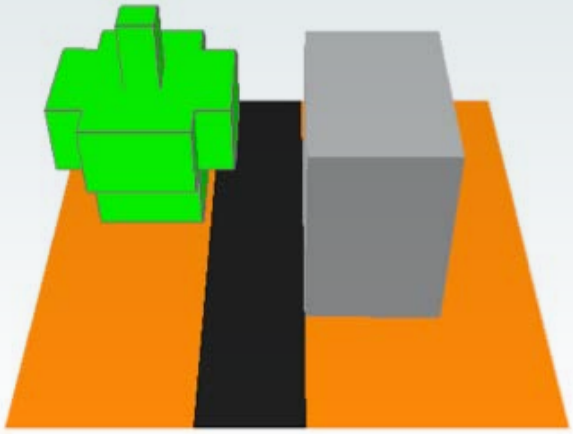
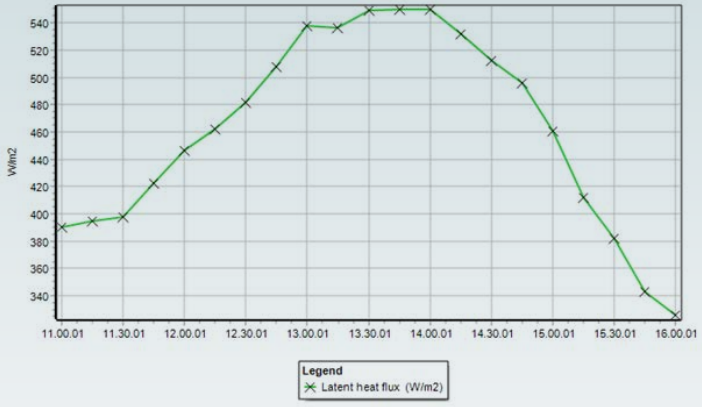
Application of Precipitation

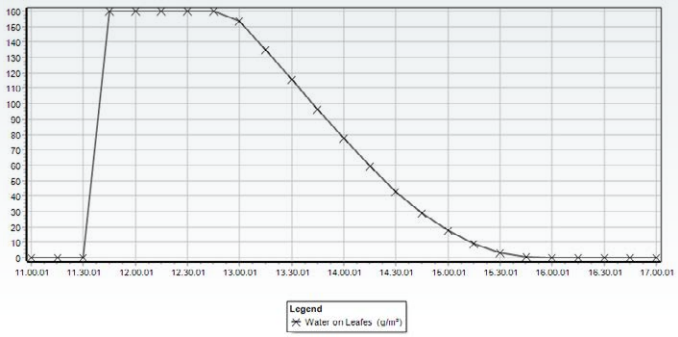
ANALYSIS OBJECTIVE

In an exemplary study, a very simple model area containing a building, a tree, unsealed and sealed surface is run with a Full Forcing File containing precipitation. 1 mm of rain accumulates each at 12:00, 12:30, and 13:00.
The precipitation only influences open surfaces and vegetation, so that no effects should be observable in parts of the model area with a sealed surface or building. As the accumulated rainfall is distributed over the time step prior to the indicated hour and the forcing time step is 30 minutes, first indications of the precipitation should be visible at 11:30.



SIMULATION RESULTS





ANALYSIS

When regarding the latent heat flux [W m^{-2}] at the surface, the influence of rainfall is clearly visible. With more water available, the latent heat flux at the unsealed surface increases due to the rainfall, declining after the precipitation has ceased and excess water is being percolated or evaporated. The latent heat flux of the sealed surface, however, continuously stays at 0 W m^{-2}, as precipitation only influences unsealed surfaces.
The parameter "Water on leaves" [g m^{-2}] shows a similar development. At 11:30, the amount of water on the leaves increases to 160 g m^{-2}, which is the maximum amount of water that can be kept in the cell in accordance with its LAD. With the ceasing precipitation, the amount of water on the leaves declines steadly.

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