Disaster Early Warning Systems: Focus on All-Hazards, All-Media, Public Warning

presented by
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SESSION 2: PERSPECTIVES ON CHALLENGES TO DISASTER COMMUNICATIONS

INTERNATIONAL TELECOMMUNICATION UNION
Telecommunication Development Bureau

ITU Resolution 136 *(Antalya, 2006)*

"The Plenipotentiary Conference [...]
resolves to instruct the Directors of the Bureaux [...]

to promote implementation by appropriate alerting authorities of the international content standard for all-media public warning, in concert with ongoing development of guidelines by all ITU Sectors for application to all disaster and emergency situations"

identifier USGS-volcanoes-20070327-083829

sender jquick@usgs.gov

sent 2007-03-27T08:38:29-00:00

status Test **msgType** Alert **scope** Public

language: en-US **category:** Geo

event: Message from USGS Volcanoes Program

urgency Expected **severity** Minor **certainty** Possible

senderName: USGS Volcanoes Program, Craig Weaver

headline

Mount St Helens Volcano Advisory (aviation color code ORANGE)

description

Current status is Volcano Advisory (Alert Level 2); aviation color code ORANGE: Growth of the new lava dome inside the crater of Mount St. Helens continues, accompanied by low rates of seismicity, low emissions of steam and volcanic gases, and minor production of ash. During such eruptions, changes in the level of activity can occur over days to months. The eruption could intensify suddenly or with little warning and produce explosions that cause hazardous conditions within several miles of the crater and farther downwind. Small

instruction

Wind forecasts from the National Oceanic and Atmospheric Administration (NOAA), coupled with eruption models, show that any ash clouds that rise above the crater rim today would drift principally eastward. Under current eruptive conditions, small, short-lived explosions may produce ash clouds that exceed 30,000 feet in altitude. Ash from such events can travel 100 miles or more downwind.

web http://vulcan.wr.usgs.gov/Volcanoes/MSH/Eruption04/

image http://www.fs.fed.us/gpnf/volcanocams/msh/

contact Craig Weaver 1-206-553-0627

areaDesc

Skamania County, Washington, in the Pacific Northwest region of the United States (96 miles south of Seattle, Washington and 53 miles northeast of

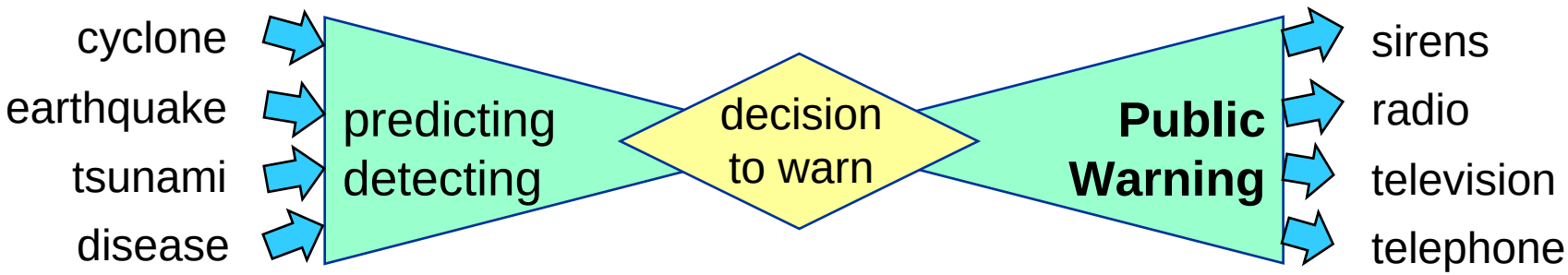
polygon

circle 46.2,-122.2 0

geocode

Public Warning & Early Warning

Early Warning focuses on predicting or detecting a hazard event before it becomes an immediate threat to life or property



Public Warning focuses on communicating to people about a hazard event that is an immediate threat to life or property

The Goal of Public Warning

People who are
properly alerted will act
to reduce damage and
loss of life from natural or
man-made hazard events

