hydrometeorological
innovative solutions

WISAM

Weather information system for airport management

WISAM is a powerful integrated terminal weather information system developed to assist airports in strategic and tactical decision making. It provides high quality information about the meteorological conditions on the Terminal Manoeuvering Area (TMA) which increases safety and efficiency and reduces costs resulting from adverse weather conditions.

WISAM is a full decision support system for airport management, including: data management and processing, product generation, alert generation, and visualization of data and products. WISAM's strength lies in its modular architecture which makes it highly adaptable to the specific needs of a given airport.

WISAM products

WISAM generates forecasting products related to three complexes of meteorological phenomena affecting aviation: thunderstorms, heavy precipitation and winter conditions. All products are generated employing algorithms from leading research centers, McGill University and CRAHI-UPC. These products combine the information content of different data sources to develop an improved composite view of the current and future weather conditions in the TMA. The underlying data include observations from different sensors such as weather radar systems, satellites, lightning detection networks and ground stations together with forecasts from numerical weather prediction models.

The thunderstorm product detects and predicts thunderstorm activity up to two hours ahead, based on observations (weather radar, satellite, lightning detection networks) providing information on the size, intensity, the propagation speed of the storm and the estimated arrival time of the storm at the airport. Furthermore, regions of enhanced risk for aircraft resulting from hail, lightning or turbulence due to strong convection, are identified.

The precipitation product focuses on the quantitative precipitation estimation at the airport in case of heavy precipitation. It provides the precipitation intensity and the accumulated precipitation at the airport in order to prevent problems due to aquaplaning or low drainage efficiency. Apart from the actual observation, it also provides forecasts of precipitation intensity and accumulated precipitation up to 2 hours ahead.

The winter weather product determines the risk related to winter precipitation and its impact on the conditions of run- and taxiways. This includes the start time and duration of winter precipitation, the precipitation phase and the freezing risk based on ground temperatures and the thermodynamic profile of the atmosphere. In addition, the freezing risk for aircraft at the ground is determined.

The **WISAM** alert generator automatically warns the operator in case of deteriorating weather or any other changes in weather conditions that might impact on ground operations. Alerts are issued in case of heavy rain, lightning, hail, start of snowfall, or icing risk.

Visualization

WISAM is completed by a state-of-the-art visualization system. The visualization system has been designed to reduce the complexity of the meteorological information and allows for quick and easy overviews of current and future weather situations for optimized decision making. Customization and navigation are facilitated by well-designed, intuitive, visually pleasing and friendly graphical user interfaces.

WISAM
FEATURES

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WISAM key features

Multi instrument support (integration of different sensors, e.g. weather radar, lightning, LLWS, rain gauges, ...)

HYDS data management solutions

Modular architecture

Product generator Thunderstorm

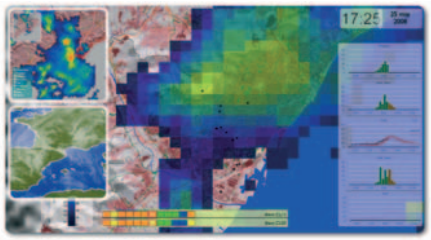
Product generator Heavy Precipitation

Product generator Winter Weather

Visualization of products and observations with customizable, graphical user interfaces

Automatic alert generator

Google Earth integration



WISAM product generator Thunderstorm

Early warning of convective activity

Thunderstorm detection

Lightning detection

Detection of hail risk

Detection of meso-cyclones and tornadoes

Detection of turbulence connected to convection

Tracking and short term forecast of thunderstorms

WISAM product generator Heavy Precipitation

Quantitative precipitation estimation

Accumulated precipitation

Short term quantitative precipitation forecast

Long term quantitative precipitation forecast

WISAM product generator Winter Weather

Start and duration of winter precipitation

Precipitation phase and height of the melting layer

Short term forecast of freezing risk

Long term forecast of freezing risk

Alert Generator

Heavy rainfall

Thunderstorm

Lightning

Icing risk

Snow risk

hyds

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