



Tempest Home Weather Station

By

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Outline

- Overview of the Tempest Weather Station
 - Description from the web site
 - Cost
- Weather station display
 - No dedicated monitor – web browser or phone app
 - Interactive Demo (if available in meeting room) + Screen Captures
- My Installation
 - Physical & Software
 - Using a dedicated processor & display (Raspberry Pi Zero W)
- Summary

AI-Powered Weather App (from web site)

<https://weatherflow.com/tempest-weather-system/>



- While weather apps abound, the Tempest app leverages real-time data, advanced forecast modeling and the oversight of in-house meteorologists.
- Data from each Tempest is processed with advanced machine learning which checks the information for accuracy, allowing us to apply daily calibrations and ultimately improve your forecast over time.

So Advanced, It's Simple (from web site)



- A revolutionary design with no moving parts, nearly zero maintenance, instant online data, a free personal webpage, and a rich API powering a growing list of third-party applications.
- Install the Tempest home weather system in less than five minutes and it will do the rest!

Smart Home Enabled (from web site)

- Trigger your outdoor lights based on the actual brightness of the sky.
- Enable your thermostat to use the weather conditions outside your home to conserve heating and cooling use.
- Automate your sprinklers to operate based on rainfall.
- Get text alerts when lightning is approaching.
- Save time and money with a home that can optimize itself.

- I have not implemented any of these suggestions.

All About The Data (from web site)

- Accurate measurements from your location, along with data from other Tempest Systems, flows to our data processing center.
- There we also collect ALL other relevant weather data, including measurements from satellites, aircraft, radars and other surface weather stations.
- Our process ultimately yields standardized data and a real-time analysis product. Not every measurement is of equal value (e.g. wind 'shadows' affect how wind data is utilized) but our big data analytics adjust accordingly, meaning every Tempest System can make a difference.

Hyper-Local Forecasting (from web site)

- Our forecast system initializes with the ECMWF, the highly acclaimed European global forecast model, the best of NOAA's forecast models and WeatherFlow's own in-house modeling suite .
- Over key areas, WeatherFlow's operational forecast system (WF WRF) assimilates the most valuable observations into this powerful baseline to provide detailed regional forecasts.

Do Something About The Changing Weather (from web site)

- Tempest data, along with all our real-time useful information, is part of data sets which are shared with the National Weather Service (NWS-NOAA) and other met agencies across the world, supporting their mission of predicting dangerous weather and warning the public of potential risks.
- As forecasting becomes more difficult and weather patterns increasingly unpredictable, each Tempest helps contribute to a better global forecast.

Purchasing

- Cost: \$329 + tax (Free shipping)
- 60 Day Money Back Guarantee

- 2 Year Warranty
- 10 Year Extended Warranty

What's In the Box?



Tempest Weather System Includes:

- Tempest sensor device
- Flat base & pole mount attachments
- WiFi Hub (base station)
- Hub power supply
- Wood screw for temporary mounting

