

Carbon monoxide emissions from the Southern Ocean  
estimated by underway measurements

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ABSTRACT

Atmospheric carbon monoxide (CO) plays an important role in ozone-related chemistry in the troposphere, especially under low-NO<sub>x</sub> conditions like the open ocean. While the ocean has been known as a source of atmospheric CO, previous studies reveal large discrepancies among their source strength estimates. Thus, clarifying the contribution of the ocean to atmospheric CO budget is essential to understand atmospheric chemistry. During austral summer seasons of 2009 through 2012, we performed continuous shipboard measurement of atmospheric and dissolved CO in the Southern Ocean and along the trans-pacific passage from Incheon, Korea to Christchurch, New Zealand. Based on our observation, we will present source strength of carbon monoxide in the Southern Ocean. Furthermore, global source strength of CO from the ocean will be optimized using inversion analysis of our measurements and the result of 3-D global chemical transport model.