

The future of an ET Network in Texas??

Guy Fipps

Professor and Extension Specialist

Texas A&M AgriLife Extension Service

The TexasET Network

- Started in 1994
 - Same year as the North High Plains PET Network
- *My expectation at the time was that I'd demonstrate the value of an ET network for a few years, then the State would take it over...*
- TexasET is Not a service of the Texas A&M AgriLife Extension Service
 - but a project I do in collaboration with weather station sponsors

ET Networks in Texas

~ 12 years ago

- High Plains PET Network
- TexasET Network
- Coastal Ag Weather Network
- Precision Irrigators Network
- Rio Grande Ag Weather Network

Notes: ET Network as defined by Gammon, et al. 2017

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Today

- TexasET Network

Notes: ET Network as defined by Gammon, et al. 2017

*Is there a future for an ET
Network in Texas (without Dr.
Fipps)?*

Today's Topics

- I. What is ET and Why does it matter?
- II. The TexasET Network
- III. The Water My Yard Program
- IV. Report: "*Feasibility Study for Development of Statewide Evapotranspiration Network*" contracted by the TWDB
- V. *TexMesoNet* Program
- VI. A way forward for a sustainable ET Network in Texas?

Evapotranspiration ET

- ET (evapotranspiration) is a measurement of the water use of plants and crops for the *local climate*
- *Requires the measurement*
 - *solar radiation*
 - *wind*
 - *humidity*
 - *temperature*



