

TexasET Network Weather Station Sponsorship

What is ET?

Evapotranspiration (or ET) is the scientific term for the amount of water that plants and crops need to grow and remain healthy. The water requirements of plants depend upon both:

- a) the type of plant, and
- b) the local weather, particularly temperature, relative humidity, wind speed and solar radiation.

For ET determination, local weather must be measured using an “ET” type weather station. National weather service data cannot be used for this purpose because of ET station siting requirements and the need for solar radiation data.

TexasET uses the standardized Penman-Monteth method for calculating ET from local weather which is the international standard for such purposes. This method calculates the ET of a reference grass referred to as ETo. Then, plant coefficients are used to relate the ETo to the specific plants or crops being grown.

Over the past 60 years, research and demonstration projects have shown that using ET-based irrigation schedules can save significant amounts of water. In urban settings, automatic irrigation systems typically are improperly set-up and “over-irrigate” (and waste) 20%-50% of the water applied.

What is the TexasET Network?

The TexasET Network was begun in 1994 by Dr. Guy Fipps, Professor and Extension Specialist, Texas A&M AgriLife Extension Service in order to promote the use of ET-based irrigation water management in urban and agricultural applications. The website (<http://TexasET.tamu.edu>) posts daily weather and ETo summaries and has tools to determine watering requirements for landscapes and crops. Users can sign up for free automatic emails that also provide this customized information.

TexasET is now a component of our Irrigation Technology Program (ITP) which also includes trainings and short courses, technical services and applied research projects. For more information, see <http://itc.tamu.edu>.

Unlike other states which fund state-wide ET Networks, Dr. Fipps receives no State funding to maintain the network. In order to help cover costs, TexasET depends upon local sponsors to purchase the weather stations and cover communication and maintenance costs. We also request that organizations that use TexasET as part of their water conservation programs pay a Network Fee in order to help maintain this service.

We also routinely work with sponsors to provide customized data, information, interactive maps and websites in order to meet their individual requirements on a cost-basis. Information dissemination programs can also be set-up in cooperation with local county Extension offices.

Station Sponsorship Requirements

To sponsor a weather station on the TexasET Network, the sponsor must:

1. Purchase a weather station that meets TexasET Network specifications,
2. Pay the monthly bill if a telephone or cell phone is used for data transfer,
3. Appoint a Station Manager to oversee the required maintenance of the station,
4. Provide for sensor recalibration costs and maintenance to the station as needed, and
5. Acknowledge the TexasET Network, Texas A&M AgriLife Extension Service as the source for ETo and weather data, and irrigation recommendations as appropriate.

Station sponsors will be recognized on their Station's webpage on the TexasET website.

Note: through our School of Irrigation, we offer a 1-day short course on *Operation and Management of Weather Stations for Irrigation* which station managers may find useful. Registration fees for this course is waived for station managers.

TexasET staff will:

1. Assist the sponsor with the purchase and siting of the weather station,
2. Provide advice on the most appropriate communication method(s) based on local situations,
3. Help set up internet transfer (if used),
4. Download station data on a daily basis, perform error and data quality checks, calculate ETo, and post on the TexasET Website,
5. Assist the station manager with troubleshooting problems if they occur and with sensor recalibration and installation directions, and
6. Other services on a cost-basis such as weather station installation, and the creation of customized webpages and information delivery.

Costs

1. **Weather Station:** ~\$5500.
See the price list of station components below.
2. **Weather Station Installation:** *Varies.*
Costs vary from site to site and depend on the preferences of the sponsor. Stations may be purchased with a self-supporting tripod and simply placed in a grassy area, or on a pole set-up with a concrete base. A chain link fence may be needed if located in a public accessible area. Contact our staff for more information.
3. **Extra Set of Sensors:** ~\$1700.
We recommend that sponsors keep on hand an extra set of sensors so that there is no data interruption when sensors are recalibrated or must be replaced.
4. **Annual Sensor Recalibration Costs:** ~ \$400 per year
Sensors are recalibrated every one or two years, depending on the sensor. Thus, costs vary from year to year.
4. **TexasET Network Fee:** \$3000 per year, and \$300 for each additional station.

Note: billing for fees is through Texas A&M AgriLife Extension Service.

Contacts

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Equipment Specifications

TexasET Network requires scientific grade weather stations and sensors that may be purchased through Campbell Scientific, Inc. If other manufacturers are used, then the equipment must meet or exceed that of the equipment listed below. Data loggers must be programmable.

<u>Minimum Weather Station Specifications</u>	<u>Approximate Costs*</u>
1. CR800 Datalogger for Measurement and Control	\$1100
2. HMP60-L10 Vaisala Temperature and RH Sensor	\$ 345
3. 6 Plate Gill Radiation Shield	\$ 120
4. TE525-L25 6" Rain Gauge	\$ 377
5. LI200X-L15 LI-COR Pyranometer	\$ 412
6. LI2003S LI-Cor Leveling Base	\$ 80
7. CM225 Solar Sensor Mounting Stand	\$ 28
8. 03002-L15 RM Young Wind Set	\$ 686
9. CM220 Right Angle Mounting Kit	\$ 30
10. PS150 12V Power Supply w/Rechargeable Battery	\$ 275
11. SP10 10W Solar Panel w/Regulator	\$ 185
12. CM106 10-foot Galvanized Steel Instrument Tripod	\$ 510
13. CM204 4-foot cross-arm mount	\$ 88
14. ENC14/16 Weatherproof Enclosure	\$ 350
Total	\$4586

**costs as of March 2015 and do not include shipping, handling, tax or installation*

Communication Options

1. Cell Phone

Raven XTV* (Verizon)	\$479
LS300g* (AT&T)	\$479
Raven Mounting Kit	\$ 24
Null Modem Cable	\$ 4
0dBd ½ Wave Whip Antenna	\$ 22

2. Land line phone

COM220*	\$384
Surge protection	\$ 30

3. Ethernet

NL201*	\$290
Field power cable	\$ 14

4. Radio (various options)

**modems - one modem is required for each communication option*

