

Introduction to Emergency Communications (EmComm)



G.E.C.O.-Grassroots Emergency Communications Operations

A GECO-WARC-WBRC Presentation

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GECO-Intro EmComm

Advisory Note

This version of the presentation was created for a visit to St. Augustine's Day School prior to my departure for India.

However, due to last minute program changes, it wasn't shown to the students. The actual presentation given was more of an introduction to HAM radio combined with a hands-on demo of 2m VHF radio communications with the West Bengal Radio Club.



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About This Lesson

KI6GIG modified this original G.E.C.O. lesson for the West Bengal Radio Club.



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This lesson adapts materials from previous lessons created by KI6GIG for these programs.



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Advisory Note

This lesson is formatted for viewing on a single computer screen by a few people.



For large group presentations, a narrator should read the slides with text not readily legible to the audience.



Photo courtesy of N7YLA



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Assumptions



This lesson is developed based on these assumptions:

- In an emergency, any and all forms of communications should be used.
- You cannot assume the internet will not be available in all disasters.
- You cannot assume the RF bands will be clear in all disasters.
- Regardless of your preferred operation mode, all hams should have back-up communications modes available (including non-radio modes).
- Resilience and sustainability are key EmComm goals.



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Assumptions



This lesson is developed based on these assumptions:

- Interoperability with other local hams is highly desirable.
- Ability to operate with independent power is highly desirable.
- The station should be fully operational within 60 minutes of a emergency activation notice.



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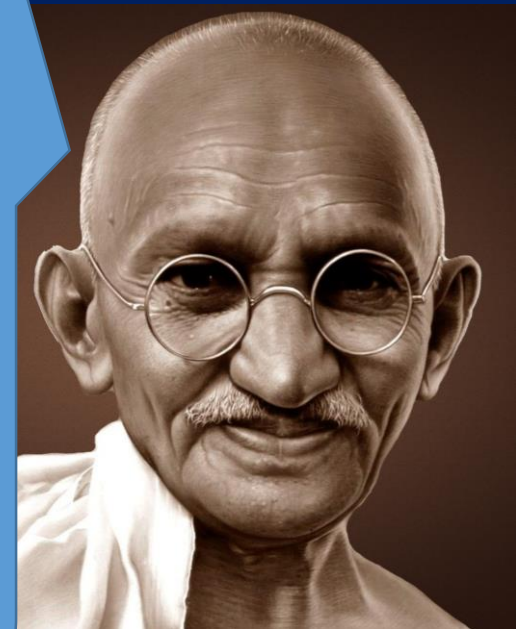
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If these assumptions do not apply to you, this presentation may not be suitable for you.

A Guiding Thought

“Interdependence is and ought to be as much the ideal of man as self-sufficiency. Man is a social being. Without interrelation with society he cannot realize his oneness with the universe or suppress his egotism. His social interdependence enables him to test his faith and to prove himself on the touchstone of reality.”



Mahatma Gandhi



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Words Put to Action

Ham radio is a hobby. But learning about technology is just the beginning.

HAM means

Helping All Mankind.

The West Bengal Radio Club hams use technology to help people in times of calamity.



Photo courtesy of W.B.R.C.



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<http://wbradioclub.in/home.php>

What is an emergency?



An emergency is a situation when there is imminent danger to life or property.



