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OTHERWORLDLY SPRITES MAY SIGNAL ALIEN LIFE



Analysis by Jason Major
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Enigmatic and exotic, sprites are large electrical discharges that flash high in the upper atmosphere -- usually above powerful lightning storms. Often bright red in color with streaming tendrils of blue and purple stretching down beneath, they hadn't even been photographed in color until 1995!

Sprites are one of the most elusive phenomena occurring in Earth's atmosphere -- and researchers at Tel Aviv University now suggest they may also be found on other worlds as well.

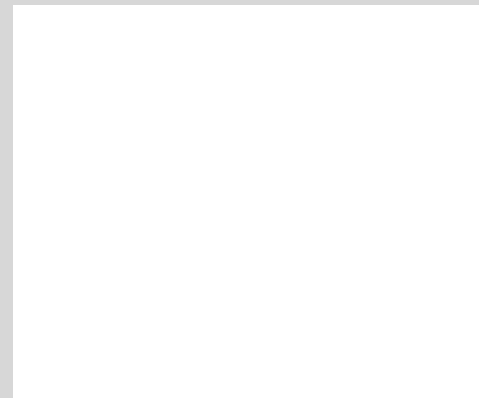
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Although sprites are fairly common on Earth they have not been well documented because of their location high in the mesosphere, well above the range of weather balloons. They only last a few tens of milliseconds and are basically high-altitude offshoots of lightning events closer to the ground. Lightning is not only found in large quantity on Earth but also on other planets in our solar system.

Venus has been shown to have Earthlike lightning, while



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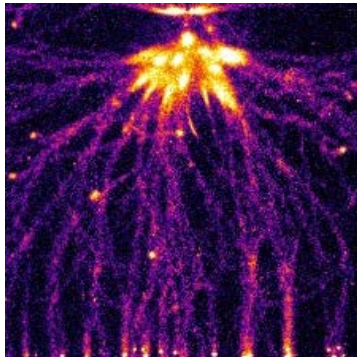
Tel Aviv University Ph.D. student Daria Dubrovin, along with her supervisors Colin Price of TAU's Department of Geophysics and Planetary Sciences, and Professor Yoav Yair of the Open University of Israel, as well as collaborators Ute Ebert and Sander Nijdam from the Eindhoven Technical University in Holland, have re-created other planetary atmospheres in the lab to study the presence of extraterrestrial sprites.

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Using chemical mixtures that mimic the atmospheres of Venus, Jupiter and Saturn, and electrical circuits that simulate lightning, Dubrovin's team studied how sprites would be created -- and what they would look like -- on other worlds.

"We make sprites-in-a-bottle," Dubrovin said.

Because sprites are connected to lightning, and lightning plays a key role in many theories concerning how life first developed on Earth, it stands to reason that the existence of sprites on other planets (both in our own solar system and others) may be something to look out for when searching for signs of alien life, according to Dubrovin.



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Not only would sprites indicate lightning further down in a planet's atmosphere but also what kinds of molecules exist there, and may explain the presence of exotic compounds. Sprites would also provide information on the conductivity of a planet's atmosphere.

The team's research was presented in October at the European Planetary Science Congress in France.

Dubrovin's research is funded by the Israeli Science Foundation and by an Ilan Ramon Scholarship and Endowment, which is named after the Israeli astronaut who flew on the STS-107 Columbia shuttle mission that ended in tragedy on Feb. 1, 2003. Part of the scientific research aboard that shuttle was on sprites, and Dubrovin is proud to continue Ramon's legacy.

Read more on the American Friends of Tel Aviv University site.

Top image: A sprite captured on video over a thunderstorm above the U.S. midwest on July 3, 1995. The top of the sprite is 280,000 feet (85 km) above the Earth. Credit: Geophysical Institute, University of Alaska Fairbanks. Inset image: TAU lab-created sprite streamers as they would appear on Saturn.

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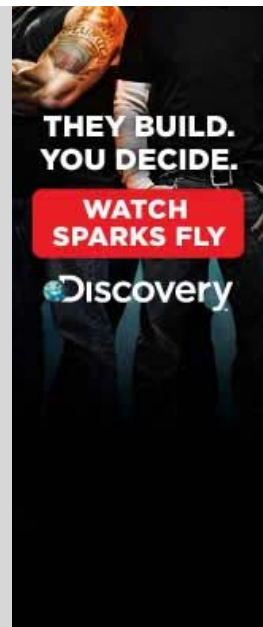


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