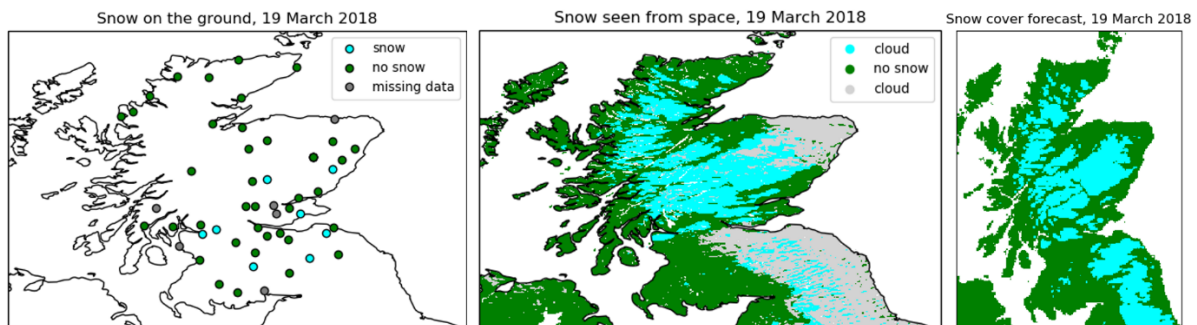


## Mapping Scotland's Mountain Snow

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### Project description

The presence or absence of snow on the ground has a strong influence on near-surface climate. Recognizing snow cover as an "Essential Climate Variable", a current European Space Agency project is reprocessing optical satellite data to derive global snow cover maps at 1 km resolution back to 2000 and 5 km back to 1982. For the mountains of Scotland, frequent cloud cover means that there are significant temporal gaps in these records. Based on snow observations at weather stations, the Met Office has produced maps of annual snow cover duration on a 1 km grid for the UK, but there are significant spatial gaps in the observations, and they are biased towards low elevations. Finally, Met Office high-resolution UK forecasts have been archived back to 2016. The 1.5 km resolution of these regional forecasts is better able to resolve mountain topography than Met Office 17 km global forecasts, but accurate forecasting of snow cover requires a delicate balance between forecasts of precipitation, temperature and cloud cover. The aim of this project is to compare satellite observations, direct observations and forecasts of snow cover in the Cairngorms to determine how consistent and how confident they are. Data and example visualization scripts in Python will be provided, but some knowledge of Python or another programming language will be required for data analysis. Based in Edinburgh, there will also be opportunities for fieldwork in the Cairngorms alongside a SENSE PhD student to measure the extent and spectral reflectance of late-lying snow drifts as ground truth for satellite observations.