



Jerry McCrea, The Star-Ledger

New Jersey's Water Resources: A State Climatologist's Perspective

Dr. David A. Robinson
Chair, Department of Geography &
New Jersey State Climatologist
Rutgers University

**Rutgers CECI Conference on the Impacts
of Climate Change on Water Resources**
April 15, 2008




This Morning's Climate Agenda

- 1. Water resources and the ONJSC**
- 2. NJ's precipitation regime**
- 3. NJ water resources: what lies ahead**
- 4. Keeping a watchful eye**
- 5. NJ Water Resources Information System**

Office of the NJ State Climatologist

Our mission:
Monitor
Understand
Inform

<http://climate.rutgers.edu/stateclim>



Office of the New Jersey State Climatologist • Rutgers University • 54 Joyce Kilmer Avenue • Lucy Stark Hall 1224 • Piscataway, NJ 08854

Home

Quick Links

- New Jersey Forecast
- National Forecast

NJ

- Current Conditions
- Current Forecasts
- Climate Information

US

- Current Conditions
- Current Forecasts
- Climate Information

Other

- Coastal
- Observations
- El Niño/La Niña
- Hurricanes

ONJSC

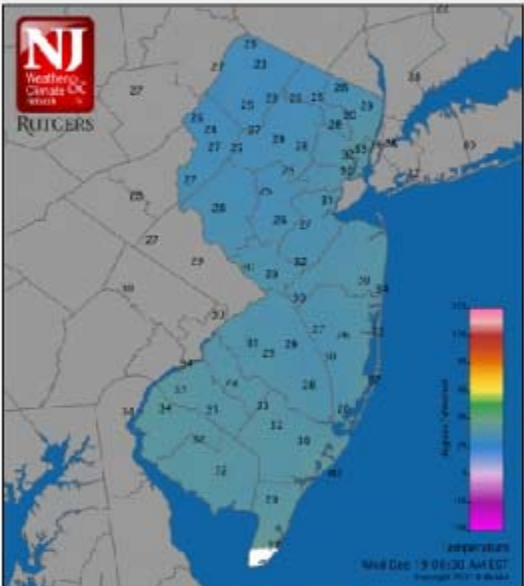
- Outreach
- About ONJSC
- Research
- Staff

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Disclaimer Information

Latest from the NJWxnet




Latest temperatures across NJ appear in the above map. Click on the map or here, the [New Jersey Weather and Climate Network](#) for much more information.



Frequently Updated Climate Data

- [Monthly and Annual Statewide \(1895-Present\)](#)
- [Monthly Station](#)
- [Monthly Maps](#)
- [Winter 2007-2008 Snow Event Totals](#)

Latest News



Marcella, NJ, November 19 2007 (photo by Albert Manganelli)

A Return to Normalcy November 2007 and Fall Overview

Dr. David A. Robinson
NJ State Climatologist
December 5, 2007

Following the record warmth of October, November temperatures seemed downright frigid across the Garden State. Finally, leaves were convinced to drop as the



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Water Resources and the ONJSC

SC is member of NJDEP Internal Drought Task Force
(lone academic; one of several non DEP participants)

Extensive community outreach
(primarily through the media)

Contribute to national "Drought Watch"

