

Lao People's  
Democratic Republic.

Thailand

Cambodia

Vietnam

# Modelling and forecasting urban population patterns for vulnerability assessment

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MAUPP

Kilometers  
0 50 100



$\text{Risk} = \text{Hazard} \times \text{Exposure} \times \text{Vulnerability}$



$f(\text{Human population})$

# World pop



[www.worldpop.org](http://www.worldpop.org)

Open access archive of spatial  
demographic datasets

Current focus: Central and South  
America, Africa and Asia

Transparent and shareable methods

Support development and health  
applications



# Gridded population data

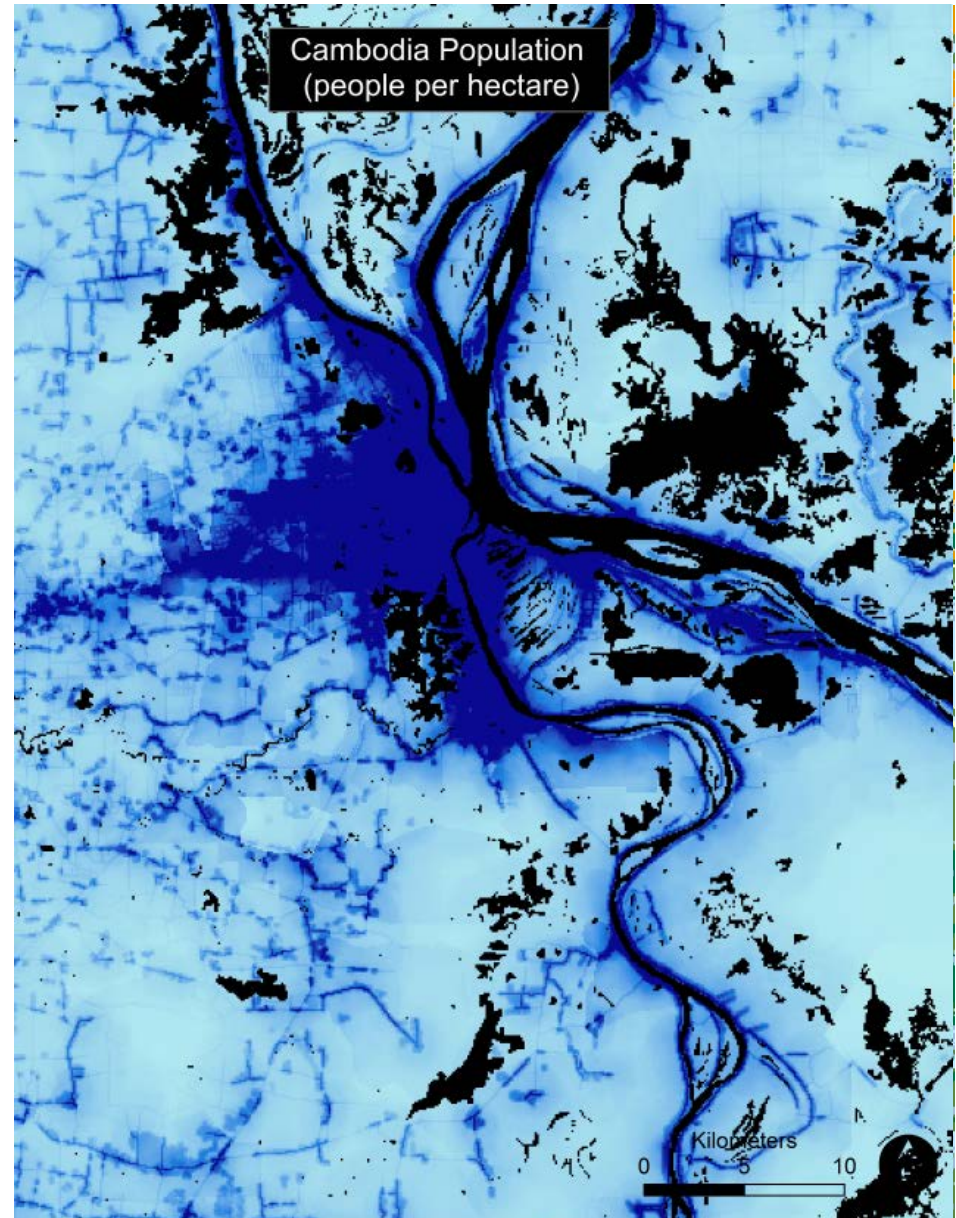
Census data linked to  
GIS administrative  
boundaries

