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Incorporation of a new melt pond model into a GCM sea ice model component

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The Arctic sea ice cover has retreated in the past few decades: submarine data gathered from 1958 to 1976 indicates a decrease of sea ice thickness of about 1.5m (Rothrock et al, 1999) in the region of observation. Satellite observations show that the ice cover is continuing to thin (Laxon et al, 2003). In September 2005 and 2007 historical minima of sea ice extent have been observed.

Melt ponds form on sea ice during the melting season and their presence affects the heat and mass balance of the ice cover. Towards the end of the melt season melt ponds cover up to 50% of the sea ice area. We have previously developed a new melt pond evolution theory and presented results of a standalone version of our model. We have now included our theory into the Los Alamos CICE sea ice model. We will present results to show the impact of the presence of a pond routine in CICE and present the results of a sensitivity study to various parameters.