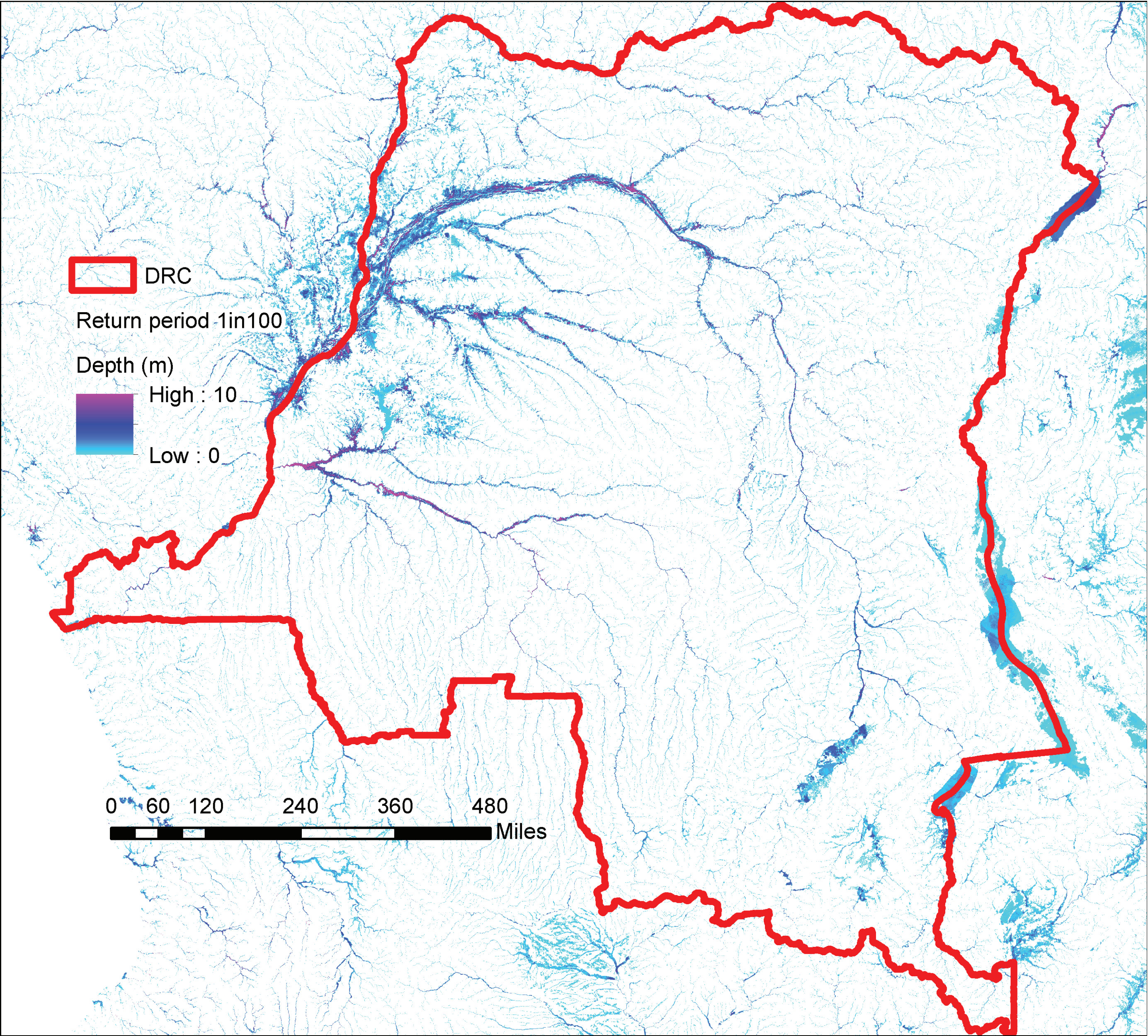
