

Hydrologic Indicators

Courtney M. Stevens

Regulatory Specialist

Coastal Branch

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US Army Corps of Engineers
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HYDROLOGY

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required):
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D6) (LRR T, U)
Field Observations:		
Surface Water Present?	Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		





Some Factors that Influence the Wetness of a Site

- Climate
- Landscape / geomorphic setting
- Stratigraphy
- Soil texture and drainage
- Plant cover
- Normal rainfall



Wetland Hydrology Indicators



A1 – Surface water

A2 – High water table



Water table is
12 inches or
less from the
surface



Wetland Hydrology Indicators

A3 – Saturation

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



- Indicated by water glistening on ped faces and interiors within 12 inches of the surface



Wetland Hydrology Indicators

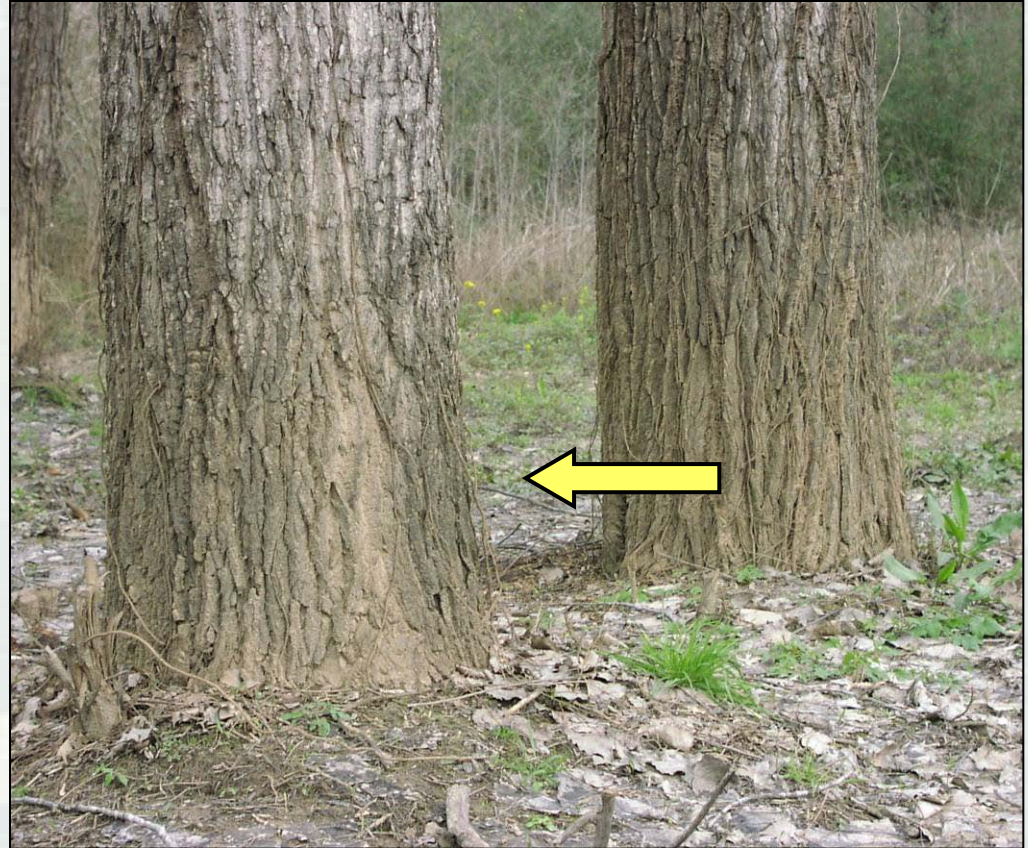
B1 – Water marks



