

C07-O06

EPOCH DIFFERENCES IN WATER CYCLES IN EASTERN AND WESTERN SIBERIA DURING THE PAST TWO CENTURIES

Kazuhiro Oshima (*Japan Agency for Marine-Earth Science and Technology, Japan*)

Koto Ogata (*Mie University, Japan*)

Hotaek Park (*Japan Agency for Marine-Earth Science and Technology, Japan*)

Yoshihiro Tachibana (*Mie University, Japan*)

kazuhiroo@jamstec.go.jp

Among all the rivers flowing into the Arctic Ocean, the three great Siberian rivers; Lena, Yenisei and Ob, are the three largest in terms of discharge (R), and they are a large source of freshwater. While long-term variation and trend of the Rs have been examined in many previous studies, causes of the R variabilities are still unclear. Fukutomi et al. (2003) showed that the observed R of the Lena was negatively correlated with that of the Ob during the 1980s to mid-1990s. The precipitation (P) and net precipitation (P-E) also showed negative correlations during the same period. They revealed that east-west seesaw pattern of atmospheric circulation and associated moisture transport over Siberia affect those variations of R, P and P-E. In this study, we examine a relationship of water cycles in eastern and western Siberia during the past two centuries and aim to reveal a cause of those variations.

As in Fukutomi et al., the observed Rs of the Lena and Ob were negatively correlated during 1980s to mid-1990s, but the correlation becomes weak after the mid-1990s. In contrast, the correlation was positive during the mid-1950s to 1960s. Therefore the relationship between the Rs in eastern and western Siberia differed in each epoch during the past seven decades. Reconstructed Rs of the Lena and Ob based on the tree-ring during the past two centuries also showed positive and negative correlations in each of the epochs. Interestingly, the correlations of the reconstructed Rs in each epoch during the past two centuries tend to be distributed on the negative side. This implies that the east-west seesaw pattern frequently appeared over Siberia. Control simulation with an atmospheric general circulation model (AGCM) indicated that correlations of the simulated Ps over eastern and western Siberia were negative in most of the epochs. This suggests that the east-west seesaw pattern appears as an atmospheric natural internal variability over Siberia.