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How different would tropospheric oxidation be over an ice-free Arctic?

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Climate projections suggest that a complete Arctic sea-ice retreat is likely in the future during summer. Less ice will
cause less light reflection and slower tropospheric photolysis. We use a tropospheric chemistry model to examine
how oxidation may differ over an ice-free Arctic. We find that late-summer OH concentrations can decrease by
30–60% at polar latitudes, while effects on local ozone and global oxidant abundances are small. Ozone changes
become larger in the more extreme case where sea-ice is also removed in spring and early summer. In this case,
we find large spring ozone increases (up to 50–60%) over the Arctic, and even over inhabited high latitude regions
(up to 20%), due mainly to a reduction in the impact of bromine chemistry, caused by the sea-ice retreat. Annual
mean ozone also increases in the run with the summer/spring sea-ice removal, but not in the simulation including
only late-summer sea-ice removal.

Please list some keywords

sea-ice retreat, photolysis rates, hydroxyl radical, bromine, tropospheric ozone

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