

Solution for Saturn's Hexagonal Storm Mystery

Sandeep Jaiswal

CEO, Self - employed, Mumbai, 400077, India
Corresponding author Email: [augjaiswal\[at\]gmail.com](mailto:augjaiswal[at]gmail.com)

Abstract: *The article proves that the Saturn's hexagonal storm is due to an earlier formed crater on the top north end. The cyclone at the very centre of the crater is constrained with the 6 walls of the hexagon with separates the outside storms and hence the view from outside.*

Keywords: Saturn; Hexagonal Storms; Tethy; Crater; Cyclone

1. Introduction

One of Saturn's mysteries involves the massive storm in the shape of a hexagon at its north pole. The six - sided vortex is an atmospheric phenomenon that has been fascinating planetary scientists since its discovery in the 1980s by the American Voyager program, and the subsequent visit in 2006 by the U. S. - European Cassini - Huygens mission. The storm is about 20, 000 miles in diameter and is bordered by bands of winds blowing up to 300 miles per hour. A hurricane like it doesn't exist on any other known planet or moon. During the Cassini mission, the hexagon changed from a mostly blue colour to more of a golden colour. Saturn's south pole does not have a hexagon, as verified by Hubble observations. It does, however, have a vortex, and there is also a vortex inside the northern hexagon.

So far the storms remains a mystery and unexplainable with one explanation being that the smaller storms interact with the larger system and as a result effectively pinch the eastern jet and confine it to the top of the planet. The pinching process warps the stream into a hexagon. This paper

provides an explanation and solution to the mystery of storms backed by pictures and concrete logical analysis.

2. A New Section

As can be seen from the picture below (FIG.1.) from NASA's Cassini mission, similar hexagonal formation in the top north end of the Saturn's very own Tethy's moon that is a single biggest proof of the similar formation on the Saturn's same north end that is causing the hexagonal storms. This hexagonal formation shows that due to such common crater formations on the Saturn and the moons and the effect of the atmospheric cyclones can the mystery of the hexagonal storm be explained by following two points below:

- 1) The cyclone at the very centre of the crater is constrained with the 6 walls of the hexagon with separates the outside storms and hence the view from outside.
- 2) This constrains the central cyclone that demarcates the rest of the outside environment from what's happening's within the crater (Figure 1).

