

# ALEXANDER IVAN ZVOLEFF

Vice President, Science for Impact

Conservation International

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<http://www.conservation.org/science>

<https://github.com/azvoleff>

## EDUCATION

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### **San Diego State University / University of California, Santa Barbara**

Ph.D. Department of Geography, September 2013. Dissertation: *Understanding the Dynamics of Changing Land-use and Land-cover, Population, and Climate in the Chitwan Valley, Nepal*

### **Columbia University, New York, New York**

M.A. Climate and Society, October 2008

### **University of California, San Diego**

B.S. Earth Sciences - Geochemistry, minor in Environmental Systems, December 2006

## RESEARCH INTERESTS

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- Incentivizing and supporting action by governments and the private sector to protect, manage, and restore land
- Leveraging remote sensing and other spatial tools to explore interactions among climate, land use and land cover change, and livelihoods
- Methods and tools for integrating large social and biophysical datasets to inform conservation

## POSITIONS

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07/2024 – Present	<b>Vice President, Science for Impact</b> , Betty and Gordon Moore Center for Science, Conservation International, Arlington, VA
07/2018 – Present	<b>Senior Director of Resilience Science</b> , Betty and Gordon Moore Center for Science, Conservation International, Arlington, VA
03/2018 – 06/2018	<b>Senior Director of Data Science</b> , Betty and Gordon Moore Center for Science, Conservation International, Arlington, VA
07/2015 – 03/2018	<b>Director of Data Science</b> , Betty and Gordon Moore Center for Science and Oceans, Conservation International, Arlington, VA
07/2013 – 07/2015	<b>Postdoctoral Associate</b> , Tropical Ecology Assessment and Monitoring (TEAM) Network, Conservation International, Arlington, VA
08/2008 – 06/2013	<b>Teaching Associate</b> , Department of Geography, San Diego State University, San Diego, CA
08/2007 – 08/2008	<b>Research Assistant</b> , Department of Mechanical Engineering, Columbia University, New York, NY

06/2006 – 12/2006    **Research Assistant**, Cecil H. and Ida M. Green Institute of Geophysics and Planetary Physics, Scripps Institution of Oceanography, University of California, San Diego, CA

## **REFEREED PUBLICATIONS**

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- Araujo, Diogo S. [and 9 others, including **Alex Zvoleff**] “Global Future Drought Layers Based on Downscaled CMIP6 Models and Multiple Socioeconomic Pathways.” *Scientific Data* 12, no. 1 (February 19, 2025): 295. <https://doi.org/10.1038/s41597-025-04612-w>.
- Viana, Daniel F., David Gill, **Alex Zvoleff**, et al. “Sustainable-Use Marine Protected Areas to Improve Human Nutrition.” *Nature Communications* 15, no. 1 (September 17, 2024): 7716. <https://doi.org/10.1038/s41467-024-49830-9>.
- Donatti, Camila I. [and 8 others, including **Alex Zvoleff**] “Global Hotspots of Climate-Related Disasters.” *International Journal of Disaster Risk Reduction* 108 (June 15, 2024): 104488. <https://doi.org/10.1016/j.ijdrr.2024.104488>.
- Duncanson, L [and 14 others, including **Alex Zvoleff**] “The Effectiveness of Global Protected Areas for Climate Change Mitigation.” *Nature Communications* 14, no. 1 (June 1, 2023): 2908. <https://doi.org/10.1038/s41467-023-38073-9>.
- Liang, Mengyu [and 9 others, including **Alex Zvoleff**] “Assessing Protected Area’s Carbon Stocks and Ecological Structure at Regional-Scale Using GEDI Lidar.” *Global Environmental Change* 78 (January 1, 2023): 102621. <https://doi.org/10.1016/j.gloenvcha.2022.102621>.
- López-Carr, David, Narcisa G. Pricope, Kevin M. Mwenda, Gabriel Antunes Daldegan, and **Alex Zvoleff**. “A Conceptual Approach towards Improving Monitoring of Living Conditions for Populations Affected by Desertification, Land Degradation, and Drought.” *Sustainability* 15, no. 12 (January 2023): 9400. <https://doi.org/10.3390/su15129400>.
- Pricope, Narcisa G., Gabriel A. Daldegan, **Alex Zvoleff**, Kevin M. Mwenda, Monica Noon, and David Lopez-Carr. “Operationalizing an Integrative Socio-ecological Framework in Support of Global Monitoring of Land Degradation.” *Land Degradation & Development*, September 2022. <https://doi.org/10.1002/ldr.4447>.
- An, Li [and 10 others, including **Alex Zvoleff**] Sex-Specific Habitat Suitability Modeling for *Panthera Tigris* in Chitwan National Park, Nepal: Broader Conservation Implications. *Sustainability* 13, no. 24 (January 2021): 13885. <https://doi.org/10.3390/su132413885>.
- Rovero, Francesco [and 15 others, including **Zvoleff, A.**] A Standardized Assessment of Forest Mammal Communities Reveals Consistent Functional Composition and Vulnerability across the Tropics. *Ecography* 43, no. 1 (2020): 75–84. <https://doi.org/10.1111/ecog.04773>.
- Cooper, Matthew W. [and 7 others, including **Alex Zvoleff**] Mapping the Effects of Drought on Child Stunting. *Proceedings of the National Academy of Sciences* 116, no. 35 (August 27, 2019).
- Beaudrot, Lydia [and 11 others, including **Alex Zvoleff**]. Local Temperature and Ecological Similarity Drive Distributional Dynamics of Tropical Mammals Worldwide. *Global Ecology and Biogeography* 28, no. 7 (July 2019): 976–91.
- Selig, E. R. [and 17 others, including **Alex Zvoleff**] Mapping global human dependence on marine ecosystems. *Conservation Letters* 12, no. 2 (March 2019): e12617.

