

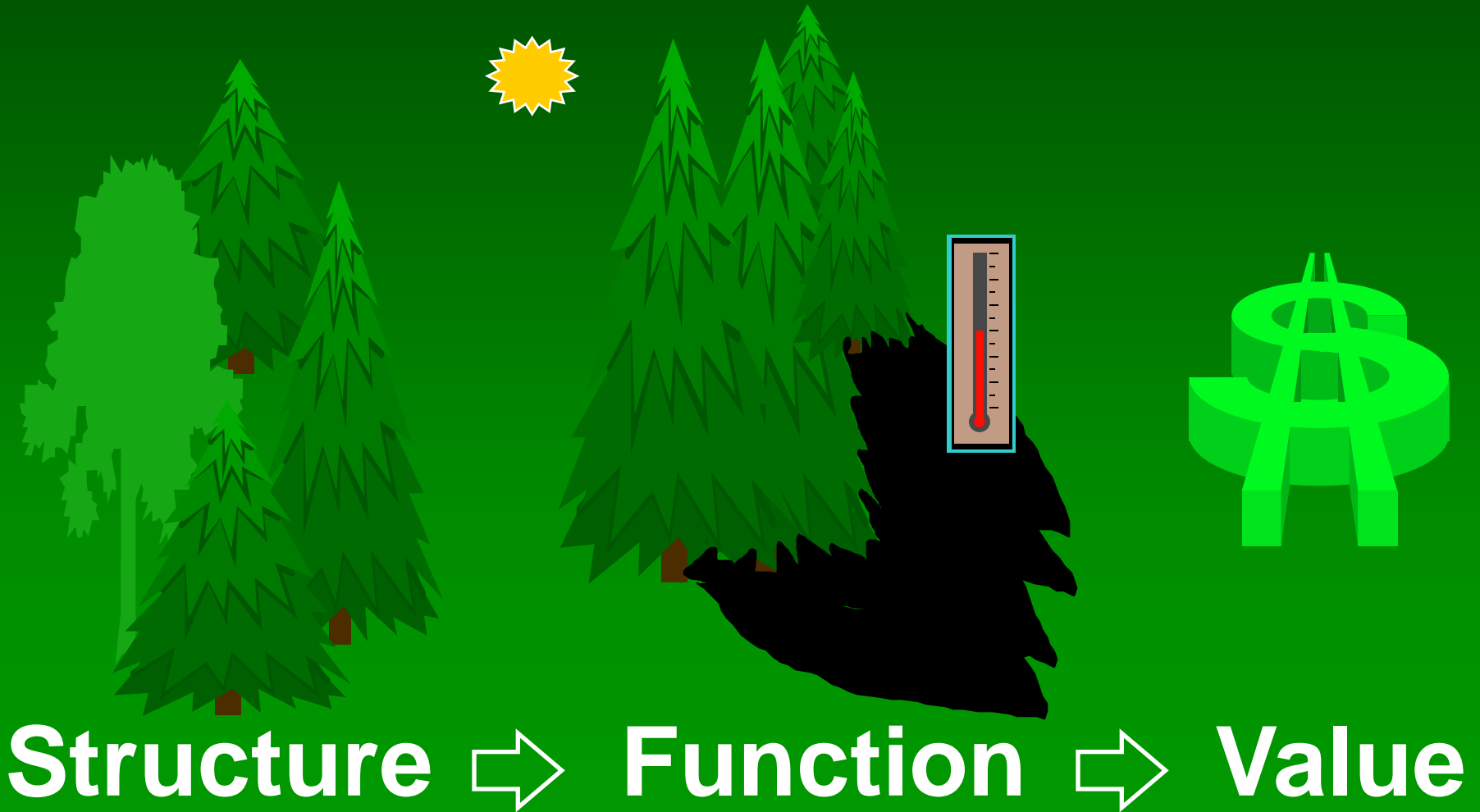
Hydrologic Modeling of Urban Tree Cover Effects



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Measurement is Critical



What is i-Tree?

www.itreetools.org



A series of FREE tools to quantify ecosystem services and values from trees (free support also)

