

Research Project

EMER-met@Basel (Emergency Response Meteorology)

Third-party funded project

Project title EMER-met@Basel (Emergency Response Meteorology)

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Organisation / Research unit

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Department

Project start 01.10.2020

Probable end 31.03.2022

Status Completed

The aim of this project is to evaluate the potential of a new EMER-Met station with focus on the Basel area. This station will be especially useful in case of an industrial accident around Basel.

In this project, MeteoSwiss will install a complete set of remote sensing instruments near Basel for one year. A radar wind profiler, a wind lidar, and a microwave radiometer will be installed. The wind profiler and the lidar are complementary and allow a precise measurement of the wind from a height of 25 m to 8000 m above ground level. The wind lidar can additionally be used to detect smoke plumes in a radius of 8 km. A microwave radiometer will measure temperature and humidity profiles up to 1.5 km. Examples of observations are shown below. Even if measurements are already available on the Swiss plateau, measurements at Basel will likely improve the simulation of the specific weather situations at the Rhine bend.

During this campaign, data from these additional instruments will be used in real-time to improve weather forecasts around Basel. Off-line calculations will be performed to determine the impact of the instruments on weather forecasts in typical weather situations. These simulations are called Observing System Experiments (OSEs) and are commonly used to evaluate the benefit of a specific observation. A scientific collaborator, funded by this project, will work during one year on these experiments and on the report. The collaborator will work in close collaboration with MeteoSwiss teams in Zurich and Payerne.

After the project, the benefit of a remote sensing measurement station at Basel to forecast the dispersion of chemicals will be quantified. A strong influence is expected in case of wind shear situations (different wind directions near the ground and further up in the atmosphere) or temperature inversions.

Keywords COSMO, FLEXPART, RADAR and LiDAR wind profiler, LiDAR,

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Add publication

Add documents

Specify cooperation partners