

Development of accurate detection of spatio-temporal variability in growing season in a mountainous area

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Accurate detection of spatio-temporal variability in the timing of start (SGS) and end of growing season (EGS) in a mountainous area is important to evaluate the ecosystem functions (i.e., photosynthesis) and regulating ecosystem service under climate change. The timing of SGS and EGS is more strongly characterized by the vertical (altitude) gradient than horizontal (latitude) gradient [Nagai et al. 2015; Int J Biometeorol, 59:47-54]. This geographical character is well shown in the central part of Japan, where has a wide range in altitude (2000-3000 m) over a relatively short distance (50-100 km). Analysis of satellite-observed daily vegetation index with a 500 m spatial resolution provides this geographical character in a broad (continental) scale. However, the accuracy of analysis in a mountainous area is inferior to that in a broad area (e.g., Japan). Here, (1) we evaluated the spatial distribution in the timing of SGS and EGS in Takayama by analyzing statistic phenology models, which were developed by long-term continuous phenological and meteorological observations in Takayama site; and (2) we evaluated the accuracy of the timing of SGS and EGS by referring to phenological information in multiple points published on web sites. In this presentation, we discuss current understanding, issue, and future task by showing our last results.

Keywords: phenology, remote-sensing, altitude