

HOT - Crowdsourced area based damage assessments and comparative damage rankings

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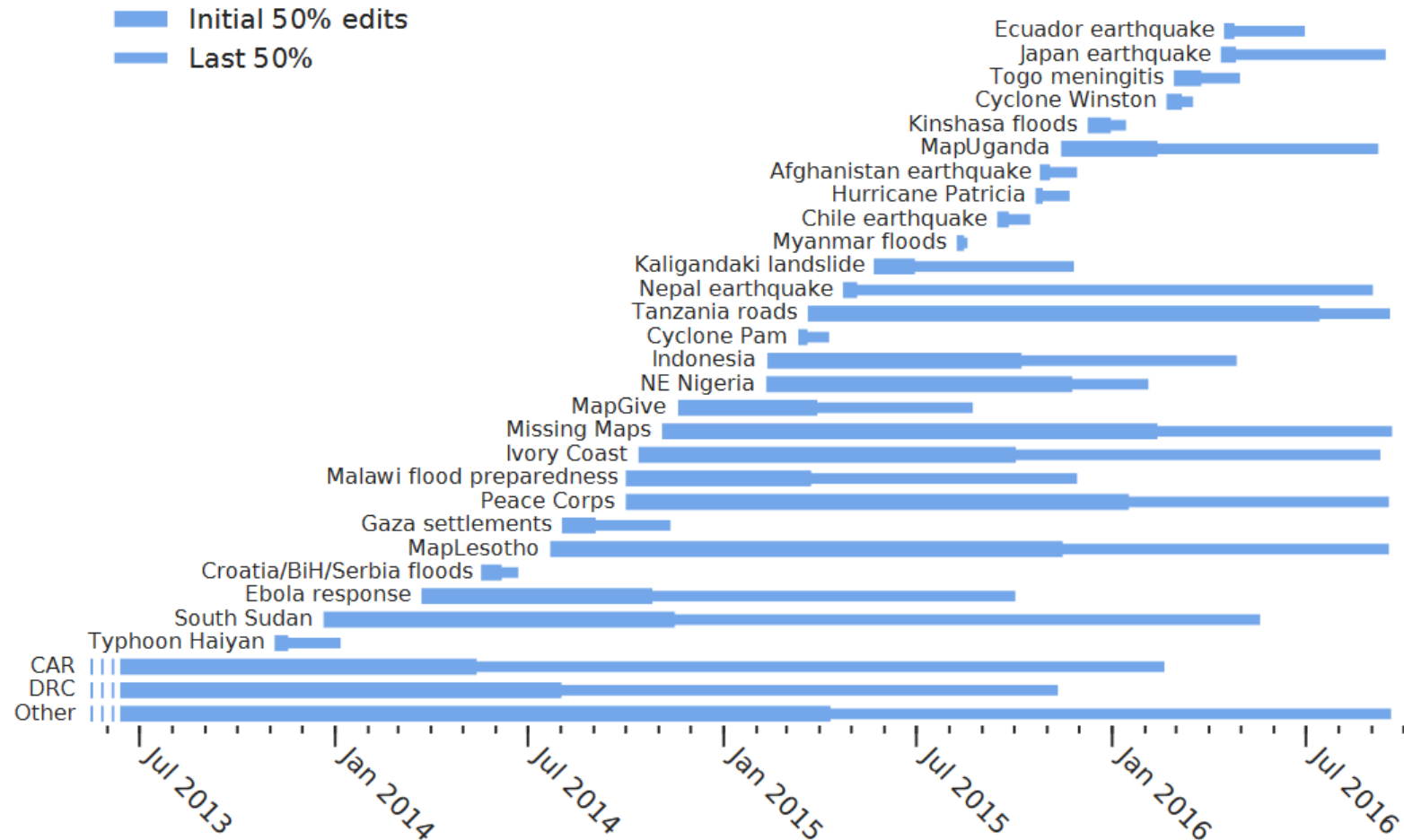


Agenda

- Background
- Objective
- Approach
- Current state
- Outlook



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Dittus, SotM 2016



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Crowdsourced damage mapping

#1044 - Nepal Earthquake, 2015, Severely damaged housing areas and IDP Informal camps, Trisuli Valley

Entities to Map

landuse=brownfield, idp:camp_site

Changeset Comment

#hotosm-nepal-earthquake-1044

When saving your work, please leave the default comment but add what you actually mapped, for example "added buildings and a residential road".