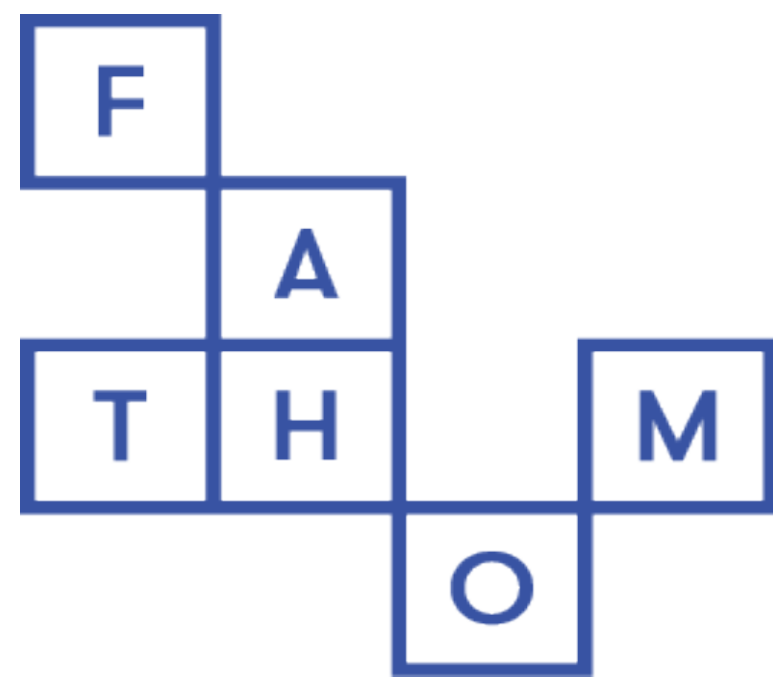