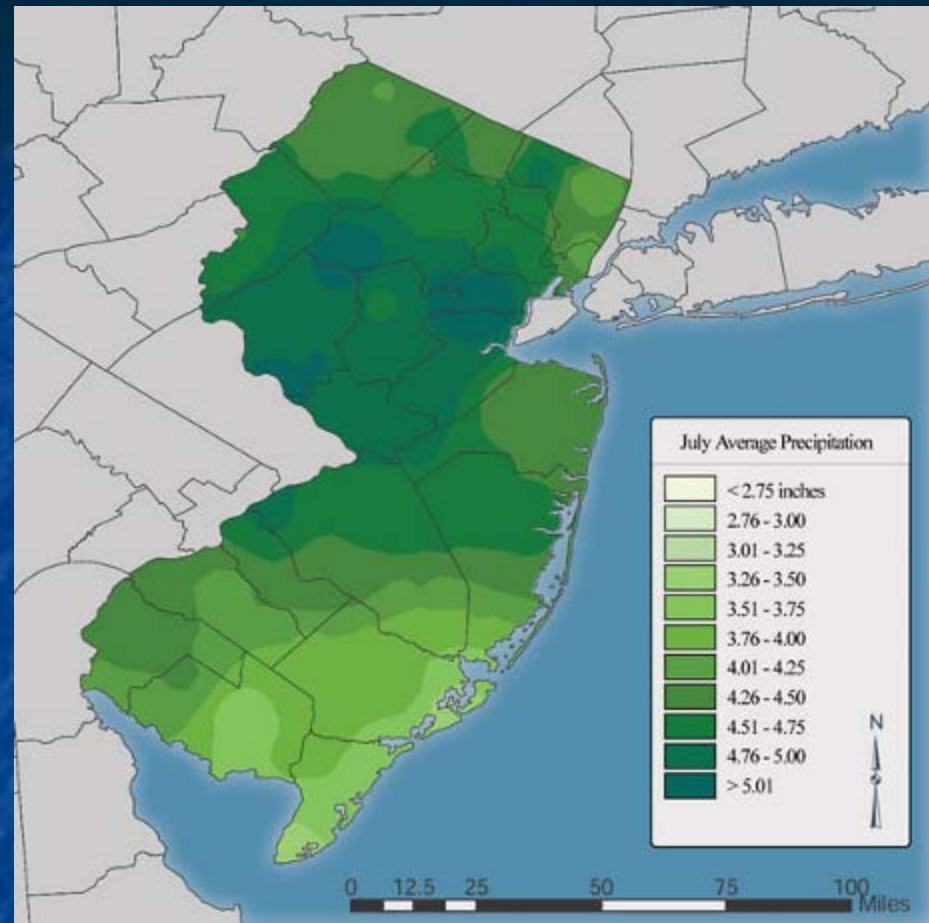
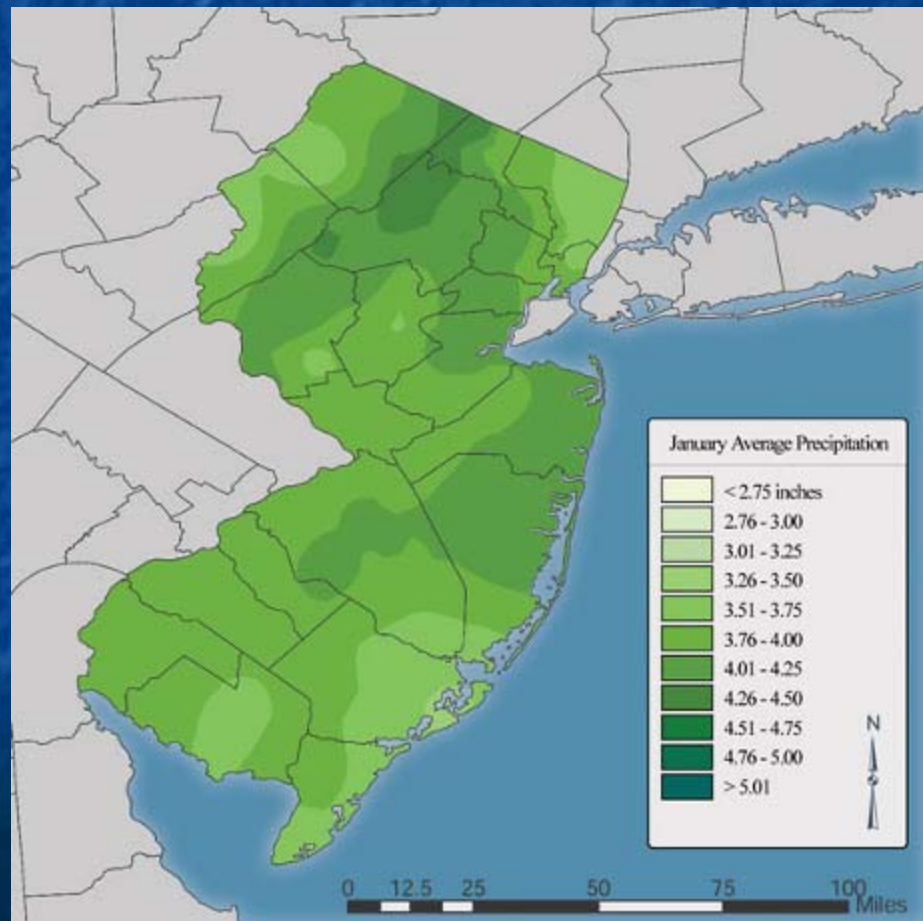
Exchange information with other entities
(e.g. NWS, USGS, State agencies)

Operate NJ Weather & Climate Network

Maintain NJ WaterWatch Website



A precipitation rich state.....



.....most often

Sometimes
too much.....



