

A new angle on the effects of solar wind

Physicists have developed a method for predicting how the interactions between fast-moving and slow-moving solar wind streams influence the Earth's atmosphere¹, particularly magnetosphere and ionosphere which have a significant effect on satellite-based technology, such as mobile communications.

Fast solar wind interacts with slow solar wind, forming an interaction region known as co-rotating interaction region (CIR). Formed in the interplanetary space between the Sun and the Earth, CIR generates high-energy charged particles that disturb space weather, disrupting the activities of satellites and other space-based technologies.

Scientists from the Physical Research Laboratory, Ahmedabad in India studied 43 CIR events and analysed their potential to impact the Earth's atmosphere.

When solar winds moved at angles less than 6 degrees, they formed CIR events that adversely impacted the Earth's atmosphere.

"This method will be helpful for forecasting geomagnetic storms. This, in turn, allows ground stations to take appropriate measures to prevent damage to ground- and space-based communication systems," says Janardhan Padmanabhan, one of the researchers.

<http://www.natureasia.com/en/nindia/article/10.1038/nindia.2017.116>

References

1. **Solar wind flow angle and geo-effectiveness of corotating interaction regions: First results.**

Diptiranjan Rout, Chakrabarty, D., Janardhan, P., Sekar, R., Vrunda Maniya and Kuldeep Pandey (2017). *Geophys. Res. Lett.*, **44**, 4532-4539 doi: 10.1002/2017GL073038.