

UNOSAT Support to the United Nations System



Introduction to UNOSAT

- A programme in the United Nations Institute for Training and Research (**UNITAR**)
- **Sixteen** years of operations (extra-budgetary)
- Fully dedicated to **satellite imagery analysis** and **capacity development**
- Based at the CERN physics research center (endless computing resources)

Introduction to UNOSAT

- 25 people (~15 analysts)
- Specialties:
 - Remote Sensing
 - Disaster response
 - Humanitarian support
 - Human rights
 - Coding
 - Server development and deployment

- About 24 different satellites in regular use, depending on needs and image availability
- High-resolution satellites:
 - DigitalGlobe the majority
 - Airbus
 - KOMPSATs (South Korean)
 - TripleSat and others (Chinese)
 - Planet
 - Others
- Lower resolution satellites:
 - NASA, ESA, JAXA

UNOSAT Rapid Mapping Partners and Requests

- **Disaster response** - a flood, typhoon, earthquake, or something else occurs and UN partners request imagery analysis, perhaps done under the International Charter (OCHA)
- **Humanitarian response** – Violence in DR Congo results in refugees in neighboring countries, settlements need to be rapidly developed and landcover mapping and hydrological assessments needed (UNHCR)
- **Human rights** – Myanmar violence needs to be mapped, assessed, and monitored, and possible new events assessed (OHCHR)
- **Conflict monitoring** – Syrian conflict requires frequent assessments of displaced persons and refugees, security issues, damage, and more (UNHCR / UN OCHA / UNICEF / Special Envoy) .



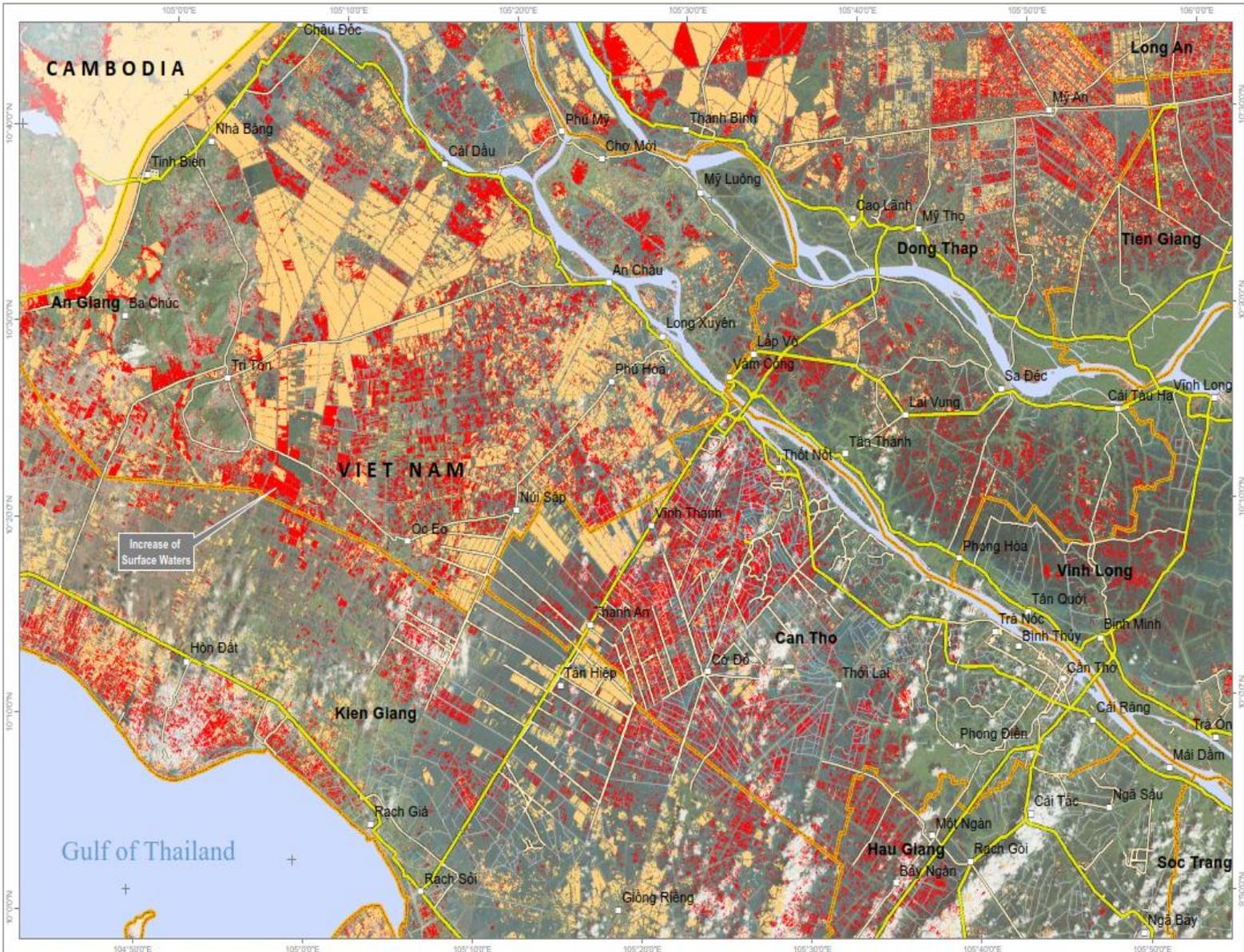
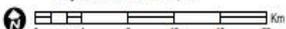
Satellite Detected Surface Waters Evolution in Southern Provinces of Kien Giang, Dong Thap & An Giang, Vietnam

