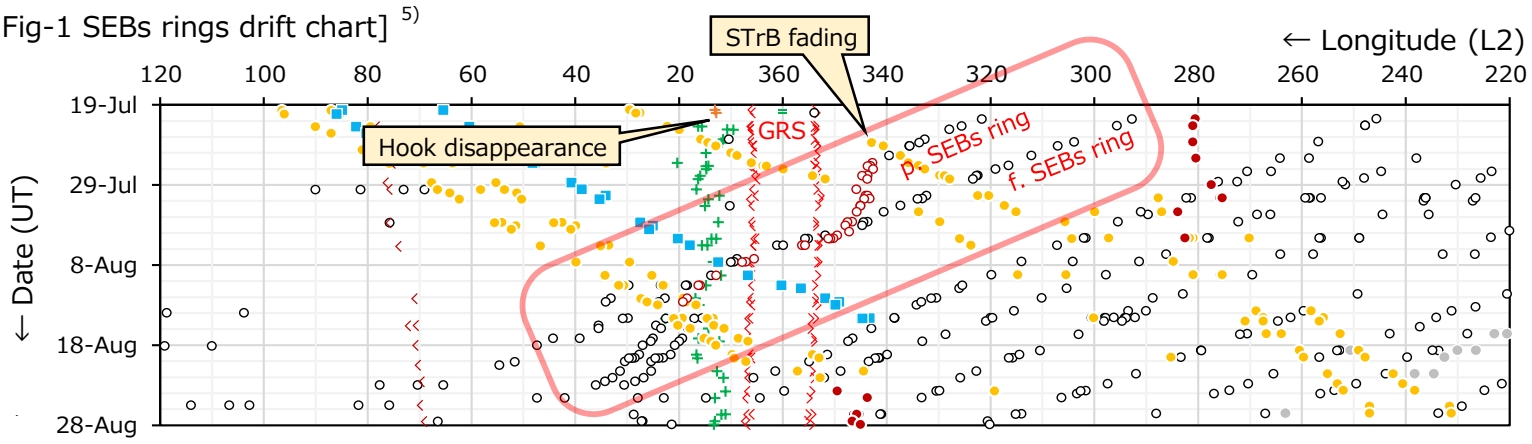
2021 Sudden deceleration of the SEBs ring

