*Forecasting the weather
- ensemble techniques
in probabilistic weather prediction*

A probabilistic ensemble-based wind forecasting system for the international airport Frankfurt/Main

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The aviation research program LuFo iPort (innovative airPort) funded by the Ministry of Economics (BMWI) is instigated to improve the effectiveness and competiveness of the German aviation. This is accomplished through supporting the development of new forecasting techniques for various weather related phenomena affecting airport management and traffic along with other airport related activities.

Wind conditions, even if non hazardous, have significant impact on the air-traffic system. Both take-off and landing should be performed under headwind conditions. Thus, depending on wind speed and direction the decision is made, which runway will be the one in use.

Within the sub project iPort-WX-WiWi (adverse wind conditions) probabilistic wind forecasts for the international airport Frankfurt are generated. The probabilistic forecasts are based on the ensemble prediction system (EPS) COSMO-DE-EPS, which is developed at DWD (German Meteorological Service).

The main goal of the project is to derive categorical decisions from probabilistic forecasts in order to support the air traffic management in, for example, the decision which runway is in use.

After assembling the customers' requirements, probabilistic wind forecast products have been designed accordingly. Hence, costumer-oriented forecasting products are developed as basis for proper decision making. From the beginning of the project high attention is given to the communication of uncertainties and the use of ensemble forecasts.

The presentation provides an overview of the project with focus on the design of the forecast products corresponding to the customer demands.