

"We respectfully acknowledge the University of Arizona is on the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with Tucson being home to the O'odham and the Yaqui. Committed to diversity and inclusion, the University strives to build sustainable relationships with sovereign Native Nations and Indigenous communities through education offerings, partnerships, and community service."



*Satellite image analysis for anticipatory  
research and planning  
at flood-prone informal settlements*

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AIR Resilience Symposium

**Monrovia, Liberia**

**Luswata & Humanitarian OpenStreetMap (HOT), 2018**

***Flood-prone informal settlements***

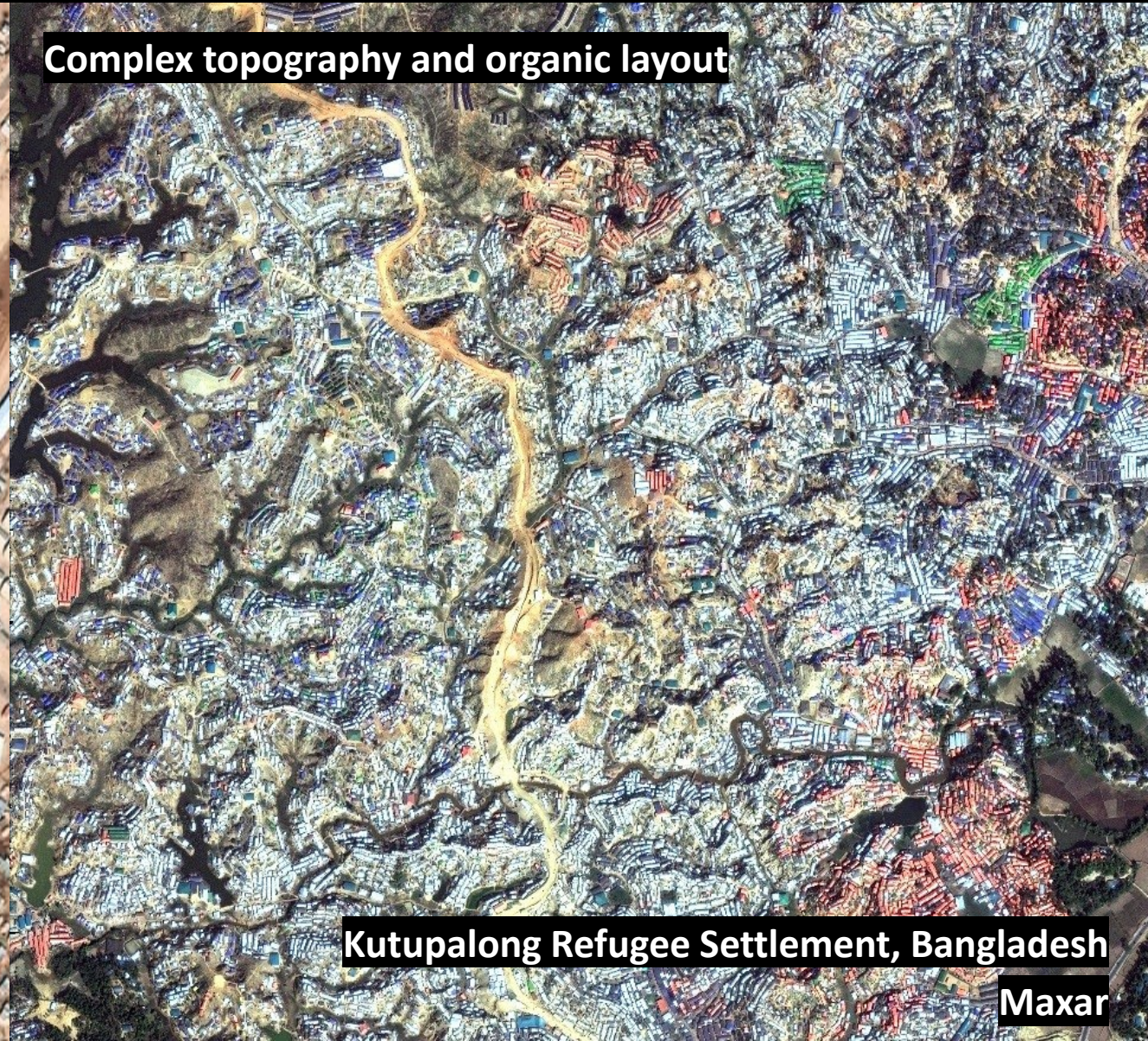
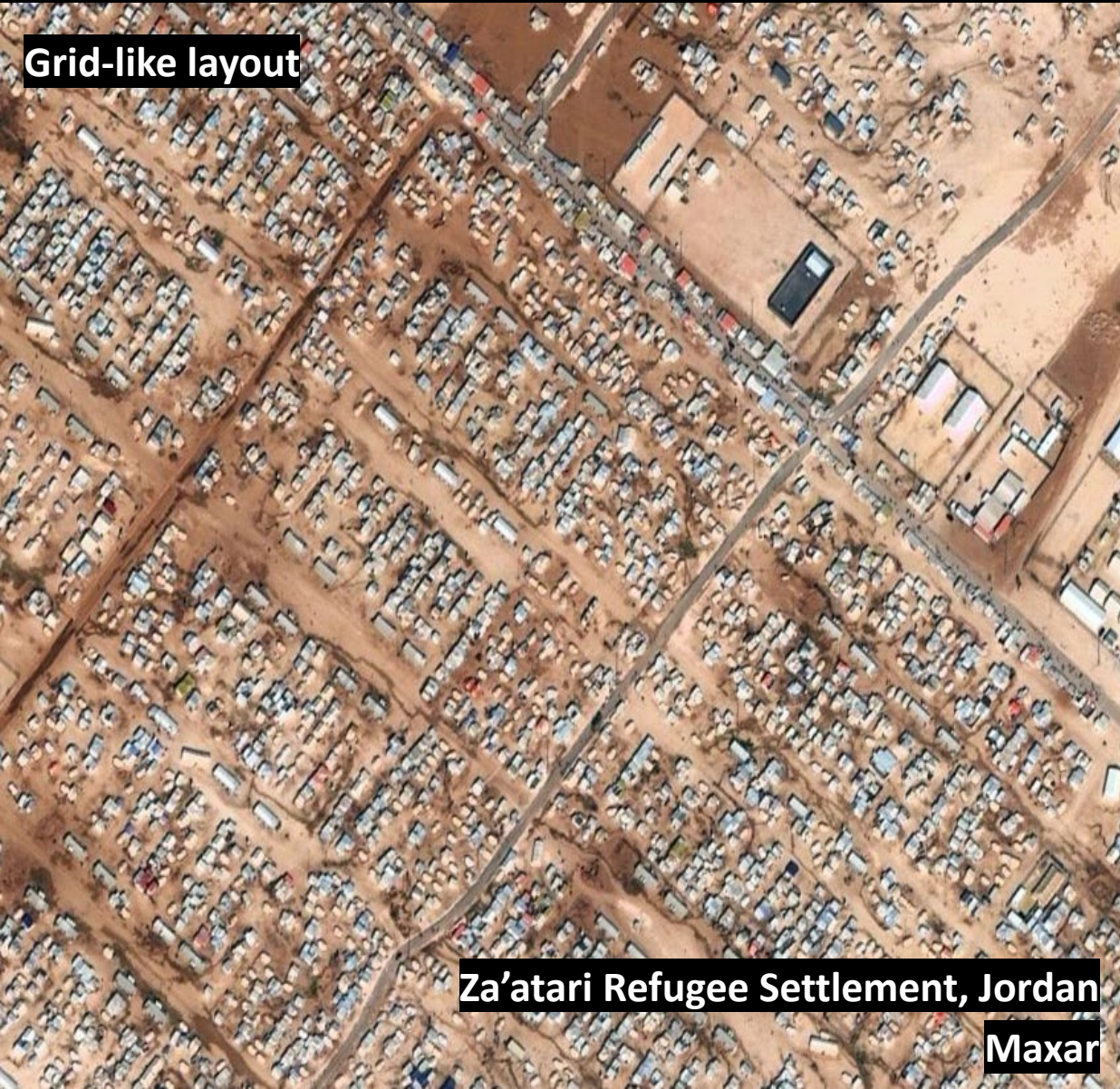
***Satellite imagery***

