TwisterAlert
User Manual

For TwisterAlert version 1.1

Introduction and Commitment

What is TwisterAlert?

TwisterAlert is a lightweight, yet extremely robust and adaptive piece of software intended for use on Windows PCs. Running in the background, it constantly monitors an unlimited number of US based locations for Severe Weather Alerts published by the National Weather Service, and creates configurable audio / visual notifications the instant one is discovered. TwisterAlert.com

My Commitment

I will never, under any circumstances, require payment for or allow advertising on this software. Furthermore, the source code will always be included with TwisterAlert, and I encourage more capable programmers build even better, smarter versions as long as they share the same belief that potentially life-saving software should always be non-monetized and completely anonymous.

If you'd like to show your appreciation, you can donate to my caffeine fund!

Why?

While NOAA's Weather Radio transmitter network is extensive and largely reliable, gaps in coverage and Out-Of-Service transmitters are unavoidable. What's more, cellular coverage in some rural areas can be sparse or non-existent. *Both of these problems can be exponentially worse for people at sea or in close proximity to structures, geographic features or radio interference sources that can obstruct signal reception and disrupt the ability to receive potentially life-saving information.*

TwisterAlert was created to help fill these gaps. It could also be useful as a backup to a proper weather radio, or as a tool for monitoring locations of interest such as a loved one's residence or multiple business locations. With technologies like StarLink and fiber internet maturing at an exponential rate, as of mid 2024, virtually 100% of American households now have access to reliable internet. [Source](#)

Disclaimer:
This should not be relied on as a replacement for proper Severe Weather Alert devices such as a Midland All Hazards Alert Radio. <u>Damage to your local internet infrastructure or a power outage will render this software useless.</u> If you already have proven and reliable means of receiving severe weather alerts, TwisterAlert should only be viewed as supplemental.
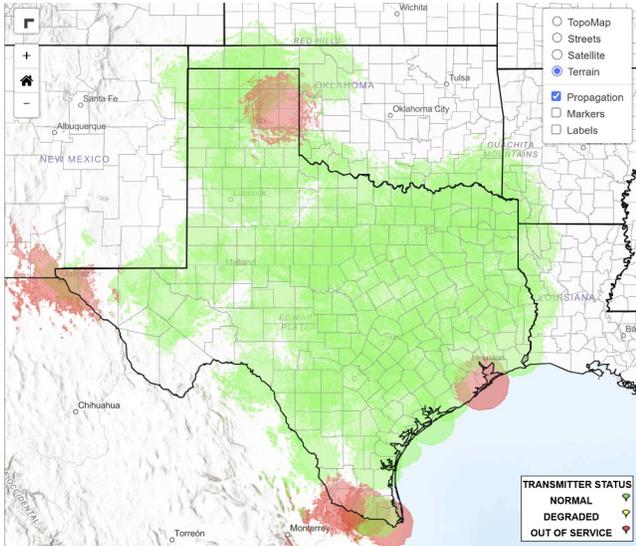
All information entered into TwisterAlert is stored locally on your machine and is not transmitted or accessible by anyone else. TwisterAlert has no code that would allow this behavior. Uninstall TwisterAlert immediately if you suspect this has happened.
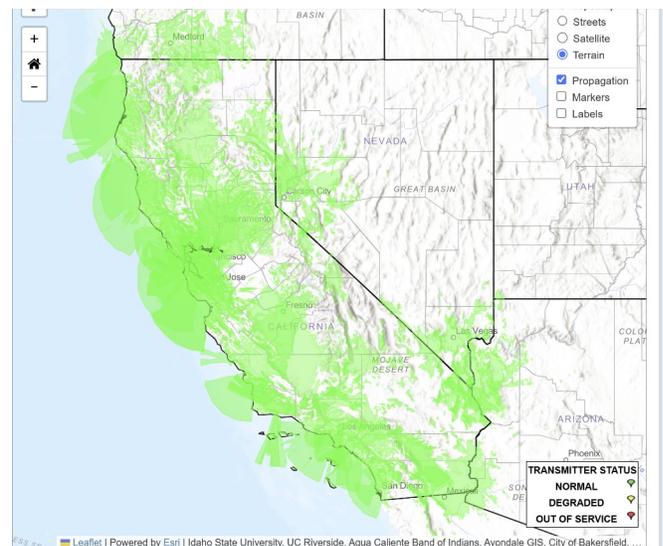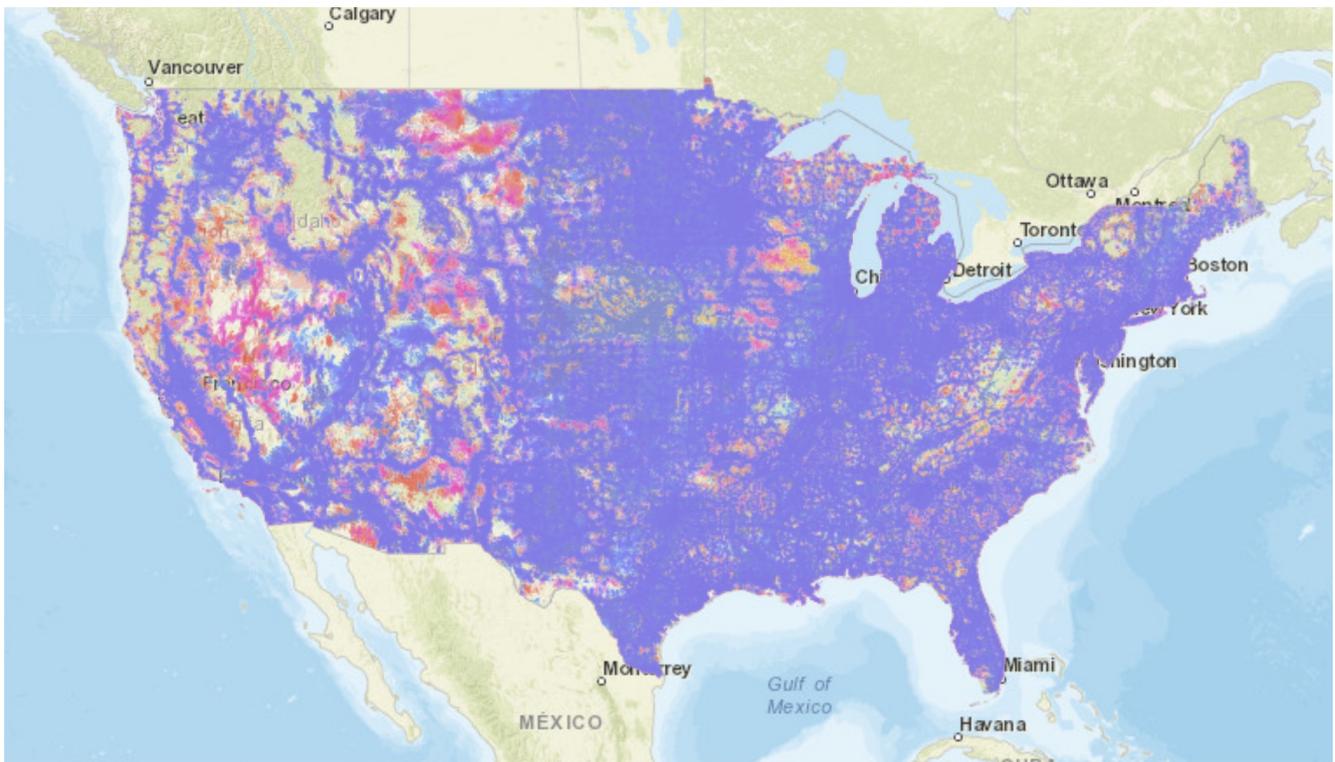
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Texas NWR Coverage Map (July 2025)

