

## ***Activity name: Evapotranspiration In Florida's Water Budget***

This activity is meant to provide a real-world application of the ATEEC Recommended Core Curriculum's math, science, technical, communications, or critical thinking knowledge and skill concepts, which have been identified by the ATEEC Fellows as necessary preparation for environmental technology occupations.

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*Appropriate for which course(s)?* Environmental Science, Biology

*Concept/skill learned (i.e. from K/S Tables):* Perform laboratory and field equipment (glassware, balances, meters, electrodes, etc.).

*Approximate time to complete activity:* 3 class periods

*Source of idea or activity (for published source, please include author, title, publisher, date):* HBJ Biology, Ancillary - Florida Biology 1994?

*Materials/resources needed (equipment, print media, electronic media, videos, supplies, etc.):*

- Triple beam balance - 1 per 4 students
- Plastic newspaper bag - 1 per student
- Permanent marker
- Twist ties or rubber bands

*Description of activity:*

**Purpose:** To determine the amount of evapotranspiration in the water budget.

**Procedure:**

**Pre Lab:** Explain water cycle, general overview. Brainstorm through class discussion ways that water is added to water cycle.

**Step 1:** Students in groups of 4 determine the mass of newspaper bags numbered 1-4.

**Step 2:** Record mass of empty bags on data table.

**Step 3:** Locate two different tree species within walking distance.

Step 4: Have students place Bag 1 on a tree limb, enclosing as many leaves as possible, without pulling leaves off of tree limb. Leave Bag 1 open. Place Bag 2 on same tree and enclose tree limb in a similar fashion. Tie end of bag closed with twist tie. Estimate and record % of tree covered by each bag. Repeat Step 4 on another species of tree with bag labeled 3 & 4.

Step 5: Carefully remove bags from each tree limb without losing moisture collected (collection time may vary - 1 class period to 24 hours).

Step 6: Determine mass of each bag and moisture. Subtract mass of bag from total mass of bag and water to determine mass of water collected.

Step 7: Estimate mass of total water given off by tree from % estimates, from Step 4.

Data Table:

Bag #	Mass of empty bag	Tree species placed on	Mass of bag and transpiration	Time of collection	% of tree covered
1	_____	_____	_____	_____	_____
2	_____	_____	_____	_____	_____
3	_____	_____	_____	_____	_____
4	_____	_____	_____	_____	_____

Example Bag 1:

- Mass bag start = 14g.
- Tree species = wax mrytle
- Mass bag after = 25g
- Time collection = 24 hours
- % of tree covered = 1%

From this data calculate:

1. Transpiration
2. Evaporation -
  - Difference in moisture collected in bag 1 (open) and bag 2 (closed)
3. Total estimate of tree transpiration in 24 hour period.
4. Estimate amount of moisture given off from a forest, estimate number of trees in.

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