Imagery

http://mw1.gstatic.com/crisisresponse/2015/earth_astrium_pleiades_priority/PO_FCGC600296416_rendered_2015_05_05_maptiles/{x}_{y}_{zoom}.png

Access to this imagery is limited by the Airbus DS / OSM-FR license agreement.

You have already acknowledged the terms of this license.

THIS TASK IS FOR MORE EXPERIENCED MAPPERS

To add the various tags, it is easier to edit through JOSM

** Pre-Disaster imagery to compare is either [Bing](#) or [MapBox](#)

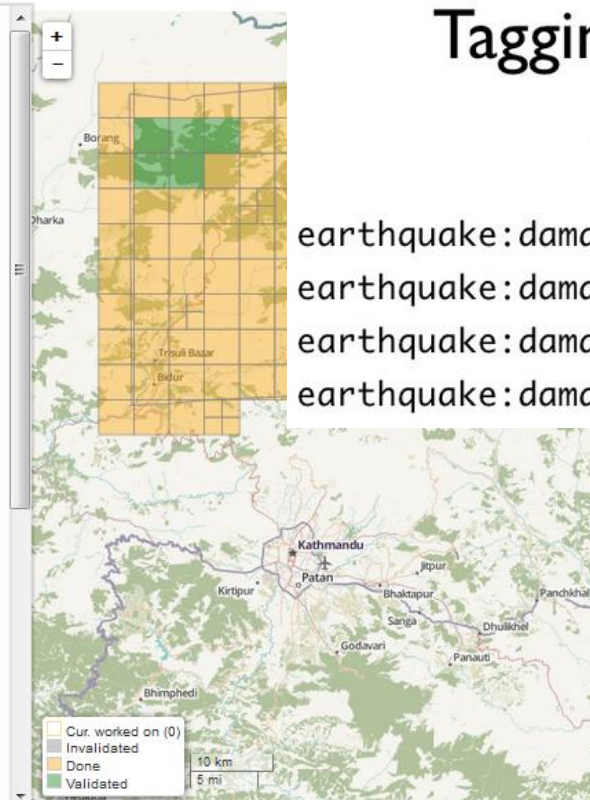
** Post-Disaster Imagery source=Pleiades 2015-05-03, CNES, Airbus DS

ID editor
http://mw1.gstatic.com/crisisresponse/2015/earth_astrium_pleiades_priority/PO_FCGC600296416_rendered_2015_05_05_maptiles/{x}_{y}_{zoom}.png

JOSM editor [Modify](#) / [Parameters](#) / [WMS](#) - [TMS](#), + [TMS](#)
http://mw1.gstatic.com/crisisresponse/2015/earth_astrium_pleiades_priority/PO_FCGC600296416_rendered_2015_05_05_maptiles/{x}_{y}_{zoom}.png

From the Pleiades image, locate the villages and informal campsites.

Report severely damaged housing areas -



Tagging Earthquake Damage

earthquake:damage: collapsed_building
earthquake:damage: spontaneous_camp
earthquake:damage: damaged_infrastructure
earthquake:damage: landslide

<http://tasks.hotosm.org/>



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Crowdsourced damage mapping

“[...] image-based damage assessment can be considered more challenging than base data mapping [...].

Damage mapping requires that a single ordinal scale label is given to a structure in a complex state [...]. That essentially makes “damage” a concept rather than a physical state.”

(Kerle 2013, p. 127f.)

“OSM contributors did a reasonably good job of identifying affected buildings but overestimated the number of buildings completely destroyed by the typhoon and underestimated the number of buildings that were majorly damaged.[...]”

(ARC 2014)



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Objective

Examine further opportunities for crowdsourcing
of damage assessment information
following major disasters.



