Grassroots Emergency Communications Operations

Sticky Notes

GECO Newsletter
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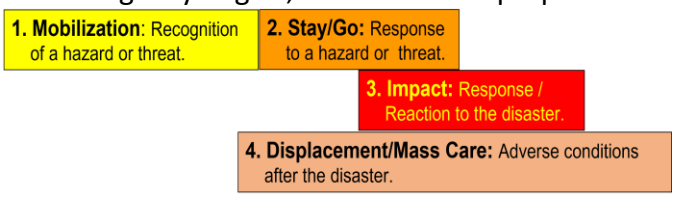
Ready to Serve and Sustain Our Community

Stay or Go? What to Know and Do

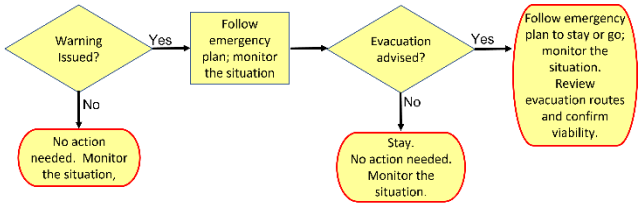
Some psychologists study human behavior in past disasters as far back as Pompeii. Everyone handles change differently. A disaster is a rapid change occurring in a magnitude unfamiliar to most people. The stress and fear make many people less likely to take risks. Their reactions range from panic to paralysis, with many seeking security in the familiar. Thus, some folks may not to evacuate.

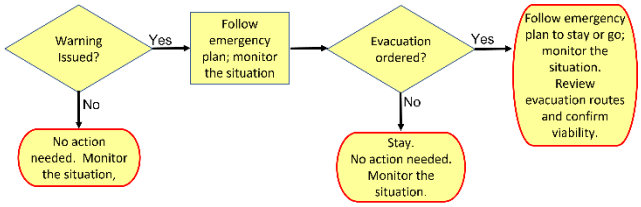
The diagram below is a general model of Emergency Phases (colored text boxes). Emergency plans are best made prior to Phase 1 (Mobilization}. Once an emergency begins, it is too late to prepare. .



Mobilization occurs when a threat is anticipated or imminent. During Mobilization, warnings and advisories are issued. Phase 2 is using your emergency plan. You monitor the situation and take the appropriate action. Phase 3 can overlap with Phase 2 because some areas may be hit before others. Your emergency plan comes into full swing; stay or go, and how to survive. Phase 4 can overlap with Phases 1-3. Some folks may leave the area before official notices to evacuate. Some areas may be hit before others causing people to be displaced and injured. Mass care is often in full play after Phase 3.

The diagrams below show the processes of dealing with an evacuation advisory and an order.





The decision to stay or go is yours to make. Every emergency is a unique scenario and you have to decide. In any case, being familiar creates a sense of security. Get familiar with your community's emergency plan, evacuation routes, and emergency shelter locations *even if your plan is to stay*. Situations can change and the better prepared you are, the better. If there are no community plans or facilities, start to make your own plans about where and how you would deal with leaving your home. Planning is important. The key is to get familiar with these arrangements BEFORE you need to leave your home. Once the disaster begins, it is too late to prepare.

The military, fire fighters, and other emergency responders know familiarity is the key to successfully responding to emergencies. Therefore, they practice, practice, practice, and then practice some more. Repetition helps them achieve a high level of familiarity with their equipment and procedures. Few amateur radio operators exert a comparable effort. But being aware is the first step in problem solving.

In This Issue

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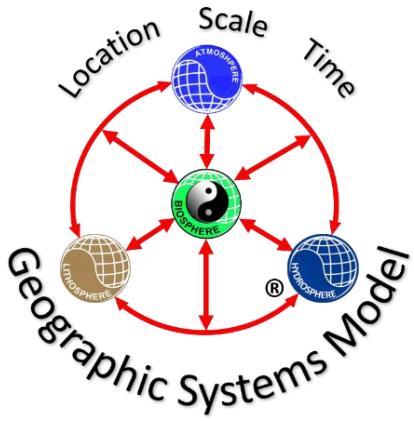
Some families have infants, others elderly or infirm family members with special needs. For some, pets are important family members. You must consider the full range of responsibilities for the lives and well-being of your family, friends, and neighbors. Consider these factors and plan accordingly. Each of us decides how and when we will spend our time. This is not meant to be critical or judgmental. It is the reality of life.