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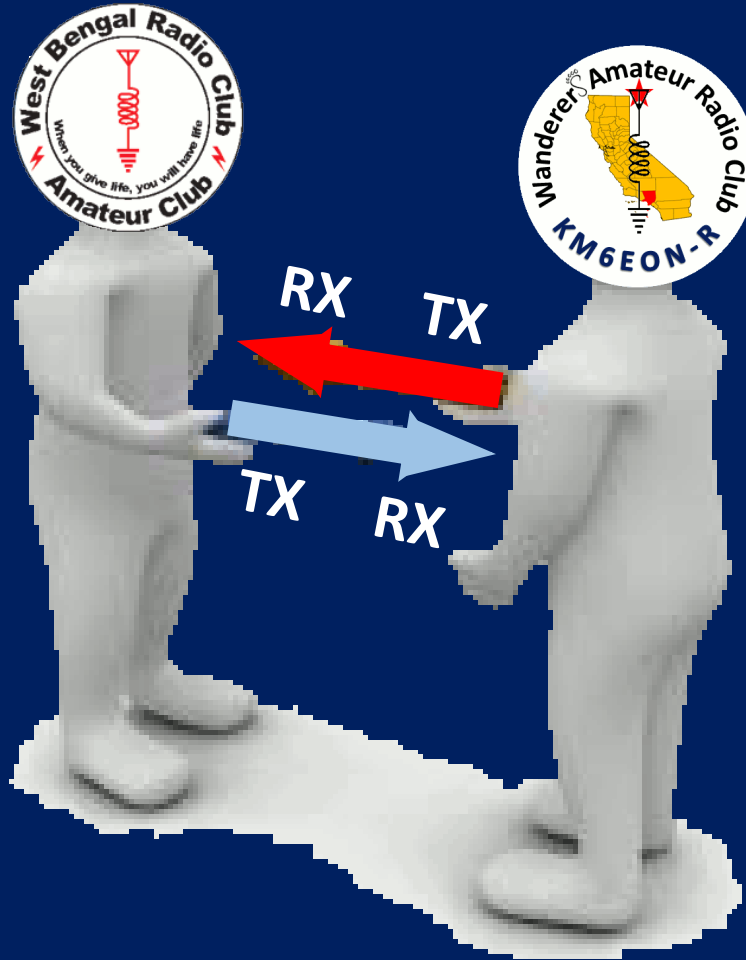
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What is communication?



Communication is the clear and accurate exchange of information between a sender and a receiver.



