The Activity of NEB in 2001-2002

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1. Introduction

This figure shows the typical aspects of the NEB (J.H.Rogers).

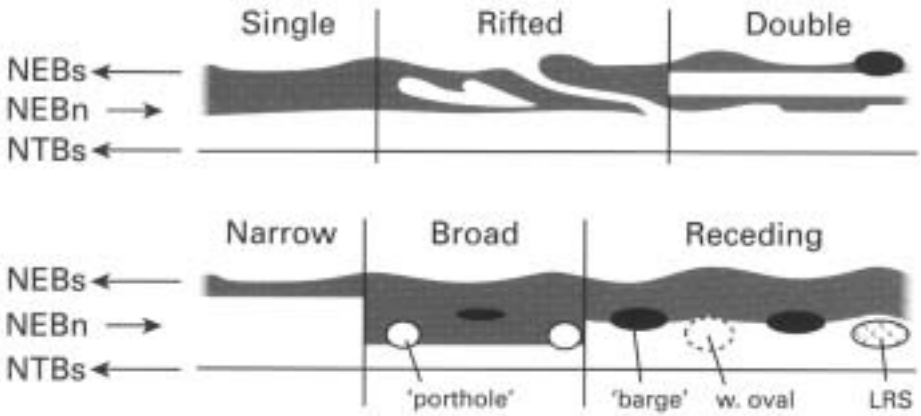
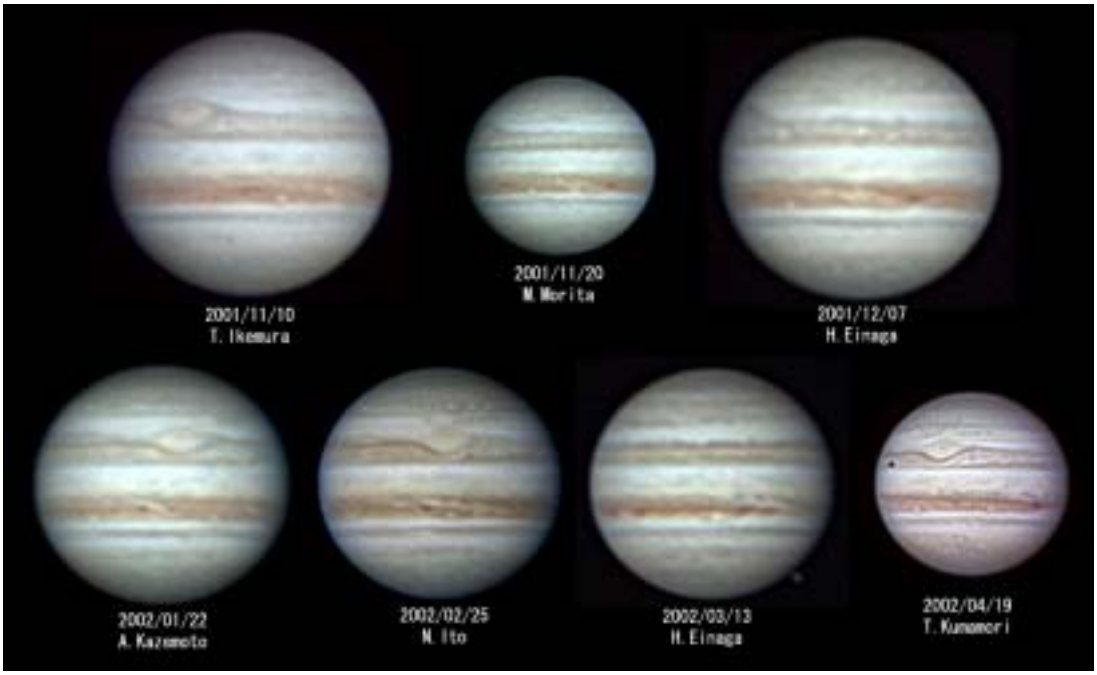
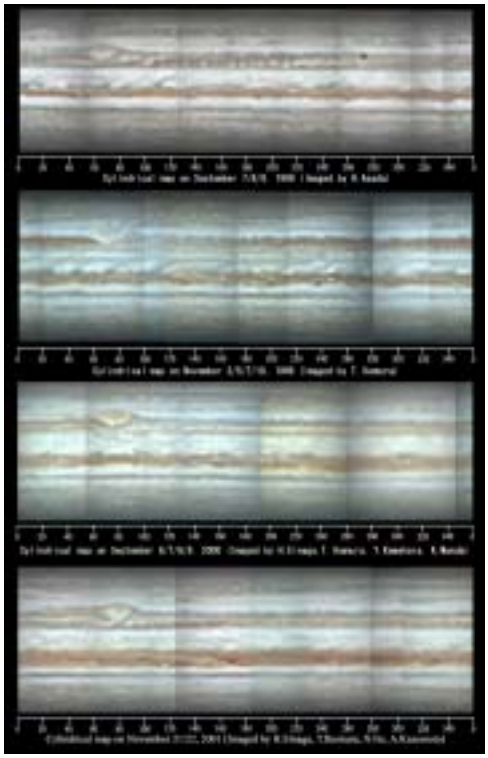


