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Melt pond evolution on Arctic sea ice: preliminary model results

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Melt ponds form mainly in the Arctic when absorbed solar radiation melts snow and the upper surface of sea ice to generate meltwater that is then redistributed over the sea ice surface. During the melt season, melt ponds cover up to 50% of the sea ice surface, decreasing the sea ice albedo by up to 10%. We have developed a standalone melt pond evolution model suitable for inclusion within existing GCM sea ice models. We consider such factors as lateral and vertical drainage, and enhanced melting rates depending upon the pond depth. We will present the theory at the base of the standalone melt pond model, and preliminary simulations using a standalone version of the CICE sea ice model including our new melt pond parameterisation.