This map illustrates the satellite-detected surface waters extent in the southern provinces of Kien Giang, An Giang, Dong Thap & Can Tho as observed from the Sentinel-1 SAR images acquired on 16 & 28 August 2018. In the analysed area, an increase of surface waters is observed mainly in agricultural and paddy fields areas. It is likely that flood waters have been systematically underestimated along highly vegetated areas along main river banks and within built-up urban areas because of the special characteristics of the satellite data used. This is a preliminary analysis and has not yet been validated in the field. Please send ground feedback to UNITAR - UNOSAT.

Legend

-  City/Town
-  Highway/Primary road
-  Secondary road
-  Waterway/River
-  Reference water extent
-  Satellite detected waters: 16 August 2018
-  Satellite detected waters: 28 August 2018
-  Province boundary
-  International boundary

Map Scale for A3: 1:400,000

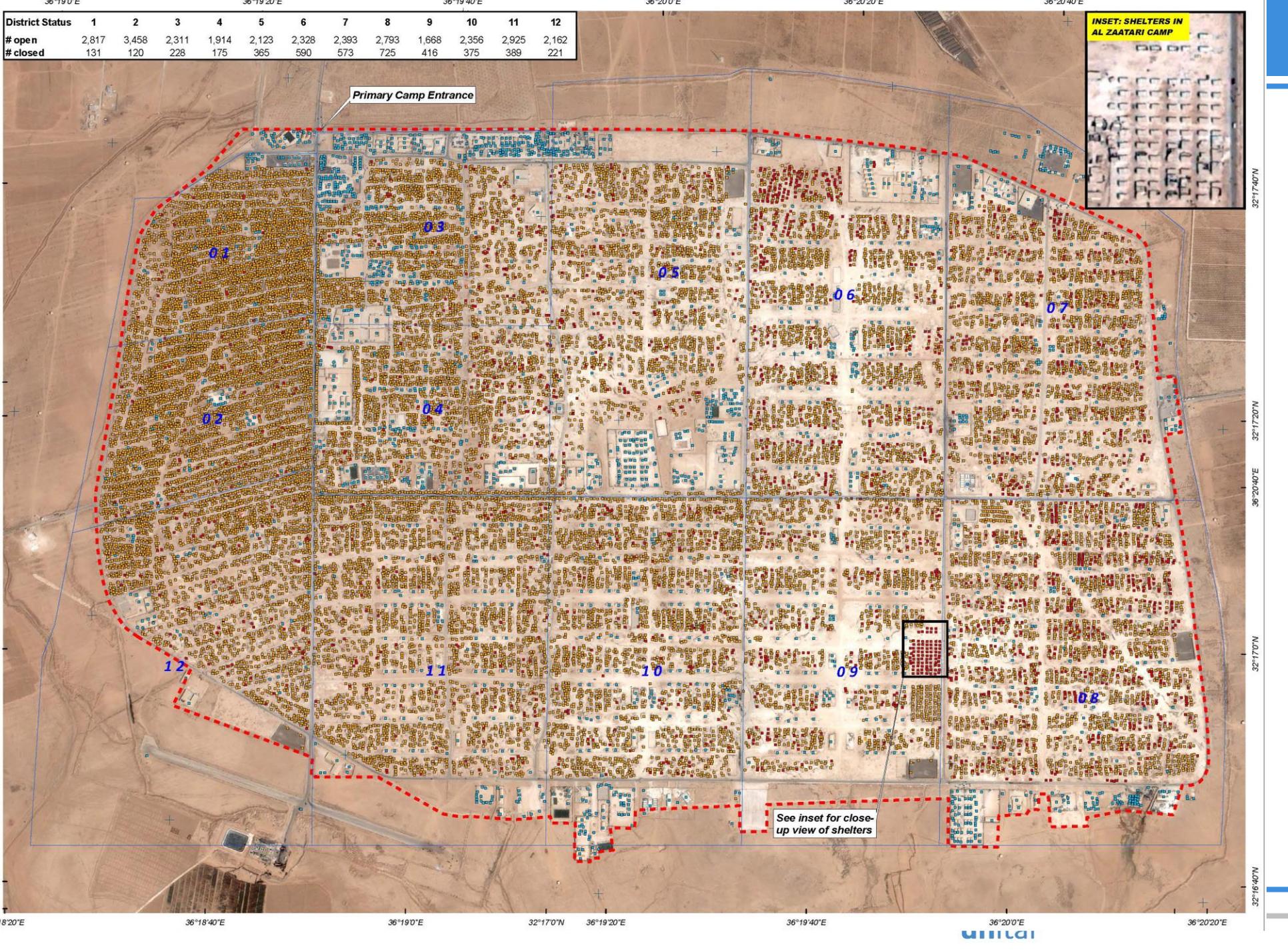


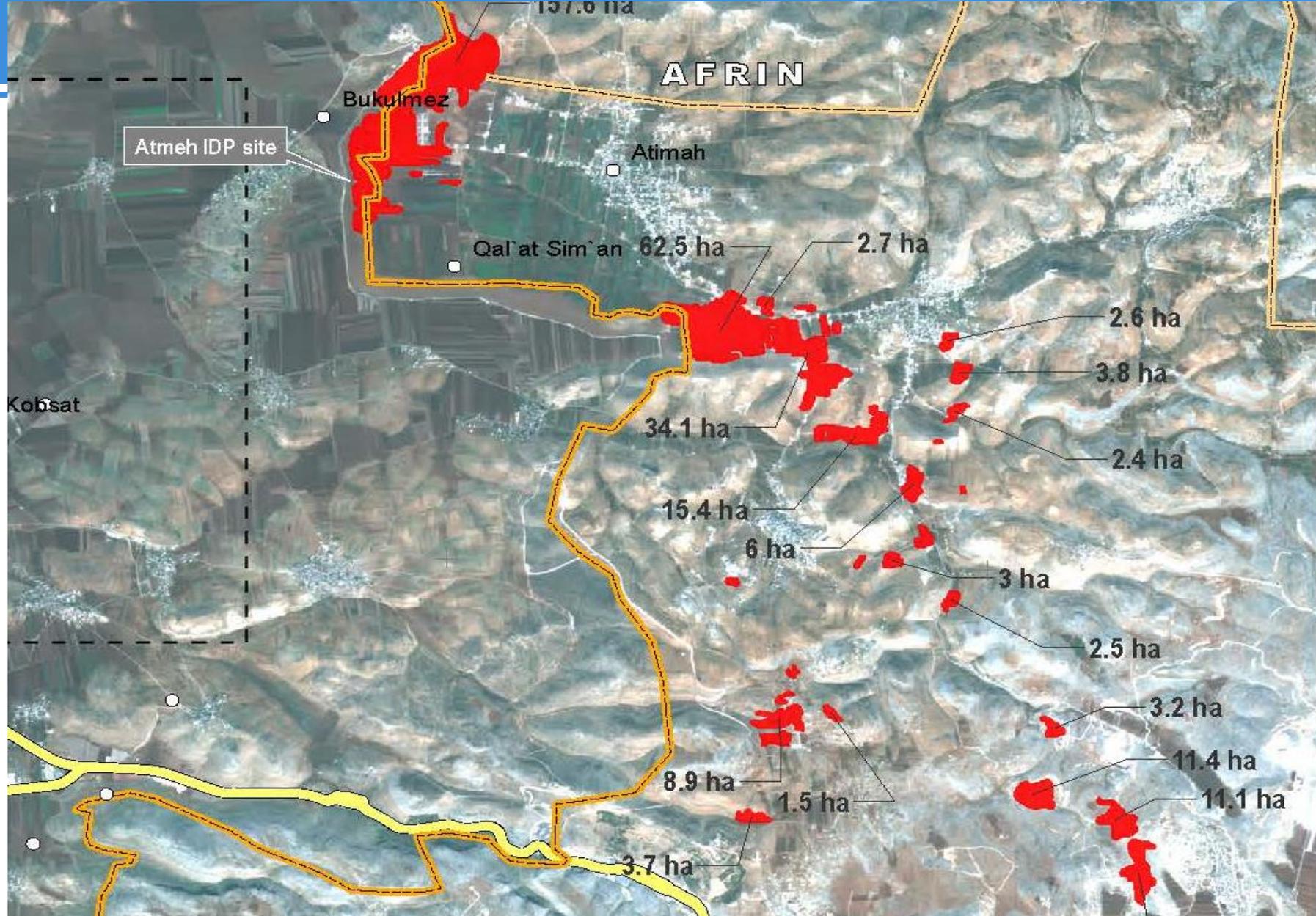
| District Status | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| # open | 2,817 | 3,458 | 2,311 | 1,914 | 2,123 | 2,328 | 2,393 | 2,793 | 1,668 | 2,356 | 2,925 | 2,162 |
| # closed | 131 | 120 | 228 | 175 | 365 | 590 | 573 | 725 | 416 | 375 | 389 | 221 |



