Xin Tao

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EDUCATION

University of Maryland, College Park, MD, USA   May 2015
PhD, Geographical Sciences
Thesis: Estimating the fraction of absorbed photosynthetically active radiation from multiple
satellite data

Peking University, Beijing, China   July 2009
MEng, Photogrammetry and Remote Sensing
Thesis: Remote sensing retrieval of FAPAR: model and scaling effect

Peking University, Beijing, China   July 2006
BS, Geographic Information System
Thesis: Blind source separation on mixed pixels in hyperspectral image

EMPLOYMENT

Clinical Assistant Professor, State University of New York at Buffalo,   August 2017–Present
NY, USA

Postdoctoral Associate, University of Maryland, College Park, MD, USA   June 2015–August 2017

Graduate Assistant, University of Maryland, College Park, MD, USA   September 2009–June 2015

Research Assistant, Peking University, Beijing, China   September 2005–June 2009

RESEARCH INTERESTS

Estimation of biogeophysical variables from satellite data.
Data fusion of satellite products.
Scaling effect and scale transformation of biogeophysical variables.

PUBLICATIONS

Journal Articles

Submitted

Tao, X., Huang, C., Zhao, F., Schleeweis, K., Masek, J., Liang, S., Mapping forest disturbance
intensity in North and South Carolina using annual Landsat observations and field inventory data.
Remote Sensing of Environment, In review.

<u>Published</u>

Shen, W., Li, M., Huang, C., **Tao, X.**, & Wei, A. (2018). Annual forest aboveground biomass changes mapped using ICESat/GLAS measurements, historical inventory data, and time-series optical and radar imagery for Guangdong province, China. *Agricultural and Forest Meteorology* 259: 23–38.

Tao, X., Liang, S., Wang, D.D., He, T., & Huang, C. (2018). Improving satellite estimates of fraction of absorbed photosynthetically active radiation through data integration: Method and validation. *IEEE Transactions on Geoscience and Remote Sensing* 56: 2107–2118.

Tao, X., Liang, S., He, T., & Jin, H. (2016). Estimation of fraction of absorbed photosynthetically active radiation from multiple satellite data: Model development and validation. *Remote Sensing of Environment* 184: 539–557.

Tao, X., Liang, S., & Wang, D. (2015). Assessment of five global satellite products of fraction of absorbed photosynthetically active radiation: Intercomparsion and direct validation against ground-based data. *Remote Sensing of Environment* 163: 270–285.

He, T., Liang, S., Wang, D., Shi, Q., & **Tao, X.** (2014). Estimation of high-resolution land surface shortwave albedo from AVIRIS data, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* 7(12): 4919–4928.

Wang, D.L., Yang, J., Sun, G.C., Brolly, M., **Tao, X.**, Xiao, J.H., Sun, G.Q., Wan, Y.C., & Xin, X.P. (2014). SAR imaging and interferometry using parameters estimated from raw data. *Photogrammetric Engineering and Remote Sensing* 80(7): 663–674.

Yao, Y., Fan, W., Liu, Q., Li, L., **Tao, X.**, Xin, X., & Liu, Q. (2010). Improved harvesting method for corn LAI measurement in corn whole growth stages. *Transactions of the Chinese Society of Agricultural Engineering* 26(8): 189–194.

Tao, X., Yan, B., Wang, K., Wu, D., Fan, W., Xu, X., & Liang, S. (2009). Scale transformation of leaf area index product retrieved from multi-resolution remotely sensed data: Analysis and case studies. *International Journal of Remote Sensing* 30(20): 5383–5395.

Xu, X., Fan, W., & **Tao, X.** (2009). The spatial scaling effect of continuous canopy leaves area index retrieved by remote sensing. *Science in China Series D-Earth Sciences* 52: 393–401.

Tao, X., Fan, W., Wang, D., Yan, B., & Xu. X. (2009). Remote sensing retrieval of FAPAR: Model and analysis. *Advances in Earth Science* 24(7): 741–747.

Tao, X., Fan, W., & Xu, X. (2008). Blind separation of component information from hyperspectral data. *Acta Scientiarum Naturalium Universitatis Pekinensis* 44(6): 921–926.

Jin, H., **Tao, X.**, Fan, W., Xu, X., & Li, P. (2007). Monitoring the spatial distribution of high-resolution leaf area index using DMC+4 image. *Progress in Natural Science* 17(9): 1229–1234.

Conference Proceedings

Tao, X., Huang, C., & Zhao, F. (2017). Estimation of forest disturbance intensity from Landsat data in North Carolina and South Carolina. Proceedings of the International Geoscience and Remote Sensing Symposium, July 23–28, Fort Worth, TX, USA, pp. 1111–1114.

Tao, X., Liang, S., & He, T. (2013). Estimation of fraction of absorbed photosynthetically active radiation from multiple satellite data. Proceedings of the International Geoscience and Remote Sensing Symposium, July 21–26, Melbourne, Australia, pp. 3072–3075.