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Awareness is important

**Awareness
of the
problem is
the first
step to a
solution.**



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An impending emergency

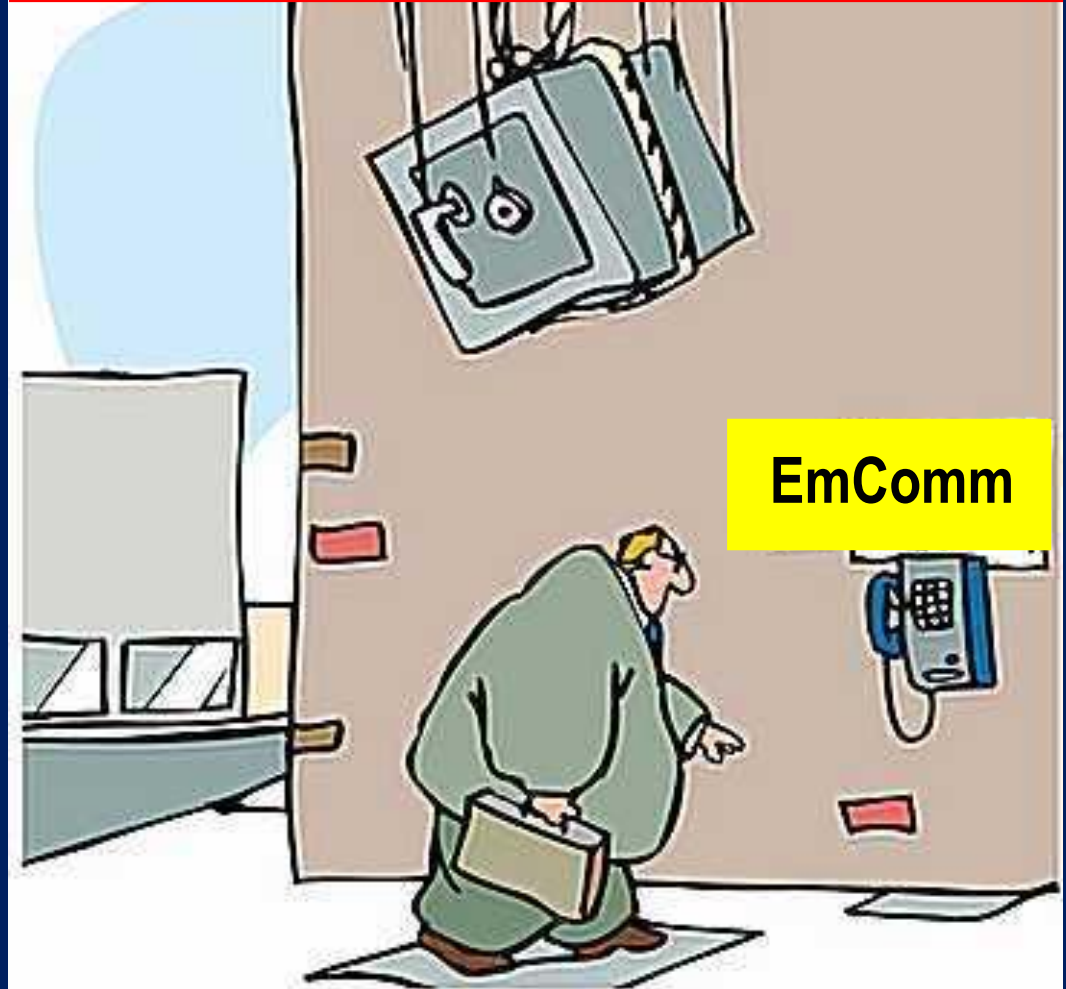
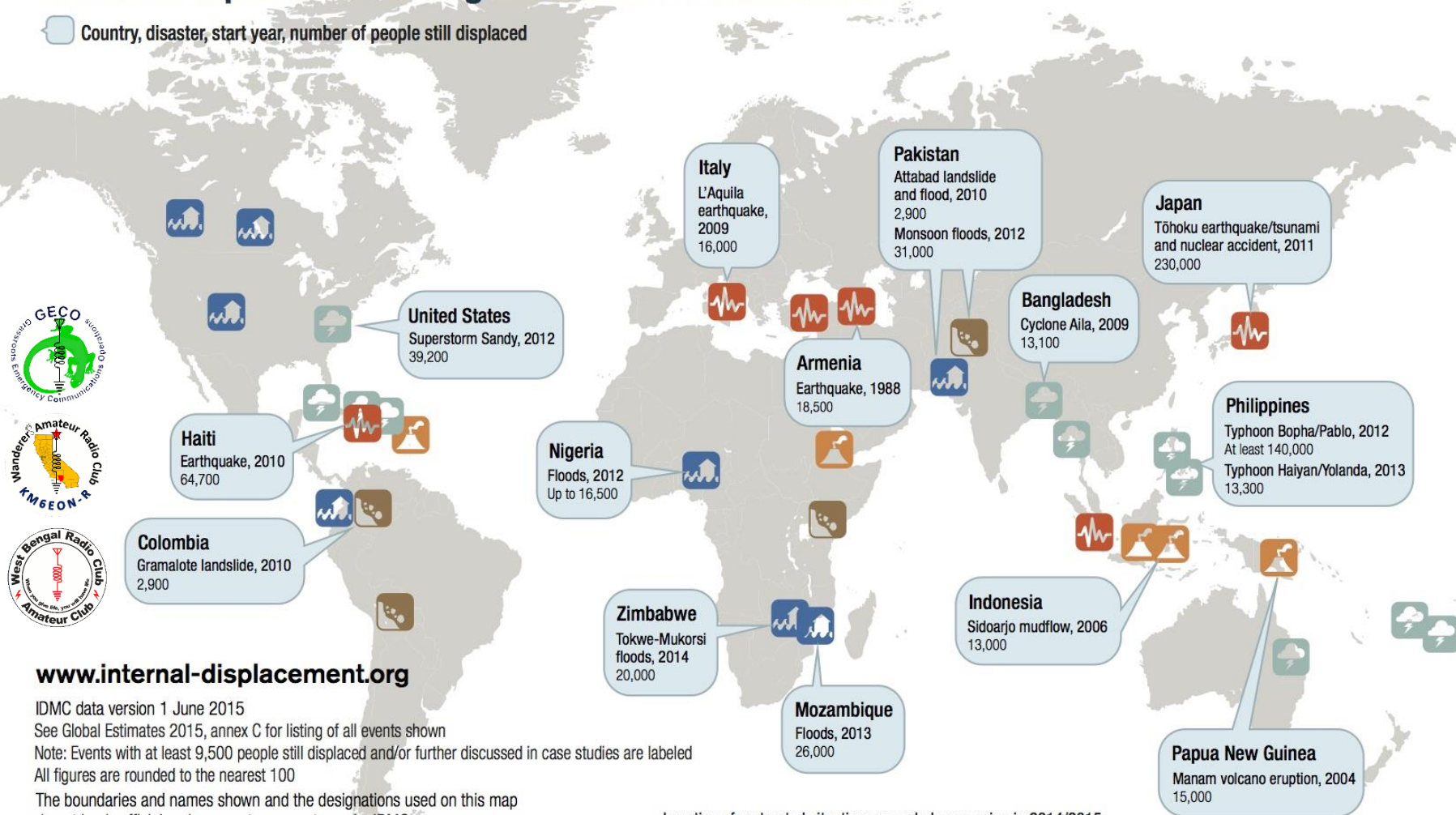


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Displaced People from Natural Disasters

Protracted displacement following disasters worldwide in 2014/2015

Country, disaster, start year, number of people still displaced



www.internal-displacement.org

IDMC data version 1 June 2015

See Global Estimates 2015, annex C for listing of all events shown

Note: Events with at least 9,500 people still displaced and/or further discussed in case studies are labeled

All figures are rounded to the nearest 100

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by IDMC.