Fig. 8.1. Sketches of typical aspects of the NTrop/Z and NEB. The NEB commonly evolves as sketched from left to right, (top row) during an episode of rifting, or (bottom row) during a typical cycle of activity – broadening, reddening, and creation of stable ovals. W., White; LRS, Little Red Spot. (Detailed forms of NEBs disturbances are not shown; see Fig. 9.1.)

2. CCD images in 2001-2002



3. Comparison of strip map in recent apparitions



1998-1999: Normal feature of NEB (single stage)

There were several barges of NEBn.

The mid-SEB outbreak occurred.

1999-2000: Active feature of NEB

The region of NEBn was very active.

2000-2001: Broad stage with rifted region

The broad stage was begun in several places of NEBn.

There were several notches (porthole) in NTropZ.

2001-2002: Broad stage of NEB was in whole region.

A great rift was located at 150 degrees in system-II

4. Feature of NEB in this apparition

-The NEB is broad.

-There are several barges that are located at the middle of NEB.

-There are several notches that are located at the north edge of NEB (normally NTropZ).

-A new belt occurred in the middle of NEB.

-The rift of the NEB was very active.

-The rift had several bright white spots.

5. Strip maps of NEB region

I generated 46 strip maps from the CCD images taken by our and worldwide observers.

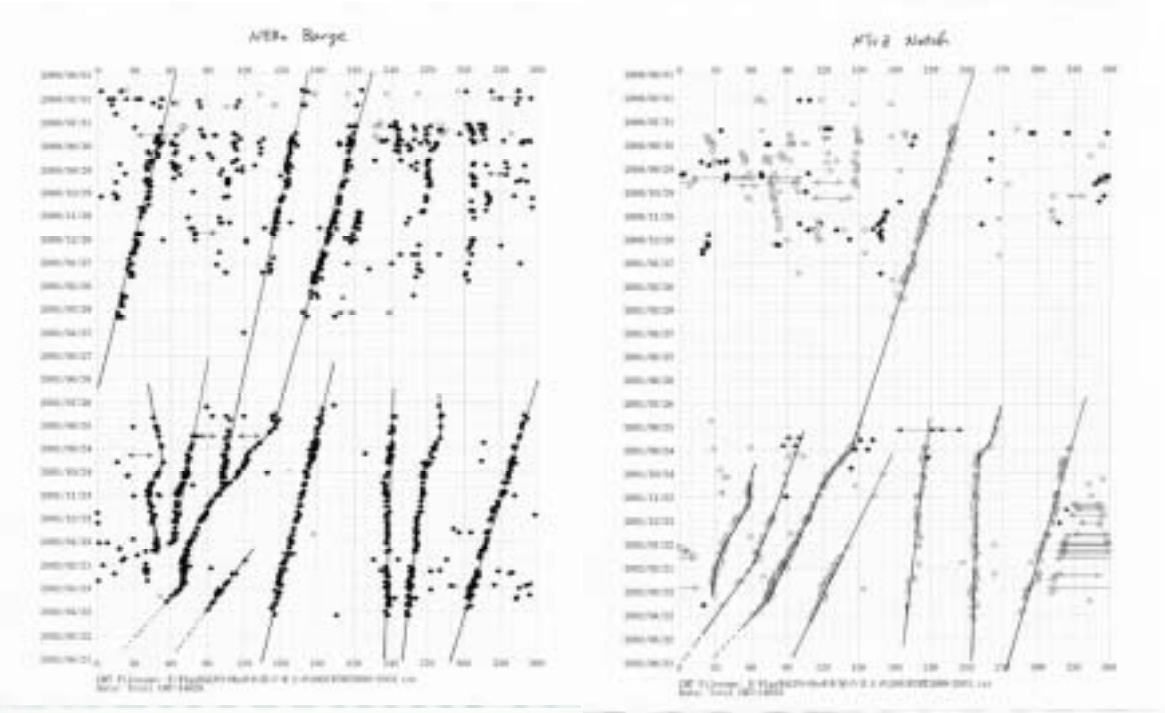
2002	Numbers	2002	Numbers
August	1	January	7
September	3	February	7
October	7	March	8
November	5	April	4
December	4	Total	46

6. Drift chart of the barges of NEB

There were 8 barges of NEB in 2001-2002. But, only two barges were identified from the last apparition. Two barges merged each other in November 2001. Two barges disappeared in January and February 2002. Several barges drifted not by linear.

