

# Dust Storm from December 20, 2021 to January 23, 2022

—— According to MRO observation records ——

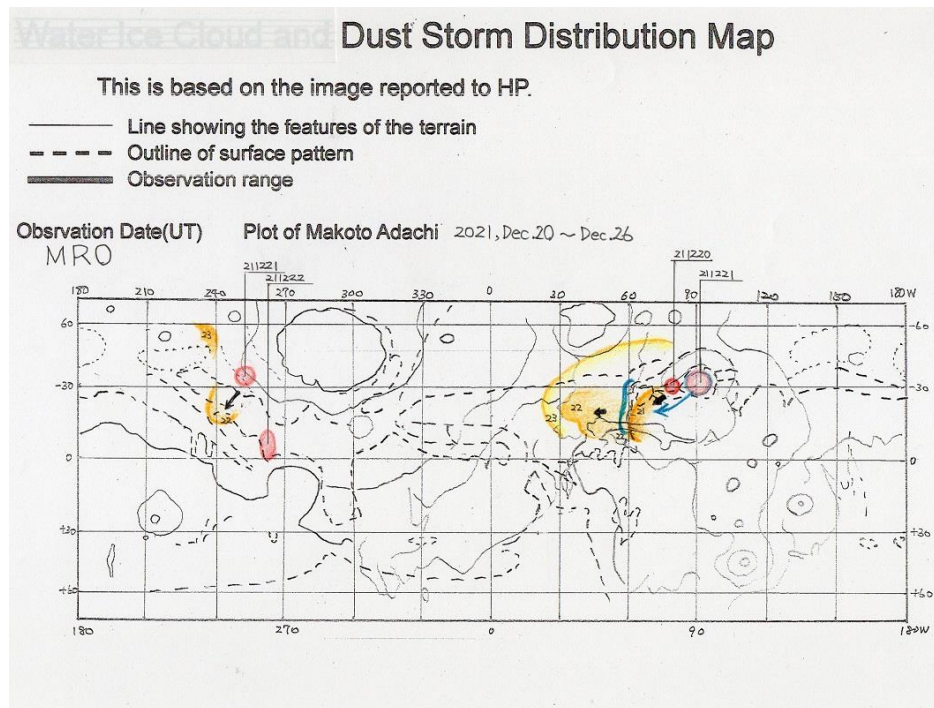
2022, Feb. 3

ALPO-JAPAN

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On February 4, 2022, when I wrote this report, Mars as seen from Earth was very small, still a little over 4 seconds in size. MRO's daily recordings of Mars had been suspended since September 4, 2019, but resumed on November 8, 2021.

From Earth, the observation season has just begun, but I examined the latest five images (about a month) to find out the current state of Mars. The first purpose was the occurrence of dust storms. The results are shown in the figure below.



From December 20, 2021 to December 26, 2021

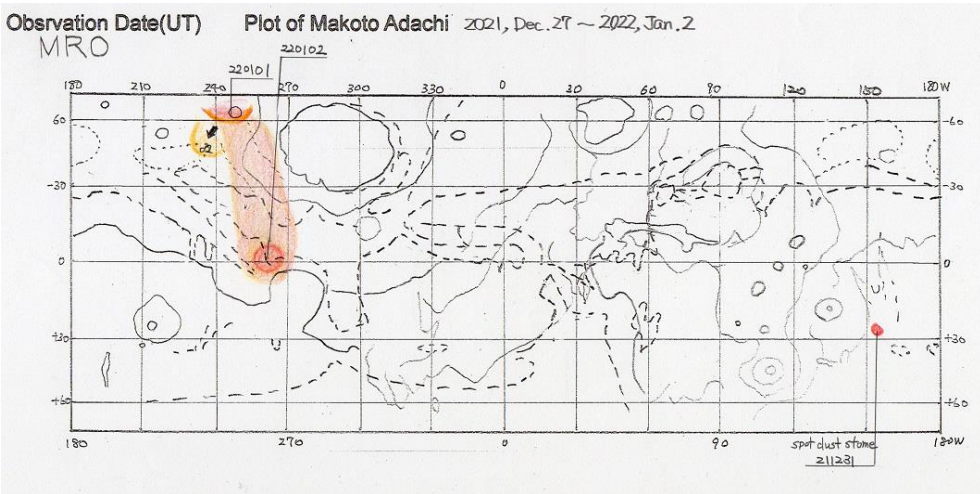
Four dust storms have occurred.

As shown in the figure on the left, it is divided into two areas, east and west.

The dust storm near Solis Lacus (W90; -28) heads eastward, Mare Erythraeum (80W ~ 55W, -30) Spread to the area. Eventually it spread.

On the other hand, the eastern part of Hellas (275 ~ 315W, -30 ~ 60) may have led to a large dust storm this week. In particular, the dust storm south of Ishidis (270W, +23) was in the same position as the dust storm that occurred on January 2. This dust storm spread to 90° in the east-west direction.