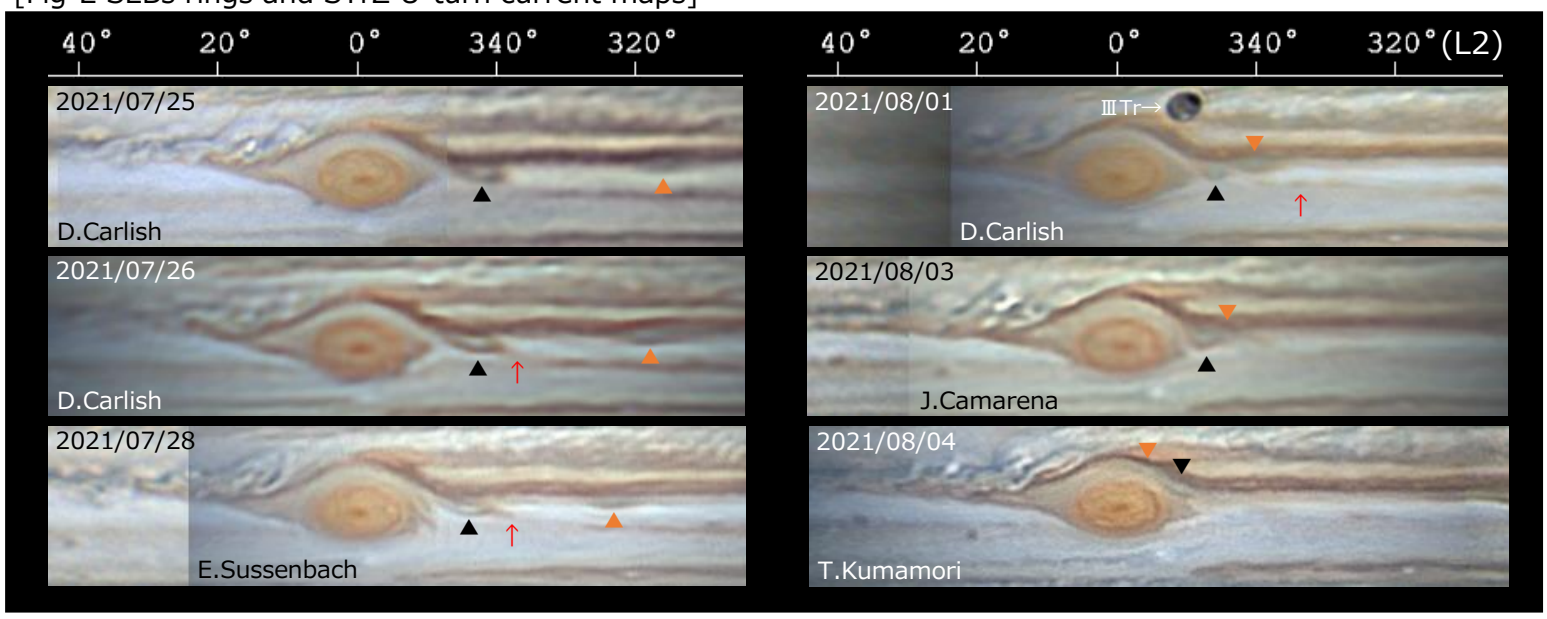
<Development process>

- In late-Jul. 2021, the retrograding SEBs ring (3.7°L2/day) shifted south on the GRS-bay p. side and suddenly decelerated (0.9°L2/day). [Fig-1,2,3]
- At this time the dark cloud outflow from the SEBs ring towards the STrB was observed. This suggests the existence of the STrZ U-turn current from the SEBs to the STrB. [Fig-2]
- Initially it was thought that the preceding SEBs ring would make a U-turn on this STrZ U-turn current, as it did in 2019, [6]
  but in early-Aug. the following SEBs ring (4.3°L2/day) caught up with the preceding ring and the two rings successively entered and accelerated (3.7°L2/day) past the GRS-bay. [Fig-1,2,3]
- On entering the GRS-bay, the following SEBs ring appears to have overtaken the preceding SEBs ring by passing north of it. [Fig-2,3]
- In mid-Aug., after passing the GRS-bay, they decelerated (0.9°L2/day) again. [Fig-1]
- After that, the two rings seemed to disappeared while gradually accelerating. [Fig-1]

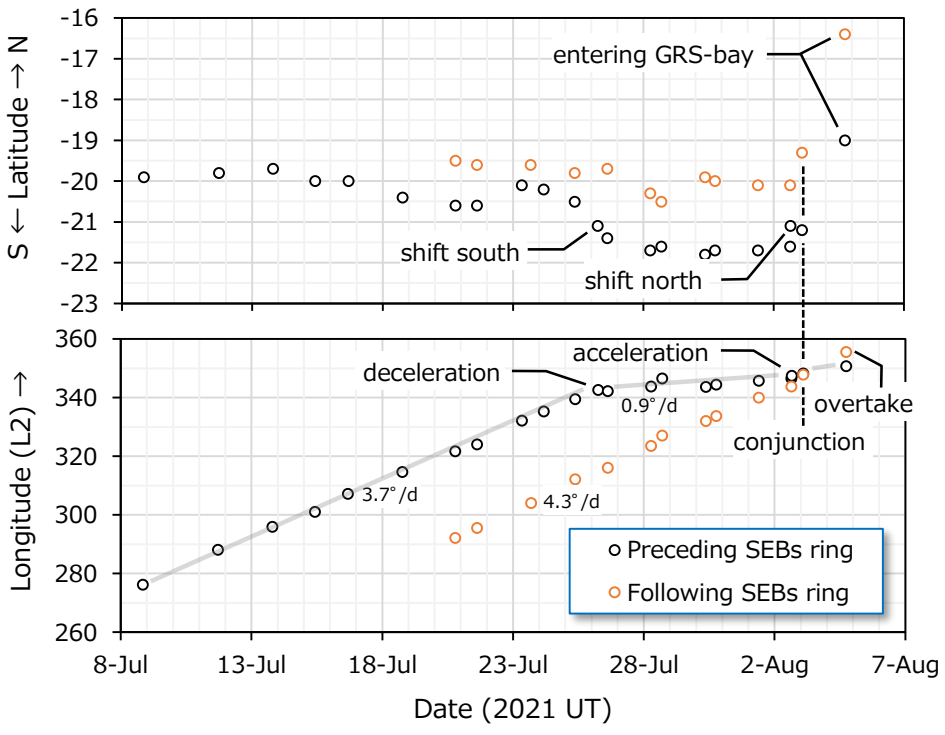
[Fig-1 SEBs rings drift chart] [5]

