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Title: Formation and Release of Sediment-Laden Ice Blocks in Minas Basin and the Possibility of Ice Block Interactions with Tidal Energy Generators

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Category: Marine Renewable Energy

Sediment-laden ice forms and accumulates in winter on the banks of tidal channels in Minas Basin, changing channel morphology. Gently sloping muddy banks become vertically edged ice shelves composed of inter-layered sediment and ice. Sediment-laden ice blocks are released from the ice shelves, typically during spring tides or during warm weather. The blocks become denser by a fractional increase in sediment content due to melting, which preferentially releases water, and due to plucking of the seabed. A fraction of the blocks become neutrally or negatively buoyant. Slightly negatively buoyant ice blocks set adrift by currents may transit the Minas Basin and impact tidal energy generators. The fraction of sediment-laden ice blocks with negative buoyancy and the quantity of ice formed based on changes in channel morphology can be used to quantify the threat sediment-laden ice blocks pose to turbines.