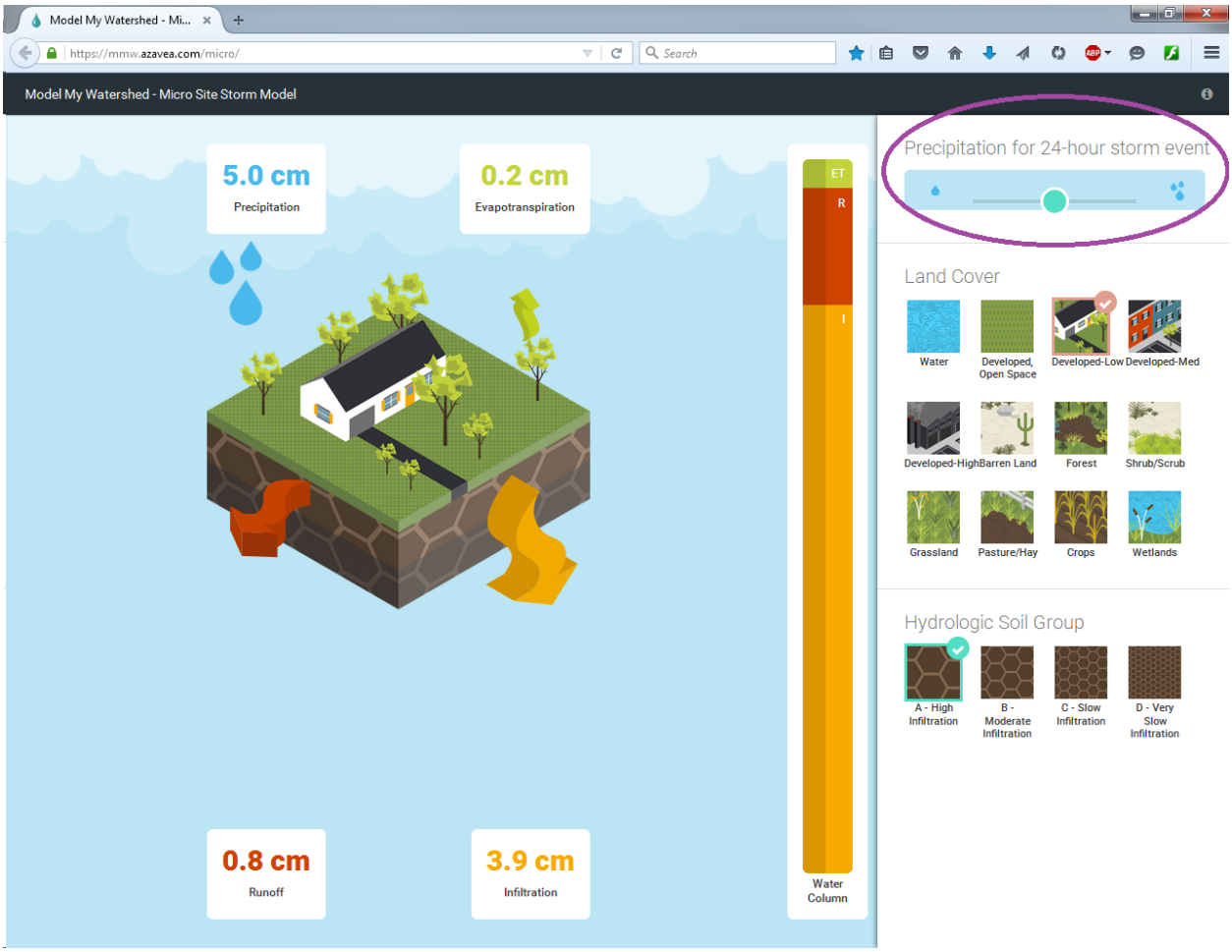
*Presented by Stroud Water Research Center*

