Merge of the STB Ovals 'BE' and 'FA' Approached Soon

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1. Introduction

There were three STB Ovals that appeared since 1940. When the ovals became small, the distance between the ovals became small together. In March 1998, the ovals 'BC' and 'DE' merged to a new oval (called 'BE'). Unfortunately, this merge happened during the conjunction of the sun.

In the apparition of 1998, the merged oval 'BE' and 'FA' behaved the converge of the distance; 45 degrees in June, and 35 deg. in October. The 'BE' was slightly larger than the normal STB ovals, had no dark edge around of the oval, and was difficult to observe by naked eye. Also 'BE' was slightly north than 'FA'.

2. Converge of 'BE' and 'FA' (from May to December, 1999)

Figure 1 and Figure 2 show the feature of STB Ovals 'BE' and 'FA' in 1999-2000. The distance between 'BE' and 'FA' was 17 deg. in May 1999 (early observations). A small white spot was visible from early July, which was located at the north-middle of two ovals. Ikemura's CCD image of August 8 shows that the oval 'BE' was surrounded by the dark edge, was the strange shape of pentagon, and had the detailed dark feature inside the oval. This small white spot was a clockwise oval (high pressure region), while the STB ovals were anti-clockwise cyclonic ovals (low pressure region). This spot was similar to the same oval just before the merge of 'BC' and 'DE' in March 1998. It seemed that this spot blocked the contact of two ovals, and extended the life of STB ovals.

In middle September 1999, the distance of 'BE' and 'FA' was short of 12 degrees. If the converge was maintained in this rate, the merge would happened soon; I expected. However, the distance of two ovals was longer after the oval 'BE' moved forward at 30 deg. following of the GRS. When the STB oval passed through the GRS, the oval changed the latitude a little to the south, and accelerated the drift. The oval 'BE' passed through the GRS in middle November, and the oval 'FA' passed in middle December. The small white spot, located between the 'BE' and 'FA', was visible until the middle December, and it was disappeared after that. The distance of two ovals was expanded to 17 degrees in this time.