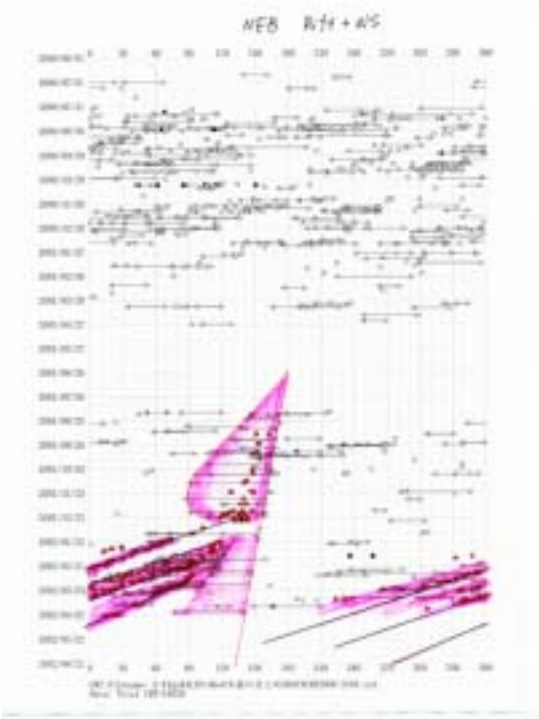
7. Drift chart of the notched of NTropZ

There were 7 notched (porthole) of NTropZ in 2001-2002. Only a notch (named ‘form-Z’) was identified from the last apparition. Several notched drifted not by linear.



8. Drift chart of the white spots and rifts in NEB

There was a great rift at 90-160 degrees of system-II from July to December 2001. There were many white spots located at the center of the great rift. There were four white spots that moved rapidly forward from January 2002.



9. Drift chart of the features of NEB

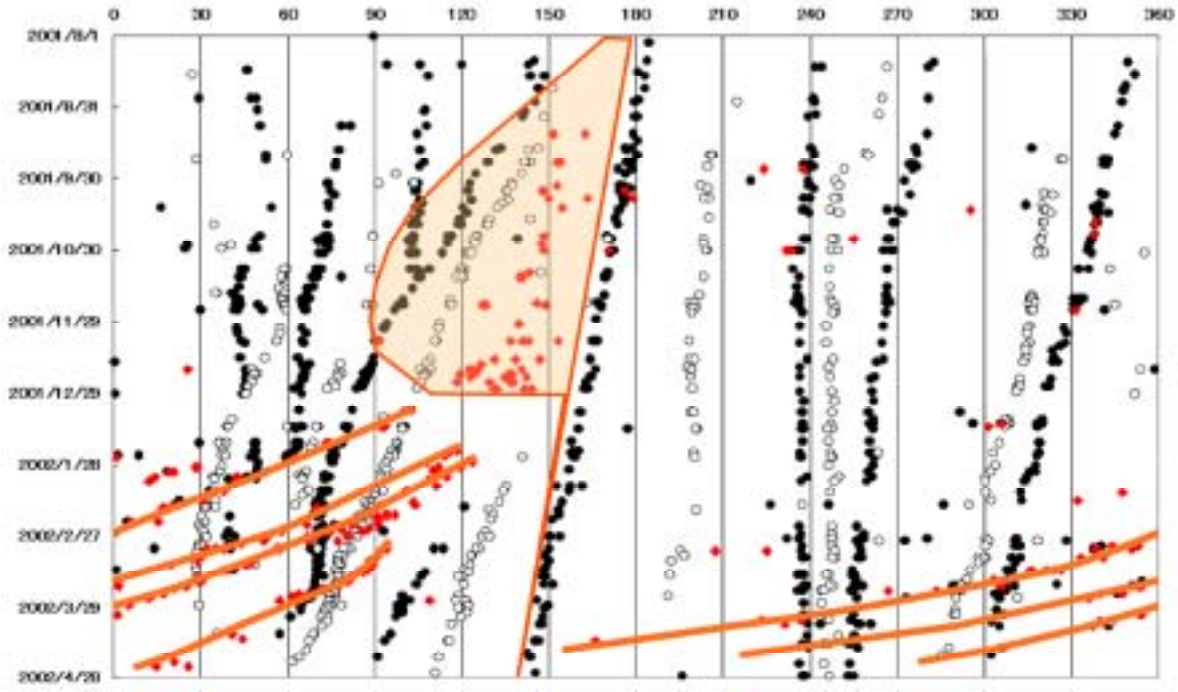
Black circles show the barges.

