



Six years of aerosol observations at the world highest GAW station: Chacaltaya, Bolivia

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The Chacaltaya GAW Station (16.3505°S, 68.1314°W, 5240 masl) was established in December of 2011 with a set of instruments for monitoring atmospheric composition; mainly aerosol physical and chemical properties as well as concentration of greenhouse and reactive gases. The station is located on the eastern flank of the Andes Mountains near the center of South America, close to the Amazon rain forest and the highest plateau in South America, the Altiplano, at 3800 m asl. Due to its strategic location, air masses arriving from the Amazon, the Altiplano, the Pacific Ocean and the metropolitan area of La Paz/El Alto, the largest city complex in the region, are sampled regularly at the station. The daily behaviors of both aerosol and gas concentration are strongly influenced by the planetary boundary layer (PBL). A clear signal of aerosols arriving from the metropolitan area (about 1200 m below the station) is frequently measured late in the morning under the right meteorological conditions. The complex topography of the region produces complicated patterns of air mass transport and several atmospheric layers in the surrounding region. In spite of this, very different conditions characterize day and night aerosol and gas concentrations. Turbulent conditions are typically observed during daytime whereas stable conditions, characteristic of the free troposphere, are present at nighttime. However, relatively large values of aerosol concentration in the free troposphere are measured at night. In addition, long range transport of aerosols is clearly discernible in the data especially during the biomass burning season, which occurs in the transition period between the dry and wet seasons in August and September. Results from the continuous measurements at Chacaltaya and from two campaigns in the metropolitan are discussed in this work.