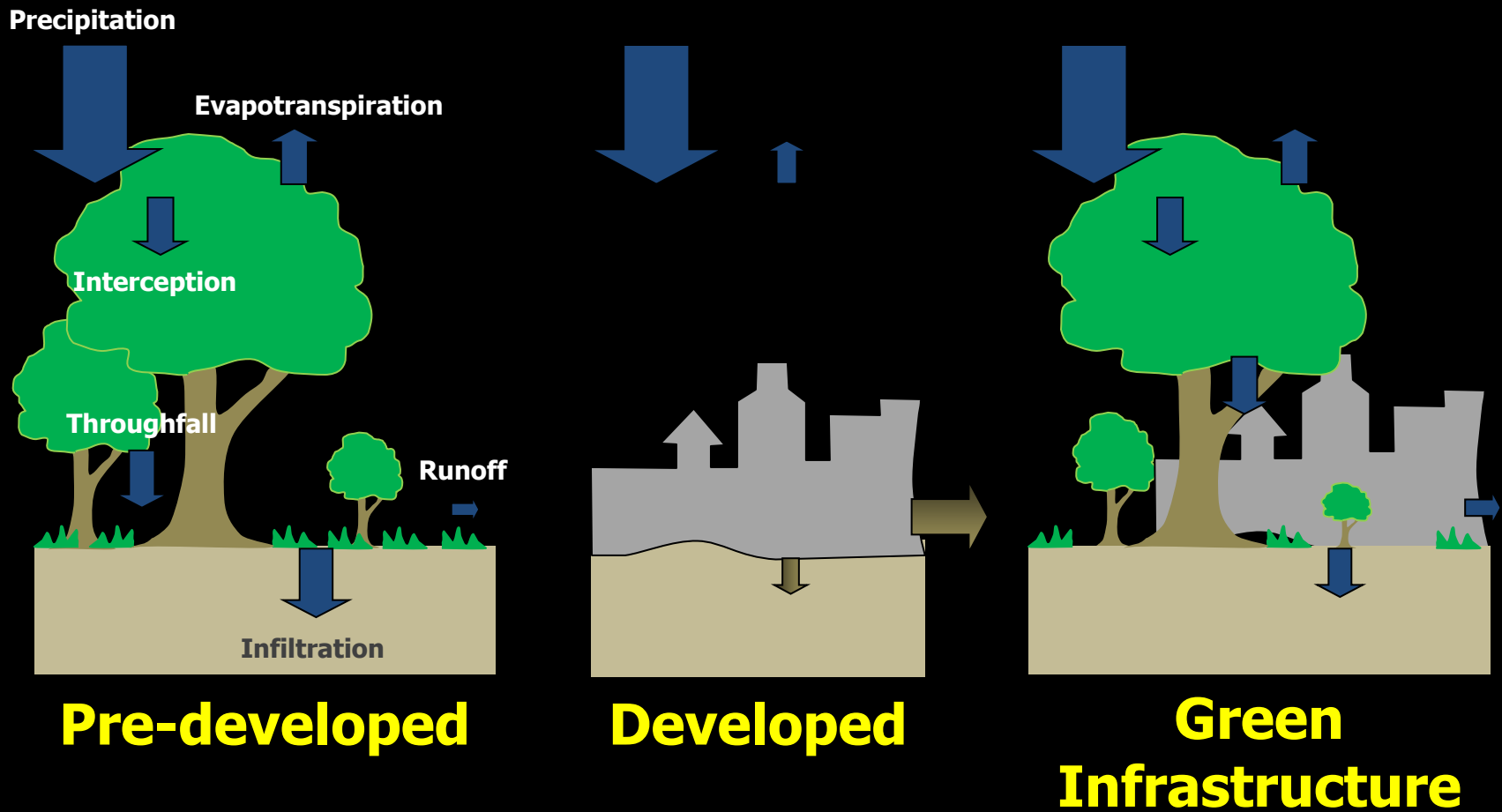


i-Tree is a Cooperative Initiative

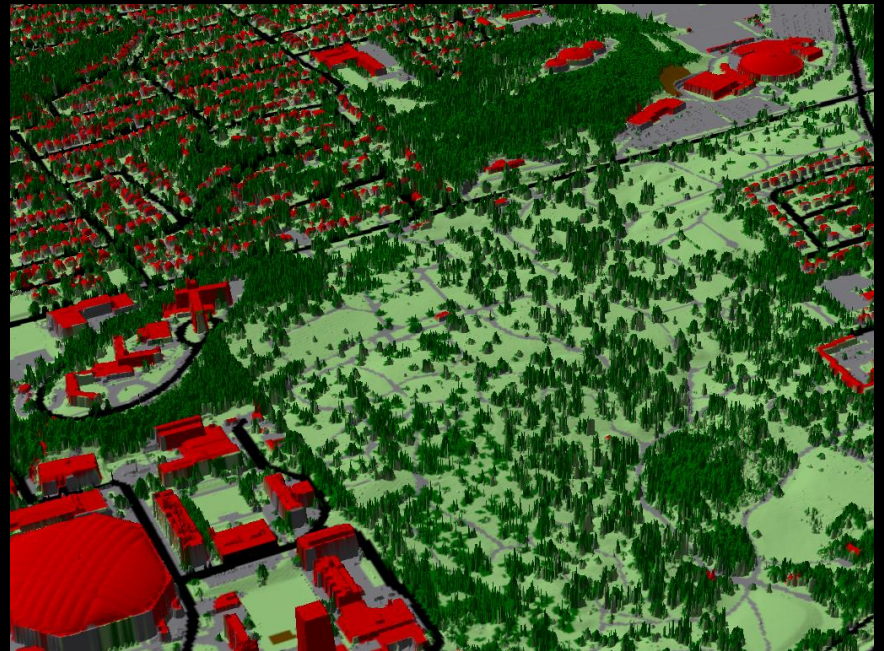


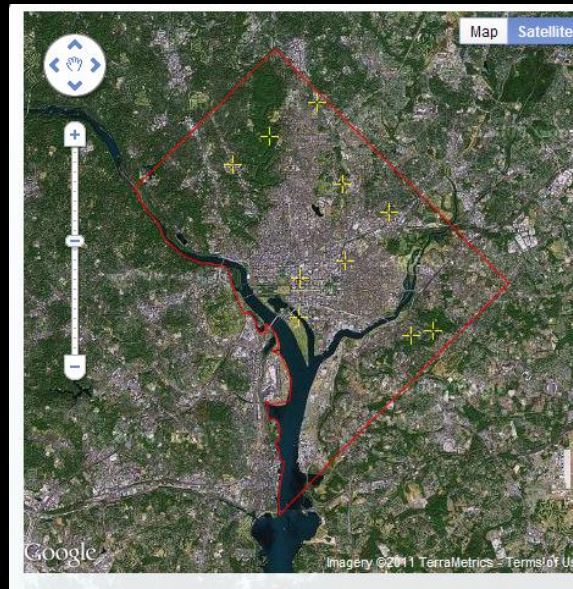
Urban Forest Hydrology

🌿 Natural vs. Disturbed Hydrological Cycle



High Resolution Cover Maps





