



The characteristics of air pollution in the semi-arid City of Urumqi (NW China) and its relation to climatological processes

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The rapidly growing urban center of Urumqi, capital of the Xinjiang Uygur Autonomous Region, is a mega city in the northwestern part of China. Air pollution has emerged as a serious threat to the residents of the city. A report released in 1998 by the World Health Organization (WHO) on air quality in 272 cities worldwide noted that seven of the ten most polluted cities in the world were in China and Urumqi was one of these. Current attention on pollutants in Urumqi is focused on total suspended particulates (TSP), fine particulate matter (PM₁₀), sulfur dioxide (SO₂) and NO_x. Among those, PM₁₀ is the primary component of Urumqi's air pollution. Human activities, particularly industrial activities, play an important role for Urumqi's air pollution problems. They also contribute significantly to regional occurrence of air pollution. Specific climatological factors, particularly stagnant conditions of Urumqi's boundary layer, also contribute significantly to high concentrations of air pollutants. In this study we will focus on (a) sources Urumqi's air pollution (b) characteristics of air pollution (spatial and temporal distributions of pollutants), and (c) relations between climatological processes and pollutants' concentrations.