Before any emergency, you should know if your home, station, or workplace, and common travel routes are in a geo-hazard zone. The type of geo-hazard sets the tone for planning for your own rescue. GECO advocates the use of the Geographic Systems Model for geo-hazard awareness. (FFI to learn more click here.)

The model divides the world into 4 environmental spheres. These are summarized below with notes of the key geo-hazards associated with each sphere. However, some geo-hazards inter-connect with others from other environmental spheres. (See table below, right).

Geo-sphere	Natural Hazard
Atmosphere	Severe storms, Lightning
Lithosphere	Earthquakes, Landslides
Hydrosphere	Floods, Flashfloods
Biosphere	Wildfires, Epidemics, Human activity

- **Thunderstorms**. Thunderstorms are a type of natural hazard that can bring strong winds, tornadoes, hail and extreme lightning. The consequences can be devastating.
- **Hurricanes (aka Typhoon, Tropical Cyclone)**. Hurricanes are a giant ball of natural hazards all rolled up in one. They can cause flooding (due to heavy rain and storm surge), wind damage, lightning strikes, tornadoes, and hail, all at once.
- **Blizzards**. Blizzards are the worst type of snowstorms. They bring wind, ice, and snow so deep it can bury entire houses and crush roofs under the weight.
- **Droughts**. Droughts happen when rainfall is far below what an area needs to maintain its normal environment. The worst dangers of droughts are wildfires and subsequent famine as crops and livestock die. People can perish from lack of water and food.
- **Temperature extremes**. Whether it's way too hot or way too cold, each of these types of natural hazards can take a huge toll on life. Every year, hundreds of humans, livestock and crops die from excess heat or cold. Animals tied up in backyards without protection fair even worse.
- **Astronomical events**: This includes EMP / CME (electromagnetic pulse / coronal mass ejection) events and meteor impacts.

- **Landslides and avalanches**. There are several different types of natural hazards that cause landslides and avalanches, but they all have the same result. They bury anything in their path indiscriminately.
- **Volcanic eruptions**. Volcanic eruptions cause death from falling debris, deadly gases, pyroclastic and lava flows. These types of natural hazards are the closest thing to hell on Earth that one can experience.
- **Earthquakes**. Earthquakes can happen literally anywhere on the planet.
- **Sinkholes**. Sinkholes occur without warning.

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- **Tsunamis** threaten coastal areas and adjacent low-lying areas.
- **Floods** occur due to heavy rain, severe storms, storm surge, as well as the failure of dams, levees, sea walls, etc.
- **Limnic** (Gas) eruptions (in lakes).
- **Sea Level Rise** is a long-term threat but may have more rapid local implications for smaller low-lying islands and coastal communities.

- **Flora:** wildfires, invasive species, loss of biodiversity.
- **Fauna:** Diseases, infestations, invasive species, loss of biodiversity.
- **People:** Habitat destruction; biodiversity loss; pollution, contamination; diseases; civil unrest, conflicts, wars; over population

All GECO policies and ideas are general guidelines which MUST be adapted and used at the discretion of the user relative to their circumstances. As difficult as the task of emergency preparedness may be, keep this thought in mind: Once the disaster starts, it is too late to prepare.

Some Helpful Links

You may already know about these apps, but for those who don't, have a look at these and discover your options to be more aware of possible earthquake-eruptions in your area. Best wishes.

General

https://www.redcross.org/about-us/news-and-events/news/Learn-More-about-Red-Cross-Safe-and-Well-App-Feature-and-Website.html

https://www.fema.gov/pdf/areyouready/basic_preparedness.pdf

https://www.ready.gov/

Earthquakes

https://www.lifewire.com/best-earthquake-apps-4774774

Volcanoes

https://www.americangeosciences.org/critical-issues/faq/what-kinds-hazards-are-associated-volcanic-eruptions

https://www.usgs.gov/natural-hazards/volcano-hazards/understanding-volcanic-hazards-can-save-lives

https://volcanoes.usgs.gov/volcanic_ash/

https://www.americangeosciences.org/geoscience-currents/investigating-volcanic-landslide-hazards

https://www.americangeosciences.org/webinars/identifying-reducing-landslide-risk

Free E-Books

We learned of a link for free e-book downloads. We visited the site and searched for "ARRL." We were pleasantly surprised to find several free PDF downloads (as well as other e-book formats) of older editions of ARRL books on antennas and other ARRL publications. There were also books on related HAM radio subjects from non-ARRL sources.