i-Tree Canopy

i-Tree
Canopy

Get started in three easy steps!

Browse to your project area boundary GIS file. The file must be in ESRI Shapefile format and in lat/long coordinates.

One Or

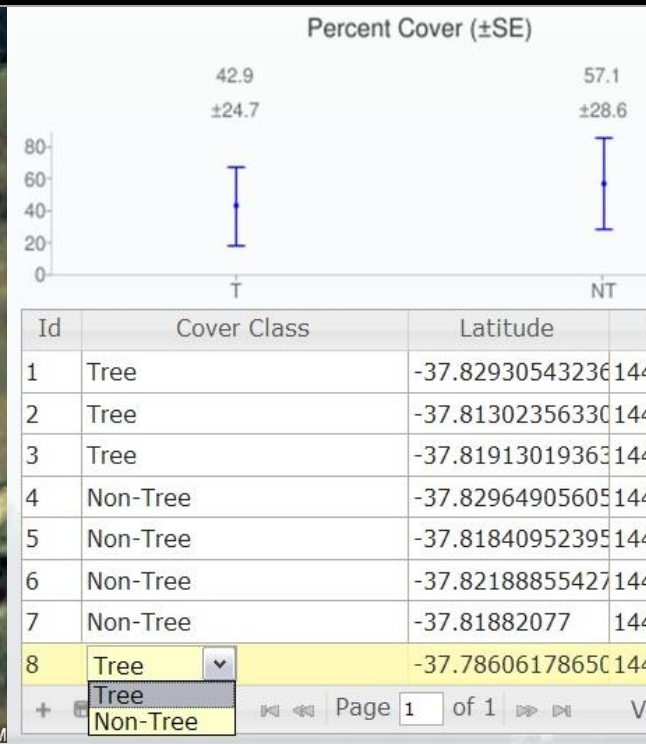
Configure the cover classes for your survey.

