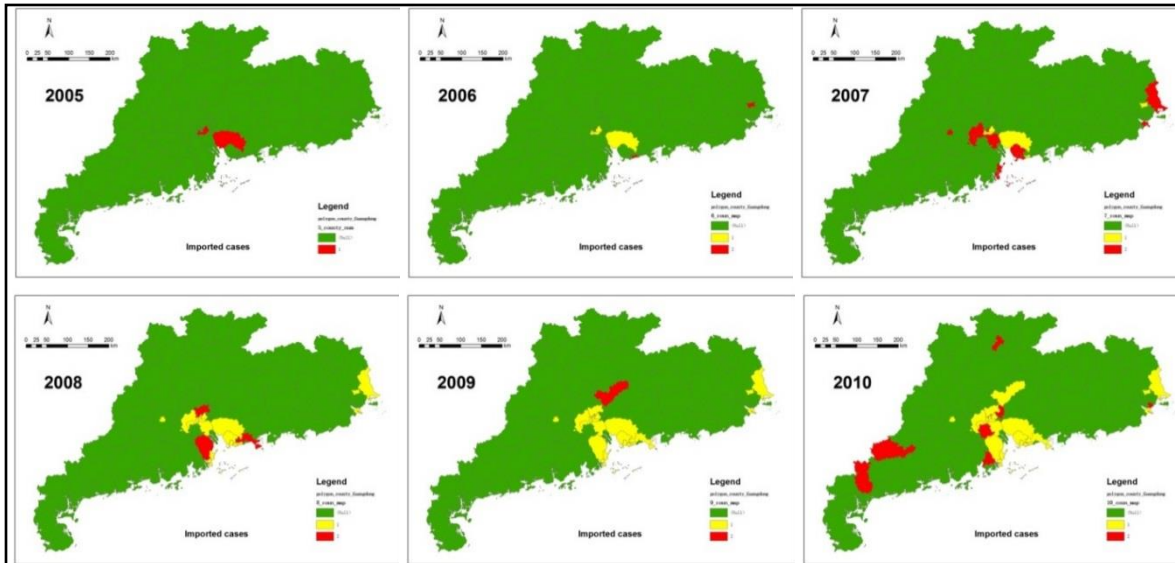# Specific Hazards and Drivers of Disease:
Pandemic Vector-Borne Diseases
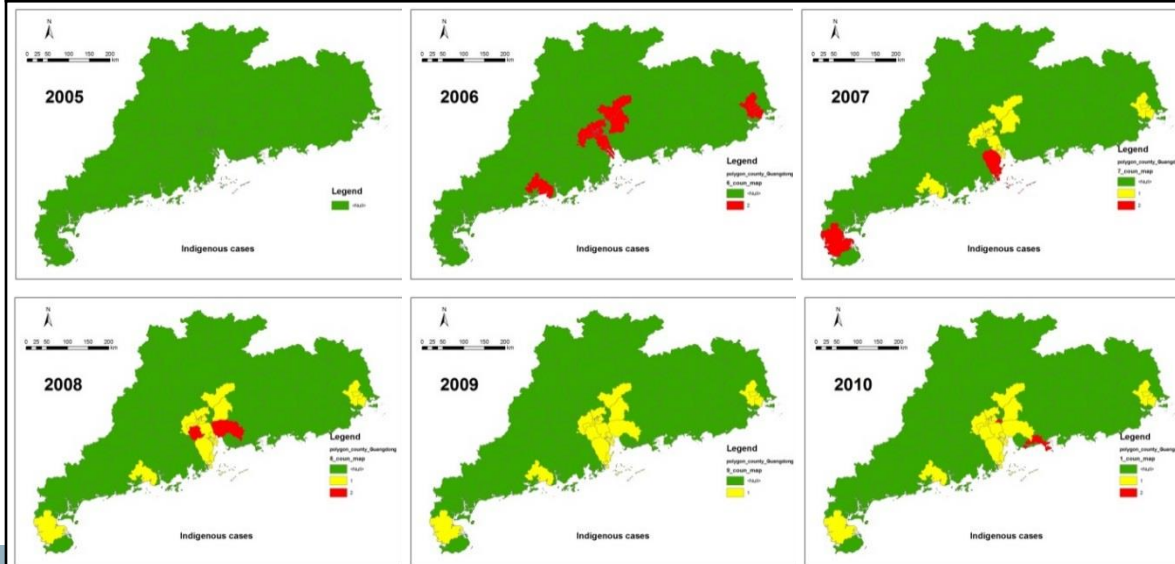
Archie Clements