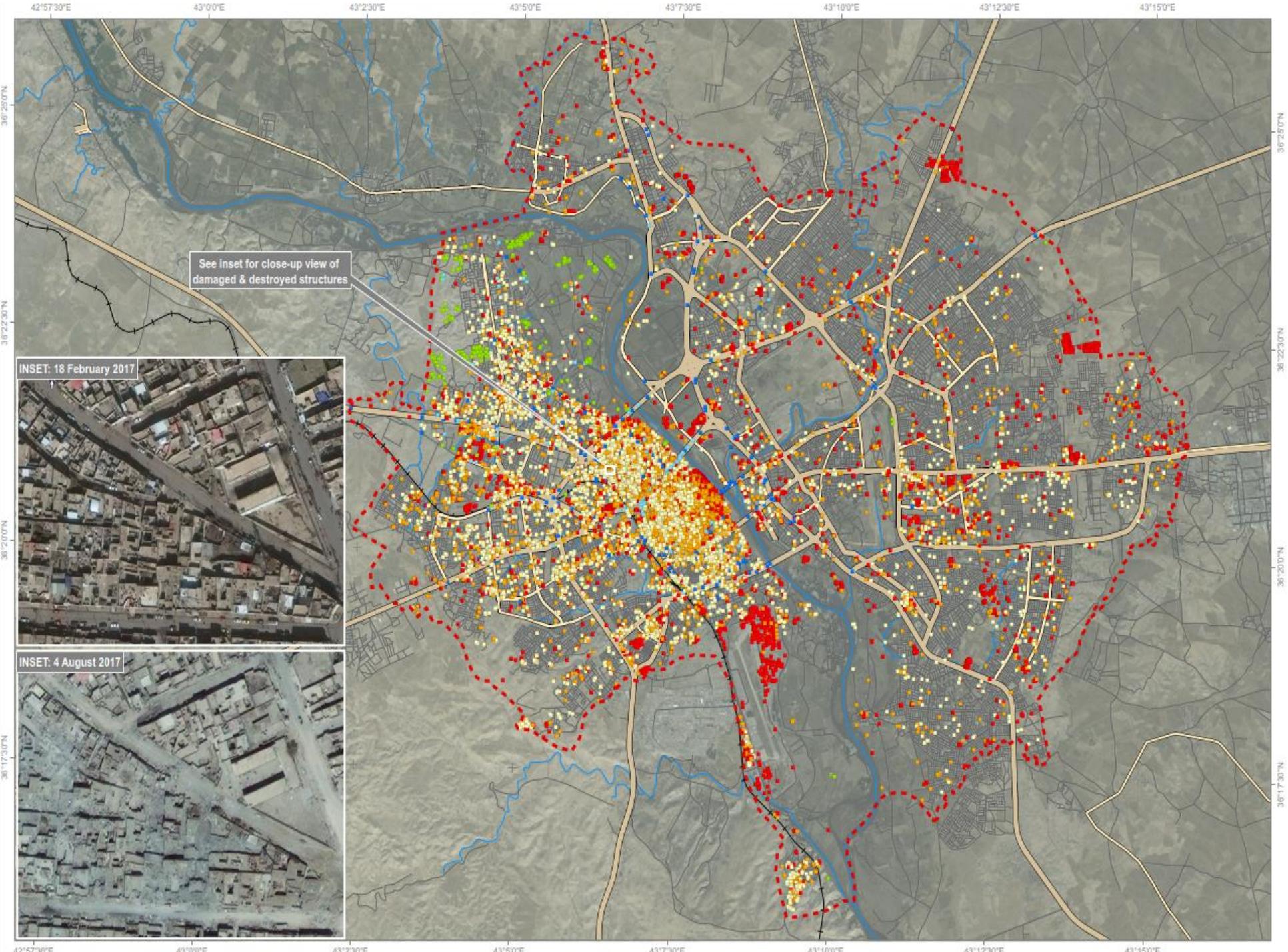
Primary Camp Entrance

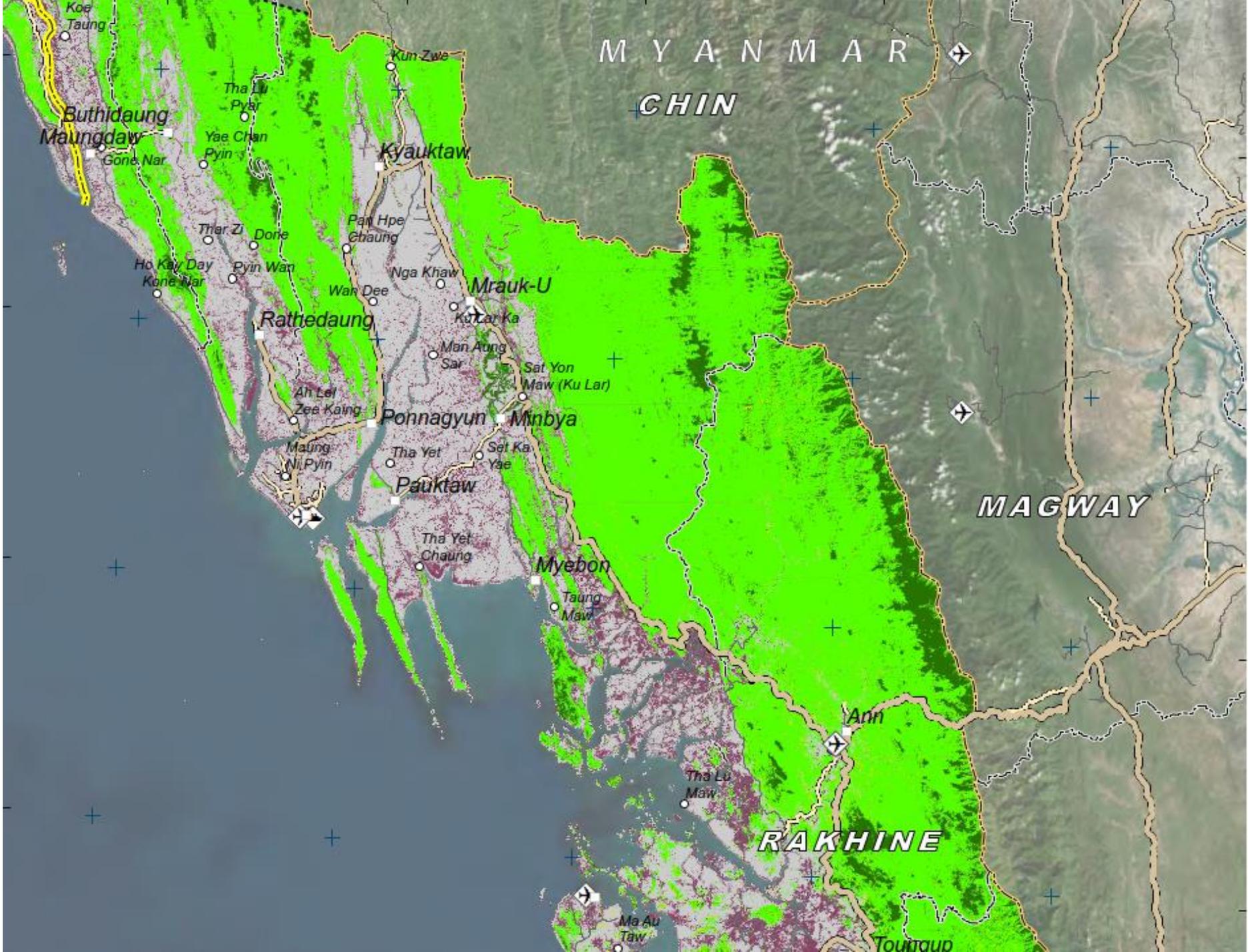
See inset for close-up view of shelters





Syria: 20,000 sq km, ~90,000 shelters estimated... Continuing