Two

Three

[Been here before?](#)

Already started an i-Tree Canopy survey?
Load it here and resume your work.



Determines
% tree cover

Easy & Fast
World-wide
Web-based

i-Tree Hydro

www.itreetools.org

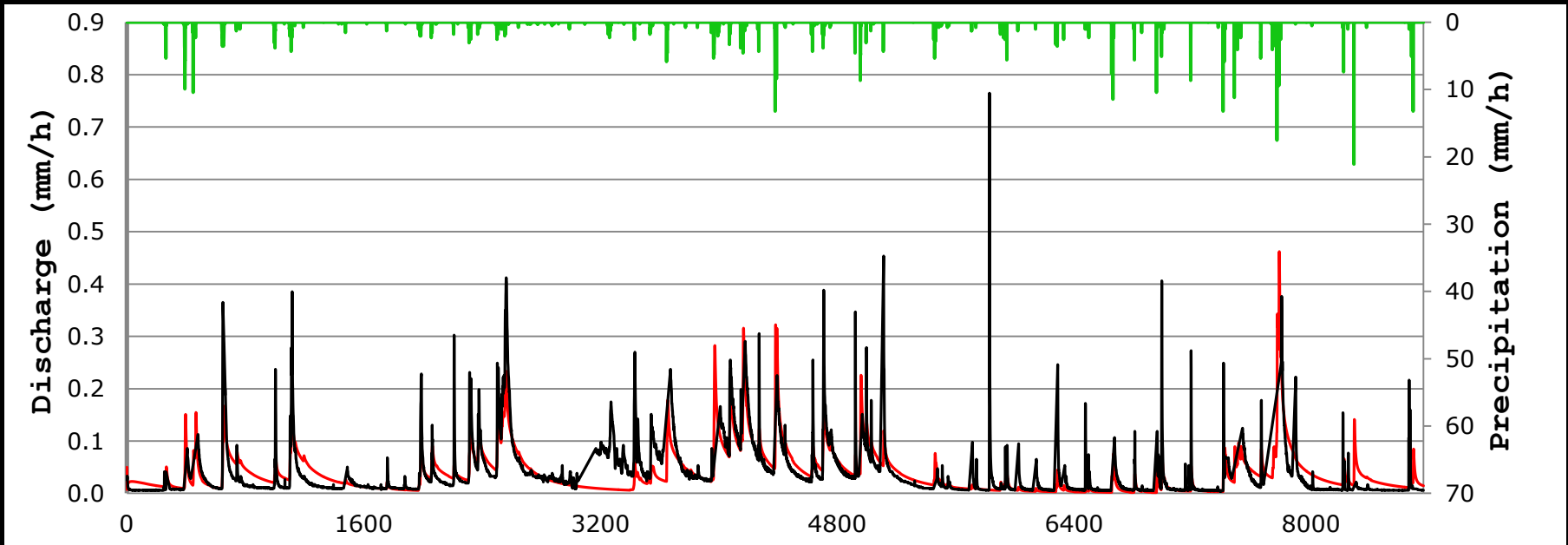


Quantifies effects of:

- Tree cover
- Impervious cover

on:

