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Reduced warming sensitivity by lack of chilling – some methodological aspects in the spatio-temporal domain

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Spring phenology is a well-known bio-indicator for regional climate warming and many studies in the recent decades have demonstrated large temporal shifts towards advancing phases across all temperate and boreal zones. With continuing warming also in winter, the issue of chilling requirement came into play, indicating that a lack of chilling might result in delayed break of true dormancy and consequently reduced spring warming (forcing) sensitivity. With further warming also in winter, this may lead to less advancing or event delayed spring onset. Several recent studies have shown evidence for these changes, either experimentally or by analyses of observational data in the spatial- and / or temporal domain. However, the results strongly differ, also with site, species, phase, and study method. Especially studies at elevational gradients and based on remote sensing data have emerged. This presentation reviews recent literature findings, presents new results for elevational gradients in the Alps and discusses the influence of methodological techniques.