Director, Research School of Population Health,

College of Medicine, Biology and Environment,

The Australian National University

director.rsph@anu.edu.au

DENGUE EMERGENCE, GUANGDONG
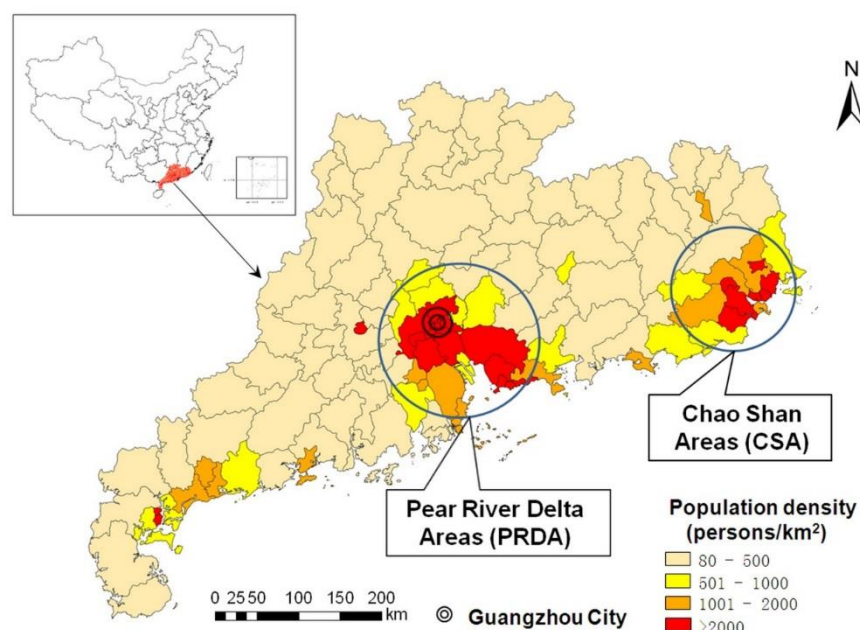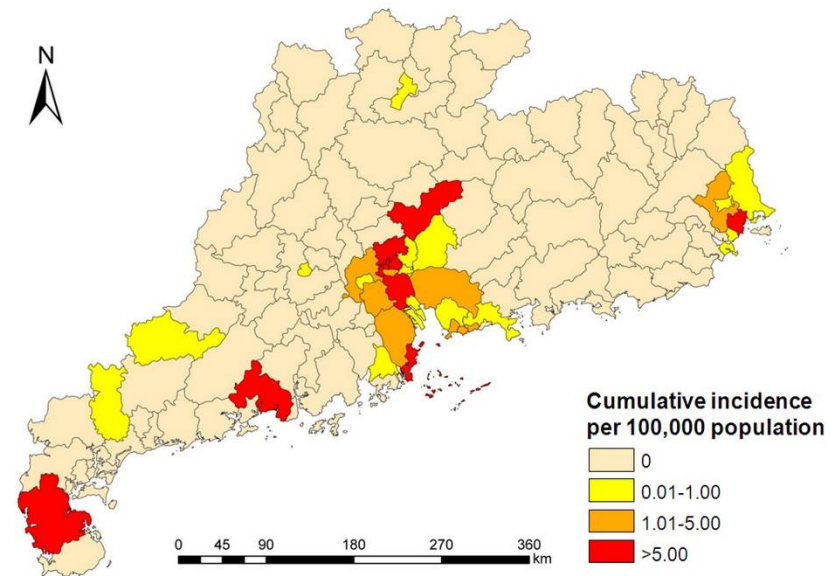