Wetland Hydrology Indicators

B2 – Sediment deposits

- Thin coatings of silt or organic material



Wetland Hydrology Indicators

B3 – Drift deposits

- Rafted debris or litter



Wetland Hydrology Indicators

B4 – Algal mat or crust



Wetland Hydrology Indicators

B5 – Iron deposits

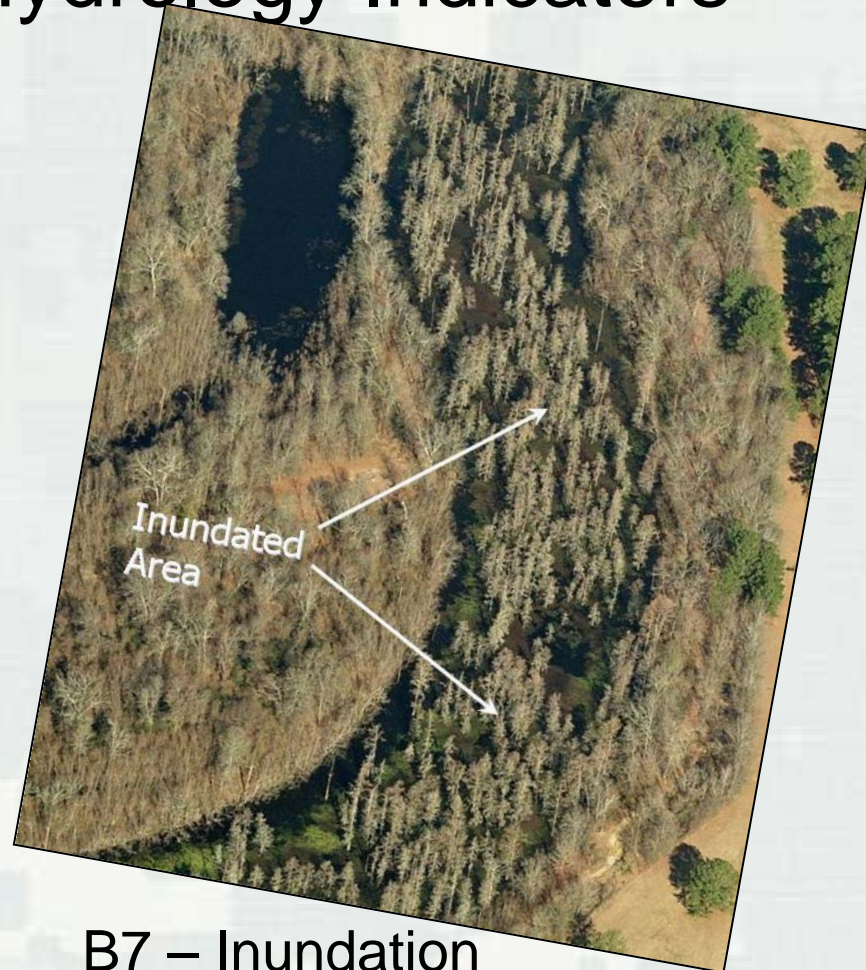
- Reduced iron emerges with groundwater and oxidizes on the surface



Wetland Hydrology Indicators

B6 – Surface soil cracks

Does not include deep cracks in clay soils (e.g., Vertisols)



B7 – Inundation visible on aerial imagery



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Wetland Hydrology Indicators

B8 – Sparsely vegetated concave surface

- <5% ground cover
- A woody overstory may or may not be present



Wetland Hydrology Indicators

B9 – Water-stained leaves



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Wetland Hydrology Indicators

B10 – Drainage patterns



Wetland Hydrology Indicators

B13 – Aquatic invertebrates (or fauna)



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Wetland Hydrology Indicators