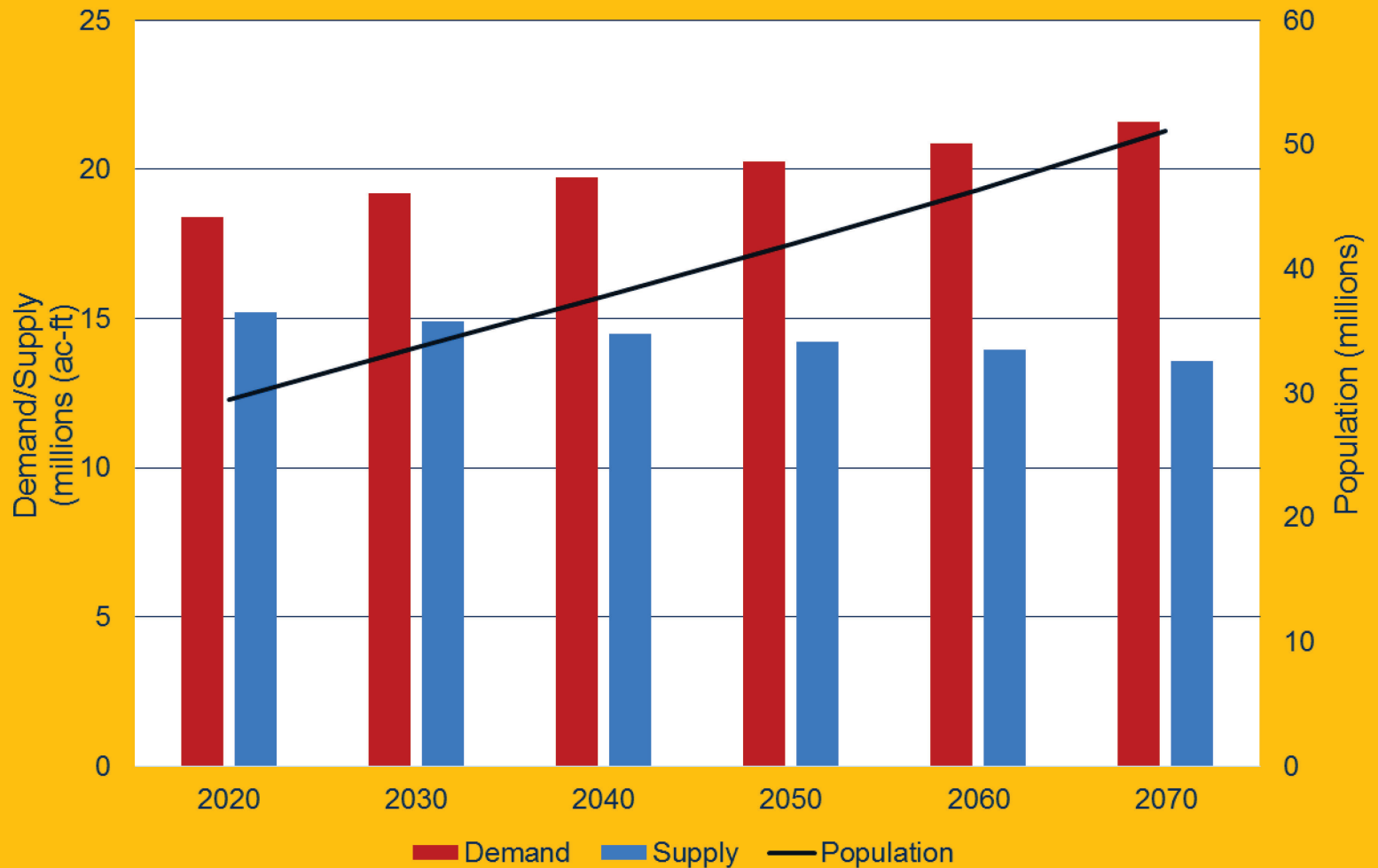
Evapotranspiration ET

- Widely used:
 - irrigation water management and crop production
 - design of water projects
 - water planning
 - modeling of climate and natural resources
 - etc.