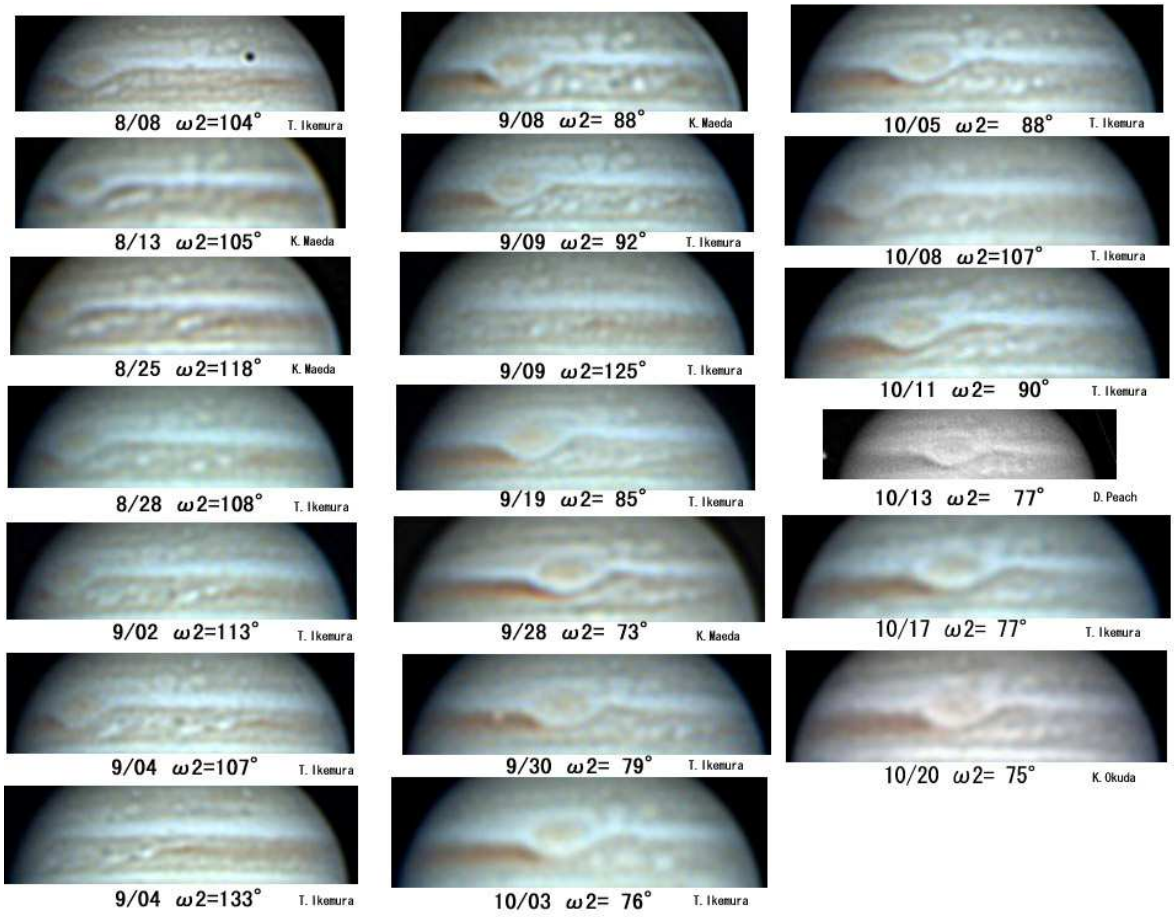

Figure 1. CCD Images from August 8 to October 20, 1999

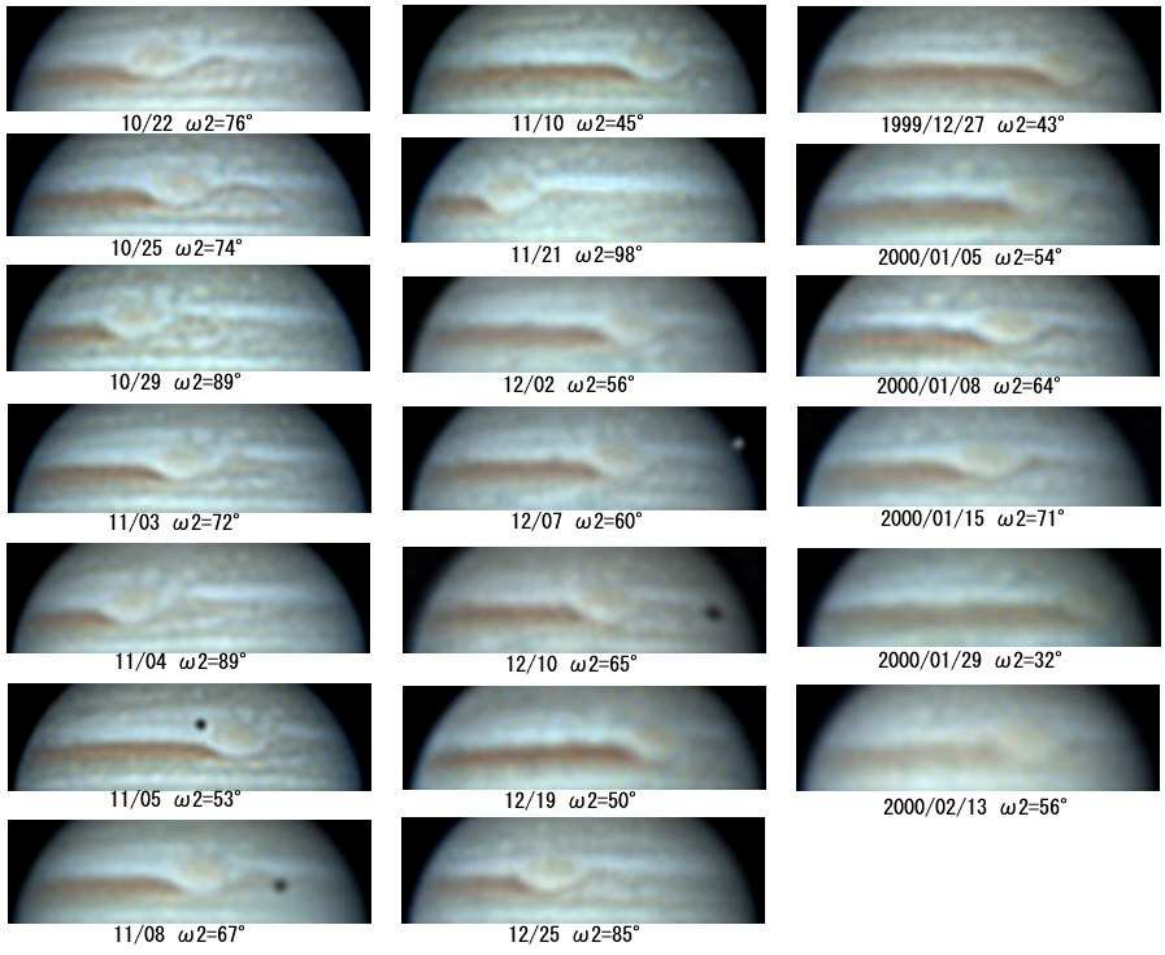

Figure 2. CCD Images from October 22, 1999 to February 13, 2000

3. Approach to the merge (from January to February, 2002)

The STB ovals 'BE' and 'FA', finished to pass through the GRS, returned to the previous latitude, therefore the approach just began again; 16 deg. in January 5, 13 deg. in January 29, and 11 deg. in February 13.

