Streams

Reading
- Today: Ch 6
- Next Monday: Ch 6
- Next Wednesday: Ch 7

The Hydrologic Cycle

Importance of Streams

Water Resources

Geomorphic Agents

Flood Hazards

Streams of different sizes

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Streams
Drainage Basins (Watersheds)

Basin Order

1st order
2nd order
3rd order

Drainage divides at Topographic highs

Basins of varying order in WI

WI River
Lake MI

High Order
Lower Order

Dane County Watersheds

From Headwaters to Base Level

Drainage divide
Headwater streams

River
Confluence with larger river

“base level”
From Headwaters to Base Level

Measuring streamflow – water velocity

Discharge: volume of water per time flowing through a channel cross section
= Velocity x Depth x Width (cubic feet/sec)

Measuring streamflow -
Using water velocity to calculate discharge

Direct measurement of discharge

weir
flume
Changes downstream

Mechanisms of Sediment Transport

Competence and Capacity

Stream Erosion and Deposition Animation
Formation of meanders

- Erosion at outside bend
- Deposition of point bar at inside bend
- Position of strongest current (blue arrow) shifts from side to side
- Direction of meander migration

Other important stream features

- Braiding
- Delta
- Alluvial fan

Stream Stage (water level)

- Float
- Outside reference gages
- Intakes

Continuous record of stream stage (Stage Hydrograph)
Relating Stage to Discharge

Streamflow Hydrograph

Annual Peak Discharge

USGS summary data at water.usgs.gov