

**Climatic characteristics of surface air temperature variations in mega-city Shanghai**Yiling Hou<sup>†</sup>; Baode Chen<sup>†</sup> Nanjing University of Information Science and Technology, China, People's Republic ofLeading author: [houyl@climate.sh.cn](mailto:houyl@climate.sh.cn)

Shanghai is the largest city in China in terms of population and one of the largest urban areas in the world, with over 20 million people in its extended metropolitan area. Located on China's central eastern coast near the mouth of the Yangtze River. From 1873, when instrumental records in Shanghai starting, the annual mean surface air temperature has increased by 1.4 , much larger than the global average 0.74 . Typical climate effects due to urbanization are also detected in Shanghai. For example, Shanghai heat waves. To qualify, the maximum temperature needs to be greater than 35 , and the minimum temperature has to be greater than 25 for three days in a row. The occurrence of heat waves in the center of city is much more frequent than that in suburban, and there is a clear decrease in the dew point, which indicates that the local climate becomes more hot and dry, this is typical climate effects due to urbanization. A weekly cycle also has been detected in the surface temperature field of the observation station's data. This cycle consists of a minimum in the weekend and a maximum in the mid-week. Furthermore, by using the OMR approach (Observation Minus Reanalysis), the result shows 2/3 of the surface warming in Shanghai may be due to changes in land surface (urbanization).