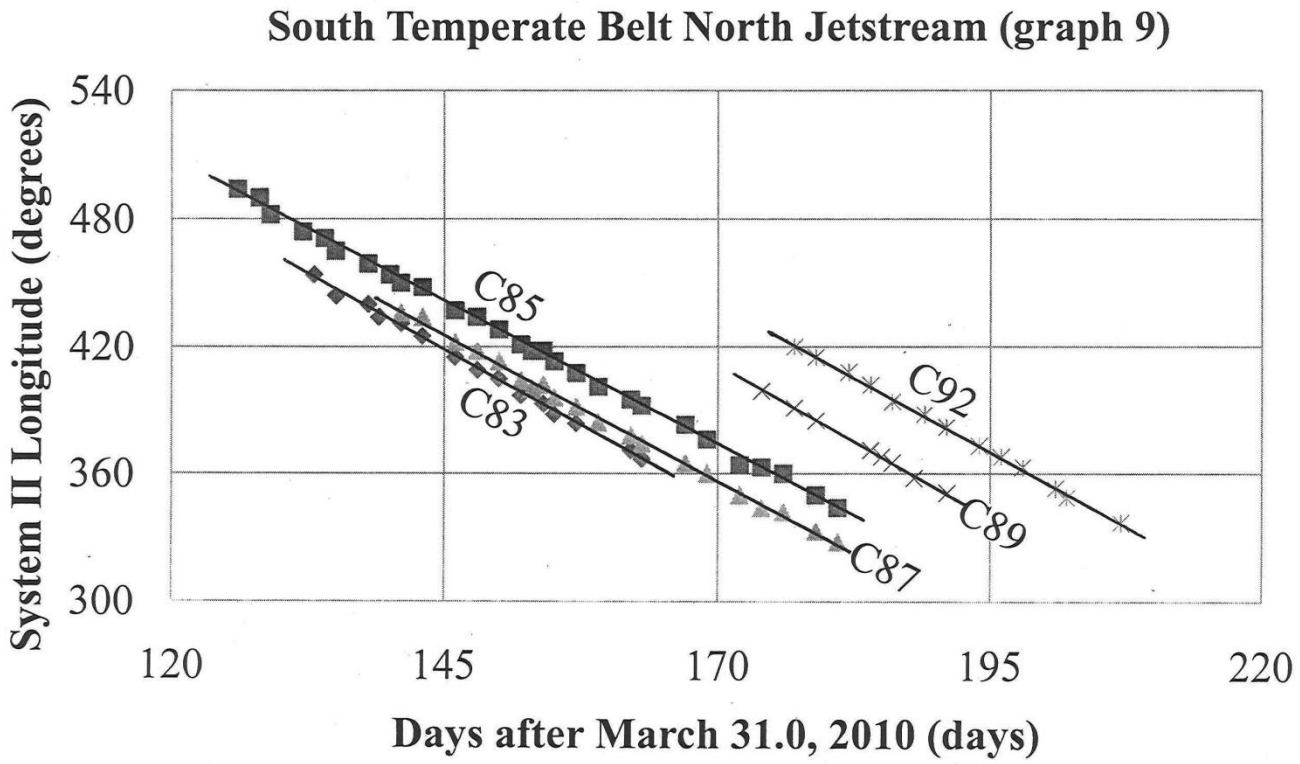
STBn Jetstream



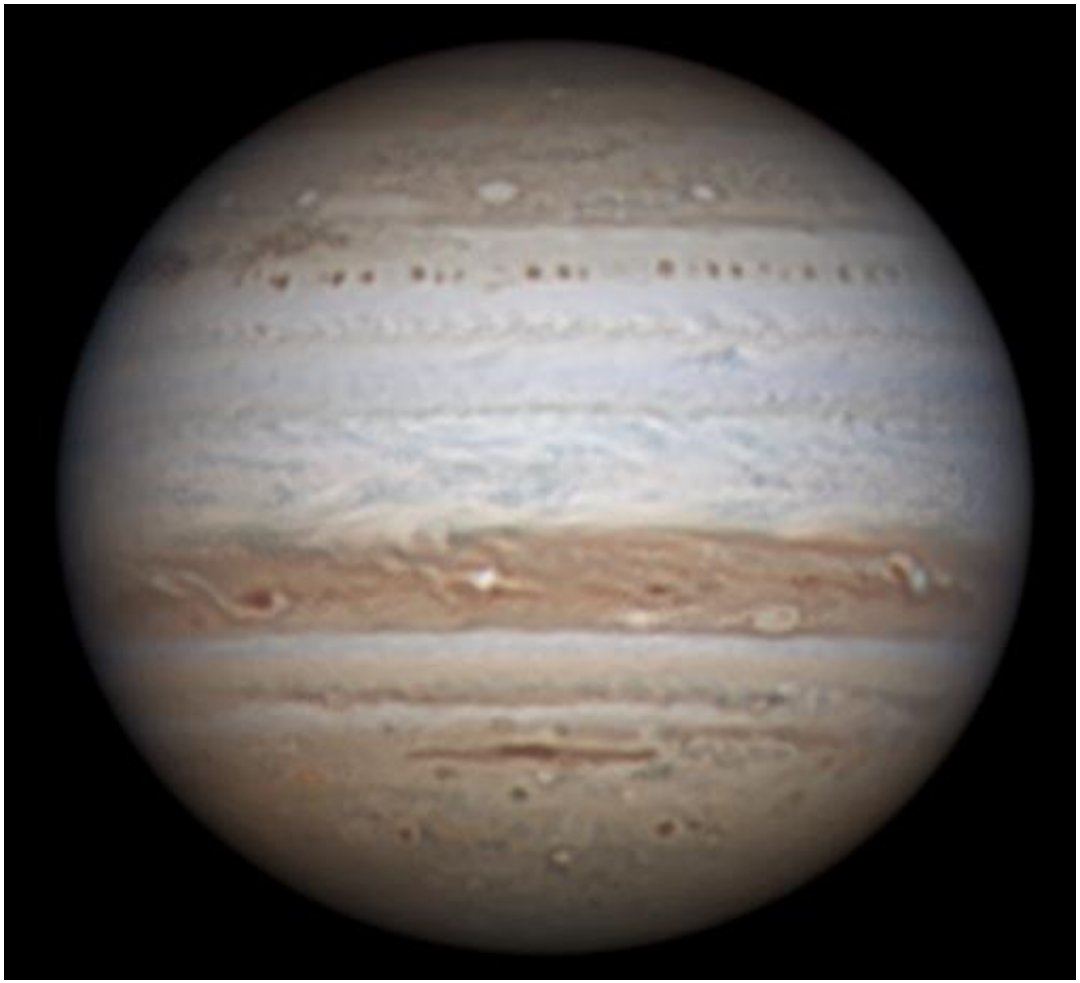
Current: STC-jet Apparition: 2010-2011 Page: B1

Date	Name	Day	λ	Comments	Latitude
Aug. 25.1	C64 a	147	283		
	C65 b		287		
	C66 c		291		
	C67 d		298		
	C68 e		303		
23.0	C64 a	145	281		
	C65 b		285		
	C66 c		289		
	C67 d		303		
	C68 e		309		
21.7	C64 a	144	293		
	C65 b		297		
	C66 c		300		
	C67 d		308		
	C68 e		313		
27.9	C64 a	150	280		
	C65 b		284		
	C66 c		288		
27.5+	C67 d		294		
	C68 e		298		
27.1	C64 a	149	280		
	C65 b		283		
	C66 c		288		
26.7	C64 a		278		
	C65 b		283		
	C66 c		287		
	C69 c'		291		
	C67 d		294		
	C68 e		300		
	C70 f		304		
	C71 g		307		
	[illegible]		311		
28.8	C64 a	151	274		
	C65 b		278		
	C66 c		282		
	C69 c'		285		
	C67 d		289		
	C68 e		294		
	C70 f		299		
	C71 g		301		
	[illegible]		304		
Aug 31.6	C64 a	154	268		18 /72
	C65 b		272		18
	C66 c		275		17.6
	C69 c'		279		18
	C67 d		283		18
	C68 e		289		17.8
	C70 f		294		18
	C71 g		298		17.8
31.7	C73 i		309		17.6
"	C74 j		314		17.4
31.6	C72 g'		304		18

