

# New findings could help keep satellites and space debris from colliding

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Half a million objects, including debris, satellites, and the International Space Station, orbit the planet in the thermosphere, the largest layer of Earth's atmosphere. To predict the orbits—and potential collisions—of all this stuff, scientists must forecast the weather in the thermosphere.

Researchers who analyzed the role that [gravitational effects](#) of the Moon have on the [thermosphere](#) found that satellites taking different paths around the planet—circling over the poles, around the equator, or any route in between—will experience different levels of lunar-induced drag. Incorporating these results in current atmospheric models can refine the accuracy of orbital predictions, thus keeping satellites and space junk on separate paths.

"We continue to be surprised and fascinated by the different pathways that connect the lower atmosphere to space weather," said Jesse Zhang, lead author of the *Space Weather* paper.

**More information:** Zhang, J. T., J. M. Forbes, C. H. Zhang, E. Doornbos, and S. L. Bruinsma (2014), Lunar tide contribution to thermosphere weather, *Space Weather*, 12, 538-551, [DOI: 10.1002/2014SW001079](#)

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