- Hourly stream flow
- Water quality



i-Tree is a
Cooperative
Initiative



DAVEY

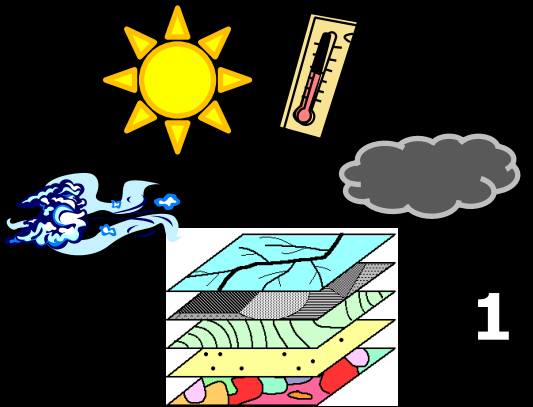


Arbor Day Foundation™

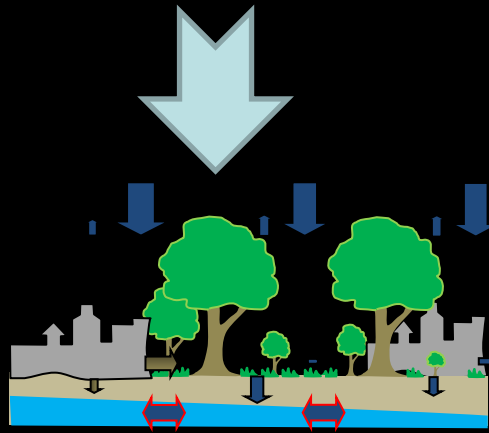


i-Tree Hydro Model Processes

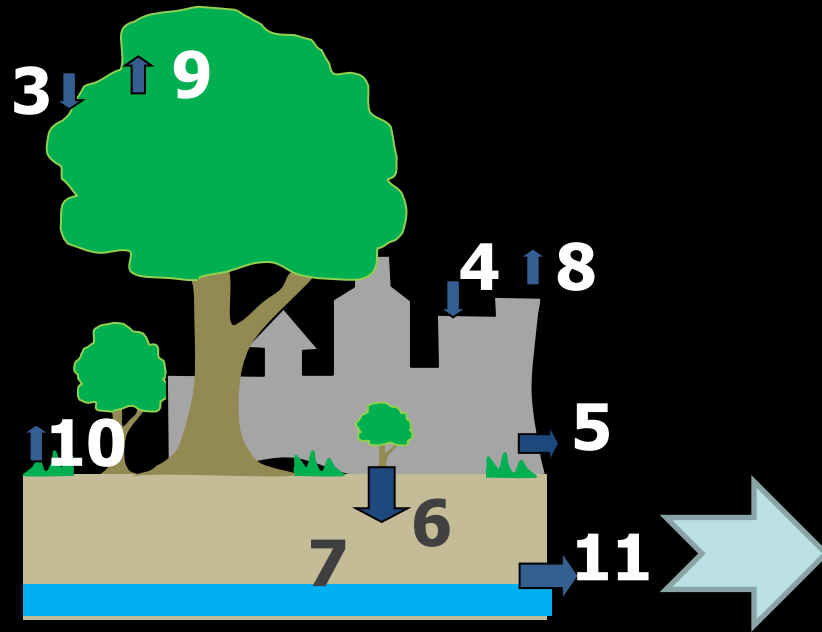
- 1 Inputs
- 2 Spatial Distribution
- 3 Canopy Interception
- 4 Depression Storage
- 5 Surface Runoff
- 6 Infiltration
- 7 Soil Moisture
- 8 Surface Evaporation
- 9 Veg Evaporation
- 10 Evapotranspiration
- 11 Subsurface Flow
- 12 Outputs



