

ABSTRACT

In this paper, the surrounding areas of West Lake and Xixi Wetland in Hangzhou City were taken as the research area, Landsat series and Sentinel-2 images were used as the basic data, and the information provided by remote sensing images was used to invert the brightness temperature of the research area, summarize the general situation of surface temperature distribution, and at the same time extract the distribution information of vegetation, water, buildings and other ground objects on the surface. Combining the above two factors, the cooling effect of urban water body in Hangzhou in the summer of 2021 was expressed. This paper mainly analyzed and summarized the variation law of surface temperature gradient within 1200m around the two research areas, and studied the relationship between the distribution of water bodies, green space and other ground objects and the cooling distance and cooling amplitude of water bodies. The differences and influencing factors of the cooling effect of the two water bodies in all directions and the influence of the water body itself on the cooling effect were analyzed. The main conclusions are as follows: (1) Both West Lake and Xixi wetland have a significant cooling effect in the range of several hundred meters, and there is a potential cooling effect in the range of several thousand meters. (2) Comparing the cooling effect of the two, taking the data of 2021 as an example, the West Lake reaches the ultimate cooling distance at a distance of about 540m, and the maximum cooling effect in the whole cooling space is 4.29°C; Xixi Wetland reaches the ultimate cooling distance at a distance of about 240m, and the maximum cooling effect in the whole cooling space is 2.79°C, which includes the influence of landscape distribution structure and types of surrounding underlying surfaces. The results provide reference for urban planners in the design process of using urban lakes and wetlands to achieve local cooling effect.