B15 – Marl deposits



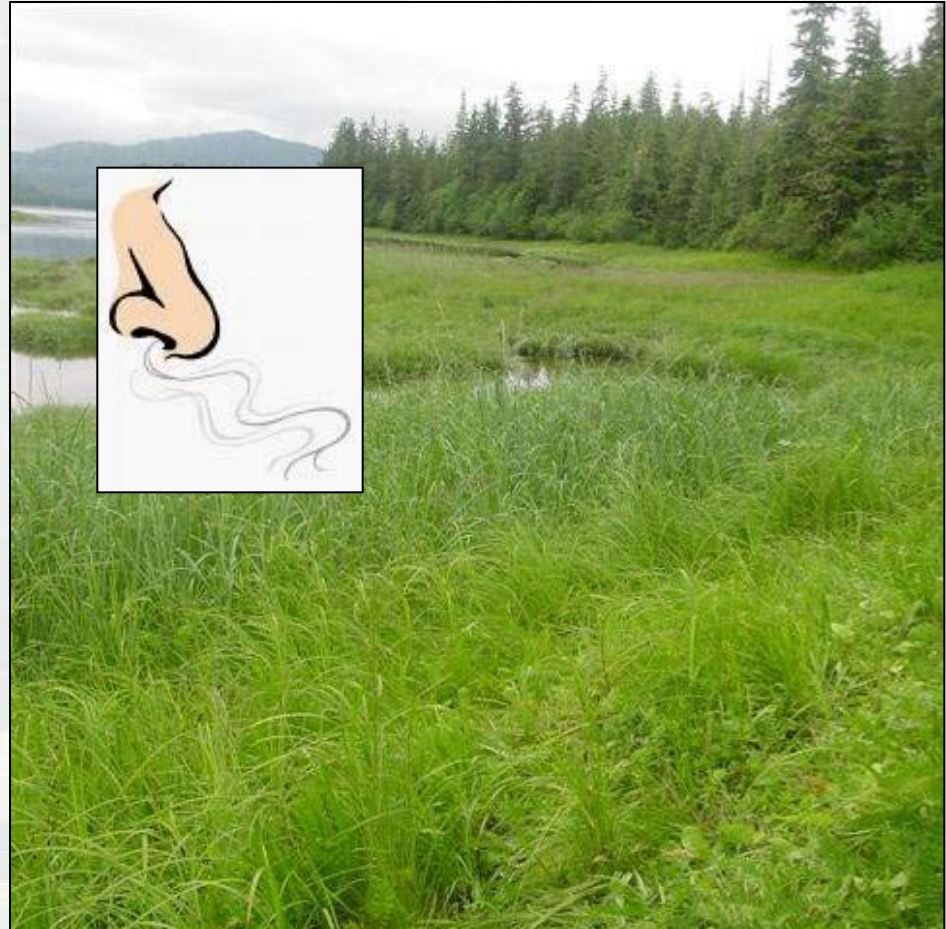
B16 – Moss trim lines



Wetland Hydrology Indicators

C1 – Hydrogen sulfide odor

- Rotten egg odor
- Observed within 12 inches of the surface
- Also indicates hydric soil