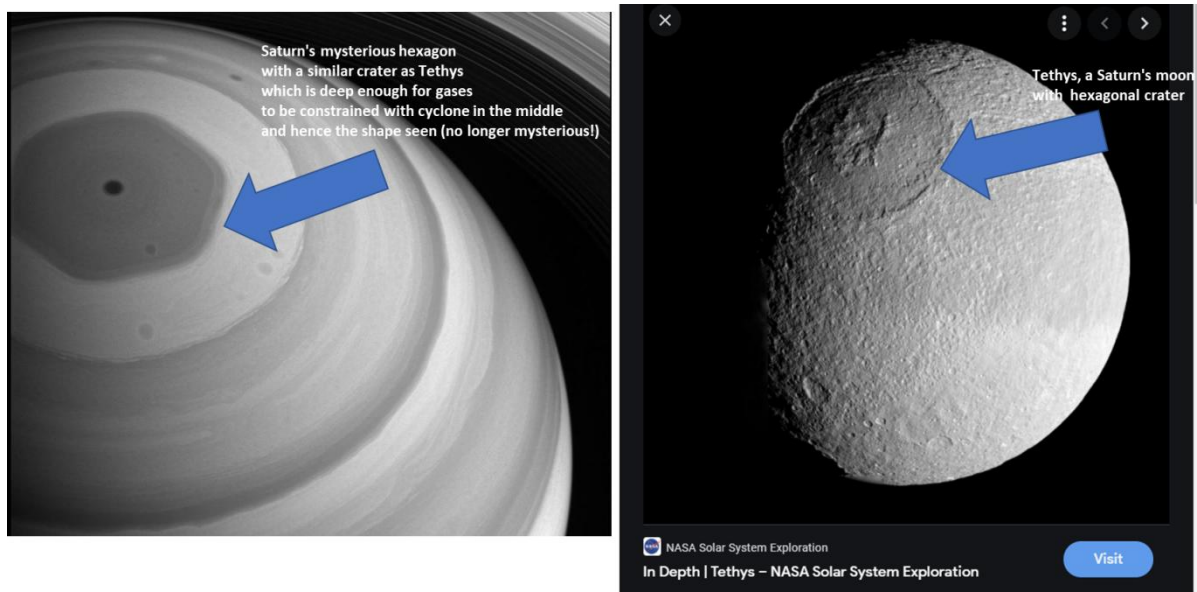


Figure 1: Image showing saturn's mysterious hexagon's and Tethy's hexagonal crater

3. Conclusion

It can be concluded that the hexagonal storm on the top north end of Saturn is due to a hexagonal crater. This is

using the images from one of the moons of Saturn where similar formation has been noticed as a hexagonal crater. This solves one of the biggest mystery of the solar system that had been unexplained so far and is the only explanation

Volume 12 Issue 3, March 2023

www.ijsr.net

Licensed Under Creative Commons Attribution CC BY

that is backed by a concrete proof and images. This is a major step in solving some of the unsolved mysteries of astronomical science by taking us closer to realities of outer space and inserting one matching piece into the puzzle.

Acknowledgements

Like to thank NASA for providing close up images of both Saturn and it's moon Tethys that helped in the analysis. Also thanks to Wiki for providing initial details about the mystery that got the curiosity started.

Citations

- [1] "Tethys". Oxford English Dictionary (Online ed.). Oxford University Press. (Subscription or participating institution membership required.)
- [2] "Tethys". Merriam - Webster Dictionary.
- [3] JPL (2009) Cassini Equinox Mission: Tethys.
- [4] https://en.wikipedia.org/wiki/Saturn%27s_hexagon
- [5] [https://en.wikipedia.org/wiki/Tethys_\(mythology\)](https://en.wikipedia.org/wiki/Tethys_(mythology))

References

- [6] Godfrey D. A hexagonal feature around Saturn's North Pole. *Icarus*.1988; 76: 335 - 356.
- [7] Caldwell J, Turgeon B, Hua XM, et al. The drift of Saturn's north polar spot observed by the Hubble Space Telescope. *Science*.1993; 260: 326 - 329.
- [8] Sánchez - Lavega A, Lecacheux J, Colas F, et al. Ground - based observations of Saturn's north polar spot and hexagon. *Science*.1993; 260: 329 - 332.
- [9] Fletcher, L. N.; et al. (3 September 2018). "A hexagon in Saturn's northern stratosphere surrounding the emerging summertime polar vortex". *Nature Communications*.9 (3564): 3564. arXiv: 1809.00572. Bibcode: 2018NatCo...9.3564F. doi: 10.1038/s41467-018-06017-3. PMC 6120878. PMID 30177694.
- [10] "Saturn's Mysterious Hexagon Emerges From Winter Darkness". NASA. December 9, 2009. Archived from the original on April 24, 2016. Retrieved May 1, 2013.
- [11] Godfrey, D. A. (1990). "The Rotation Period of Saturn's Polar Hexagon". *Science*.247 (4947): 1206–8. Bibcode: 1990Sci...247.1206G. doi: 10.1126/science.247.4947.1206. PMID 17809277. S2CID 19965347.
- [12] "Scientists solve mystery of Jupiter's polygon storms". *Sky News*. Retrieved 2020 - 09 - 25.
- [13] Canup, R. M. (12 December 2010). "Origin of Saturn's rings and inner moons by mass removal from a lost Titan - sized satellite". *Nature*.468 (7326): 943–6. Bibcode: 2010Natur.468...943C. doi: 10.1038/nature09661. PMID 21151108. S2CID 4326819.
- [14] Muller, Daniel. "Missions to Tethys". Archived from the original on 3 March 2011. Retrieved 16 September 2014.
- [15] Lassell, W. (14 January 1848). "Observations of satellites of Saturn". *Monthly Notices of the Royal Astronomical Society*.8 (3): 42–43.