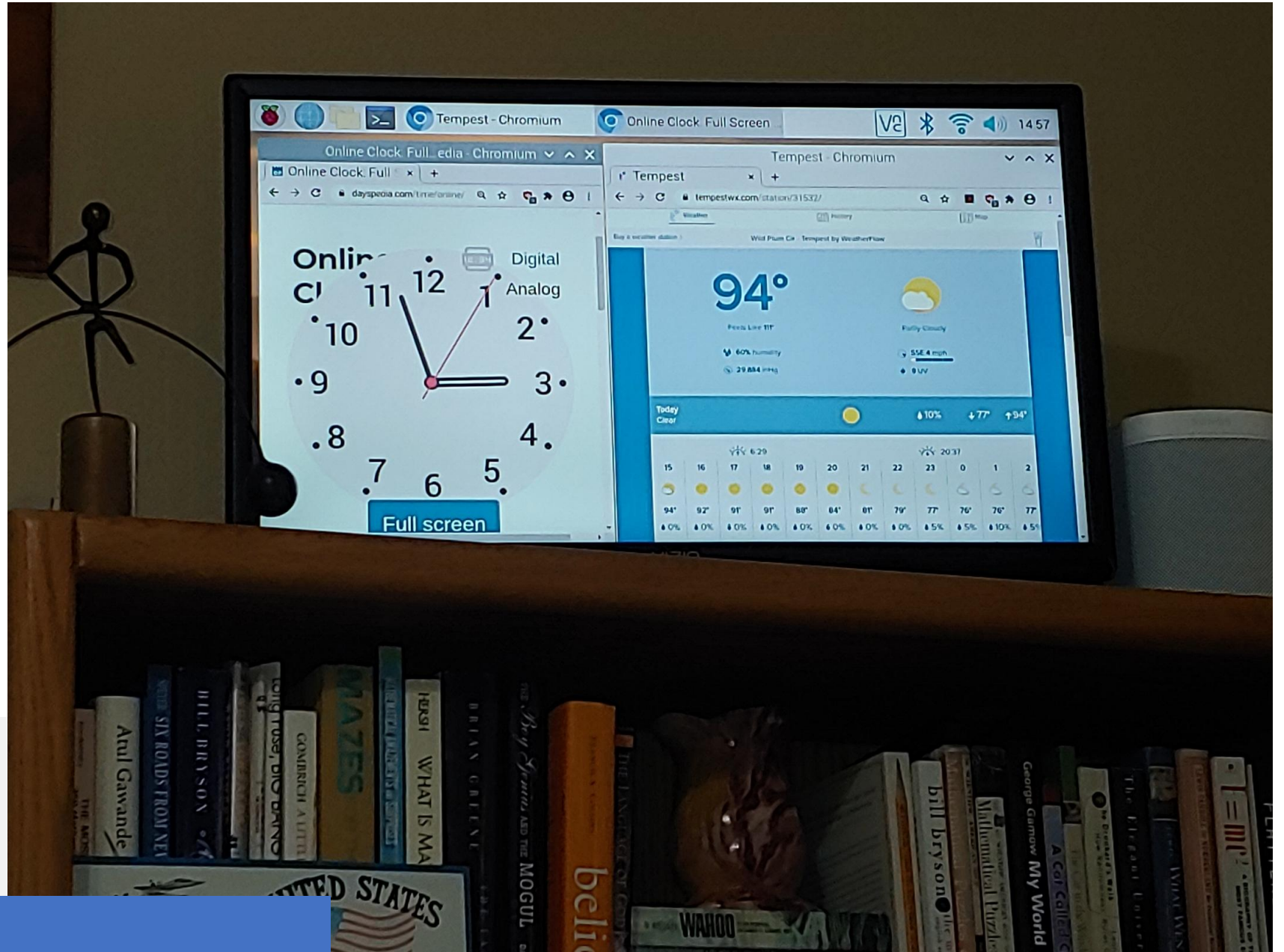
Tempest
Mounted On
House



Tempest On
Mount



Monitor on Bookcase



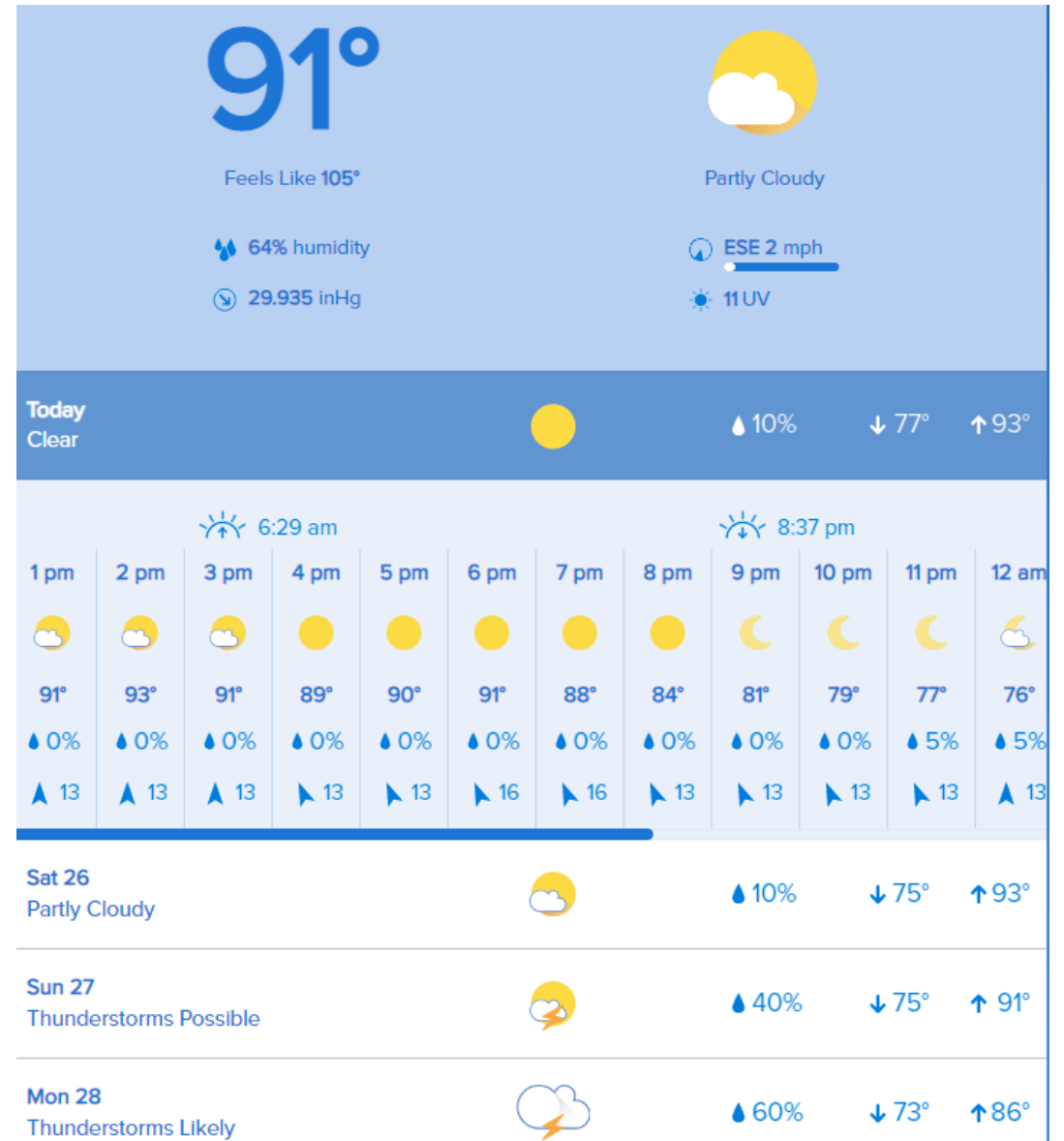