Imported cases

Indigenous cases

Li et al. (2012) *BMC Infectious Diseases*. 12:132
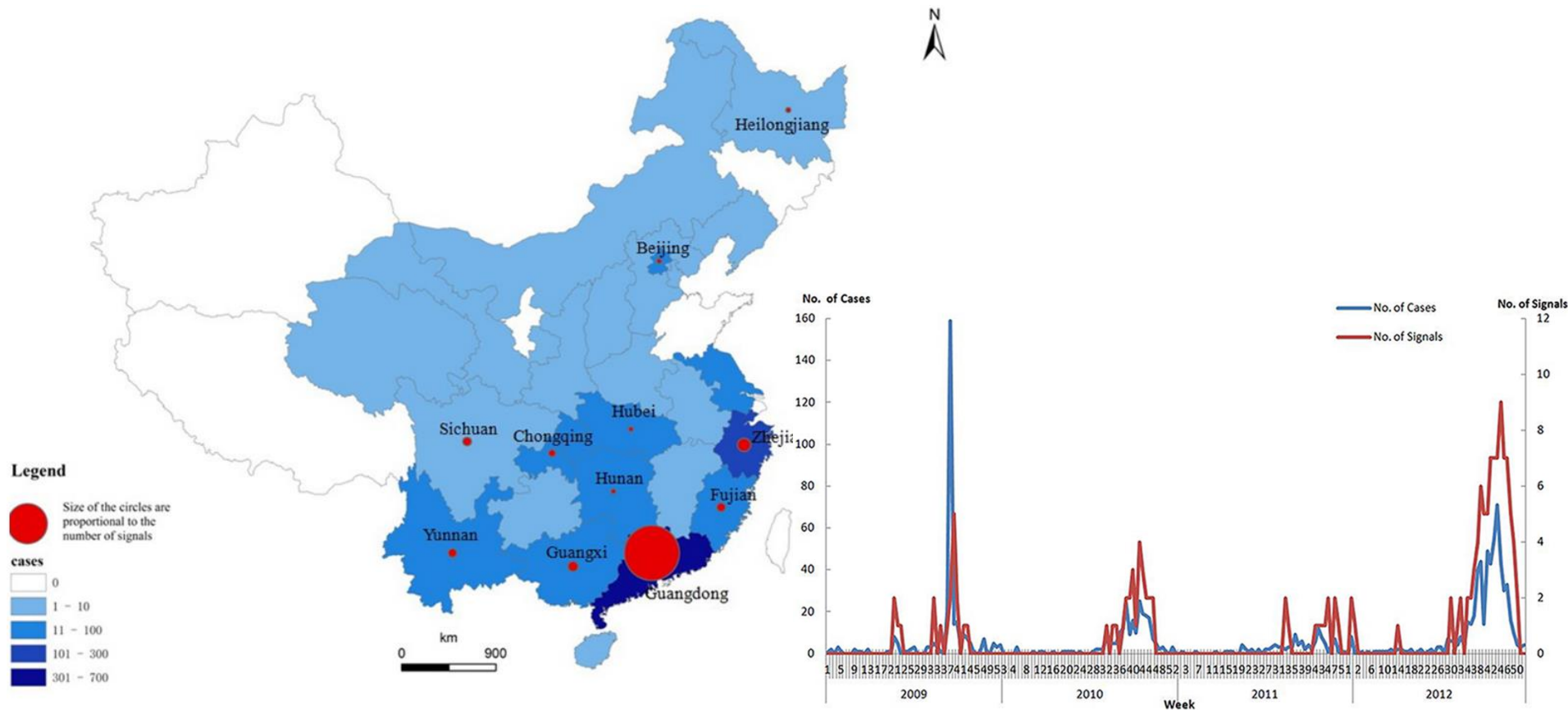
DENGUE, GUANGDONG

