



The Air-temperature
Response to
Green/blue-
infrastructure
Evaluation Tool

(Broadbent et al. 2019)

TARGET

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Introduction

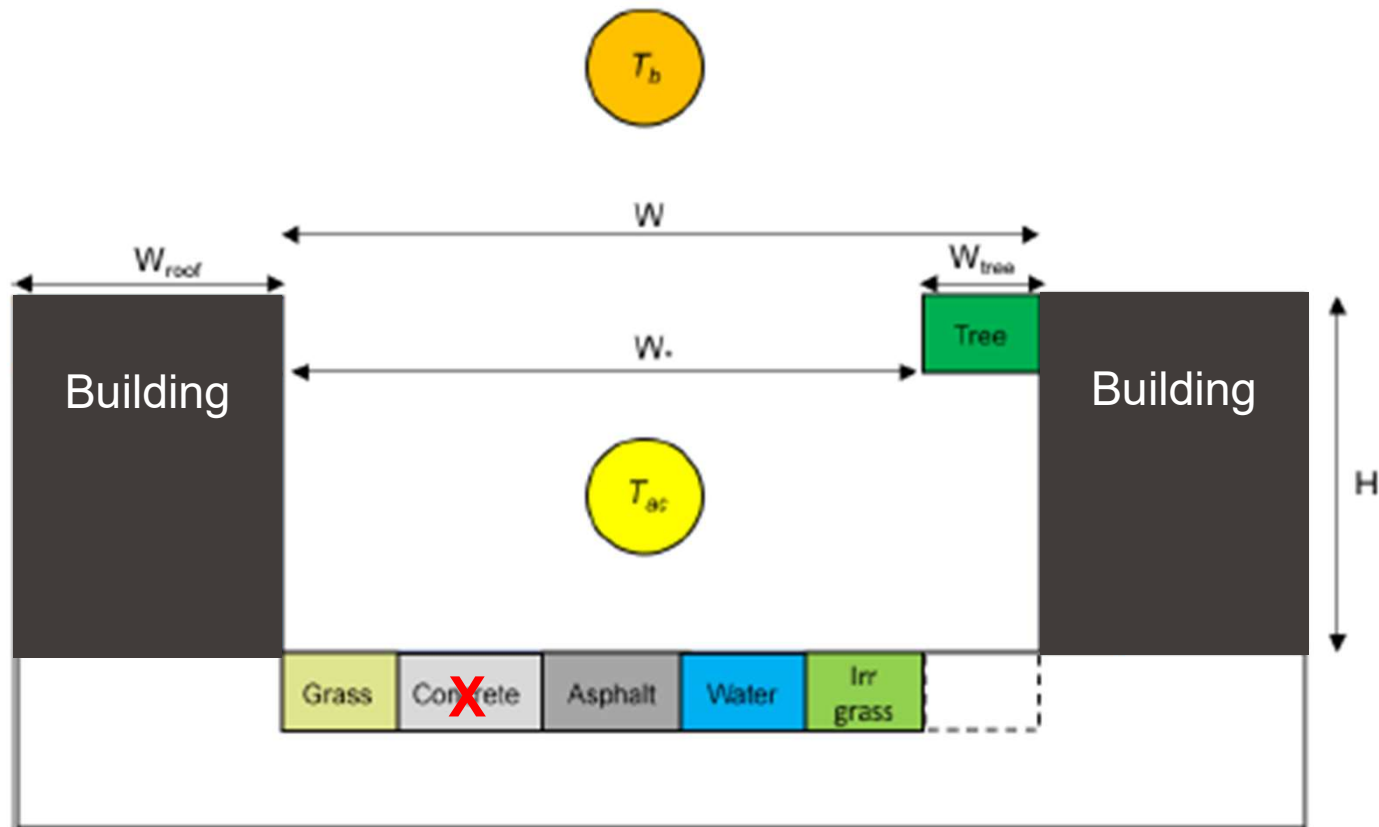
(1) TARGET set up

- Run the example

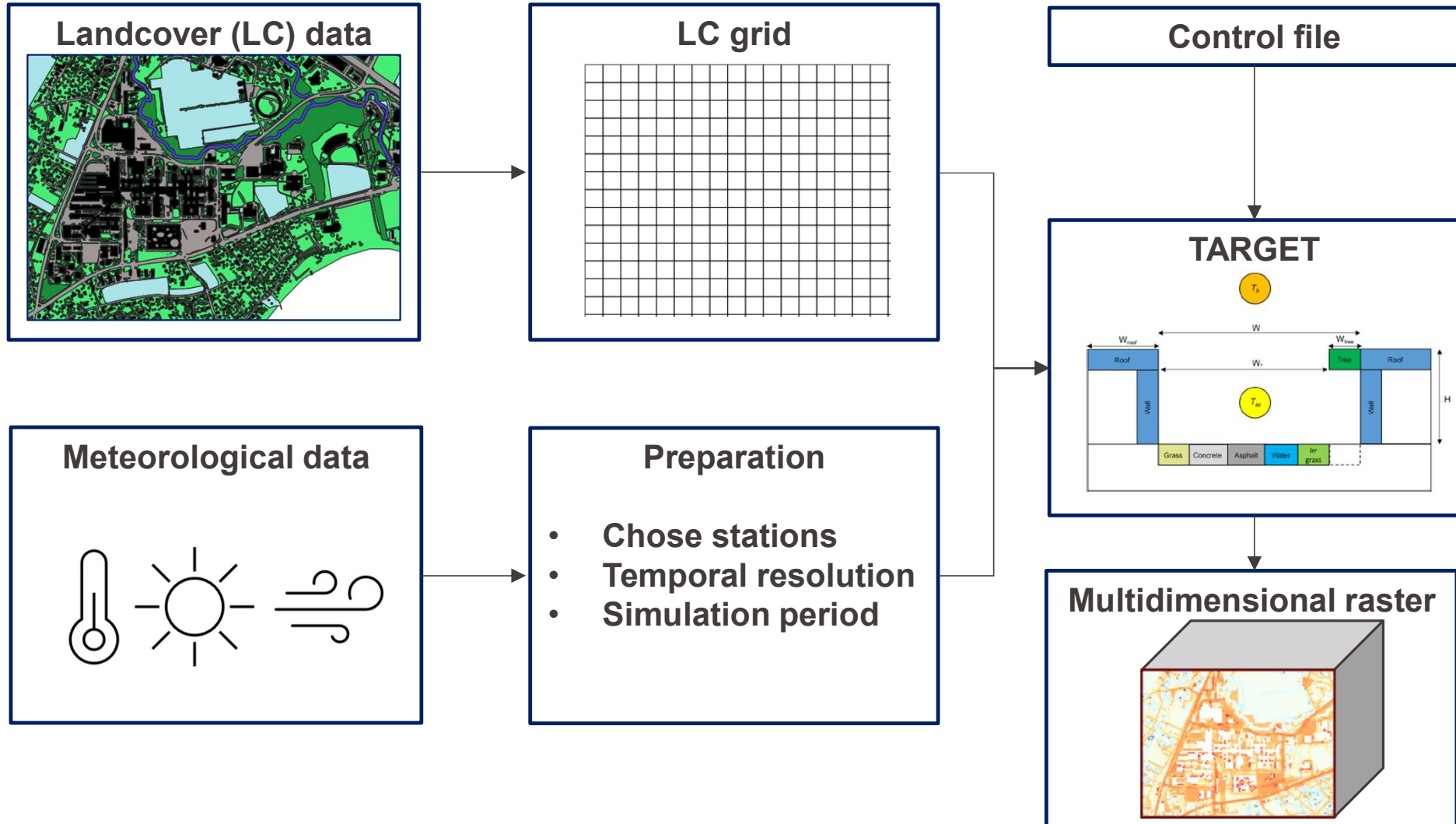
(2) Status quo simulation

- Get familiar with the data
- Prepare input data for simulation
(spatio-temporal resolution, area size, simulation period, etc.)
- Run TARGET with status quo data
- Illustrate and analyze the output

(3) Simulate scenarios that explore different climate sensitive campus designs



Broadbent et al. (2019): Air-temperature Response to Green/blue-infrastructure Evaluation Tool (TARGET v1.0): an efficient and user-friendly model of city cooling.



- Landcover data
 - LC class shapefiles
 - Building height
 - Street width

Data: ALICE lab, swisstopo, FOAG, manual classification

▼ Resources for Group Project



READING MATERIAL



InVEST - example EPFL data



TARGET - input data and ressources



EPFL-UNIL GIS Layers

- Meteorology (01.05 – 31.08 2023, 10min)
 - Air temperature [°C]
 - Wind speed [m/s]
 - Relative humidity [%]
 - Atmospheric pressure [hPa]
 - Incoming shortwave radiation
 - Incoming longwave radiation

