Title: How does the shrinking sea ice influence the wind speed over Arctic Ocean?

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Decrease of sea ice concentration over the Arctic Ocean is influenced above other factors also by near-surface winds. Likewise near-surface winds may be influenced by decreasing sea ice concentration. This two-way interaction may amplify the changes. Wind conditions and their connections to sea ice indicators were analysed based on NCEP-CFSR reanalysis from 1979–2009 to discover the relationship.

There is a positive trend 0.08 m s⁻¹/year in wind speed at 10 m in Fram Strait in winter and spring; whereas in Canada Basin there is negative trend in autumn, which is more intensive at 500 hPa. Ice concentration shows negative trend in many regions in Arctic, especially in Chukchi Sea in autumn. Negative trend in ice thickness is most dimensioned in summer (0.02 – 0.04 m year⁻¹) and not so widespread and strong in winter.

Generally negative correlation between ice concentration and wind speed at 10 m is detected, especially in summer and autumn in East Siberian Sea and between the North Pole. Near ice edge zone the positive correlation between wind speed at 10 m and ice drift speed is higher than elsewhere. Significant positive correlation between surface roughness and ice drift speed is detected near ice edge zone, but there are also some marginal areas with negative correlation above the sea ice zone, especially near Wrangel Island in winter.