

AUTOMATIC DETECTION OF METEORITES IN NEXRAD RADAR

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For several years meteorite recovery in the United States has been greatly enhanced by using doppler weather radar images to determine possible fall zones for meteorites produced by witnessed fireballs. While most events leave no record on the doppler radar, some fireballs do. Based on the successful recovery of over 10 meteorite falls 'under the radar', and the discovery of radar on 10 historic falls, it is believed that meteoritic dust and or actual meteorites falling to the ground can be recorded on doppler weather radar.

Up until this point, the process of detecting the radar signatures has been a manual one and dependent on prior accurate knowledge of the fall time and estimated ground track. This manual detection process is labor intensive and can take several hours per event. Recent technological developments by NOAA now help enable the automation of these tasks. This in combination with advancements by the American Meteor Society in the tracking and plotting of witnessed fireballs has opened the possibility for automatic detection of meteorites in NEXRAD Radar Archives. Here in the processes for fireball triangulation, search area determination, radar interfacing, data extraction, storage, search, detection and plotting are explained.