Flood hazard and exposure in the Congo Basin given initial results from a global flood model

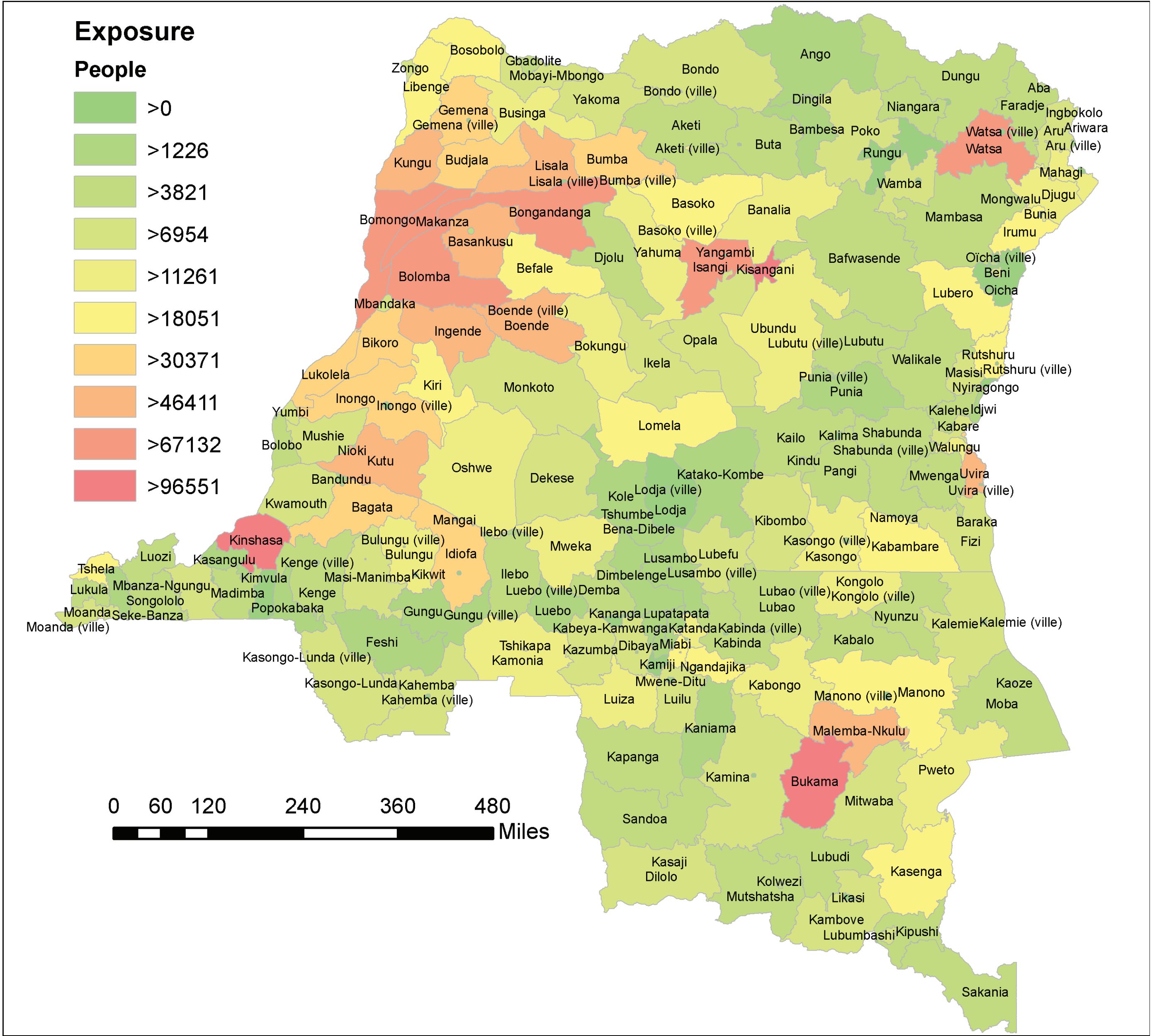
Jeff Neal¹, Luntadila Paulo¹, Raphael Tshimanga², Laurence Hawker¹, Thorsten Wagener³, Francesca Pianosi³, and Andrew Smith⁴



