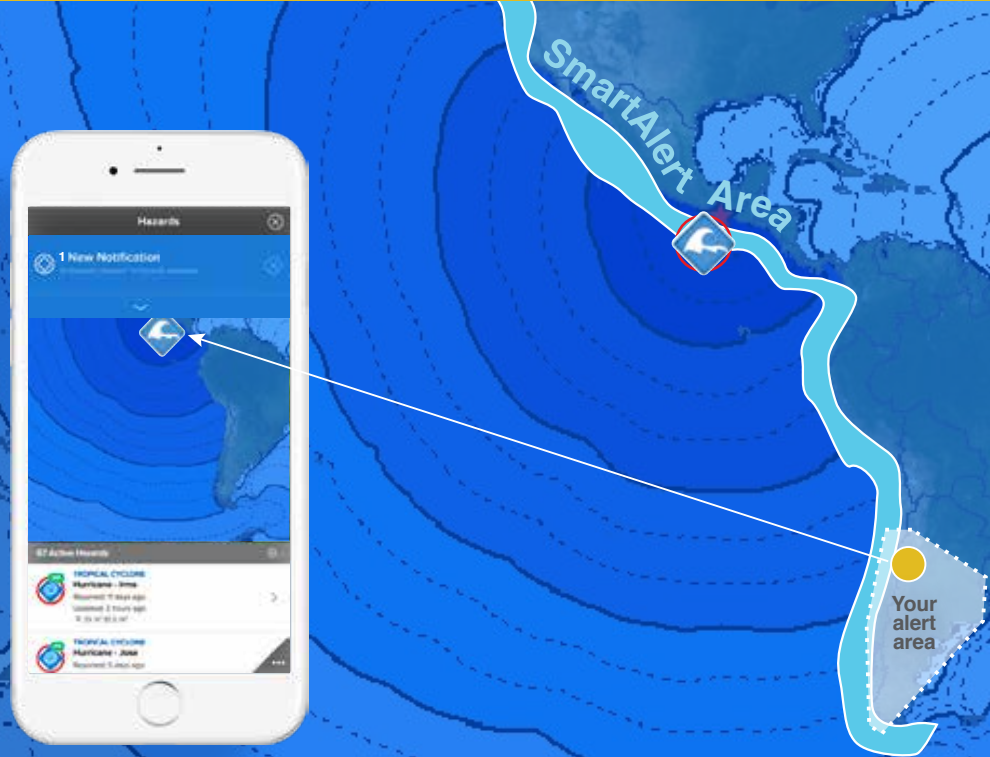# SmartAlert™
for DisasterAWARE

SmartAlert Area

Your alert area

SmartAlert™

You select an area to monitor. We'll alert you to hazards inside and outside that area that may pose a threat—automatically.

Multiple hazards supported

| Earthquake | Tsunami | Cyclone | Volcano | Tornado | Wildfire | Flood | Winter Storm | Custom Hazards |

We're taking the guesswork and unnecessary noise out of your early warning alerts. Developed by PDC's engineers and disaster management experts, our new SmartAlert technology allows you to specify the area you want to monitor and then alerts you about hazards that can impact that area—automatically. You no longer need to cast a wide net over areas outside your area of concern and sift through numerous alerts for hazards that will never reach your community. You simply tell us your area of interest and PDC's new SmartAlert technology will take care of the rest.

How most alerting systems work

Most systems require users to specify a fixed geographic area for alerts, such as by ZIP code or geometric boundary. In order to receive alerts about sudden onset events originating outside the fixed area—such as with a tsunami or a moving threat like a tropical cyclone or tornado—**users must define a larger boundary and guess at how wide it should be**. Once defined, alerts will be sent about tsunamis and tropical cyclones that may have impact within the boundary, but also other hazards inside the boundary area with no potential impact.

