

The conditions in the luv and lee of Arizona's Meteor Crater during downslope-windstorm-type flows

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In October 2013, the Second Meteor Crater Experiment (METCRAX II) was performed at the Barringer Meteorite Crater in northern Arizona. It aimed to study the nocturnal development of downslope-windstorm-type flows in the crater basin. Extensive in-situ and remote sensing instrumentations were installed in and around the crater basin during the month-long campaign.

On a sloping plain outside the crater, a south-westerly nocturnal drainage flow typically developed under clear-sky conditions. Under certain conditions, downslope-windstorm-type flows associated with warm air intrusions developed over the inner upstream crater sidewall. Variations in the upstream conditions are considered to be decisive for the occurrence of the intrusions. Observations up- and downstream of the crater basin revealed strong variations of the luv- and lee-side conditions (stratification, wind velocity, direction and wind shear) during the warm air intrusions.