California NWR Coverage Map (July 2025)

US 4G LTE Coverage Map (July 2025)

Map Sources:
https://www.weather.gov/nwr/maps
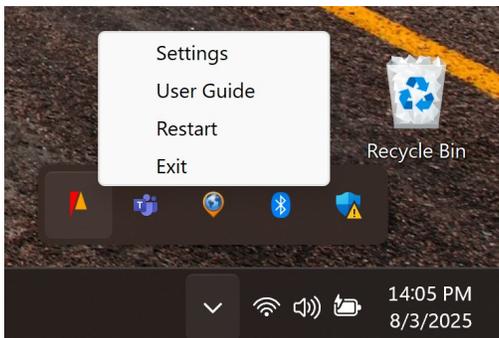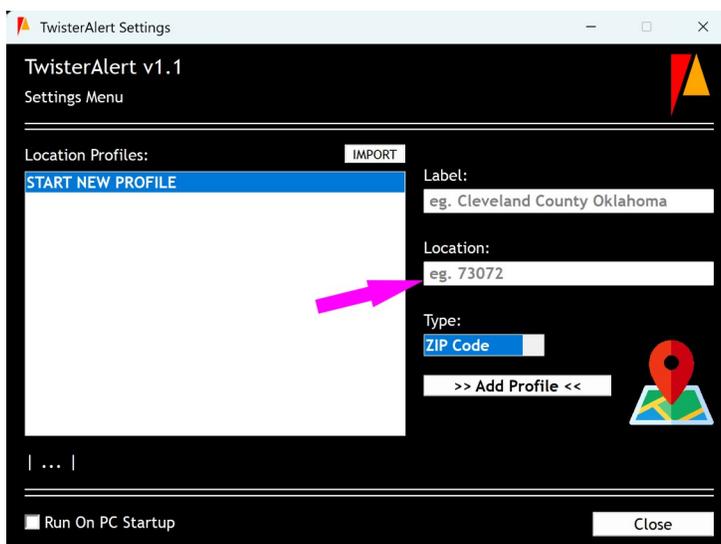https://www.fcc.gov/BroadbandData/MobileMaps/mobile-map

Quick Setup Guide

For those wishing only to monitor a single location such as your home county for severe weather alerts, it is possible to get up and running in as few as three steps once TwisterAlert is installed on your PC.

However, to get the most out of what TwisterAlert has to offer, and to know what to expect if an alert is issued for your area, I encourage you to continue reading the manual.

1: Open the Settings Menu.

