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## Linking marine fog variability in Atlantic Canada to changes in large-scale atmospheric and marine features

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Marine and coastal fog forms mainly from the cooling of warm and moist air advected over a colder sea surface. Atlantic Canada is one of the foggiest regions of the world due to the strong temperature contrast between the two oceanic currents in the vicinity. Recurring periods of low visibility notably disrupt off-shore operations and marine traffic, but also land and air transportation. On longer time-scales, marine fog variability also has a significant impact on the global radiative budget. Clouds, including fog, are the greatest source of uncertainty in the current climate projections because of their complex feedback mechanisms. Meteorological records indicate a significant negative trend in the occurrence of foggy conditions over the past six decades at most airports in Atlantic Canada, with large internal variability, including interannual and interdecadal variations. Using the airport observations, reanalysis data and climate model outputs, we investigated the various variabilities on the trend, at interannual and interdecadal scales, and attempted to address what caused these changes in fog frequency. Our results show that the strength and position of the North Atlantic Subtropical High as well as the sea-surface temperature of the cold and warm waters near Atlantic Canada were highly correlated with fog occurrence. We applied the derived fog indices on climate model outputs and projected the fog trends and variability in the different future climate scenarios. The results from this study will be compared with those obtained from other methods and the implications will be discussed.