Tsunami Scenario | Problem

User-defined area for alerts

Expanded boundary
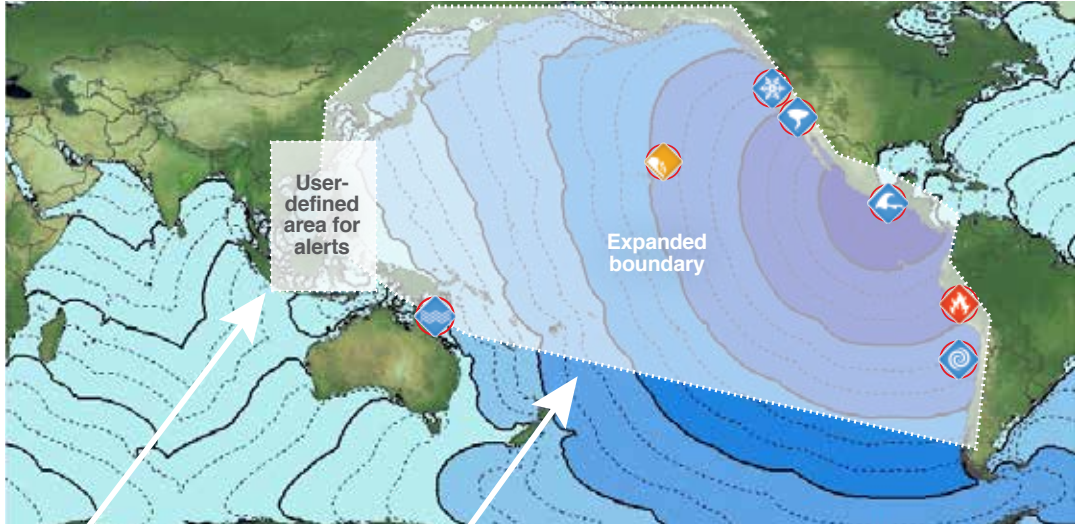
1 User identifies area of interest.

2 User expands area to ensure they receive tsunami alerts that may originate from across the ocean.

3 User receives alerts about a potential tsunami, but also receives numerous alerts about other hazards inside the expanded area and that have no potential impact.

How SmartAlert works

SmartAlert allows users to define a geographic area for alerts and then automatically detects hazards which may pose a threat to that area. When a hazard is detected and the SmartAlert geometry intersects the user-defined area, an alert for that hazard is issued. SmartAlert only alerts about the hazards that have potential impact, eliminating erroneous alerts. It also groups and aggregates multiple alerts issued by source agencies to reduce the number of duplicate alerts and the common problem of "over alerting."

Tsunami Scenario | Solution

User-defined area for alerts
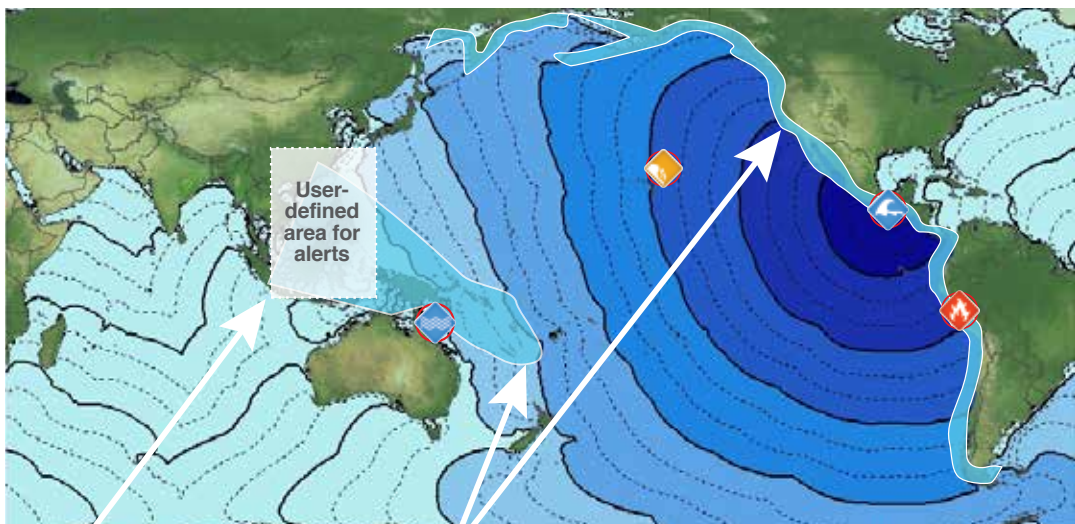
1 User identifies area of interest.