2: Enter Your ZIP Code.
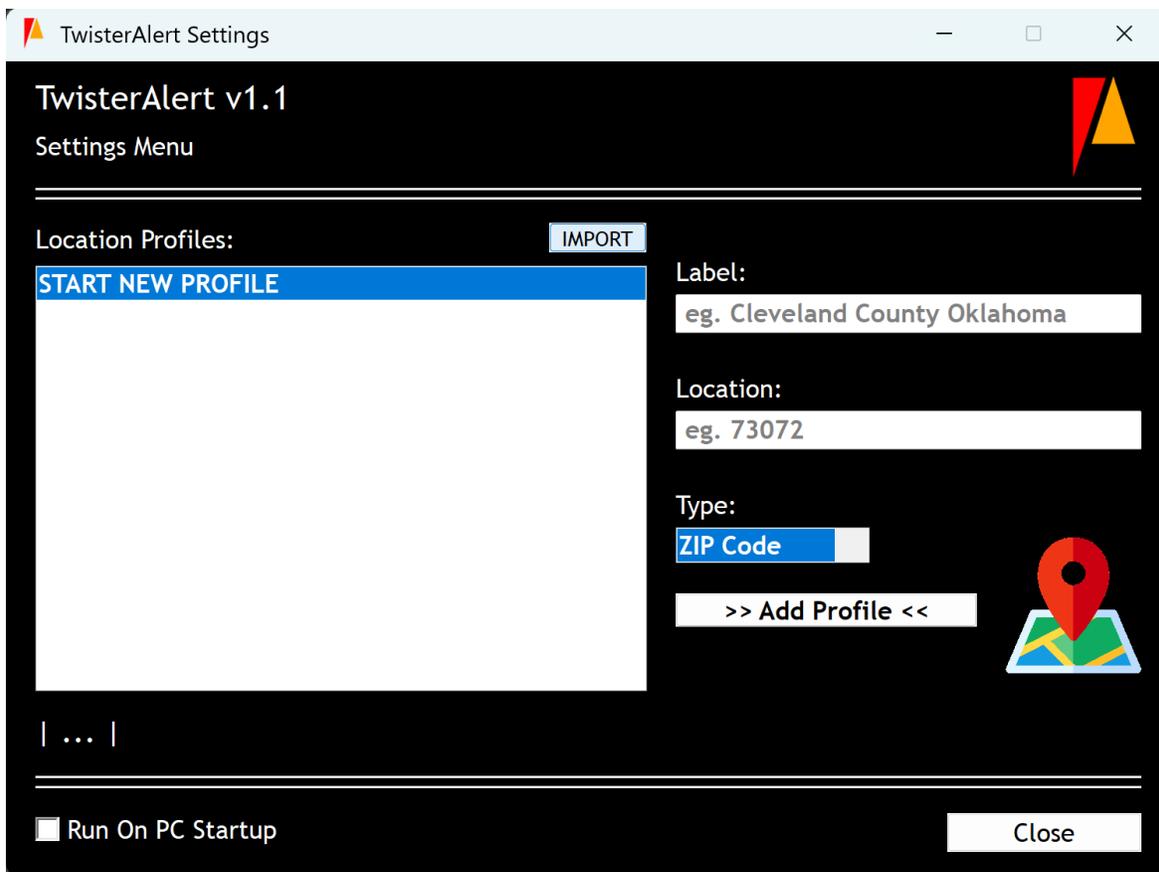

3: Click "Add Profile" and close settings.

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Settings Orientation

Profile Management

The first screen you will see upon opening TwisterAlert's Settings will be the Profile Management screen. This is where you can add, delete and update location profiles. There are also a few more niche features, such as importing and exporting existing profiles, which we will go over on page 8.

Let's start by going over the three fundamental basics of any TwisterAlert Location Profile.

Label:

This is what TwisterAlert uses to identify the affected profile of a severe weather alert notification. For example, a notification for a Tornado Warning for a profile with the label "Mom's House" will say "Tornado Warning for Mom's House", assuming default notification configurations are in place. *The label cannot exceed 45 characters (including spaces), contain no special characters except an apostrophe, and not already be in use on another profile*.

Location:

The Coordinates, ZIP Code or Zone ID of the location.

Type:

A scroll-list that allows you to tell TwisterAlert what type of location this is. Latitude/Longitude coordinates must be in Decimal Degrees format. "Zone ID" would typically be used to monitor a maritime area. *(eg. PKZ412 for one of the offshore zones in the Bering Sea)*

Coordinates vs. ZIP code:
Coordinates are hyper-specific and will allow TwisterAlert to request active severe weather alerts in effect only for that specific geographic location. By contrast, using a simple ZIP code or Zone ID will result in notifications for Severe Weather Alerts issued anywhere in the __entire__ county / parish / zone. I understand that for some, this may be preferable, but for most, this will result in occasionally annoying and unhelpful notifications.

To get latitude / longitude coordinates, navigate to the desired location on Google Maps, right click on the spot you wish to use and click the coordinates at the top of the menu that appears. This copies the coordinates into your clipboard which can then be pasted into the "Location" field in TwisterAlert.
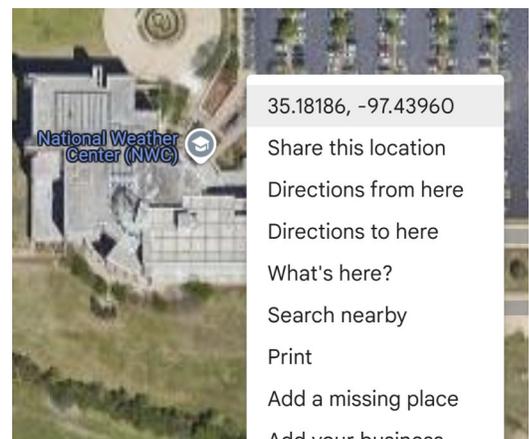
Import / Export:

Because of how extensively a location profile can be customized, I added the ability to Import and Export location profiles. This can be useful if you want to make backups of your profiles, or clone profiles between multiple systems.

To Export a profile, select the profile from the Location Profiles listbox and click "Export". Next, choose where you want to save the profile and click "Ok". A small configuration type file will then be created.