STBn Jetstream



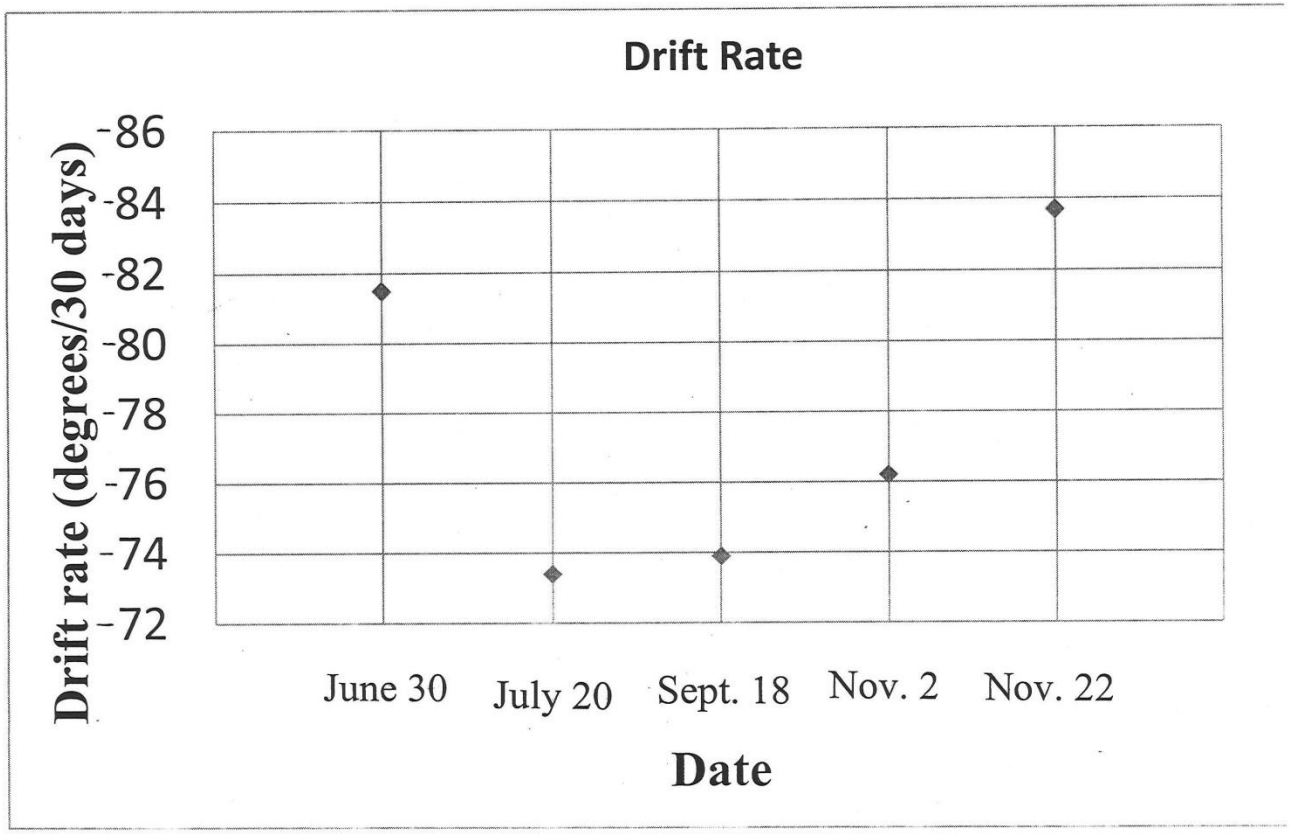
STBn Jetstream



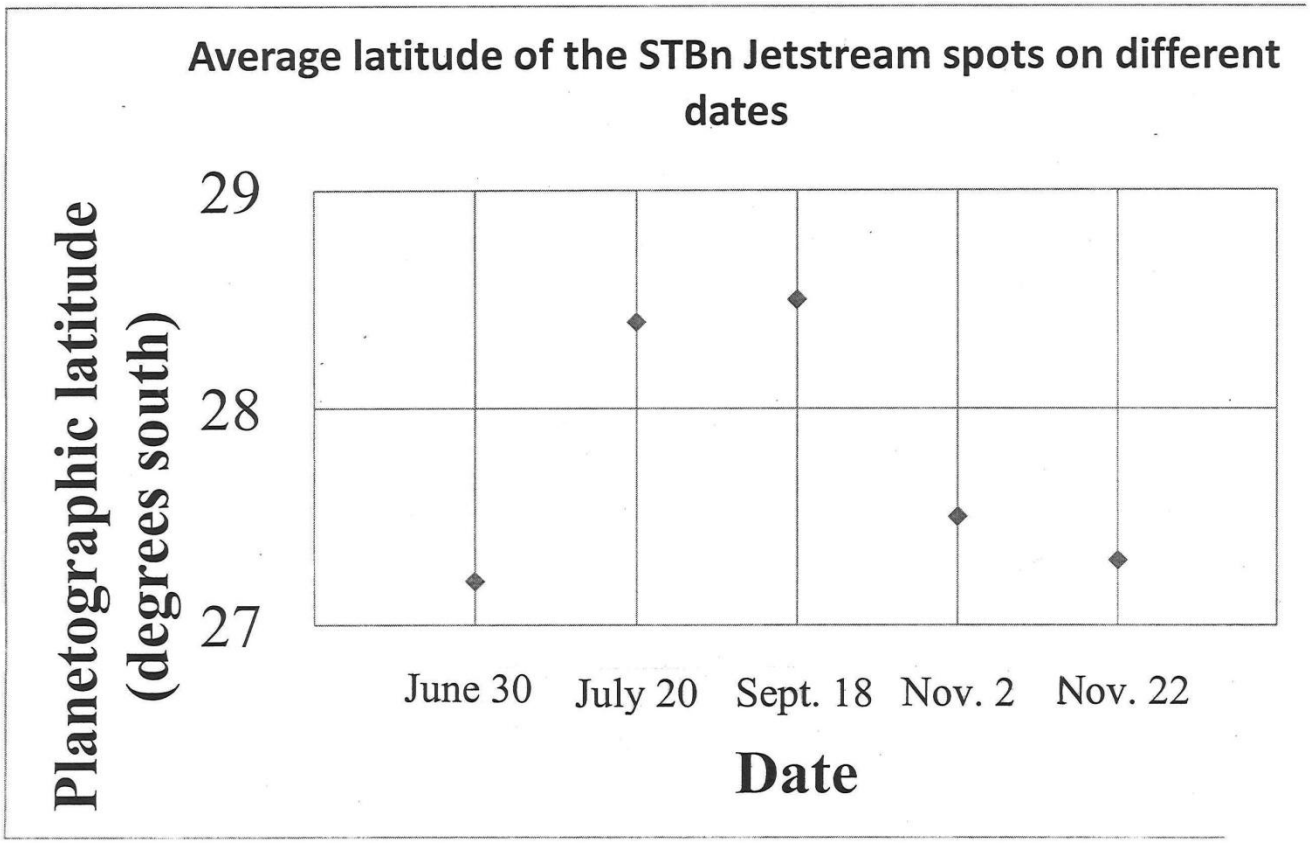
STBn Jetstream

- Drift rates (degrees/30 days)
  - Following GRS: -75 (sd = 4)
  - Preceding GRS: -84 (sd = 2)

STBn Jetstream



STBn Jetstream



Impact Flash

Impact Flash

- June 3, 2010
  - Wesley and Go imaged same spot
- August 20, 2010
  - Three Japanese astronomers imaged the spot