Figure 3 shows the drift chart of STB ovals and GRS from 1995 to 2000. The STB ovals would pass through the GRS every 2 years and 4 months. Three ovals of STB passed through the GRS in order in August 1997, then the oval 'BC' and 'DE' merged in March 1998 (during the solar conjunction). It was visible the merged oval 'BE' and 'FA' in 1998, and the distance of two ovals were shorter in 1999.

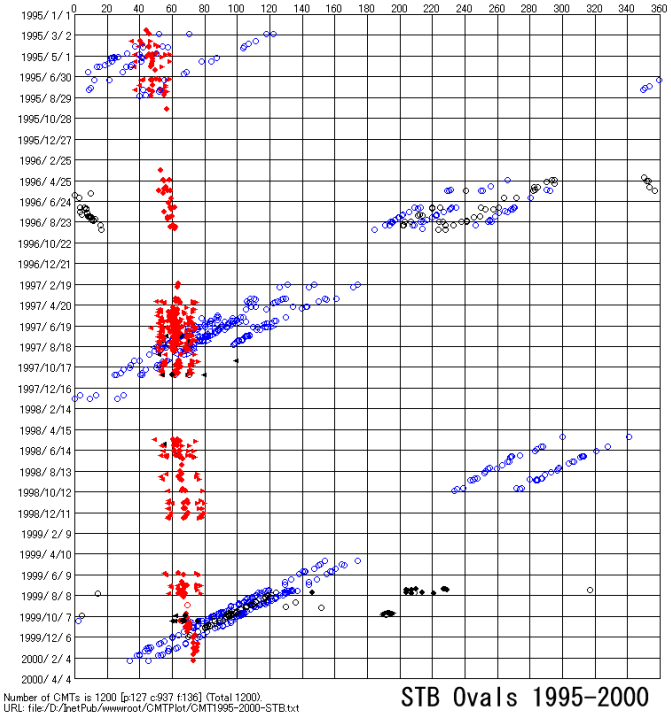

Figure 3. Drift chart of STB Ovals form 1995 to 2000

Figure 4 shows that the distances between the 'BE' and 'FA' were plotted. As mentioned above, the distance was at once close 12 degrees in middle September 1998. But the distance was expanded to 17

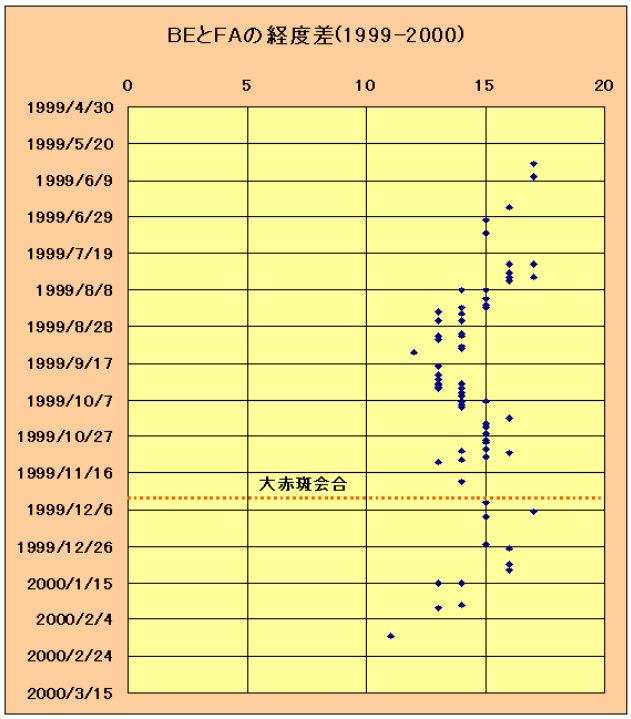

Figure 4. The distance between 'BE' and 'FA'

