Phenology cameras observing boreal ecosystems of Finland

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Network
We established a network of cameras that are observing phenological changes in boreal ecosystems of Finland. Sites include intensively monitored eddy-covariance sites, LTER and ICP II sites and other sites with phenological monitoring.

Presently, 26 cameras at 14 sites take images at 30 min intervals.
Sites include spruce, pine, wetland, and mixed species sites.
Sites have 1-3 cameras positioned above canopies, crown level, and/or at ground level.

Questions and examples
How useful are cameras in the timing of phenological events and the seasonal development of photosynthesis?

Can camera derived information be used in improving EO-products of phenology and snow cover?

Fig: Average GCC (top panel) of Sodankylä wetland (see figure below), and air temperature, photosynthetic index (GPI), and albedo of the same site. Gray circles suffer from low light during the winter (Linkosalmi et al., manuscript).

Fig: GCC changes by vegetation patch in Sodankylä wetland (Linkosalmi et al., manuscript).

Fig: Estimates of end of snow cover based on EO observations. Estimates are accurate when sky is clear and EO image time series is continuous (left). Melt-off days can be severely biased (right) when there are cloud gaps in the EO image time series (Metsämäki et al., in prep.).

Fig: Seasonal development of NOVI and camera-derived GCC in Sodankylä site (Böttcher et al., in prep.)

Fig: Camera at Lammi LTER offers various elements for image analyses.

Fig: Kenttärova spruce (top) and Suonenjoki pine (left) sites.

Fig: Ground camera monitors understory green-up and snow cover in Hyytiälä.

Fig: Camera at Lammi LTER offers various elements for image analyses.

Fig: Season changes in Pajakkra spruce site in Central Finland

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