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Delivery of Hydrologic Data in Central America Using NOAA / NWS **EMWIN**

The Emergency Managers Weather
Information Network

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Original Need

- x The hydrologic database project needed to get hydrologic data from from telemetry based field stations to central computers in each country...
 - x Quickly
 - x Reliably
 - x Inexpensively
 - x Sustainably

Options considered

- x DRGS
- x Radio
- x Dedicated Internet Lines
- x Others (LRGS, Other Satellites)
- x EMWIN

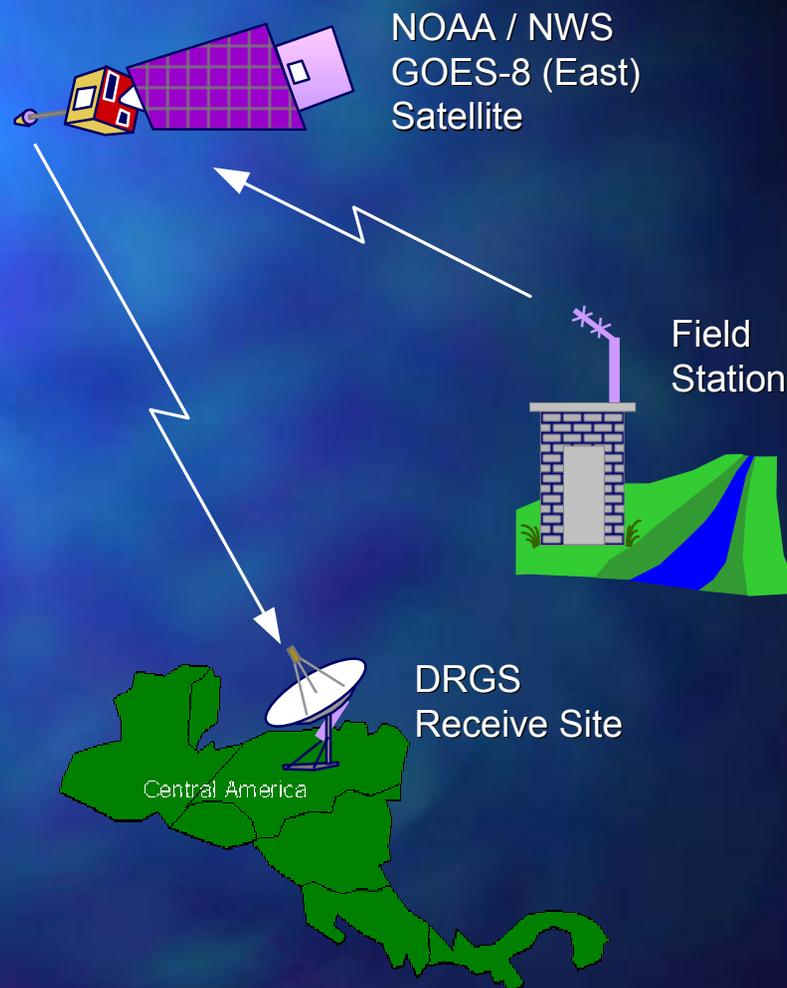
Option 1: DRGS

✘ Pros:

- ✘ Reliable – direct from station to satellite to receive site
- ✘ No dependency on others

✘ Cons:

- ✘ Expensive - \$35,000 - \$70,000
- ✘ High technical experience level needed
- ✘ Not easily relocated



