



## **The Post-processing Techniques for the Objective Analysis of Gust Fronts**

**M. Kaspar** and Z. Sokol

Institute of Atmospheric Physics ASCR, Prague, Czech Republic (kaspar@ufa.cas.cz / Fax: +420 2-72763745 / Phone: +420 2-72016024)

The contribution is devoted to the testing experiments of a post-processing tool aimed at the objective analysis of propagating gust fronts in a given convective environment. The tool is being developed to be applicable by utilizing operational NWP model outputs. The model for the Objective Analysis of Gust Fronts (OAGF) is adapted for the thermodynamic outputs of the non-hydrostatic limited area NWP model LM COSMO with the horizontal resolution of 2.8 km. The OAGF procedures enable to determine the position of gust fronts within the domain and to assess their speed of movement, their head height and their potential to initiate convection according to the properties of ambient vertical shear and stability as well as humidity conditions ahead of the respective downdraft outflows.

The experiments were carried out on selected summer convective cases which occurred in the Czech Republic. They represent different types of convective systems, both accompanied by objectively identifiable gust fronts and causing heavy precipitation. The goal was to test the hypothesis that the OAGF is capable to evaluate the role which downdraft outflows played in the decay and initiation of convective cells by interaction with convective environment. The study has confirmed the applicability of the LM COSMO-OAGF chain in the case of both isolated and multicellular convection, which may represent the potential for improving the nowcasting and very short-range forecasting of hazardous convection phenomena.