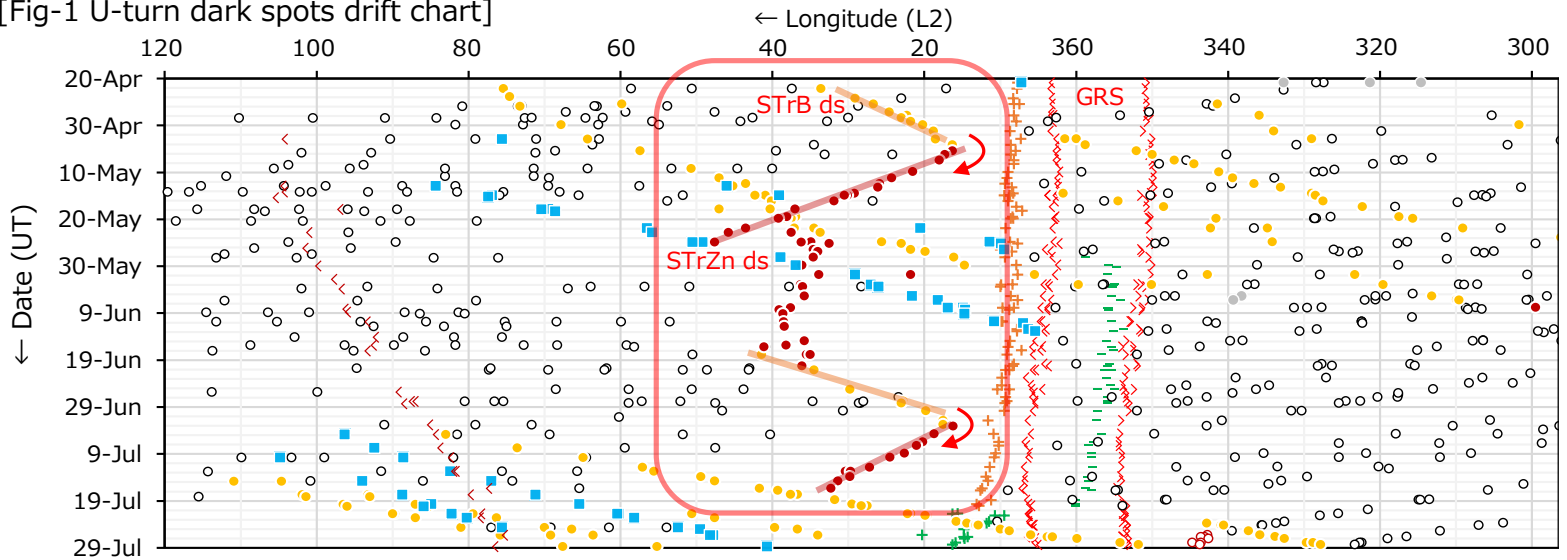


2021 U-turn dark spots

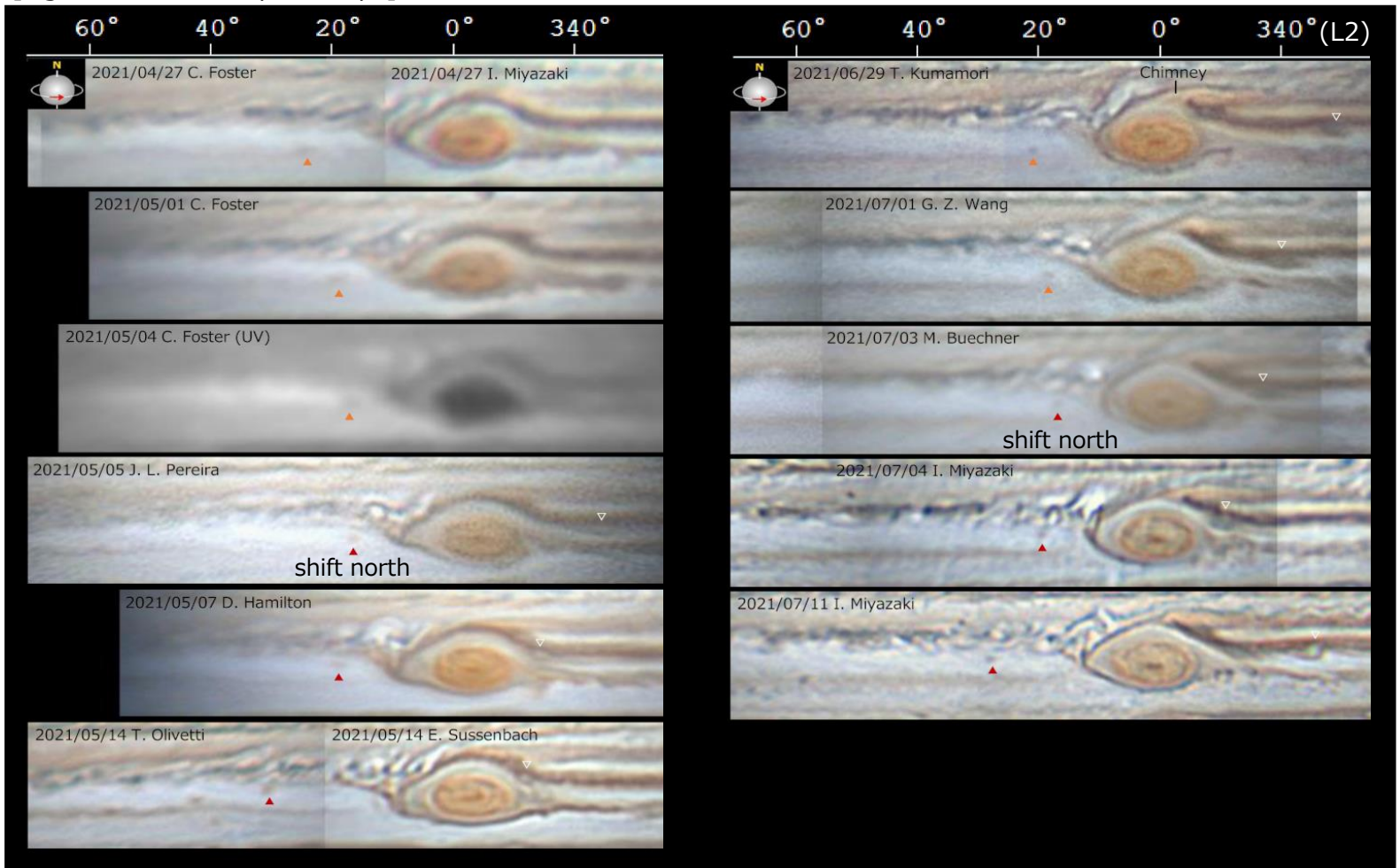
<Development process>

- In early-May and early-Jul. 2021, the U-turn events were observed in which the dark spots that had been prograde ($-1.6^\circ L2/day$) the northern edge of the STrB shifted northward around $L2=15^\circ$ and then retrograde ($1.6^\circ L2/day$) on the STrZn.
- Since Mar. 2021, the circulating current p.e. like region has been observed as an arch-like pattern, and the U-turn events of the dark spots seems to be caused by this current. Here we refer to this as the 'STrZ U-turn current'.
- The U-turned dark spots disappeared after about half a month.
- The STrZ U-turn current p. disappeared with the disappearance of the Hook (GRS-bay f. dark column) around Jul.23, 2021.