IDMC internal displacement monitoring centre

NRC NORWEGIAN REFUGEE COUNCIL

Location of protracted situations recorded as ongoing in 2014/2015



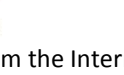
Floods



Earthquake



Landslide



Storm



Volcanic eruption

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Why EmComm?

There is too much misery and suffering in the world.



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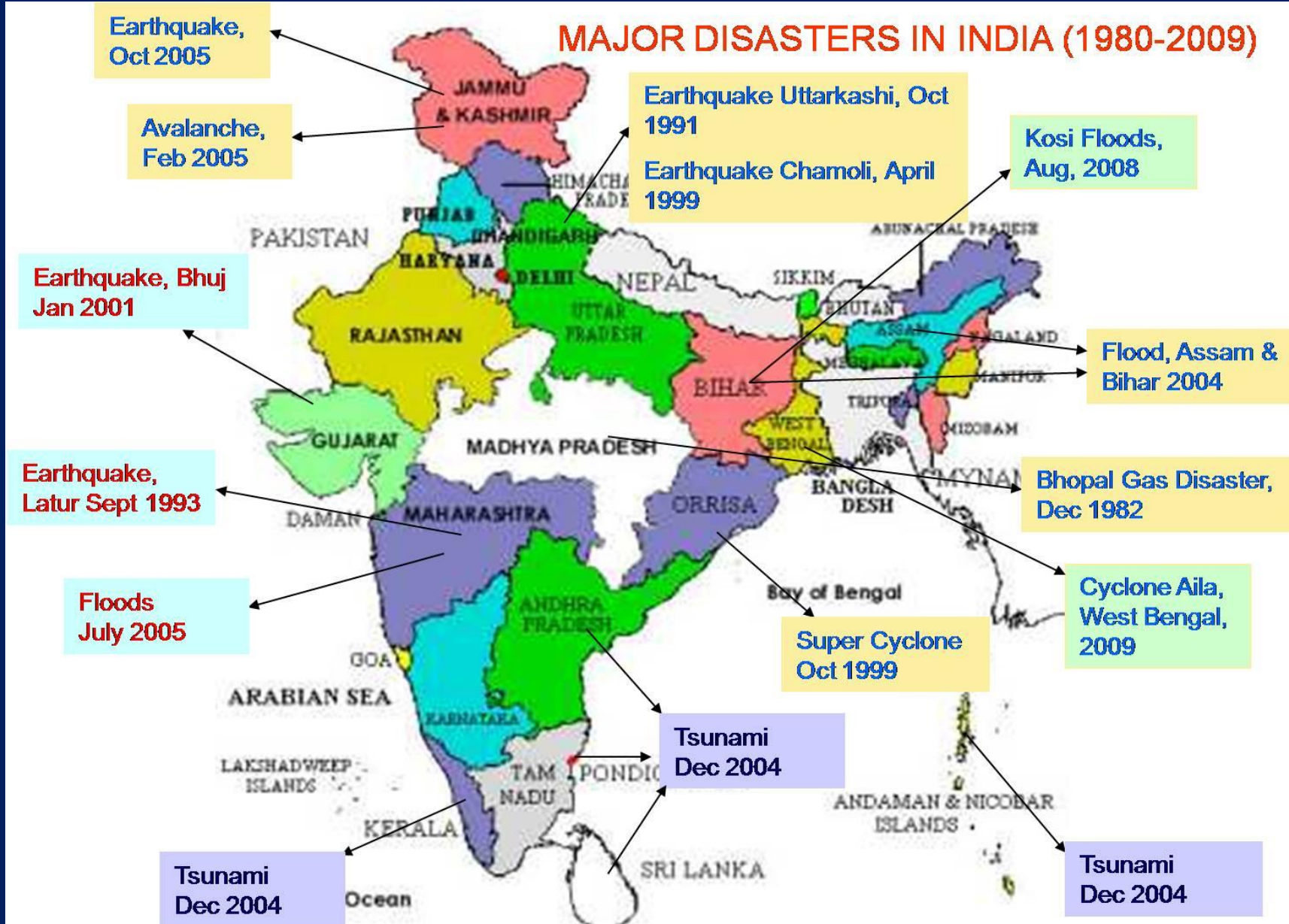
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MAJOR DISASTERS IN INDIA (1980-2009)



