MYANMAR MALARIA EARLY WARNING SYSTEM (MMEWS)

Tatiana Loboda, Dong Chen, Varada Shevade, Amanda Hoffman-Hall, Allison Baer, Maria Tonellato
Department of Geographical Sciences, University of Maryland

Christopher Plowe, Myaing Myaing Nyunt
Formerly Duke University

Poe Poe Aung
Formerly Duke Global Health Institute, Myanmar
MALARIA RISK

P. falciparum – one of malaria-causing parasites

Source: pixnio.com

Anopheles mosquito – a primary vector of malaria

http://sitn.hms.harvard.edu

Satellite data + auxiliary spatial data + CRF surveys

Hazard

Exposure

Vulnerability

Satellite data + entomological surveys
MALARIA BURDEN POTENTIAL (MBP)

NEW

Hazard
- Parasitemia (0.5)
- Surface Water (0.167)
- Veg Stress (0.166)

Vector Abundance
- Surface T (0.167)

Exposure
- Population Distribution (0.4)
- Occupational Exposure (0.6)

Vulnerability
- Access to Care (0.6)
- Social Vulnerability (0.4)

MBP
0.5

0.25

0.25
OPTIMIZED MYANMAR-WIDE MBP MODEL

- Wall-to-wall model of Malaria Burden Potential
  - 240 m resolution
  - 8-day update
  - 1 – 2 months forecast
- Executed: 2016 - 2020
- In progress: 2021
Mean daily area under "High" risk

- Shan: 888 km²
- Kayin: 260 km²
- Chin: 255 km²
- Sagaing: 206 km²
- Kachin: 194 km²
- Rakhine: 191 km²
- Tanintharyi: 64 km²
- Bago: 49 km²
- Ayeyarwady: 11 km²
- Magway: 6.0 km²
- Kayah: 5.1 km²
- Mon: 2.3 km²
- Yangon: 1.6 km²
- Mandalay: 1.2 km²
- Naypyitaw: 0.1 km²

Percent area under "High" risk

- Kayin: 0.85%
- Chin: 0.71%
- Shan: 0.57%
- Sagaing: 0.22%
- Kachin: 0.22%
- Tanintharyi: 0.17%
- Bago: 0.13%
- Kayah: 0.04%
- Ayeyarwady: 0.03%
- Mon: 0.02%
- Yangon: 0.02%
- Magway: 0.01%
- Mandalay: 0.00%
- Naypyitaw: 0.00%

* Numbers based on a 5-year mean assessment
By area km²

By % state

Map showing regions in Myanmar with color coding indicating very high, high, moderate, and low levels.
Moderate Risk States

Area under "High" risk

Bago
Tanintharyi

Area km²

0 20 40 60 80 100 120 140 160 180

Percent area under "High" risk

- Kayin: 0.85%
- Chin: 0.71%
- Shan: 0.57%
- Rakhine: 0.57%
- Sagaing: 0.22%
- Kachin: 0.22%
- Tanintharyi: 0.17%
- Bago: 0.13%
- Kayah: 0.04%
- Ayeyarwady: 0.03%
- Mon: 0.02%
- Yangon: 0.02%
- Magway: 0.01%
- Mandalay: 0.00%
- Naypyitaw: 0.00%
COVID19 + POLITICAL CONTEXT + PARTNERS

- Unable to travel to meet and work with stakeholders
- Stakeholders are fully engaged in COVID response

Unable to complete text-reporting system development
Unable to complete testing, verification, and operational deployment