Modified Clark Method

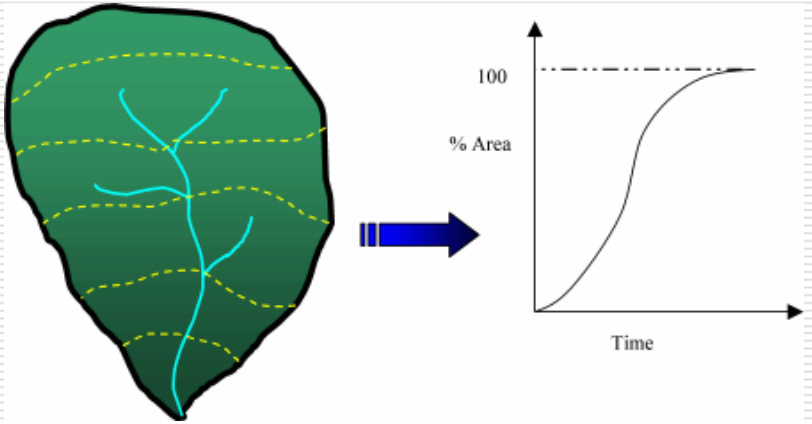
Comparison between Clark, MODClark and GSSHA

MODClark Method in HEC-HMS

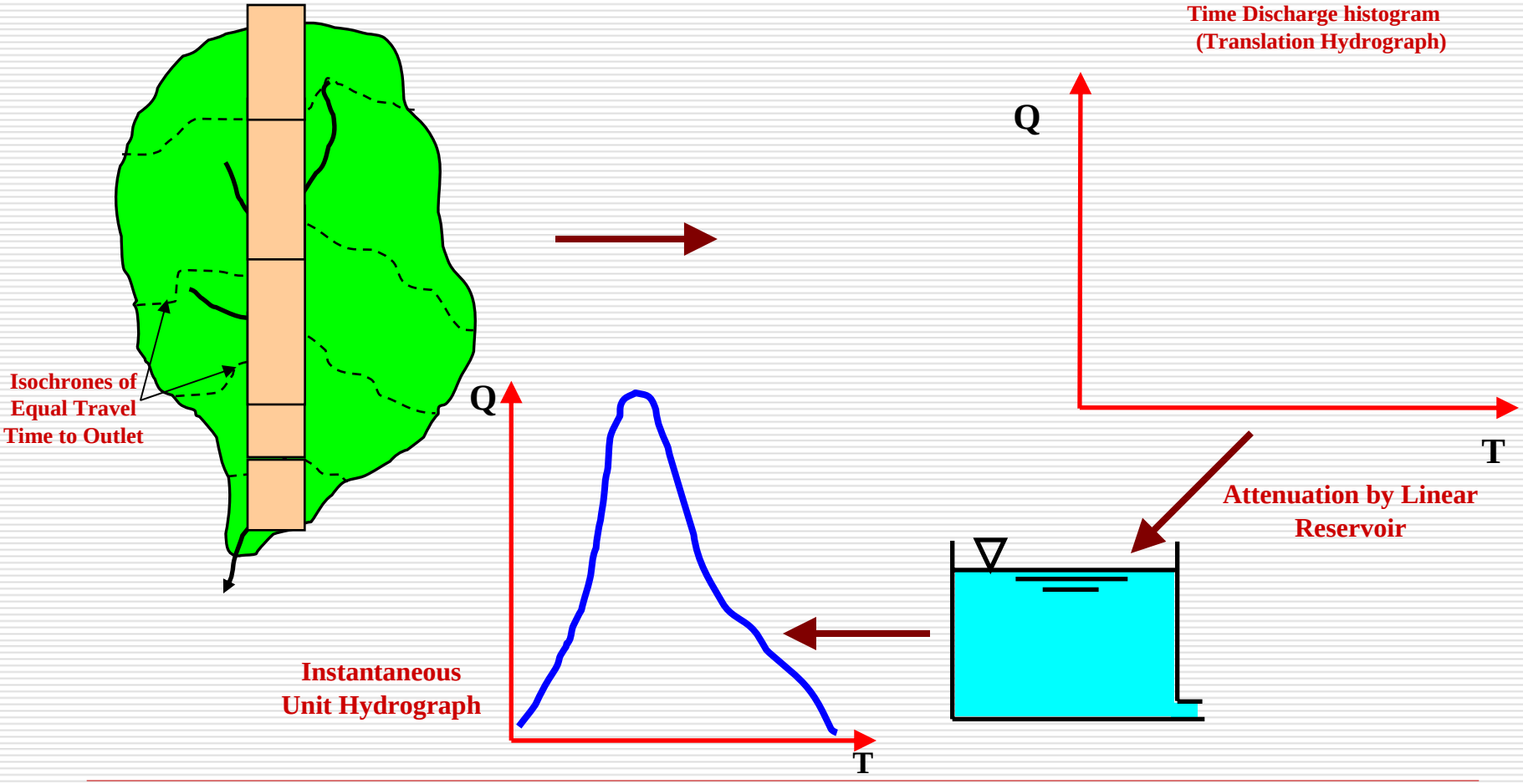
Clark Method

Uses Time-Area method

- Watershed is broken into areas with equal travel times to the outlet
- Time discharge histogram is created
- This histogram is then routed through a linear reservoir that causes attenuation
- Basin shape and travel time are taken into consideration
- Infiltration parameters and Rainfall are lumped through out the watershed