# Model My Watershed® Walkthrough: Micro Site Storm Model

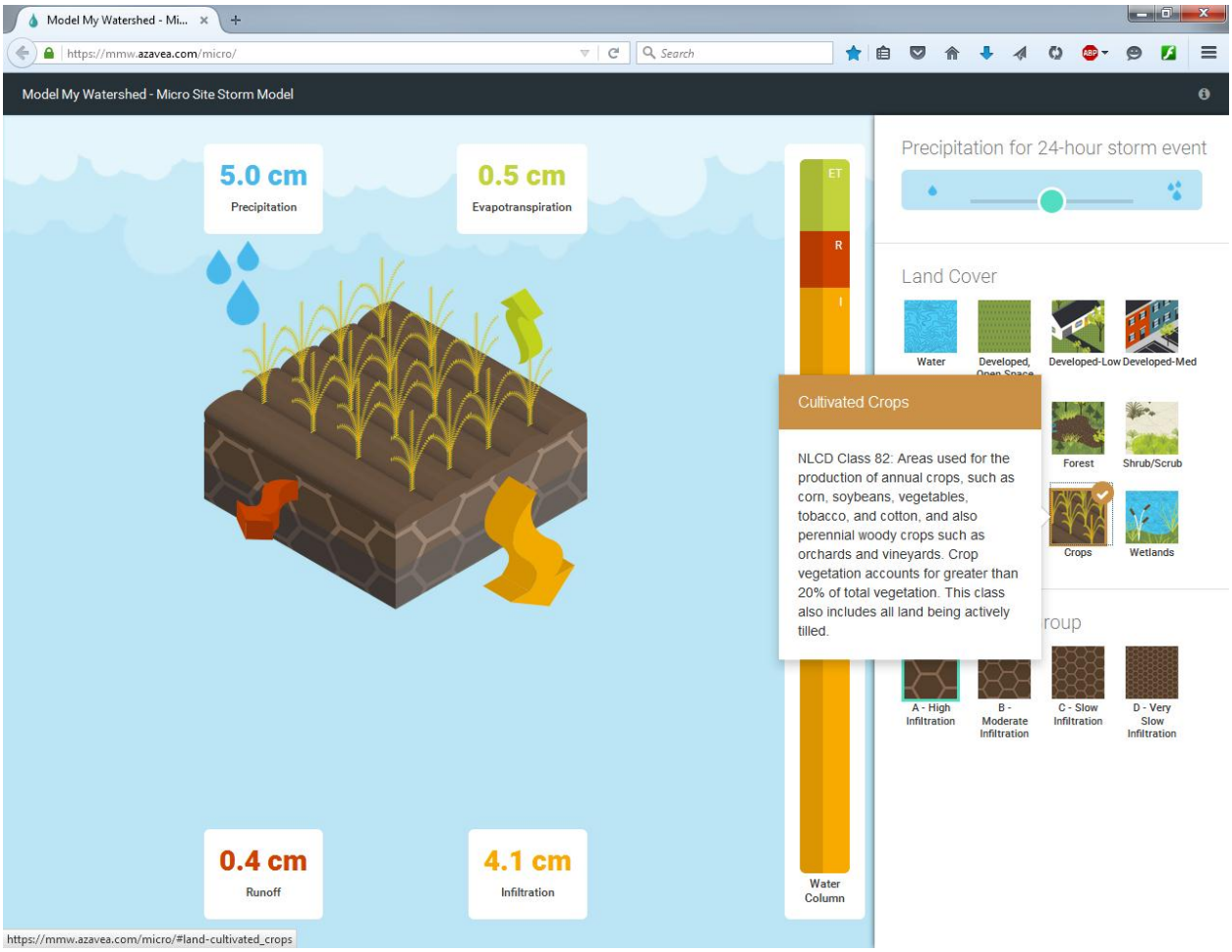
The **Model My Watershed (MMW) Micro Site Storm Model** animates results from applying the TR-55 runoff model developed by the U.S. Department of Agriculture and the Small Storm Hydrology Model for Urban Areas developed by Robert Pitt for a single 24-hour rain storm over a hypothetical small unit of land with a single land cover class and a single hydrologic soil group. The complementary MMW **Site** Storm Model performs the same model calculations for a selected land area within the continental United States by using actual land cover and soil data for the selected land area.

The MMW Micro Site Storm Model is available online through the Innovative Technology in Science Inquiry (ITSI) portal or in any Web browser at https://app.wikiwatershed.org/micro. When you run the full Model My Watershed Storm Model application, the exact same calculations are happening on every single pixel of the map and are being added together to calculate what is happening for a whole map area. Please note that although the look of the graphics of the model may have changed from the time this walkthrough was created, the placement and functionality of the controls will not change.

