GEO-ENGINEERING EXTREME EVENTS RECONNAISSANCE
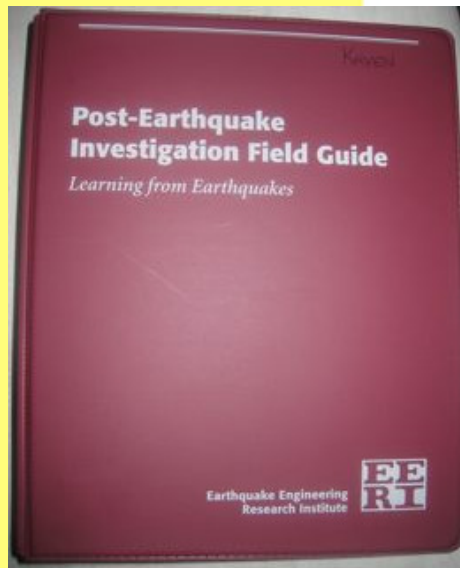
Turning Disaster into Knowledge

GEER Post-Event Reconnaissance Guidance Document
Robert Kayen – US Geological Survey

- Guide GEER team as they survey the damaging   geotechnical aspects
- Standardize digital documentation
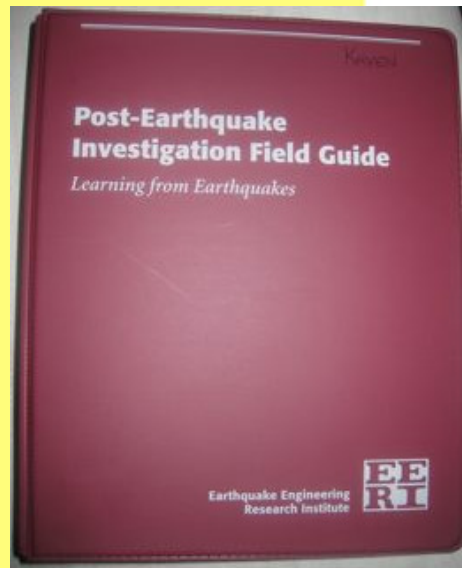- Provide a solid foundation of information for further research.

GEER Post-Event Reconnaissance Guidance Document

- EERI 'Post-Earthquake Investigation Field Guide *Learning from Earthquakes*'
- Amplify Geo-Engineering Elements
- Update, Promote, and Standardize Guidance for Internet/Digital Globe Driven Reconnaissance Effort

GEER Post-Event Reconnaissance Guidance Document

- Germane elements of EERI 'Post-Earthquake Investigation Field Guide *Learning from Earthquakes*'; S3-General Response Procedures; S4-Responsibilities of Project Participants

- **New Elements- [1] Team Meetings,[2] Team Safety, [3] Mobile Communications, [4] GPS, [5] Geodetic Datum's, [6] Digital Reconnaissance, [7] Google Earth Reconnaissance and GE Reporting**

Post-Event Reconnaissance Guidance Document: MEETINGS

Morning Planning Meeting on the road

Evening Clearinghouse Team Discussion using Google Earth

- TEAM Meetings – Focused on maximizing recon productivity & efficiency

- Identify & assist topic-leaders who synthesize team observations

- Promote a 'culture of safety'

- Discuss daily observations; Organize digital data, photos, GPS. Generate daily Google Earth map and disseminate map onto everyone's laptop.

Post-Event Reconnaissance Guidance Document: SAFETY

- GEER teams arrive within 72 hour
- Promote a **Culture of Safety** among team
- Require First Aid bags and Manuals; Mobile Phones; Supply of water and high-energy foods in every vehicle.
- Guidance on appropriate clothing & personal gear
- Be aware of surroundings & potential crime, driving hazards, walking on landslides, bear hazards, etc.

Post-Event Reconnaissance Guidance Document: COMMUNICATIONS

Phone, Skype, Dictation, email, web, SMS, GPS, Camera, Google Earth, Twitter *…everything!*
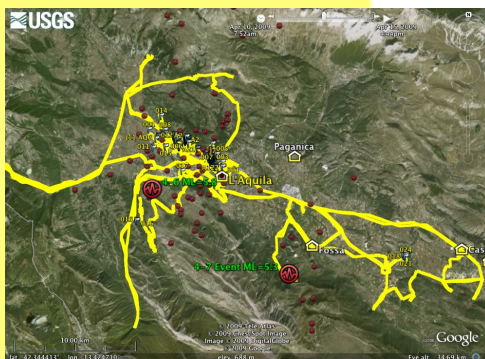
- Bad: Show up with no means of communication (typical on Int'l events)

- Good: Voice and texting

- Best: Smart Phones with voice, web, email, texting, camera, GPS (iphone, Palm & Int'l voice-data plan)

- 'Walkie Talkies', SMS Texting, Twitter

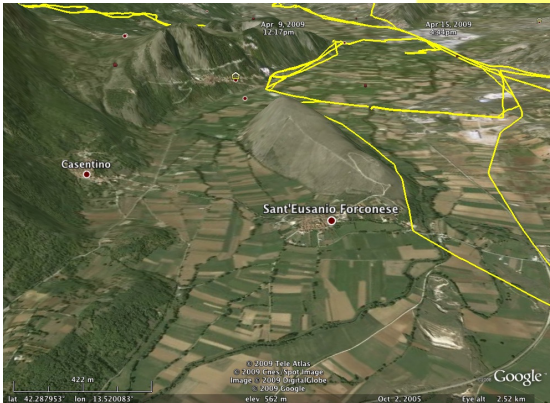# Post-Event Reconnaissance Guidance Document: GPS

Logging Waypoints
[Castelnuovo, IT]

.gpx file Track Log and
Waypoints brought
into Google Earth
[Abbruzzo, IT]

- Standardizing on Garmin unit

- Always recording 'Track logs'

- Always turning on WAAS

- How to take and report 'waypoints'

- Sequential site naming with ID

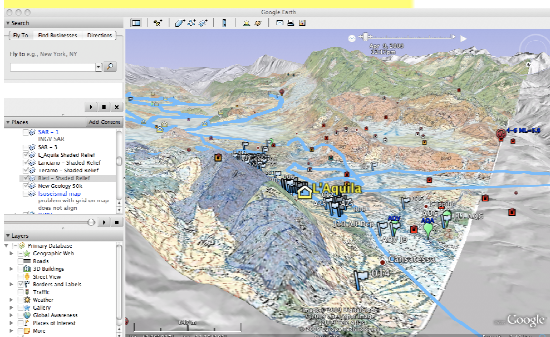- Geotagging photographs

- .gpx files

Mapping on Satellite imagery

Mapping on Geology Overlay

Field Mapping on daily .kmz file

Post-Event Reconnaissance Guidance Document: GOOGLE EARTH (GE)

- It is Free, Everywhere, and Easy

- How to map using Google Earth

- Importing GPS .gpx data and KML processed GPS data

- Importing overlay images (e.g. aftershocks locations, Geologic Map)

- Making daily .kmz file & disseminate

- Data structure

- Final reporting map

Post-Event Reconnaissance Guidance Document: GOOGLE EARTH (GE)

- **Appendix 1: AMERICAN RED CROSS FIRST AID ESSENTIALS**

- **Appendix 2: EXCEL templates for logging observations**

- **Appendix 3: Google Earth KML Tutorial**

GEO-ENGINEERING EXTREME EVENTS RECONNAISSANCE

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