

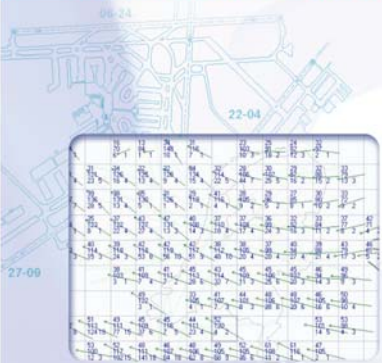


TP Meteo Server



WWW.KDC-MAINPORT.NL

INNOVATION PLATFORM



OBJECTIVE

The objective of the TP Meteo Server project is to provide accurate forecasts of wind and temperature to aircraft and groundsystems to enable Continuous Descent Arrivals with high capacity. The TP Meteo Server shall provide meteo data in a grid covering an area of about 200 NM around Schiphol, from sea level up to an altitude of 45000 ft (approximately 15 km) and a look-ahead time period from 30 minutes up to 6hours. To achieve this goal meteo data will be derived from Mode-S Enhanced Surveillance¹ data, which will then be assimilated in KNMI meteo models, from which nowcasts and forecasts will be derived. By using the meteo observations from the aircraft, KNMI expects to improve the quality of its products significantly.

¹ Mode-S Enhanced Surveillance: Suitably equipped aircraft can transmit data which enables ground systems to derive the wind (and when available temperature conditions) to which the aircraft are subject at the altitude flown.





Develop | Validate | Operate |

BACKGROUND

It has been widely recognized that the European Air Traffic Management system is operating close to its limits. This recognition is even stronger for the operation of Schiphol airport in which environmental constraints, but also controller workload constraints, limit the prospects of a sustainable Schiphol operation.

For the Netherlands a development strategy has been set out to modernize the operation as part of the European SESAR development. In this development strategy the SESAR concept has been translated into a local strategy to develop stable and predictable traffic flows. Fixed arrival routes, increased approach altitudes, and continuous descent arrivals, have been set forth as steps of the arrival management strategy. This strategy aims at a sustainable Schiphol operation with reduced annoyance in the greater Schiphol area.

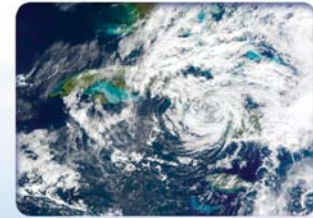
In the current operation, the air traffic management system has to cope with a great variability in arrival times of inbound traffic (traffic bunching) and a very limited airspace to build traffic sequences to the runway. The TP Meteo Server supports the development strategy which is based on streamlining inbound traffic streams as an enabler for fixed arrival routes, increased approach altitudes and ultimately Continuous Descent Approaches with high capacity.

PROJECT DESCRIPTION

The meteo data which are currently available to the LVNL ATM system for trajectory prediction purposes are very coarse. The project investigates two lines of improvement. One is to improve the quality by using all information available at the output of the KNMI/HIRLAM weather models. The other is to use more recent measurement data as input to the weather models, which are available from most of the Mode-S equipped aircraft, extracted via the current generation of Mode-S Radars. After an initial feasibility study which demonstrated the feasibility to derive meteo data from available Mode-S Enhanced Surveillance data, the project is aiming at development of a method to assimilate these data into existing European weather models. Validation of the method through prototyping is an important part of the activity.

Towards the Single European Sky

A key element of the SESAR Target Concept is the concept of Trajectory Based Operations (TBO). TBO is an enabler for an array of operational performance improvements through flight profile optimization resulting in reduction of operational costs, emissions and noise. The feasibility of TBO depends on the availability of reliable aircraft trajectory information both in the on-board and ground systems. The improved meteo forecast is an essential contribution to the accuracy of aircraft trajectory prediction. The TP Meteo Server project therefore is vital to the deployment of TBO and subsequently the implementation of Continuous Descent Approaches with high capacity.





KDC Innovation Programme



WWW.KDC-MAINPORT.NL



ABOUT KDC

The Knowledge and Development Centre Schiphol (KDC) is a foundation in which the Dutch aviation sector partners KLM, Amsterdam Airport Schiphol and Air Traffic Control the Netherlands (LVNL) have organized their Research and Development work. The objective of the KDC is to secure the position of Mainport Schiphol by bringing together the necessary know-how and resources for the innovation of the air traffic management system.

Together with the Dutch Ministry of Transport (Directorate General Civil Aviation and Maritime Affairs, DGLM), the National Aerospace Laboratory (NLR) and the Royal Netherlands Meteorological Institute (KNMI), the KDC has defined the KDC Innovation Programme with the aim to ensure an environmentally sustainable Schiphol airport operation providing reliable capacity to the airlines.