***Anticipatory research and planning***

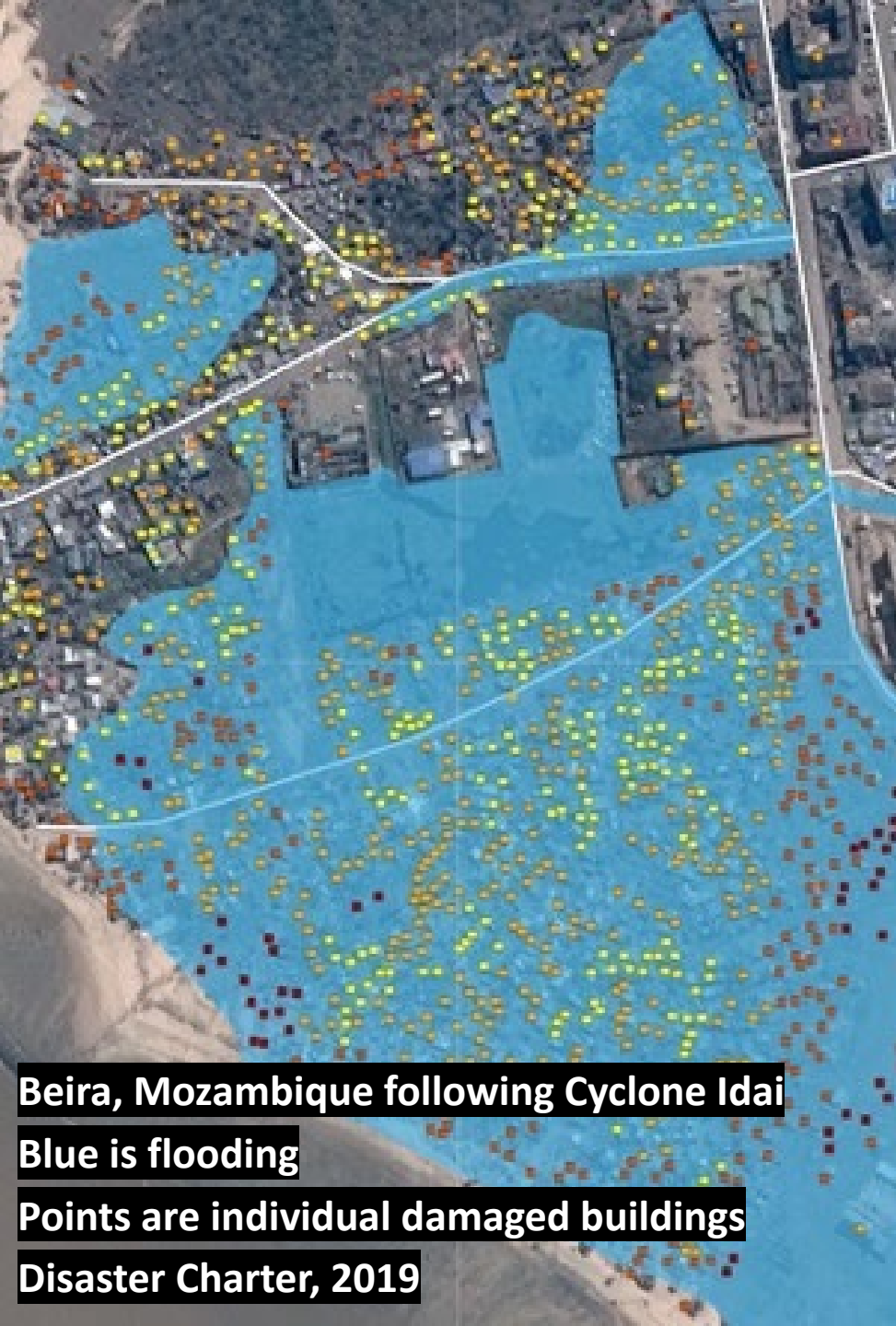


# *Informal settlements are home to 1 billion people*

Revi et al., 2014







## ***Floods are a growing hazard***

Global population exposed to floods is ***ten times higher*** than previously expected and increasing (Tellman et al., 2021)