To import a profile, click "START NEW PROFILE" from the Location Profiles listbox and click "Import". Navigate to the saved configuration file and click "Open".
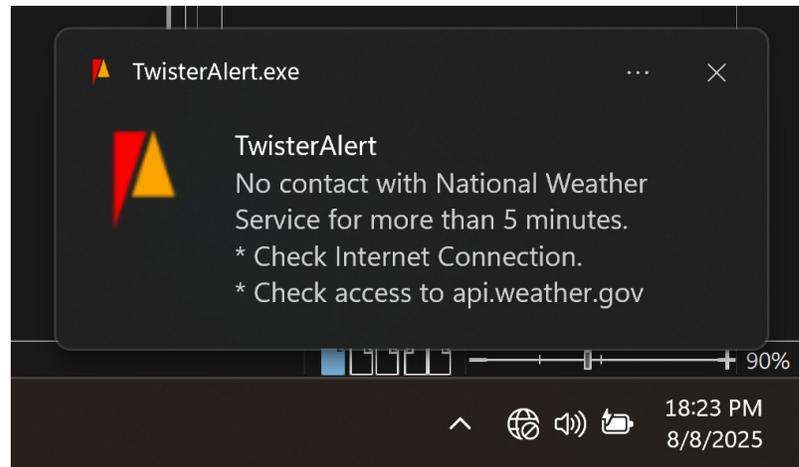
TwisterAlert
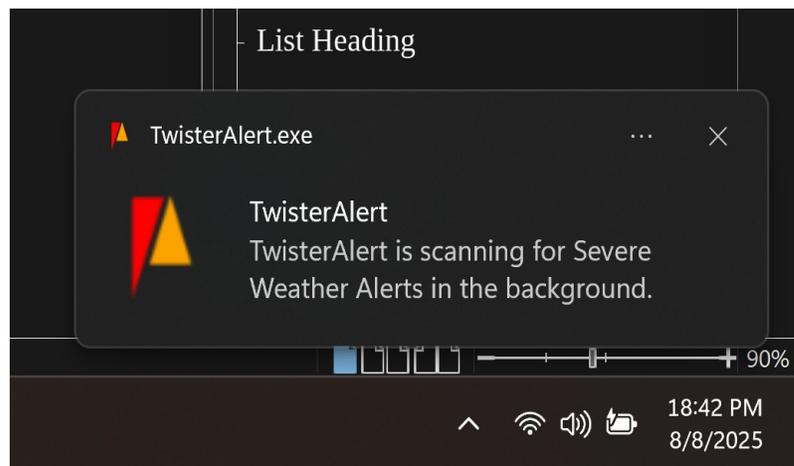## User Manual
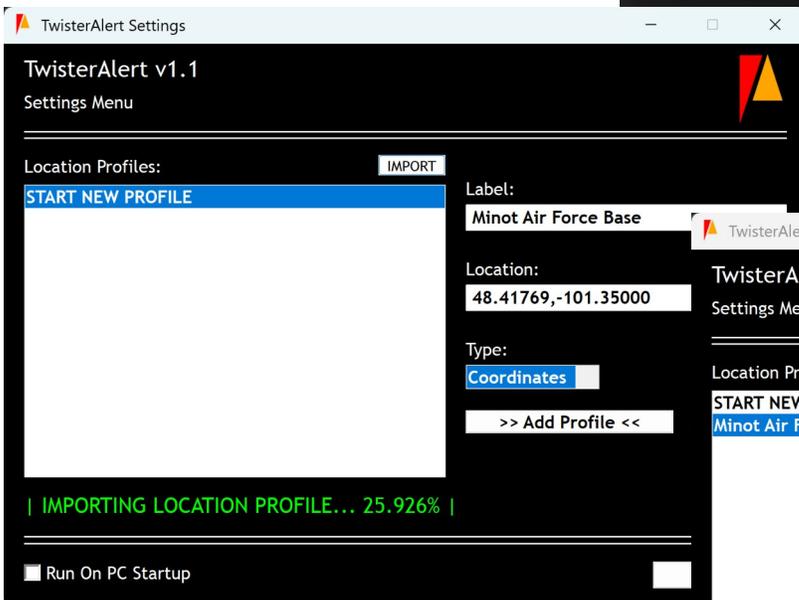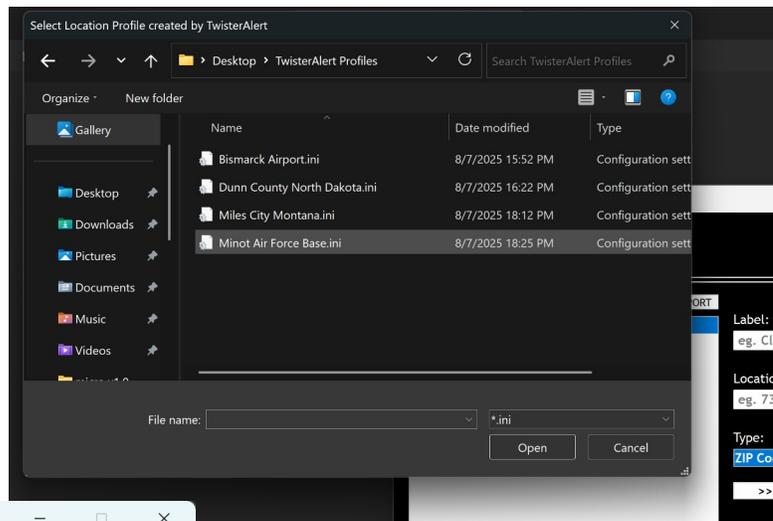
Connection Status Indicators

This part is a little technical but bear with me.

