1) Does size matter?
The dynamics of marginal glaciers in the Maritime Alps

2) Ice on fire:
The fascinating interaction between glaciers and volcanoes

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This seminar is split into two talks. For the first talk, I will present a study on “marginal” glaciers response to past climate changes. The focus will be on a few cirque and valley palaeoglaciers in the Maritime Alps which deposited prominent frontal moraines. These moraines were recently dated to the Last Glacial Maximum by using cosmogenic isotope exposure dating techniques. A comparison between these and much larger glacier systems in the same area indicates that the response time of small and large glaciers to the same climate event is very similar and/or within the uncertainty of the dating technique. While the response time seems to be largely unaffected by the size of the glacier, our results shows that small glacier’s equilibrium line altitude, which is key to palaeoclimate reconstruction, is very sensitive to local topo climatic conditions. For the second talk, I will discuss the interaction between volcanoes and glaciers, with a particular focus the effect volcanoes have on glacier elevation. The focus is on 600 glaciers located on and near 37 ice-clad volcanoes in South America. Results demonstrate glacier sensitivity to volcanic heat. We distinguished between “volcanic glaciers” (≤ 1 km from volcanic centers; n=74), and “proximal glaciers” (1−15 km; n = 526) and calculated their equilibrium line altitudes (ELAs). For each ice-clad volcano, we compared the ELAs of its volcanic glaciers to those of its proximal glaciers, which showed that the ELAs of the former are higher than the ELAs of the latter. The difference in ELA between the two show a strong correlation with volcanic thermal anomalies, which has important implication for ice-clad volcano monitoring.

The Speaker
Prof. Matteo Spagnolo is a glacial geomorphologist at the University of Aberdeen and the director of the Scottish Alliance for Geoscience, Environment and Society (SAGES). He obtained a BSc in Natural Sciences at the University of Pisa (Italy), an MSc in GIS and Remote Sensing at the IAO in Firenze (Italy), a Geology PhD at the University of Genova (Italy), before moving to the UK in 2007. Prof. Spagnolo has expertise in GIS, remote sensing, geomorphometry and geochronology. He applies these skills to alpine and subglacial environments, to understand present-day and past glacier dynamics in response to climate changes and other forcing (e.g. volcanic). His current research interests include the history of glaciations in the Alps Balkans and the Andes, the interaction between volcanoes and glaciers, the recent evolution of glaciers in the Himalayas, and the role of glaciers as water resources under current/future scenarios of global warming.