

# **Comparison between measured ice load caused by freezing rain and corresponding simulations with a NWP model for the Northeast part of Bulgaria**

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Freezing rain events are not very often observed on the territory of Bulgaria but they could be surprisingly severe. The most affected regions are in the north, and especially in the north-eastern part of the country. This severity is determined by the simultaneous influence of two factors – very intensive Mediterranean cyclone, passing south of the country, and a strong cold advection from north or northeast. This situation is very favorable for freezing rain in the northern part of Bulgaria. The southern regions are protected from the cold advection by the mountain Stara planina, which crosses through the whole territory of the country from east toward west, and that is why freezing rain is not common here. The last severe incident was in November 1998 causing huge damages all over in north Bulgaria.

Special records of the duration, dimensions of the ice deposition and the density from 5 meteorological stations and field stations in cases of damages, are compared with numerical simulations for some of these severe events from the last decades. This study demonstrates how well a state of the art numerical weather prediction model can simulate the conditions leading to freezing rain at ground level for selected cases. We also discuss the potential to combine an accretion model for freezing rain with the output from the NWP model in order to predict the ice load explicitly.