

Research regarding symbiosis pavement, which effective for city climate mitigation and groundwater increment.

[Point]

Due to pavement surfaces in cities are viewed as a factor of heat-island phenomenon, as well as there is concern of a bad effect on the water circulation, development of new type pavement that can contribute inhibition of heat-island phenomenon and improvement of water circulation, as well as quantification of the efficiency, are needed. In this research, we developed new type pavement that can contribute inhibition of heat-island phenomenon and improvement of water circulation, performed field monitoring to verify the surface temperature inhibitive effect of a sample pavement model. Moreover, we quantified the new type pavement's rain runoff inhibitive effect, groundwater increment effect, and city climate mitigation effect, using numerical simulation. Regarding inhibitive effect of the surface temperature, artificial water sprinkling reduced the surface temperature, maximum 5 °C lower than current high grain density asphalt pavement, but it only persisted for one day. And also, water permeability is high and water penetration rate was 10⁻³ ~ 10⁻² cm/s order. By introducing the water permeable and retentive pavement widely, 15% reduction of peak discharge, and the effect on yearly hydrological balance were observed. The impact toward city climate was the same as the result of some other measures, such as roof gardening and water surface restoration.

Keyword : city climate mitigation, groundwater increment, retentive pavement