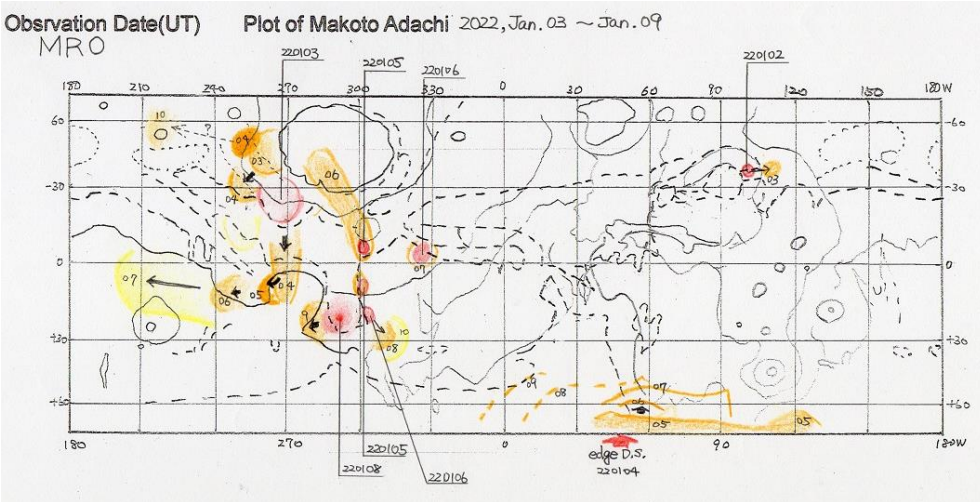
From December 27, 2021 to January 2, 2022



This time too, it occurred in the eastern part of Hellas ( $275 \sim 315\text{W}$ ,  $-30 \sim -60$ ). The one that occurred on January 2, the last day of the period, was in the position shown in the figure, but it was connected to a new dust storm in the south and widely covered Ausonia ( $\text{W}235 \sim 270$ ,  $-55 \sim -20$ ). This dust storm (January 2nd) was just after the outbreak, and white clouds were widely seen from the MRO. Below this white cloud should be the body of the dust storm.

The dust storm to the west of Olympus Mons (135W, +25) was clearly visible on 31 December, but only traces were visible on 1 January. It is a spot-shaped dust storm.

From January 3rd to January 9th, 2022



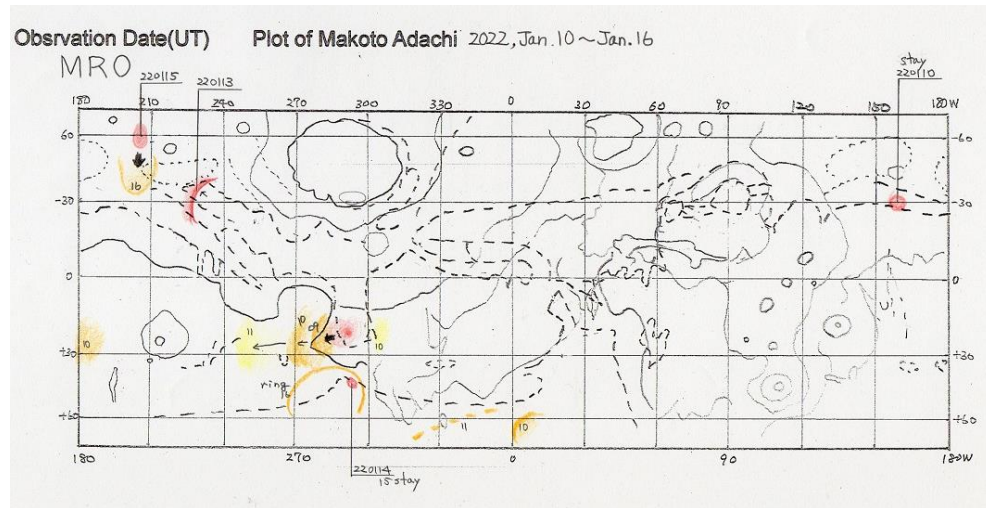
There was a lot of dust storms from the Arctic this week.

Eight places were also seen. It is concentrated near Syrtis Major from Hellas. Most notably, there is a point of origin along the edge of Syrtis. There is a point of occurrence at the boundary between the dark pattern and the desert.

All dust storms near Syrtis were swept east. The dust storm east of Hellas was also swept east.

The Solis Lacus dust storm barely repositioned and disappeared on the third day. Maybe I couldn't move because it was behind the mountain. An edge dust storm from the pole occurred on January 4, and the area around the pole was greatly disturbed.