Tao, X., Wang, D., Wu, D., Yan, B., Fan, W., Xu, X., & Yao, Y. (2009). A model for instantaneous FAPAR retrieval: Theory and validation. Proceedings of the International Geoscience and Remote Sensing Symposium, July 12–17, Cape Town, South Africa, pp. 144–147.

Cui, R., Qin, Q., Yang, N., **Tao, X.**, Zhao, S. (2009). The optimization of the crop chlorophyll content indices based on a new LAI determination index. Proceedings of the International Geoscience and Remote Sensing Symposium, July 12–17, Cape Town, South Africa, pp. 3201–3204.

Tao, X., Yan, B., Wu, D., Fan, W., & Xu, X. (2008). A scale transform method for leaf area index retrieved from multi-resolutions remote sensing data. Proceedings of the 8th International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences, June 25–27, Shanghai, China, pp. 176–182.

Yan, B., Fan, W., **Tao, X.**, & Xu, X. (2008). Study on urban heat island of Beijing using ASTER data----a quantitative remote sensing perspective. Proceedings of the International Geoscience and Remote Sensing Symposium, July 7–11, Boston, United States, pp. 1350–1353.

Tao, X., Fan, W., & Xu, X. (2007). Blind separation of component information from mixed pixels in hyperspectral imagery. Proceedings of the International Geoscience and Remote Sensing Symposium, July 23–27, Barcelona, Spain, pp. 3215–3218.

Jin, H., **Tao, X.**, Fan, W., Xu, X., & Li, P. (2007). Monitoring the spatial distribution of high-resolution leaf area index using observations from DMC+4. Proceedings of the International Geoscience and Remote Sensing Symposium, July 23–27, Barcelona, Spain, pp. 3681–3684.

Book Chapters

Liang, S., Wang, D., Cheng, J., He, T., **Tao, X.**, Yao, Y., & Zhang, X. (2018). Methodologies for Integrating Multiple High-Level Remotely Sensed Land Products. In *Comprehensive Remote Sensing*, ed. by Liang, S. Elsevier, Volume 2, 278–317.

Fan, W., & **Tao, X.** (2012). Fraction of Absorbed Photosynthetically Active Radiation by Green Vegetation. In *Advanced Remote Sensing: Terrestrial Information Extraction and Applications*, ed. by Liang, S., Li, X., & Wang, J. Academic Press, 383–414.

PRESENTATIONS

Tao, X., Huang, C., Zhao, F., Schleeweis, K. (2017). Estimation of forest disturbance intensity from Landsat data in North and South Carolinas. *Joint NACP and AmeriFlux Principal Investigators Meeting*. March 26–30, North Bethesda, MD, USA.

Huang, C., Zhao, F., Feng, M., **Tao, X.**, Schleeweis, K., Dungan, J., Goward, S., Masek, J., Hansen, M., Wulder, M., Townshend, J., Nemani, R. (2017). North American Forest Disturbances Assessed from Landsat. *Joint NACP and AmeriFlux Principal Investigators Meeting*. March 26–30, North Bethesda, MD, USA.

Tao, X. (2016). Assessing five global satellite products of fraction of absorbed photosynthetically active radiation: Intercomparsion and direct validation against ground-based data. Invited on July 17, National Oceanic and Atmospheric Administration, College Park, MD, USA.

Huang, C., **Tao, X.**, Zhao, F., Schleeweis, K., Ling, P., Goward, S., Masek, J., Michaelis, A. (2015). Dynamics of industrial forests in Southeast United States assessed using satellite and field inventory data. *American Geophysical Union Fall conference*. December 12–16, San Francisco, CA, USA.

Chung, C., Nagol, J., **Tao, X.**, Anand, A., Dempewolf, J. (2015). Hierarchical object-based image analysis approach for classification of sub-meter multispectral imagery in Tanzania. *American Geophysical Union Fall conference*. December 12–16, San Francisco, CA, USA.

Tao, X., & Liang, S. (2014). A model for estimation of fraction of absorbed photosynthetically active radiation from multiple satellite data. *American Geophysical Union Fall Conference*. December 15–19, San Francisco, CA, USA.

Tao, X., & Liang, S. (2013). Estimation of fraction of absorbed photosynthetically active radiation from multiple satellite data. *American Geophysical Union Fall Conference*. December 9–13, San Francisco, CA, USA.

Tao, X., & Liang, S. (2012). Integration of satellite products and time series curve of FPAR for input in land models. *Association of American Geographers Annual Meeting*, February 24–28, New York City, NY, USA.

Tao, X., Fan, W., Liang, S., & Xu, X. (2010). Estimation of net primary production: Model and analysis. *Association of American Geographers Annual Meeting*, April 14–18, Washington DC, USA.

RESEARCH EXPERIENCE

University of Maryland, College Park, MD, USA   June 2015–present
Postdoctoral Associate
- Estimated forest biomass, age, and disturbance intensity from Landsat time series data over Contiguous U.S.
- Analyze large quantities of Landsat and related dataset to quantify forest and carbon dynamics at national scales using a Linux cloud computing system.

