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**Reexamining Pleistocene tunnel valleys on the Scotian Shelf and their implications for slope sediment delivery**

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Tunnel valleys are a special kind of erosional channel characterized by anastomosing, steep-sided channel systems that are thought to form by subglacial, confined meltwater flow. On the Scotian Shelf, partially infilled tunnel valleys are recognized on the sea floor in bathymetry data, but they have also been recognized by previous workers in the Sable Island area

in single and multichannel seismic data. This study uses a more comprehensive 2D industry seismic dataset on Sable, Middle and Western Banquereau banks to better constrain the geometry of tunnel valleys in the area. Our interpretation shows that buried channels north and west of Sable Island are V to U-shaped, average 2–5 km wide and 150–400 m deep, tend to be oriented north-south and extensively branch, reconnect, and meander. They have a general size, shape and orientation similar to the channels exposed on the sea floor further north. Immediately to the south and west of Sable Island, the channels become narrower (1–1.5 km) and more widely spaced. Contrary to previous interpretations, the orientations remain roughly N-S and there is a gap of 20–30 km between the ends of the detectable tunnel valleys and the shelf edge south of Sable Island. An exception is at the shelf edge at the head of Logan Canyon, but these channels are also disconnected from those further north. The reason for this gap is not clear, however, it could be due to the limited resolution of industry seismic data in the shallow part of the section. Alternatively, if the channels genuinely end just south of Sable Island, then the gap between them and the shelf edge implies that they were either present but not preserved (i.e. removed by subsequent erosion), or that along this stretch of shelf edge (between The Gully and Logan Canyon) the subglacial meltwater channels did not empty directly at the shelf edge. This would have implications for models of sediment delivery to the Scotian Slope during the Pleistocene.