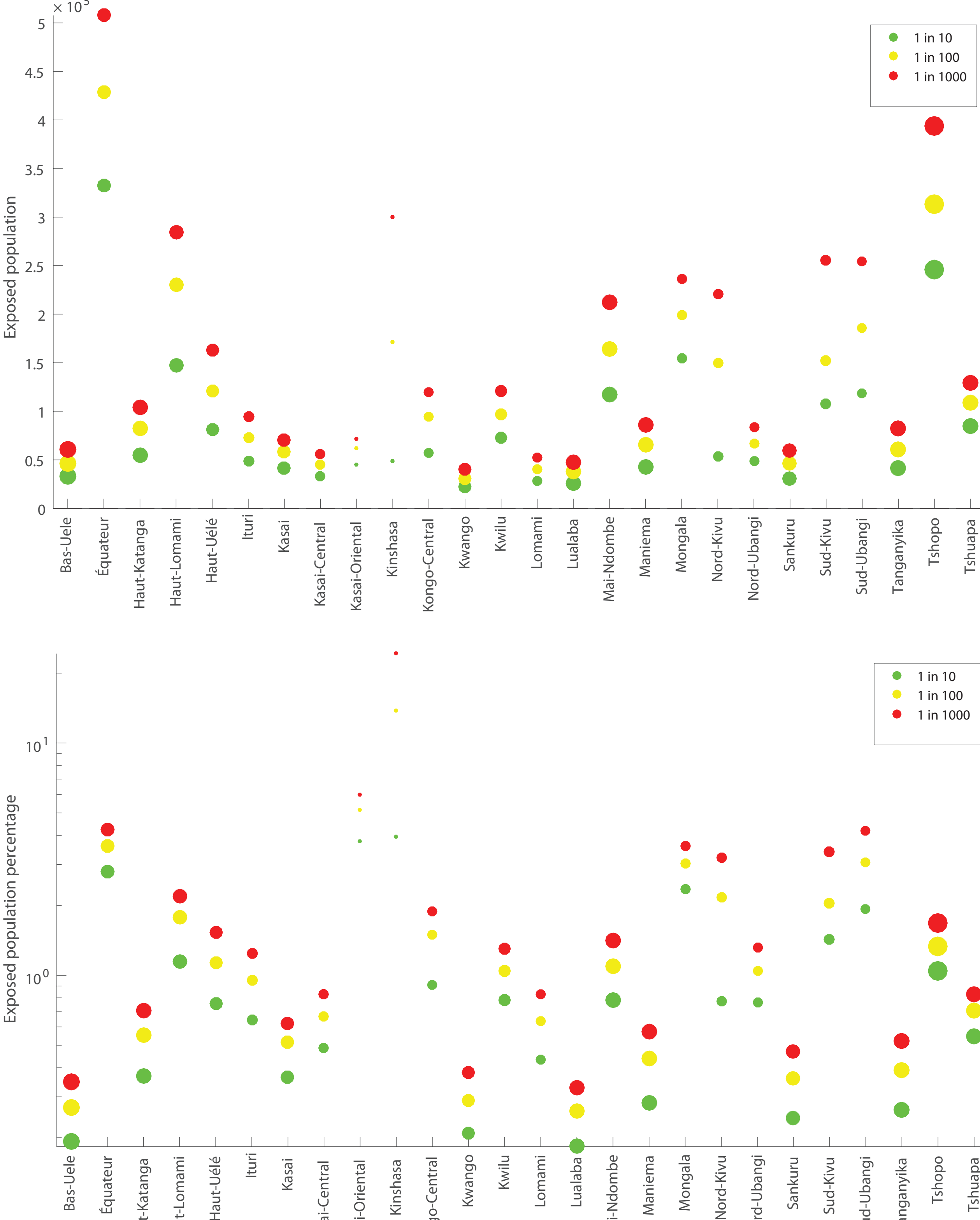
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3. School of Engineering, University of Bristol, Bristol, UK
4. Fathom Ltd, Engin Shed, Bristol, UK
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1 Flood inundation simulations