2 SmartAlert identifies all areas potentially impacted by tsunami waves and issues an alert when tsunami impact area geometry intersects user-defined area.

3 User receives only an advance tsunami wave alert when it may have impact to their specific area of interest.

Better solutions.
# Fewer disasters.

Safer world.

Volcano
ERUPTS

SmartAlert

1. Identifies ash cloud forecast area, if applicable, based on Volcano Ash Advisory Center data.
2. Creates hazard radius and severity based on ash cloud area and volcano risk area provided by the Global Volcano Model Network.
3. Adds a predetermined buffer of 100 km to hazard radius to reflect maximum potential risk.
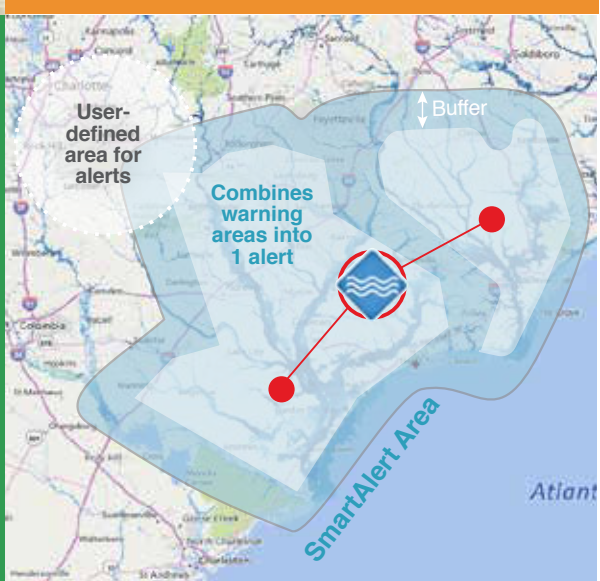4. Issues SmartAlert notification when impact radius intersects user-defined alert area.

Buffer

Ash cloud area

SmartAlert Radius

User-defined area for alerts

User-defined area for alerts
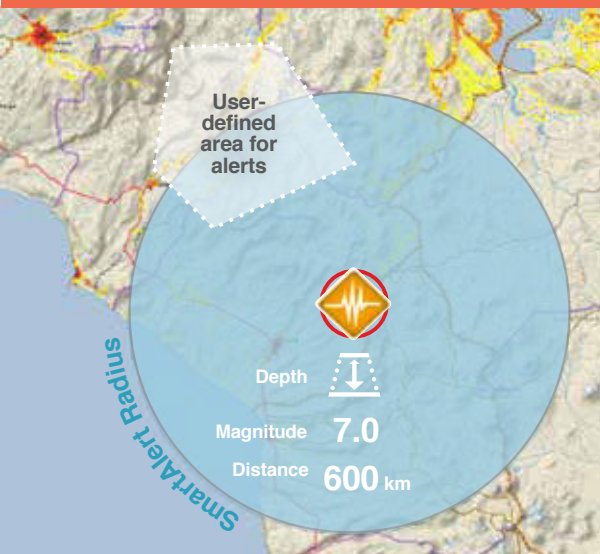
Earthquake
OCCURS

