



Measured and modeled tropospheric profiles over Sofia

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The development of the models helps meteorology to reach new limits for research. However, models need to be evaluated with observation data in order to increase their accuracy and reliability for a given place. Routinely, the models are evaluated against surface observations, but their success is determined also from the way they simulate the vertical structure of the atmosphere. In some regions in the globe and even in Europe there are places with modest profile observations. NIMH, for example, performs only one noon radio sounding per day in Sofia at the Central Aerological Observatory (WMO 15614). The aim of this study is to compare the Pennsylvania State University / National Center for Atmospheric Research mesoscale model (known as MM5) forecast with 10 km resolution and the available aerological data. The studied parameters are the temperature, the potential temperature, the wind speed and direction up to nearly 12 km height for a 4-year period in 2011 - 2015. The MM5 model is used for meteorological driver for a Chemical weather forecast at NIMH. The valley of Sofia is characterized with complex vertical structure due to the influence of the surrounding mountains. The performance of the model was found to exhibit seasonal variation.