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Role of the Arctic Sea Ice melt on the lower latitude Climate

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The melting of polar ice caps and sea ice are of immediate concern in the context of global warming. The observations suggest that the thickness, as well as the areal extent of the Arctic sea ice, have been declining in the last three decades, in large part due to manmade global warming. The effect of faster sea ice melt on lower latitude climate is not well understood as compared to that of mid and high latitudes. It is reported that the mid-Pacific trough (MPT) can be influenced by a stationary wave train triggered in response to a melt of sea ice over the Bering strait (Deng et al., 2018, J. Clim). The MPT is known to influence Pacific tropical cyclone (TC) activity.

Here, we investigate the effect of the summer sea ice variability over the Arctic on Pacific TC activity. We have seen in the higher melting Sea Ice years showing the strong wave train toward the lower latitude over the northern pacific in comparison to the lower melting years and also affecting the pacific TCs. The summer Arctic sea ice concentration is regressed on TC track density and accumulated cyclone energy (ACE). Both track density and ACE show an increase with increased sea ice concentration. The wind shear over the tropical Pacific is found to have an opposite relation with the Arctic sea ice concentration that led to a more favorable environment for the TC development when the sea ice concentration is high.

KEYWORDS: Climate Change; Tropical Cylone;