

EGU21-7681

<https://doi.org/10.5194/egusphere-egu21-7681>

EGU General Assembly 2021

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“Reduction in water consumption and environmental improvements in Barcelona through WSUDs (Water Sensitive Urban Design Systems”

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Key words: WSUDs; thermal behavior; water

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The aim of this communication is showing the research done during the last years to try to reduce water consumption in Barcelona with the WSUDs (Water Urban Design Systems) while reducing surface temperatures with the chosen WSUDs and reducing rainwater runoff especially in the flood areas of the city.

Water sensitive urban design (WSUD) have been chosen in this research as an approach to planning and designing urban areas of Barcelona as a resource to reduce the damage urban areas cause to water cycle when we change natural pervious surfaces into impervious ones. Thus, while recuperating in some areas water cycle we can reduce rainwater runoff.

This same WSUDs used to reduce rainwater runoff can not only infiltrate and transport water but also to harvest it where it can be more efficient. Water harvesting and reducing he rainwater runoff in a floods area calculations for an area as an example will be shown in this communication. This decentralization of the water treatment will save energy by saving the transportation a long distance away to the water sewage treatment plants. It also avoids diffuse pollution of the runoff since water quality is not worsed due to its transportation to the depuration plant.

On the other hand, since we have climate change not all the materials and construction systems are the proper ones. This part is mainly experimental and has taken almost three years measuring surfaces temperatures of some WSUDs of Barcelona and treating its data to stablish a criteria to choose WSUDs which can help to reduce surface temperatures, even in some cases, underneath the environmental temperatures. It means we can produce a better thermal effect while planning and implementing the WSUDs in this case in Barcelona and in homoclimatic cities.

Therefore, with this WSUDs specific urbanistic micro-acupuncture we can improve some effects of climatic change such as: water scarcity, floods and heat island effect. This communication will focus and deep on it.