Nor'easter
April 15-16, 2007

**Sometimes
too little.....**



Jerry McCrea, The Star-Ledger

Spruce Run Reservoir: March 2002



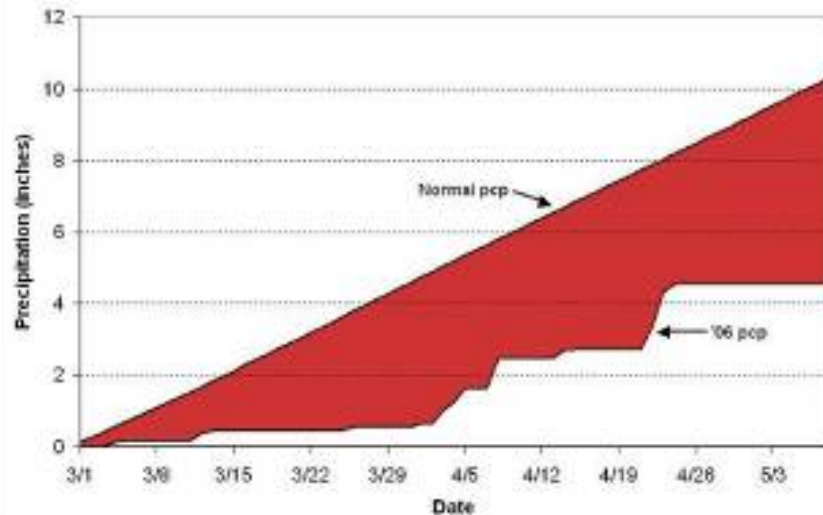
Photo by Scott Stetzer

**Pinelands:
May 2007**



Delaware River: November 1963

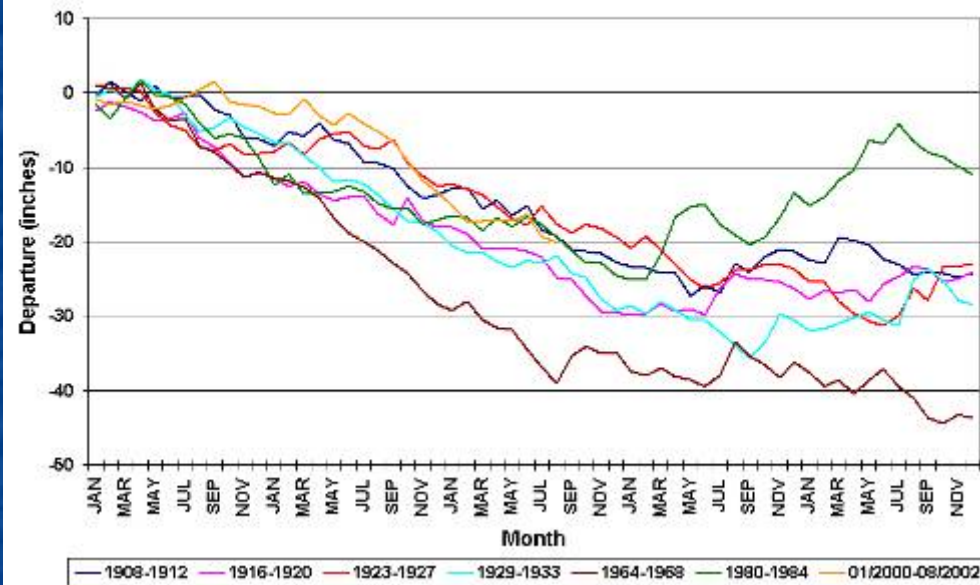
Cumulative Precipitation March 1 - May 8, 2006
Charlotteburg Reservoir, Passaic County



Charlotteburg March-May 2006

Cumulative Precipitation Departures

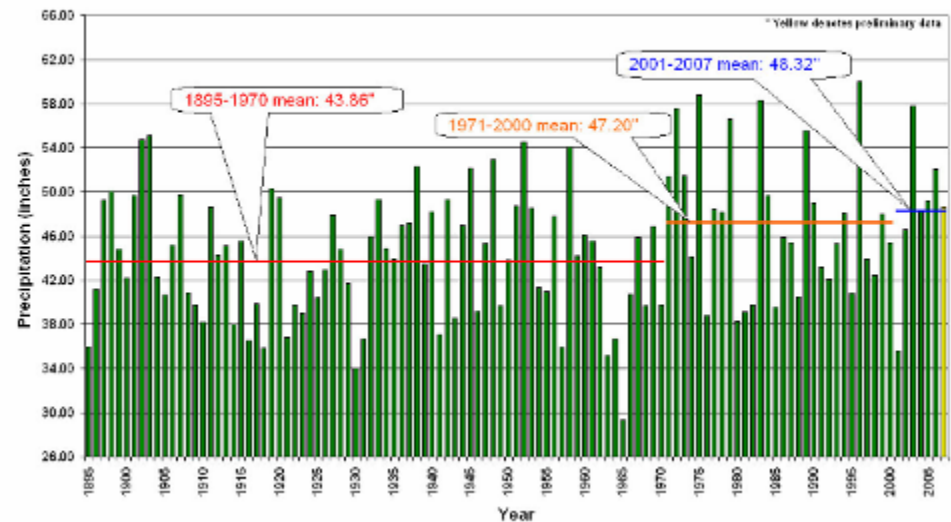
Accumulated Precipitation Departures



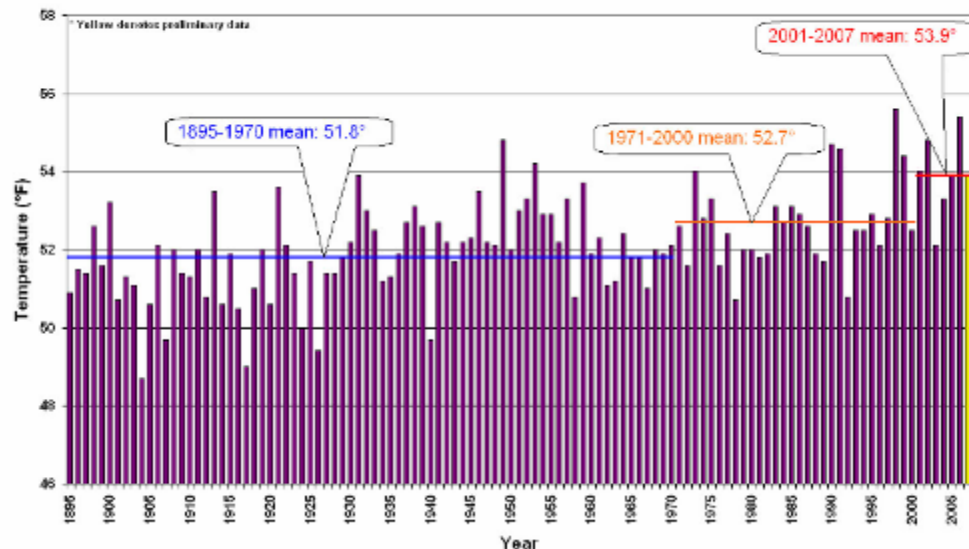
Jersey-wide: 5 year totals

Where we have been

NJ Statewide Annual Precipitation (1895-2007)



NJ Statewide Mean Annual Temperature (1895-2007)



Past century of NJ climate variability

What Lies Ahead?