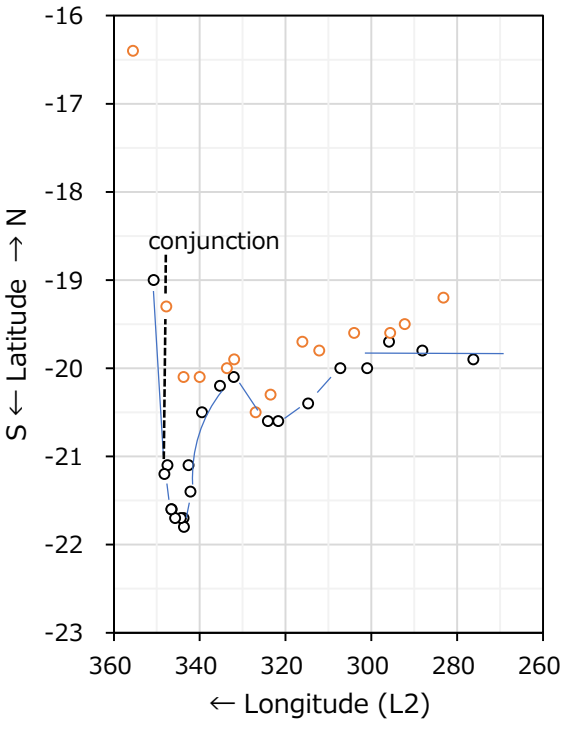


[Fig-2 SEBs rings and STrZ U-turn current maps] [3),4)]



[Fig-3 Latitude and longitude relationship of two SEBs rings]

