



Lightning Potential Index in the Czech Republic during convective events of summer 2018 using COSMO NWP model

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This contribution is focused on analysis of Lightning Potential Index (LPI) calculated by the COSMO Numerical Weather Prediction (NWP) model for convective days, when the lightning was observed in the Czech Republic. We use the COSMO NWP model with 1 and 2-moment microphysics with a horizontal resolution of 1.2 km and 70 vertical levels. The integration domain covers a large part of the Czech Republic. LPI is defined as the kinetic energy of the updraft in a thundercloud that is scaled by the potential for charge separation. The charge separation is assumed to be closely related to the simultaneous presence of updrafts, supercooled liquid water, graupel, and ice. In COSMO, the LPI is closely bounded to explicit simulation of convective cells and ice microphysics. LPI values above zero indicate a potential of a lightning flash and the greater the LPI value, the higher the potential of flashes. We compare values of LPI with ground based measurements of lightning that are at our disposal from Siemens lightning database (BLIDS). We are motivated by the fact that studies conducted over Germany showed that the spatial and temporal distribution of the LPI values greater than 0 corresponds well with that of the observed flash rates. However, such studies are not available for the Czech Republic. In addition, we suppose that 1 and 2-moment microphysics may give different values of LPI. We will present the obtained results at the conference.