Audiences of Public Warning

- Public (at home, at work, traveling ...)
- Leadership (political, civil service ...)
- Emergency Managers
- Responders (law enforcement, emergency medical services ...)
- Intermediaries (services that filter, route, and/or create derived warning products)

The Challenge of Public Warning

"Collaborative actions are necessary to assure that standards-based, all-media, all-hazards public warning becomes an essential infrastructure component available to all societies worldwide."

http://www.isoc.org/challenge

Standards-based

- Governments, emergency managers and ICT providers are converging on key standards (message content standard, technology standards, standards of practice)

- ITU-D and ITU-T are prime examples, bringing together standards expertise with key public warning agencies and commercial enterprises

All-media, All-hazards

- All available communications media should be used (from broadcast down to individual targeting) to get timely and appropriate warnings to everyone who needs them, and to only those who need them

- Public warning systems should be in routine use for all hazards, not only for rare events such as earthquakes and tsunami, but for severe weather, fire, and other emergencies

The Common Alerting Protocol (CAP) Standard

The CAP standard message format is designed for All-Hazards, All-Media, communications:

- **about any kind of hazard** situation

  (*Weather, Fires, Earthquakes, Volcanoes, Landslides, Child Abductions, Disease Outbreaks, Air Quality Warnings, Beach Closings, Transportation Problems, Power Outages, …)*

- **over any and all media**

  (television, radio, telephone, fax, highway signs, e-mail, Web sites, RSS "Blogs", …)

- **to anyone:** the public at large, designated groups, or specific people (civic authority, responders, etc.)

The Common Alerting Protocol (CAP) Standard

- Compatible with legacy as well as newer transports (WMO messages, news wires, digital TV, Web Services, ...)
- Flexible geographic targeting
- Phased and delayed effective time, expiration
- Message update and cancellation features
- May include inline digital images and audio
- Version 1.1 approved in October 2005
- Significant uptake, many implementations

WORLDSPACE SATELLITE RADIO

Anny Network
Early Warning System

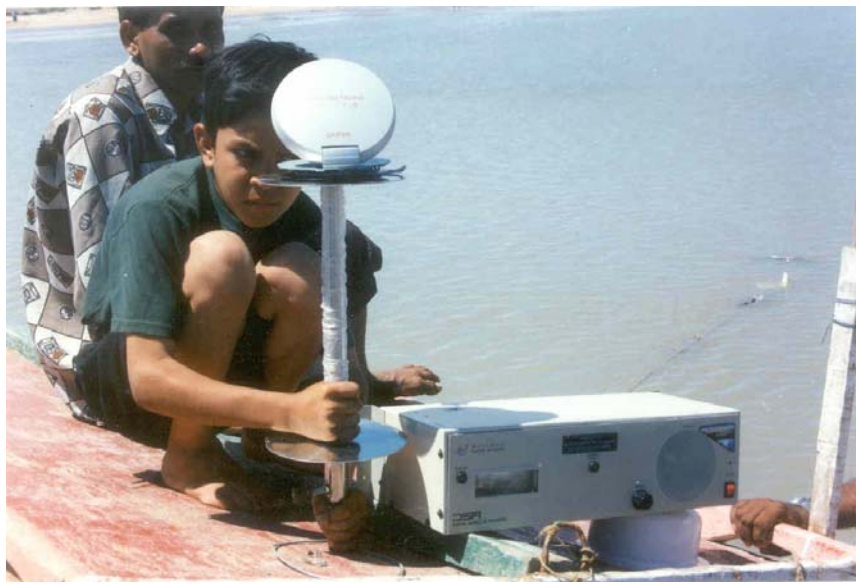
Anny Network
Coverage Area

- AfriStar™ coverage area
- AfriStar™ & AsiaStar™
- AsiaStar™ coverage area
- No coverage available at this time