Wetland Hydrology Indicators



C2 – Dry-season water table

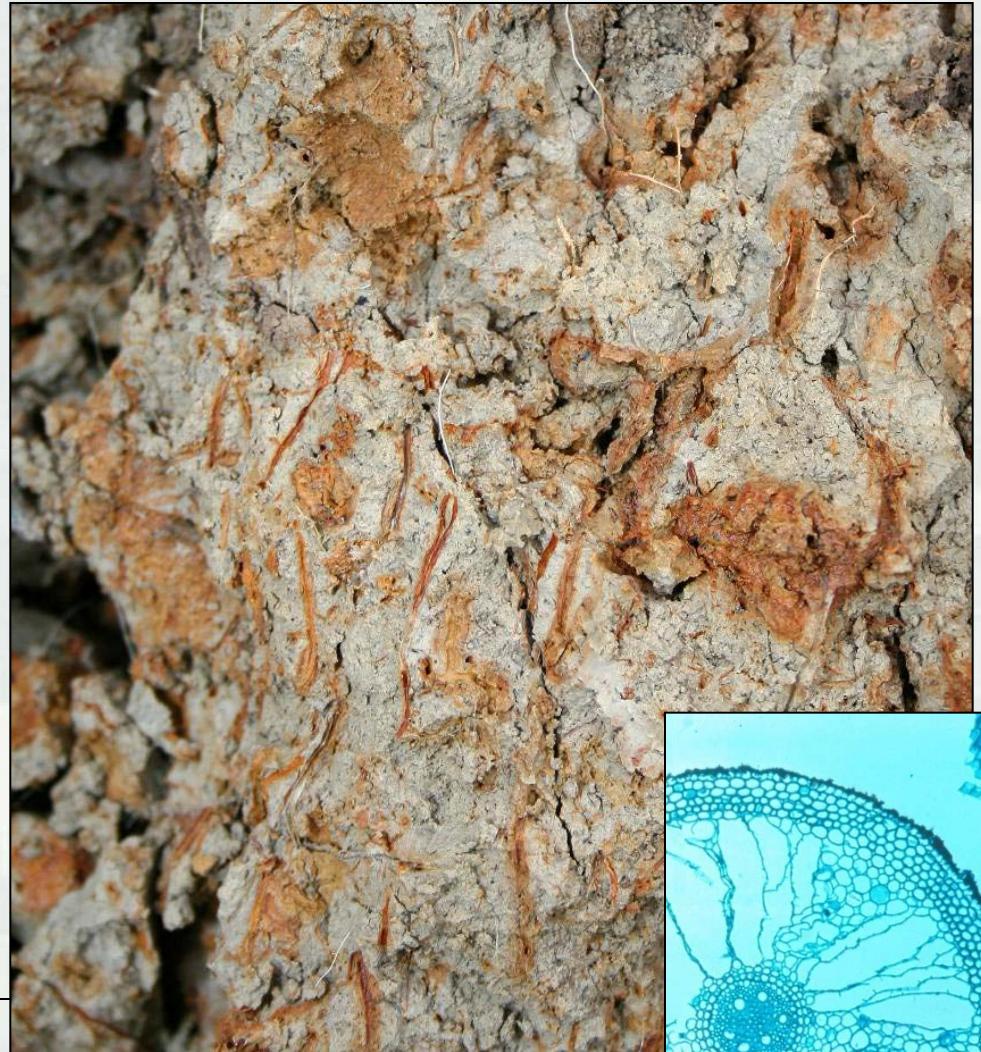
- Water table is 12-24 inches from the surface
- Observed during the dry season or in a dry year



Wetland Hydrology Indicators

C3 – Oxidized rhizospheres along living roots

- Result of oxygen leakage in anoxic soils
- Within 12 inches of the surface
- Occupy 2% or more of the layer's volume



Wetland Hydrology Indicators

C4 – Presence of reduced iron

- Ferrous iron test or color change upon exposure to air
- Within 12 inches of the surface



Wetland Hydrology Indicators



C6 – Recent iron
reduction in tilled soils



C8 – Crayfish
burrows



Wetland Hydrology Indicators

C7- Thin Muck Surface



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Wetland Hydrology Indicators

C9 – Saturation visible on aerial imagery

- Signatures must correspond to field-verified hydric soils, depressions or drainage patterns, or other evidence of a seasonal high water table



Wetland Hydrology Indicators

D2 – Geomorphic position

Examples:

- Localized depression
- Drainageway
- Concave position on a floodplain
- Toe of slope
- Fringe of water body
- Discharge zone (seep)



Wetland Hydrology Indicators

D3 – Shallow aquitard

- Capable of perching water within 12 inches of the surface

Examples:

- Permafrost
- Dense glacial till
- Clay layer
- Bedrock



Wetland Hydrology Indicators

D5 – FAC-neutral test

$$(OBL + FACW) > (FACU + UPL)$$

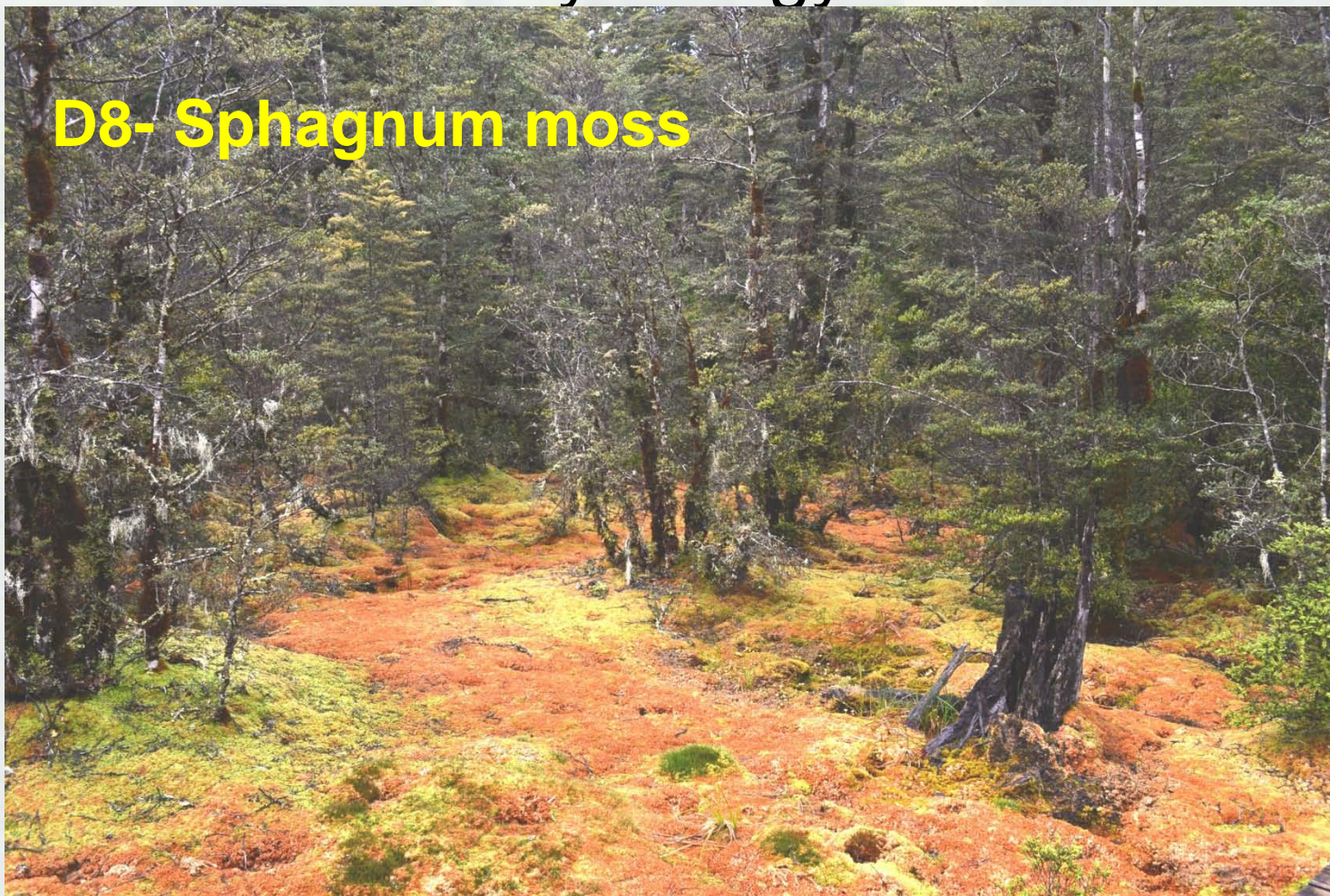


- List the dominant species across all strata
- Drop any species that is FAC, FAC-, or FAC+
- More than 50% of the remaining dominants must be OBL and/or FACW



Wetland Hydrology Indicators

D8- Sphagnum moss



The Problem

- Lack of an indicator does not necessarily mean that wetland hydrology is absent
 - ▶ Additional information may be needed to determine if wetland hydrology is present when indicators appear to be absent
 - ▶ **Problem areas:**

Wetlands in which indicators of one or more parameters may *periodically* be lacking due to **normal** seasonal or annual variability.



DON'T FORGET!

