

### Developing decision-support tools for agriculture under a changing climate USDA Agricultural Outlook Forum – February 24, 2023



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Agroclimate mission: Increase action and add value to weather and climate data





#### AgroClimate.org

Southeast USA

• Decision and monitoring tools, educational materials



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#### Climate Information System

• USDA-NASS: CONUS

• Risk monitoring



#### AgroClimate Indicators (a) AgroClimate

- USDA-OEEP: CONUS Partnership with NOAA Northeast RCC Applied Climate Information System (ACIS)
- AgroClimate indicators for decision making



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## AgroClimate Education Workshops

LEARN MORE

ce climate risks Rainfall and Temperature Climate Indicators Pests and Diseases Growing Degree Days Monitoring Crop Yield & Development Growing Degree Days Calculator **Footprint Calculators** Heat Stress Monitoring Fruit & Veg Supply Chains ARID (Spatial) ARID (Stations) **Chill Hours Calculator** Freeze Probabilities Cooling and Heating Degree Days Calculator Tools and resources to red and improve efficiency in a

roclimate.org/tools/#climate-tools



Chilling accumulation is already considered a major limitation for temperate fruit production in the southeast. Warm winters also accelerate bloom, making flowers vulnerable to freezes. The southeast has seen several devastating late freezes in recent years.

Warm winters in

the southeast

are reducing chill

accumulation

during the

winter



#### Our plan for 2023:

- Redesign the tool
- Plot more years than just last year
- Add Dynamic model (chill portions)





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2020 WINNER

#### Strawberry Advisory System Pests and Diseases Crop Yield & Development Blueberry Advisory System > Footprint Calculators Citrus Copper Application Scheduler > Fruit & Veg Supply Chains Citrus Advisory System A smart way to manage Kissimmee Cotton Pests in Florida diseases in strawberry Palm Harbor ter Haven learwater Beach Watermelon Wilt Saint Petersburg Download and start saving Sarasota Download on the GETITON Google Play App Store Plant City Last update: 03/21/2016 11:15 AM Anthracnose High risk Botrytis Moderate risk Recommendations

Climate Indicators





Plant City, Florida Anthracnose risk Nov 1 – Feb 10

We have experienced reduced disease pressure during the last 3 years due to La Niña cycles

## **Climate Information System**

Enhancing NASS's Decision-Making Capability to Identify Areas Under Potential Risk Due Ongoing Weather Events



To make timely and informed decisions

## **Climate Indicators available in the system**



**Agricultural Reference Index for Drought (ARID)** 



ETo

 $T_h$  = Observed temperature

 $T_{hth}$  = Temperature thresholds (68°F, 72°F, 73°F, and 79°F)

🛓 Export

#### Report

Iowa - Report for counties in district <u>1930 - Northeast</u> Time period of 08/10/2016 to 08/31/2016

#### IOWA, August 2016

Low water stress, average nighttime temperature

		Average AR	ID			Ac	cumulated Night Temp	erature Index >	73°F	
Counties	Observed	Percentile of all long-term observations (%)	Deviation from long- term Avg	5₋ year Avg	Observed	Days of occurrence	Percentile of all long-term observations (%)	Deviation from long- term Avg	5-year Avg	Percentage of the observations (%)
Allamakee	0.02	9.7	-0.29	0.44	63.7	14	63.6	16.8	37.2	100
Black Hawk	0.04	7.3	-0.31	0.41	117.1	18	72.7	20.8	127.7	100
Bremer	0.04	7.3	-0.29	0.36	79.1	14	54.5	6.0	89.5	100
Buchanan	0.11	14.6	-0.22	0.38	77.3	17	63.6	2.1	98.9	100
Chickasaw	0.01	2.4	-0.31	0.36	57.6	11	54.5	11.9	45.8	100
Clayton	0.04	9.7	-0.28	0.36	91.6	17	54.5	14.9	70.6	100
Delaware	0.12	21.9	-0.20	0.34	58.9	16	45.4	-17.7	85.4	100
Dubuque	0.08	19.5	-0.22	0.28	115.8	19	54.5	13.4	113.0	100
Fayette	0.03	9.7	-0.29	0.35	65.2	15	54.5	8.1	57.4	100
Howard	0.01	4.8	-0.28	0.40	43.4	9	72.7	10.8	32.0	100
Winneshiek	0.01	7.3	-0.29	0.45	54.7	12	54.5	11.3	35.9	100





#### 🕒 Report

Iowa - Report for counties in district <u>1930 - Northeast</u>

Time period of 08/10/2020 to 08/31/2020

#### IOWA, August 2020 High water stress, high nighttime temperature

		Average AR	ID			Ac	cumulated Night Temp	perature Index >	73°F	
Counties	Observed	Percentile of all long-term observations (%)	Deviation from long- term Avg	5₋ year Avg	Observed	Days of occurrence	Percentile of all long-term observations (%)	Deviation from long- term Avg	5-year Avg	Percentage of the observations (%)
Allamakee	0.75	97.5	0.45	0.44	98.3	14	100.0	54.5	37.2	100
Black Hawk	0.57	87.8	0.23	0.41	209.9	19	90.9	122.0	127.7	100
Bremer	0.58	85.3	0.25	0.36	161.7	16	100.0	96.1	89.5	100
Buchanan	0.63	87.8	0.29	0.38	171.6	16	90.9	105.0	98.9	100
Chickasaw	0.56	87.8	0.25	0.36	103.1	14	100.0	61.6	45.8	100
Clayton	0.64	95.1	0.33	0.36	169.2	19	100.0	99.4	70.6	100
Delaware	0.59	92.6	0.27	0.34	164.9	16	100.0	97.8	85.4	100
Dubuque	0.55	90.2	0.25	0.28	222.8	21	100.0	130.0	113.0	100
Fayette	0.59	92.6	0.28	0.35	136.1	16	100.0	85.4	57.4	100
Howard	0.53	85.3	0.25	0.40	85.8	12	100.0	57.1	32.0	100
Winneshiek	0.70	97.5	0.41	0.45	93.3	13	100.0	53.5	35.9	100



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#### Y Crop

# Corn Utilization Grain

All Production Pra...

#### Region of Interest

\*\*Select state / county below or on the map

Iowa	-
lonia	
County	-





#### 📚 Map Data Layer



#### Region of Interest

\*\*Select state / county below or on the map

State	*		

Q LOAD DATA



Department of Agriculture Climate Change Program Office Technical Bulletin 1953



## CLIMATE INDICATORS for AGRICULTURE





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## Thank You! Agroclimate Risk in Agriculture



