



Sticky Notes

GECO Newsletter
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Ready to Serve and Sustain Our Community



Are You Ready?

Unlike the military and professional emergency responders, amateur radio operators who volunteer to do EmComm activities are unpaid and don't have routine rigorous training. Their proficiency is linked to their passion. Gordon West WB6NOA suggests amateurs be able to get on the air within 60-minutes of being notified. Another common number is to be able to operate for 72 hours before needing resupply.

Before we go any further, here are some basic assumptions about preparations:

- You routinely charge and monitor the charge for your radio batteries.
- You have local repeaters programmed into your radios and know how to add new repeaters and frequencies to your radios. You and your group have a set of alternate operating frequencies.
- If you are in a radio net, 1) you are prepared to serve as a Net Control operator; 2) you keep records of the stations you can reach via simplex.
- You have a backup transceiver, antennas (both omnidirectional and directional), and battery power to keep operating after your regular station may have been damaged.

During an emergency, a basic question is to shelter in place or evacuate. GECO recommends preparing for both. This is based on the idea of being prepared for the unknown and operational flexibility. Preparation is similar but differs in the details.

Station Preparation: GECO suggests all stations have an omnidirectional (vertical) and directional antenna, with a backup radio and backup antennas in case the primary gear is damaged. Emergency power is critical for a viable EmComm station. Whatever battery capacity you have at your station, you will need to consider various operating duty cycles, and TX power settings, to budget your battery power to last



Gordon West WB6NOA



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the 72-hours. In the spirit of planning for the unexpected, GECO suggests making these battery budget calculations without allowing for battery recharging before the 72-hour guideline. This would be the worst-case scenario (e.g., in case something went amiss with your recharging plans). GECO has deep cycle battery banks at the station. To extend the life of these batteries, GECO's policy is to recharge batteries when their charge level is at 11.0 Volts. In addition to having pre-set alternate operating frequencies, you should establish a procedure for low battery situations. For example, when your batteries are low, you listen for traffic at a set time and frequency. This procedure should be standardized for all stations on your radio net.

Provisions: Follow the 72-hour guidelines for food, water, and supplies for both the station and evacuation kits. With more room at your station, you can gradually increase the number of supplies from 72 hours to a week, then two weeks, and continue to a month or more of supplies. The limit depends on the space and budget available.

Evacuation Kit: This will be much smaller than your station kit. Its actual size depends on how you will be evacuating (e.g., by foot, by vehicle, etc.). GECO uses the worst-case scenario of traveling by foot which means you must backpack your EmComm gear and supplies for the 72-hour guideline. The GECO HT EmComm Ready Pack has two dual-band (2m/70cm) HT radios, antennas, and batteries for 72 hours of field operating. [Note: We still need a portable compact dual-band directional antenna for the HT Ready Pack.] Weight for portability was the prime consideration in selecting the HTs. Limited operating range can be offset by high elevation operating positions and external antennas. Remember, you also have to backpack your water, food, and other gear (e.g., tent, sleeping bag, etc.). This is where smart decisions are made.

Consider the factors that determine how much food, water, and other gear you will need. Key factors are the weather and climate (affected by the season); your physical condition, and the amount of physical activity planned; the distance you must travel from your station to a safe alternative operating site. The weight of a three-days water supply is daunting (~11.34 kg just for drinking) and we haven't added in the food and camping gear. As a guide, US soldiers (depending on their combat assignment) have loads ranging from 68 to 91 kg into combat. Scientific studies suggest the maximum load should be 58 kg. But all of this doesn't matter because the reality check is to pack up your gear and walk to your alternative operating **site in all seasons and weather conditions**. Whatever the times are, add more time for a) the unexpected (e.g., keeping track of family members, pets, etc.; b) encountering obstacles (e.g., fallen trees, power lines, debris). When making plans, avoid timing things to a split second. Doing so sets you up for failure.