MYANMAR

CHIN

MAGWAY

RAKHINE

Buthidaung
Maungdaw

Tha Lu
Pyar

Yae Chan
Pyin

Kyauktaw

Thar Zi

Done

Ho Kay Day
Kone Nar

Pyin Wan

Par Hpe
Chaung

Wan Dee

Nga Khaw

Mrauk-U

Ku Lar Ka

Man Aung
Sar

Ponnagyun

Minbya

Pawkhaw

Maung
Ni Pyin

Ah Lei
Zee Kaling

Tha Yet

Set Ka
Yae

Tha Yet
Chaung

Myebon

Taung
Maw

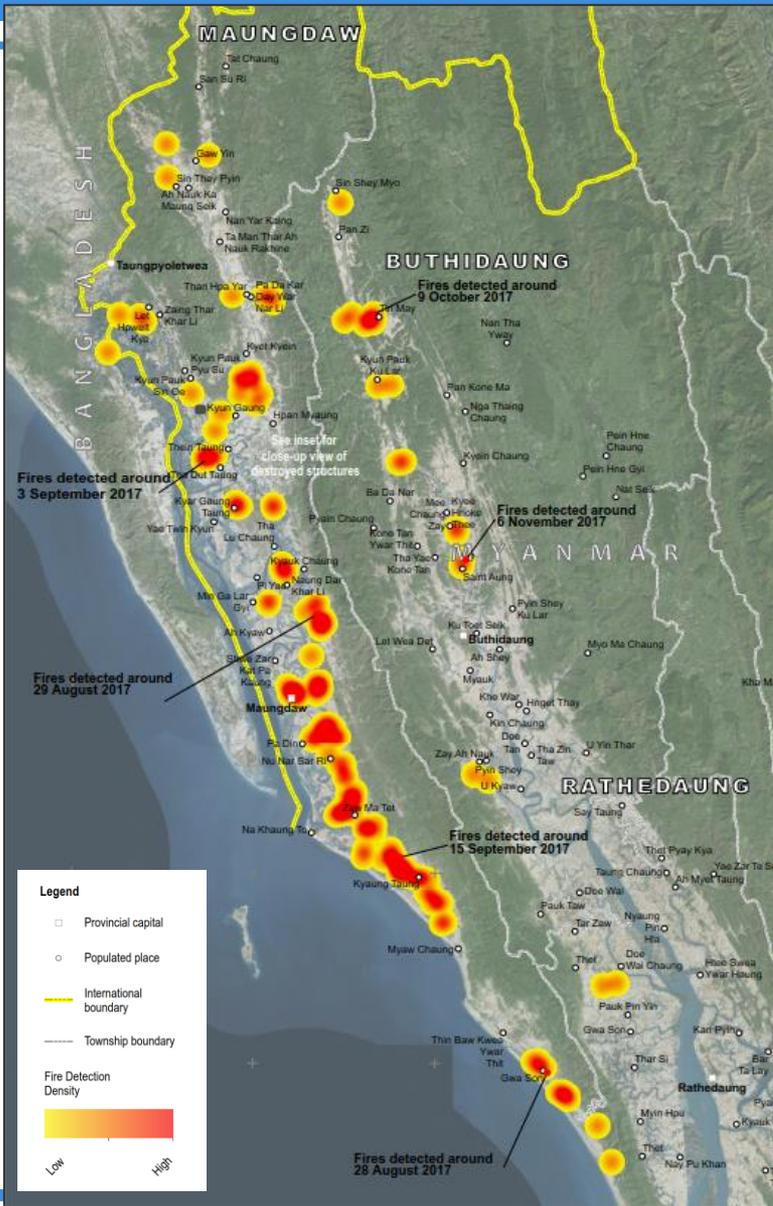
Ann

Tha Lu
Maw