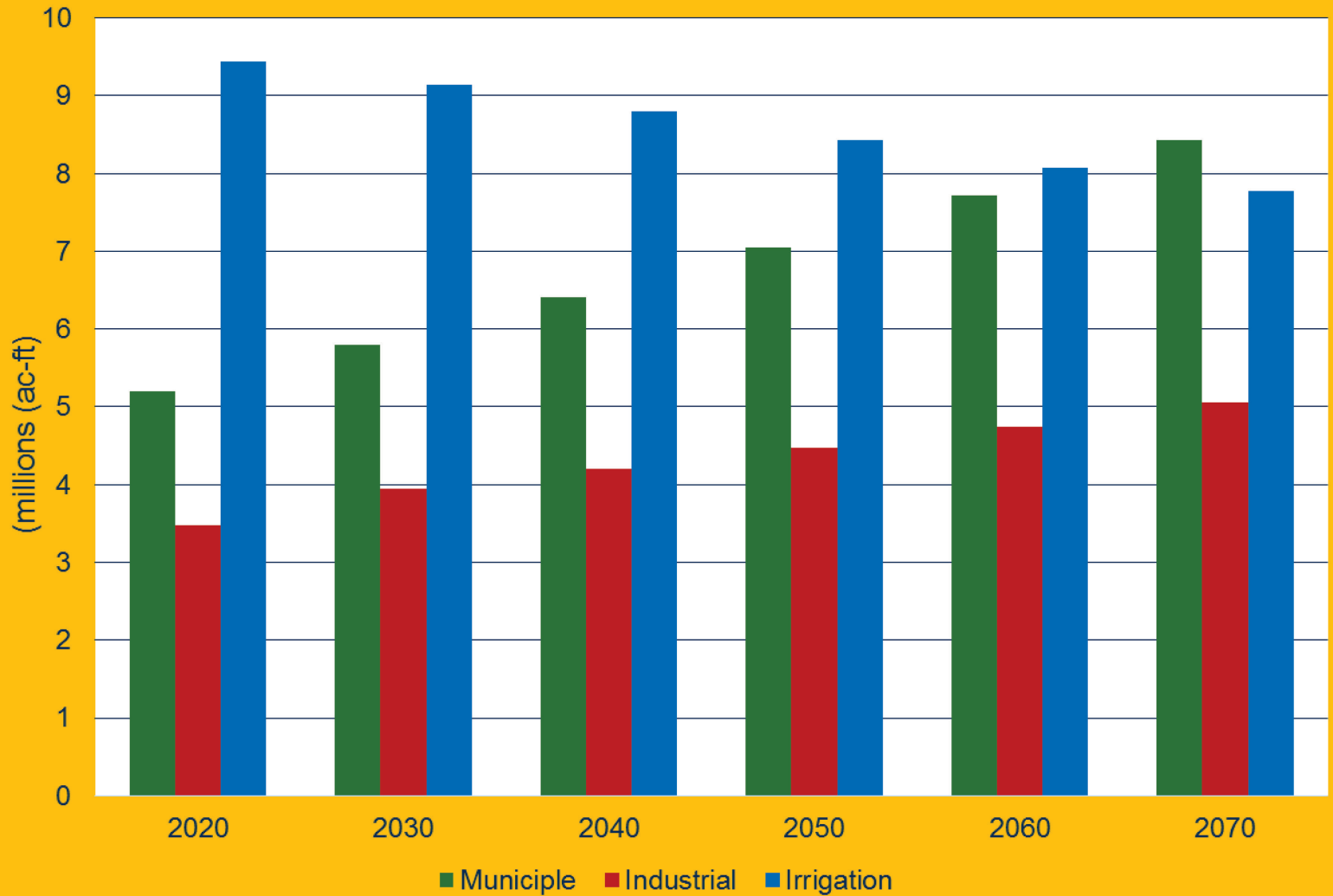
Evapotranspiration ET

- In Texas, and many other regions, irrigation is the largest user of water
 - Ag irrigation accounts for 60% of all freshwater usage in Texas
 - Landscape irrigation accounts for 30-60% of municipal water usage

Projected Water Supply/Demand and Population for Texas



Water Use in Texas by Category



Evapotranspiration ET

ET-based irrigation schedules can reduce water consumption by

- 20-30% in agricultural irrigation
- 40-50% in landscape irrigation

TexasET Network

<http://TexasET.tamu.edu>

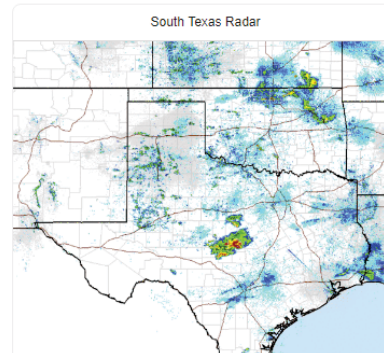
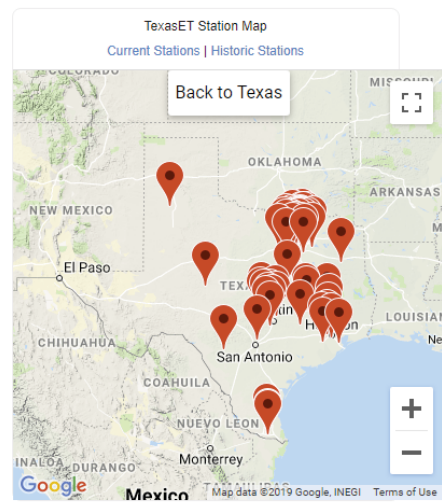
Texas ET contains weather information, current and average evapotranspiration data, and irrigation watering recommendations.

You may either select the station nearest you from the drop down menu below, click on the station map, or login with your profile.
For more information on why you should create a profile click here.

Yesterday's Weather Summary									
Station	ETo (in)	Max Temp (f)	Min Temp (f)	Min RH (%)	Solar Rad. (MJ/m2)	Rainfall (in)	Wind 4am (mph)	Wind 4pm (mph)	Battery (v)
Coastal Bend									
Dickinson	0.18	78	64	53	25.59	0.00	0.07	3.88	🔋
Houston	0.20	81	58	33	26.74	0.00	0.00	6.61	🔋
Memorial Village	0.17	84	59	34	25.20	0.00	0.00	0.98	🔋
Richmond North	0.20	82	58	33	25.87	0.03	0.00	4.74	🔋
Richmond South	0.23	81	62	36	26.60	0.00	0.30	7.98	🔋
Spring	0.20	83	58	30	28.23	0.00	0.00	4.20	🔋
East Texas									
Conroe	0.18	82	55	31	25.06	0.00	0.00	2.62	🔋
Huntsville	0.14	80	53	31	22.85	0.00	0.00	2.08	🔋
Overton	0.17	80	53	39	25.24	0.00	0.00	6.08	🔋
South Central									
Austin (LCRA Redbud)	0.16	81	54	32	26.01	0.00	0.00	2.41	🔋
Bryan	0.18	81	55	29	25.79	0.00	0.00	4.11	🔋
Buda	0.18	80	56	41	25.44	0.00	0.30	4.17	🔋
Burnet	0.18	78	53	34	21.07	0.00	0.75	6.35	🔋
Cedar Park	0.19	79	51	37	27.98	0.00	0.00	4.02	🔋
Dripping Springs	0.20	79	53	39	29.02	0.00	0.06	5.58	🔋
Lakeway	0.19	82	57	30	29.77	0.00	0.00	1.13	🔋
Marble Falls	0.21	81	55	35	29.16	0.00	2.01	4.63	🔋
Pflugerville	0.18	80	56	36	26.22	0.00	0.44	1.75	🔋
Spicewood	0.17	80	53	40	22.85	0.00	0.79	4.69	🔋
Winedale	0.20	81	56	35	26.00	0.00	0.61	5.26	🔋
The Metroplex									
Colin County									
Allen	0.19	81	57	29	27.54	0.00	0.00	2.43	🔋
Farmersville	0.17	82	56	35	23.45	0.00	0.00	3.81	🔋
McKinney	0.18	80	54	38	24.06	0.00	0.00	5.81	🔋
Melissa RD121	0.19	79	55	33	25.39	0.00	0.00	6.80	🔋
Murphy	0.19	81	56	28	27.58	0.00	0.00	3.85	🔋
Plano	0.17	85	55	30	23.66	0.00	0.00	2.43	🔋
Princeton	0.20	80	56	30	27.86	0.01	0.00	6.12	🔋
Wylie	0.22	81	59	26	26.52	0.00	2.23	7.08	🔋
Dallas County									
Garland	0.22	80	58	20	26.23	0.00	0.07	5.65	🔋
Irving North	0.23	82	61	25	25.84	0.00	2.43	5.03	🔋