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The older ARRL publication editions are like older HAMs. They may be old, but they are still very useful. Ask any HAM who has an Elmer in their life! (I'm lucky and can count at least three active Elmers in my corner.) Many antenna articles talk about well-proven designs which haven't changed much since they first came out.

GECO EmComm Field Equipment Design Factors

These GECO field equipment design factors originated when living in rural northern Thailand more than a decade ago. We recently pulled our notes from the files to review them. These are based on some pragmatic assumptions for lone HAMs in remote or rural areas. While these circumstances may not apply to you, we share these just in case you might consider adapting them for your use.

In essence, they haven't changed much. But we thought it might help to share them with HAMs, especially new HAMs who are still working to acquire their equipment.

The GECO field equipment factors are (not in priority order). We listed the key words, then arranged the letters to spell "Crisp" as we want to be fresh and ready to operate.

- **Compact:** A compact design means it will fit into a backpack of convenient size for the individual HAM. Since HAMs come in a variety of sizes, don't just copy other HAMs. Assume you will be carrying your own backpack. Size it to fit you and your abilities. Don't use theoretical formulas to calculate the "right" weight for your pack. Do it by actual trial and error. Just make your wish list of gear to have. Load your pack. Remember, for evacuation you would have your radio gear as well as equipment and supplies to operate for 72-hours. Then set out to walk your intended evacuation route. Time yourself. Look at maps and determine the primary and alternate routes. Consider distance and elevation changes. Then factor in chaos, detours, debris, adverse weather, and adjust your estimated travel time. These practical checks will account for both your body weight AND pack weight. After doing a practical walk with your gear, you will know if the pack is too heavy or not. Then try it in different seasons.
- **Robust:** The system should be rugged to take rough field conditions. Of course, we expect to be careful, but unexpected things can happen (e.g., a backpack gets knocked off a bench or table, etc.). On our list of precautions: padding/cushioning against drops, tossing, vibration; waterproof / water resistance; dustproof / dust resistance; EMP (electro-magnetic pulse). While full protection may not be achievable for all concerns, we strive to cover as many as possible. Of course, spares and back-ups for components are on the list. However, loading the backpack is also affected by other considerations (e.g., deployment specifics, duration, etc.). Life is about compromises which will affect the final backpack configuration.
- **Interoperable:** This applies to all components in the backpack. But we also try to consider being able to readily fit with others. Anderson Power Connectors are widely used (we follow the ARES configuration). However, we also try to be ready to adapt to other basic connectors whenever possible provided it fits with our backpack size/weight constraints.
- **Simple:** Simplicity reduces vulnerability and increases reliability (fewer things to go wrong). There are trade-offs to be sure. Keep in mind most EmComm failures are due to "unexpected" events

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arising during the disaster. Simplicity often means needing fewer tools to make repairs. This can mean a lighter backpack, too.

- **Portability:** All GECO station emergency plans are to "shelter-in-place" as our QTH is outside of known hazard zones. But "unknown" hazards can become "unexpected" events. So, flexibility is the key. Being able to pack up and go on short notice is part of EmComm operating. The worst-case is working solo. All GECO portable systems are intentionally set up for solo operations.

We used CRISP to set up the GECO EmComm HT Ready Pack. We opted for using dual band HTs for compactness of the transceivers, batteries, and antennas. Recent enhancements were reported in the last newsletter (pp. 3-4).

Complementary Kits: GECO envisions a series of complementary EmComm Kits to form a layered preparation effort. We start with the: individual, station, vehicle, and workplace.