Ancillary data e.g.  
Settlements, roads

Spatial modelling rules to  
disaggregate census  
counts

Estimates of number of  
people in each grid cell

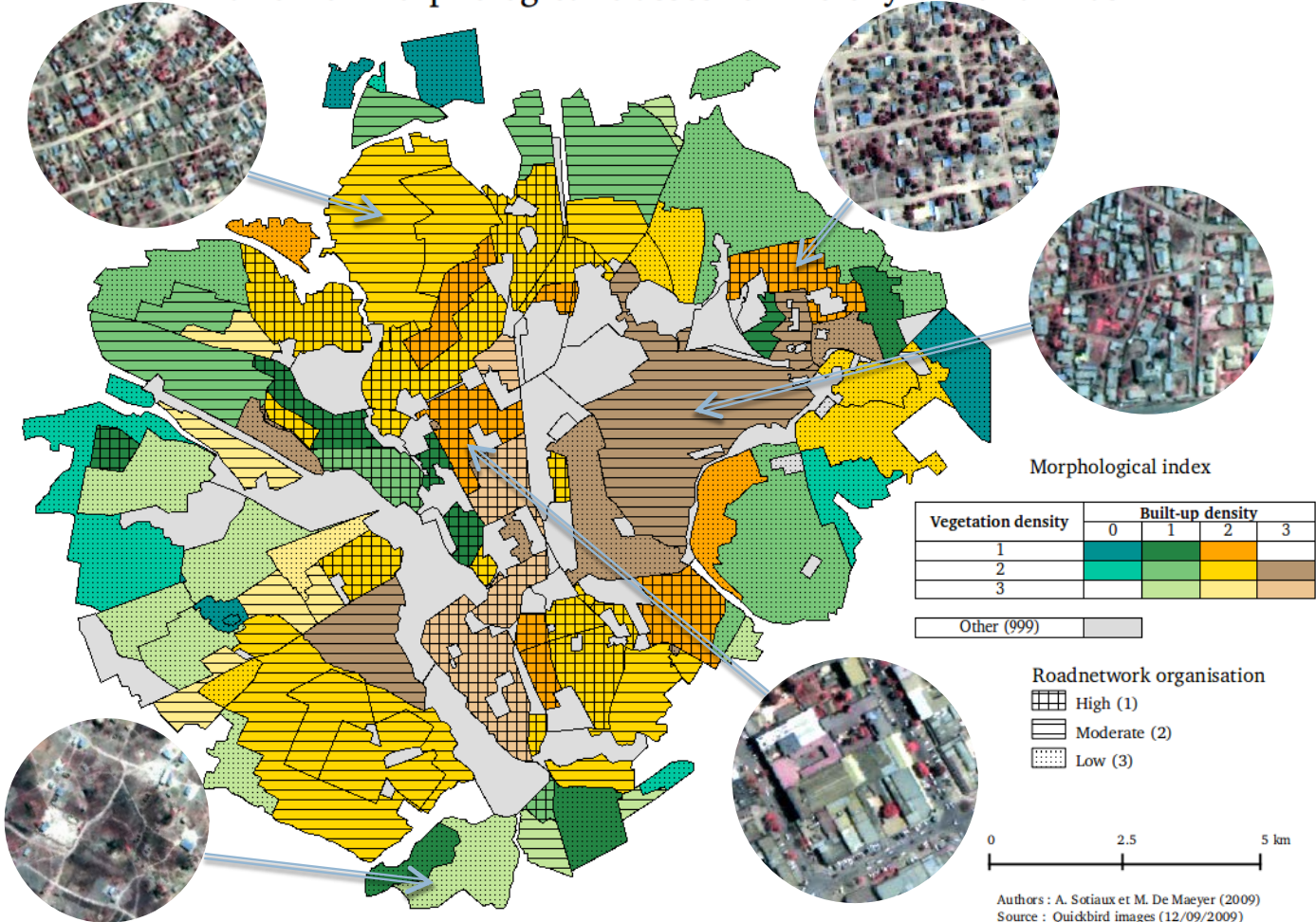
Population Density (pph)



