

## **Abstract:**

Estimated wind speed is as one of the most important variables in all areas. Sistan region is one of the most focuses affected by wind factors. By identifying the factors affecting the pace of wind and producing more accurate results and selecting the most appropriate method for estimating wind speed, can prevent many negative consequences dominant winds. The aim of this study was to predict wind speed using an artificial neural network and adaptive neuro-fuzzy inference system (ANFIS) and linear and non-linear regression methods comparing these methods with each other to choose more accurate method to estimate wind speed in the region. for optimal model to estimate the wind speed in Sistan were used the meteorological data in zabol and zahak in a five years period of time (2010-2015). by meteorological stations and variables such as evaporation, average temperature, average humidity wind speed and sunshine hours in a day are affected factors on wind speed and were selected as input and wind speed is intended as output. Modeling is done by using MATLAB and DATA FIT soft wares. The accuracy of these methods were evaluated by Root Mean Square Error, Index of operation and - Mean Absolute Error. The Results showed that the operating temperature and relative humidity, respectively, have the highest and lowest impact on wind speed in the region of Sistan.. the results of these models showed good accuracy in estimating wind speed and between these models neuro-fuzzy network is the best one. So it is suggested that the best prediction method to estimate the wind speed in the region of Sistan is artificial intelligence.

**Keywords:** Wind speed, Regression models, Artificial intelligence, Sistan



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**The Thesis Submitted for the Degree of Master of Science  
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**The Accuracy Comparision Between Regression  
Procedures and Artificial Intelligence Methods to  
Estimating of Wind Velocity in Sistan Region.**

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