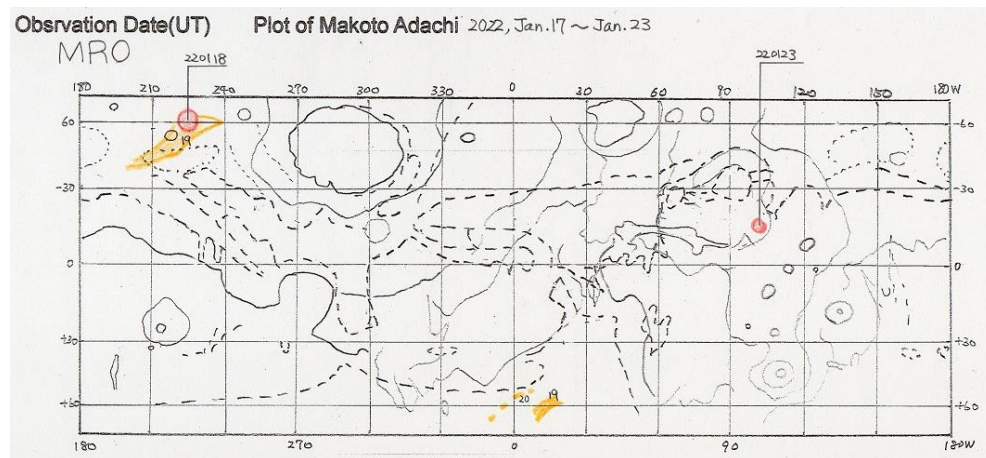
From January 10th to January 16th, 2022



The dust storm that occurred ahead of Syrtis Major on January 10 merged with other dust storms in the north and south and expanded toward Elysium. I don't know the details from the MOR image, but it was finally swept east by about  $120^\circ$  in longitude.

From the direction of Antarctica near  $W210^\circ$ , a dust storm that seems to be an edge dust storm occurred and was swept north. It seems that the influence of the Antarctic crown has already come out.

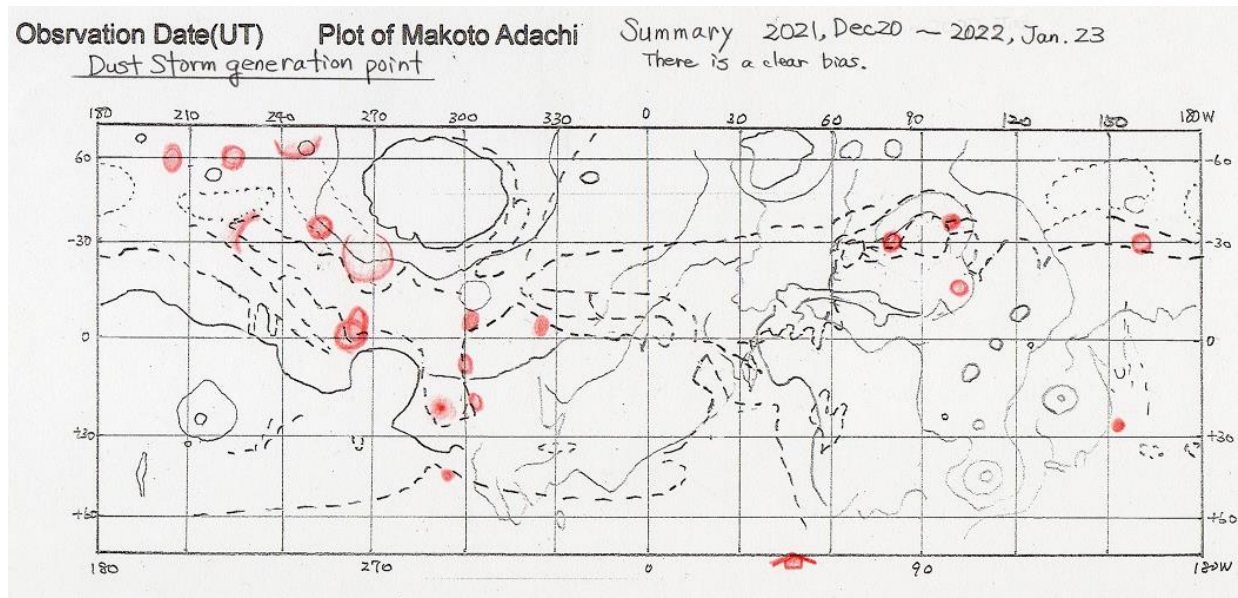
From January 17th to 23<sup>rd</sup>



The occurrence of dust storms was small. The area where it occurred became very dusty, and the pattern became difficult to see.



## Occurrence point during the period



1 Occurs at the boundary with a dark pattern

It was based on the cause of the normal local dust storm.

2 Ls value

During the period, it is around  $150^\circ$  to  $160^\circ$ , which is usually the time when dust storms are less likely to occur. However, with MRO's high-resolution data, many dust storms were recorded.

3 Scale of dust storm

Of these dust storms, if Mars is more than 10 seconds in size and can be observed from Earth, it will probably be only about five. To find it, the bright hours need to be facing the observer.