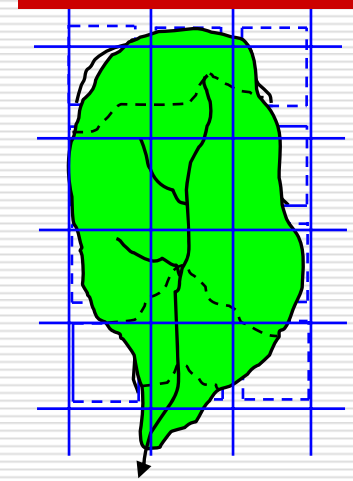
Clark Method



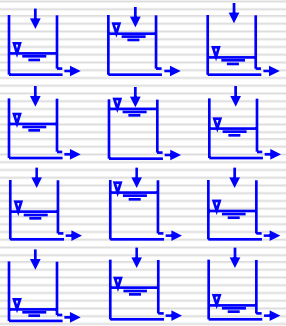
MODClark Method

- The watershed is divided into uniform grids cells and each cell represents a small sub watershed
- Travel time is calculated for each grid cells and scaled to overall watershed time of concentration
- The lagged runoff from each grid cell is routed through the linear reservoir
- The outputs from each linear reservoir are combined to form outflow hydrograph
- It is a linear, quasi-distributed transform method based on the Clark conceptual unit hydrograph
- Need either HEC GeoHMS or WMS or similar tools to create MODClark input grids.

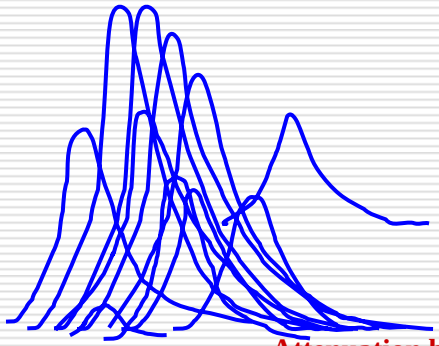
MODClark Method



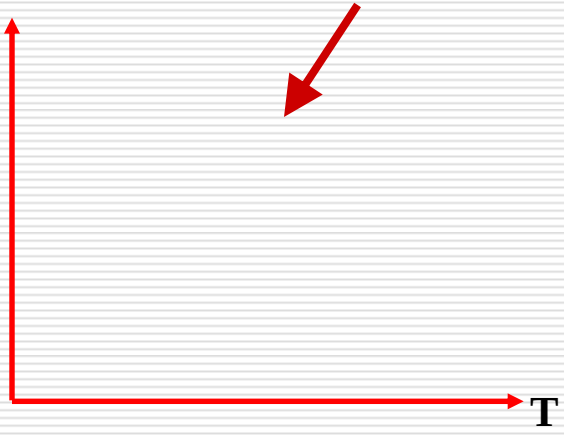
Grid Superposed on the Watershed



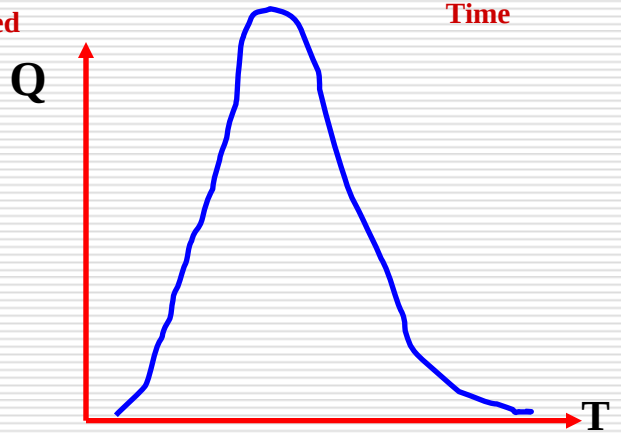
Cell Discharges: Function of Cell Area, Rainfall, Infiltration and Travel Time



Attenuation by Linear Reservoir



Cell Outflow Hydrographs



Basin direct Runoff Hydrograph

GSSHA

- It divides the watershed into uniform grid cells
- Performs all physical processes like loss calculations etc in each cells
- Transforms runoff from one grid cell to the corresponding suitable grid cell using routing technique
- Keeps accumulating flow from all the cells and finally generates outflow hydrograph

Comparing MODClark and GSSHA

???	???
☐ Divides watershed into grids cells ☐ Determines runoff from each cells assuming it to be sub watershed ☐ Routes runoff from each cell through linear reservoir directly to the watershed outlet	☐ Divides watershed into grids cells ☐ Determines runoff from each cells assuming it to be sub watershed ☐ Routes runoff from each cell to adjacent cell using physically based equations considering soil water interaction processes