



Analysis on variability and trend in Antarctic sea ice albedo between 1983 and 2009

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Sea ice is key parameter in order to understand the cryosphere climate change. Several studies indicate the different trend of sea ice between Antarctica and Arctic. Albedo is important factor for understanding the energy budget and factors for observing of environment changes of Cryosphere such as South Pole, due to it mainly covered by ice and snow with high albedo value. In this study, we analyzed variability and trend of long-term sea ice albedo data to understand the changes of sea ice over Antarctica. In addition, sea ice albedo researched the relationship with Antarctic oscillation in order to determine the atmospheric influence. We used the sea ice albedo data at The Satellite Application Facility on Climate Monitoring and Antarctic Oscillation data at NOAA Climate Prediction Center (CPC). We analyzed the annual trend in albedo using linear regression to understand the spatial and temporal tendency. Antarctic sea ice albedo has two spatial trend. Weddell sea / Ross sea sections represent a positive trend ($0.26\% \sim 0.04\% \text{ yr}^{-1}$) and Bellingshausen Amundsen sea represents a negative trend ($-0.14 \sim -0.25\% \text{ yr}^{-1}$). Moreover, we performed the correlation analysis between albedo and Antarctic oscillation. As a results, negative area indicate correlation coefficient of -0.3639 and positive area indicates correlation coefficient of -0.0741 . These results sea ice albedo has regional trend according to ocean. Decreasing sea ice trend has negative relationship with Antarctic oscillation, its represent a possibility that sea ice influence atmospheric factor.