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Other Natural Disasters in India



Odisha super cyclone (1999)



Uttarakhand floods (2013)



Gujarat-earthquake (2001)



Tsunami (2004)



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Major Accidents in India



Telinipara Ghat disaster (2017)



Girish Park flyover collapse (2016)



Mangalore Airplane Crash (2010)



Rajasthan Train Accident (2009)



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YOU HAVE A CHOICE

EmComm may not change the world, but it will change the way you prepare for it!



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YOU HAVE A CHOICE

Do you think
this man has a
good
emergency
plan?



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YOU HAVE A CHOICE

This or That



Unprepared;
No shelter, no food,
inadequate clothing.



Prepared;
Shelter, food, adequate
clothing.



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YOU HAVE A CHOICE

This or That



**In an emergency
you can be heard,**

**or just one of the
herd.**



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YOU DON'T HAVE TO BE ALONE

You are never alone when you are part of
an EmComm team.



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Photo courtesy of G.E.R.C.

EmComm: Non-Radio vs. Radio

For this lesson, Non-Radio means audio and visual means of communication. Generally, non-radio signal equipment costs less than radios and can be readily made using locally available materials.

Radio for this lesson means HAM radio. Generally, radio equipment costs more and may not be so readily available locally. Radio equipment and systems can be very expensive.



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Non-Radio EmComm

Non-Radio for this lesson means audio and visual means of communication.
Some work better at day or night.

Audio includes:

- Shouting
- Whistling
- Horns / Sirens
- Loud speakers

Visual includes:

- Flags / Signal panels
- Lights
- Smoke
- Mirrors

Some of these can be used as ways to have students putting theory into practice.



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Audio Non-Radio EmComm

Shout



Whistle



Speakers



Sirens



100 m

1.6 km

0.8-1.6 km

1.6-3.2 km

The actual distance sound carries depends on a variety of factors: wind direction, air temperature, humidity, ambient noise, and physical surroundings.