1



2



3

9

4

8

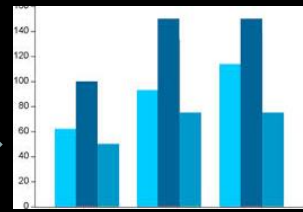
10

5

7

6

11



12

5 Watersheds

❦ Cobbs Creek, Philadelphia, PA

❦ 51.3 km², TC = 32%, IC = 51%

❦ Girtys Run, Pittsburgh, PA

❦ 30.4 km², TC = 48%, IC = 33%

❦ Gwynns Falls, Baltimore, MD

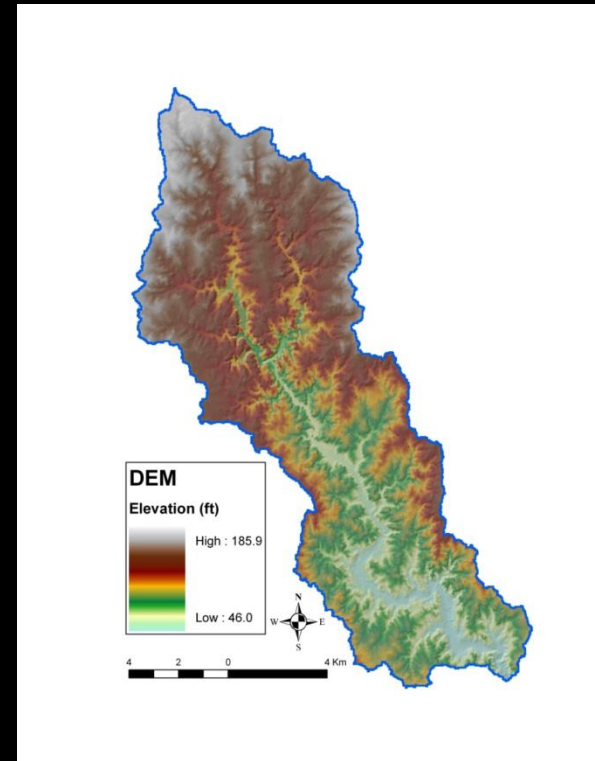
❦ 84.7 km², TC = 27%, IC = 19%

❦ Rock Creek, Washington, DC

❦ 161.7 km², TC = 27%, IC = 18%

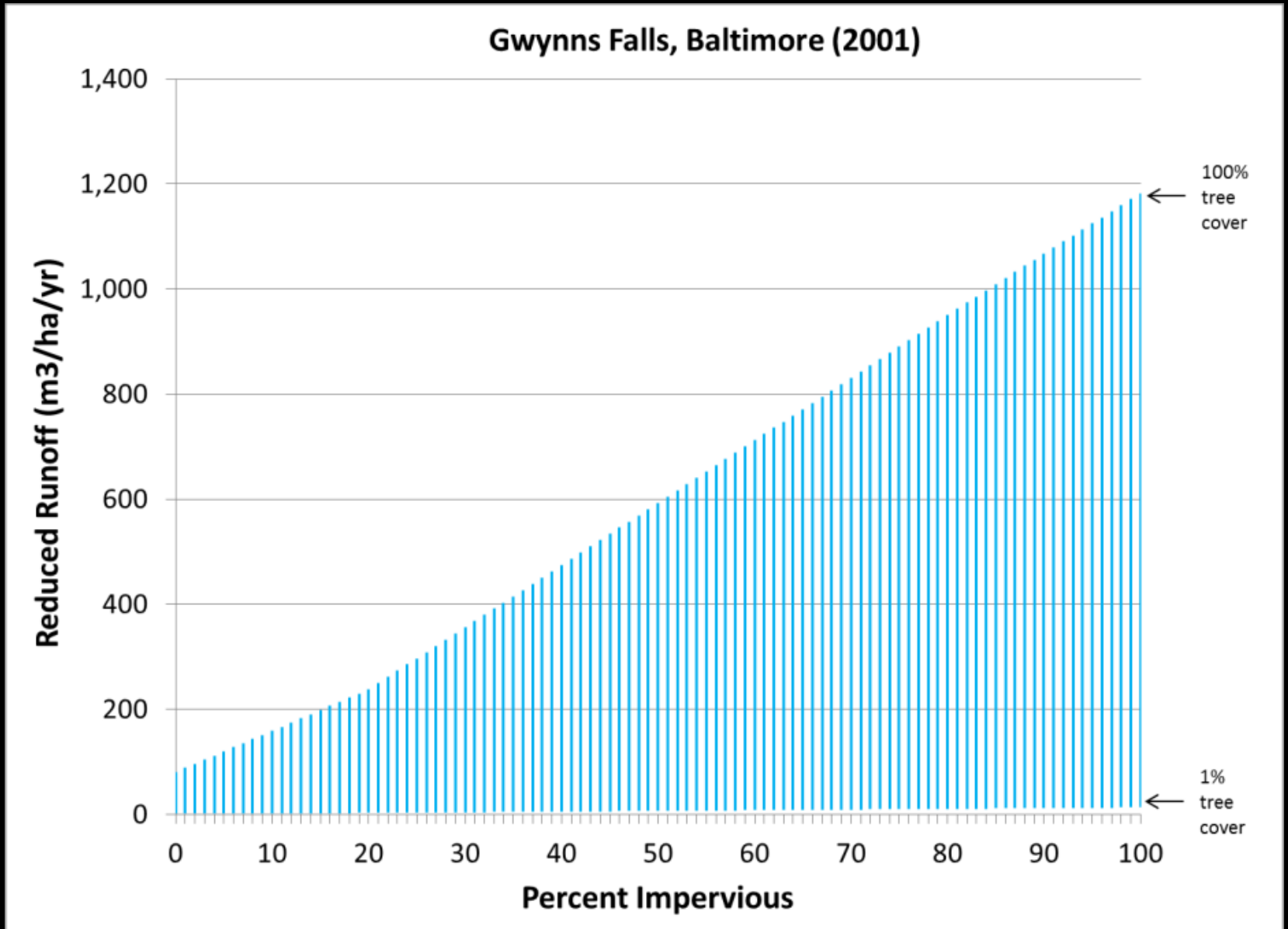
❦ Sandy Creek, Durham, NC

❦ 12.0 km², TC = 57%, IC = 33%