# Using remote sensing to better predict intra-urban variations



Distribution of morphological classes for the city of Lubumbashi



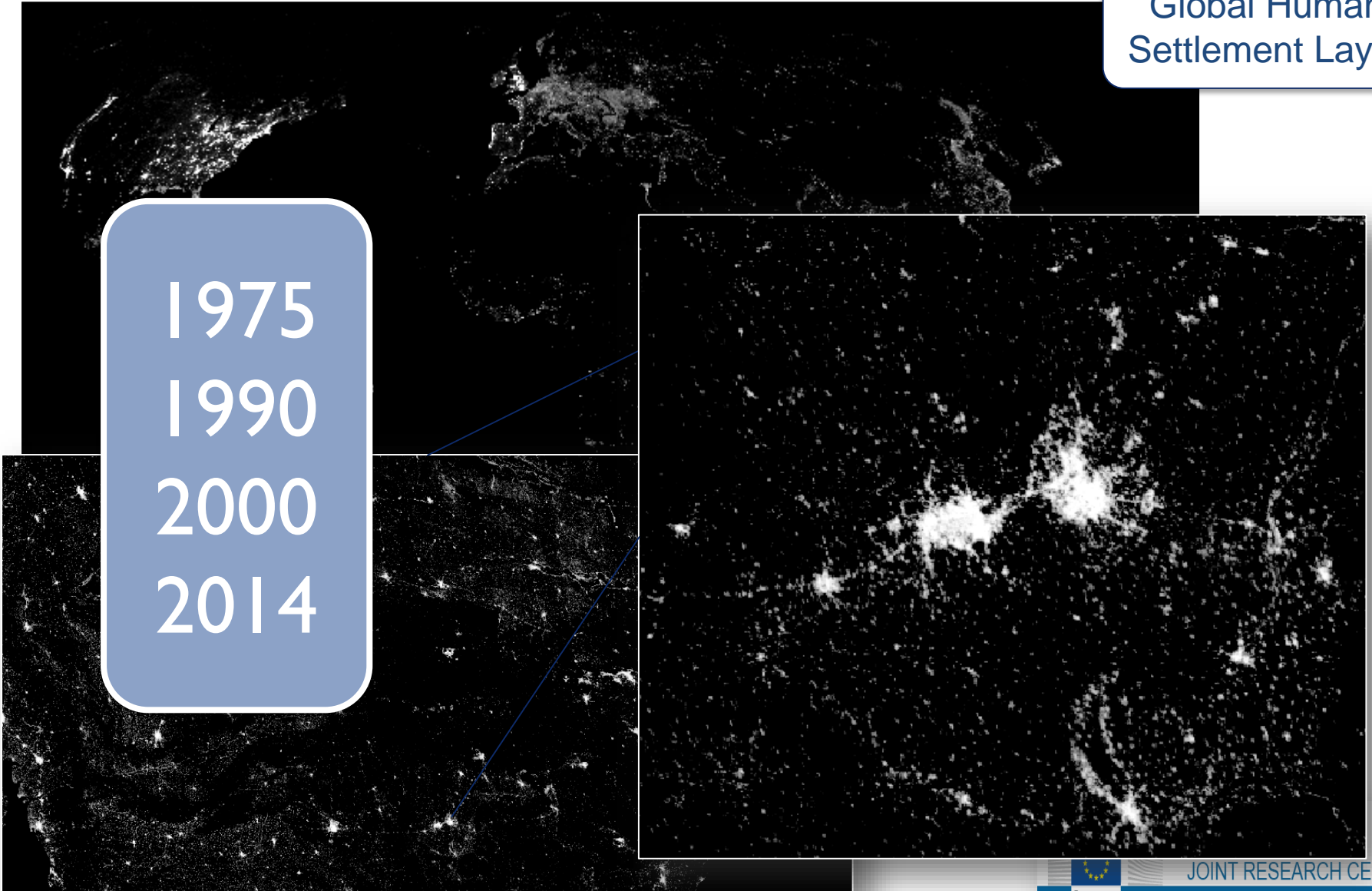
Sotiaux & De Mayer (2009)

Authors : A. Sotiaux et M. De Maeyer (2009)  
Source : Quickbird images (12/09/2009)