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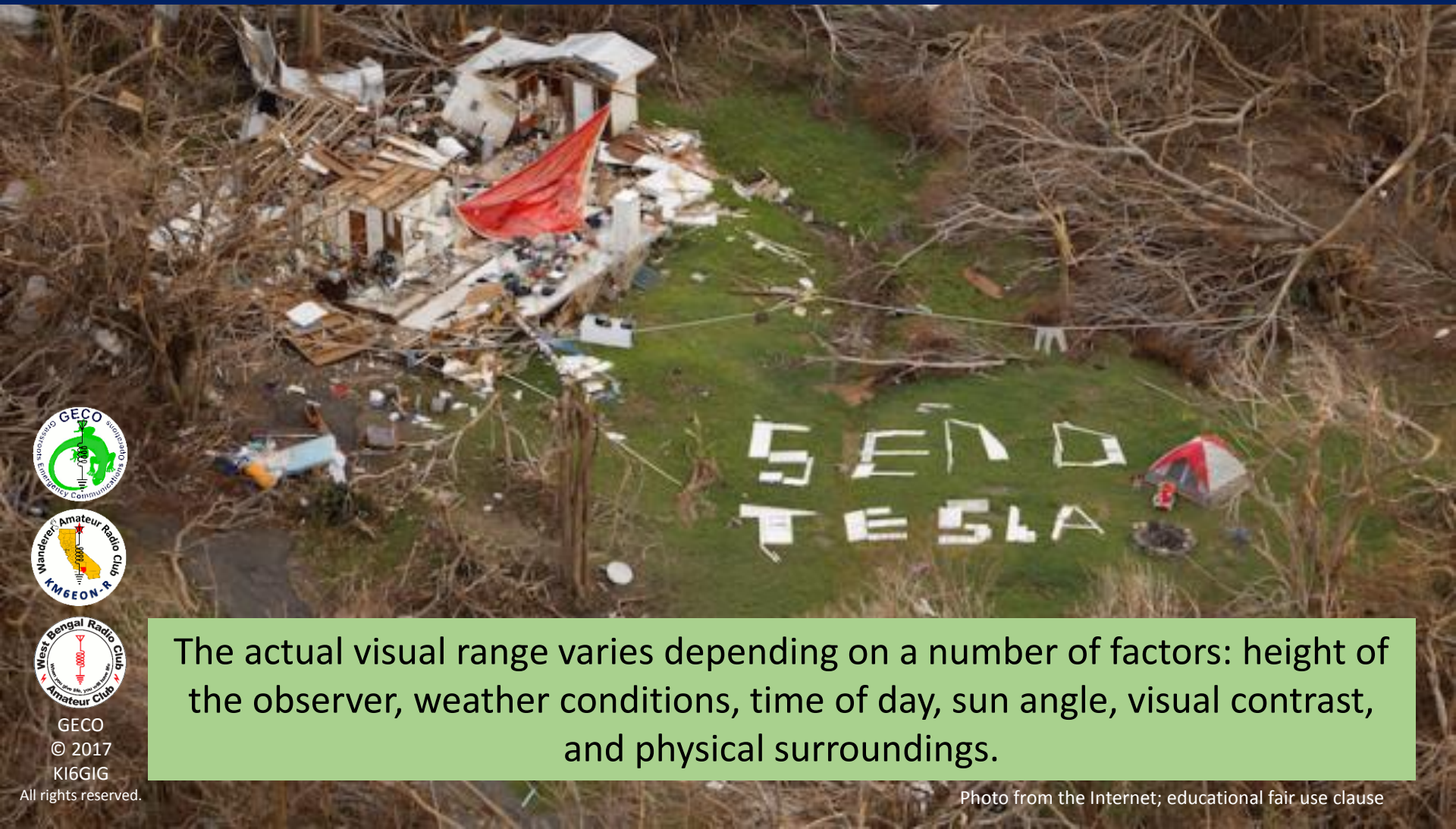
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Visual Non-Radio EmComm

Signs / Symbols can be seen from the air,.



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The actual visual range varies depending on a number of factors: height of the observer, weather conditions, time of day, sun angle, visual contrast, and physical surroundings.

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Visual Non-Radio EmComm

Flags



1-4 km

Lights



4.7 – 19.6 km

Smoke



Mirrors



160 km

The actual visual range varies depending on a number of factors: height of the observer, weather conditions, time of day, sun angle, visual contrast, and physical surroundings.



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To Learn More

Here are 3 free lessons about making and using non-radio ground-to-air signals to communicate with rescue aircraft.



http://www.neighborhoodlink.com/RTC-TH_Tech/pages

Then scroll down to Section 4.2.3 GECO; Non-Radio GTA Signals to find this 3-part series.



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Radio EmComm

For this lesson, Radio means “HAM” radio.

HAM radio requires training and a license. HAM radios cost more to get and to maintain than most non-radio methods.

Licensed amateurs use HAM radios.
They are volunteers.
They help others.
HAMs are not paid.



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Radio EmComm

EmComm = Emergency Communications

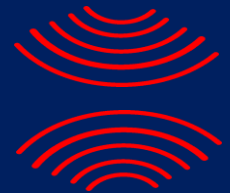
**Radio
Amateurs
Dedicated to
Inter-dependent
Operations**



VU2JFA
Net Control,
VU2MQT-L



KI6GIG
KM6EON-R



Internet



VU3ZHI



N6WZK-R

Photos of India hams courtesy of W.B.R.C..
Graphics from the internet; educational free use clause.



Radio EmComm

HAM radio works day/night over longer distances than non-radio methods.



UHF	VHF	HF
300-3000 mhz	30-300 mhz	3-30 MHz
Short range(LOS*); good in buildings	Short range (LOS*)	Regional & global
*LOS = Line of Sight; depends on antenna height, terrain, and other factors. For example, a 15 m high antenna can reach about 32 km.		



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Radio EmComm

A HAM radio is a set of 3 basic parts.



Battery
(Power Supply)



Radio
(Transceiver)



Antenna
(Aerial)

These parts are connected using various wires and cables.



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Antenna photo from the Internet; educational fair use clause

Radio EmComm

The most common modes of HAM radio use are voice, CW (Morse Code) and digital.