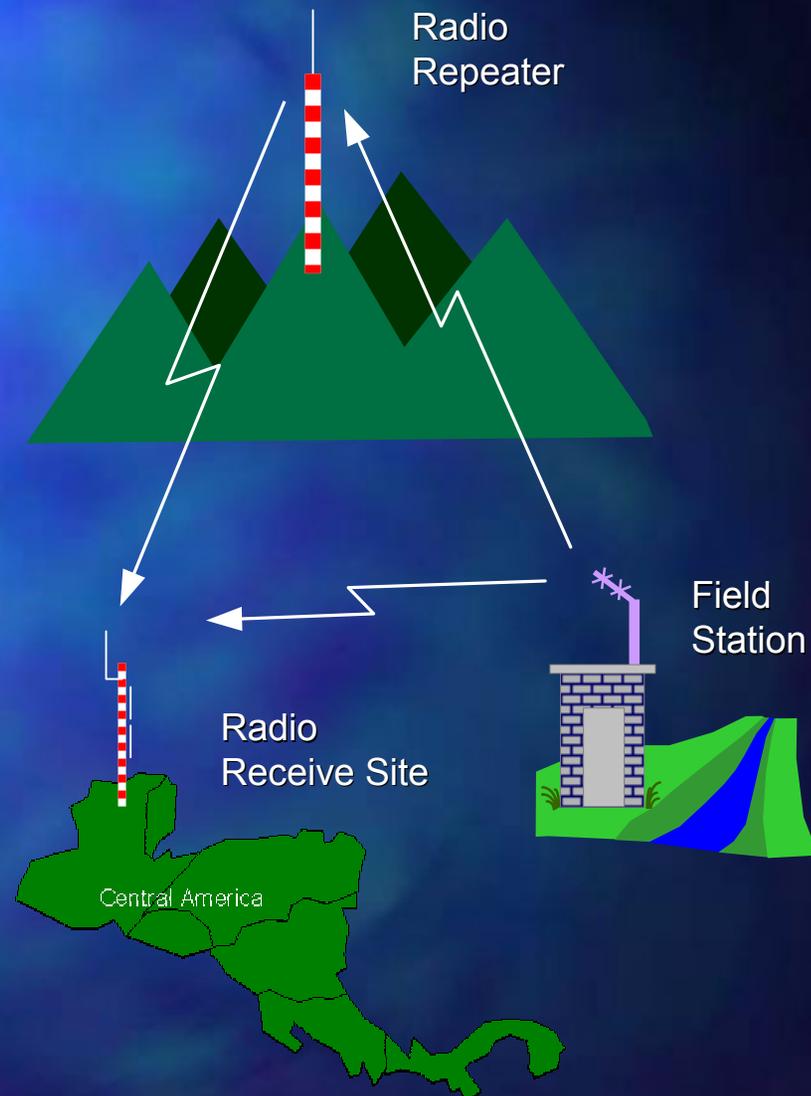
Option 2: Radio

- ✘ Pros:

- ✘ Less expensive
- ✘ No dependency on others

- ✘ Cons:

- ✘ Less reliable than with telemetry
- ✘ Radio towers and related equipment subject to damage during events... if repeater fails, all stations are unavailable