Open circles show the notches of NTropZ.

Red squares show the white spots of NEB.

Faint orange region shows the great rift of NEB.

Orange lines show the rapid moving white spots.



10. Classification of the activity of NEB

The activity of NEB is classified by three stages in this apparition.

-1st stage (August to December 2001):

The great rift was very active, which was located at 150 degrees of system-II.

-2nd stage (January to February 2002):

Rapid moving white spots and several rifts in the south component of NEB.

-3rd stage (March to May 2002):

Recede the width of the NEB.

11. 1st stage (August to December 2001)

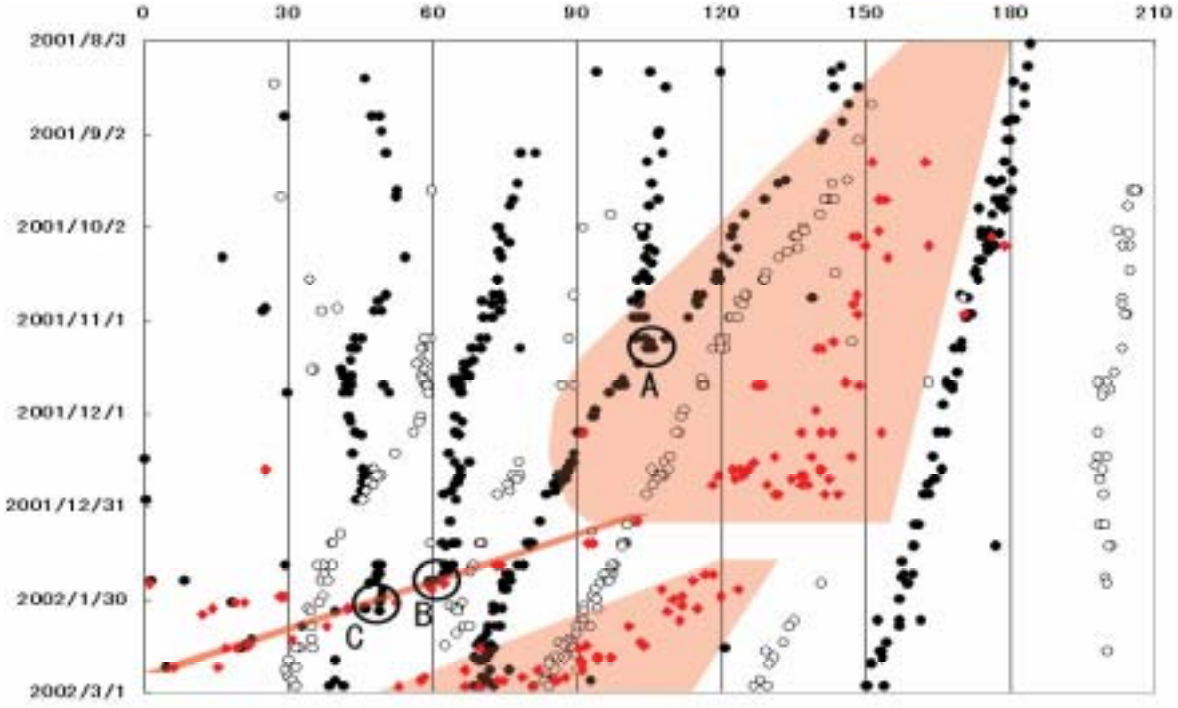
Some white spots occurred continuously at 150 degrees of system-II from middle August 2001. These white spots grew toward the east and west, and developed to the great rift. The source of the white spots moved slowly forward to system-II. A new white spot occurred every 20 days. It seemed that these spots maintained the activity of the great rift.