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Photo courtesy of W.B.R.C.

Voice and CW are the most basic, though digital is growing popular.



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Radio: Simplex Station

An “HT” (handi-talkie) is a small Simplex station.

Battery, transceiver, and antenna are all in one compact, portable unit.

This is often the most affordable radio set for new HAM radio operators.

They are available for VHF, UHF, and dual VHF/UHF models.



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HT Radios are small and light-weight

Saborni VU3JFE with her HT serving the community. Won't you join her?



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Photo courtesy of W.B.R.C.

Simplex Base Radio Station

A Simplex station only needs one radio and antenna operating on one frequency.

The single operating frequency is used for TX and RX.

You may use an HF, VHF or UHF radio. It depends on your budget. This set up is called a base station.



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Radio: Simplex Mobile Station

A Simplex station can be “mobile” in a car, on a bicycle, or carried by a person.



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Radio EmComm : Repeater

A Repeater station often needs two radios, two antennas operating on two frequencies and a duplexer to keep the frequencies from interfering with each other.



This cost much more than a simplex station.



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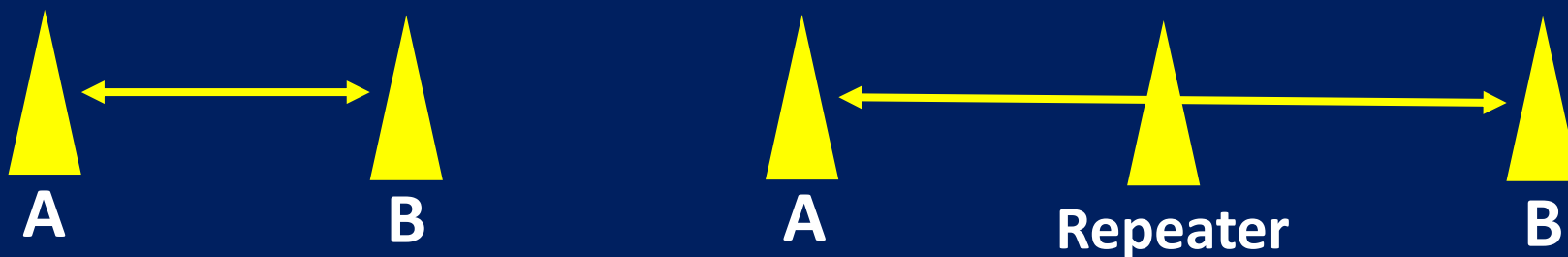
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Radio EmComm : Simplex & Repeater

Ham radio stations can be set up to operate Simplex or as a Repeater.



Repeaters help extend the operating range of Simplex stations. But repeaters cost more to set up and maintain than Simplex stations.



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EchoLink

EchoLink is a free computer program that lets HAMs contact each other globally using the Internet.



You don't have to buy expensive HF radios to talk globally.