Global Land Cover Facility, College Park, MD, USA   June 2014–June 2015
Research Assistant
- Classified land covers in three African countries based on Landsat and PALSAR data.
- Estimated bare soil fraction and water cover duration.
- Postprocessing FAPAR, evergreen fraction, burned area, NPP products, etc.

University of Maryland, College Park, MD, USA   August 2009–June 2014
Graduate Assistant
- Estimated fraction of absorbed photosynthetically active radiation from multiple satellite data with uncertainty reduced to 0.08 for different types of canopies.
- Assessed radiometric calibration and quality of FY-3 MERSI sensor for land applications.
- Evaluated the climatic effects of lakes in the desert, deforestation, and reforestation across different latitudes through data assimilation in community land model.

Peking University, Beijing, China   September 2005–June 2009
Research Assistant
- Examined the spatial scaling effect of biophysical variables and designed a scaling formula to produce accurate values at different scales.
- Designed and implemented synchronous atmospheric correction and sea surface temperature retrieval with improved accuracy to 3%.
- Investigated blind separation of component information from mixed pixels in hyperspectral image with an error rate below 2%.

TEACHING EXPERIENCE

University at Buffalo, Buffalo, NY, USA
Instructor
GEO120 Maps: Earth from Above, 86 students	Fall 2018
GEO281 Web-based GIS, 46 students (2 sessions)	Fall 2018
GEO503 Mobile GIS, 14 students	Fall 2018
GEO100 World Regions & Issues, 68 students	Spring 2018
GEO106 Global Climate Change, 97 students	Spring 2018
GEO281 Web-based GIS, 111 students	Spring 2018
GEO503 Web programming for GIS, 9 students	Spring 2018
GEO100 World Regions & Issues, 54 students	Fall 2017
GEO106 Global Climate Change, 155 students	Fall 2017
GEO281 Web-based GIS, 26 students	Fall 2017

- Instructing in lectures, developing course materials, and grading assignments and exams.
- Students' assessments are available.

University of Maryland, College Park, MD, USA
Teaching Assistant
GEOG797 Professional Project, 34 students	Spring 2014
GEOG655 Spatial Database System, 53 students	Spring 2014
GEOG677 Internet GIS, 33 students	Winter 2013
GEOG650 Mobile GIS, 24 students	Fall 2013
GEOG651 Spatial Statistics, 19 students	Summer 2013
GEOG657 Web Programming, 45 students	Spring 2013
GEOG652 Remote Sensing Digital Image Processing and Analysis, 19 students	Winter 2012
GEOG651 Spatial Statistics, 31 students	Fall 2012
GEOG651 Spatial Statistics, 10 students	Summer 2012
GEOG796 Project Management, 35 students	Summer 2012
GEOG657 Web Programming, 42 students	Spring 2012
GEOG652 Remote Sensing Digital Image Processing and Analysis, 37 students	Winter 2011

GEOG788R Web Programming, 19 students   Fall 2011
- Instructed in highly-interactive labs weekly, encouraged the participation of students through questions, and graded assignments in a timely fashion.

INTERNSHIP EXPERIENCE

Beijing Oriental TITAN Technology Co., Ltd, Beijing, China   December 2007–April 2008
Intern, Software Developer
- Designed the system structure and user interface in Visual C++ for radiometric calibration and accuracy validation of HY-1B satellite ground application system.
- Guided programmers the functions of modules and helped them to finish successfully.

AWARDS & GRANTS

Tuition Scholarship and Teaching/Research Assistantship, UMD, MD, USA   2009–2015

Jacob K. Goldhaber Travel Grant for attending American Geophysical Union Fall   2014
Conference, San Francisco, CA, USA

Outstanding graduate, Peking University   2009

Outstanding volunteer award for Beijing Olympic and Paralympic Games   2008

Outstanding student and Okamatsu scholarship, Peking University   2008

Outstanding student and CASC scholarship, Peking University   2007

PROFESSIONAL SERVICE

Editorial Board Member
1. Remote Sensing
2. Satellite Oceanography and Meteorology

Peer-reviewer
1. Climate
2. Energies
3. Global Change Biology
4. International Journal of Remote Sensing
5. International Journal of Remote Sensing Applications
6. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
7. IEEE Photonics Journal
8. Multimedia Tools and Applications
9. Remote Sensing
10. Remote Sensing Letters
11. Remote Sensing of Environment
12. Sensors
13. Sustainability
14. Urban Science

PROFESSIONAL MEMBERSHIPS

Institute of Electrical and Electronics Engineers   2007–2018
American Geophysical Union   2009–2018
Association of American Geographers   2010–2018

SKILLS

MS Office Suite, ArcGIS, ENVI, and GDAL
HTML, CSS, JavaScript, C++, Python, MATLAB, IDL, and R Programming
Fluent in English and Chinese