Population density

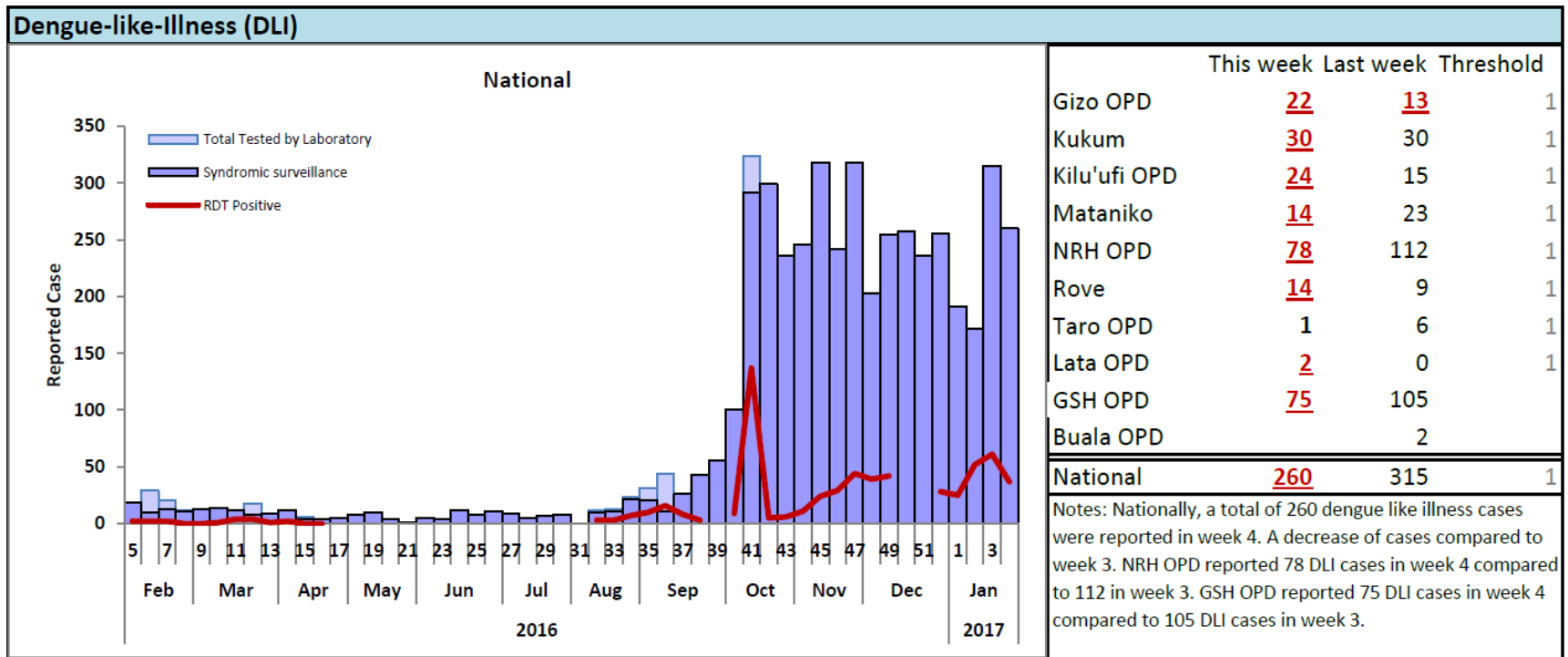Age-standardized cumulative incidence, 2005-2010

Li et al. (2012) *BMC Infectious Diseases*. 12:132

Dengue early warning system (CIDARS)
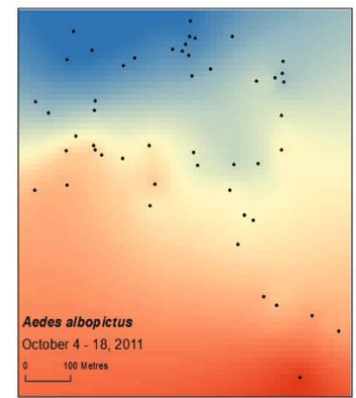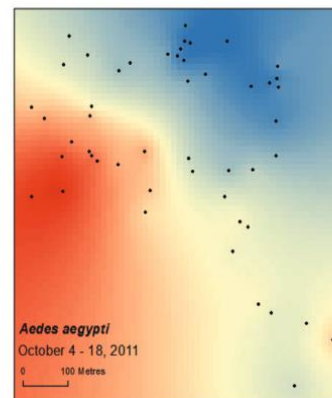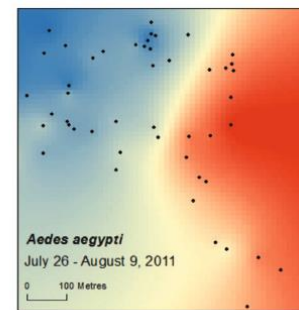

