Paul C. Sutton | (303) 871 - 2399

Paul C. Sutton

Professor of Geography
Department of Geography and the Environment
University of Denver

Appointments

1999 - Present   Department of Geography at the University of Denver
Professor (2012 - Present) Assoc.(2005-2012) Asst.(1999 – 2005)

2015 – 2016   Head of Discipline: Envt & Geospatial Sciences (UNISA)

2012 – 2013   Barbara Hardy Institute   Senior Research Fellow (UNISA)

2005 – 2006   School of Geography, Population, & Environmental Mgmt
Visiting Research Fellow (Flinders University)

1995 – Present   National Geophysical Data Center of NOAA in Boulder CO
Research Associate

1992-1999   Department of Geography, University UCSB
Lecturer, Graduate Student Researcher, and Teaching Assistant

1983-1993   Anacapa High School (Physics, Chemistry, & Math Teacher)

1984-1992   Process Engineer with Santa Barbara Research Center

Engagement & Service

Elected to Board of Trustees in Morrison, CO (2018-2022)
(7 member board oversees $4 million annual budget)

Human Planet Initiative (part of GEO Strategic Plan)
(member of steering committee approved at GEO-XII)

Global Human Settlement Layer Working Group
(Joint Research Center of the European Union in Ispra Italy)

UNEP's Global Environmental Outlook 6 GEO6 (2014-16)

Australia Council of Environmental Deans & Dirs (2015-16)

ELD Economics of Land Degradation Working Group (2014-15)

Australia New Zealand Society for Ecological Economics (2015-17)
(member of executive board and chair of conference committee)

Chair of Academic Program Review Team for the Department of Geography at Texas State University in San Marcos, Texas. (2013)

President of the Advisory Board for evaluation of the Master in Geospatial Science and Technology at the Polytechnic University of Puerto Rico for the Government of Puerto Rico (2012)

Prg Com of GIScience 2014 & 2010 Sept the 14-17th in Zurich

Proposal & Manuscript Reviewer for various scientific foundations & journals (NSF, NASA, ESA, ESF, ARC)

Invited Keynote speaker at various functions sponsored by various government, public, and environmental organizations.

Education

PhD Geography   (1999)
University of California at Santa Barbara
Dissertation: 'Census from Heaven'

M.A. Applied Statistics   (1997)
University of California at Santa Barbara

M.A. Geography   (1995)
Thesis: 'Public Opinion of Population Issues'

B.S. Chemistry   (1983)
Union College in Schenectady, New York

Research Agenda

Conduct empirically validated work in collaboration with scientists, policy makers, and the public to chart a path to a sustainable and desirable future. Research areas include:

- **Population Geography**
- **Sustainability Science**
- **Ecological Economics**
- **Integration of Remote Sensing & GIS**
- **Ecosystem Services**
- **Integrated Assessment**
- **Urban metabolism and Smart Cities**
- **Green Infrastructure**
- **Urban Ecology**
- **Land Degradation**
- **Applications of Nighttime Satellite imagery**

Media & Public Outreach

Valuing Nature – Engaging Ideas Forum
https://www.du.edu/ideas/interview-videos/valuing-nature.html#

A modest proposal: 'Kill all the bees'
http://theconversation.com/if-dollars-rule-the-world-why-dont-the-bees-get-a-bailout-38384

'Planet Talk' at WOMAD in Adelaide
https://www.youtube.com/watch?v=GvlHAEp8q50&feature=youtu.be

Why a pop of 15 million makes sense for Australia
https://www.theguardian.com/business/2017/jul/11/why-a-population-of-say-15-million-makes-sense-for-australia

PUBLICATIONS

ONGOING RESEARCH INTERESTS

The NightSat Mission

As an Urban Metabolism Scientist, I do research that identifies and documents how the improved spatial and spectral resolution of nighttime satellite imagery derived 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.

Valuation of Ecosystem Services

I began a working relationship with Robert Costanza back in my days as a graduate student at UCSB in which I participated in the writing of a paper published in Nature titled: *The value of the world's ecosystems and natural capital*. As a result of this I became interested in the development of the discipline of ecological economics. Dr. Costanza and I have worked together on several other papers involving the interesting problems associated with trying to assign dollar values to ecosystem services. I use my expertise in GIS and spatial data analysis in collaborations with economists and ecologists to make spatially explicit valuations of ecosystem services.

Development of independent and objective Sustainability Metrics

I have had a long interest in the idea of carrying capacity going back to my days as president of the Santa Barbara Chapter of Zero Population Growth and conversations with Paul Ehrlich, Garrett Hardin, Hunter Lovins, and Jared Diamond. I have developed some simple, easy to measure, and objective metrics of sustainability that correlate strongly with well-established metrics such as the Global Footprint Network's 'Ecological Footprint'. I collaborate with Alessandro Galli of the Global Footprint Network in this area.

Mapping Economic Activity using Nighttime Satellite imagery

I worked closely with one of my PhD Students, Tilottama Ghosh, in the modeling of economic activity using the DMSP OLS data products. She successfully developed methods for estimating the fraction of the national economy of India and Mexico that is in the informal sector and mapped it. She also produced the first global map of GDP/capita at 1 km^2 spatial resolution. This work relating the estimation and mapping of economic activity using nocturnal satellite observations is gaining traction with researchers at Yale and UCLA.

Issues of Scale and Representation in Geographic Data

Figuring out how best to represent spatially and temporally varying phenomena in a digital environment is a fascinating problem of scale, classification, and abstraction. The simple idea of representing the spatio-temporal variation of intra-urban population density is a good example of how this is not really a simple idea. In my efforts at modeling proxy measures of population density, economic activity, and ecosystem service value I have enjoyed struggling with these insurmountable problems and hope to make some contributions to methods that will inform our understanding of the roles these phenomena play in questions of sustainability.

Measuring Learning Outcomes for undergraduate Geography Students

I am becoming increasingly interested in what it is, exactly, that we believe we are teaching to undergraduate geography students. I am appalled at the simplistic ways in which we use end of course student evaluations to measure teaching effectiveness. I applaud efforts at the development of instruments such as the AP Human Geography exam that attempt to actually measure what students of Geography have presumably learned. I also serve as an AP Geography exam reader. I intend to participate in this clarification of 'Learning Outcomes' for undergraduate degrees in Geography for the rest of my career because I think it is imperative that we as faculty in this discipline can answer questions like: "*What will I learn from taking a degree in Geography that I won't learn from taking some other degree?*"