Alternative Operating Site: If you evacuate, and have a safe alternative operating site, have you conducted field tests to confirm the stations you can contact? Be sure to test thoroughly (e.g., using different transceiver/antenna/power combinations. It's best to have both omnidirectional and directional antennas on hand. Height is your friend, and with the compact portable gear in the GECO Ready Pack, finding elevated operating positions is the optimal way to get our antennas as high as possible. 🌿



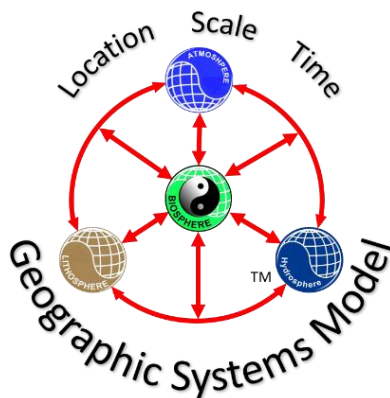
The GECO HT EmComm Ready Pack is 56x36x20 cm and weighs 4.3kg with masts and radio gear.

Welcome to the Mega-Disaster Century

The Fukushima Daichi nuclear power plant disaster is an example of a combined natural-technological (na-tech) mega-disaster. It started with an earthquake that caused a tsunami (natural geological actions) that created a technological disaster (e.g., nuclear power plant meltdowns).

While not directly applicable to the Fukushima event, global warming and climate change have been tagged as part of the reason many natural disasters have increased in frequency and magnitude/intensity. But climate change will figure into an event that could lead up to a mega-disaster coming to a neighborhood near you soon. The list of ingredients is basic.

A Hazard: This is the trigger or cause of releasing the energy for a disaster to occur. Hazards can be natural (e.g., earthquakes, severe storms, etc.), technological (e.g., power plant or industrial accident, gas pipeline explosion), sociological (e.g., civil unrest, revolution). Everyone should be aware of the local and regional hazards that could affect them. Click [here](#) for help getting started.



The [geographic systems model](#) is a systematic conceptual diagram showing how all things (living and non-living) are interconnected. The non-living parts are the atmosphere (air), lithosphere (land), and hydrosphere (water). The biosphere included all living things: flora (plants), and fauna (animals, including people). The Yin-Yan symbol is in the biosphere as a reminder of 1) culture (since this symbol was created by people). People are part of the biosphere. Culture is the window through which people perceive all other things around them; 2) non-linear thinking, exceptions, relative perspectives, dynamic interaction, and change.

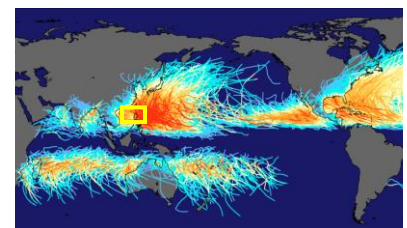
We don't have time to get into the hazard assessment process, but it is important to get the big picture. This is where "scale" becomes important to see the big picture. Every location on Earth fits into the context of a region and the globe (see diagram below).



Local Scale



Regional Scale



Global Scale

Local hazards are your immediate concern. For example, a hill near your station could be a landslide hazard if triggered by heavy rains or an earthquake. The storms for your area are

determined by the regional global oceanic and atmospheric circulation patterns beyond your local scale. Weather patterns are seasonal, and some can even vary depending on the time of day. This is how the geographic systems model interconnects location, scale, time, and the living, and non-living environmental spheres.

People: Hazards pose a threat to people and property. Larger populations increase the size of the disaster. Cities tend to have higher population densities (e.g., people per square mile) than smaller communities. The UN considers cities with 10 million or more people to be a megacity. Some megacities have a large population of slum dwellers who are marginalized and excluded from city governance. Just as biodiversity is the source of resilience in Nature, people must embrace cultural diversity and inclusion as the reservoir of community resilience. Intelligence, creativity, and innovation do not care what the size, shape, or color of the person's body. No nation can afford to ignore or discard the brainpower of any segment of society. All the scientific studies and research on disaster prevention, mitigation, adaptation, etc., are for naught if people don't act at the local level. Government leaders and policies help set the conditions to facilitate local action. But the work can only be done by people on the ground.



Biodiversity gives Nature resilience.

Amplifiers: Several local variables can intensify the forces involved in the disaster: topography, season, time of day, weather conditions (including climate change), single, multiple, or simultaneous disasters, and amount of community preparedness. These must be known to do any planning.