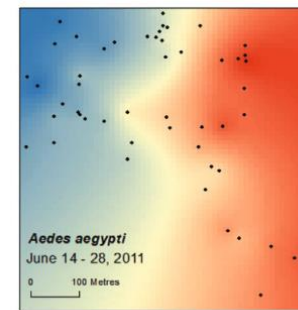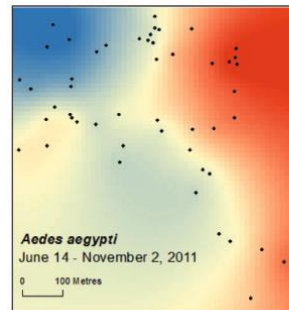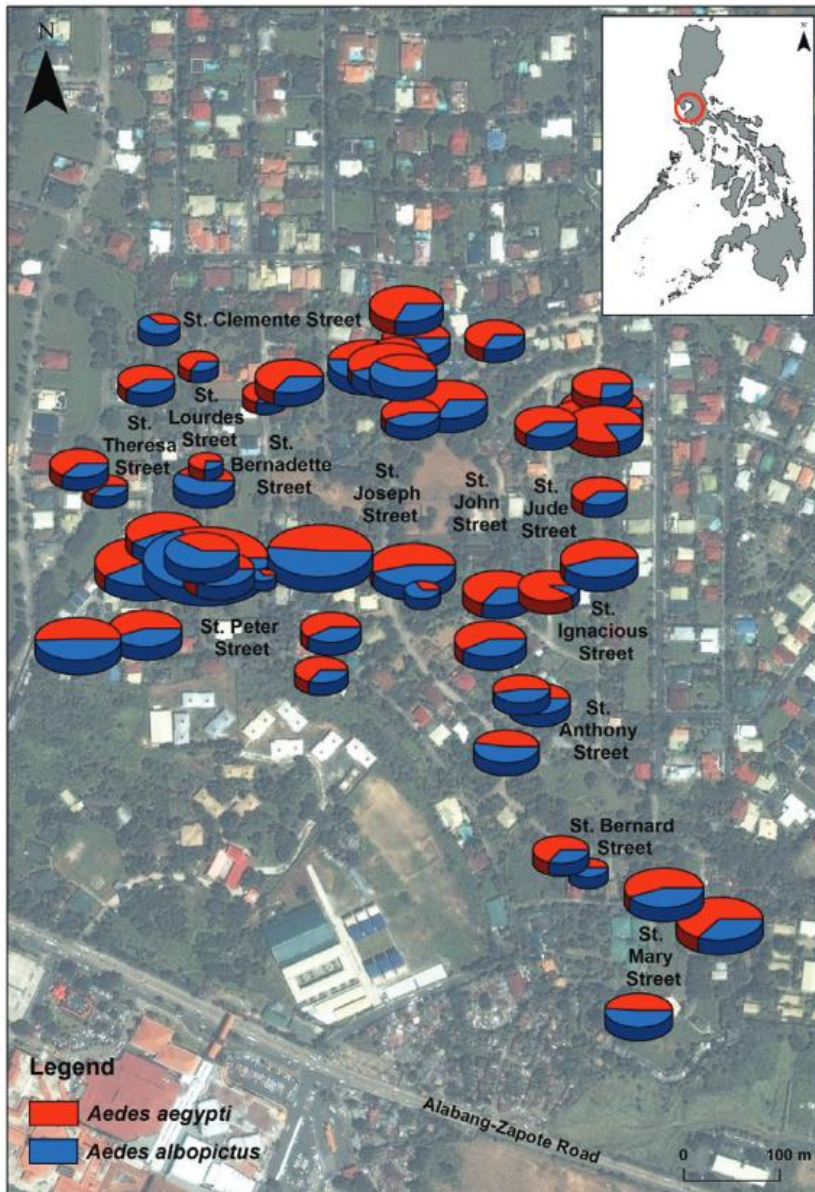Zhang H et al. (2014) *PLoS One* 9:e106144.

Dengue surveillance: Solomon Islands

Zika!

