

Abstract Submitted  
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**Turbulent properties under sloping Ice-wall in polar water**<sup>1</sup>  
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C. KERR, The Australian National University — Ice-shelves around West Antarctic basins are the most vulnerable to melting in the presence of warmer continental shelf water. A large extent of slope exists under these ice-shelves, where turbulent transport of salt and heat into the ice wall drives a convective melt-water plume against it. Large scale ice-ocean models neglect the effect of convection which can lead to a wrong estimation of melt rate. We perform direct numerical simulations under sloping ice-shelves with realistic ambient conditions. We estimated the melt rates, boundary layer thicknesses and entrainment coefficients as a function of slope angle. The numerical results are further supported by theoretical predictions. Over the range of slope angles, different mechanisms are active for sustaining turbulence. For near vertical case, buoyancy production is the primary source of turbulent kinetic energy whereas for shallower angles turbulence is produced by velocity shear in the meltwater plume.

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