Mobilize Student Volunteers: The best way to get information is through local field studies. This lends itself to mobilizing local citizens, especially students, as volunteers to conduct local field studies as community service projects. This kind of applied learning connects abstract classroom lessons to the local environment making the learning relevant for the students. These will not be substitutes for professional studies but can at least be considered “coarse screening” or recon efforts to pinpoint sites requiring specialized studies. Other student community-service projects can involve emergency preparedness, land use, and land cover ground truthing of computer image/mapping studies to build community resilience and sustainability. It also provides students with networking and job preparatory activities. Using the [GLS Community-based Education](#) approach adapts hands-on, practical environmental lessons to easily conform to the STEM/STEAM curricular guidelines. 🌱

Megacity Evacuation?

Every city is different, and your location in the city and proximity to travel routes out of the city are a unique combination of factors to consider. Add to that the mode of travel and fuel needed, and the challenge increases. Consider what happens when the electricity goes out. Traffic signals don't work, so expect traffic jams. Gas stations cannot pump fuel even if they have it. Roads will be congested, and any stalled vehicles (for any reason) will cause more congestion or even a total blockage. And we haven't even begun to factor in damaged roads, bridges, over and underpasses, disaster debris, and crowds of pedestrians.

Being aware of your local hazards isn't about the ones that can cause a disaster. It includes the impact of hazards on routes to and from the area. Relief supplies will be inbound, evacuees outbound. Disruptions to these routes must be considered in emergency planning. 🌱

Message Posted on the ARSB Facebook Page 14 Jun 2022



Amateur Radio Society
Bangladesh (ARSB)

Public group · 1.7K members

Joined + Invite

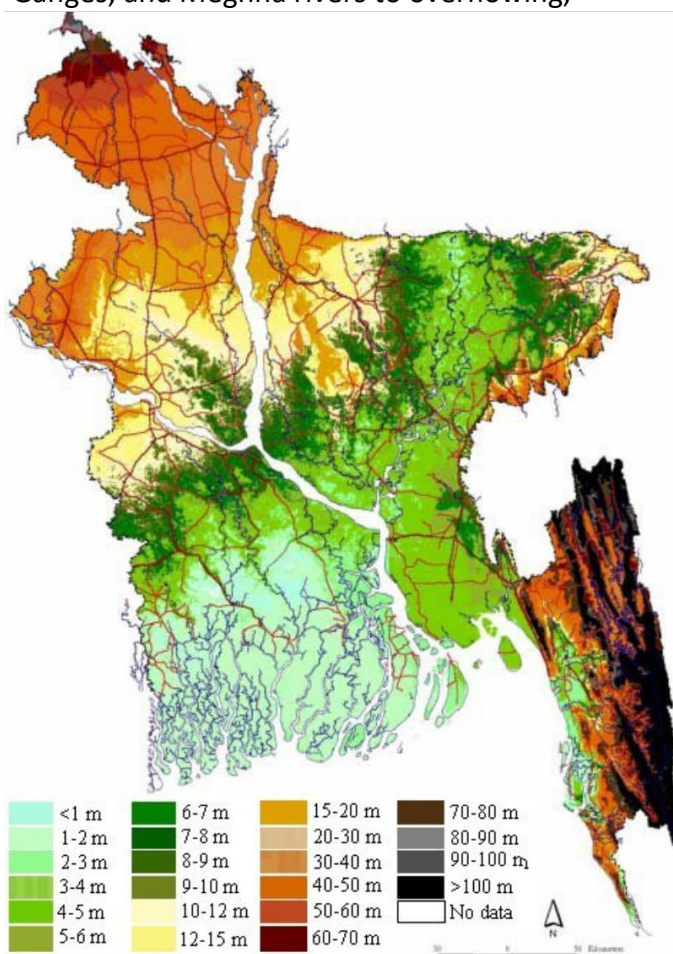
Flooding the land from north to south. Cyclones front the Bay of Bengal bring heavy rain and storm surges to flood the coastal areas and push flood waters inland. So, during the rainy season, Bangladesh is being flooded from two directions. Added to this are the facts of land subsidence and sea level rise and you can see Bangladesh faces a quadruple whammy. The map on the right gives you an idea of what the country faces every year.

EmComm is seriously needed as floods displace millions of people every year. The Amateur Radio Society of Bangladesh was initiating a nationwide effort for emergency communications. While it takes time for governments to organize the policies, agencies, and funding in place with attendant regulations, all of that effort is for naught if people on the ground cannot put things into action and help the people.