This great rift was different from the rift of the last apparition. This activity was broad from the south edge of NEB (NEBs) to the north edge of the NEB (correctly NTropZ in this apparition), while the normal rift was active at the region from NEBs to NEBn. This great rift was long lived from August to December, while the normal rift was lived up to 15-30 days. Also the white spots, which maintained the great rift, occurred at the north edge of the NEB (NEBn; but located at the middle of NEB in this apparition). The latitude of the white spots was different between the great rift and the normal ones.

The great rift affected the other features in NEB. It seemed that the great rift pushed the preceding notch (called 'form-Z') in last August 2001; therefore the notch was accelerated in drift. It also seemed that the great rift pushed the preceding barge in September 2001. The barge also was accelerated.

12. The merge of two barges

It was interesting to merge the two barges in November 2001 (See point A). The barge accelerated by the great rift moved faster forward, encountered the preceding barge at 115 degrees of system-II on November 2001. Two barges merged each other.



13. 2nd stage (January to February 2002)

In early January 2002, a new bright white spot occurred at 105 degrees of system-II. This white spot moved rapidly forward. This spot was located at the middle of NEB (correctly NEBn in this apparition). The second white spot occurred located at the same latitude in last January 2002. The

third and forth white spot occurred similarly in the early February and early March 2002. These white spots formed the new rift for each, and the rift grew toward the east and west. Finally the rifted region, merged the neighboring rift, covered the whole region of NEB until last April 2002.

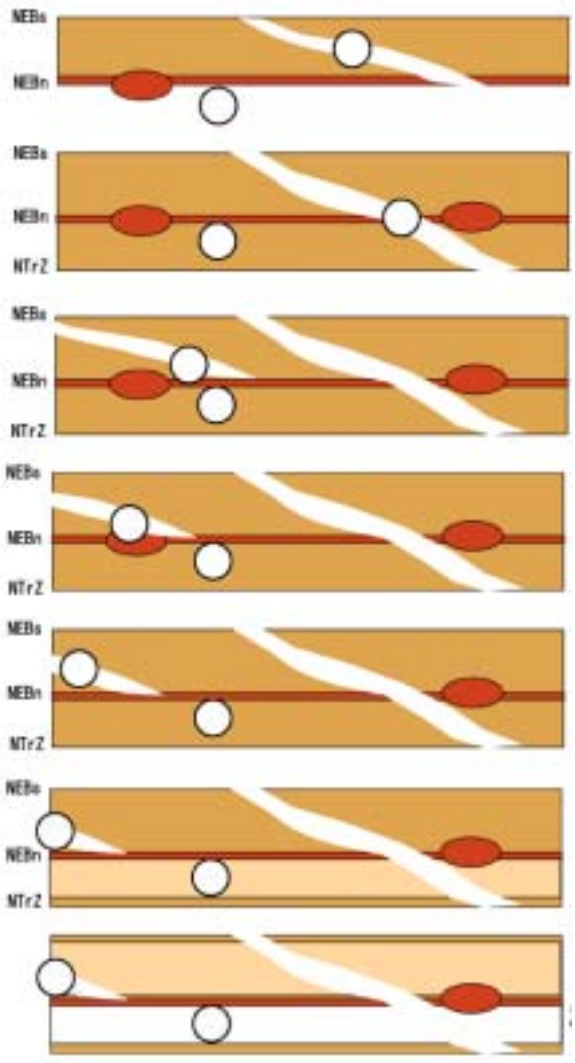
14. Disappear the two barges of NEB

Because the white spots moved faster forward in the middle of NEB, the two barges located at the preceding side encountered with them. In last January 2002, a barge located at 60 degrees (system-II) disappeared when the white spot passed through. In early February 2002, a more preceding barge located at 50 degrees (system-II) disappeared as the same manner (See point B and C).

15. 3rd stage (March to May 2002):

It began to be faint the north region of NEB at 360 degrees (system-II). This faint was expanded to the preceding side; the region of 140 to 360 degrees (system-II) was faint in April 2002. This was the receding of the NEB, and it will be that NEB returns to be single.

On the other side, the south region of NEB was bright because to cover the whole by the expanded rifted region. Therefore the only narrow reddish belt was remained at the middle of NEB.



16. Model of the NEB activity in 2001-2002

1) NEB was single in 2000-2001, and the rift of NEB was active.
2) NEB was 'broad' toward the north. The great rift was active in the region from NEBs to NTropZ (1st stage).
3) A new white spot occurred at the middle of NEB. This spot moved rapidly forward (2nd state).
4) A rapid moving white spot passed through the barge.
5) That barge disappeared.
6) The north region of NEB was faint.
7) The south region of NEB was faint by the activity of NEB rifts (3rd stage).