AIr Pressure Data from Vallee de la Sionne

Jim McElwaine (1) and Betty Sovilla (2)

(1) Department of Earth Sciences, Durham University, UK, (2) SLF/WSL, ETH, Switzerland

Despite their clear danger to humans, snow avalanches are hard to document. They occur in inaccessible and dangerous locations, often at times of bad weather. Observation instruments frequently malfunction in the harsh conditions or are destroyed. Measurements of powder snow avalanches are particularly difficult, as these occur less frequently and are usually very large. To understand the air flow in front of and inside powder snow avalanches, we have designed an air pressure sensor to survive the harsh conditions. This has operated for the last ten years and we report on the results from these avalanches. We present an analysis of the sensor response and an interpretation of the signals in terms of simple flow fields and show how these connect to experiments and simulations. We show how these data can be used to deduce information about the speed, size and location of the avalanches using a dipole approximation.