Diffusion Mechanism of PM 2.5 In East Asia Based on GIS and RS

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Abstract: Recently, flying tiny particulate matter, PM 2.5, is attracting the attention of Japan. This spring, slightly higher concentration was observed in the Kanto areas. Japan Meteorological Agency has predicted since 8th March, yellow sand from China will fly to Japan islands. PM 2.5 is considered to diffuse with the yellow sands from the north of China to Japan. From the observations and meteorological data of PM2.5 in Nagasaki and Okinawa the ranges of the origin and height of PM2.5 were calculated by using the Stokes Law and some methods in mathematics. Within this range, comparing with the heights in some main city, the most affected areas are determined. Combining with satellite data, the 3D continuous model was structured for simulating the diffusion mechanism of PM 2.5 and yellow sands. On the basis of the data observation and some simulations, the origins of PM 2.5 in Nagasaki and Naha were from south of Shanghai and north of Taipei. The diffusion height of PM 2.5 was estimated by about 4000m. The origin and mechanism of PM 2.5 were different from yellow sand. The flying height of PM 2.5 was lower than yellow sand, while the origin area was derived from urban areas in South China instead of yellow sand from the desert in North China.

Keywords: Air pollution, AQUA, MODIS, NOAA, Stokes