SmartAlert

1. Locates depth and magnitude (e.g. 10 km, M7.0).
2. Determines if earthquake is in a craton or plate boundary geological region.
3. Based on region, calculates distance of tremors that can be felt extending from epicenter utilizing Next Generation Attenuation (NGA) functions.
4. Creates a radius for earthquake impacts and issues SmartAlert notification when impact radius intersects user-defined alert area.
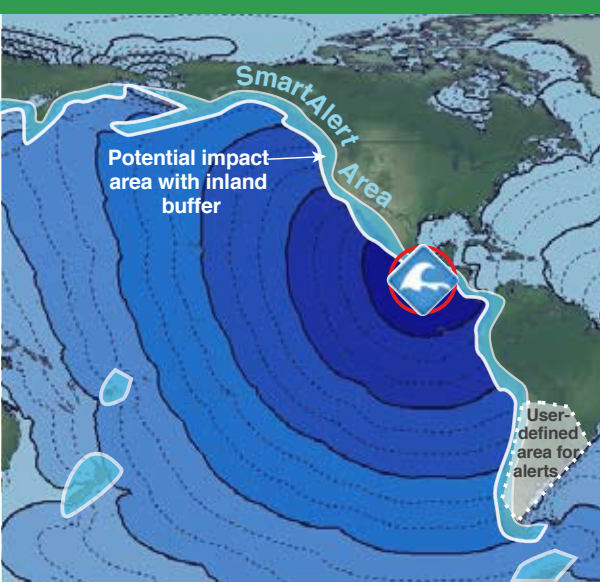
Depth
Magnitude 7.0
Distance 600 km

SmartAlert Radius

Flood
WARNING OCCURS

SmartAlert

1. Identifies flood conditions based on National Weather Service warning. Intersects warning area with populated areas to determine if impacts are possible.
2. Combines all related flood areas across regions into one geometric area to reduce number of alerts issued.
3. Adds a predetermined buffer applicable for the climate region (100 - 300 km) to reflect maximum potential risk.
4. Issues SmartAlert notification when impact intersects user-defined area for alerts.

User-defined area for alerts

Buffer

Combines warning areas into 1 alert

SmartAlert Area

SmartAlert Area

Potential impact area with inland buffer

User-defined area for alerts

Tsunami
POTENTIAL OCCURS

SmartAlert

1. Determine the ocean basin in which a tsunami may occur based on earthquake location and several regional and global data sources.
2. Identify geometric impact area for all shorelines and landmasses encompassed by the ocean basin.
3. Add a predetermined buffer of 64 km extending inland to reflect maximum potential risk.
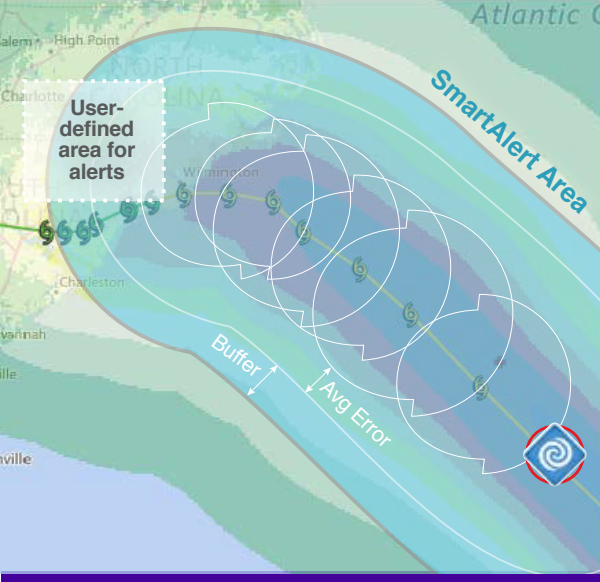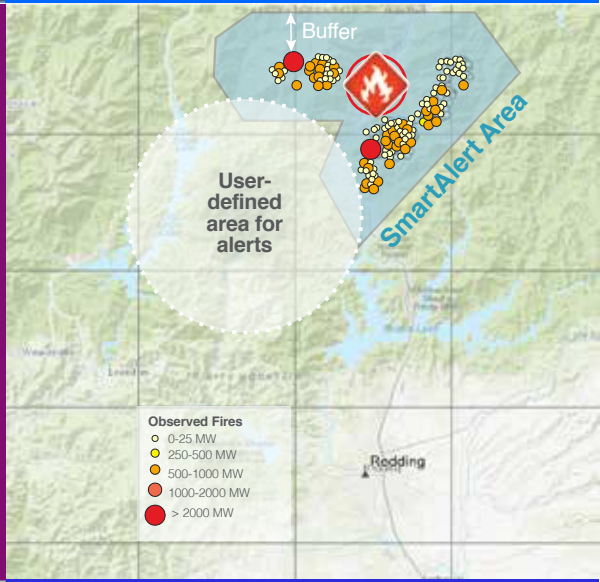4. Issue SmartAlert notification when geometric impact area intersects user-defined area for alerts.

