Investigation of Multiscale and Unsteady Characteristics of Deep Foehn Events Over Alborz Mountains

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2– Methodology
Here, Foehn has been studied in southern Alborz Mountain range in northern Iran through a combination of observational, numerical, and simulation data. To understand the structure of Foehn, reanalysis data of global forecasting system (FNL) have been used. In this study, changes in the specifications and synoptic conditions due to Foehn winds were investigated in a ten-year period (2001–2011). To do this, meteorological parameters such as potential temperature, relative humidity, pressure, wind speed and direction, and number of stations in north and south of Alborz were examined during the course which were taken from the Islamic Republic of Iran Meteorological Organization (IRIMO). We used this data to provide a summary of the weather conditions on the north-south slopes of Alborz Mountains. Finally, synoptic analysis used to investigate of weather conditions on regional scale during Foehn.

3– Study Area
Stations selecting is based on the area of study and of its impact range. As mentioned above, one of the most important limiting parameters on our study area is an example of Fajalai wind is sharp rise of temperature and reducing of relative humidity on leeward of Alborz. So stations are selected so that they represent the weather condition on both sides of Alborz. Thus, Mehrabad (35 41N, 51 21E) station as windward, Rasht (37 19N, 49 37E) and Gorgan (36 51N, 54 16E) stations as leeward were chosen, in which Foehn occurs (Fig. 1).

4– Results
Studying of number of Foehns in versus of intensity of them for leeward eastern and western stations and average value of northern stations showed that there is an inverse relationship in estimate functions of them has been drawn in Fig. 2. Temperature changes (°C) on horizontal and Foehn numbers on vertical axis is characterized.

5– Conclusion
The results indicate that a mechanically-driven Foehn occurred in Alborz Mountains during 3-9 January 2013. On the synoptic scale, the Foehn event occurred due to existence of high pressure over the interior regions of Iran and lee cycle over the southern Caspian Sea.

References