Cyclone Warning System for Fisherman out at Sea

- Pilot Experiment in west coast of India
- 80 boats fitted with WorldSpace reception
  - Encased in water proof enclosure
  - Pretuned to the assigned channel
- Warning messages in MP3 format via Internet to the uplink site
- Boats into the sea up to 200 miles
- Valuable experience gained in designing the full system

WorldSpace Reception on a Fishing Boat



NOAA/NWS Weather Watches, Warnings and Advisories in Effect for the United States - Windows Internet Explorer

http://www.weather.gov/alerts/us.html#NYC025.BGMFLSBGM.09:14:00

Google

Home Print Full Screen Tools Help

Susquehanna (Pennsylvania)

FLOOD STATEMENT
NATIONAL WEATHER SERVICE BINGHAMTON NY
846 PM EDT MON MAR 26 2007
NYC007-PAC115-271246-
846 PM EDT MON MAR 26 2007
THE FLOOD WARNING CONTINUES FOR
THE SUSQUEHANNA RIVER AT CONKLIN
* AT 8 PM MONDAY THE STAGE WAS 11.2 FEET
* MINOR FLOODING IS OCCURRING AND MINOR FLOODING IS FORECAST
* FLOOD STAGE IS 11.0 FEET
* THE RIVER ROSE ABOVE FLOOD STAGE YESTEDAY AFTERNOON AND WILL CONTINUE RISING TO NEAR 11.7 FEET BY EARLY WEDNESDAY MORNING THEN BEGIN FALLING.
* AT 12.0 FEET...FLOODING BEGINS ON ALTA...RIVER AND LAWRENCE ROADS IN THE TOWN OF CONKLIN.
$$

Done Internet 100%


Worl
Mete
Orga
eather Information Centre
ons. Official Warnings.
USGS M5+ Earthquakes
HOME
Severe Weather
Tropical Cyclones
Heavy Rain/Snow
Thunderstorms
Official Observation
Cloudiness & Rain
What's New
New Link to Meteoalarm
Introductory Pamphle
About this web site
Participating Member
Notes To Users
Links
M 5.5
M 5.1
M 5.5
March 26, 2007 16:51:03 GMT
M 5.1, Mindanao, Philippines
Yesterday, March 26, 2007, 7:17:08 AM
March 26, 2007 11:17:08 GMT
Public Health
Information
Network
Google Earth network infrastructure
will mount copies of authoritative,
authenticated, public alerts
in CAP format
from any official source worldwide
at no charge

Cautions about Public Warning

- Emergency management processes should provide for human judgment between detection of a threat situation and issuing of public alerts, usually under control of officials with appropriate responsibilities

- Where alerting involves existing operational systems, pilot implementations should be in parallel with current operations to minimize confusion and service disruption

Cautions about Public Warning

- Technologies supporting public warning must take into account that false alarms can be disruptive, expensive, and can degrade public confidence
- In any system of public warning, the authentication of senders and targeted receivers is essential
- Alerting systems can become targets for deliberate misinformation or denial-of-service attacks

Cautions about Public Warning

Effective public warning involves many distinct aspects other than ICT, including public education, training, building codes, policy, social science, among others

Now is the Time...

- It makes no sense to continue building a separate public warning system for each particular threat

- Efficiency as well as effectiveness of public warning argue for using standards, and for combining the public warning requirement for all-media coverage with the requirement for an all-hazards approach

Now is the Time...

A standards-based, all-media, all-hazards public warning strategy makes sense for ICT providers now using digital technologies and integrating radio, television, cellular telephone, satellites, Internet-based and other network services

Now is the Time...

All-media, all-hazards public warning is no longer a matter of designing specialized communications technology,

it is a matter of implementing the agreed standard

Online References

CAP standard (from OASIS standards organization)
at http://www.oasis-open.org/

Proceedings of the ITU-OASIS Workshop on Public Warning
http://www.oasis-open.org/events/ITU-T-OASISWorkshop2006/proceedings.php

Display of CAP Alerts Using Google Earth (Powerpoint)
http://www.search.gov/cap/ge.ppt

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