Ma Au
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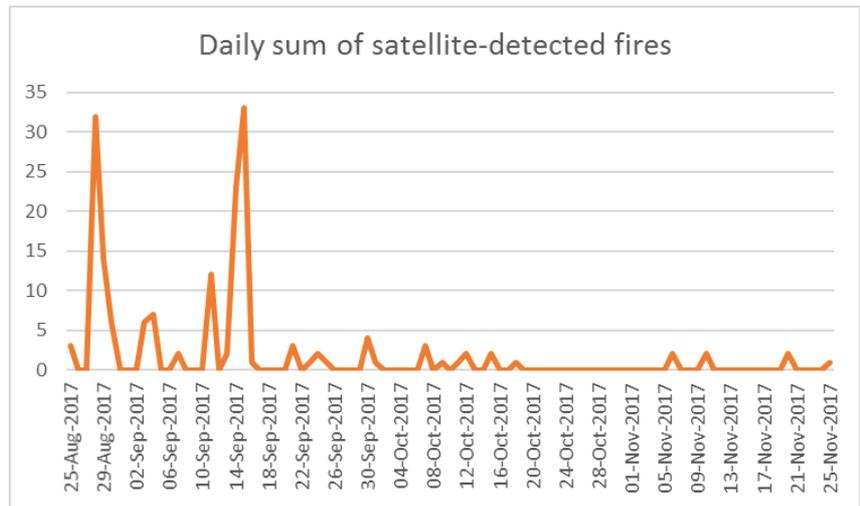
Toungap

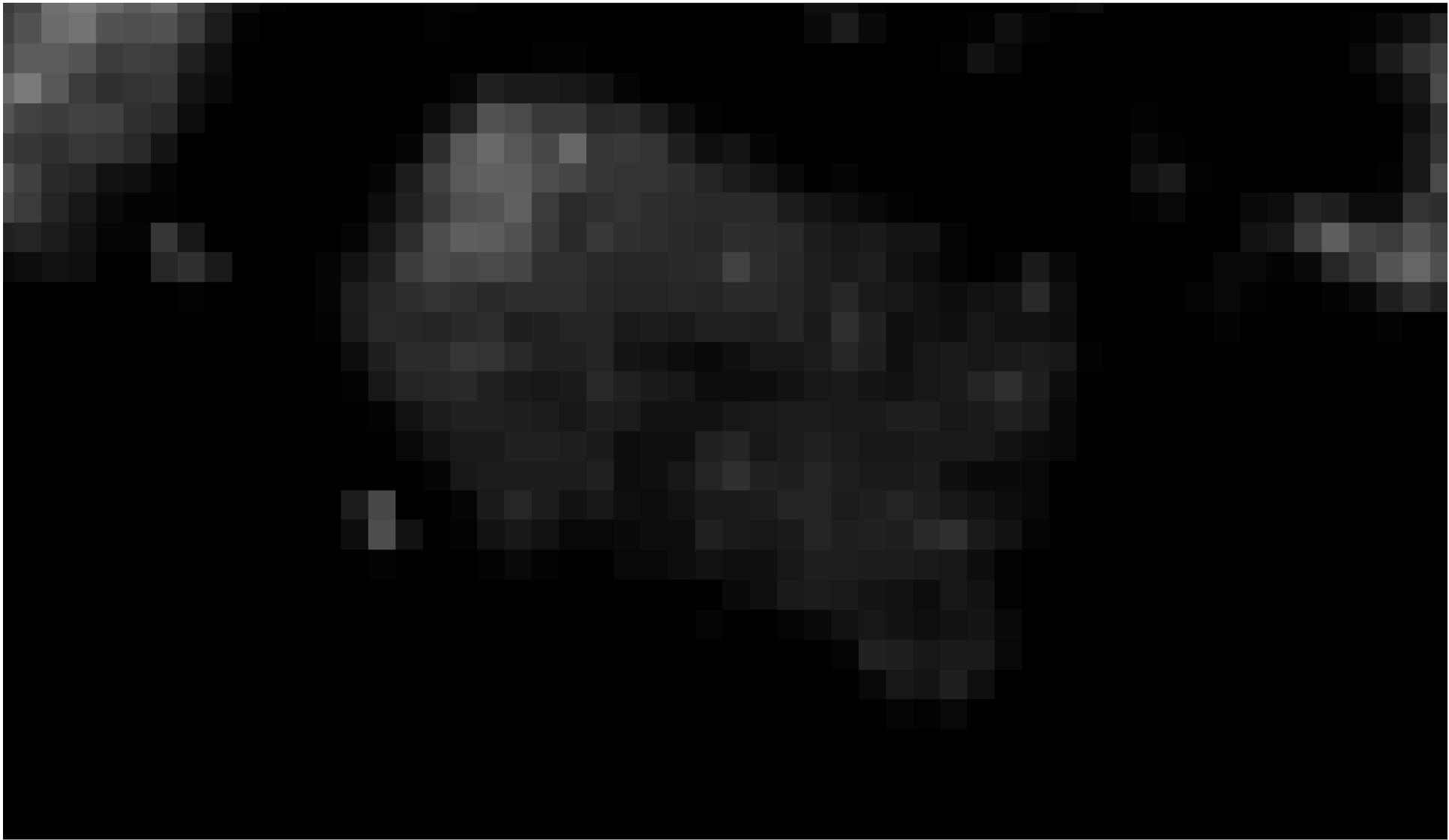
Myanmar Analysis – MODIS / VIIRS Fire Detections



