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Investigating Dunedin Whistlers using Volcanic Lightning

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Abstract :

Whistlers recorded at Dunedin, New Zealand, are anomalous: rather than being caused by lightning close to the magnetic conjugate point, they appear to be statistically linked to lightning on the west coast of Central America, several thousand km away. This conclusion, however, is the result of a global correlation analysis, which is complicated by the fact that there is a lot of lightning close to the proposed source region. This makes the chance of spurious coincidences between lightning and whistlers quite likely.Our aim was to find a direct link between individual whistlers and their causative lightning strokes. We focused our attention to sites of rare lightning activity: the electrified plumes of high-latitude volcanoes. By limiting our search to these locations, we succeeded in identifying individual lightning discharges which could be linked directly to whistlers at Dunedin. Two volcanoes on the Aleutian Islands, Mount Redoubt and Mount Okmok, were found to have had a prominent effect on Dunedin's whistler count. These are the first observations of whistlers linked to volcanic lightning.

Award :

No

Level :

MSc

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Paper :

No

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