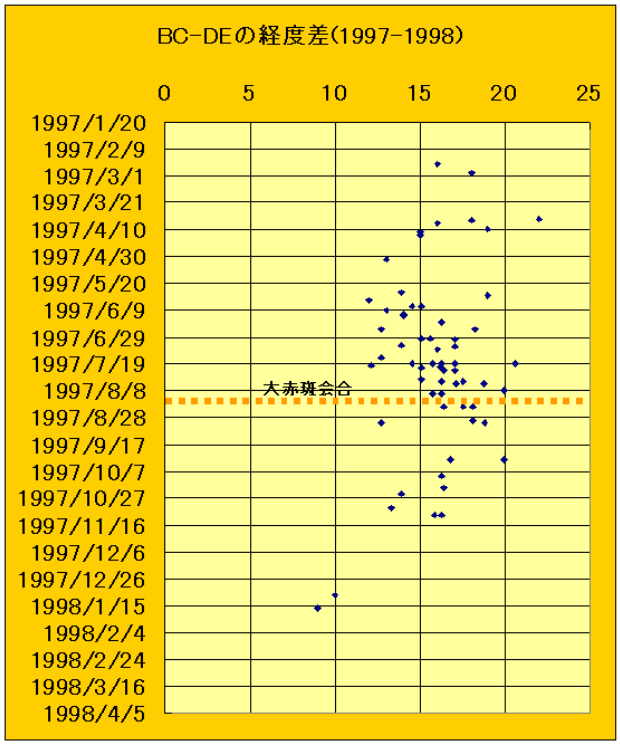

Figure 5. The distance between 'BC' and 'DE'

degrees, because the ovals passed through the GRS. Then two ovals began to approach again in January 2000.

4. Comparison to the merge of the 'BC' and 'DE' in March 1998

Figure 5 shows that the distance between the 'BC' and 'DE' were plotted. The feature of approach of the 'BC'/'DE' is very similar to Figure 4 ('BE'/'FA'). In the case of the ovals 'BC' and 'DE', it was continued to approach up to 12 degrees until June 1997. However, the distance was extended to 20 degrees, because these ovals passed through the GRS. After two ovals passed through the GRS in September 1997, they were quickly approach each other, and merged to a new oval 'BE' in March 1998. If the distance of two ovals were less than 8 degrees, the merge would happen quickly.

5. Estimate the merge of the ovals 'BE' and 'FA'

I expect that the change of the distance between 'BE' and 'FA' will be same manner between 'BC' and 'DE'. The Approach to merge of two ovals is the following steps:

1) A clockwise cyclonic oval happens at the middle of two ovals.
2) The distance between these ovals is larger when the ovals passed through the GRS.
3) The distance is smaller again after the ovals passed through the GRS.
4) Just after a small white spot disappeared, the merge of two ovals happened immediately.

As the diameter of 'BE' is 10 deg. and the diameter of 'FA' is 6 deg., two ovals will contact each other within 8 degrees of the distance. So the merge will happen immediately. I estimate that this merge will happen in middle March 2000.

The Merge of the STB Ovals 'BE' and 'FA'

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The merge of the STB ovals 'BE' and 'FA' happened in March 21, 2000. The approach to merge continued in March; the distance between ovals 'BE7 and 'FA' was 11 degrees in March 3, 10 deg. in March 10, 8.5 deg. in March 15, and 7 deg. in March 20, 2000 (See Figure 1). This plot shows that the two ovals began to approach again each other from January, when the ovals passed through the GRS. The change of the distance is linear as expected.

Figure 2 shows the strip maps of STB ovals from July 1999 to March 2000. This map is plotted by special system-III.

In March 15, two ovals just contact each other, and expanded to the direction of longitude. In March 20, two ovals approached more. The 'FA' moves southward, and goes around the oval 'BE'.

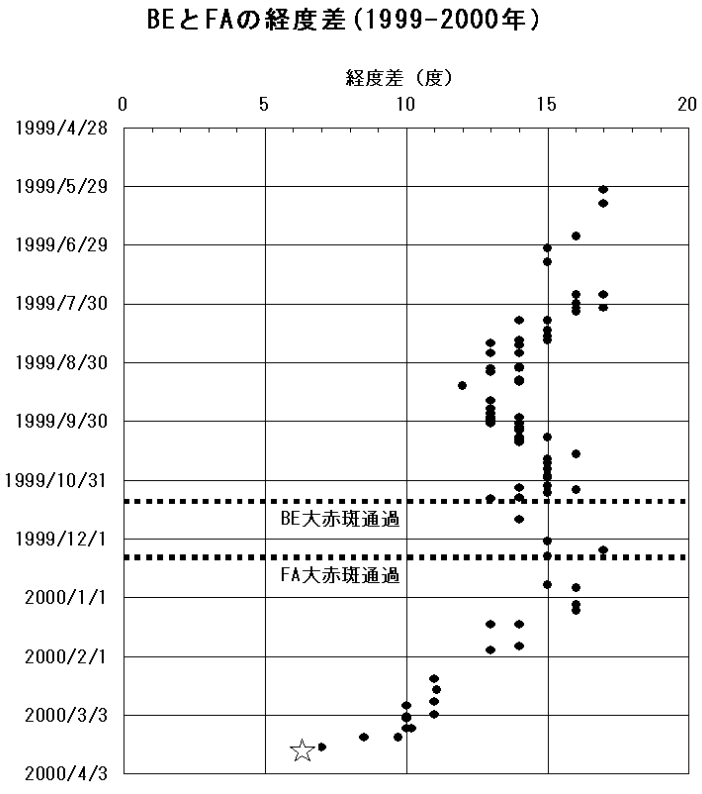

Figure 1. Distance between the oval 'BE' and 'FA'