- Gonzalez-Roglich, Mariano, **Alex Zvoleff**, et al. Synergizing Global Tools to Monitor Progress towards Land Degradation Neutrality: Trends. Earth and the World Overview of Conservation Approaches and Technologies Sustainable Land Management Database. *Environmental Science & Policy* 93 (2019): 34–42.
- Cooper, M. **Zvoleff, A**, et al. Geographic factors predict wild food and nonfood NTFP collection by households across four African countries. *Forest Policy and Economics* 96, 38–53 (2018).
- Beaudrot, Lydia, [and 32 others, including **Alex Zvoleff**]. Standardized Assessment of Biodiversity Trends in Tropical Forest Protected Areas: The End Is Not in Sight. *PLoS Biol* 14, no. 1 (January 19, 2016): e1002357. doi:10.1371/journal.pbio.1002357.
- Beaudrot, Lydia, [and 23 others, including **Alex Zvoleff**]. Limited Carbon and Biodiversity Co-Benefits for Tropical Forest Mammals and Birds. *Ecological Applications*, November 13, 2015. doi:10.1890/15-0935.1.
- Zvoleff, A.**, S. M. Wandersee, L. An, and D. López-Carr. 2014. Land use and land cover change. *Oxford Bibliographies*.
- An, L., **A. Zvoleff**, J. Liu, and W. Axinn. 2014. Agent based modeling in coupled human and natural systems (CHANS): lessons from a comparative analysis. *Annals of the Association of American Geographers* 104(4):723-745.
- Zvoleff, A.**, An, L., 2014. The effect of reciprocal connections between demographic decision making and land use on decadal dynamics of population and land-use change. *Ecology and Society* 19:2.
- Zvoleff, A.**, and L. An. 2014. Analyzing human-landscape interactions: tools that integrate. *Environmental Management* 53:94–111.
- López-Carr, D., M. Erdman, and **A. Zvoleff**. 2010. *Mapping Population onto Priority Conservation Areas*. World Wildlife Fund, PHE Series, 73 pages.
- Zvoleff, A.**, S. Kocaman, W. T. Huh, and V. Modi. 2009. The impact of geography on energy infrastructure costs. *Energy Policy* 37 (10):4066-4078.

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## BOOK CHAPTERS

- Zvoleff, A.**, L. An, J. Stoler, and J. R. Weeks. 2013. What if neighbors' neighborhoods differ? The influence of neighborhood definition on health outcomes in Accra. In *Spatial Inequalities*, eds. J. R. Weeks, A. Hill, and J. Stoler. Springer.
- Weeks, J. R., J. Stoler, A. G. Hill, and **A. Zvoleff**. 2013. Fertility in context: The influence of neighborhoods on family-building and reproductive health. In *Spatial Inequalities: Health, Poverty and Place in Accra, Ghana*, eds. J. R. Weeks, A. G. Hill, and J. Stoler. Springer.

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## PROCEEDINGS PAPERS

- Zvoleff, A.**, and J. Ahumada, understanding the link between population dynamics and biodiversity conservation through remote sensing and gridded population data integration. Proceedings of the 2015 International Geoscience and Remote Sensing Symposium (IGARSS). Milan, Italy, July 2015.

