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The following pages demonstrate several options for analysis:

1) Zoomed in to Apia (background imagery is from BING)

2&3) An approximate coastline boundary before and after the surge; these two layers were created from images developed by the JRC (rectified first and the boundaries were then digitized)

4) Overlaid the building center points by type/condition (layer developed by JRC)

5) Selected only those that were located in the pink zone (203)

6) Roughly digitized roof/footprints to demonstrate the benefits of footprint vs. center point layer (footprints are very coarse); OSM's data can be used (not collected for this area yet). Can provide a lot of information including blue tarp for roofs

7) Same area overlaid with UShahidi reports

8) Same area overlaid with UShahidi reports & building roof/footprints

9) UShahidi reports and an example of an Area of Interest (AOI) such as hardware stores. GIS can be used for routing purposes; in this example (to get from a hardware store to where a chainsaw is needed).  * Facilitating the routing from a "giving" location to a "receiving" location by using GIS
Samoa Simulation Project - UN-Spider Simulation

Storm Surge and building condition datasets are provided by the Joint Research Center (JRC). Crowd Sourced data is obtained from UShahidi instance. The analysis is performed by GISCorps volunteers, December 2011
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Building center points by type

Legend
Bldg Types (JRC)
- FlatIllShaped
- FlatRoof
- IllShaped
- Before Surge
- After Surge

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Building footprints (±250,000 square meters of roof surface)
One side benefit of digitizing building footprints
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The analysis is performed by GISCorps volunteers, December 2011
More effective situational awareness with building footprints

Legend
- No Category
- Building
- Chainsaw needed
- Dead
- Displaced
- Emergency
- Fire
- Flooding
- Food needed
- Health care needed
- Infrastructure
- Injured
- Medical supplies needed
- Missing
- Offers of assistance
- Other
- Search & Rescue
- Shelter needed
- Trapped
- Vehicle accident
- Water needed
- Building footprints
- Before Surge
- After Surge

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Before Surge

Afte Surge

Chainsaws Needed

Hardware Store

1.2 Km

1.1 Km

Legend

- No Category
- Building
- Chainsaw needed
- Dead
- Displaced
- Emergency
- Fire
- Flooding
- Food needed
- Health care needed
- Infrastructure
- Injured
- Medical supplies needed
- Missing
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- Other
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- Shelter needed
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- Vehicle accident
- Water needed
- Before Surge
- After Surge

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Further analysis ideas for all stages of a disaster (Preparedness, Search and Rescue, and Recovery)

1) Conduct change detection procedure between pre and post disaster imagery to identify the location and level of damages; this could be very helpful when more detailed GIS layers are absent (building footprints, property boundaries, etc.)

2) Develop an online application that includes all the base layers and also incorporates other datasets that might be transmitted frequently and throughout the disaster response process. The application should include basic and more complex GIS tools such as: select, buffer, heat maps, routing, and draw tools. The application can assist in delineating evacuation routes, creating a safe buffer to place temporary health centers and shelters. The application can also help in responding to and verifying information coming from the crowd. This will require a live link to the UShahidi platform so that the crowd sourced data can be analyzed and verified in a richer manner.

Required datasets:

1) Pre and post imagery (high resolution)

2) GIS layers for base map: roads (with name), political boundaries, locations of city/villages, hydrology, property boundaries, building foot/roof print, points of interests (hospitals, shelters, hardware stores, etc.)

3) Other GIS layers: Critical infrastructure (water plants, waste water treatment plants, lift stations, etc.), center point of structures with relevant attribute data (age, type, condition, etc.), elevation data (contours, DEM), storm surge model in a GIS useable format