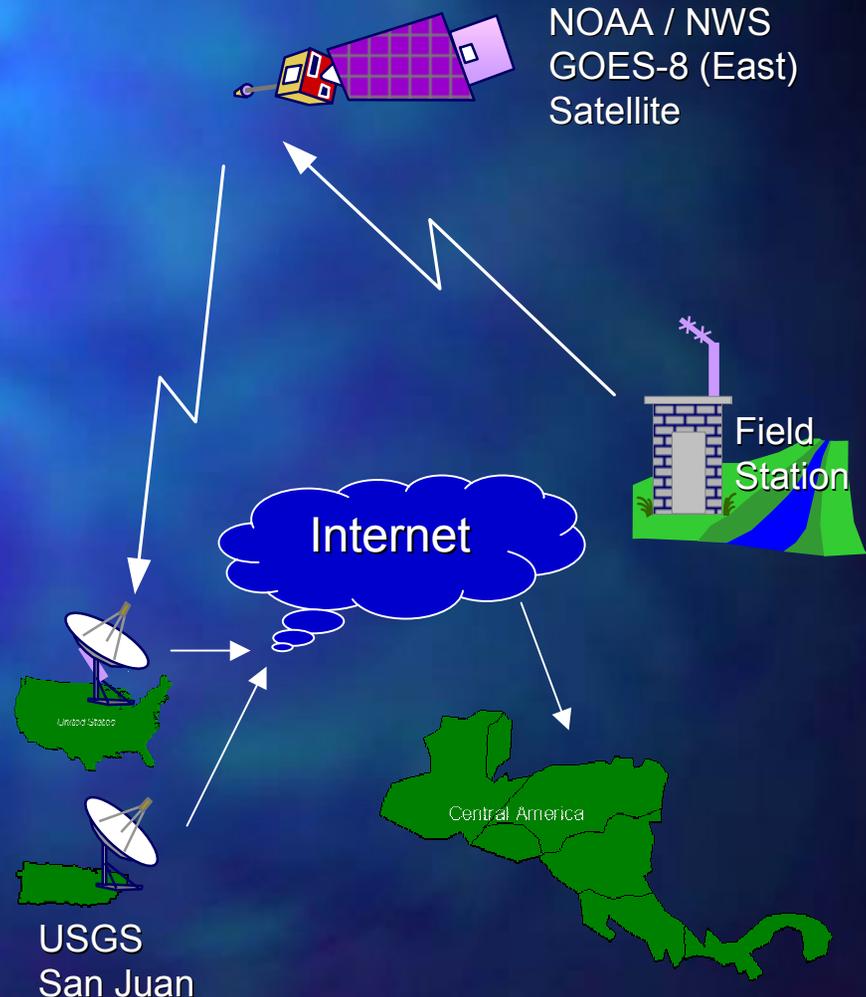
Option 3: Dedicated Internet Lines

✘ Pros:

- ✘ Multiple data streams
- ✘ Familiar technology, local support available

✘ Cons:

- ✘ Dependent on others
- ✘ Expensive for fast connections
- ✘ Typically slow in Central America
- ✘ Government controls on communication
- ✘ Lines susceptible to damage



Option 4: EMWIN

✘ Pros:

- ✘ Reliable – NOAA/NWS operated system via GOES satellites
- ✘ Inexpensive – \$1,200 - \$3,000
- ✘ Minimal dependency on others
- ✘ Simple installation and maintenance
- ✘ Useful, related environmental products of EMWIN

✘ Cons:

- ✘ Data is transmitted twice... more points of failure
- ✘ Transmission of hydrologic data has not been done before... details must be worked out.

Operational Test Mode

NOAA / NWS
GOES-8 (East)
Satellite

EMWIN Control
Center, Silver Springs
Maryland



United States



Field
Station



USGS
San Juan



EMWIN
Receive Site

Desired Operation

NOAA / NWS
GOES-8 (East)
Satellite

EMWIN Control
Center, Silver Springs
Maryland



United States

Wallops Island
Virginia



~~USGS
San Juan~~



Field
Station



EMWIN
Receive Site

Central America

What makes EMWIN such a good solution

- ✘ Data arrives directly from Satellite
 - ✘ Greater reliability during events
 - ✘ Will not go “off-line” during governmental emergencies
- ✘ Easily installed, relocated, and maintained... not complicated
- ✘ Additional products are valuable to environmental issues

Cost Comparisons

DRGS	\$35,000 - \$70,000
Radio	More than EMWIN with repeater towers
Dedicated Internet Lines	\$500 – \$6,000 per month
EMWIN	\$1,200

Additional Products Available on EMWIN

Analyses Environmental/Air Pollution, Hydrological/Marine, Surface, Misc

Climatic Products Daily Surface, Monthly Surface, Misc

Forecasts Aerodrome, Aviation Area, Extended, Flash Flood Guidance, Headwater Guidance, Hydrological, Iceberg, Local/Area, Misc, Public, Recreation/Travelers, **River**, Shipping Area

Graphics AFOS charts and map overlays

Images **GOES satellite**

Misc Civil Emergency Messages, Public Weather Statements

Reports Radar, Seismic, Synoptic, **Hydrological River**, Drifting Buoy, Ice

Severe Weather Warnings, Summaries, Statements, Advisories

Warnings Tsunami/Tide, Tornado, River Flood, Lakeshore/Marine, Typhoon/**Hurricane**, Marine/Coastal Flood, Severe Thunderstorm

EMWIN Installation in El Salvador



EMWIN Installation in Nicaragua



Ease of Installation, Relocation, Maintenance

The EMWIN antennas are simple in construction and require no special expertise to install and operate



Implications

- ✘ EMWIN has the capacity to transport a large amount of telemetry data with minimal impact on the rest of the system
- ✘ The cost of EMWIN installations makes it possible for more locations to receive critical hydrologic data directly from the satellite, with minimal dependency on others
- ✘ Agencies in Central America can cooperate to backup each others data
- ✘ Standardizes the reception of hydrologic data in the region



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