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False spring events in the eastern part of the Baltic Sea region

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False spring is one of the preconditioned compound climate events that gained a lot of attention in recent years because of its negative impact on agriculture, fruit trees, damage to native forests, and reduction of carbon uptake. The aim of this research is to identify these events in the eastern part of the Baltic Sea region during the spring months from 1950 to 2022 and to assess their frequency, intensity and potential damage to agriculture. To do that, the date of the last spring frost (LSF) as well as the date of the start of the growing season (SGS) were found for each cell of analysed territory for each year. In this study the SGS for a particular year was defined as the first day in a period of six days when the average daily temperature (T_{avg}) during all these six days was at least $+5.0$ °C. Meanwhile, the LSF date was determined when the minimum daily air temperature (T_{min}) in April-June dropped below 0°C for the last time during a particular year. Daily T_{avg} and T_{min} data that was needed to determine SGS and LSF dates were obtained from European Centre of Medium-range Weather Forecast ERA-5 reanalysis dataset with a spatial resolution of $0.25^{\circ} \times 0.25^{\circ}$. In this study, a false spring was identified at the corresponding point of the study area if the last spring frost was identified after the start of the growing season. The study showed, that at the end of the analysed period (1950–2022), the growing season started earlier in the entire study area. This change ranged from -0.5 days per decade in the northeastern part of the study area to -2.1 days per decade in the western part of Lithuania. The LSF date during the 73-year study period has also become earlier in almost all study area points. The largest changes (-1.8 days per decade) were observed in the northern and northeastern part of the analysed territory. However, the changes of LSF date were not as rapid as those of the SGS. Therefore, during the study period, the number of false spring cases increased in 73.76% of the study area. The largest growth of such cases was observed in the eastern part of the study area and in coastal regions. There was also an increase in the amount of accumulated heat from the SGS date to the LSF date. Positive changes were found in 82.76% of the study area points, with the largest ones occurring at the border between Lithuania and Kaliningrad and in the eastern part of the study area.