<https://engineering.purdue.edu/mapserve/LTHIA7/documentation/scs.htm>

<https://en.wikipedia.org/wiki/Runoff_curve_number>

SWRRB stands for Simulator for Water resources in rural basins. It has now been expanded for generic areas as well. This model was developed to mathematically simulate various factions of the hydrological cycle. The objective was that, with the help of these simulations, we could accurately quantify the effects of change in various parameters (of the equations) on the hydrological cycle, which would have arisen due to change in management practices.

For achieving this objective, the simulator had to be:

1. Empirical-based, backed with science
2. Computationally capable of quantifying the effects of changes in conditions
3. Computationally efficient
4. Capable for simulating long periods, for use in frequency analysis.

Surface run-off, as we all know refers to the flow away of water on the top-soil, to the drainage, which means that the aquifers (both above ground and underground) are not getting replenished. To model run-off, the technique used is called Curve Number Technique, or more specifically: **Soil Conservation Service (SCS) Curve Number Technique.** The curve number **technique relates runoff to soil type, land use and management practices.** It is also reliable and computationally efficient.

Available daily rainfall is an important parameter in CN technique. Antecedent Rainfall index: We use the already available rainfall index (per day rainfall) (antecedent rainfall index), to estimate the soil moisture conditions.

**Antecedent soil water content definition:** The degree of wetness of the **soil** at the beginning of a period of runoff, usually expressed as the total inch‐depth‐equivalent of **water** stored in the **soil**. Also known as antecedent soil water.

The runoff curve number is based on:

1. the area's hydrologic soil group
2. [land use](https://en.wikipedia.org/wiki/Land_use), treatment
3. hydrologic condition.

References, such as from USDA[[1]](https://en.wikipedia.org/wiki/Runoff_curve_number#cite_note-usda86-1) indicate that, for characteristic land cover descriptions and a known hydrologic soil group of the region, the runoff curve numbers are kind of fixed and can be predetermined.

Curve number, taking into account the Antecedent Soil Moisture condition (AMC), is called AMC II or simply CN2 for Average moisture conditions, similarly we have I for dry and III for wet.