



**Project acronym:** SHARDS

**Project title:** Subglacial Hydrology Analysis using Repeat Drone Survey

**Project leader:** Robert Storrar, Sheffield Hallam University, United Kingdom

**Discipline:** Earth Sciences & Environment: Global change & Climate observation

**Station(s):** Tarfala Research Station (Sweden)

This project aims to produce the first simultaneous measurements of changes in glacier surface elevation and velocity at unprecedented temporal (sub-daily) and spatial (<10 cm) resolution, using a new innovative Uncrewed Aerial Vehicle (UAV)-based technique developed by the team. This will help to refine our understanding of key hydro-dynamic processes occurring beneath glaciers and ice sheets. A key element of this aim is to identify the location, shape and behaviour of a Variable Pressure Axis (VPA), where water pressure increases along a subglacial drainage axis in response to melting in the middle of the day, causing ice flow acceleration and surface uplift (hydraulic jacking), and then decreases, resulting in a slowdown and surface subsidence, overnight. The research will take place at Storglaciären, Arctic Sweden.