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Approach

- *Demand Survey*
 - Post Disaster Needs Assessment requirements



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Approach

- *Area based assessment*
 - Rather than rating the level of damage to individual buildings, testing scoring the amount of damage in a given area



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Approach

- *Area based assessment*



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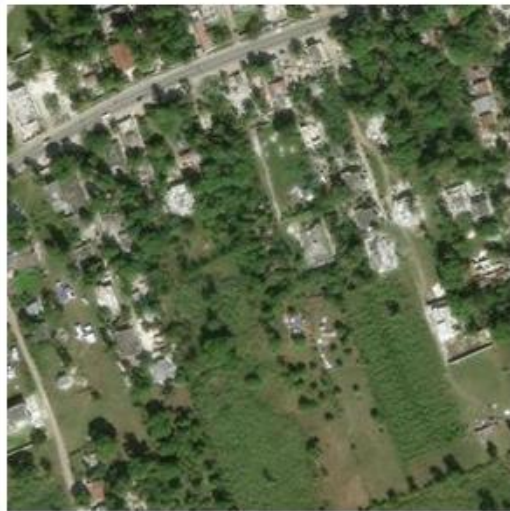
Approach

- *Comparative damage rankings*
 - Rather than rating each building/ area individually, testing method by which participants are asked to compare two separate areas.

Approach

- *Comparative damage rankings*

Click on the image that shows a higher level of damage



Images Classified: 18



[Link to PDF tutorial with instructions](#)

Finish

Same damage in both images

Not sure



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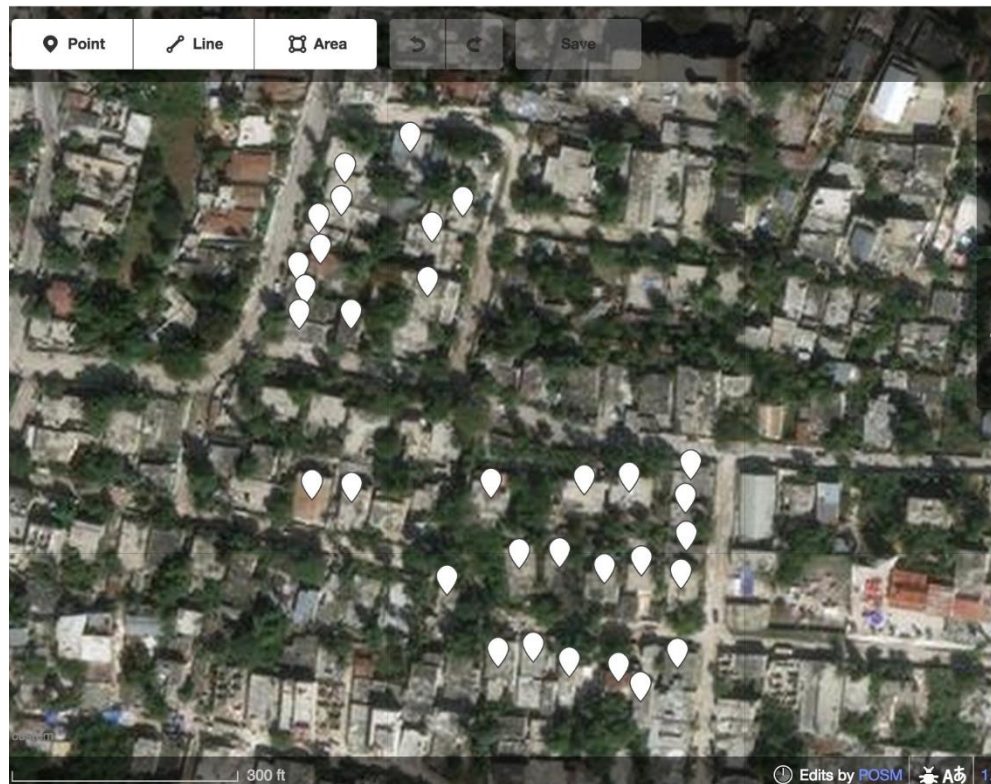


Approach

- *Statistical methods of aggregation*
 - rather than testing accuracy of individual building marking, aggregating results to ward or district levels
 - including multiple passes and weighting user

Approach

- OSM damage mapping



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Approach

- Training material

„Creating **generic and disaster-specific damage assessment guidance** materials for remote mappers would **improve the accuracy of results** and **reduce the number of potentially inaccurate judgment calls** contributors are asked to make. [...]

Tailored materials featuring disaster-specific imagery could help to better identify damage patterns common to **local construction types** [...].”
(ARC 2014)

Approach

- Training material



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Current state

- Pre-experiment ✓
- Think alouds ✓
- Internal review ✓



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Next steps

- Finalize experiment setup
- Run experiment with OSM, HOT and Stanford community
- Presentation of experiments and results at HOT Summit and further conferences and discuss results with practitioners



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Thank you for your attention!

Questions? Comments?

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