Wildfire
OCCURS

SmartAlert

1. Identifies all thermal anomalies (hot spots) using satellite data and determines if likely to be a wildfire based on land use data.
2. Combines multiple wildfires as appropriate into a single geometric area, merging multiple days of data to reflect geometric impact area over time.
3. Adds a predetermined buffer of 161 km to geometric impact area to reflect maximum potential risk.
4. Issues SmartAlert notification when impact area intersects user-defined area for alerts.

Buffer

User-defined area for alerts

SmartAlert Area

Observed Fires
● 0-25 MW
● 250-500 MW
● 500-1000 MW
● 1000-2000 MW
● >2000 MW

Redding

User-defined area for alerts

SmartAlert Area

Buffer   Avg Error

Cyclone
OCCURS

SmartAlert

1. Identifies the largest forecast wind quadrant on the projected cyclone track days in advance.
2. Creates impact radius by combining the largest wind quadrant distance with the average historical error radii measurements.
3. Adds a predetermined 15% buffer to the impact radius to reflect maximum potential risk.
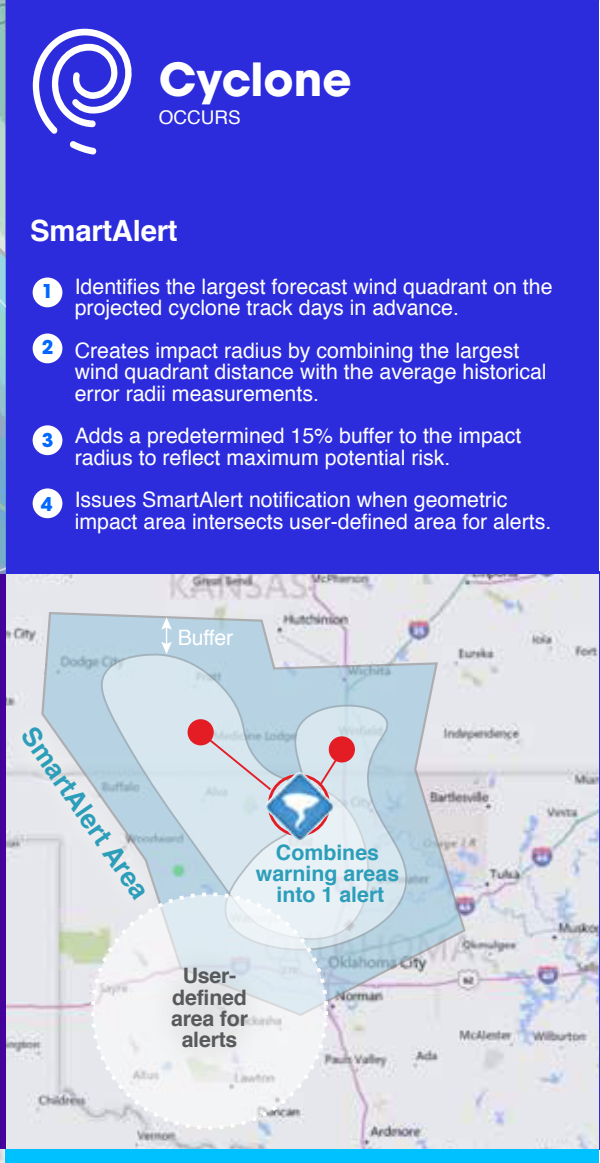4. Issues SmartAlert notification when geometric impact area intersects user-defined area for alerts.