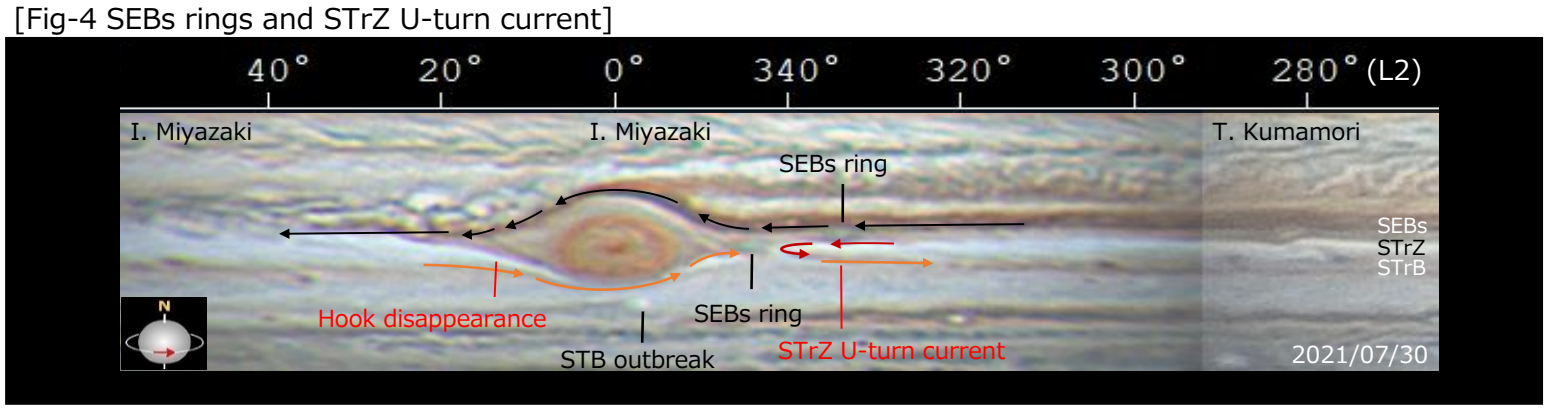




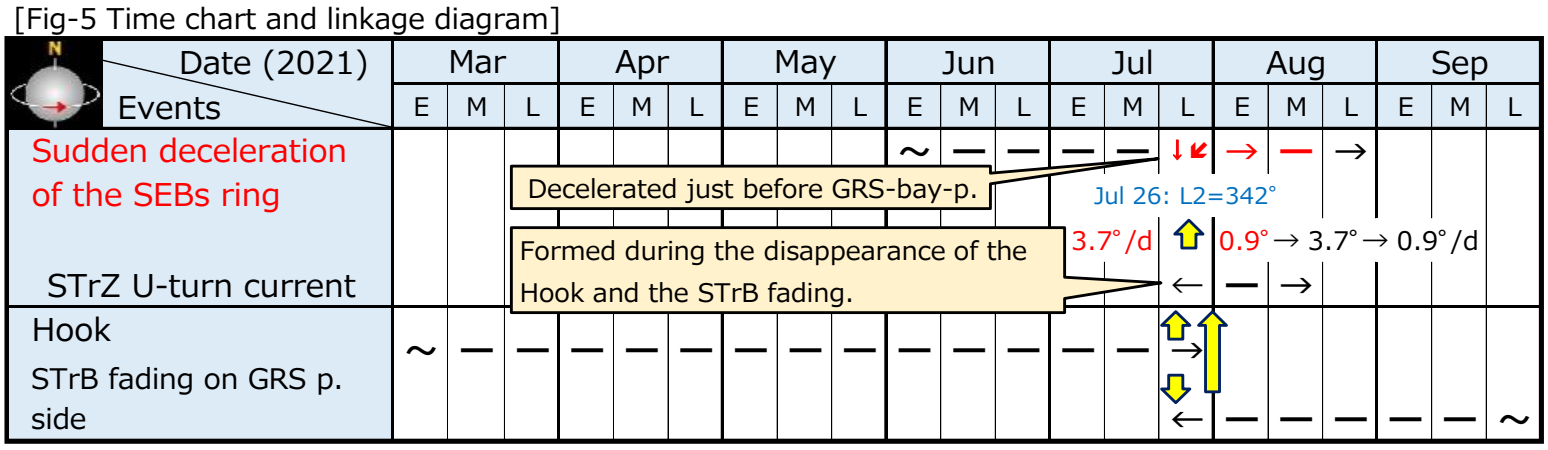
<Summary>

- The sudden deceleration of the SEBs ring appears to have been caused by the following process.
  - ・The Hook (GRS-bay f. dark column) disappearance and associated the STrB fading. [Fig-1,4,5]
  - ・STrZ U-turn currents formed, which shifted the latitude of the preceding SEBs ring to the south. [Fig-1,2,3,4,5]
  - ・The preceding SEBs ring decelerated. [Fig-1,2,3,4,5]
- The U-turn of the SEBs rings were also observed on the GRS-bay p. side in 2019, again just after the disappearance of Hook. [6)]

[Fig-4 SEBs rings and STrZ U-turn current]



[Fig-5 Time chart and linkage diagram]



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