



Ozone pollution from future Ship Traffic in the Arctic Northern Passages

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With sea ice expected to recede in the Arctic during the 21st century as a result of projected climate warming, global shipping patterns will change considerably in the decades ahead. The opening of viable shipping routes through the Northern passages will generate new environmental problems including the degradation of air quality in the Arctic. The release of considerable amounts of carbon monoxide, nitric oxide and other chemical substances by the ship's combustion engines will enhance the level of atmospheric photo-oxidants and other secondary pollutants in this region. In a simulation with the global CTM MOZART4 we have shown that, during the summer months, surface ozone concentrations in the Arctic could be enhanced by a factor 2-3 in the decades ahead as a consequence of ship operations through the northern passages. Projected ozone concentrations of 40-60 ppbv from July to September are comparable to summer time values currently observed in many industrialized regions in the Northern hemisphere.