

## Year-to-year variability in the timing of start and end of growing season in deciduous forests in Japan

NAGAI, Shin<sup>1\*</sup> ; SAITOH, Taku<sup>2</sup>

<sup>1</sup>Japan Agency for Marine-Earth Science and Technology, <sup>2</sup>Gifu University

Accurate detection of the spatio-temporal variability in the timing start (SGS) and end of growing season (EGS) is important but challenging task to evaluate the ecosystem functioning and service in deciduous forests under meteorological and climate changes. Here, (1) we detected the spatio-temporal variability in the timing of SGS and EGS in Japan from 2001 to 2013 by analysing Terra/Aqua MODIS satellite-observed daily green-red vegetation index (GRVI) with a 500-m spatial resolution; (2) we examined the spatio-temporal variability in the timing of blooming of cherry, leaf-flushing of ginkgo, leaf-colouring of ginkgo and maple, and leaf-fall of ginkgo and maple based on dataset of *in situ* phenological observation; and (3) we evaluate the relationship between year-to-year variability in the timing of satellite-observed SGS and EGS and those of *in situ*-observed SGS and EGS. We found that (1) the year-to-year variability in the timing of SGS, EGS, blooming, leaf-flushing, -colouring, and -fall showed characteristics along vertical and/or horizontal gradients; and (2) the year-to-year variability in the timing of SGS correlated with those of blooming of cherry and leaf-flushing of ginkgo in Hokkaido and Tohoku.

Keywords: satellite data, biometeorological data, deciduous forest, Japan, phenology, year-to-year variability