

Fog forecast based on statistical correlation of selected meteorological elements

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Polish participants of Action COST722, within the frame of WG1, performed fog climatology for two main Polish airports – Warsaw-Okecie and Krakow-Balice.

Climatological analysis allowed to retrieve “weather patterns” favorable for fog formation and persistence. The weather patterns were extracted based on correlations between selected meteorological elements with fog formation. The method of cluster analyses based on K-mean tool was used to examine weather elements at the time of fog presence and before fog formation. Synoptic and aerological data from last 30 years was analyzed including surface pressure characteristics. As the result sets of 4 weather patterns were extracted for each airport. Presently the method is being verified and introduced into operational work at Warsaw-Okecie and Krakow-Balice as a convenient and helpful forecasting tool (Glowacka A., Bakowski R., Wiazewski W., Paradowski M., 2005).

The final result of the task is a forecasting model based on climatology of weather patterns favorable for fog formation. The model uses adequate weights for each meteorological element accordingly to its impact on fog formation (Analysis of..., 1999). The model uses synoptic and aerological data, as well as data from reanalyzes NCEP/NCAR. Calculations are based on polynomials of the lowest possible grade.

The great advantage of the described method is taking into account

References

Analysis of Rapidly Developing Fog at the Kennedy Space Center 1986 – 1990 Final Report, 1993, NASA, Kennedy Space Center, Under Contract NAS10-11844

Glowacka A., Bakowski R., Wiazewski W., Paradowski M., 2005, Weather patterns: conditions preceding fog formation at Warsaw and Cracow airports, proceedings, Short range forecasting methods of fog, visibility and low clouds, edited by Silas Chr. Michaelides, Larnaca, Cyprus 20 May 2005, ss. 73-78