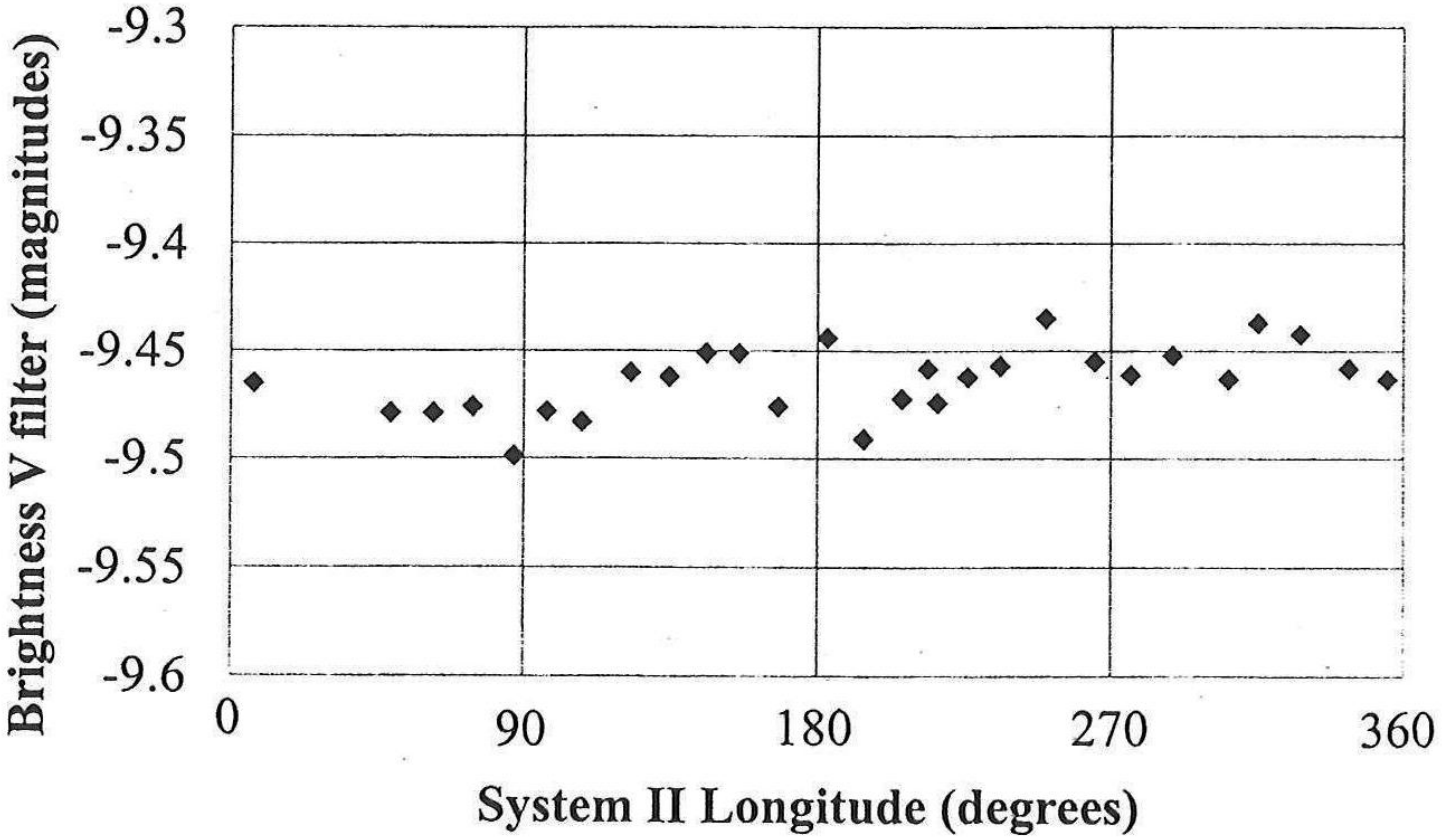
Impact Flash

- Probably cause: a house-size piece of rock

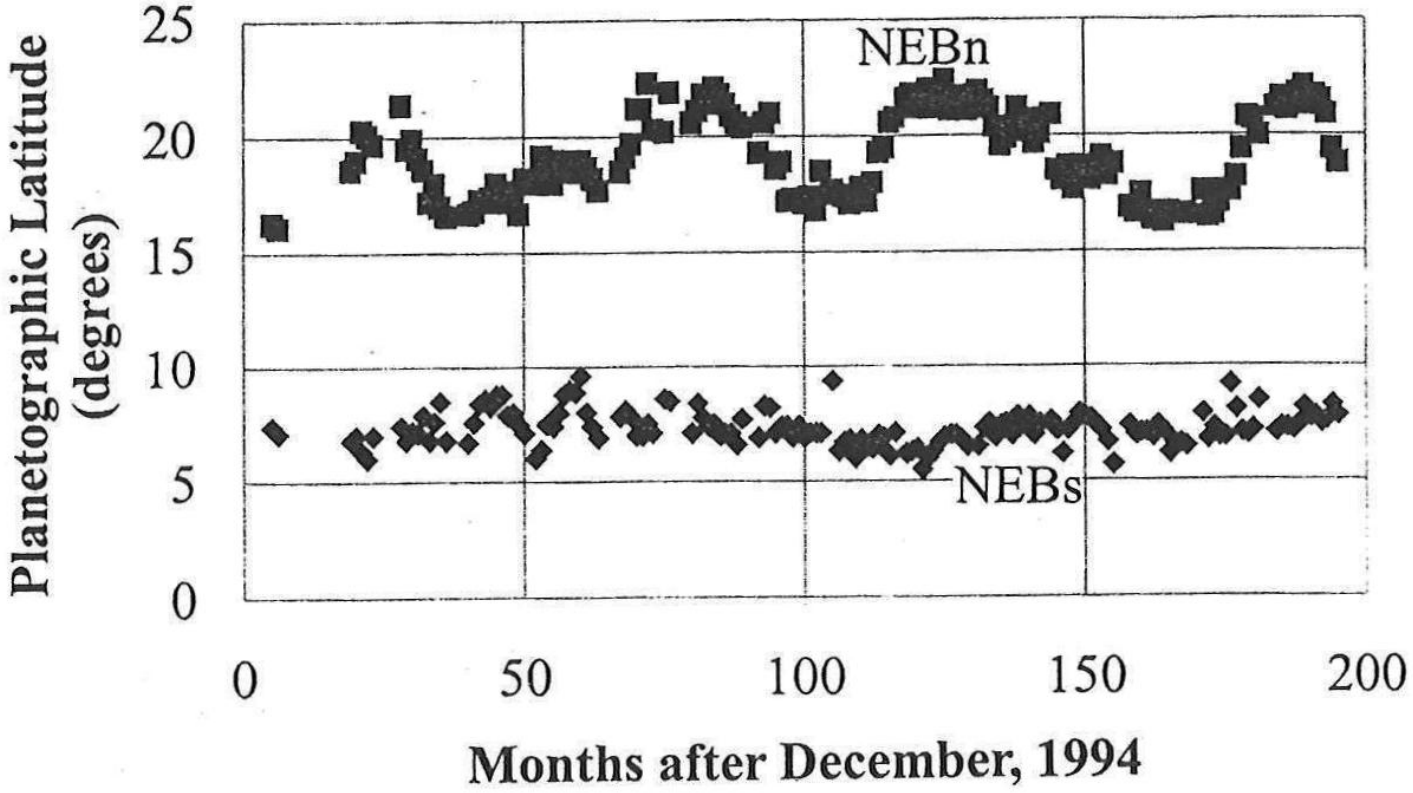
Jupiter's Brightness

- V(1,0) nomalized magnitude
  - More negative = brighter
  - Less negative = dimmer
- V(1,0) normalized magnitude; corrected for:
  - Distances
  - Solar phase angle

