

Abstract Submitted  
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**Snow settling dynamics in atmospheric turbulence**<sup>1</sup> JIAQI LI, ALIZA ABRAHAM, MICHAEL HEISEL, FILIPPO COLETTI, MICHELE GUALA, JIARONG HONG, University of Minnesota — The study investigates the influence of atmospheric turbulence on the settling of snowflakes through in situ imaging of snowflakes in a field of view on the order of 10 m. Previous research based on such field measurements has shown that snowflakes exhibit typical features of inertial particles in turbulence: exponential tails of acceleration probability distribution function as compared to a Gaussian distribution, occurrence of clustering and enhanced settling velocity. However, those measurements relied on either particle tracking velocimetry (PTV) or particle imaging velocimetry (PIV) with limited analysis on the interaction between turbulent flow field and the snowflakes. In the current study, we present simultaneous measurements of atmospheric turbulence from a 20 m (width) x 40 m (height) PIV field and snowflake trajectories from a 3 m x 5 m PTV field of view within the PIV domain. Our analysis demonstrates clearly the interconnection among prominent vortical structures, snowflake clustering, and settling velocity enhancement in turbulence.

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