Entomological surveillance for dengue
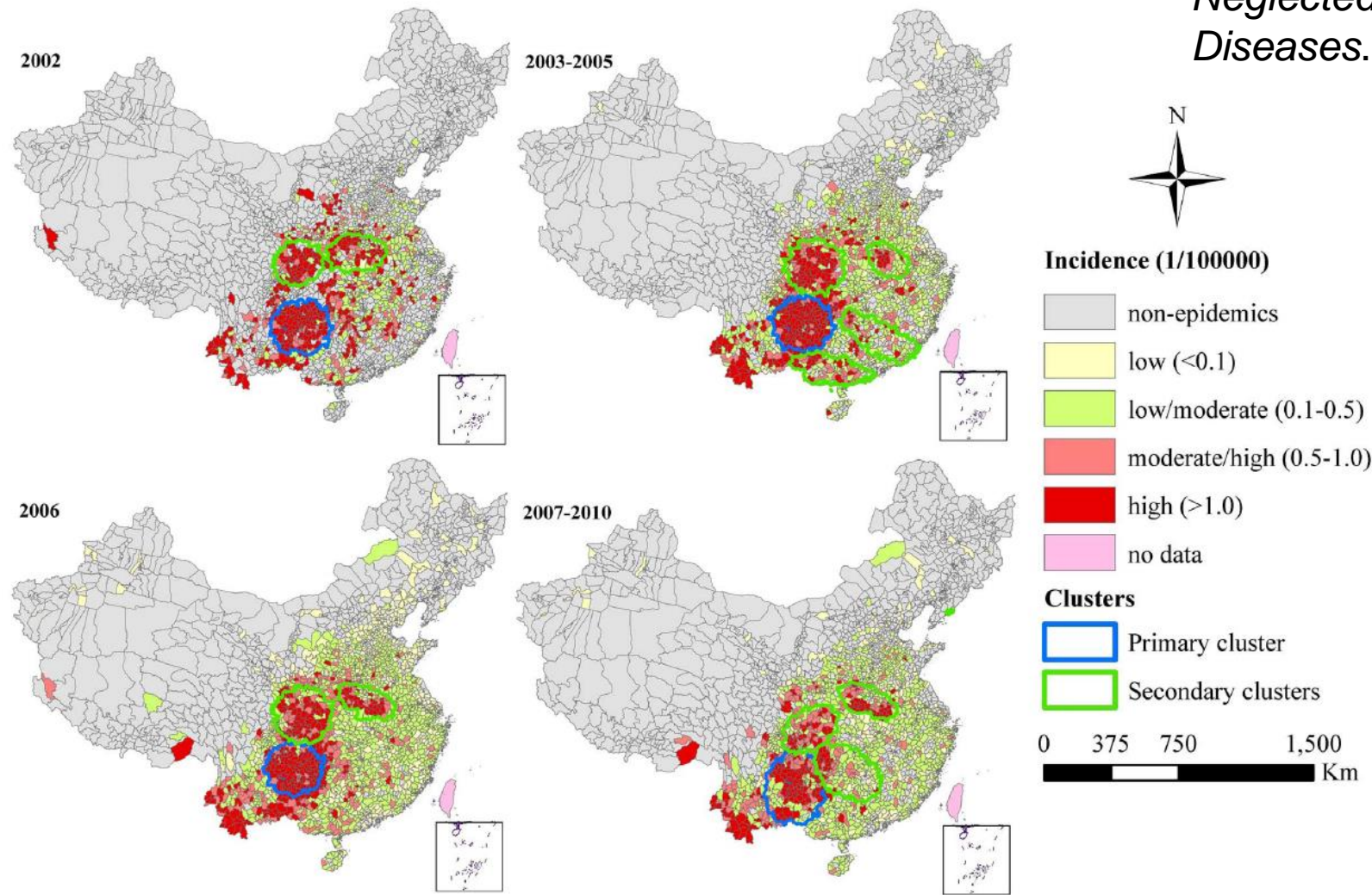

Duncombe et al. (2013) *Geospatial Health*. 8:255–65

CLUSTERING OF JAPANESE ENCEPHALITIS, CHINA

Wang et al. (2013) *PLoS Neglected Tropical Diseases*. 7:e2285

Incidence (1/100000)

- non-epidemics
- low (<0.1)
- low/moderate (0.1-0.5)
- moderate/high (0.5-1.0)
- high (>1.0)
- no data