Because of the possibility that internet connection may be interrupted or limited during severe weather, TwisterAlert has a feature that will alert you if it cannot establish a useful connection with the National Weather Service's API service api.weather.gov.

During Normal Operations, meaning Settings is closed and TwisterAlert is scanning for alerts in the background, a balloon tip will appear every 5 consecutive minutes that TwisterAlert has been unable to receive data from the National Weather Service.

After this message appears and once connection has been reestablished, this message will appear letting you know that things are running smoothly once again.

To definitively determine if TwisterAlert is able to receive and correctly parse National Weather Service data, a full test can be performed by clicking the TwisterAlert Logo within the settings window, followed by clicking "CAP / ATOM Test".

A hand full of errors are completely normal and shouldn't affect your ability to receive severe weather alert notifications. If you have verified that your connection to api.weather.gov is good and there is still large number of errors or no connection at all, please reach out to me ASAP. https://twisteralert.com/contact/

Alert Notification Panel
Accessed by clicking "Alert Notifications >>"

Before moving on, it is crucial to understand that all notification settings are unique to the Location Profile in which they are contained. To use the image on the next page as an example, changes made to these settings will only apply the location profile "Cleveland County Oklahoma" and no other profile.

When a location profile is first created, notifications for the following severe weather alerts are enabled by default:

Tornado Warning, Tornado Watch, Severe Thunderstorm Warning, Hurricane Warning, Blizzard Warning, Civil Danger Warning, Civil Emergency Message, Earthquake Warning, Evacuation Immediate, Extreme Fire Danger, Flood Warning, Flash Flood Warning, Fire Warning, Extreme Wind Warning, Ice Storm Warning, Local Area Emergency, Law Enforcement Warning, Nuclear Power Plant Warning, Radiological Hazard Warning, Shelter In Place Warning, Special Weather Statement, Tropical Cyclone Statement, Tropical Storm Warning, Tsunami Warning, Volcano Warning, Winter Storm Warning.

Each of these alerts, as well as all newly enabled alerts are pre-set with the following notification configurations. We will go over each of these settings in the following pages.

Voice:
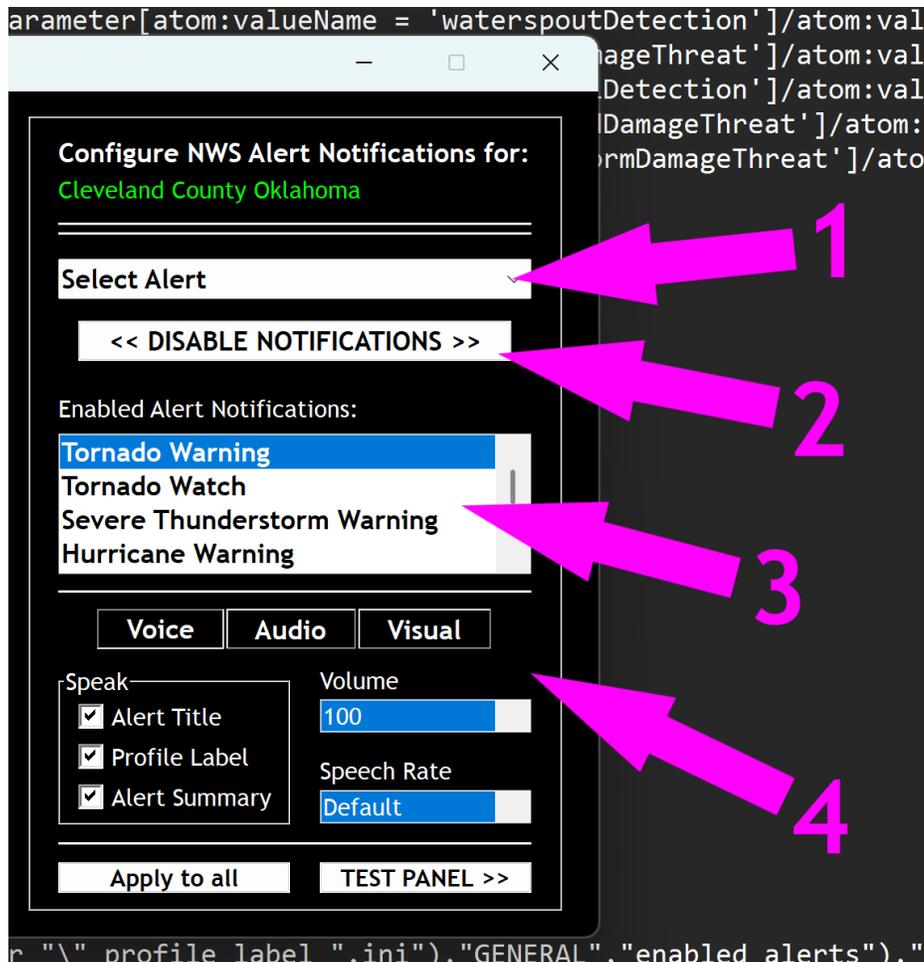*Alert Title: Enabled*
Profile Label: Enabled
Alert Summary: Enabled
Volume: 100%
Speech Rate: Default

Audio:
Alert Tone Profile: Default
PC Vol Override: Default

Visual:
Pop Up: Enabled
Font Size: 11
Balloon Tip: Disabled

1: Alert Menu
Contains all known National Weather Service alerts.

If an alert is selected from this menu which has already been enabled, it will be selected in the "Enabled Alert Notifications" list-box, and all saved notification configurations for that particular severe weather alert will be loaded.