- Bremner, J., López-Carr, D., **A. Zvoleff**, and N. Pricope. 2013. Using new methods and data to assess and address population, fertility, and environment links in the Lake Victoria Basin. Proceedings of the 2013 International Union for the Scientific Study of Population (IUSSP). Busan, Korea, August, 2013.
- Carr, D. L., M. Erdman, and **A. Zvoleff**. 2010. How are population patterns different in ecological priority areas? Mapping demography onto conservation areas. Proceedings of the European Population Conference 2010, Vienna, Austria, Sep 2, 2010.

## **OTHER PUBLICATIONS**

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- Zvoleff, A.** 2010. Open geodata standards. In *Encyclopedia of Geography*, ed. B. Warf. Thousand Oaks, CA: SAGE Publications Inc.

## **INVITED PRESENTATIONS**

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- Zvoleff, A.** Lessons from Conservation Finance Applicable to UNCCD Implementation, United Nations Convention to Combat Desertification – Committee for the Review of the Implementation of the Convention 17. Georgetown, Guyana. January 29, 2019.
- Zvoleff, A.** Opportunities and Challenges Integrating Earth Observation Data into Developing Country Decision-making Around the Sustainable Development Goals, NASA Goddard Space Flight Center. October 15, 2018.
- Zvoleff, A.**, M. Noon. Big Data for Resilience Event: The Resilience Atlas. Presented at The Wilson Center for International Scholars: Environmental Change and Security Program, March 30, 2018.
- Zvoleff, A.** Panel: Civil Society Engagement in Land Degradation Neutrality. The World Sustainable Development Summit. Delhi, India, February 15, 2018.
- Zvoleff, A.** An Open-source, Multi-scalar Approach for Monitoring and Reporting on Land Degradation Neutrality. The Global Environment Facility. Washington, DC, February 8, 2018.
- Zvoleff, A.** Monitoring Land Degradation. University of California, Geography Colloquium. Santa Barbara, California, October 26, 2017.
- Zvoleff, A.** Overlooked & Neglected Food Security Issues. World-Wide Human Geography Data (WWHGD) Working Group. Reston, Virginia, April 5, 2016.
- Zvoleff, A.**, and L. An. 2012. Exploring feedbacks between demography, land-use, and land-cover in a CHANS in the Chitwan Valley, Nepal. Presented at Special NASA-MSU Symposium on “Disentangling Diverse Drivers and Complex Dynamics of Coupled Human and Natural Systems (CHANS)” at the 2012 US-IALE Symposium, Newport, Rhode Island, Apr 9, 2012.
- López-Carr, D., and **A. Zvoleff**. 2012. Hotspots: Population Growth in Areas of High Biodiversity. Presented at The Wilson Center for International Scholars: Environmental Change and Security Program, Washington, DC, Feb 29, 2012 (presented by D. López-Carr).

## **PROFESSIONAL PRESENTATIONS**

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- Zvoleff, A.**, M. Noon, G. Daldegan, and M. Gonzalez-Roglich. “Forging the Path to Achieving Land Degradation Neutrality: Global Patterns and Drivers of Land Degradation at Global

Scales," Presented at 22nd EGU General Assembly. May 1, 2020.  
<https://doi.org/10.5194/egusphere-egu2020-11497>.

**Zvoleff, A.**, M. Gonzalez Roglich and M. Noon. An open-source, multi-scalar approach for monitoring and reporting on land degradation. Presented at American Association of Geographers 2018 Annual Meeting.

**Zvoleff, A.** The Data Revolution in Smallholder Agriculture. Panelist. African Green Revolution Forum. Nairobi, Kenya, September 9, 2016.

**Zvoleff, A.** and J. Ahumada. Understanding the link between population dynamics and biodiversity conservation through remote sensing and gridded population data integration. Presented at 2015 IGARSS Symposium, Milan, Italy, Jul 29, 2015.

**Zvoleff, A.** Ahumada, J., and L. Beaudrot, Precipitation variability in tropical forests most strongly affecting trees with low wood density. Presented at 2014 AGU Fall Meeting. Dec 19, 2014.

**Zvoleff, A.** Rosa, M., and J. Ahumada, Monitoring population and land use change in tropical forest protected areas. Presented at 2014 AGU Fall Meeting. Dec 17, 2014.

**Zvoleff, A.** Rosa, M., and J. Ahumada, An integrated framework for tropical forest monitoring. Presented at 2014 US-IALE Symposium, Anchorage, Alaska, May 19, 2014.

**Zvoleff, A.** and D. López-Carr. 2013. Population dynamics in the world's protected areas. Presented at International Geographical Union (IGU) 2013 Kyoto Regional Congress. Kyoto, Japan, Aug 4-9, 2013 (presented by D. López-Carr).

