

First experience with inflow avalanche dynamics measurements using the SNOWBALL device

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The Snowball is a sphere with a diameter of 160 mm and with the density of flowing snow (about 300 kg/m³), which was developed as an inflow measurement device for snow avalanches. It was designed by the AeroSpy Company (Linz, Austria) in collaboration with the BFW, Department of Natural Hazards and Alpine Timberline in 2009. The Snowball is equipped with several sensors: Orientation and acceleration of the device are determined by a gyroscope, magnetometers and accelerometers. The resulting 3D data is recorded with a sampling frequency of about 25 Hz. Additional information is provided by GPS sensors. A Recco Avalanche Rescue System ensures that the Snowball can be relocated and recovered after each experiment. We expect that the recorded data allows to reconstruct the trajectory of a particle embedded in an avalanche. This information can be used to characterize the avalanche dynamics along the track. Field experiments are carried out at the experimental avalanche test site Wattener Lizum near Innsbruck, Tyrol, Austria