2: Enable / Disable Notifications
Enables or disables all notifications for a selected Alert.

3: Enabled Alert Notifications
*List-box containing all enabled alerts for this location profile.*

4: Notification configurations

Customize how you'd like to receive notifications for the selected alert.

Voice:

Configurations for the
Text-To-Voice notification option.

TwisterAlert uses the default
built in Windows Voice to tell
you what type of alert has been
issued (Alert Title), for which
of your profiles the alert is in
effect for (Profile Label) and
the summary text as published by the National Weather Service. (Alert Summary)
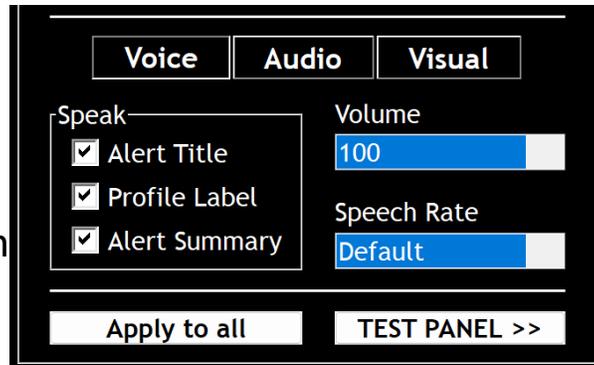
The "Volume" and "Speech Rate" scroll-lists control the volume and speed at which the voice reads a notification message for the selected alert.

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Audio:

Configurations for the Alert Tone notification option, as well as PC Volume Override setting.

The "Alert Tone" is an alarm sound file which is played immediately following the appearance of a notification pop-up (if enabled), and a few seconds before the Text-To-Voice begins (if enabled). In the "Default" setting, which specific alert tone is used will be entirely dependent upon the severity level of the Severe Weather Alert as published by the National Weather Service. **We will explore more about alert severity levels in the coming pages.**
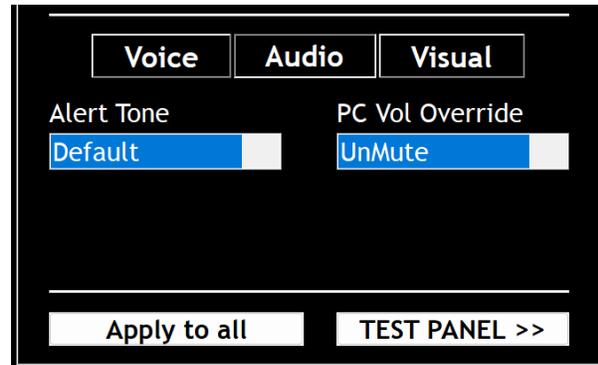
"PC Vol Override" takes over control of your PC's sound immediately prior to a severe weather alert notification, setting it to the selected volume level for the duration of the notification. The PC's volume setting will be automatically returned to it's previous state upon conclusion of the audio portion of the notification sequence.

The default setting, "UnMute", does not change your PC's volume level but simply ensures the PC's volume is unmuted during an alert.

PC Volume Override can be disabled altogether by selecting "N/A".

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Visual:

Configurations for the visual aspects of an alert notification.

By default, an on-screen pop-up is created which contains information about the Severe Weather Alert. The font size of the summary text is the only customization option for pop-ups as of TwisterAlert version 1.1
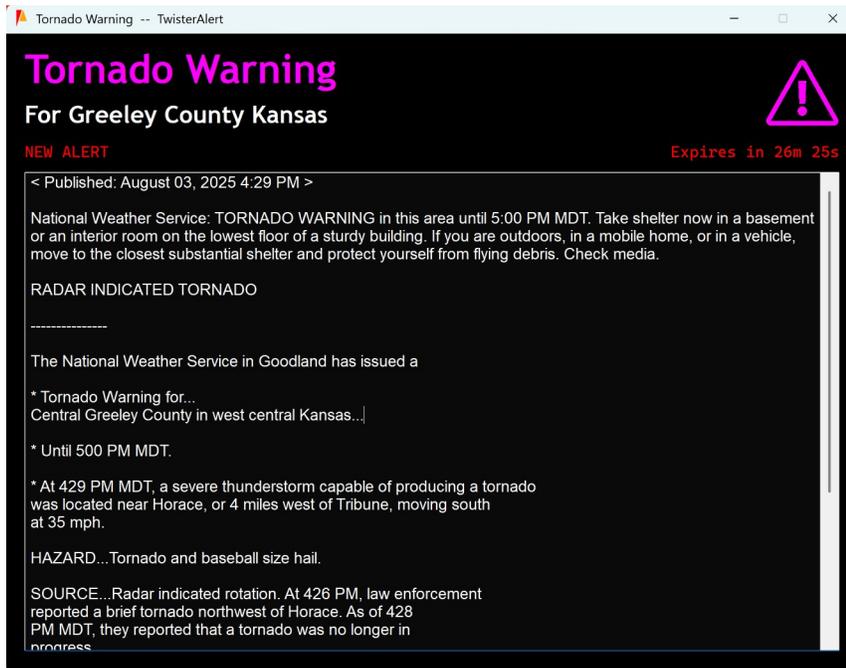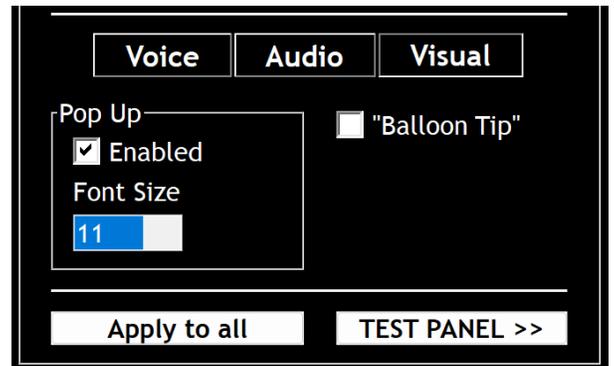
You can create simulated alerts and test out all notification configurations in the "Test Panel".
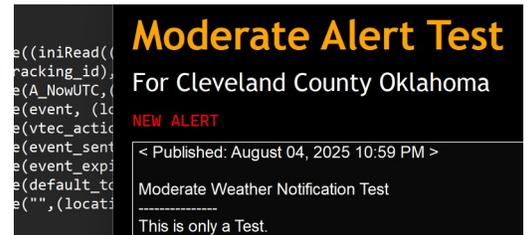
"BalloonTip" will create a Windows style alert pop-up at the bottom right of your screen.

