



Variations of flow characteristics upstream and downstream of Arizona's Meteor Crater basin during downslope-windstorm-type flows

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In October 2013, the Second Meteor Crater Experiment (METCRAX II) was conducted 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 sets of in-situ and remote sensing instrumentation were installed in and around the crater basin during the month-long campaign.

During clear-sky nights a southwesterly drainage flow typically developed on the sloping plain outside the crater. Under certain conditions, downslope-windstorm-type flows associated with warm air intrusions formed over the inner upstream crater sidewall. Variations in the upstream conditions are considered to be decisive for the occurrence of these intrusions. Observations revealed strong differences in the flow characteristics (stratification, wind velocity, direction and wind shear) between sites upstream and downstream of the crater basin during the warm air intrusions.