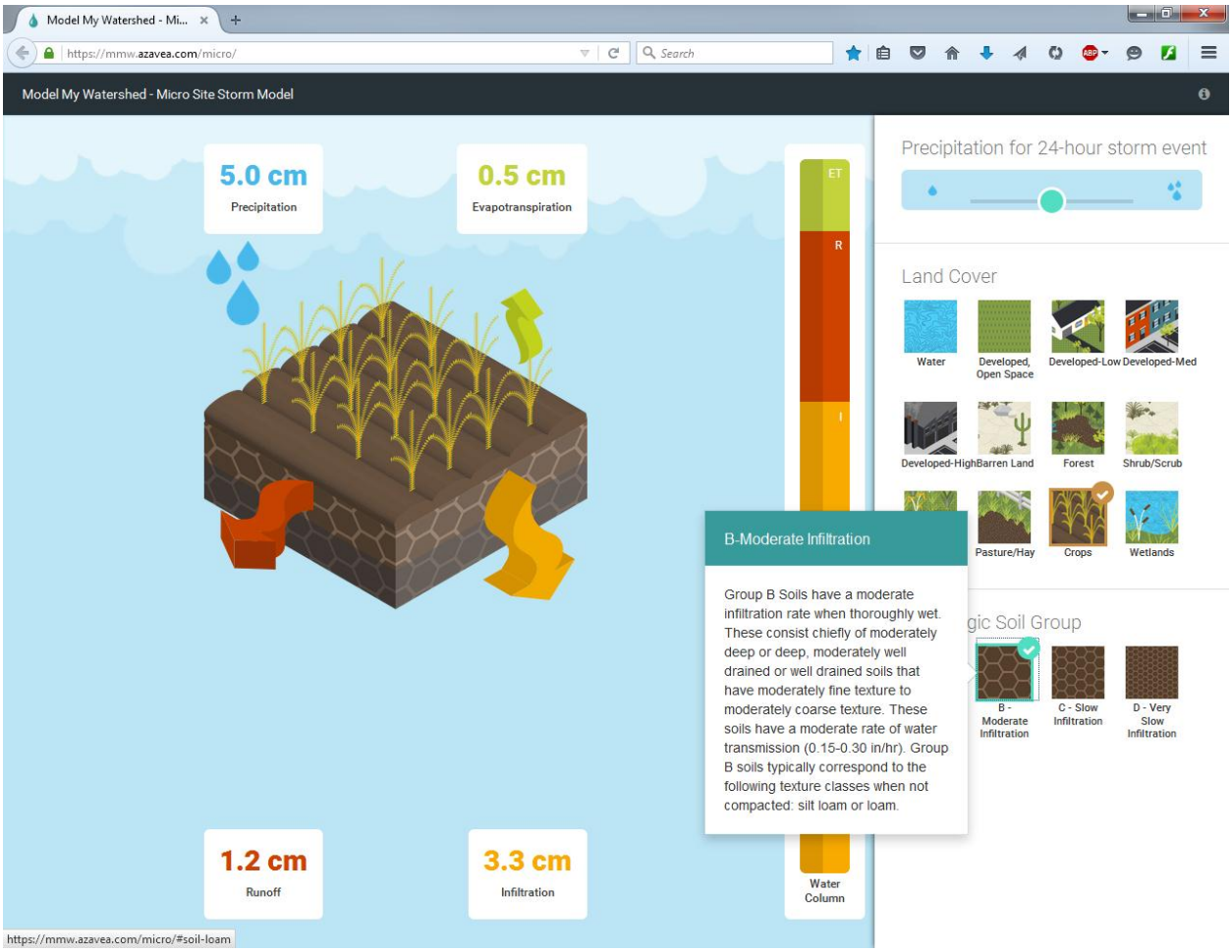
As a "micro" model, there are only a few controls to worry about. At the top right is a slider where you can adjust the level of rainfall within 24 hours from a small rainstorm (equivalent to 1 cm of rain) to a hurricane (21 cm of rain). As you adjust the slider from left to right, the rainfall increases. The amount of rainfall is shown on the box on the upper left.