Current stations:
Select a station ...

Historic stations:
Select a station ...



Home Owner Irrigation Notification Programs

- ET is being used as a basis to provide recommendations to homeowners on irrigation of yards and landscapes
- The first such program in Texas was the SIP (seasonal irrigation program) by SAWS
- As a part of TexasET and in cooperation with water districts/utilities, the *WaterMyYard* program (<http://WaterMyYard>) was begun in 2014.

Home Owner Irrigation Notification Programs

Current WaterMyYard sponsors:

City of Irving

City of San Angelo

Fort Bend Subsidence District

Harris Galveston Subsidence District

Lower Colorado River Authority

North Texas Municipal Water District

Park Cities Municipal Utility District

Upper Trinity Regional Water District

Keep your yard healthy and save water in two simple steps.



Save Water

Over 50% of outdoor water is wasted due to overwatering, inefficient watering practices and broken or poorly maintained irrigation systems. Water My Yard will help you determine exactly how much to water, conserving water resources for the future and saving you money right now.



Keep Your Yard Healthy

A healthy yard needs less water than you may think. The Water My Yard program has been designed as a tool to assist you in determining an adequate amount of supplemental water that is needed to maintain a healthy lawn.



Automated Recommendations

It only takes a few short steps to begin receiving automated emails or text-messages to know how much water your landscape actually requires based on local weather conditions.

Let's get started

Step 1.) Check if your address is in the service area:

Enter a full address, city or zip code

Check your address

2.) We need to know the precipitation rate of your irrigation system?

- You know your precipitation rate
- You do NOT know your precipitation rate ✓ ⓘ

Please select the sprinkler from below that most resembles the sprinklers that your system uses. ↓



Multi-Stream

Applies water in multiple moving streams across the lawn, typically in either a circle, half circle, or quarter circle pattern.

You have this type of sprinkler



Rotor

Applies a single stream of water that rotates in a circular pattern over the lawn.

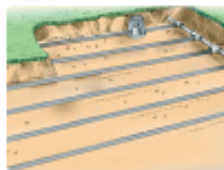
You have this type of sprinkler



Spray

Applies a solid continuous fan of water across the lawn, typically in either a circle, half circle, or quarter circle pattern.

You have this type of sprinkler



Drip

Applies water through dripping emitters in a buried hose in the lawn's root zone. Sub-surface drip of turf only.

You have this type of sprinkler




Hose-end

Applies fan-type sprinklers manually placed in the yard. Assuming full coverage (180 degrees) with no overlap.

You have this type of sprinkler

Watering recommendation for: Tuesday May 14, 2019 to Monday May 20, 2019

home station 1


 Station: Plano

Sponsored by:

North Texas Municipal Water District



Default Zone: Precipitation Rate: 0.5 in/hr

 0 inches of water needed 1.57 inches effective rainfall*

 No watering required!

