

## **$^{18}\text{O}$ & $^2\text{H}$ Compositions of the Precipitation at Three Moroccan Stations: Influenced by Oceanic and Mediterranean Air Masses**

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Oxygen-18 and deuterium compositions were monitored in several rain events on daily and monthly time scales at three meteorological stations in Morocco. One of them is located at Rabat which is an Atlantic coastal city. The two others are situated at Beni Mellal and Bab Bou Idir that are a continental areas located respectively in central Meseta and middle Atlas. Monitored period was spread over three years from November 2000 to April 2003.

Large variations in both  $\delta^{18}\text{O}$  and  $\delta^2\text{H}$ , as well as in deuterium excess were recorded at the three stations during this time period. Correlations between stable heavy isotopes and meteorological parameters are not reliable while  $\delta^{18}\text{O} / \delta^2\text{H}$  plots give important information about the precipitating air masses origins. At the Atlantic station (Rabat); the majority of samples presents d-excess around +10 ‰ revealing Atlantic Ocean origin of the precipitating air masses. At the continental stations, isotopic signature of the water vapour coming from the Mediterranean Sea is more registered with weighted mean values for d-excess around +14 ‰ of samples collected at Beni Mellal and +17 ‰ recorded at Bab Bou Idir. Also, at this later station, the East Mediterranean origin was pronounced by dexcess values up to +22 ‰ and confirmed by weather maps. Combinations between different origins and trajectories of air masses which attain Morocco using weather maps defined three groups. The first one is characterized by air masses coming from central Atlantic reaching Morocco by it Atlantic coast. The second group is associated with air masses coming from North Atlantic and crossing the western part of the Mediterranean Sea. The third group is characterized by air masses coming from East Mediterranean and traveling over North Africa and West Mediterranean Sea.

Key words: precipitation, isotopes, air masses, Morocco.