



Complementary Views on Spring Phenology derived from Satellite and Ground Observations

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We compared the computed green-up dates of vegetated land surface derived from satellite observations with budburst dates from ground observational networks. Landscapes dominated by cold-deciduous broad-leaved trees in Germany were analysed. The objective of ground observations is often to detect the onset of bud-break. In contrast, remote sensing refers to a detectable change of surface reflectance that accounts for the unfolding of the majority of the leaves. Thus, the occurrence of the satellites' green-up signal is to be expected some days after the onset of bud-break. However, the first results of comparisons indicate an earlier, not a later satellite derived green-up than bud-break derived from ground observations. It has been hypothesised that this is due to heterogeneous ground cover and a detection of the greening of non-tree vegetation by the satellite. The current paper tests this hypothesis by incorporating the proportional surface area of potentially observed species. The two sets of observations are analysed within progressively more restricted selection criteria for the land surface elements. It is shown that heterogeneous vegetation cover is one of the main factors determining the difference between green-up date and date of budburst of the dominating tree species.