

Atmospheric monitoring of carbon monoxide over the Pacific Ocean by utilizing a commercial cargo vessel

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Atmospheric carbon monoxide with predominant anthropogenic source plays an important role in the atmospheric chemistry as an important precursor of tropospheric ozone and main sink substance for OH radical. Recent study pointed out that emission strength of carbon monoxide has been increased since around 2000 because of the extensive growth of human activity in East Asia region whereas its mixing ratio in the remote and clean maritime atmosphere has been decreased globally since 1980's. It is thus important to establish the carbon monoxide monitoring network which covers East Asian region to estimate the influence of activity of East Asian countries onto the atmospheric environment.

National Institute for Environmental Studies has initiated atmospheric monitoring of carbon monoxide in the maritime atmosphere over the Pacific Ocean since 2005 by utilizing a commercial cargo vessel. The monitoring is now performed over the three shipping routes: Oceania route (Japan-Australia/New Zealand), North America route (Japan-West coast of North American continent), and East Asian route (Japan-Southeast Asian countries). In these shipping routes, North America and Southeast Asia routes are under the influence of East Asian emission whereas Oceania route is working in the pristine air. In this presentation, we will consider the observation results from three shipping routes and discuss the influence of emission from East Asian region onto the atmospheric distribution of it.