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CHARACTERIZATION OF THE SPATIO-TEMPORAL VARIATION OF ATMOSPHERIC POLLUTION. WRF-CHEM SIMULATIONS AND ANALYSIS POTENTIAL SOURCES CONTRIBUTION ON THE CENTRAL ANDES

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The Central Andes are an area located in South America, between latitudes 30 ° and 40 ° south. It is important because it contains the largest metropolitan area in Chile, Santiago and the fourth largest city in Argentina, Mendoza. According to climate predictions, this region would be very affected by climate change, which would cause an alteration of the relationships between liquid and solid precipitation, albedo variations, changes in the seasonal distribution of Andean fluvial spills and overtaking in runoff peaks. Due to the possible socioeconomic impacts in the region, it is necessary to design and implement adaptation strategies for these anticipated changes. An accurate prediction requires a correct representation of atmospheric conditions, their development and evolution. Recent studies conducted by our research group show that the presence of atmospheric aerosols would be related to the negative trend variations of albedo in the snow during the last 17 years, which leads to an increase in the thaw rate. Even so, there is a high degree of uncertainty about the identification and characterization of the sources of origin of the aerosols that contribute most to the darkening of the snow. In addition, the particulate material, depending on its size, quantity and chemical composition, could modify the constitution of the clouds, reducing the precipitation of rain or snow and increasing the formation of hail. The physics and dynamics of this type of events can be understood through the use of mesoscale models. In this work, inventories of regional anthropogenic emissions of own elaboration are incorporated to the simulations carried out with the WRF-Chem model to study the relationships: aerosols-albedo and aerosols-precipitations. The objective is to recognize the retro-trajectories that indicate potential sources of contamination, and to improve the modeling with own measurements, made for the criteria pollutants: PM, BC, OC and dust.