Location: Rakhine State, Myanmar

Background: with the use of fire detection data derived from environment monitoring satellites, UNOSAT identified the existence of fires that were affecting towns and villages. Analysis of the historical data also confirmed that the source of the fires is probably not natural or related with agriculture.





Research Activities

- Artificial intelligence very partnership driven
 - UN Global Pulse
 - CERN
 - UNICEF Innovation
 - ITU
- Seeking to:
 - Augment, not replace analysts
 - Simulate satellite imagery for training purposes
 - Develop extensive training data from our data
 - Understand progress towards analysis for SDGs

Training Activities

- Semi-regular training for UN partners:
 - UNDP (Crisis Management)
 - OHCHR (Satellites in HR investigations)
- For member states:
 - IGAD (Disaster Risk Reduction)
- And a Masters level course with University of Copenhagen

Thoughts on Partnerships

- International Charter on Space and Major Disasters
- Member states with satellite programs / companies can be enormously helpful
- Airbus and DigitalGlobe – discounts
- Awareness raising in the UN system on possibilities
- Partnerships in the UN are key for resource sharing (UNOSAT - UN Global Pulse)

Thoughts on Partnerships

- More and more satellites every year (China... Finland... Poland...) from non-State sources
 - Seeking use cases, feedback in early stages
- Exciting conferences for networking, developing projects
 - UN World Geospatial Information Congress
 - AI for Good
- Funding, however, is still key and lacking



unosat

DATA | LOCATIONS | ORGANISATIONS

HOME / DATASETS

You might also like: [UN Operational Satellite Applications Programme \(UNOSAT\) organisation page](#)

Data [551] Show 25 | 50 | 100

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[UNOSAT Population Exposure Report - 3 October 2016 Tropical Cyclone Matthew-16](#)
UN Operational Satellite Applications Programme (UNOSAT)
Updated October 6, 2016 | Dataset date: Oct 5, 2016

This report illustrates the po
XLSX | | | 20+

[Cuba - Population Exposure Wind Speed from Hurricane Matthew \(UNOSAT, 2016-10...](#)
UN Operational Satellite Applications Programme (UNOSAT)
Updated October 7, 2016 | Dataset date: Oct 6, 2016

Population Exposure Wind S
ZIPPED SHAPEFILE |

[Dominican Republic - Population Exposure Wind Speed from Hurricane Matthew \(U...](#)
UN Operational Satellite Applications Programme (UNOSAT)
Updated October 7, 2016 | Dataset date: Oct 6, 2016

Population Exposure Wind S
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[Jamaica - Population Exposure Wind Speed from Hurricane Matthew \(UNOSAT - 2...](#)
UN Operational Satellite Applications Programme (UNOSAT)
Updated October 7, 2016 | Dataset date: Oct 6, 2016

Population Exposure Wind S
ZIPPED SHAPEFILE |

UNITAR Operational Satellite Application Programme (UNOSAT)
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