[Fig-1 U-turn dark spots drift chart]



[Fig-2 U-turn dark spots maps]

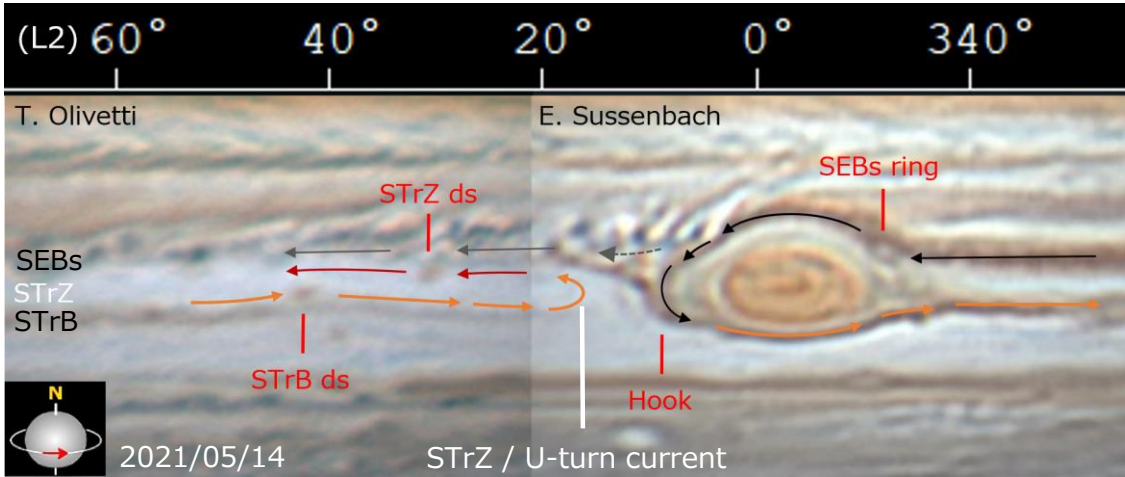


<Summary>

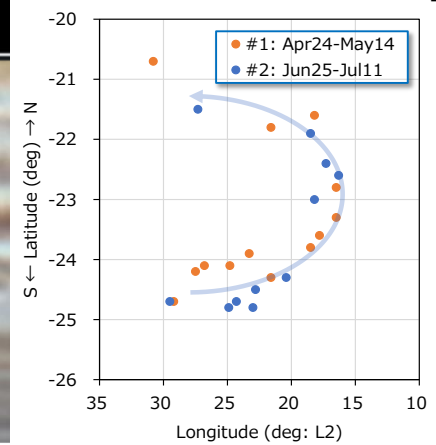
- The currents around the GRS during the U-turn dark spots observation is shown in [Fig-3].
- The chart made from the longitude and latitude measurements is shown in [Fig-4].
- The time chart and linkage diagram is shown in [Fig-5].
- The formation process of the STrZ U-turn current was unknown due to its near the solar conjunction.
- The STrZ U-turn current seems to be a local events smaller in scale than the Hook.
- The Hook is formed by the direct effect of the GRS, whereas the STrZ U-turn current is formed by the indirect effect of the GRS?

- The STrZ U-turn current-p and the Hook disappeared at about the same time: are they interrelated? ⁶⁾
- Is the STrZ U-turn current p. interrelated with the STrZ U-turn current f. in the GRS p. side that formed immediately after the disappearance of the STrZ U-turn current p.? ⁶⁾

[Fig-3 Currents around the GRS]



[Fig-4 Relationship between Lat. & Lon. of the U-turn d.s.]



[Fig-5 Time chart and linkage diagram]

Events	Mar			Apr			May			Jun			Jul			Aug			Sep		
	E	M	L	E	M	L	E	M	L	E	M	L	E	M	L	E	M	L	E	M	L
U-turn dark spots (STrB → STrZn)				~	—	—	↻	—	→	~	—	—	↻	→							
STrZ U-turn current p.	~	—	—	—	—	—	—	—	—	—	—	—	—	—	—	→					
STrZ U-turn current f.							Formed during the disappearance of the Hook and the STrB fading.						↻			→					
Hook	~	—	—	—	—	—	—	—	—	—	—	—	—	—	—	↻					
STrB fading on GRS p. side	~	—	—	—	—	—	—	—	—	—	—	—	—	—	—	↻					

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