- Individual Kit (e.g., our HT Ready Pack): The goal is to have EmComm gear and support equipment and supplies for 72-hour operation. Since our primary plan is to shelter in place, we can rely on our station resources for any needs to support our 72-hours operating goal. However, in case of evacuation, the individual EmComm pack must have the equipment and supplies for 72-hour operation.
- Station Kit: Our minimal station kit is to have station supplies for 72-hrs and a separate 72-hour set for the HT Ready Pack. When possible, we add to the station kit to last until resupply is possible. When would that be? It depends on the type and severity of the disaster. Look at past events in the local area to see how long it took for relief to come. At a minimum, set a goal of 72-hours. Once you have that, aim for a week; then two weeks, a month, two-months, etc. Your budget and storage space set practical limits on your preparations. Regardless of how little you can set aside, it is most important to set something aside to prepare for an emergency.
- Vehicle Kit: There are two basic approaches here. Your EmComm equipment is mounted in the vehicle or kept in a Ready Pack. This determines your other equipment and re-supply strategy. If your EmComm equipment is vehicle mounted, your 72-hour equipment and supplies can be stored in the vehicle. If your Individual Kit has all your EmComm equipment but not your other equipment and supplies for 72-hour operations, consider keeping those in the vehicle. If it does have them, consider storing an additional 72-hours of supplies in your vehicle.
- Workplace Kit: GECO adds this to the list because some folks spend a good deal of time at work, away from home. Your preparations must be tailored to your workplace situation. For example, I used to commute 1 hour to work in a high-rise building. Earthquakes were high on the list of local geo-hazards. My travel route to and from work involve freeway travel with numerous overpasses and bridges. An earthquake meant it may be impossible to drive home. I had 72-hours emergency supplies in my car. But if a major earthquake hit, I might not be able to get to the car (if it were not damaged). So, I prepared a 72-hour equipment / supply kit which I kept in my office. I also had equipment (e.g., crash axe, rope/climbing harness, gloves, eye protection, dust mask) so I could get out the window and down 3 floors to the ground.

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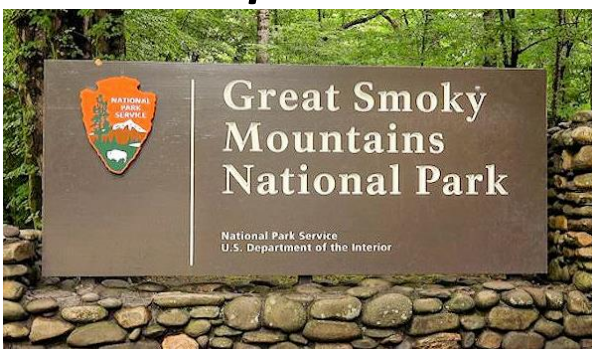
Wilderness Protocol Follow-up



In our last issue, we talked about the Wilderness Protocol. ARRL reported an incident where HAM radio played a role in a rescue effort in Great Smoky Mountains NP. Tim KA9EBJ was in a group hiking in the park when a member of the group became exhausted and needed assistance.

In this case, there was no cell phone service in the area. But Tim was able to reach the W4KEV VHF repeater in Gatlinburg, TN. David W5DJR heard the call, got the necessary information, and called 911. The call was relayed to Great Smoky Mountain NP authorities. They mobilized their EMS team. A park services medic set up phone communications with David, who relayed information via radio back to Tim to coordinate the park service EMS response. The situation was successfully concluded in about 8 hours, ending about 2 AM.

These HAMs were lucky they were in range of a VHF repeater. Without the repeater, the situation may have taken longer to resolve. We hope more HAMs and clubs near recreation areas with spotty cell phone and repeater coverage will set up and maintain a Wilderness Protocol program. Having this added layer of communication enhances public safety in recreation areas. Publicizing a local Wilderness Protocol watch program could be combined with local tourism and public awareness of HAM radio as a hobby and community service.

GLS Community-based Education for EmPrep

GECO uses the GLS Community-based Education method to help local schools and communities develop hands-on training about local geo-hazards awareness. The lessons conform to STEM/STEAM curriculum using the enhanced GLS STEAMING (STEAM Integrating Nature and Geography) model.

This approach takes students outdoors to apply their classroom knowledge and skills to community service projects to enhance community emergency preparedness and resilience. There is no need to change the curriculum. Most activities involve making some of the equipment using off-the-shelf parts and locally available materials or re-using items destined for recycling or the trash. All lessons involve strong links to job skills.

This method was used in a rural village elementary school in northern Thailand to improve math, science, and English language skills in a single integrated program. Teachers and community leaders interested in learning more can email us for more information.

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