HYDROLOGY
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The science of water, its properties, distribution and circulation, both on the surface and underground.
HYDROLOGY is:

The most
(a) important
(b) dynamic
(c) elusive
(d) all of the above component of a wetland.
Wetland Hydrology

Wetlands gain and lose water constantly through a variety of pathways.
Water Budgets

\[ \text{Inputs} = \text{Outputs} + \text{Storage} \]

- **Inputs**
  - Precipitation
  - Groundwater discharge
  - Surface inflow
    - Runoff
    - Streams
    - Tides

- **Outputs**
  - Evapotranspiration
  - Groundwater recharge
  - Surface flow

- **Storage**
  - Above Ground
  - Below Ground
Climatic Water Budgets

Twin Cities

Thief River Falls

Sacramento CA

WebWIMP - http://climate.geog.udel.edu/~wimp/
Factors that Influence Hydrology

- Water Inputs and Outputs
- Geomorphic setting (landscape)
- Stratigraphy
- Soil texture and drainage
- Plant cover
Wetlands in Landscapes

Fringes of lakes and oceans
Wetlands in Landscapes

Closed depression with a fluctuating water table:
Wetlands in Landscapes
Closed depression with a perched water table:
Wetlands in Landscapes

Wetlands in depressions
Wetlands in Landscapes

Riverine (floodplain) wetlands
Wetlands in Landscapes

Wetlands on slopes:
Observable Characteristics - examples

- Large wetland, small watershed:
  - groundwater source
- Wetland on slope, not in floodplain:
  - ground water discharge
- Wetland in small depression, with fine-textured, mottled soils:
  - Periodic saturation, intermittent hydrology
Inundation

A condition in which water from any source temporarily or permanently covers a land surface.
Ponding

A condition in which water stands in a closed depression. The water is removed only by percolation, evaporation, or transpiration.
Flooding

The soil surface is temporarily covered with flowing water from any source, such as overflowing streams or rivers, runoff from adjacent slopes, and inflow from high tides.
Saturation

Condition in which all easily drained pores between soil particles are temporarily or permanently filled with water.
Water Table

The upper surface of groundwater, or the level at which water stands in an unlined borehole.
Capillary fringe

A zone immediately above the water table in which water is drawn upward by capillary action.
For field assessment and hydrology field indicators, we are concerned with the level of water in an unlined borehole (water table) without regard to capillary fringe. The technical standard of 12” accounts for capillary action. **Do not try to assess capillary fringe in the field.**