INTEGRATING DATA FROM DIFFERENT SENSORS FOR EMERGENCY RESPONSE IN URBAN AND RURAL ENVIRONMENTS

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Rural areas

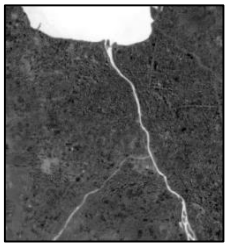
- Rural areas and small settlements are characterized by: low population density, low socio economic status - traditional and rural economic, low structures stability- local constructions materials and low seismic capacities.
- Land use land cover (LULC) variability both natural and man-mad.

Damage assessment using Remote Sensing

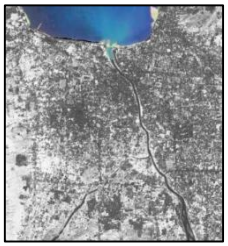
- Near real-time
- Rapidly mapping of the damage
- High accuracy
- High spatial coverage
- Low cost
- Provides information for remote and inaccessible

When a disaster strikes, remote sensing is often the only way to view the damage and its extent!

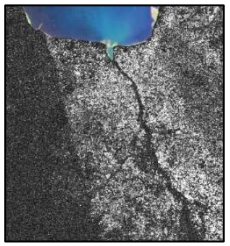
MNDWI



NDVI



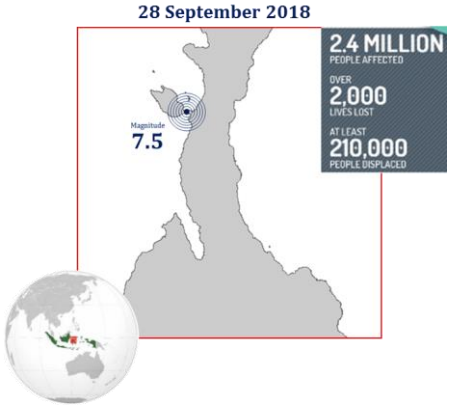
Coherence



Thresholds

Damage Assessment Map

Case Study



Palu, Indonesia

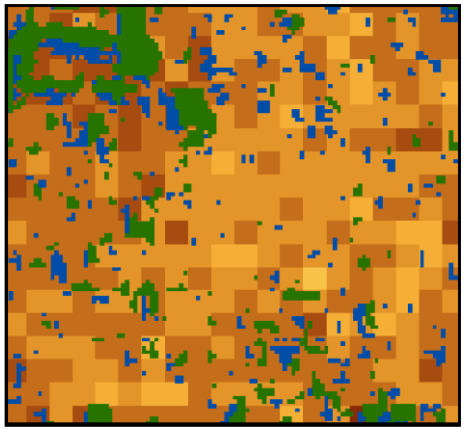
Before: 17-AUG-2018

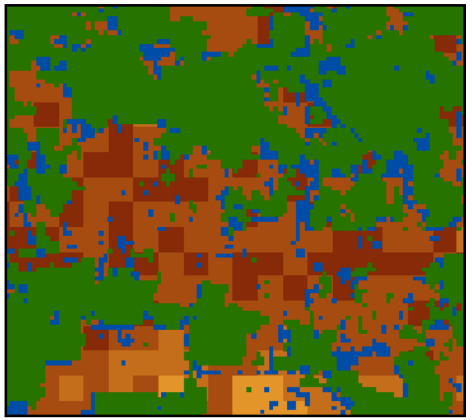
After: 01-OCT-2018

Damage assessment map

Urban

Rural





Damage density (%)

- 0 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 - 60
- 60 - 70
- 70 - 80
- 80 - 90
- 90 - 100
- Vegetation
- Water

KM

0 0.25 0.5

CONCLUSIONS

- Combining SAR and multi-spectral imagery, leads to more reliable information and provides a more complete scene for an emergency response.

- Understanding the geomorphology of rural areas and its unique changes such as liquefaction, led us to insert the MNDWI (Modified Normalized Difference Water Index) and modify our algorithm that was initially set for urban regions.

- Rural areas are characterized by more severe damage than in urban areas, due to the low structure stability.