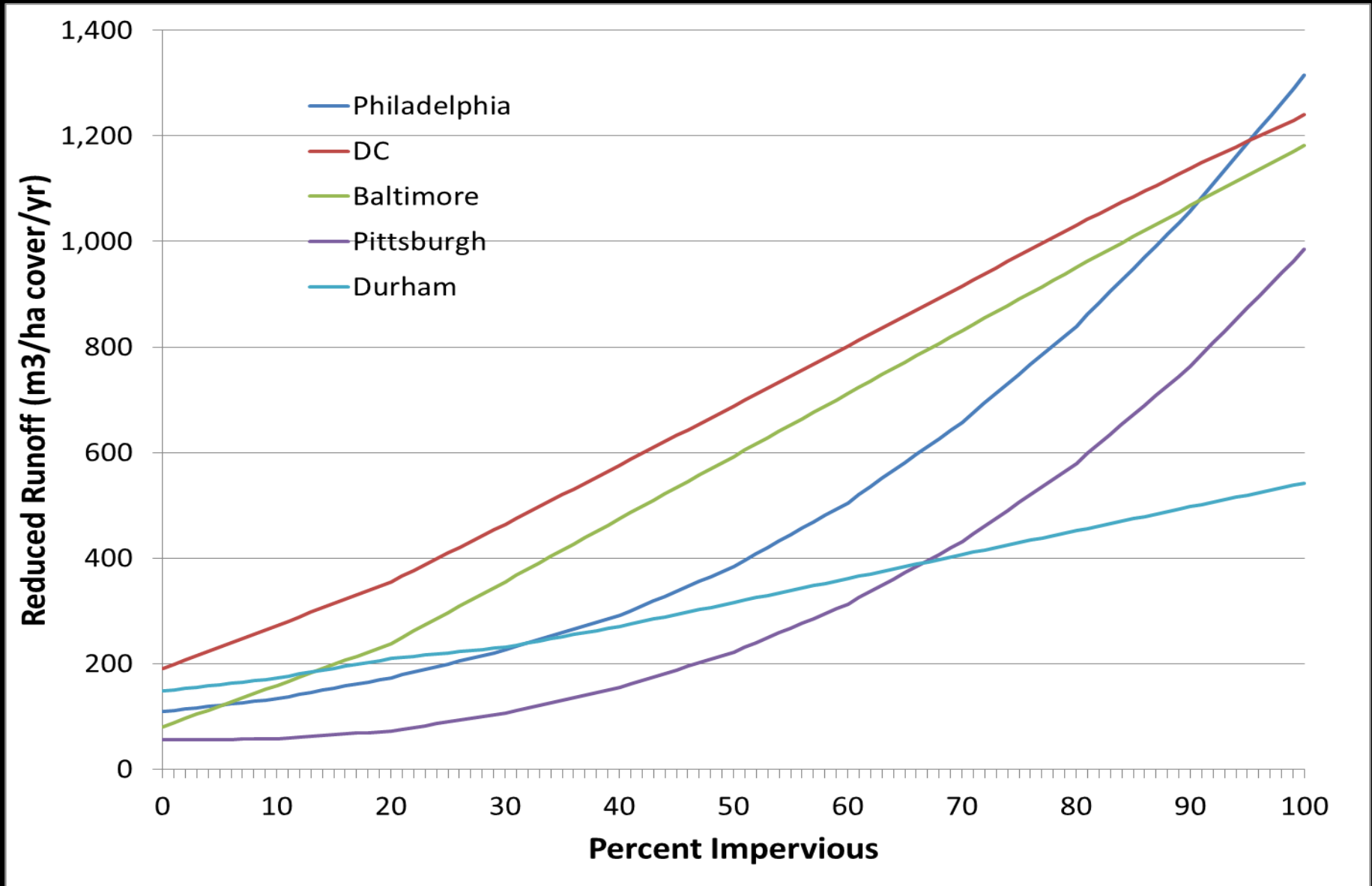


Rock Creek

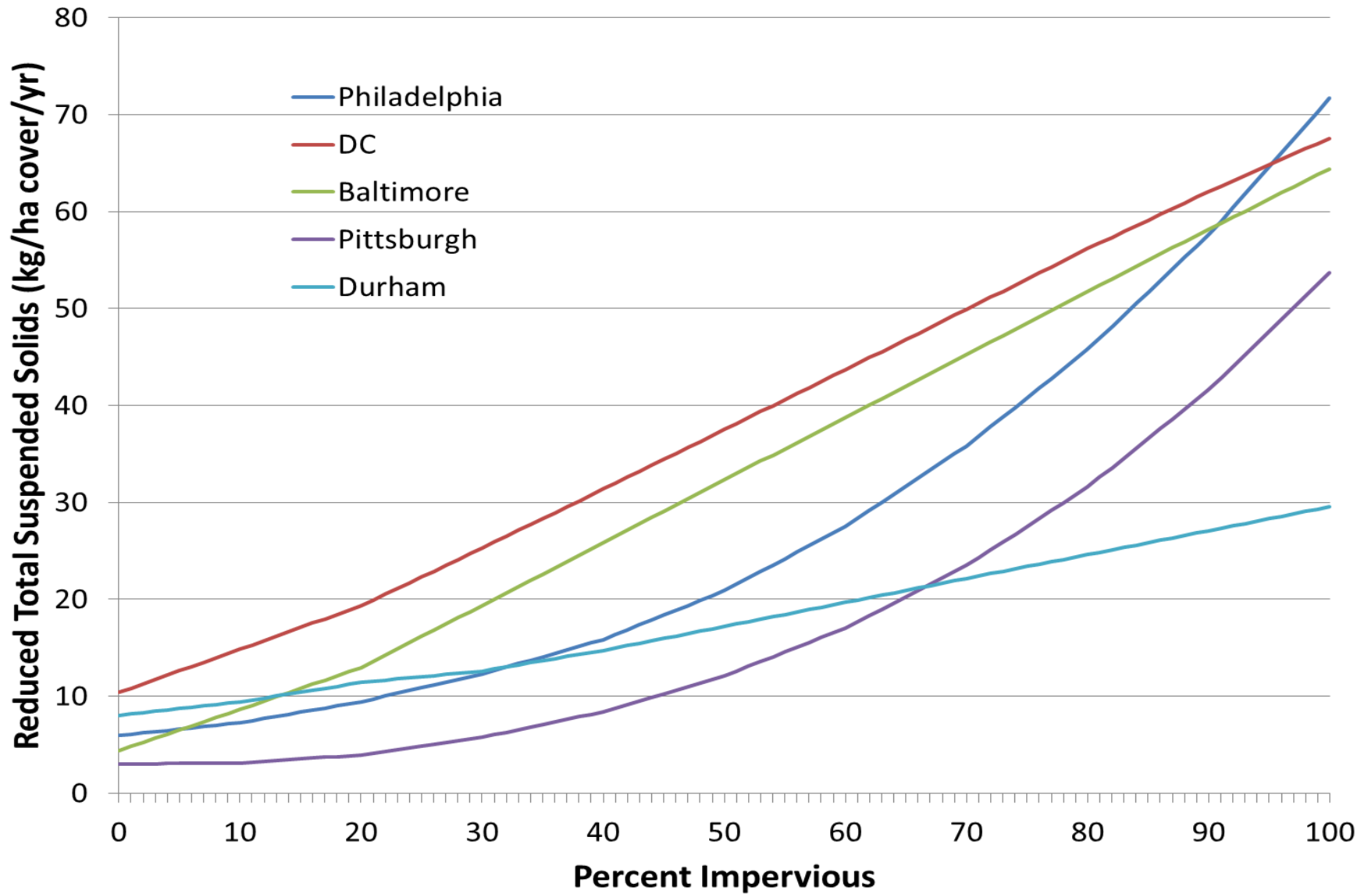
Reduced Runoff



Reduced Runoff per ha of tree cover



Reduced TSP per ha of tree cover





Questions?

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