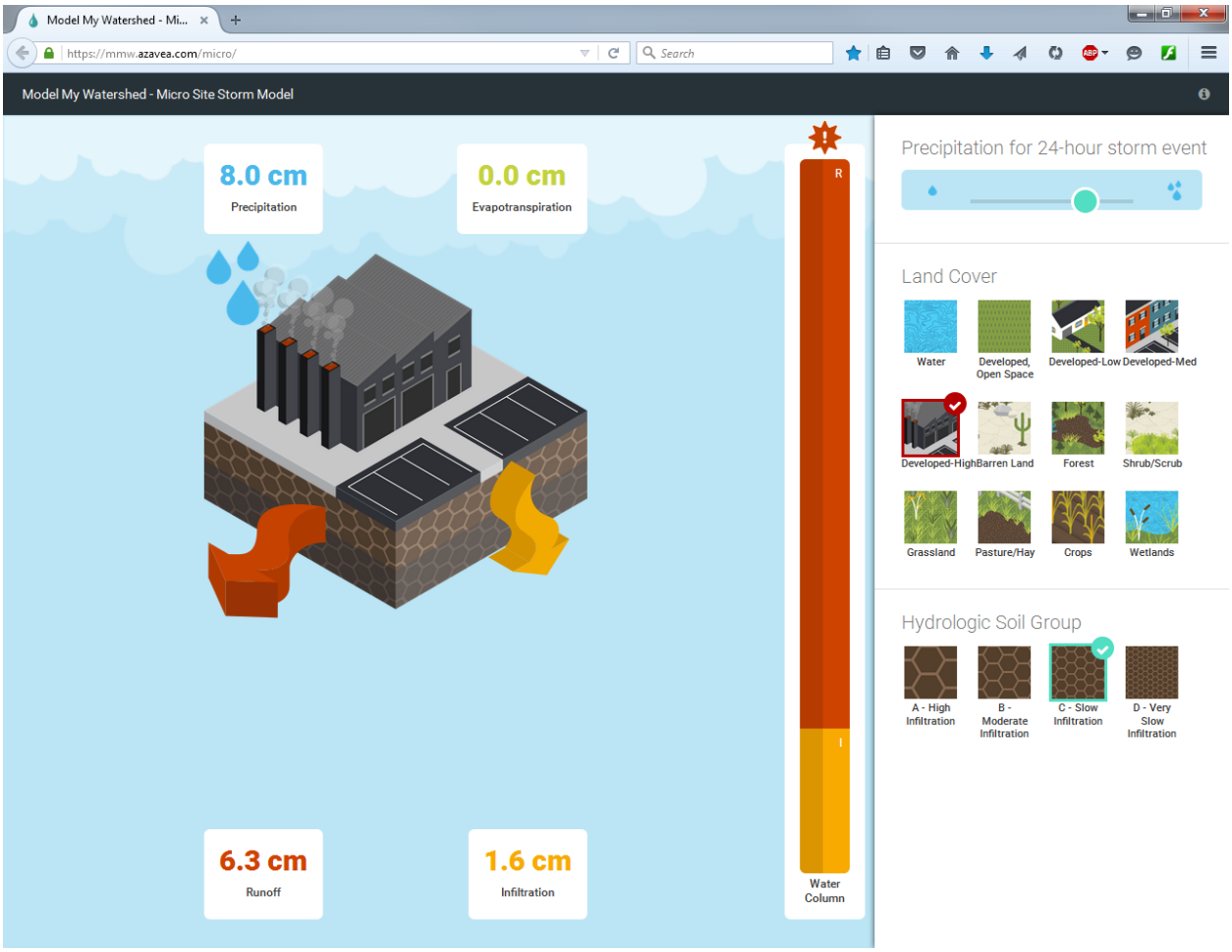

Below the rainfall, you can select the land cover type. These land cover types and the general color scheme are taken directly from the National Land Cover Database made by the U.S. Geological Survey. A help bubble describing each land cover type will appear as you hover over that land type.




On the lower right, you can also select the hydrologic soil group. These four hydrologic soil groups were defined by the U.S. Department of Agriculture in 1955. Soil scientists group all soils in the U.S. into one of these four groups based on how the soils absorb and transmit water. There are also help bubbles here describing the soil types.




As the parameters are selected on the right part of the screen, the infographic on the left changes. It will always show a cube of land with the selected land cover on top and the soil type on the sides. In the upper left corner of the infographic is a box with the amount of rainfall listed. The other four corners of the infographic show the amount of rainfall that will end up as evapotranspiration (ET, water that immediately evaporates or is taken up by plants), runoff (R, water that flows across the land surface), and infiltration (I, water that seeps through the soil). Arrows coming out of the block in the infographic change size as the amount going into each component increases. The size of the arrows is proportional to the amount of rainfall; larger rainfall amounts will always lead to larger amounts of water coming out and thus bigger arrows. To the right of the cube of land is a bar graph showing the distribution of water. This bar graph shows the percent of water going into each category (ET, I, or R). The size of the bar graph is the same for every storm size. If more than 5 cm of rainfall will become runoff, an exclamation point will appear at the top of the bar graph. The colors of the bar graph match the colors of the arrows and the colors of the numbers in the text boxes.




A few more notes about using this model: First, it is possible that the sum of the amount of infiltration, runoff, and evapotranspiration will not add up to exactly the total rainfall. This is due to rounding in the model. This model is also not predicting flooding; it is only predicting the distribution of water between infiltration, runoff, and evapotranspiration. A true flooding model is much more complicated. To predict flooding you need a great deal of detail about the whole landscape and years of historical weather and flooding data. This micro site model is only a simplified way of demonstrating the effects of different land cover and soil types on water distribution.

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