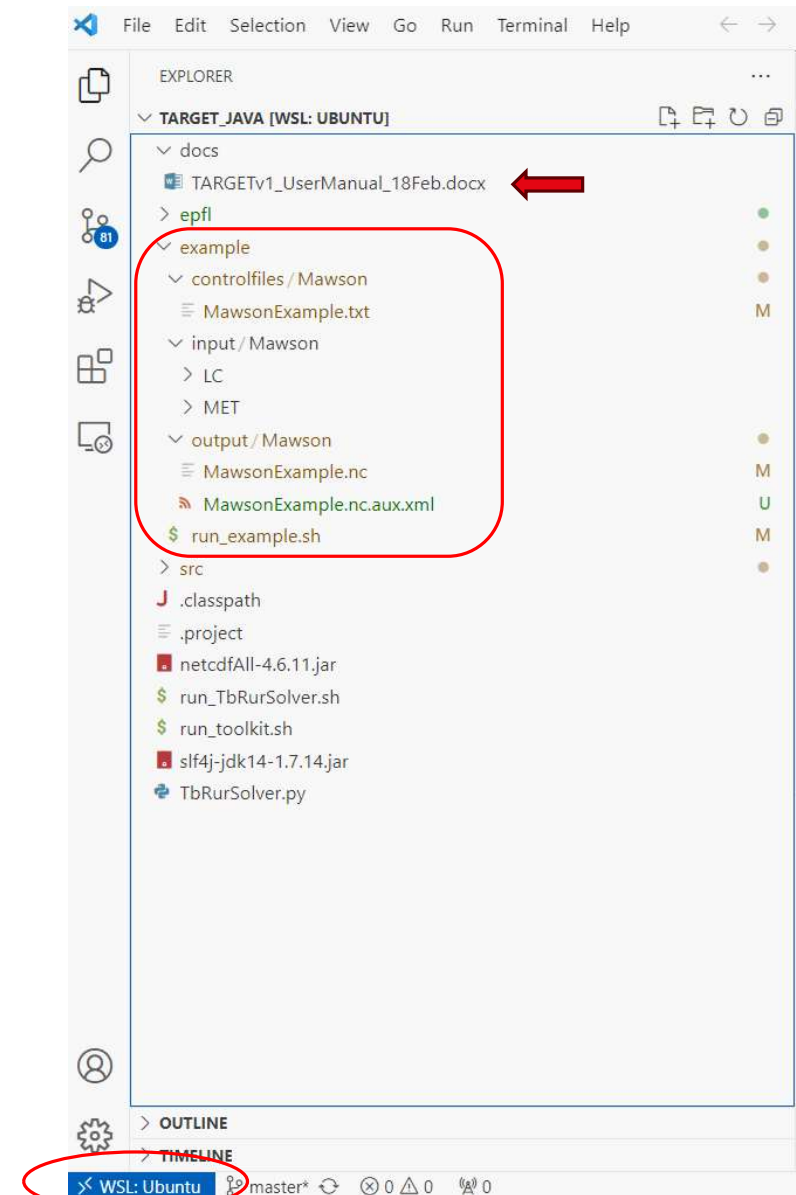
Pully
Lausanne

Aigle
Payerne

Data: MeteoSwiss, FOEN

(1) TARGET set up

- Visual Studio Code with WSL extension (Windows Subsystem for Linux)
- Clone or download TARGET
- Read user manual
- Run Mawson example



(1) TARGET set up

- Adjust input and output paths in control file (MawsonExample.txt)

```
##### Example Main Control File #####
#-----
##### INPUTS #####
site_name=Mawson                # site name (string)
run_name=MawsonExample          # run name (string)
inpt_met_file=/home/rosa/target_java/example/input/Mawson/MET/Mawson-meteorology_KentTown_30min.csv # input meteorolgical file (i.e. forcing file)
inpt_lc_file=/home/rosa/target_java/example/input/Mawson/LC/100m_lc_grid.csv # input land cover data file
output_dir=/home/rosa/target_java/example/output/Mawson # directory output will be saved in
date_fmt=%d/%m/%Y %H:%M        # format of datetime in input met files
timestep=1800S                 # define in seconds
include_roofs=Y                # turn roofs on and off to affect Tac
```

- Start simulation (run_example.sh in VS code terminal)

```
1 #cd ..
2 cd src
3 #sh compile_code.sh
4
5 cd Target
6 javac -cp ../../netcdfAll-4.6.11.jar:../../slf4j-jdk14-1.7.14.jar:. *.java HTC/*.java
7
8 cd ..
9 java -cp ../../netcdfAll-4.6.11.jar:. Target.RunToolkit ../example/controlfiles/Mawson/MawsonExample.txt
```

(1) TARGET set up

1. What are the inputs and outputs of the model? Show/plot the land cover, climate forcing, etc
2. How does TARGET calculate air temperature? Show the equations and explain what the different variables/parameters are;
3. What are the main limitations/assumptions of the model?

(2) Status quo simulation

- Explore the input data
- Prepare the meteorological data
 - Choice of stations
 - Temporal resolution
 - Simulation period
- Prepare the LC data
 - Choice simulation area
 - Spatial resolution
 - Aggregate data in grid
- Explore the output data

(3) Scenario simulations

- Adjust the LC input data according to your scenarios
- Run the scenario simulations
- Illustrate and analyse your results