- Use the remarks section!
- Tell us about any recorded data (wells, photos, site visits, history)
- Ditches



Evaluating Normal Rainfall

WETS Tables

United States Department of Agriculture
NRCS Natural Resources
Conservation Service

National Water
and Climate Center

NWCC Home | About Us | Products | Publications | News | Partnerships | Contact Us

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Enter Keywords **GO**

Water and Climate Information

Water Supply

- Water Supply
- Forecasts
- Reservoirs
- Surface Water
- Climate

Climate Monitoring

- SNOTEL Data
- SCAN Data
- Snow Course Data
- Data Search **NEW**
- Soil Search **NEW**

Climate Interpretation

- Climate Analysis
- PRISM
- Climate Data
- General Information

Snow Survey Programs by State

Find a Service Center

States and Regions

National Centers

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Climate Analysis for Wetlands by County

Wetlands climate information has been updated through Calendar Year 2001 and uses an improved procedure to analyze arid regions and low monthly precipitation totals.

Retrieval of Wetlands Climate Evaluation Dataset

1. Select desired region:

Connecticut
Delaware
Florida
Georgia
Hawaii

Go to County Selection

<http://www.wcc.nrcs.usda.gov/climate/wetlands.html>

Site Map | Contact | Webmaster | NRCS | USDA | FirstGov

WETS Station : SAVANNAH WSO AIRPORT, GA7847 Creation Date: 09/04/2002
 Latitude: 3208 Longitude: 08112 Elevation: 00050
 State FIPS/County(FIPS): 13051 County Name: Chatham
 Start yr. - 1971 End yr. - 2000

Month	Temperature (Degrees F.)			Precipitation (Inches)				
	avg daily max	avg daily min	avg	avg	30% chance will have		avg	avg
							# of	total
					less than	more than	days w/.1 or more	snow fall
January	60.4	39.3	49.9	3.96	2.38	4.81	6	0.1
February	64.1	42.0	53.1	2.93	1.81	3.54	4	0.2
March	71.1	48.8	59.9	3.67	2.39	4.41	5	0.1
April	77.7	54.1	65.9	3.31	1.94	4.02	4	0.0
May	84.3	62.7	73.5	3.61	2.25	4.36	5	0.0
June	89.4	69.5	79.5	5.47	3.34	6.63	7	0.0
July	92.4	73.0	82.7	5.93	3.90	7.12	8	0.0
August	90.4	72.3	81.3	6.93	4.54	8.32	8	0.0
September	86.0	68.2	77.1	5.20	2.63	6.35	6	0.0
October	78.0	57.0	67.5	2.95	0.99	3.59	3	0.0
November	70.4	48.4	59.4	2.37	1.31	2.90	3	0.0
December	62.3	41.2	51.8	2.78	1.76	3.35	5	0.2
Annual	----	----	----	-----	44.04	53.26	--	----
Average	77.2	56.4	66.8	-----	-----	-----	--	----
Total	----	----	----	49.12	-----	-----	64	0.5

30 Year Range of
Normal for area in
question:

44.04"- 53.26"

GROWING SEASON DATES

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher



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Georgia Rainfall Data

(for use with WETS Tables)




Georgia
Weather



Enter a GA ZIP Code

Weather Stations

Select a Station ▾

K-12 Weather School 
AEMN Home

Expand All | Collapse All

- ☐ Drought
- ☐ Fruits
- ☐ Cotton
- ☐ Peanut
- ☐ Current Maps
- ☐ Daily Maps
- ☐ Daily Summaries
- ☐ Climate Maps
- ☐ Calculators
- ☐ Background Info
- ☐ General
- ☐ Others
- ☐ News

Supporters



**Georgia Automated
Environmental
Monitoring Network**
www.GeorgiaWeather.net



WARNING:

WARNING: The AEMN and this website are currently scheduled to be **shutdown in late Summer 2011 due to a shortfall in funding**. Unless substantial blocks of dedicated funding are committed by early July 2011, we will begin the process of decommissioning weather stations at that time. Once a weather station is decommissioned, current data will no longer be available. For more information [click here](#).