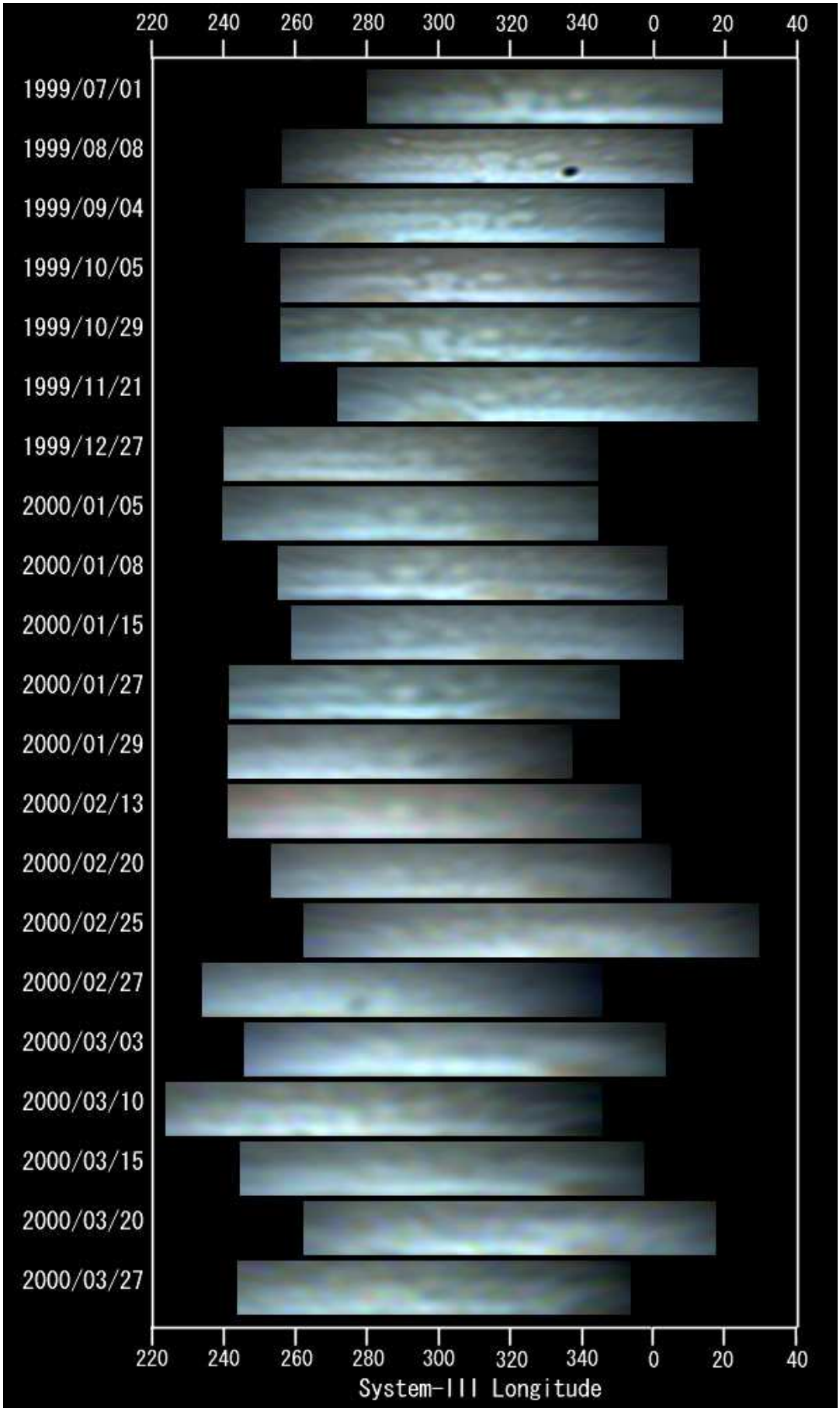

Figure 2. Strip maps of the merge between the STB ovals 'BE' and 'FA'