Raspberry Pi Zero on Bookcase



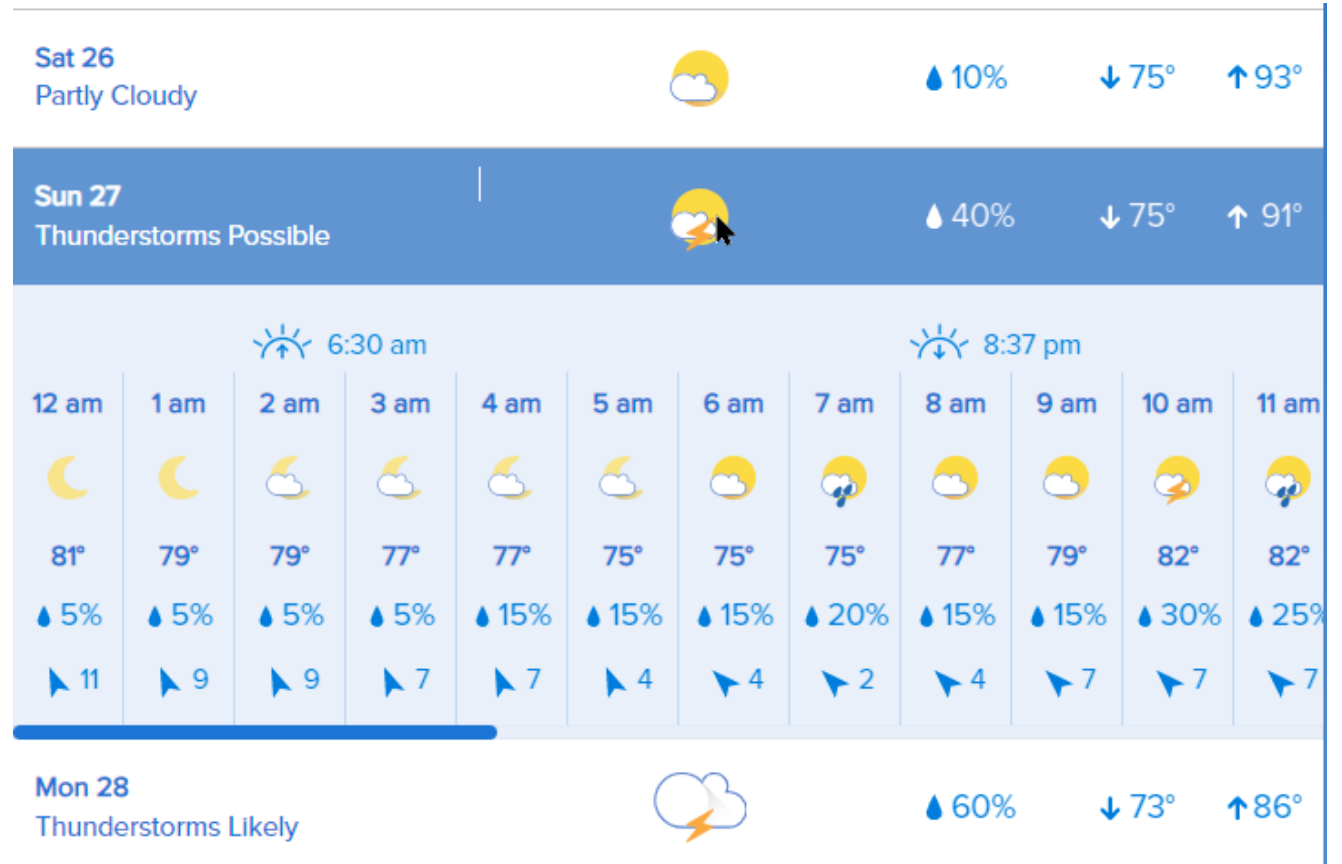
My Station Web Page

- <https://tempestwx.com/station/31532/>
- On-line Demo (if'n it works!!!)