3 Exposed population 100 year return period

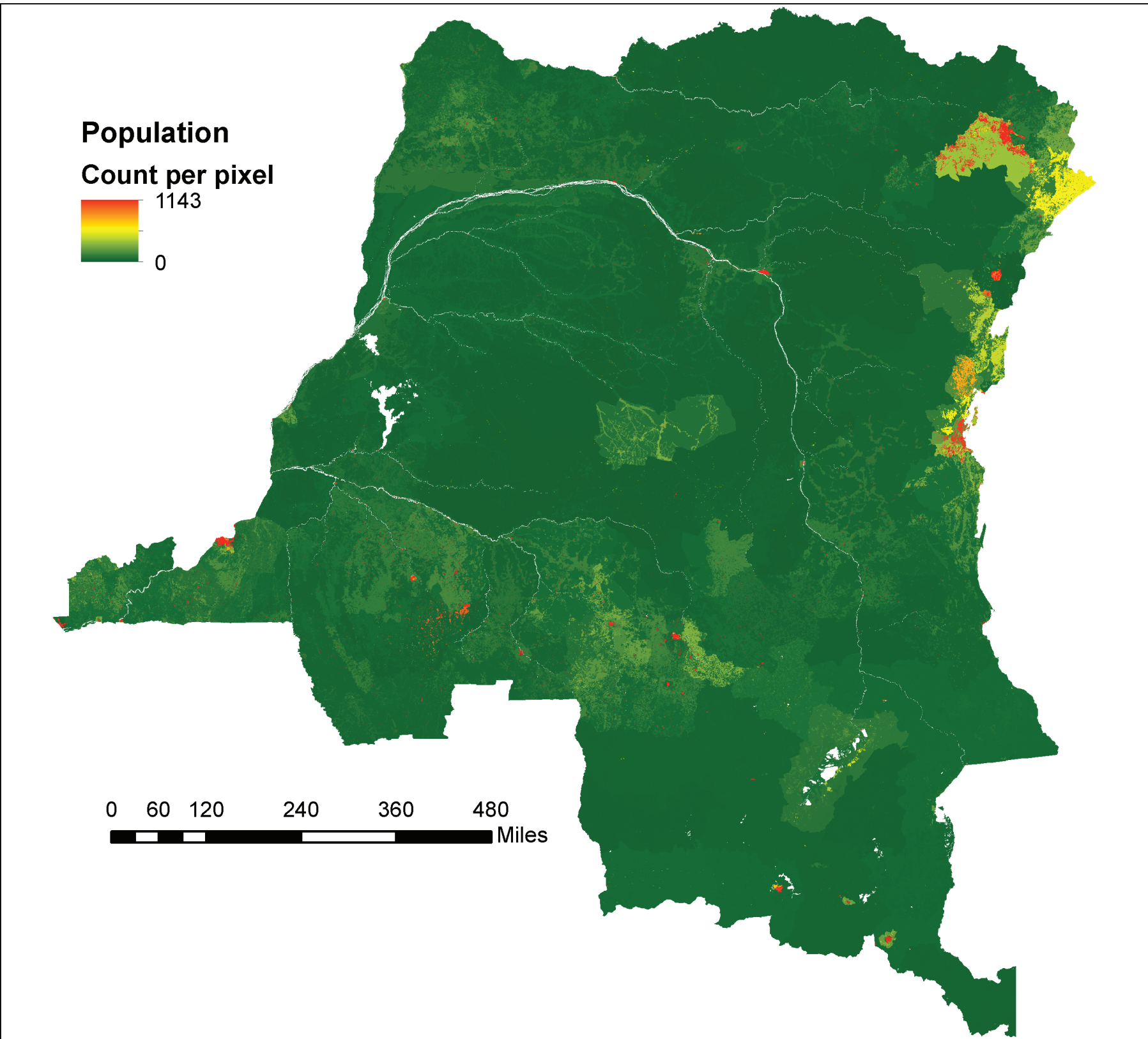


4 Exposure by province a) population and b) % population. Dot size ~ area

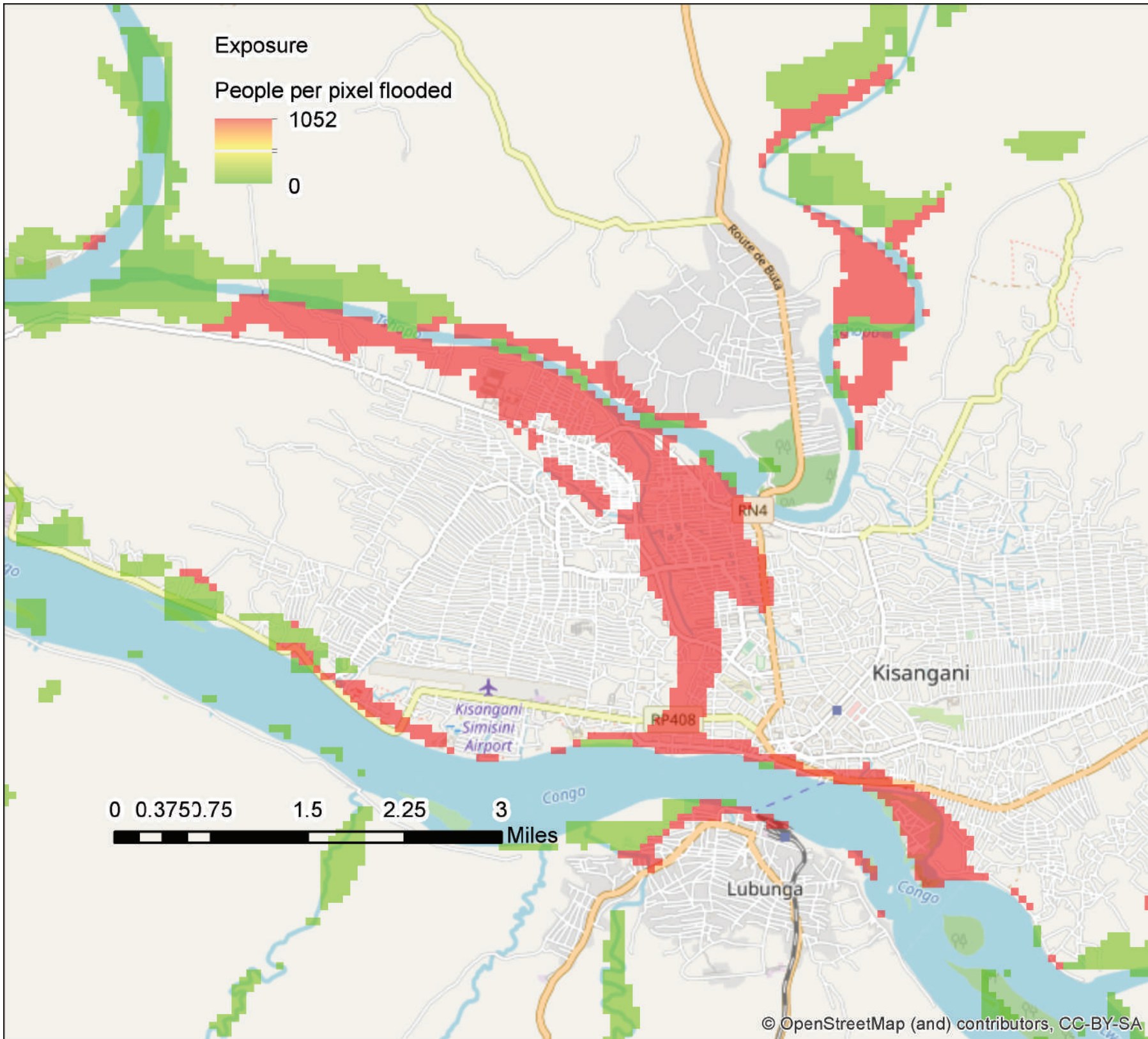
Exposure estimates were made from 90 m resolution simulations of inundation depth at 10 return periods (Sampson et al., 2015; Fathom Ltd) combined with Woldpop estimates of population per pixel at 100 m resolution (Tatem, 2017).

Results highlight potential locations at risk of flooding in detail. However, some obvious overestimates are seen where Woldpop blurs the edges of urban areas onto the flood-plain (Fig 6) and where low return periods cause extensive urban flooding.

