



COMMUNITY *ACTION* NETWORK

WATER:
The Cycle of Life

*Water Resources and the Future of Orange
County*

March 9, 2008



Panel Members:

- Dr. Charles Daniel III, consulting hydrogeologist
- Pat Davis, Utility Manager, OWASA
- Tom Konsler, Environmental Health Director, Orange Co. Health Dept.

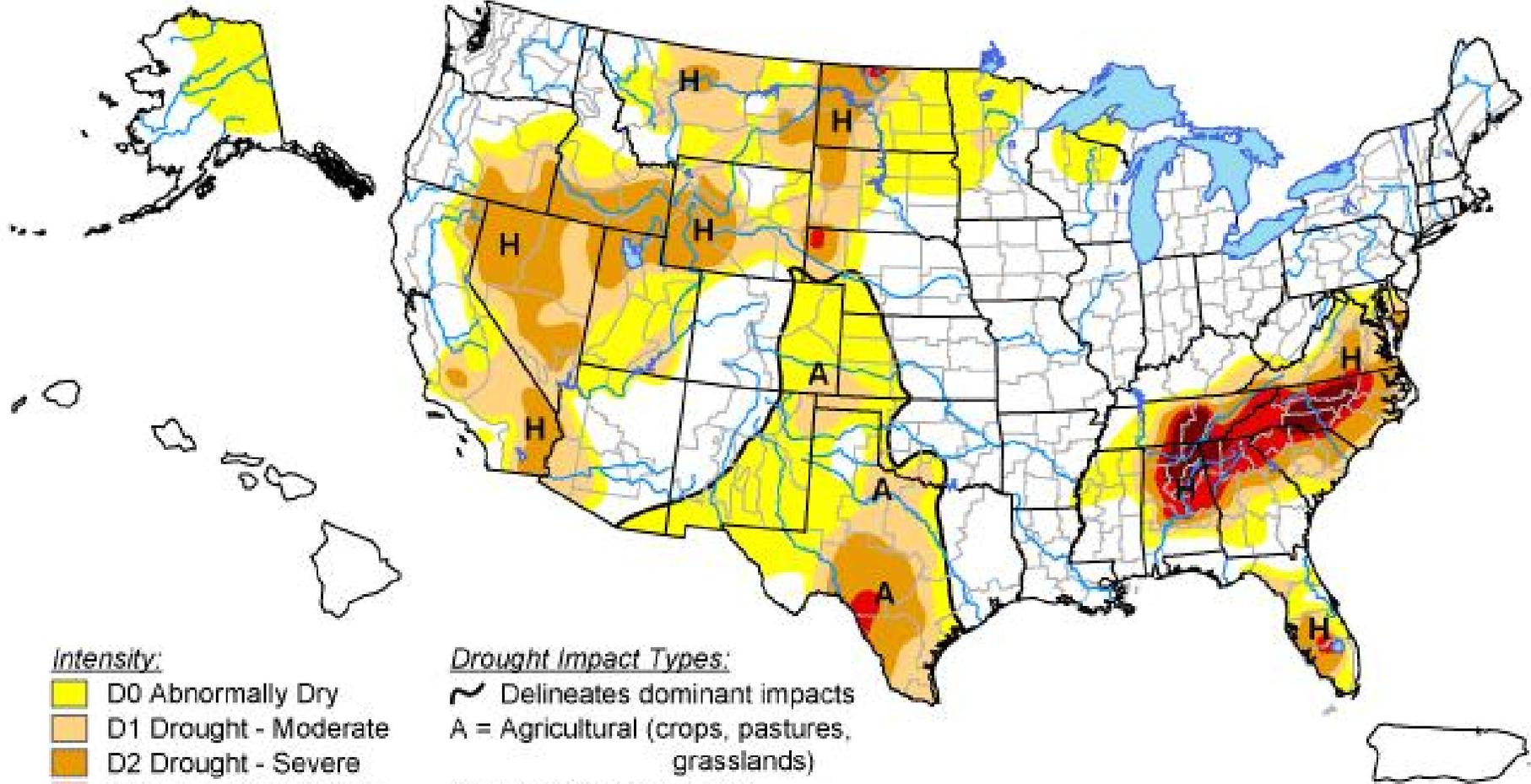
Are We Running Out of Water?

