Wildfires can inflict serious damage to forest ecosystems, agricultural areas and often endanger human settlements and lives. Rising global temperatures and changes in precipitation pattern increase the risk of severe fires. In Croatia, the areas currently most affected with high risk of forest fires are located in the Mediterranean region. Due to climate change the risk will likely increase and further strain the available fire-fighting resources. The situation could be even more alarming in Continental parts of the country where forest fires were not common in the past, but may become increasingly likely in the near future. Therefore, accurately assessing the wildfire risk is increasingly important in implementing fire-avoidance activities and optimizing the management of country's fire-fighting resources.

The aim of our study is to assess the change in the spatio-temporal distribution of the fire Daily Severity Rating (DSR) and the Seasonal Severity Rating (SSR) in the last two decades, with respect to the reference period 1961–1990. We present a spatial analysis of SSR for the period 1989–2018 in Croatia based on the Croatian Meteorological and Hydrological Service (DHMZ) data and compare it with the one of European Forest Fire Information System (EFFIS). The relation between the SSR and the burned area, estimated from MODIS MCD64A1 Version 6 Burned Area data product, during 2001–2018 is investigated with the aim to facilitate locally optimized model for the assessment of the expected burned area associated with a given SSR. The results should contribute to improved understanding of the near-future risk of severe fires in Croatia related to possible future climate scenarios.