Tornado
OCCURS

SmartAlert

1. Identifies geographic hazard area based on NWS monitoring service tornado watch and warning data.
2. As appropriate, combines adjacent watch and warning areas in effect into one geometric area to reduce the number of alerts issued.
3. Adds predetermined buffer of 129 km to the geometric area to reflect maximum potential risk.
4. Issues SmartAlert notification when impact area intersects user-defined area for alerts.

Buffer

SmartAlert Area

Combines warning areas into 1 alert

User-defined area for alerts

User-defined area for alerts

Combines warning areas into 1 alert

SmartAlert Area

Winter Storm
OCCURS

SmartAlert

1. Identifies geographic hazard area based on NWS monitoring service.
2. Assigns hazard names based on U.S. climate regions.
3. As appropriate, combines adjacent watch and warning areas into one geometric area to reduce the number of alerts issued.
4. Issues SmartAlert notification when impact area intersects user-defined area for alerts.

Other Custom Hazards

1. When automated data source is not available, PDC will refer to other authoritative sources for hazard information.
2. The SmartAlert area for manual hazards will be based on incident information and follow PDC guidelines associated with each type of custom hazard.
3. SmartAlert issues notification when the impact area intersects user-defined area for alerts.

User-defined area for alerts
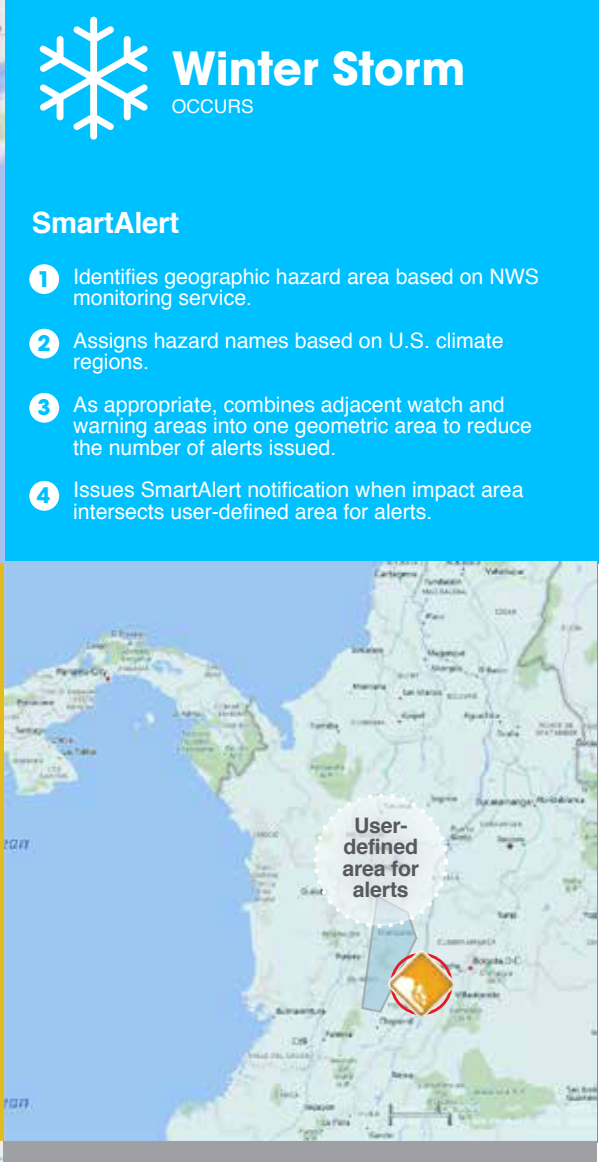
Global coverage for nearly all hazard types