Task 4: Water-Environment Analysis (Student D)

Scenario Selection and Justification *From the scenarios in Group 5 (S5.1 to S5.3), select the one you hypothesize to be the most effective for mitigating urban heat compared to the baseline scenario S0. State your choice below and provide a detailed justification.*

Selected Scenario:

Justification:

A. Analysis of Environmental Conditions (T_{air}, MRT, RH, V_{air})

Insert supporting figures (e.g., contour or time-series plots) below. You may insert a composite figure with multiple panels; if so, please label them (a), (b), etc., and describe each panel in your caption. Refer to all figures in your analysis.

Insert figure(s) for Environmental Conditions analysis
(Use a PDF editor to insert your image(s) here)

Figure 4.1:

*Provide a comprehensive analysis of the changes in environmental conditions for both **daytime** and **nighttime**. Explain the primary cooling mechanism (evaporation) and its impact on T_{air} and RH. For the reservoir, also discuss the role of high thermal inertia on the diurnal temperature profile.*

B. Analysis of Surface Fluxes

Insert supporting figures, provide captions, and refer to them in your analysis.

Insert figure(s) for Surface Flux analysis
(Use a PDF editor to insert your image(s) here)

Figure 4.2:

Analyze how the water feature acts as a major source of latent heat flux (Q_E). Compare the magnitude of this flux to the sensible heat flux (Q_H). For the reservoir, discuss how its large heat storage capacity affects the ground heat flux (ΔQ_S) and the release of heat at night.

C. Analysis of Thermal Comfort (PET)

Insert supporting figures, provide captions, and refer to them in your analysis.

Insert figure(s) for Thermal Comfort analysis
(Use a PDF editor to insert your image(s) here)

Figure 4.3:

Analyze the impact on PET. Is the cooling effect localized or widespread? Discuss the trade-off between lower air temperature and potentially higher humidity on thermal sensation. **Importantly, link the calculated PET values to the corresponding thermal sensation and/or heat stress levels (e.g., "heat stress was reduced from 'Extreme Heat Stress' to 'Strong Heat Stress'" or thermal sensation was shifted from 'warm' to 'slightly warm').**