Notification Pop-Up Orientation

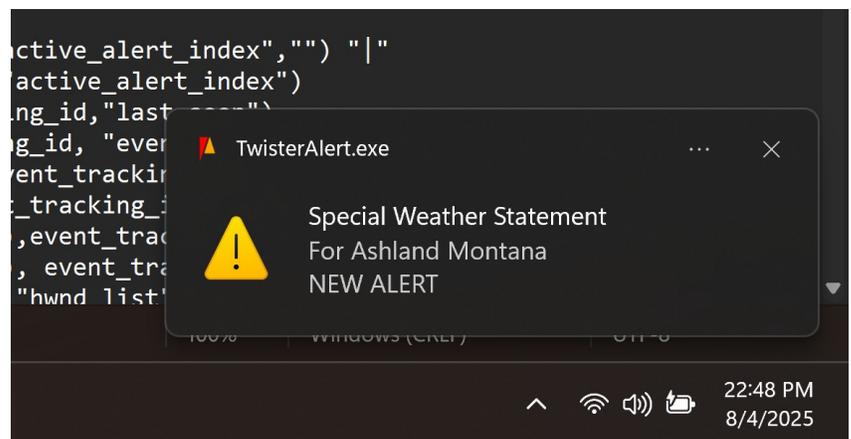This section is intended to familiarize you with the anatomy and life cycle of a typical Severe Weather Warning / alert notification pop-up. In the event a severe weather alert is issued for one of your monitored locations in TwisterAlert, the notification pop-up will appear moments before the alarm tone sounds. Immediately following the alarm tone, the text-to-voice reading will begin. All these options can be extensively modified as explained previously, but the order in which they occur cannot.

For the remainder of the manual, I will be referring to Severe Weather Alerts / Warnings as "Events", and TwisterAlert's notifications of events will be referred to as "Event Notifications".

Severe Thunderstorm Warning ← 1

For this location ← 2

NEW ALERT ← 3   4 → Expires in 0h 43m 15s

Severe Thunderstorm Warning issued June 26 at 6:01PM CDT until June 26 at 6:45PM CDT by NWS Kansas City/Pleasant Hill MO

THUNDERSTORM DAMAGE THREAT... CONSIDERABLE ← 5
RADAR INDICATED MAXIMUM HAIL SIZE...0.75 INCH
RADAR INDICATED MAXIMUM WIND SPEED... 70 MILES PER HOUR

The National Weather Service in Pleasant Hill has issued a

* Severe Thunderstorm Warning for...
East central Wyandotte County in northeastern Kansas...
Northeastern Johnson County in east central Kansas...
Jackson County in west central Missouri... ← 6

* Until 645 PM CDT.

* At 601 PM CDT, a severe thunderstorm was located over Overland Park, moving east at 25 mph.

HAZARD...70 mph wind gusts.

SOURCE...Radar indicated.

IMPACT...Expect considerable tree damage. Damage is likely to

1: "Title"
This is the title of the event as published by the National Weather Service.

Severity Level:
The expected "severity" of an event is included in the body of data sent by the NWS. TwisterAlert communicates this information by altering the font color of the Title, the color of the triangular alert icon, and the type of audio "tone" alert played when an event notification is first issued (if set to "default"). You are able to create simulated event notifications at all possible severity levels and configuration settings using the "Test Panel".

In most cases, the severity level provided by the NWS is the only factor that determines how TwisterAlert issues event notifications, **however, any event with storm tags (5) including the key-words** *"TORNADO", "WATERSPOUT", or "CONSIDERABLE"* **will be upgraded to at least "Severe" but could also be set to "Extreme" under the right circumstances. (eg. Tornado Warnings are always set to "Extreme", regardless of storm tags etc.)**

Furthermore, any event which includes a WEA activation, storm tags including the key-words "CATASTROPHIC" or "DESTRUCTIVE", or summaries (6) found to include the phrases *"Particularly Dangerous Situation"* **or** *"Extremely Dangerous Situation"* **will automatically be set to "Extreme", regardless of the event type or NWS severity level.**

An event's severity level can change dynamically throughout the life cycle of an event if an update warrants it.

For an unrecognized event with no severity level provided by the NWS, TwisterAlert will default the notification to "Extreme".

Minor	Moderate	Severe	Extreme

2: "Location"

This line will show the "label" you have added for this location. For example, an event notification for a location profile with the label "This Location" will say *"For This Location"*.