Pricope, N. G., M. Jankowska, López-Carr, D., and **A. Zvoleff**. 2013. Integrating multi-temporal climate and health data to model children's health outcomes in the Lake Victoria Region of Africa. Presented at International Geographical Union (IGU) 2013 Kyoto Regional Congress. Kyoto, Japan, Aug 4-9, 2013 (presented by N. G. Pricope).

**Zvoleff, A.**, and L. An. 2013. Modeling feedbacks between human decision-making, community context, and land-use change. Presented at American Association of Geographers, 2013 Annual Meeting, Los Angeles, CA, Apr 11, 2013.

Yang, S., **A. Zvoleff**, L. An, and M. Liu. 2013. Socioeconomic drivers and environmental impacts of local urbanization process in rural areas: a case study of Wolong Nature Reserve, China. Presented at American Association of Geographers, 2013 Annual Meeting, Los Angeles, CA, Apr 12, 2013 (presented by A. Zvoleff).

An, L., X. Chen, S. M. Wandersee, S. Yang, and **A. Zvoleff**. "Payments for Ecosystem Services: a Coupled Natural and Human Systems Approach." presented at the American Association of Geographers, 2013 Annual Meeting, Los Angeles, CA, April 10, 2013 (presented by L. An).

Weeks, J. R., J. Stoler, A. G. Hill, and **A. Zvoleff**, "Fertility in Context: Exploring Egocentric Neighborhoods in Accra, Ghana," Presented at the Annual Meeting of the Association of American Geographers, New York, NY, February 2012; and at the Annual Meeting of the Population Association of America, San Francisco, May 2012 (presented by J. R. Weeks).

**Zvoleff, A.**, L. An, J. Stoler, and J. R. Weeks. 2012. What if neighbors' neighborhoods differ? The influence of neighborhood definition on health outcomes in Accra. Presented at American Association of Geographers, 2012 Annual Meeting, New York, NY, Feb 25, 2012.

- Zvoleff, A.**, and D. López-Carr. 2012. Linking Conservation and Development: A Global-scale Analysis of Demographics in High-value Conservation Areas. Presented at American Association of Geographers, 2012 Annual Meeting, New York, NY, Feb 24, 2012. Also presented at the SDSU 2012 Student Research Symposium, San Diego, CA, Mar 9, 2012.
- Zvoleff, A.**, and D. López-Carr. 2012. Prioritizing Health Investments to Further Conservation and Development Goals. Poster presented at UC Global Health Day 2012, Berkeley, CA, Feb 4, 2012.
- Zvoleff, A.**, and L. An. 2011. Remote Sensing of Aboveground Woody Biomass Resources in the Western Chitwan Valley, Nepal. Presented at 2011 US-IALE Symposium, Portland, Oregon, Apr 5, 2011.
- Zvoleff, A.**, and L. An. 2011. Modeling Human-Environment Interactions and their Ecological Implications in the Chitwan Valley, Nepal. Presented at 2011 AAAS Conference, Washington DC, Feb 18, 2011. Also presented at SDSU 2011 Student Research Symposium, San Diego, CA, Mar 5, 2011.
- Zvoleff, A.**, and L. An. 2010. Connecting Micro-scale Fertility Decision-making with Macro-scale LULC in the Chitwan Valley, Nepal Using an Agent-based Model. Presented at Global Land Project Open Science Meeting 2010, Arizona, USA, Oct 18, 2010.
- Zvoleff, A.**, and D. López-Carr. 2010. Population Growth, Agricultural Labor, and Land Use/Cover Change in the World's Priority Conservation Areas. Presented at IGU/UGI Regional Conference, Tel Aviv, Israel, Jul 14, 2010 (presented by D. López-Carr).
- Zvoleff, A.**, B. K. Shrestha, and L. An. 2010. Biomass Resources and Population Change in the Chitwan Valley, Nepal. Presented at 2010 US-IALE Twenty-fifth Anniversary Symposium, Athens, Georgia, Apr 8, 2010.
- Zvoleff, A.** 2009. Impacts of climate change in the western Chitwan Valley, Nepal. Presented at 2009 US-IALE Symposium, Snowbird, Utah, 2009.
- Zvoleff, A.**, and L. An. 2009. Exploring land use change in southern Nepal using an agent-based model. Presented at American Association of Geographers, 2009 Annual Meeting, Session 2151, Las Vegas, NV, 2009. Also presented at SDSU 2009 Student Research Symposium, San Diego, CA, 2009.
- Zvoleff, A.**, and B. T. Werner. 2006. Agent-based model for the coupled human-climate system. Accepted for presentation at American Geophysical Union, Fall Meeting 2006, abstract# GC51A-0430, San Francisco, CA, 2006.