Clusters

- Primary cluster
- Secondary clusters

0   375   750   1,500
Km

Scrub typhus, 2006-2014

Wu Y.C. et al. (2016) *PLoS Neglected Tropical Diseases*. 10:e0004875
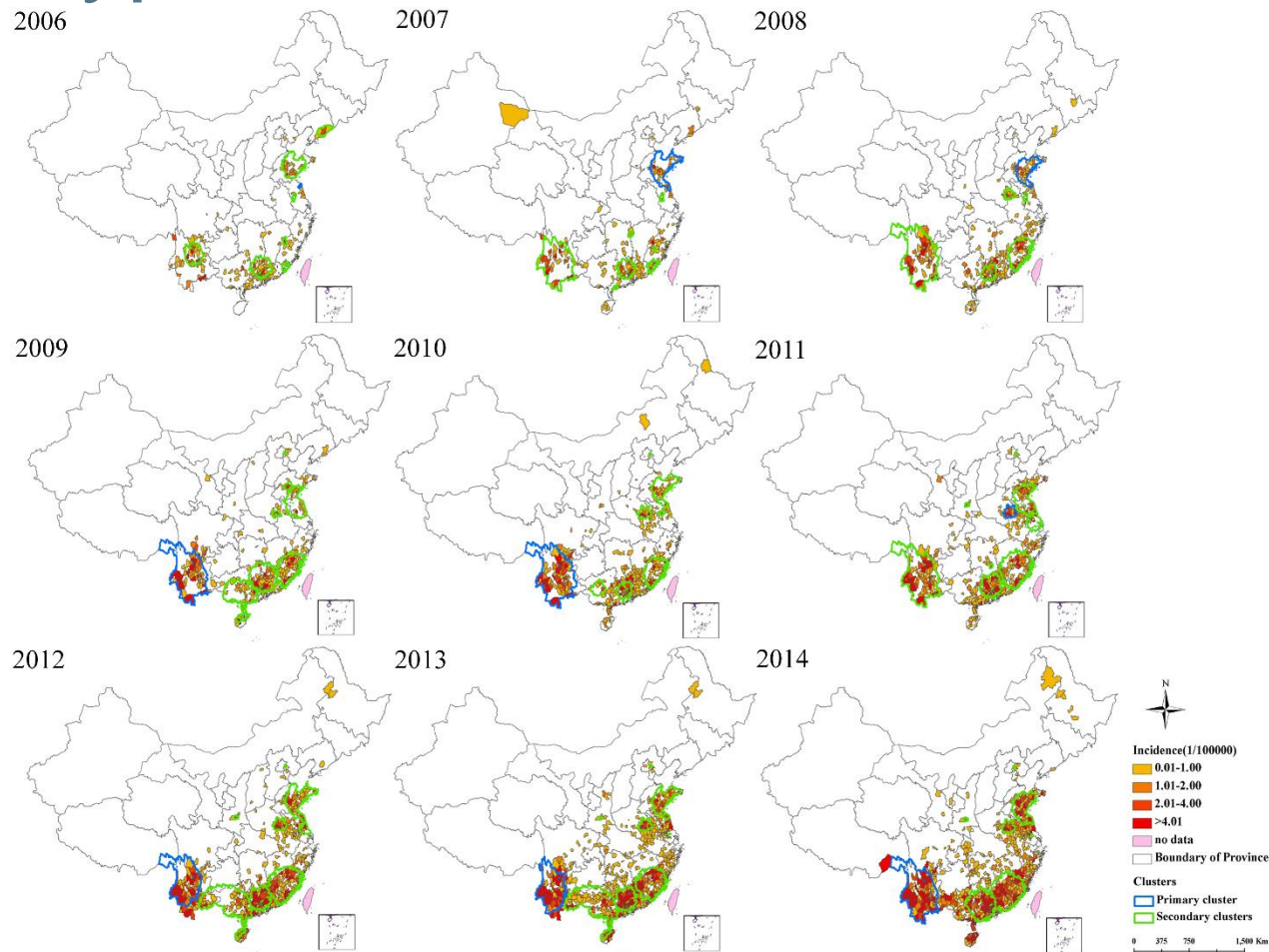
Drivers

- Rapid urbanization – poor housing, waste disposal, water supply; high population density; socioeconomic inequality

- Global travel and trade

- Climate variability

- Weak health systems – inadequate surveillance, public health interventions

- Insufficient cross-sectoral/transboundary integration