
East Asian Winter Monsoon Characteristics by Differences in Ocean-Atmospheric Interaction in the Northwest Atlantic Ocean

Seung-Joo Ma^{*1}, Sae-Yoon Oh¹, and Sang-Wook Yeh¹

¹Department of Marine Science and Convergent Technology, Hanyang University – 55, Hanyangdaehak-ro, Sangnok-gu, Ansan-si, Gyeonggi-do, Republic of Korea, South Korea

Abstract

The sea surface temperature (SST) forcing in the Northwest Atlantic Ocean is known to be related to the variability of East Asian winter monsoon through the teleconnection. However, there is less study to understand how this relationship is changed by the differences of atmosphere-ocean interactions over the Northwest Atlantic Ocean. To understand this relationship, we conducted the conditional composites when the anomalous warm SST in the Northwest Atlantic Ocean accompanies with either much precipitation or less precipitation, which represents that the ocean forces the atmosphere or the atmosphere forces the ocean, respectively. It is found that the impact of Northwest Atlantic SST on East Asian winter monsoon depends on the characteristics of atmosphere-ocean interactions in the same place. Our further analysis indicates that such characteristics are also significantly affected by SST conditions in the tropical Pacific. Therefore, it is necessary to consider at least the characteristics of atmosphere-ocean interaction and the tropical Pacific SST condition to understand the impact of Northwest Atlantic Ocean SST on East Asian winter monsoon variability.

Keywords: East Asian winter monsoon, Northwest Atlantic Ocean, Tropical Pacific, SST forcing

^{*}Speaker