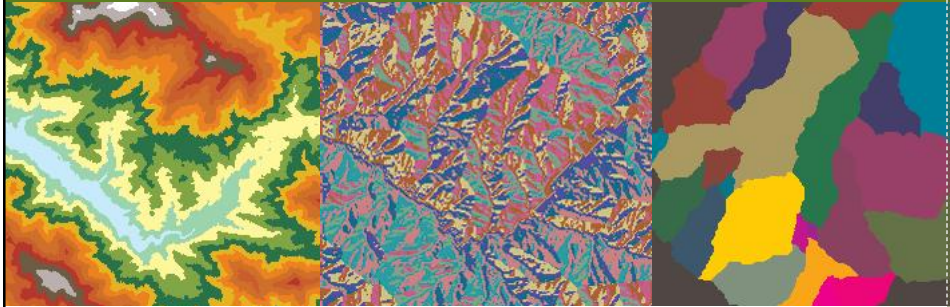
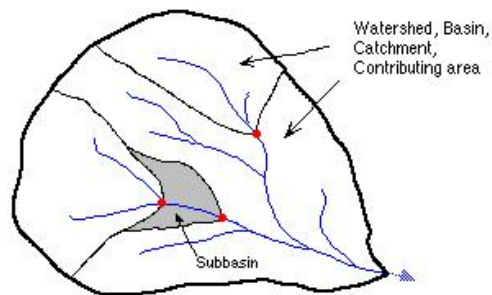






Watershed Delineation



Hydrological Analysis of Terrain Data

Stream links



-  Watershed boundaries, drainage divides
-  Stream network
-  Outlets, pour points
-  Subbasin

Flow Direction

Single vs multi-flow directions

- D4, D8

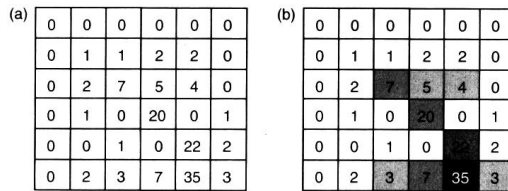
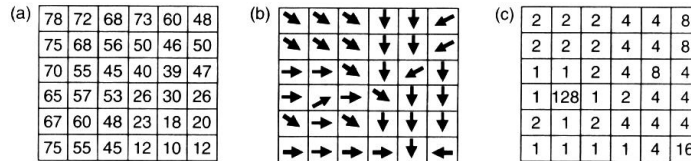
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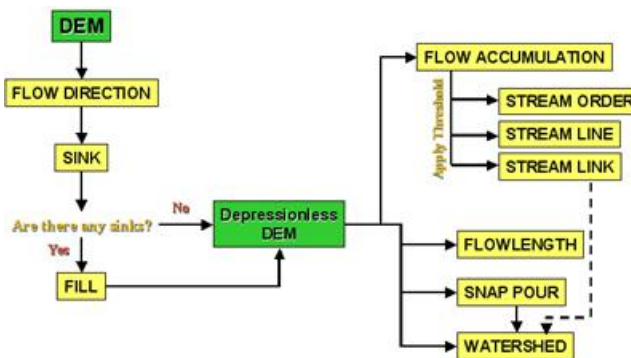
Sinks (depressions, pits, ...)

- All neighboring cells are higher than the sink cell
- Two cells flow into each other
- Sinks have undefined flow directions and are assigned a value that is the sum of their possible directions.
- For example, if the steepest drop and, therefore, flow direction, are the same to both the right (1) and left (16), the value 17 would be assigned as the flow direction for that cell.
- A digital elevation model (DEM) that has been processed to remove all sinks is called a depressionless DEM.

Flow Accumulation



Watershed Delineation Steps



Baker, M. E., Weller, D. E., and Jordan, T. E. 2006.
Comparison of Automated Watershed Delineations: Effects
on Land Cover Areas, Percentages, and Relationships to
Nutrient Discharge. PE&RS 72(2): 159-168.

- Compared manual delineations and ten automated delineations of 420 watersheds in four physiographic provinces of the Chesapeake Basin
 - Appalachian Plateau
 - Appalachian Mountain
 - Piedmont
 - Coastal Plain
- Comparison indexes:
 - Watershed size
 - Land-cover composition (row crop ag)
- Correlated ag% with N concentration

Automated Methods:

- Un-enhanced
- Stream burning
- Normalized excavation
- Surface reconditioning (AGREE)
- Normalized reconditioning.

AGREE Procedures:

1. Stream burning
2. Reconditioning DEM to ensure a smooth path of descent from the surrounding landscape to the stream channel
3. Additional stream burning

AGREE

