

OCGC Seminar

Constraining the season of occurrence of the 7.7 ka Mount Mazama eruption: insights from diatomaceous marine sediments in the NE Pacific

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Tephra deposits from the Plinian eruption of Mt Mazama, Oregon, USA at ~7.7 ka have been widely reported in sediment records from the western United States and SW Canada, and the ash layer represents one of the most important stratigraphic markers for the Holocene in North America. In spite of a substantial literature on the ash, there remain uncertainties about the character and distribution of the ash fall-out and the associated climatic impacts. This talk will present the results of ultra high-resolution analyses of a diatomaceous marine sediment core from Effingham Inlet, Vancouver Island, British Columbia, spanning the interval of the ash. The sediments were deposited under anoxic conditions and preserve a seasonal to sub-seasonal record of primary productivity change, permitting delineation of the season of tephra deposition. Diatom analyses further confirm that prior to the ash-fall, climate was characterised by warm, dry conditions with significant autumn productivity. However, a wet-shift occurring around the time of ash deposition can be inferred. The results shed new light on the regional climatic response to the eruption, as well refining the spatial and temporal boundaries of the Mazama ash layer.

Biography: Dr Helen Roe is a Reader in Physical Geography in the School of Natural and Built Environment, Queen's University Belfast. She received her PhD (Quaternary palaeoecology) from the University of Cambridge. Her research interests centre around the reconstruction of late Quaternary environmental change in wetlands and coastal environments. Major research foci include (i) applications of microfossils in biomonitoring and restoration; (ii) the use of palaeoecological and geochemical approaches for understanding long-term climate change; (iii) use of quantitative, multi-proxy techniques to aid palaeoenvironmental reconstruction. She has been an Adjunct Research Professor in the Department of Earth Sciences at Carleton since 2004. Her visit to Carleton this summer is supported by an Ireland-Canada Foundation James M. Flaherty Visiting Professorship and an Association of Canadian Studies in Ireland travel award.

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