More thinking about watershed analysis: depressions

- Depressions in DEM (see p.10, Fig.1.1, Lyon (ed.), 2003)
- - closed area with lower elevation, i.e. sinking basin
- - no flow in and out in local scale
- - actual flow in and out in regional scale
- - mixed with stagnant water and flow
- - unclear direction of flow due to depression/flat area

- Solution:
- - allocation of flow direction according to the regional flow

More thinking about watershed analysis: data system?

- Differences in results (see p.20, Fig.2.7, Lyon (ed.), 2003)
- - depending on the order of details
- - depending on the diff. system (generated vs USGS map based)


- Assessment of differences
- - by visual appearance (no diff. for higher order)
- - by comparison of channel network paramenters
- (see p.21, Table 2.1, Lyon(ed.), 2003, esp. channel slope)
- *p.85, Fig.8.5 for definition, Lyon(ed.), 2003
- - by comparison of channel network composition
- (see p.22, Table 2.2, Lyon(ed.), 2003)

More thinking about watershed analysis: data system?

- Differences: why?
- - ambiguous and subjective definitions of source channels
- - natural variations in source channel characteristics
- - the coarse vertical resolution of the DEM
- - the use of only two parameters to generate the entire network

More thinking about watershed analysis: pit

- - a vertex whose surrounding vertices have higher elevations
- - false pit can occur if the natural topography is too complicated but grid spacing is coarse

- - no flow calculation with pit
- - solution: removal of pit by adding new point (see p.31, Fig.3.8, Lyon(ed.), 2003) or by filling up the pit

# More thinking about watershed analysis: Basin characteristics

- Example of Basinsoft p.39-46, Lyon(ed.), 2003

- Basin-related: Total area, Basin length, Basin perimeter, Basin azimuth, Shape factor etc.

- Channel-related: channel length, total stream length, main channel slope etc.

- Stream-order related: stream density, basin stream order etc.

- Verification of software program: p.47-48, Lyon(ed.), 2003

- (cf) other definitions: p.104, Table 9.1, Lyon(ed.), 2003

- Reading assignments: Chapters 11, 12, 13, 14, 16

More thinking about watershed analysis: drainage pattern?

- Pattern classification

- - naturally occurring types (p.99, Figure 5.2, DeBarry , 2004)

- - automatic retrieval of representative pattern using computer program with DB of classification

More thinking about watershed analysis: Lentic water

- Differences on lentic water: pond, lake, reservoir
- (self-study p.116-118, DeBarry, 2004, esp. Table 6.1)
- - certain ambiguities among the definitions?


- Definitions of lentic zones: applicable to your GIS/DB
- -Marginal zone: the area where land meets the water
- -Littoral zone: the area from the shoreline lakeward, to where rooted plants can no longer be supported
- -Pelagic zone: the zone of open water, from the littoral zone to the center of the lake
- -Profundal zone: the mass of water and sediment occurring near the bottom of the lake below light penetration
- -Benthic zone: the bottom stratum of the lake

More thinking about watershed analysis: pollutants

- Categories and sources: large varieties (see p.174, Table 8.7, DeBarry, 2004)

- - better solution to deal with all the varieties much more effectively? (by choosing specific type with the DB concerning the specific area?)

- - Point vs Non-point discharges (p.175-179, DeBarry, 2004)

More thinking about watershed analysis: application area

- Basic area of application: flooding, sediment deposition etc.

- Other application: urbanization, impact on a need (e.g. recreation) etc.

- Further management object: e.g. management facility or structure before or after stormwater (p.560-584, DeBarry, 2004)