



## **Prediction of wind field for 24 hours for Iran's domestic flights using a nondivergent barotropic model**

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Prediction of direction and speed of wind, which has so many applications in aviation, is the aim of this article.

The wind field will be predicted for Iran and some parts of its neighbor's countries for 24 hours by using a barotropic model.

The initial wind field, obtained from WMO data, is used as an input for the computer code. This program performs the nondivergent barotropic forecasting. The prediction equation uses the streamfunction as predictive variable. The advective term is computed through the 9 point Arakawa jacobian and time integration is performed using the Matsuno predictor-corrector scheme.

The solution domain is a 2-D rectangle (4500 km length and 2100 km width) in which Iran is in the middle of this rectangle. The grid size is 100 km (aprox. 1.1 degree of latitude). The code is usable for height 800 mb and above. For each level one can obtain the wind field by changing the input data and the input variable of height (z).

The error of the results shows that the output is reliable for wind prediction (average of 10% for 12-hrs and average of 17% for 24-hrs) and the aviation companies can use the result for the next day domestic flights.