The challenges many Bangladeshi amateurs and aspiring amateurs have is getting licensed and getting equipment. But the key thing is being able to organize people at the local level to act. As a way to encourage them, we suggested they

You may recall one of the benefits of attending HamFest India 2017 was making new friends and sharing knowledge and experiences with fellow amateurs around the world. Among these new friends were several folks from S21-land, Bangladesh.

Each year, Bangladesh is subject to severe flooding. Monsoons fill the Brahmaputra, the Ganges, and Meghna rivers to overflowing,



Bangladesh topographic map.

“spell” ARSB to mean “Always Ready to Serve Bangladesh!” On Jun 14, 2022, we also posted the following words to their Facebook page to support their efforts.

“It is a basic fact that any emergency or disaster is a combination of a hazard, people, and the triggering incident (action) occurring at a location. The people present, trained or not, are the first responders. They can take action to deal with the situation, wait for help to arrive (if they have a way to call for it...hint, hint, this is what amateur radio EmComm can do), or with some training, they can do both. The fact is every emergency and disaster starts as a local event. This is why I choose to focus my efforts at the grassroots level. The more you can do locally, the faster the response to the

emergency. The high-density development in urban situations makes it difficult for government services to respond to the call for help. Today, we have mega-cities (cities with 10 million people or more, and Dhaka is #11 on some lists). Many mega-cities exist in places with multiple hazards (e.g., natural hazards, technological hazards, and sociological hazards) which creates a setting for combinations of hazards interacting to produce mega-disasters. Experts see the potential for these hazards occurring separately or simultaneously. Look at past disasters, and you find evacuation as a key option to get people away from the danger (e.g., approaching storm or flood, etc.). High-density mega-cities are nearly impossible to evacuate due to the huge population, lack of adequate transportation infrastructure and inadequate resources to facilitate and support mass evacuation (e.g., food, water, fuel, and places for the evacuees to be housed, clothed, and fed). [Note: One success of Hurricane Katrina was that about a million people were successfully evacuated in less than the estimated planned time to do so. But that success was overshadowed by the fate of those who did not and those who could not evacuate (mainly the elderly, infirm, and the poor.) Although the task seems impossible, please keep these five thoughts in mind: 1) those who say the job is impossible should get out of the way of those trying to do the work; 2) any job can be thought to be impossible until it is done; 3) Be careful not to be pessimistic because your pessimism can kill someone's hope, and hope may be all that they have; 4) Take action to prepare (first for yourself and your family, then help educate your friends and neighbors to do the same, because it all starts at home); 5) There is strength in numbers, and in emergencies and disasters, a strong sense of community makes a big difference in resilience and recovery when everyone realizes they are all in the situation together (e.g., leaders and common people, politicians and voters). This is why your action to prepare your family MUST be shared with your friends and neighbors. Taking action makes you part of the solution rather than part of the problem. Please feel free to contact me at KI6GIG@ARRL.NET for information on emergency preparedness and emergency communications. Best wishes to all. 🌱

Why do some cities fare better in the same intensity of disaster?

We live in an unfair world. When disasters hit, the disadvantaged people bear a disproportionate share of the suffering. But that is another complex issue in addition to the basic differences in construction materials and methods, regulations and building codes, economics, politics, cultural perspectives on hazards, dangers, threats, risks, vulnerabilities, and levels of preparedness, among many other factors. The 2017 earthquakes in Haiti (Jan 12, 7.0 on the Richter scale) and Chile (Feb 27, 8.8 on the Richter scale). The Chilean quake was about 500 times stronger than the quake in Haiti. Yet, the Chilean quake inflicted ~ 1000 deaths in contrast to ~ 200,000 in Haiti.

Using seismic standards to guide construction methods, quality of building materials, and writing of building codes, in Chile were defined by government regulations and an enforcement system of building inspectors. This top-down approach requires leadership and political will. Approaching the same issue from a grassroots level begins with awareness but can only happen if people can afford the cost of the materials and labor. And this assumes a skilled workforce trained in the proper construction methods. The [confined masonry](#) construction method is comparable in cost to regular methods. Existing workers can be trained to build this way. But first, people need to be aware of the problem. To learn more about this method, watch a talk by [Peter Haas](#).