

Validation of Explosive Atmospheric Sources

Despite recent advancements in infrasonic technology and modelling, identifying sources of infrasound remains an elusive task. During their passage through the atmosphere, meteoroids produce a range of phenomena, most notably a hypersonic shock, which can be recorded at the ground in the form of infrasound.

Utilizing the recently established Elginfield Infrasonic Array (ELFO) near London, Ontario, Canada, in conjunction with optical instruments in the Southern Ontario Meteor Network (SOMN), experimental studies to detect meteor infrasonic shocks and combine this information with metric, mass and energy data about each meteor detected simultaneously are discussed.

A research project presented here will aid in understanding explosive sources in the atmosphere, using meteors as a natural source of high altitude, cylindrical line explosions with the intent of further improving and refining analytical detection techniques to ensure increased resolution, and accuracy for such atmospheric explosions. Furthermore, this database of tested and well characterized meteor events will be the first of its kind and it will be used to produce a validated theory of hypersonic shock production at high altitudes for the first time.

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