Current watering restrictions:

Every drop matters! Water only as needed and operate irrigation systems in manual mode. Check with your local water provider for watering guidelines specific to your service area.

This information is provided by the "Irrigation Technology Program" under the direction of [Dr. Guy Fjpps](#).

Watering recommendations are based on standard scientific methods, accuracy is dependent on the correct input of your irrigation system's precipitation rate.

If you would like to discontinue this email service please click [unsubscribe](#).

This email was sent to Bryan77843@gmail.com by [Texas A&M AgriLIFE Extension](#).

Texas A&M AgriLIFE Extension 600 John Kimbrough BLVD, Suite 509 7101 TAMU College Station, TX 77843-7101

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* Effective rainfall is not the total measured rainfall

9:53



1 (410) 200-620 >

Text Message
Saturday 8:30 AM

FRM:Water My Yard
SUBJ:Water My Yard
MSG:Site: Bryan Zone: Default
Zone=>0 watering for 0 minut



Text Message



Water Savings and Economic Impact of WMY

- Current number of subscribers ~17,000
- Average annual water savings 1,789 million gallons
- Average annual water cost savings \$7.84 M

Feasibility Study for Development of Statewide Evapotranspiration Network

- TWDB funded study
- Final Report submitted December 2017
- PI's
 - John W. Nielsen-Gammon, Texas A&M University – State Climatologist
 - Guy Fipps, Texas A&M AgriLife Extension Service
 - Todd Caldwell, Bureau of Economic Geology, University of Texas at Austin
- Analysis was on the feasibility of a state-wide mesonet which could include an ET Network

Feasibility Study for Development of Statewide Evapotranspiration Network

- A mesonet station includes a variety of environmental sensors (while an ET station measures only the climatic parameters needed for calculating ET)
- Report is posted on the TWDB's website:
https://www.twdb.texas.gov/publications/reports/contracted_reports/doc/1613581995.pdf
- (a web search of the title works!)

Feasibility Study for Development of Statewide Evapotranspiration Network

John W. Nielsen-Gammon
Department of Atmospheric Sciences
Texas A&M University
n-g@tamu.edu

Guy Fipps
Department of Biological and Agricultural Engineering
Texas A&M AgriLife Extension Service
gfipps@tamu.edu

Todd Caldwell
Bureau of Economic Geology, Jackson School of Geosciences
University of Texas at Austin
todd.caldwell@beg.utexas.edu

D. Brent McRoberts
Department of Geography
Texas A&M University
mrobert@tamu.edu

Don Conlee
Department of Atmospheric Sciences
Texas A&M University
dconlee@tamu.edu

Final report pursuant to Texas Water Development Board contract
number 1613581995

December 21, 2017

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Feasibility Study for Development of Statewide Evapotranspiration Network

- Report identifies mesonets/ETNetworks in other states that could serve as a model for Texas
- Identifies factors/business models of successful ET Networks and Mesonets
- The Oklahoma Mesonet, for instance:
 - The State owns and maintains all the stations
 - Delivery of products are contacted out to others
 - OSU created the ET products