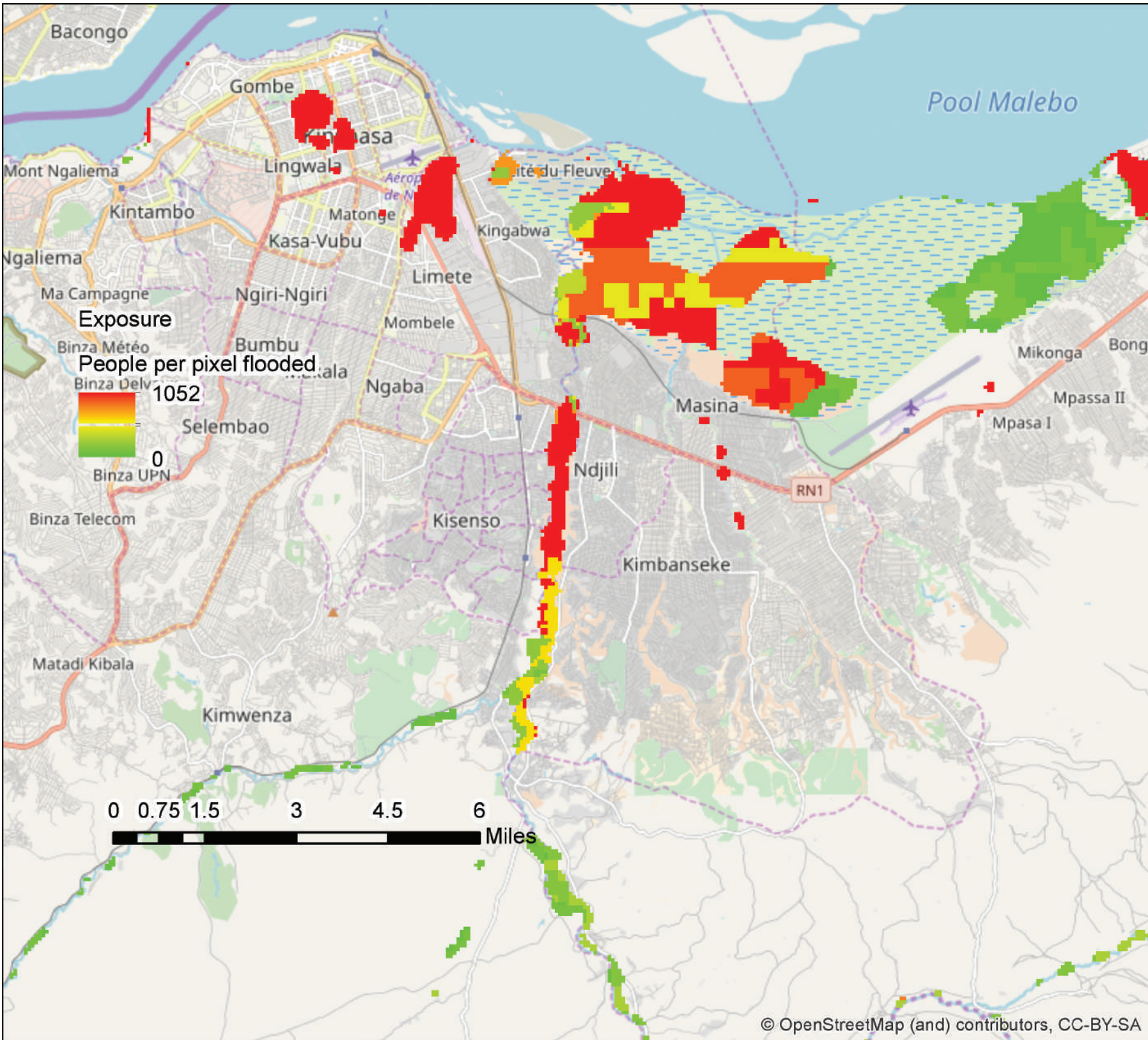
These issues will be investigated further via the NERC SHEAR funded HYFLOOD project, that will seek to integrate the latest global flood modelling methods and exposure data with the remotely sensed surface water record within an uncertainty analysis framework (Pianosi 2015).



2 Woldpop population



5 Kisangani Exposure



6 Kinshasa Exposure

References
Sampson, C. C., A. M. Smith, P. D. Bates, J. C. Neal, L. Alfieri, and J. E. Freer (2015). A high-resolution global flood hazard model. *Water Resour. Res.*, 51, 7358–7381. doi:10.1002/2015WR016954.
Andrew J. Tatem. WorldPop, open data for spatial demography. *Scientific Data* 4, Article number: 170004 (2017) doi:10.1038/sdata.2017.4
Pianosi, F., Sarrazin, F. & Wagener, T. 2015. A Matlab Toolbox for Global Sensitivity Analysis. *Environmental Modelling & Software*, 70, 80-85. doi:10.1016/j.envsoft.2015.04.009