FreakingNews.com



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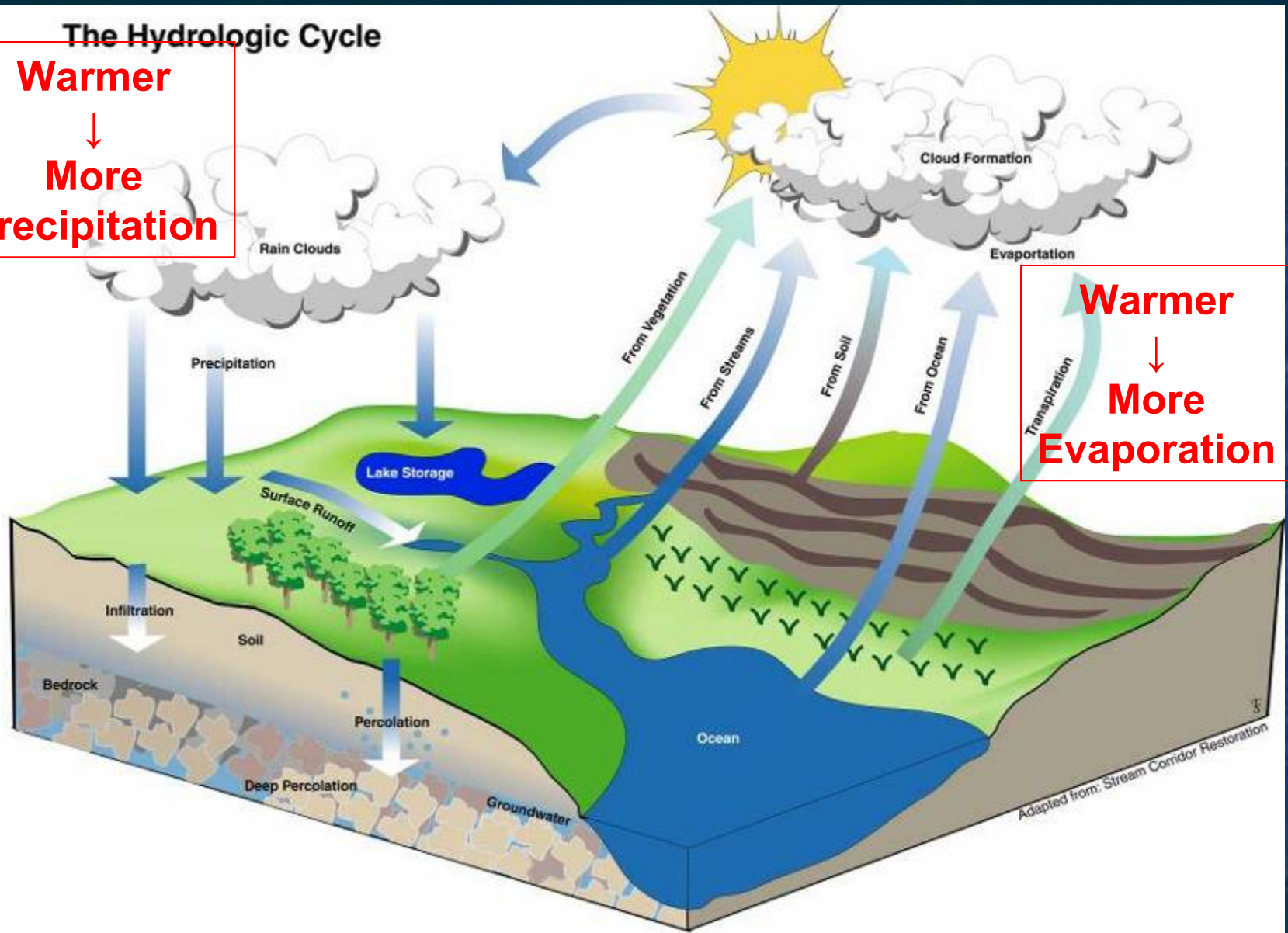
THE 21st CENTURY IN NEW JERSEY

- General agreement in model studies:
- | <u>Temperature (C)</u> | <u>Precipitation (%)</u> | <u>Runoff (%)</u> |
|------------------------|--------------------------|-------------------|
| +3 to +5 C | 0 to +20% | -25% to +20% |

Less confidence in regional precipitation/runoff than temperature

The Hydrologic Cycle

Warmer
↓
More Precipitation



Warmer
↓
More Evaporation



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THE 21st CENTURY IN NEW JERSEY

- Temperature (C) Precipitation (%) Runoff (%)
+3 to +5 C 0 to +20% -25% to +20%

Less confidence in regional precipitation/runoff than temperature

- **Regardless of sign of precipitation change, significant changes expected in:**
temperature, annual streamflow cycle, soil moisture, and snowpack;
more hot days; more variability

More floods and droughts?



Spruce Run Reservoir:
March 2002

Easton-Phillipsburg
Bridge: June 2006



Delaware River: Sept. 2004



THE 21st CENTURY IN NEW JERSEY

- **General agreement in model studies:**

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Less confidence in regional precipitation/runoff than temperature

