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**VERTICAL TEMPERATURE PROFILE OVER VERY COMPLEX TERRAIN AS INPUT IN A
DISPERSION MODELLING SYSTEM – NWP MODELLING USING WRF AND VALIDATION
WITH RASS AND TRADITIONAL HIGH TOWER**

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Abstract: For high quality modelling of air pollution dispersion over a very complex terrain validations of the input forecasted meteorological quantities are necessary. Measurements using the RASS are of exceptional values for this purpose.

Modelling the pollution dispersion in the atmosphere in the immediate vicinity of industrial sources over a complex terrain requires good meteorological input data on the state of the atmosphere. If we do not have these, it is difficult to obtain results which would be a good match with the measured concentrations in space and time in fine resolution over a complex terrain. At the current state of modelling science, such matching is a prerequisite for serious work and is reasonably required by industrial clients.

In the presentation, we will shed light on one of the most important components of the input meteorological data – a vertical temperature profile of the atmosphere. For a location in a semi-closed basin over an extremely complex terrain in Slovenia we provide a longer series of measurements of the temperature profile of the atmosphere with traditional measurements on a 70-metre high tower, measurements with a RASS, which usually extends a few hundred metres above the level of the basin and NWP results of the WRF model, with the GFS input prognostic global data, in different local resolutions.

The results of the measurements are available for point sensors in the form of a time series of half-hourly average values. We also have half-hourly average values for 24 vertical levels for the RASS. The WRF model operates in two local resolutions for the validation area. We will validate the forecast for the current day in half-hour increments.

Key words: *vertical temperature profile, weather forecast validation, WRF, RASS, complex terrain*