- [Georgia Weather Net is under threat](#) 
- [UGA seeks funds to keep weather monitors online](#) 
- [UGA seeks funds to keep weather monitors online](#) 
- [Georgia weather network struggles to survive](#) 
- [Ending weather reports worries Ga. farmers](#) 
- [K-12 Weather School for Georgia educators](#)
- Recent new stations: [Ducker...](#) [more news](#)
- To print a "printer-friendly" web page, simply select "File" and then "Print" or Click 

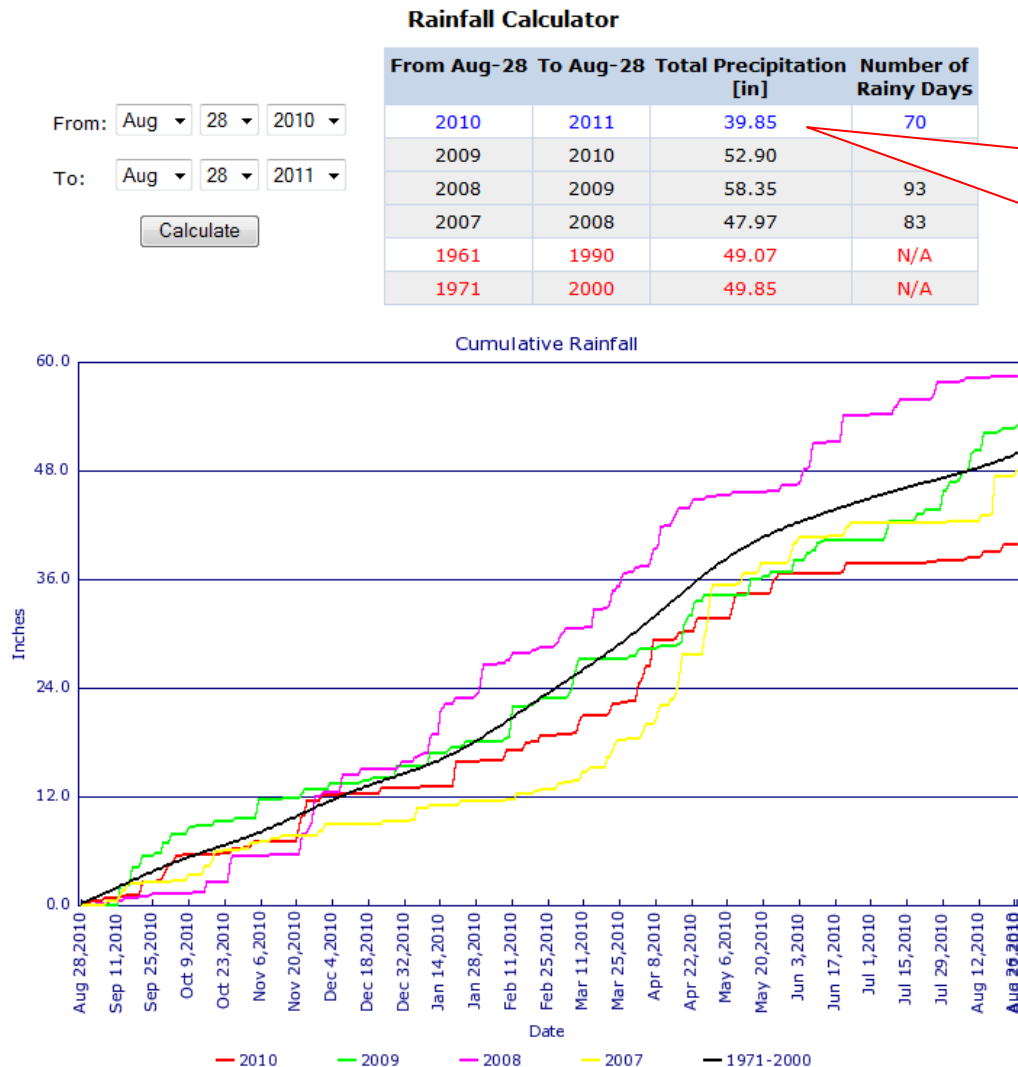
For current weather conditions, historical weather data and applications,
please select a site on the map:



<http://www.georgiaweather.net/>

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Change the dates to look at the past 12 months of rainfall data.



Total precipitation
for the past
12 months:

39.85"

Our 30 year range of normal is: 44.04" - 53.26"

The sum for the past 12 months is: 39.85"

Therefore: $44.04'' - 39.85'' =$ We are 4.19" below the range of normal for the past 12 months.