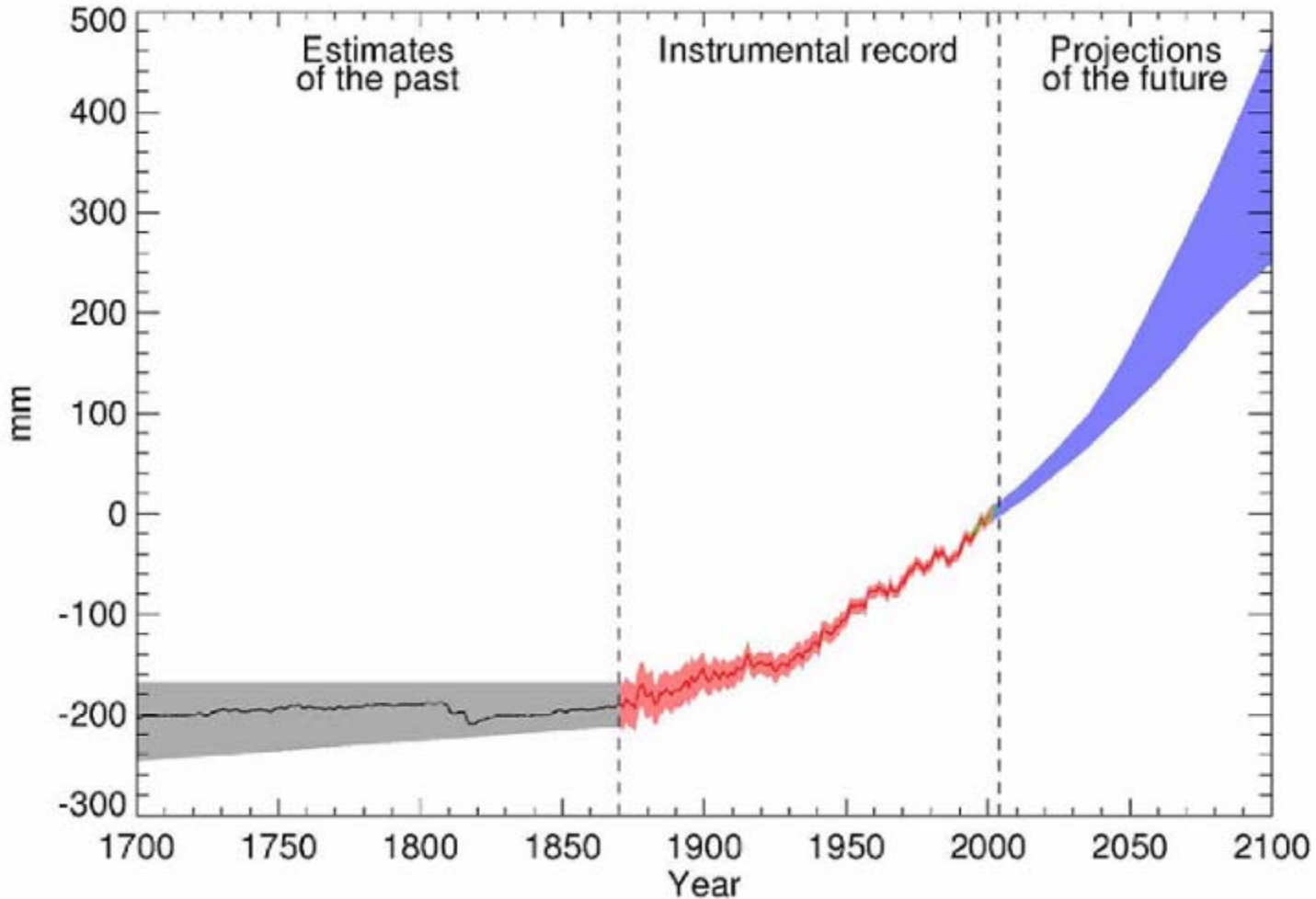
- **Regardless of sign of precipitation change, significant changes expected in:**

temperature, annual streamflow cycle, soil moisture, and snowpack;
more hot days; more variability

- **Main Uncertainties:**

1. Will it rain enough to make up for increased evapotranspiration under warmer conditions?
2. Will water demand change?
3. How much will sea level rise?
4. Economic, ecological, and other effects?