Informal settlements are susceptible to flooding due to ***lack of infrastructure and services*** to protect against flooding (Satterthwaite et al., 2020)

Short and long-term concerns over habitability with climate crisis

**Beira, Mozambique following Cyclone Idai**

**Blue is flooding**

**Points are individual damaged buildings**

**Disaster Charter, 2019**



# *Satellite imagery can aid in tracking flood impacts*

Tellman Lab is working to build models to detect flooding across complex urban geographies

Deep learning models to combine imagery from multiple satellites

*Aim: global 3-day, 3-meter maps of flood probability*



True-color image



False-color image

San Pedro Sula, Honduras

Hurricanes Eta and Iota

November 25, 2020



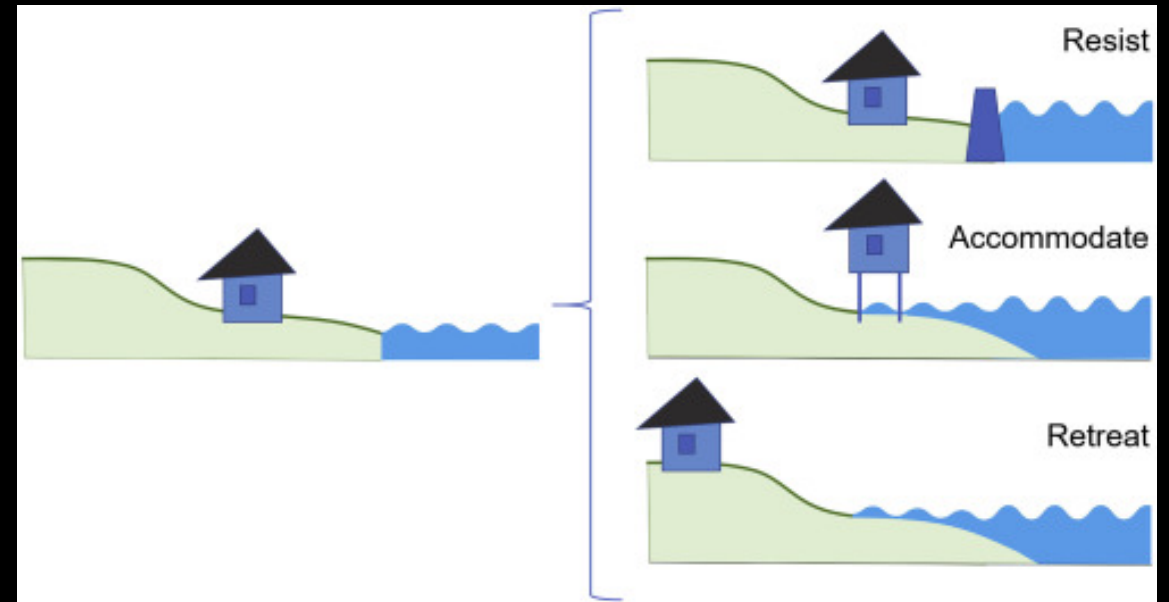
# *Translating flood risk into anticipatory climate adaptation*

Anticipatory action – proactively address emerging risk

- Enforced flood protection
- Planned relocation + managed retreat

Research agendas for anticipatory planning

- Effective and relevant data for decision making
- Monitor repeat flood events
- Identify exposed populations with insecure housing



Siders, 2019

# ***Collaboration is key for taking anticipatory action***

During workshop, looking forward to discuss

- What does anticipatory planning look like for your research?
- What role does resilience take in forming research + practice partnerships?

**Thank you! Please get in touch.**

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