Weather Page



Selecting a Future Page



Clicking on
Today's Page
(top half)

ST-00019829

 95.2 °F FEELS LIKE 113 °F HUMIDITY 59%

ST-00019829

 29.844 inHg TREND FALLING

ST-00019829

 last detected 4 days DISTANCE 19 - 22 mi LAST 3 HRS 0

ST-00019829

 ENE 1.9 mph GUSTING 0 - 6 mph

ST-00019829

 UV 7.1 BRIGHTNESS 88519 lux SOLAR RADIATION 738 W/m2

ST-00019829

 NONE RAIN (TODAY) 0.00" RAIN (YESTERDAY) 0.00"

ST-00019829

Station Pressure	29.002 inHg
Dew Point	78.6 °F
Wet Bulb Temperature	82.6 °F
Delta T	12.6 °F
Air Density	0.06929 lbs/ft3
Rain Duration (Today)	0 Minutes
Rain Duration (Yesterday)	0 Minutes

History Page – Day View

Day			Week	Month	Year	All Time
6/25/2021						
ST-00019829						
Air Temperature - °F						
Min	77.4	Max	91.2	Avg	81.3	
Relative Humidity - %						
Min	63	Max	90	Avg	82	
Sea Level Pressure - inhg						
Min	29.934	Max	29.989	Avg	29.965	
Lightning						
Strikes	0					
Wind - mph						
Min	0.0	Max	13.2	Avg	ESE 2.2	
Rain						
Duration - mins	0		Total - in	0.00		
UV Index						
Min	0.0	Max	11.8	Avg	2.1	
Solar Radiation - W/m2						
Min	0	Max	1158	Avg	219	
Brightness - lux						
Min	0	Max	138945	Avg	26292	
			● Online			

History Page – Month Summary

Day	Week	Month	Year	All Time
June 2021				
ST-00019829				
Air Temperature - °F				
Min 60.3 6/3		Max 99.5 6/13		Avg 80.2
Relative Humidity - %				
Min 43 6/13		Max 98 6/1		Avg 79
Sea Level Pressure - inhg				
Min 29.714 6/6		Max 30.119 6/1		Avg 29.931
Lightning				
Strikes 6454				
Wind - mph				
Min 0.0 6/1		Max 31.4 6/22		Avg E 1.3
Rain				
Duration - mins 1060		Total - In 3.67 ↓		
UV Index				
Min 0.0 6/1		Max 13.7 6/4		Avg 2.3
Solar Radiation - W/m2				
Min 0 6/1		Max 2445 6/4		Avg 262
Brightness - lux				
Min 0 6/1		Max 293384 6/4		Avg 31518

Dedicated Processor & Monitor

- Why?
 - Free up my primary monitor space.
 - Wanted a dedicated display without my PC being powered up.
- Implementation
 - Raspberry Pi Zero W
 - Monitor: Spare VIZEO 24" D-Series, 1080P, LED

Dedicated Processor & Monitor (cont)

- Raspberry Pi Zero W with
 - Wireless keyboard & mouse
 - Wireless link to my router
 - Chromium Browser
 - Resolved display timeout on RPi using the following commands:
 - `xset s off` # Disable screen blanking
 - `xset dpms 18000` (stays on for 18000 secs = 5 hours after last interaction)

Dedicated Processor & Monitor (cont)

- Experience
 - Chromium Interaction, with the Zero, is **painfully** slow.
 - RPi Zero W works fine once it is set up with desired pages on the display.
 - Occasionally Hub loses internet (about once / week). Requires router reboot.
 - Occasionally RPi freezes (every few days). Requires RPi reboot.
- Considering
 - Upgrading the processor to a spare RPi 3B +
 - Adding external wireless cameras (front and rear)
 - I have two Arlo HD cameras. Lots of mixed reviews online.

Issues with the Tempest System

- Initially for about a two months – unit would go on and offline, sometimes several times a day. Then may be good for a week or so.
- WeatherFlow support good. Replaced Hub but didn't solve the issue.
- The problem resolved itself and has been solid and trouble free for the last 6 months.

Summary

- The WeatherFlow Tempest is a great system
 - But, a hassle (for me) without a dedicated display
 - Wonderful with the dedicated display
 - It's more than just a home weather system
 - Coupled with WeatherFlows total weather system it has great forecasting data.