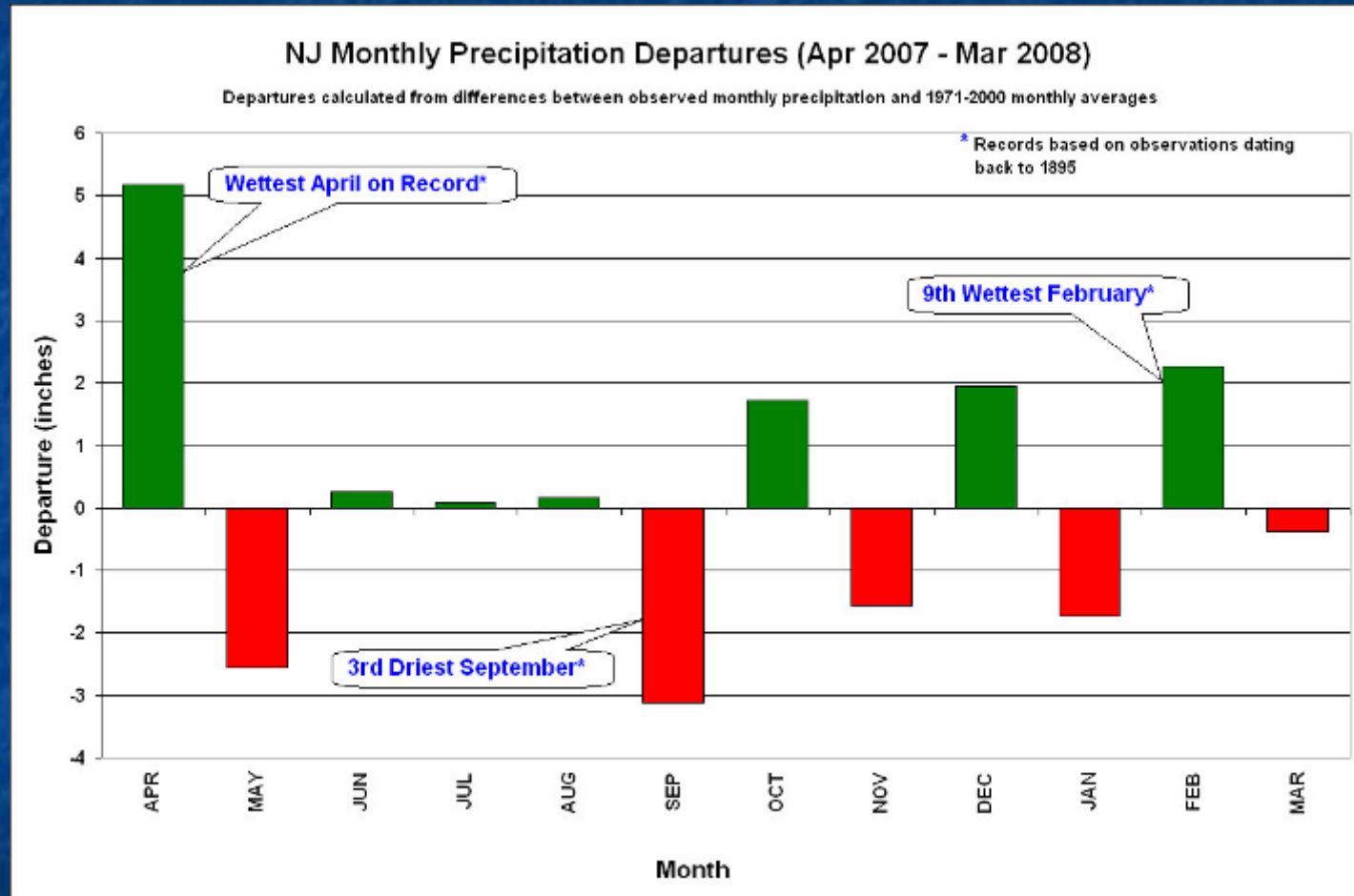
Global mean sea level changes



Keeping a Watchful Eye



Past 12 months of NJ precipitation



NJ Weather & Climate Network

<http://climate.rutgers.edu/njwxnet>



NJ Weather & Climate Network



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New Jersey Agricultural Experiment Station

NUMNET

Home
myNetnet

TABULAR DATA

Network Hourly
Network Daily
Station Hourly
Station Daily

MAPS & IMAGERY

NJ Statewide
Current Maps
Daily Maps
Animated

NJ Regional
Current Maps
Mid-Atlantic
Current
Animated

CHARTS & GRAPHS

24 Hour Charts
Climatology

METADATA

Station Locations
Webcam Locations

FAST LINKS

NWS NJ Forecast
NWS US Forecast

State Climate Office
Center Env. Prediction
Ag. Exper. Station
School Env. Div. Sci.

Contact Us



Current Conditions



The image above is the latest color-coded integrated temperature map generated by the NJWNet. To view more maps, click here. For a mid-Atlantic temperature map, click here.

NJ Extremes

NJ Hot Spots

City, State	Temp
North Beach Haven, NJ	88
East Windsor Twp., NJ	88
Atlantic City Marina, NJ	87
Meriden Vile, NJ	87
Atlantic City (HADS), NJ	87

NJ Cool Spots

City, State	Temp
High Point, NJ	27
High Pt. Monument, NJ	27
Pomona, NJ	28
Walpack, NJ	28
Sparks, NJ	28

and current information at:
or New York: 18.12.19.07.2507

Customize

Want to jump right to the conditions nearest you?

Enter a ZIP code:

Or pick from the list below:

Your custom station is
Hillsborough, NJ

[View myNetnet](#)

Feedback

How often do you use the NUMNET?

For what reasons do you use the NUMNET?

Have comments, questions, or suggestions?

[Send Feedback Now](#)

Latest News



Welcome to the new NJ Weather and Climate network (NJWNet) web site, your one-stop destination for New Jersey weather and climate information. The can

Interactive Products

One of the great new features of this latest version of the New Jersey Weather and Climate network is our new location-specific "myNetnet" page.

The concept comes with us from older versions of the NJWNet, but this newest version is much more!

Click on the myNetnet icon on the menu to your left, or enter a zipcode above to customize and jump to any myNetnet page.

