

MIROC-ESMの将来気候変化予測にみられるシベリアでの積雪アルベドフィードバックにおける植生マスキング効果

Vegetation masking effect on snow albedo feedback in Siberia during future global warming simulated by MIROC-ESM

*阿部 学¹、高田 久美子²、河宮 未知生¹、渡邊 真吾¹

*Manabu Abe¹, Kumiko TAKATA², Michio Kawamiya¹, Shingo Watanabe¹

1.海洋研究開発機構、2.国立極地研究所

1.JAMSTEC, 2.NIPR

We have investigated future change in snow amount and vegetation masking effect on snow albedo feedback (SAF) in Siberia, boreal forests region of the northern Eurasia, in the future climate change simulation by Earth System Model, MIROC-ESM. Under the future scenario, RCP8.5, snow amount during fall-spring over the northern Eurasia decreases due to global warming. The significant reduction of snow amount is found in western Eurasia during fall-spring. On the other hand, although reduction of snow amount over Siberia in fall and spring occurs, winter snow amount over Siberia increases due to increasing snow fall, which is attributable to more water vapor with higher air temperature. Relating to such snow changes, then, surface air temperature (SAT) changes are enhanced through SAF. During spring, particularly, future SAT increases largely over Siberia, boreal forest region, although snow cover decreases less than that in western Eurasia. The dominant increase in SAT over Siberia is attributed to strong SAF which is caused by both reduced snow-covered surface albedo and reduced snow cover fraction. Further, to evaluate an effect of future LAI change on the surface albedo reduction, we have conducted an additional future climate change simulation, in which change in LAI is not included. The comparison between the future climate changes with and without the LAI changes suggests growing vegetation in the future may be a potential factor of the future strong warming through the vegetation masking effect on snow-covered surface albedo change.

キーワード：積雪アルベドフィードバック、植生マスキング効果、地球システムモデル

Keywords: snow albedo feedback, vegetation masking effect, Earth system model