- The drought of 2007-2008 is one of the most severe since records have been kept.
- About 5.45 million people in North Carolina, or 80 percent of those served by water systems tracked by the state, are subject to either mandatory or voluntary water use restrictions.

U.S. Drought Monitor

February 26, 2008

Valid 7 a.m. EST



Intensity:

-  D0 Abnormally Dry
-  D1 Drought - Moderate
-  D2 Drought - Severe
-  D3 Drought - Extreme
-  D4 Drought - Exceptional

Drought Impact Types:

-  Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



Released Thursday, February 28, 2008
Author: Brad Rippey, U.S. Department of Agriculture

U.S. Drought Monitor

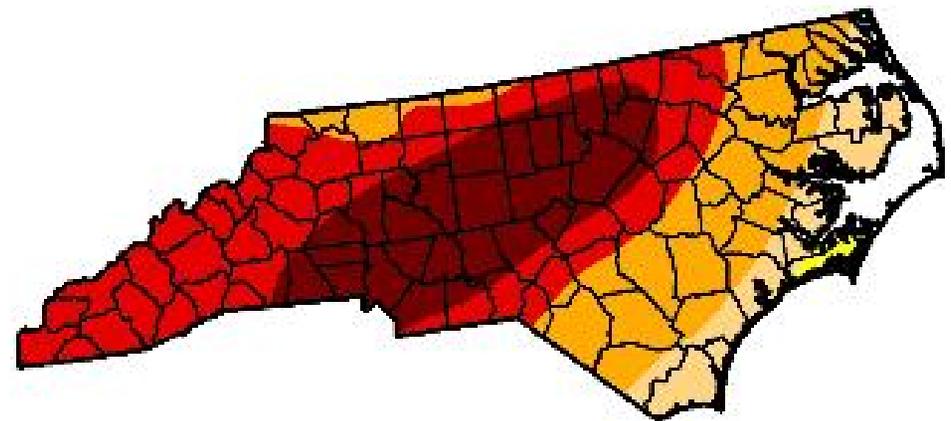
North Carolina

February 26, 2008

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.0	100.0	98.8	87.7	61.3	26.3
Last Week (02/19/2008 map)	0.0	100.0	100.0	100.0	78.6	46.2
3 Months Ago (12/04/2007 map)	0.0	100.0	100.0	99.5	81.9	56.2
Start of Calendar Year (01/01/2008 map)	0.0	100.0	100.0	100.0	83.7	51.3
Start of Water Year (10/02/2007 map)	0.0	100.0	100.0	92.8	79.4	37.7
One Year Ago (02/27/2007 map)	83.8	16.2	3.5	0.0	0.0	0.0