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## EXTERNAL SUPPORT

I have a dedicated track record of success in securing external funding, including from multilateral donors (such as the Global Environment Facility), private foundations, and individuals. Successful funding proposals on which I have led have ranged from \$10k - \$2 million.

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## SOFTWARE AND DATA SCIENCE DEVELOPMENT

[Trends.Earth](#) Primary developer. Open-source tool for calculating indicators of land degradation using satellite imagery and cloud computing. (Coded in Python, available through QGIS, over 10,000 registered users, referenced in multiple

decisions by the Conference of Parties to the United Nations Convention to Combat Desertification)

[\*glcm\*](#) Primary developer. Package for processing remote sensing imagery to calculate image textures. (R package, available on CRAN)

[\*gfcanalysis\*](#) Original author. Former primary developer. An package for analyzing data on global forest change. (R package, available on CRAN)

[\*teamlucc\*](#) Primary developer. Collection of tools for analyzing satellite imagery and performing automated image classifications. (R package)

## **TEACHING EXPERIENCE**

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**SESYNC Immersion Workshop on Land System Science.** Expert Scholar. February 5-6, 2019. One of three scholars leading immersion workshop for approximately 20 SESYNC postdoctoral scholars. Annapolis, Maryland.

**Landscape-Population Analysis Workshop,** Instructor, May 20, 2014, 23 participant workshop at 2014 US-IALE Annual Symposium in Anchorage, Alaska.

**Introduction to GIS and GPS,** Instructor, spring 2013, 5 student short workshop offered in San Diego to visiting researchers from the Fanjingshan Nature Reserve, China.

**Quantitative Methods in Geographic Research,** (SDSU), Teaching associate, spring 2013

**Remote Sensing in R and Python** (SDSU), Instructor, fall 2012, 6 student short workshop

**Introduction to R** (SDSU), Instructor, spring 2012, 12 student short workshop

**Principles of Physical Geography** (SDSU), Instructor, spring 2011, 51 student lecture course

**Spatial Data Analysis** (SDSU), Co-instructor, spring 2011, 23 student lecture course

**Introduction to GIS and GPS,** Instructor, fall 2011, 25 student intensive 3 day course offered in the Chitwan Valley, Nepal.

## **HONORS AND AWARDS (DURING GRADUATE STUDIES)**

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AAG NSF International Geographical Union Conference Travel Grant (Spring 2013, \$1250, declined)

Cotton Bridges Award for GIS Emphasizing Techniques (Spring 2012, \$715)

UCSB Doctoral Student Travel Grant (Spring 2012, \$342.50)

President's Award at 2012 SDSU Student Research Symposium (Spring 2012, \$500)

Inamori Fellowship (Spring 2012, \$5000)

UC Global Health Day Travel Grant (Spring 2012, \$375.00)

William and Vivian Finch Award in Remote Sensing (Spring 2011, \$4200)

Dean's Award at 2011 SDSU Student Research Symposium, with special recognition from SDSU Scholars without Borders (Spring 2011, \$350)

SDSU Graduate Student Travel Fund award to support Nepal fieldwork (Fall 2009, \$750)

NASA-MSU Professional Enhancement Award (Spring 2009, \$700)

**SERVICE TO COMMUNITY**

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Co-lead of Science Based Targets Network Land Hub – developing land sector targets for companies consistent with remaining within planetary boundaries (2019 – present)

Lead of Group on Earth Observations Land Degradation Neutrality (LDN) Initiative Data Analytics Working Group (2018 – present, <https://www.geo-ldn.org>)

Reviewer for: PLoS One, Global Environmental Change, Population and Environment, Land, Landscape Ecology; Environmental Management; Transactions in GIS; Journal of Nature Conservation; Computers, Environment and Urban Systems, Journal of International Development and Cooperation; Agriculture, Ecosystems and Environment; Journal of Applied Ecology; Applied Geography; Sustainability; SciPy (2013-present)

Student Rep. to Human Dimensions of Global Change Specialty Group of the AAG (2012-2014)

Research Rep. to San Diego State University Geography Graduate Student Group (2011-2012)

Founder of San Diego State University Geography Graduate Student Group (2011)

SDSU Hazard Mapping Corps (volunteer team for emergency hazard mapping – 2010-2013)

Developer of multiple open-source software packages for remote sensing and spatial analysis (see <http://github.com/azvoleff>)

**PROFESSIONAL MEMBERSHIPS**

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2011 – Present American Association for the Advancement of Science

2008 – Present Association of American Geographers

2006 – Present American Geophysical Union

**OTHER ACTIVITIES**

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I also enjoy running, biking, photography, cooking, and travel.