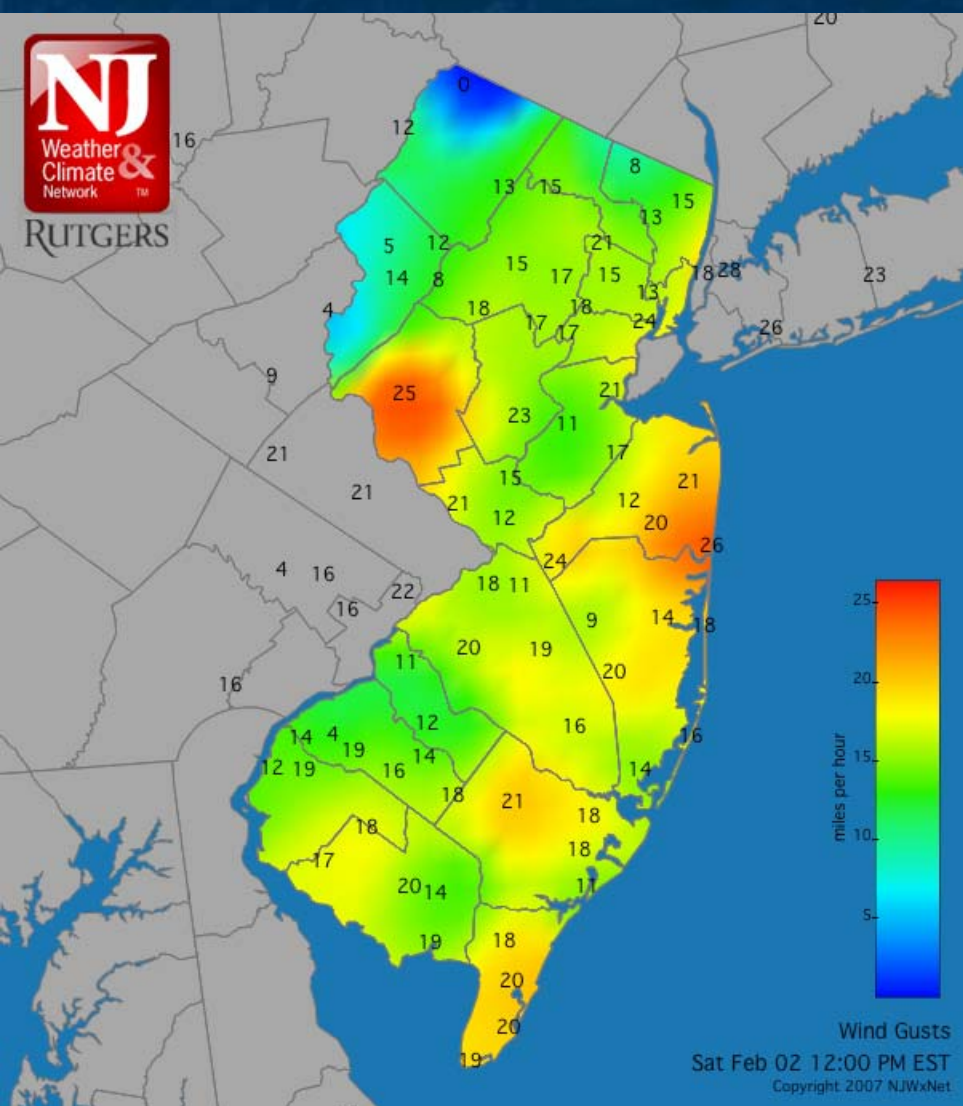




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Wind Gusts

Precipitation



Custom tabular data

USFS

NJ Fire Danger Monitoring Console

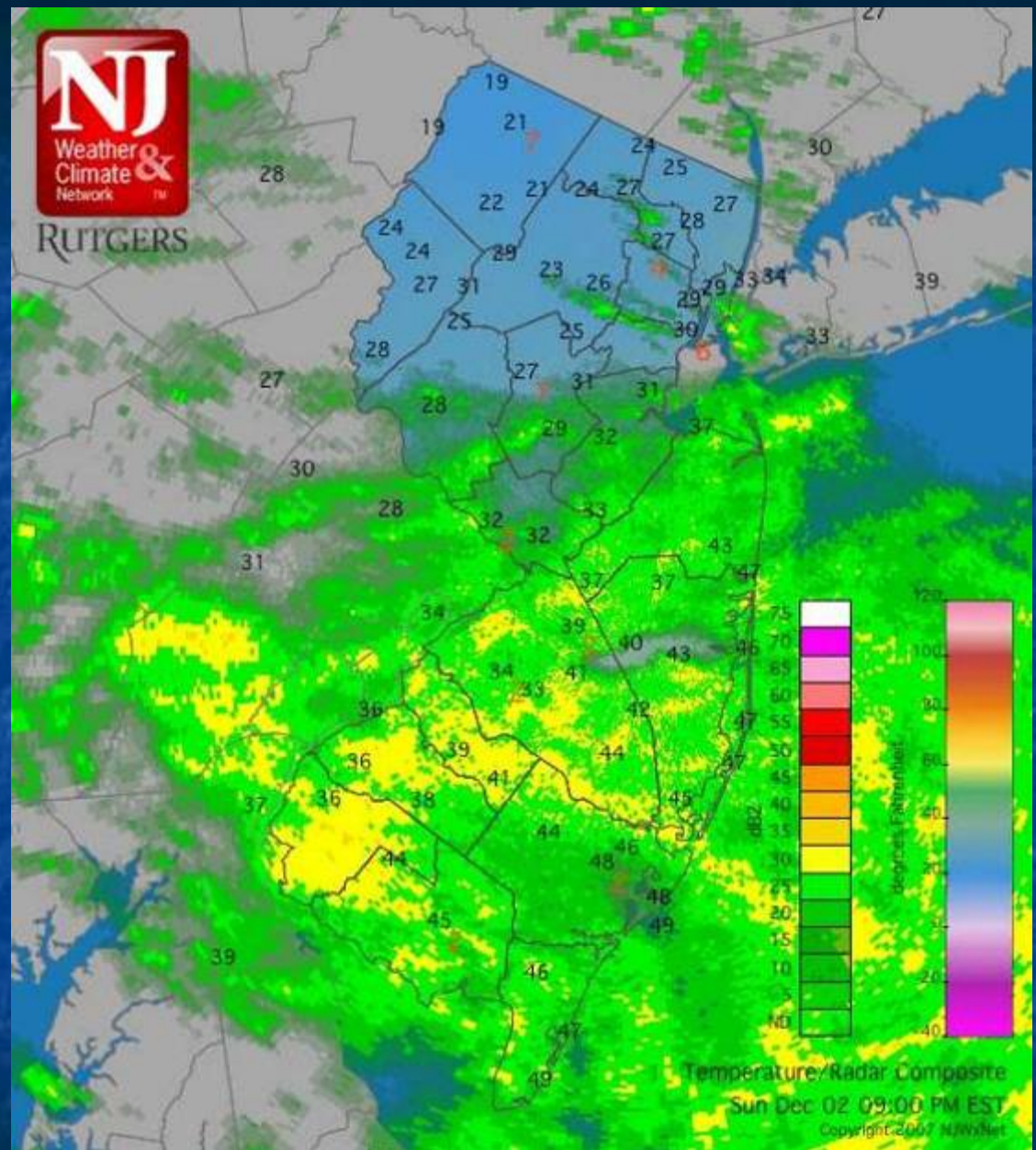
Most recent information collected as of June 20, 2007, 6:39 pm