# Temporal changes: new satellite-derived datasets

Global Human Settlement Layer

1975  
1990  
2000  
2014

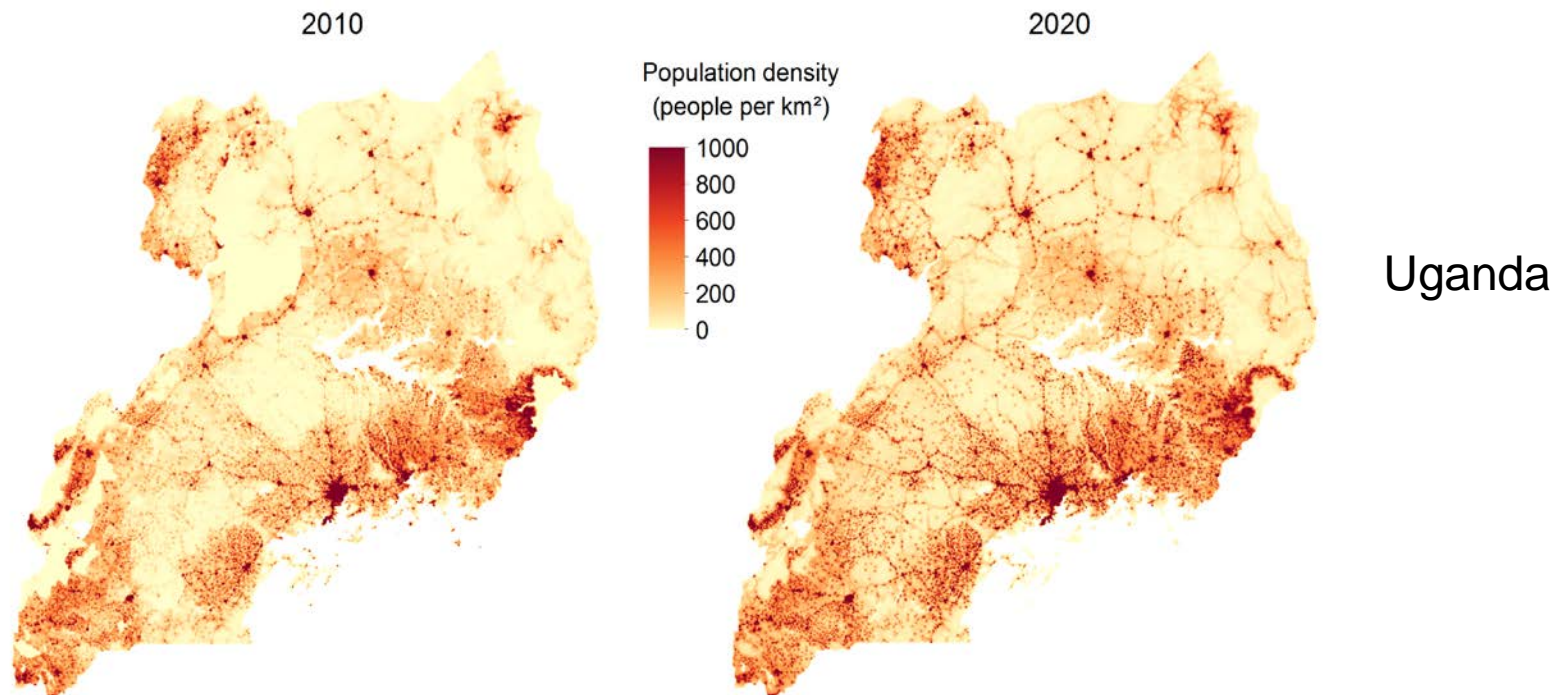




# Simulate urban expansion and future population distribution



- New global satellite-derived datasets (e.g. GHSL) used to train urban expansion models
- Predicted urban extents used to simulate future population distribution



# Summary

- Low/middle income nations face the greatest (future) urban disaster risk
- For many however a significant 'data drought' still exists
- Combining disparate and complimentary spatial datasets can fill data gaps
- Novel digital datasets offer great potential in further bridging the data divide and building more spatially and temporally detailed demographic databases



# Further information

world  
pop



Modelling and  
forecasting African  
Urban Population  
Patterns

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[www.worldpop.org](http://www.worldpop.org)



@WorldPopProject

[maupp.ulb.ac.be](http://maupp.ulb.ac.be)

## Acknowledgements

Andy Tatem, Alessandro Sorichetta, Graeme Hornby (Southampton), Andrea Gaughan, Forrest Stevens, Jeremiah Nieves (Louisville), Marius Gilbert, Yann Forget, Eléonore Wolff, Taïs Grippa (ULB), Michal Shimoni, JuanFran Lopez (RMA, Belgium), Caroline Kabaria, Robert Snow, Abdisalan Noor (KEMRI Welcome Trust)