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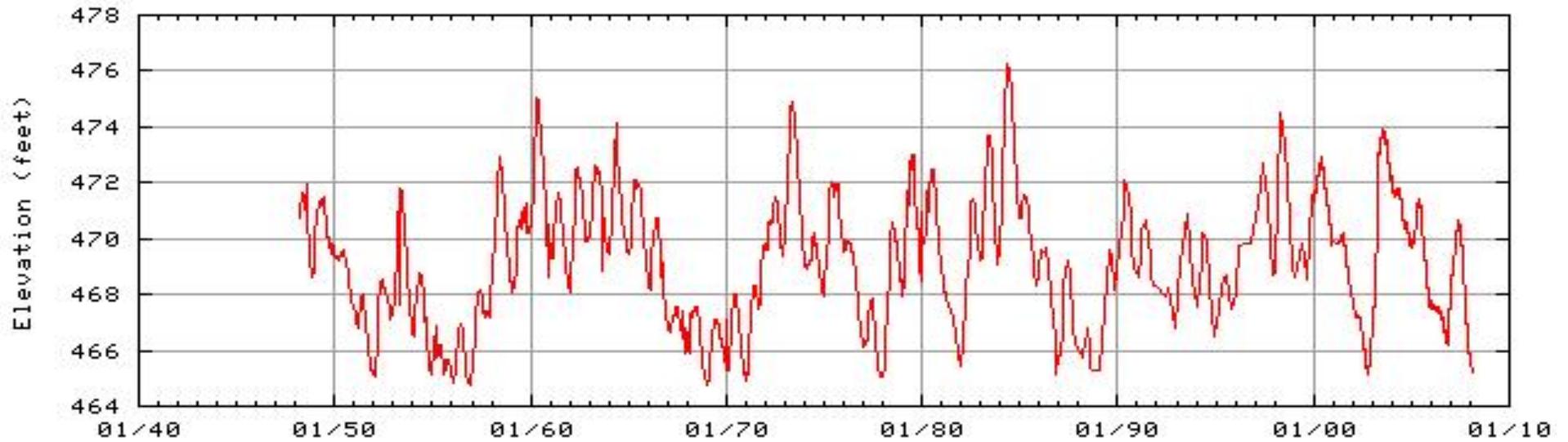


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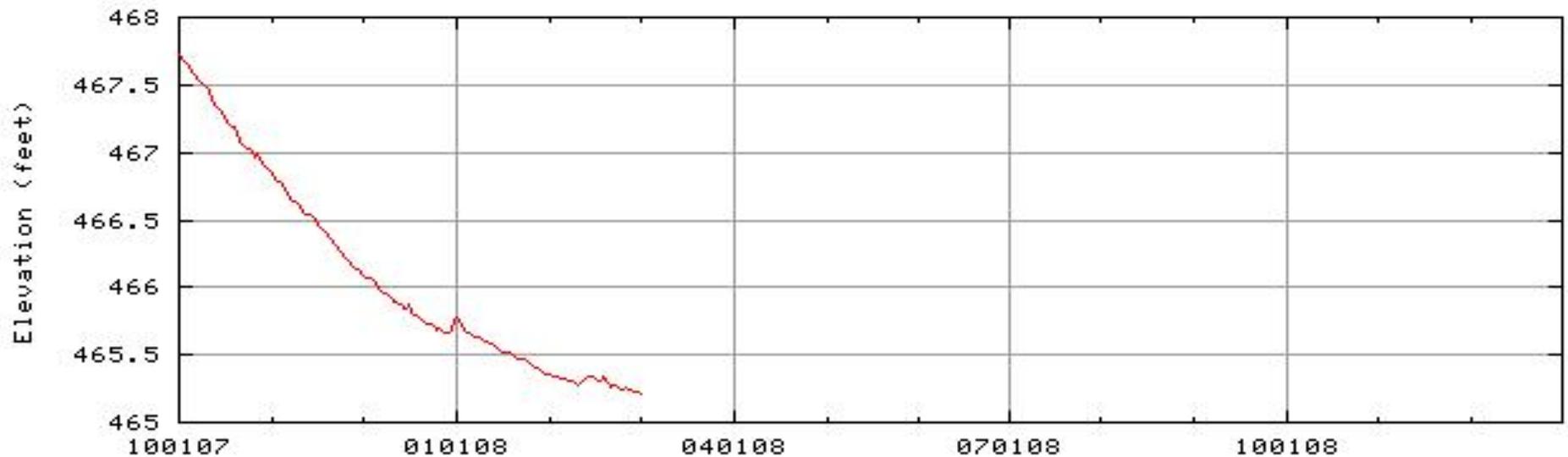
Author: Brad Rippey, U.S. Department of Agriculture