3: "Action"

This will show one of the following messages, which is intended to briefly describe the nature of the most recently published update for this particular event.

NEW ALERT, UPDATE, CORRECTED, UPGRADED, EXPANDED IN AREA, TIMEFRAME CHANGED, TIMEFRAME CHANGED AND EXPANDED IN AREA

If you are interested and have some headache medication handy, you can learn more about this on page 13 – 18 of this publication.
https://www.weather.gov/media/directives/010_pdfs/pd01017003curr.pdf

4: "Expiration Countdown"

This is the time remaining until the published expiration time of the event.

60 seconds after the expiration countdown hits zero, the event notification pop-up will be closed.

Expires in 0h 26m 49s

** EXPIRED **
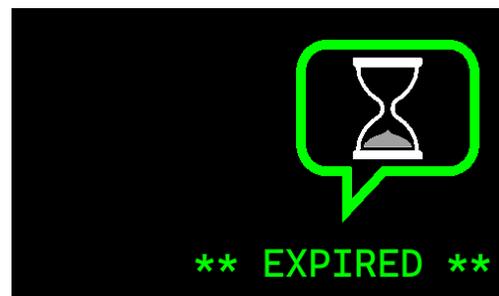
5: "Headline"

This will contain the "headline" as published by the NWS, and "storm tags" if they exist. If any alert triggers a WEA (Wireless Emergency Alert), the text intended for broadcast to cellular devices will be used instead of the standard headline.

Severe Thunderstorm Warning
For this location

NEW ALERT   Expires in 0h 33m 18s

National Weather Service: SEVERE THUNDERSTORM WARNING in effect for this area until 11:30 PM CDT for DESTRUCTIVE baseball size hail. Take shelter in a sturdy building, away from windows. People and animals outdoors will be severely injured.

THUNDERSTORM DAMAGE THREAT... DESTRUCTIVE
RADAR INDICATED MAXIMUM HAIL SIZE...2.75 INCH
RADAR INDICATED MAXIMUM WIND SPEED... 60 MILES PER HOUR

Instead of going too deep into the details of WEA and storm tags, I will refer you to a few excellent resources which I highly recommend reading.

https://www.weather.gov/wrn/wea360
https://www.weather.gov/impacts/examples
https://www.weather.gov/lot/SevereThunderstormWarningsUpdate

6: "Summary"

This is where the most important information will be found. This will contain the latest detailed information regarding the alert exactly as published by the National Weather Service.

Life Cycle of an Example Event

At a minimum, all events will be issued and eventually expire or be canceled. Depending on the length and severity of an event, there may be many updates before then, although this may not always be the case. Each time an update is issued, the alert tone and text-to-voice will be activated if enabled for the event.

"New Alert"

A new Severe Thunderstorm Warning is issued at 6:01 PM Central Daylight Time by the NWS office in Kansas City, / Pleasant Hill, Missouri.

Because of the presence of the "THUNDERSTORM DAMAGE THREAT...CONSIDERABLE" storm tag, the severity level for this event was established as "Severe" by TwisterAlert, setting the colors to Red and prompting an enhanced alert tone.

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"Update"

Some time after the event was first issued, the NWS published an update for this warning which included current information on the storm's location and movement, changing the "Maximum Wind Speed" storm tag to "OBSERVED", and including new reports from the public about tree and power line damage in several cities around the warned area.

Alert Concluded

Some time after the previous update, another was published which TwisterAlert did not issue a notification for. The reason for this is because the new update changed the affected area in such a way that the profile's coordinates were no longer included in the warned area. TwisterAlert therefore silently closed the event notification pop up and cleared the event's data from storage. This is also how TwisterAlert handles cancellations, "allowed to expire" updates, or "Until Further Notice" events which are then canceled.

*An event notification which is closed by TwisterAlert should never be treated as a situation in which the severe weather threat has just magically vanished. There are **many** reasons a particular alert may be canceled or allowed to expire, and it is very important in this situation to remain weather aware.*

To get even more familiar with how TwisterAlert handles severe weather notifications, you can find parts of the country with active severe weather alerts and create experimental location profiles for those locations.

NWS Active Watch, Warning and Advisories
https://www.spc.noaa.gov/products/wwa/

Credits

My sister, for proofreading this manual and helping me sound significantly less illiterate than I actually am.

Several friends who patiently listened to me babble for hours on the phone about Mesoscale Convective Systems, the virtues of object oriented programming, and whatever obscure niche topic I happened to be hyper-fixated on in that particular moment.

Jan DeBlont for directing a film that would inspire millions, including myself, to take a deep interest in severe weather. (That windshield just, what, magically healed itself? Whatever, it's still a great movie.)

Dozens of helpful people on the AutoHotKey Forums. Even though I still have never actually joined and still just search for the thing I need to know, it remains an invaluable resource. Special thanks to Joe Glines at the-automator.com for helping me have many break-thru moments in my programming journey, even though he absolutely has never heard of me.

Ray Casting algorithm used to determine what county a set of coordinates is located within is based on:
https://rosettacode.org/wiki/Ray-casting_algorithm

The databases used for reverse-geocoding of ZIP codes and coordinates were all provided by the United States Census Bureau. I wish I could find the exact links, but I can't. Trust me, I don't possess the patience or ability to make those myself.

Last but not least, The National Weather Service. Without their unwavering commitment to their duties, none of this would be possible and millions of people would never know precisely how and when their trampolines will become an aircraft. All jokes aside, y'all hang in there

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;=========================================================================
;"Afoot and lighthearted, I take to the open road." ~ Walt Whitman
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