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# The interaction of a cold front with a widespread low stratus and fog in the Zagreb region in December 2015: a case study

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Fog represents one of the areas of meteorology where scientific understanding is still limited. Although synoptic and mesoscale forcing play a role, local microphysical processes in the atmospheric boundary layer are the deciding factor in fog formation. Because of this complexity, forecasting fog is a difficult task. Studying the physics of fog can therefore give valuable data that can improve our knowledge of this phenomenon. A major motivation for such studies in Croatia is the fact that in the Croatian scientific community, fog is a scarcely researched phenomenon.

The main purpose of this study is to analyze a complex fog event that occurred over large parts of Croatia, Slovenia and Bosnia and Herzegovina between December 27 and December 29, 2015. The emphasis is placed on studying the characteristics of fog in the immediate vicinity of Zagreb International Airport. An attempt is made to understand the general behavior of fog, as well as to provide insight into complex meteorological interactions that led to the development and dissipation of this particular event. Of special interest is the peculiar dissipation of fog over Zagreb Airport, which occurred during nighttime hours of December 29.

Available data for the study consists of half-hourly METAR reports from Zagreb Airport, SYNOP observations from meteorological stations in the vicinity, radiosonde observations from Zagreb-Maksimir station, satellite images in a variety of channels from EUMETSAT's Met-10 satellite, and synoptic reanalysis charts from KNMI archives. The analysis revealed interplay between synoptic and local-scale processes in formation, evolution, and dissipation of this fog event. Attention was given to analyzing the behavior of temperature during the fog event, and in particular, significance of advection from a nearby river vs. local radiative processes has been discussed.