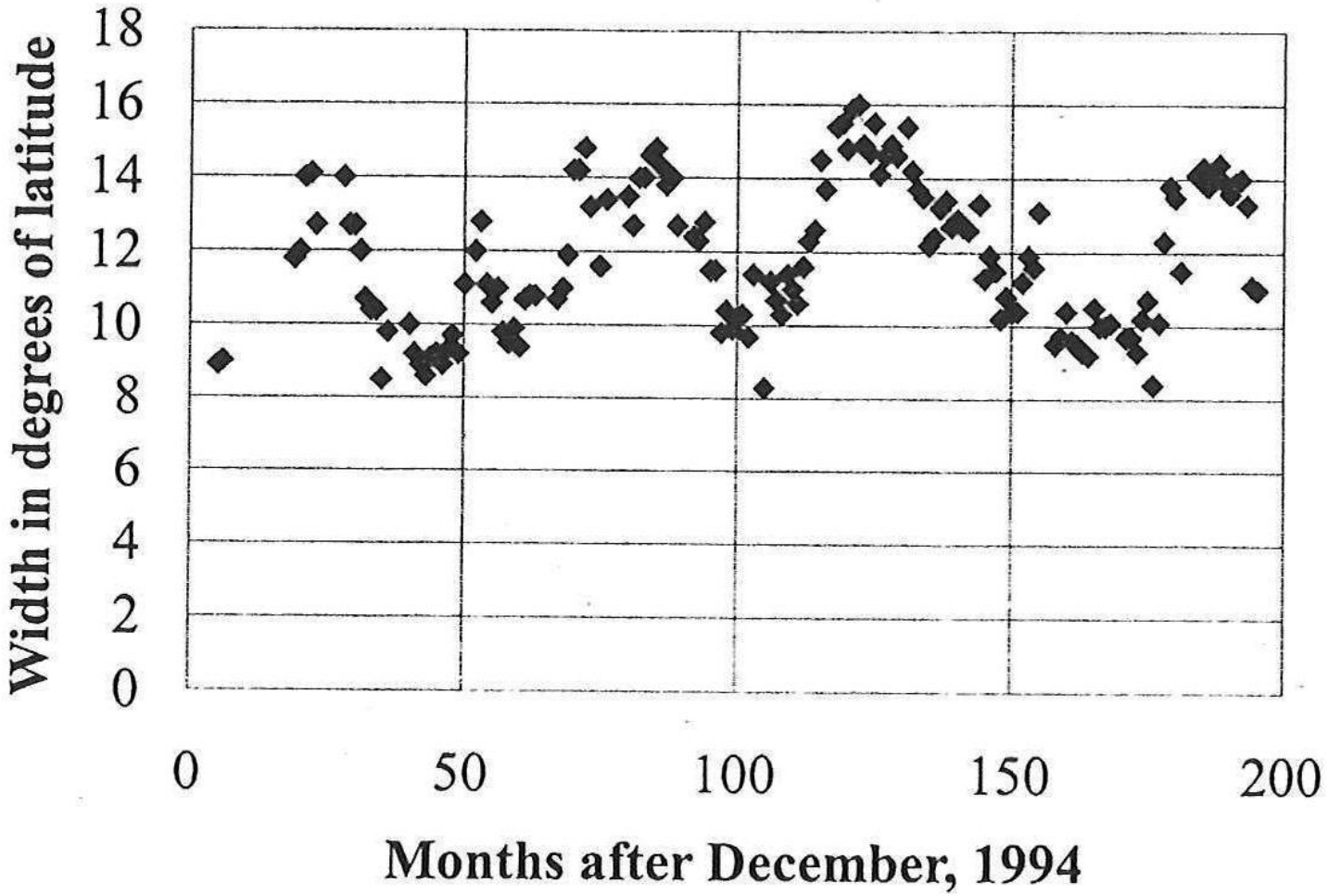
Jupiter's Brightness
October 15-17, 2010



NEB Boundaries



NEB Width


Width in degrees of latitude
18
16
14
12
10
8
6
4
2
0
0
50
100
150
200
Months after December, 1994

Conclusions

- SEB revival
  - Began on Nov. 9, 2010
  - Progressed in a similar way as in 1993
  - Lasted about two months

Conclusions

- STBn Jetstream
  - At least 49 dark spots
  - Drift rate similar to the current in 1990-1991
  - Drift rate may depend on latitude
  - Drift rate may have changed with date and position

Conclusions

- Two impact flashes
  - June 3, 2010
  - August 20, 2010
- Jupiter's brightness: nearly constant
- NEB width changed