

Dr. Paul C. Sutton

Urban Metabolism Scientist

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ROLE IN NIGHTSAT MISSION:

As the Urban Metabolism Scientist, Dr. Paul C. Sutton will be responsible to the PI for conducting research that identifies and documents how the improved spatial and spectral resolution of NightSat data products will inform our understanding of the human-environment-sustainability problematic as it pertains to the following: Urban growth and land use patterns, Mapping and monetizing the human ecological footprint, and Characterizing the megapolitan-urban-exurban gradient and its impacts on ecosystem function, habitat fragmentation, and ecosystem services.

EXPERIENCE RELATED TO THE INVESTIGATION:

Summary: Published over 40 journal articles and book chapters related to the application of nighttime satellite imagery for informing our understanding of myriad phenomena and processes related to human-environment interactions. Topics include developing models to estimate impervious surface, estimation of CO₂ emissions, developing proxy measures of economic activity and ecological footprints, mapping exurban areas, producing independent measures of urban populations and intra-urban population density and producing a robust scale-adjusted measure of urban sprawl.

EDUCATION:

Ph.D., 1999, University of California at Santa Barbara, Geography
M.A., 1997, University of California at Santa Barbara, Statistics
M.A., 1995, University of California at Santa Barbara, Geography
B.S., 1983, Union College, Chemistry

RELEVANT AWARDS AND HONORS:

2010: **Foresight Global Environmental Migration Project** Co-Investigator with Robert Costanza
quantifying change to ecosystem services in low lying coastal zones

2008: **FRF internal DU Grant: Geo-location and Radiance Calibration of the DMSP OLS**

This research involved lighting up formerly 'dark' pixels in the nighttime images obtained by the DMSP OLS to inform our understanding of geo-location and radiance measurements

1997-99: **NASA Earth System Science 'Mission to Planet Earth' Fellowship**

SELECTED PUBLICATIONS:

Sutton, P., Anderson, S., Tuttle, B., & Morse, L. (2011). *The real wealth of nations: Mapping and monetizing the human ecological footprint*. Ecological Indicators doi:10.1016/j.ecolind.2011.03.008

Sutton, Paul C.; Anderson, Sharolyn, J.; Elvidge, Christopher D.; Tuttle, Benjamin, T.; Ghosh, Tilottama (2009) *Paving the Planet: Impervious Surface as a Proxy Measure of the Human Ecological Footprint* Progress in Physical Geography 33(4) pp. 1-18

Sutton, Paul C.; Fildes, Stephen; Forster, Clive; Ghosh, Tilottama; Goetz, Andrew (2009) *Darkness on the Edge of Town: Mapping Urban and Peri-Urban Australia Using Nighttime Satellite Imagery* Professional Geographer 62(1) pp. 119-133

Costanza, Robert; Perez-Maqueo, Octavio; Martinez, M. Luisa; **Sutton, Paul C.**; Anderson, Sharolyn J.; Mulder, Kenneth (2008) *The Value of Coastal Wetlands for Hurricane Protection* *Ambio* 37(4) June pp 241-248

Sutton, Paul C.; Ghosh, Tilottama; Elvidge, Christopher D. (2007) *Estimation of Gross Domestic Product at Sub-National Scales using Nighttime Satellite Imagery* International Journal of Ecological Economics & Statistics 8(S07) ISSN 0973-1385