

## Elements of the Local Water Budget

**P** PRECIPITATION This is the rain (and snow) that falls in a particular area in a month

**Ep** POTENTIAL EVAPOTRANSPIRATION Think of this as the energy available to evaporate water. This energy will “look” for water from P and from st

**P-Ep** Precipitation minus the potential evapotranspiration.

When  $P-Ep > 0$  it means that there is water left over after the Ep does its work..

2 things can happen to that water:  
It can soak into the ground

*or*

It can run off into streams

When  $P-Ep < 0$ , it means that there is still energy left over after all the P is evaporated.

That energy will “look” for water in the soil.

**$\Delta st$**  The change in soil storage of water.

If water soaks into the soil,  $\Delta st$  is (+) and we say the soil is being RECHARGED

If the Ep is evaporating water from the soil,  $\Delta st$  is (-) and we call that USAGE

**st** STORAGE - The amount of water stored in soil

st increases during RECHARGE, and decreases during USAGE

**Ea** ACTUAL EVAPOTRANSPIRATION -The actual amount of water evaporated.

Ea can be big if there is a lot of P and plenty of Ep to evaporate it.

Ea is small if *either* P or Ep is small.

**D** DEFICIT Any energy that never “found” water.

If there is any Ep left over after P is evaporated and st is empty, we call that situation a DEFICIT

**S** SURPLUS Any water that runs off into streams is considered SURPLUS water.

# Water Budget Questions

NAME \_\_\_\_\_

1. During what season in New York will the  $E_p$  be the greatest? \_\_\_\_\_

2. If soil storage is full, and  $P > E_p$ , what situation exists \_\_\_\_\_

3. If it is empty, and  $P > E_p$ , what situation exists? \_\_\_\_\_

4. If  $P < E_p$ , and soil storage is empty, what situation exists? \_\_\_\_\_

5. Under what conditions will a water SURPLUS exist?

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\_\_\_\_\_

6. Under what conditions will USAGE occur? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7. Under what conditions is soil storage (-  
) \_\_\_\_\_

\_\_\_\_\_

8. During August in New York,  $P - E_p$  is usually  $< 0$  and soil storage is empty. What condition exists?

9. In January and February in New York, is  $E_p$  going to be HIGH or LOW? \_\_\_\_\_

Explain your answer

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10. From your experience, is there a reasonable amount of P in New York during the winter?\_\_\_\_\_

11. Consider your answers to questions 8 - 10 above, and explain why the reservoir system in New York is necessary and how it works.

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