



Comparison of net radiation based on satellite data over Arctic region

Minji Seo (1), Eunkyung Lee (1), Donghyun Jin (1), Hyun-cheol Kim (2), and Kyung-soo Han (1)

(1) Division of Earth Environmental System Science (Major of Spatial Information Engineering), Pukyong National University, Busan, Korea, Republic Of, (2) Korea Polar Research Institute., Incheon, Korea, Republic of

Energy transfer between Arctic Ocean and Atmosphere is important parts of climatic mechanism. It is affected by energy budget. Therefore, it is necessary to analyze quantity of energy budget trend over Polar Regions. Energy balance has several components such as net radiation, sensible heat flux, and latent heat flux. Among them, net radiation is balance between downward and upward energy and climate changes depend on net radiation. In this study, we analyzed accuracy and long-term variability of net radiation for understanding of energy budget changes over Arctic. We used Clouds and the Earth's Radiant Energy System (CERES) and the Global Energy and Water Cycle Experiment (GEWEX) data. The net radiation is calculated using satellite data, and the net radiation based on CERES is CRN, and the net radiation calculated based on GEWEX is GRN. We performed accuracy analysis using in-situ data. As a result, CRN has RMSE 12.15 W m⁻², GRN has RMSE 14.35 W m⁻². An inter-comparison between CRN and GRN was performed in order to understand the possibility of constructing long-term data. The study period was 2000 ~ 2007 when the two data were overlapped. The correlation between the two data indicated a high correlation of 0.9 or more.