Seasonal change of satellite-derived indices for snow and vegetation covers in Alaska using time-lapse digital camera images

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To investigate seasonal change of satellite-derived indices for snow and vegetation covers with ground-based imagery data from time-lapse digital cameras, we set up the time-lapse digital camera network in the boreal forests of Alaska. The time-lapse digital cameras were modified for year-round record and have been continuously recording the surface condition imagery as the physical evidence. Seasonal changes of Terra/MODIS satellite indices (NDVI: Normalized Difference Vegetation Index, NDSI: Normalized Difference Snow Index, NDWI: Normalized Difference Water Index) in boreal forests of Alaska have been investigated since 2010. It was confirmed that the NDVI, NDSI and NDWI change clearly with existence of snow using the modified time-lapse digital cameras installed in the boreal forests of Alaska under severely cold conditions. We discuss the spatio-temporal patterns of snow and vegetation covers and the present conditions of the observation network. Further accumulated imagery analyses enable us to interpret implications of variability of satellite-derived indices in terms of the snow and vegetation covers on a wide area.