Groundwater Levels in Chapel Hill, NC

NC-126 water levels



water levels from 10-01-2007 to 12-31-2008



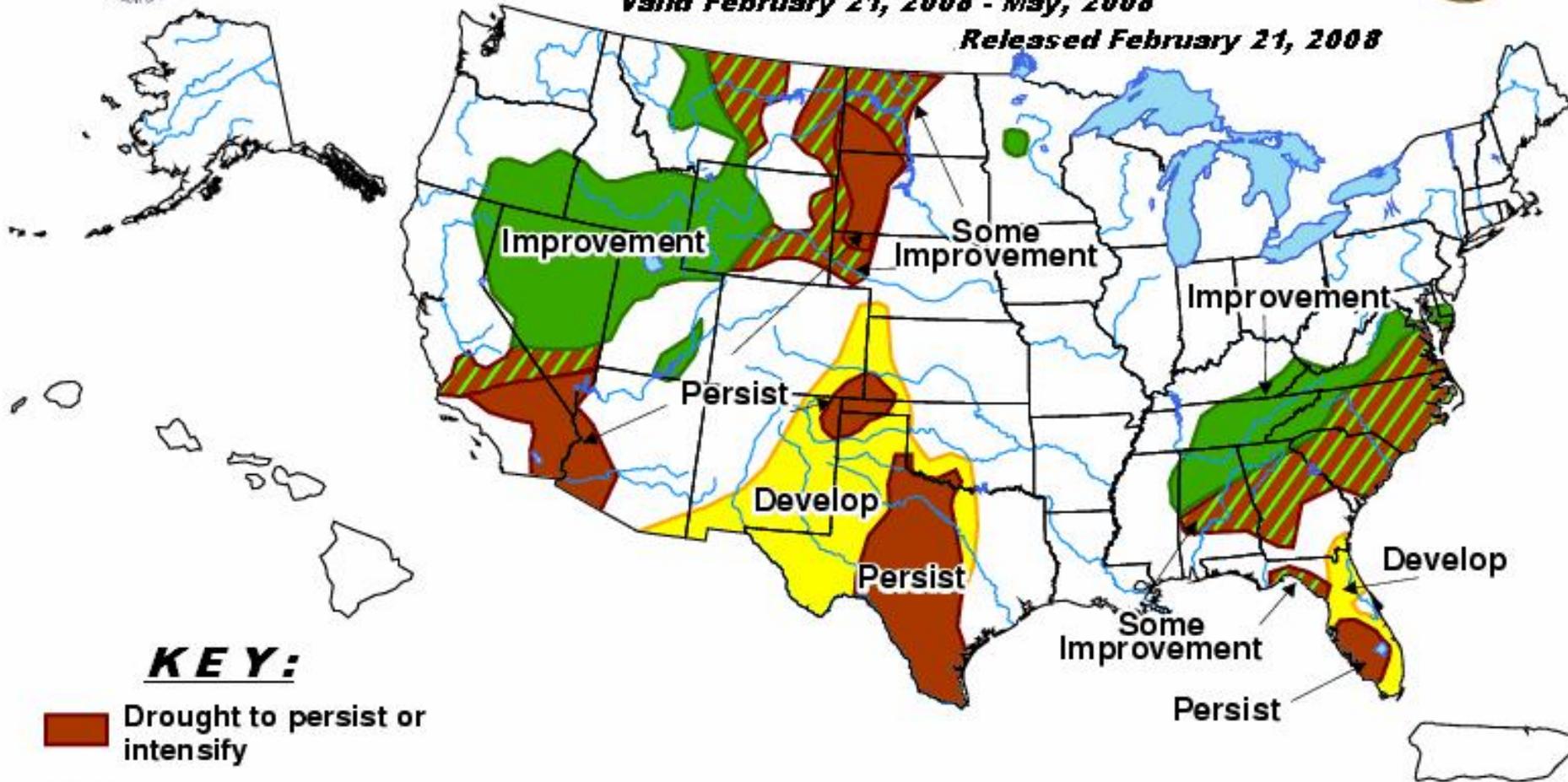


U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid February 21, 2008 - May, 2008