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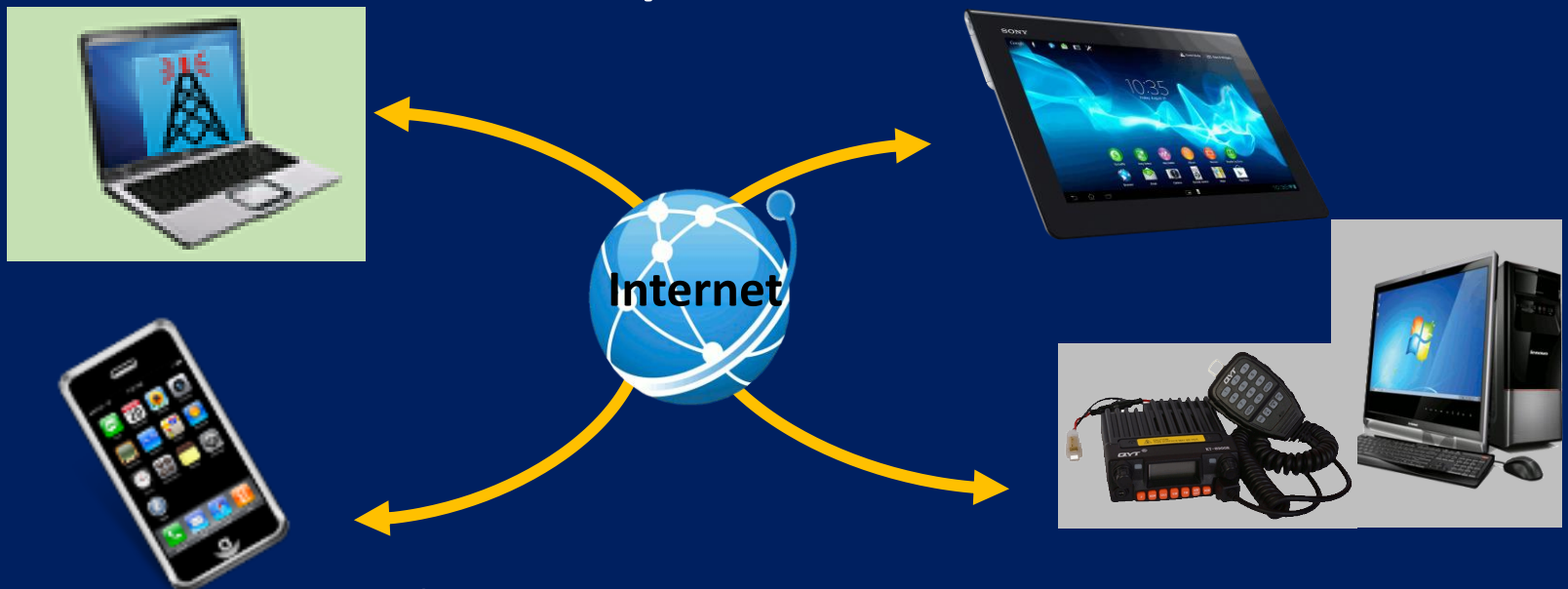
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EchoLink EmComm

You can use EchoLink with computers, tablets, smart phones, and radios connect to computers.



You don't have to buy expensive HF equipment to talk globally.



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EmComm EchoLink Repeater

Greg KI6GIG's EchoLink Repeater Station.



Greg talks globally without using expensive HF equipment.



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Precautionary Thought

No communication technology
is perfect.

When disaster strikes, we need
use all available tools and
resources to communicate and
survive.



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ASK YOURSELF...

...will EmComm help you to live longer?



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YOU HAVE A CHOICE

In an emergency, do you want to be



a sheep



or a shepherd?



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YOU HAVE A CHOICE

I EmComm,
therefore I am.



I didn't,
therefore I'm not.



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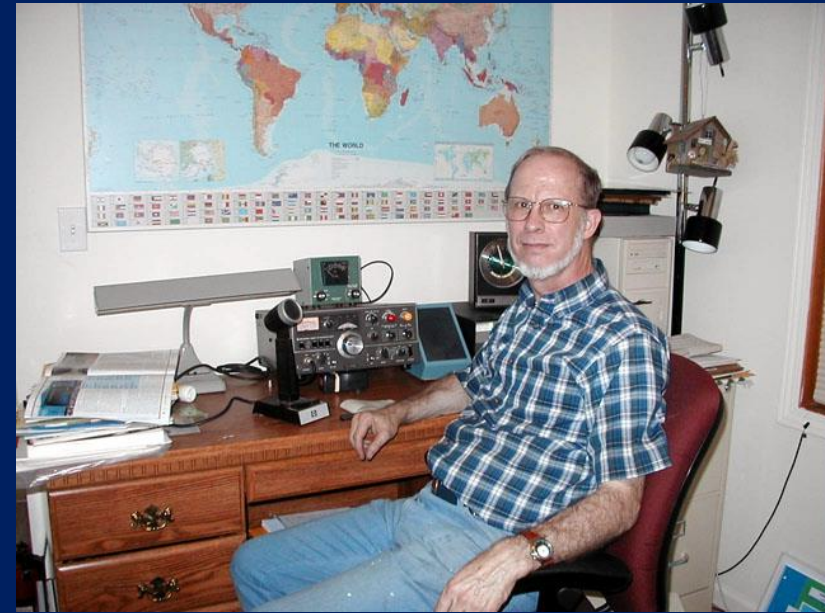
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HAM radio can help you live longer!

See for yourself.



A very young HAM and a very experienced youth.



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You Can Become a HAM



Photo courtesy of W.B.R.C.

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Your help is appreciated

Thank you for your attention.
You may email questions, comments,
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This is not **THE**
END...



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It is the **START** of
your path to being a
HAM