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## Model predictions of overwash extent into the marginal ice zone.

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Overwash is an important aspect of the dynamics in the marginal ice zone where sea ice and ocean waves interact. Overwash dissipates wave energy, and the presence of water on top of sea ice can drive growth or melting, depending on the local thermodynamic conditions. The presence of water on floes is also important for biologic and chemical processes. While overwash has been observed and investigated under experimental conditions, it has not yet been studied in the marginal ice zone. One reason for this lack of in-situ measurements and observations is due to the marginal ice zone being highly dynamic, and the onset of overwash only occurring under specific and sensitive conditions. To facilitate future observations we have produced a model of the extent of overwash into fields of sea ice by combining a new model of the onset of overwash and a standard attenuation model. This model of overwash extent is validated against experimental observations and is used to provide the extent of overwash for realistic ice and wave field conditions observed during the July 2017 voyage of the South African icebreaker S.A. Agulhas II.