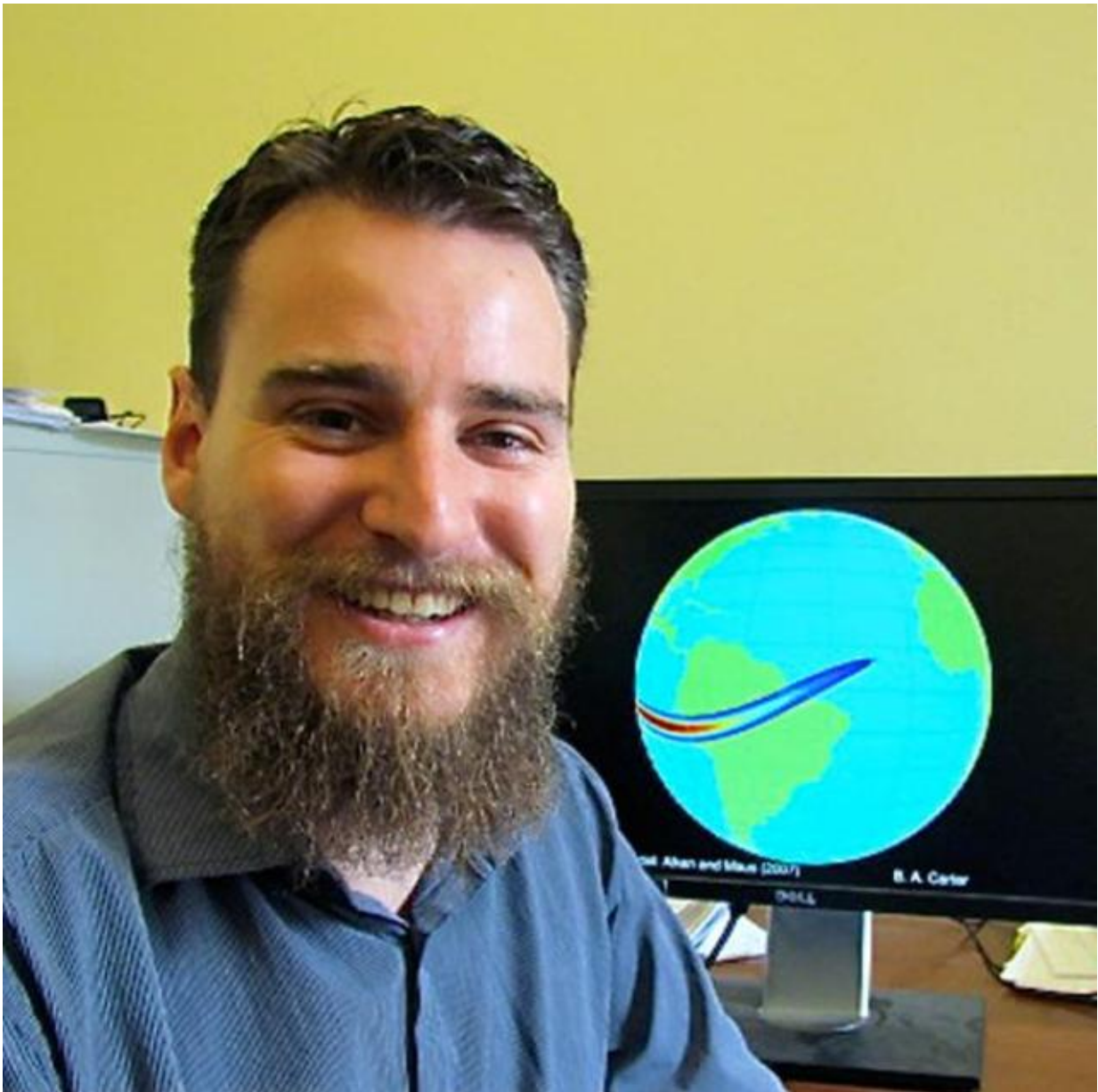


# Stormy space weather puts equatorial regions' power at risk

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Dr Brett Carter of the RMIT SPACE Research Centre.

Stormy space weather sweeping across the equator is threatening vital power grids in regions long considered safe from such events, groundbreaking new research from RMIT reveals.

Dr Brett Carter of the RMIT SPACE Research Centre and his team from RMIT, Boston College and Dartmouth College, found that these equatorial electrical disruptions threaten power grids in Southeast Asia, India, Africa and South America, where protecting electricity infrastructure from space shocks has not been a priority.

"Massive [space weather](#) events have crashed [power grids](#) across North America and Europe, but we have found that often with little warning, smaller events strike in equatorial regions more frequently than previously thought," Carter said.

"Our research shows areas closer to the equator experience disturbing effects on power grid infrastructure which has largely been overlooked," Carter said.

"Previous research has focused on severe [geomagnetic storms](#), such as the 1989 event that left millions across North America without power for up to 12 hours.

"What the historical data also shows in our study is that we don't need huge geomagnetic storms to experience negative effects at the equator.

"From previous research, we know that smaller episodes can cause fluctuations in wholesale electricity prices, as it can interfere with monitoring rates of supply and demand."

The findings, published in the journal *Geophysical Research Letters* online, show that the effects of geomagnetic storms are amplified by the equatorial electrojet, a naturally occurring flow of electric current approximately 100km above the surface of the Earth.

The electrojet travels above large parts of Africa, South America, Southeast Asia and the southern tip of India.

Carter said the Earth's equatorial regions are largely unstudied and more susceptible to disruptive space weather than previously thought, which should prompt scientists to examine the infrastructure and economic implications on countries near the equator.

"It's becoming increasingly clear that we need to investigate the effects of adverse space weather in a technology-dependent society where health and economic well-being are reliant on dependable power infrastructure."

Provided by RMIT University

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