Site	Air Temp	RH	Wind Sp	Peak Gust	Wind Dir	10hr Fuel Moisture	10hr Fuel Temp	24hr Precip
Upper Deerfield	79	37	14	21	NNW			0.20
Cream Ridge	80	37	10	16	N			0.67
Woodbine	77	53	7	12	NNW			0.24
Oswego Lake	79	43	5	14	N			0.65
Silas Little	78	41	5	11	NW	14	87	0.37
Fort Dix I	78	37	6	14	NW		85	0.32
Cedar Bridge	77	41	6	14	NW	17	80	0.20
Fort Dix II	78	36	2	5	SSW	15		
Coyle Field	79	42	7	16	NNW			
Forsythe	78		3	12	WNW			

Legend: Alert Level 1 Alert Level 2 Alert Level 3

Central & north icing event: Sunday evening 12/2/07

Red numbers
2: rain
4: snow
6: freezing rain
7: drizzle



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NJ Community Collaborative Rain, Hail and Snow Network:



**Daily observations by
trained volunteers of
all ages**



**Augmenting automated
precipitation observations**

If interested in becoming a CoCoRaHS
observer, register at:

<http://cocorahs.org/>



*CoCoRaHS Welcomes
New Jersey*

Most pieces of the NJ water resources puzzle exist

data

education

products

risks

predictive capabilities

infrastructure

decision makers

user communities

media

They simply await assembly!



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NJ Integrated Water Resources Information System

Monitoring & Forecasting


Risk Assessment

Preparedness

Communication

Evaluation & Feedback


Partnering!



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 department of environmental protection

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www.njdrought.org



NJ Drought Hotline: 1-800-4-ITS-DRY
 Outside New Jersey Please Call: 1-609-633-0560

[drought home](#) | [drought news](#) | [drought status](#) | [ask njdrought](#)

Regional Drought Indicators

The tables below show drought indicators and overall drought status each of the six drought regions in New Jersey. A water drop (●) denotes the indicator has been green for more than a year. To view a specific region, follow the links below. This page can also be downloaded in PDF format.





















Select a drought region:

- Central
- Coastal North
- Coastal South
- Northeast
- Northwest
- Southwest





- ▶ [How to determine your drought region](#)
- ▶ [Find the drought status of neighboring areas/state](#)
- ▶ [Resource Importance as a NJ Water Source by Region](#)
- ▶ [NJ Geological Survey's Drought Indicators Information Circular \(PDF format\)](#)

Central Drought Region

Updated: May 24, 2006

Drought Status Indicators					
90-day precipitation	90-day stream-flow	NJ Res.	DRBC Res.	ground water	
					near or above normal
					moderately dry
					severely dry
					extremely dry

Declared Drought Status

	normal
	watch
	warning
	emergency

Res=reservoir DRBC=Delaware River Basin Commission
 ground water refers to unconfined ground water
 # = The number in each colored dot is the number of weeks the specific indicator in that region has been in that status.

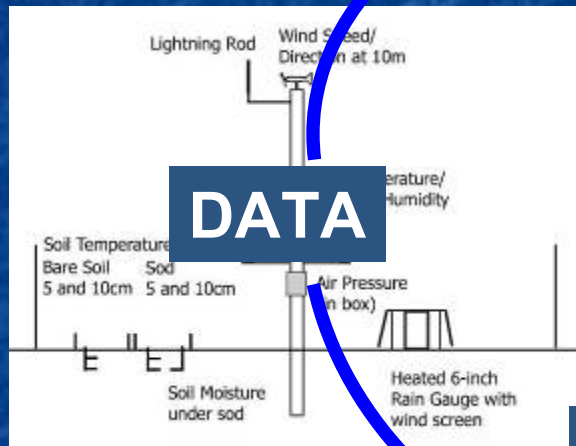
[Printing Note](#)

The ONJSC: Helping to keep an eye on NJ's water resources

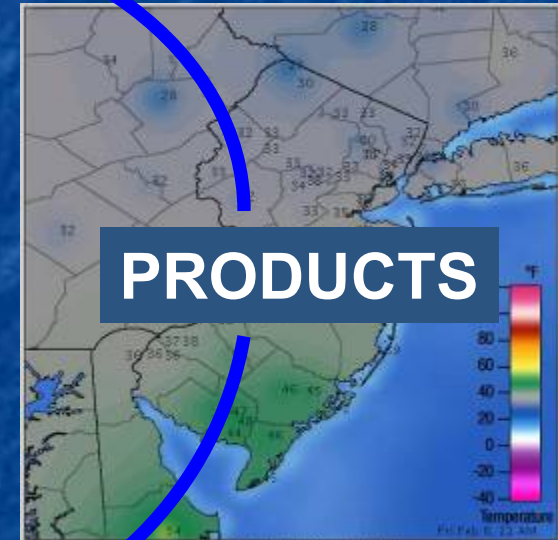
DECISION MAKERS



DATA



PRODUCTS



OUTREACH & TRAINING



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Thank you!

ONJSC:

<http://climate.rutgers.edu/stateclim>

NJWxNet:

<http://climate.rutgers.edu/njwxnet>



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