TexMesonet

The TWDB has begun the creation of a state-wide mesonet

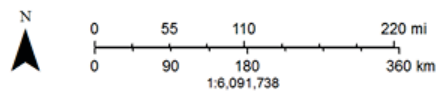
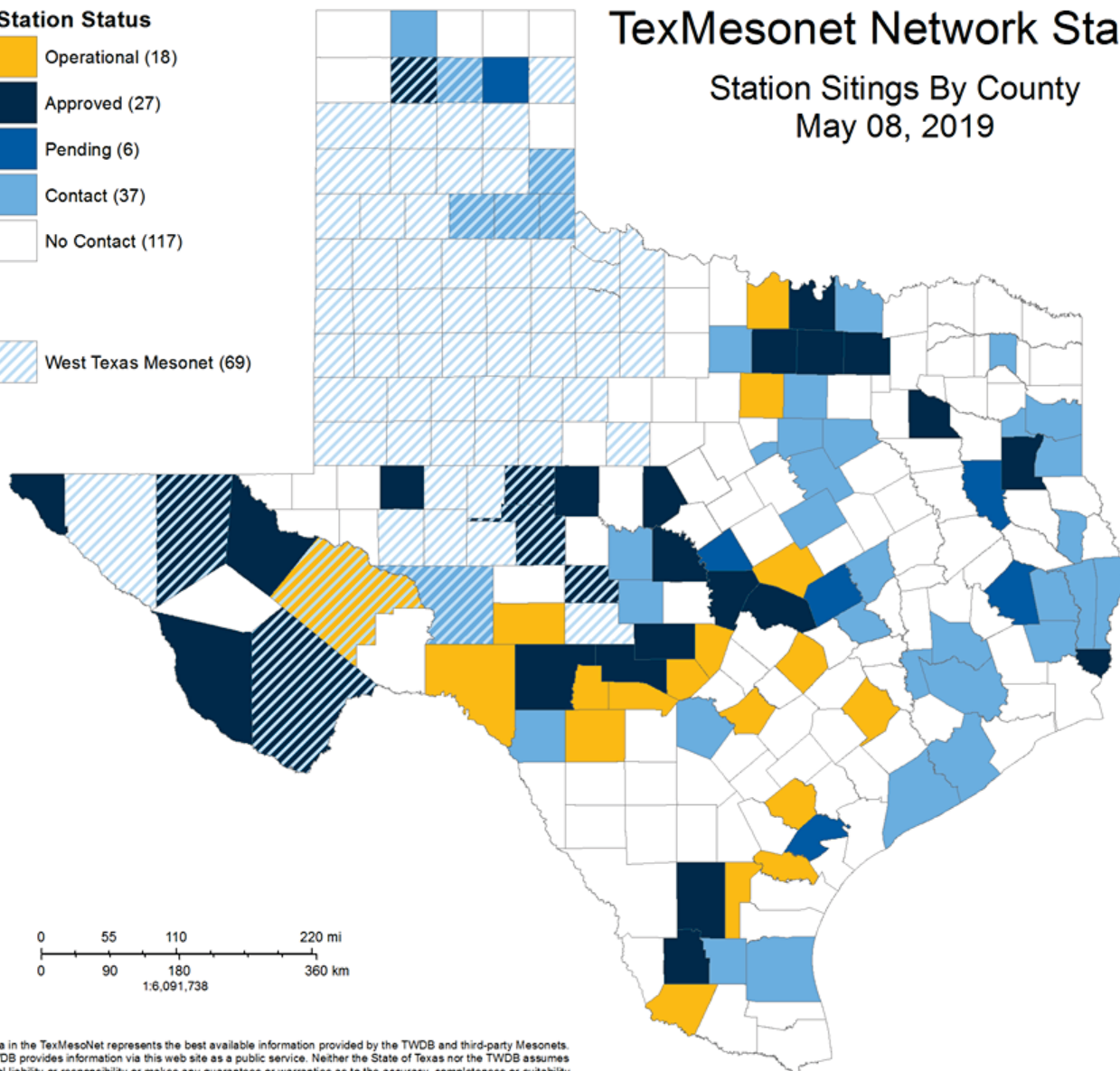
<https://www.texmesonet.org/>

TexMesonet – short history

- Severe flooding in the Spring of 2016 in Southeast Texas highlighted that Texas had insufficient data for flood prediction and response
- Summer 2016, the Governor makes funds available to the TWDB to begin development of a mesonet
- Initial TWDB work was focused on being a *network of networks* and installation of a few mesonet
- Program received continuing funding from the 2017 Legislature
- Goal is to eventually establish 2 mesonet stations in each county

TexMesonet Network Status

Station Sitings By County
May 08, 2019



The data in the TexMesoNet represents the best available information provided by the TWDB and third-party Mesonets. The TWDB provides information via this web site as a public service. Neither the State of Texas nor the TWDB assumes any legal liability or responsibility or makes any guarantees or warranties as to the accuracy, completeness or suitability of the information for any particular purpose. The TexMesonet attempts to provide the data in as near to real time as possible. However, there is no express or implied guarantee that the information will be timely. The TexMesonet systematically revises or removes data discovered to be incorrect and therefore provides the data "as is" and "as available". If you find inaccurate information or have questions, please contact TexMesonet@twdb.texas.gov

Establishment of a sustainable ET Network in Texas - recommendations

- Seek to expand the mission and funding levels of TexMesonet to include stations to support a State-wide ET Network
- Seek to expand the mission and funding of the West Texas Mesonet to support a State-wide ET Network
- Contract out the development and dissemination of ET products (such as TexasET) to appropriate state agencies