Released February 21, 2008

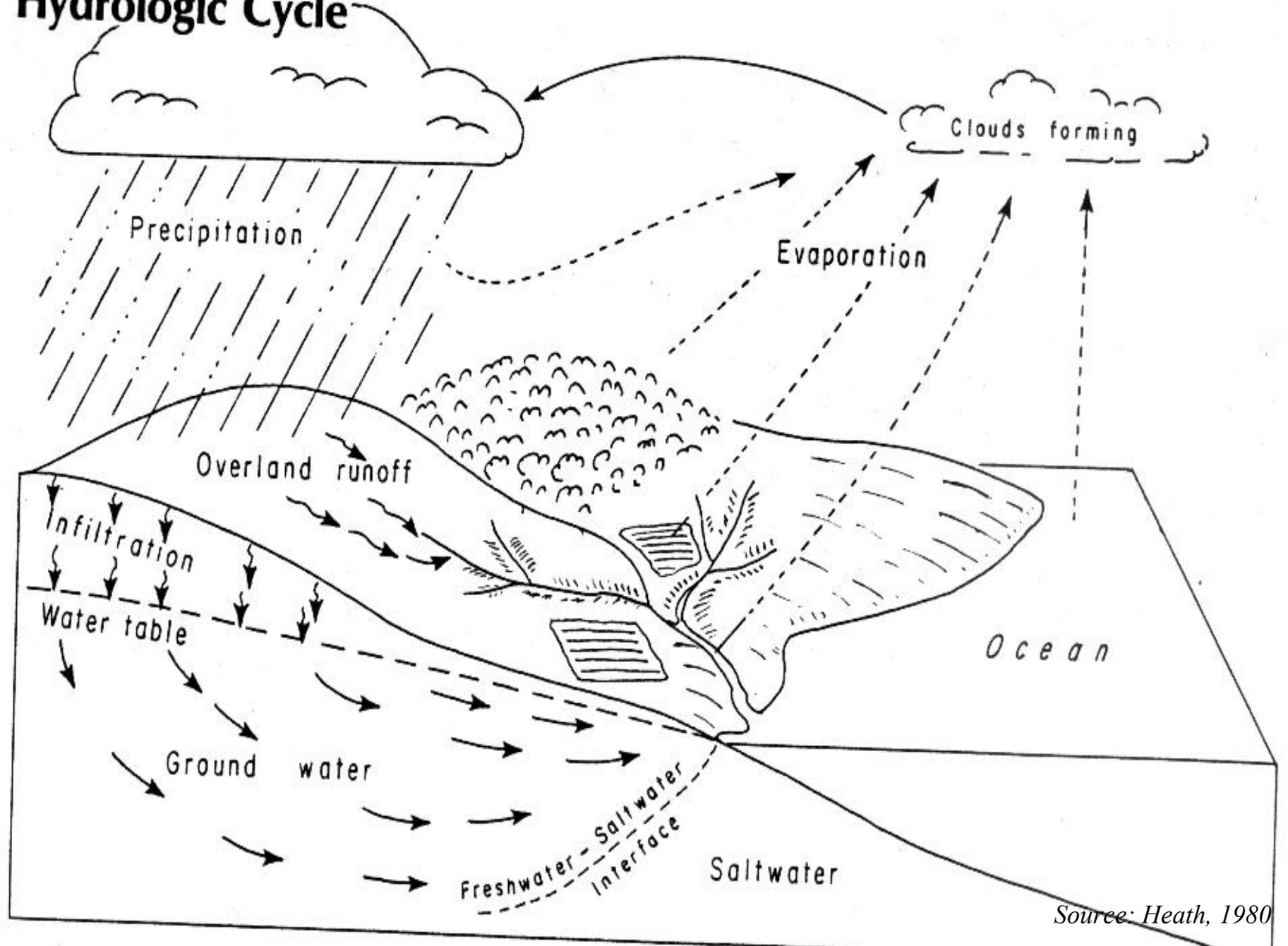


KEY:

-  Drought to persist or intensify
-  Drought ongoing, some improvement
-  Drought likely to improve, impacts ease
-  Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

Hydrologic Cycle



Source: Heath, 1980

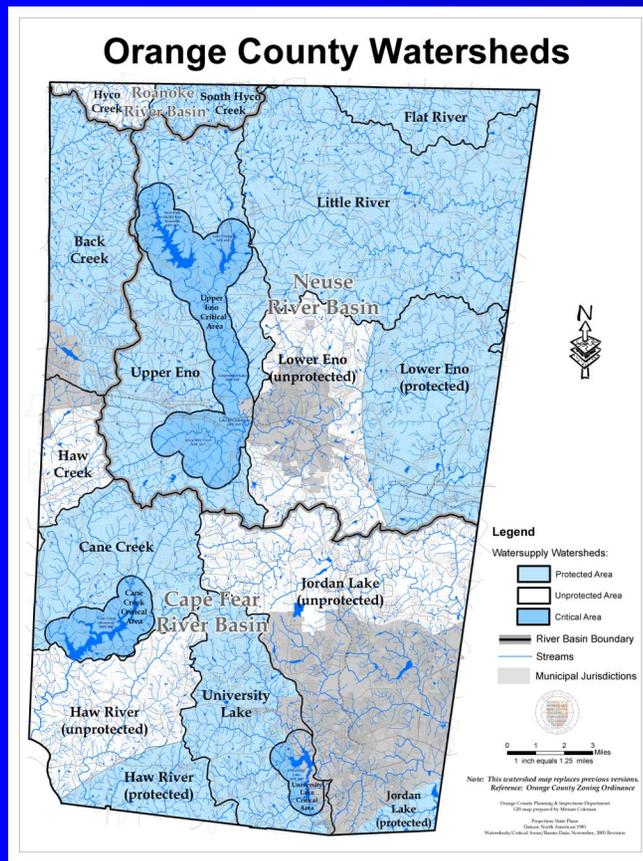
Orange County Hydrology

- 1” of rain over 1 acre = 27,152 gallons.
- Orange Co. is 256,965 acres.
- Therefore, 1” rain over Orange Co = 6,977,113,680 gallons.
- Average yearly rainfall = 46”.
- Therefore, Orange Co. receives over 300 BILLION gallons of water a year during an “average” year.

Orange County Hydrology

- 2006 Population of Orange Co. was about 120,000 people.
- This translates to an approximate yearly water demand of a little over 4 billion gallons/year, some of which recharges groundwater (septic systems).
- Orange Co. receives approximately 300 billion gallons/year from precipitation alone in an average year.
- There is approximately 3 million gallons of water stored in saprolite under an acre of land with an average saturated thickness of 20 feet above the bedrock

Watershed Protection



- Headwaters County
- We have 10 water supply watersheds
- Three technical studies have informed
- Non-structural philosophy – protect at the source

Watershed Protection History

- **1981 – First County in NC**
- **1989 – University Lake Watershed**
- **1990 – Little River/Lake Michie Watersheds**
- **1992 – State Watershed Rules (Orange County chose to exceed minimums)**

Water Resources Projects

- 1996 – Ground Water Recharge Report
- 1999 – Groundwater Contamination Susceptibility Map report
- 2001 – Ground Water Investigation Report

Are We Running Out of Water?

- **NO!!**
- There is plenty of good quality fresh water available, we just have to make sure that we manage the resource properly.
- Slow it down!!!