

# DEBSUNDER DUTTA

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## EDUCATION

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<b>University of Illinois at Urbana-Champaign, Ph.D.</b> Department of Civil and Environmental Engineering Hydrology and Remote Sensing	2016
<b>Indian Institute of Technology Kanpur, M.Tech</b> Department of Civil Engineering	2011
<b>Indian Institute of Engineering Science and Technology Shibpur, B.Eng</b> Department of Civil Engineering	2009

## PROFESSIONAL EXPERIENCE

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<b>Assistant Professor</b> , Indian Institute of Science Department of Civil Engineering	Nov 2019 - Present
<b>Postdoctoral Fellow</b> , Jet Propulsion Laboratory, Caltech	2016-2019
<b>Graduate Research Assistant</b> , University of Illinois	2011-2016

## RESEARCH INTERESTS

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Hydrology, Ecohydrology, High Resolution Remote Sensing, Coupling of Water and Carbon Cycles.

## PUBLICATIONS

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- [10] He, L., Magney, T., **Dutta, D.**, Yin, Y., Köhler, P., Grossmann, K., Stutz, J., Dold, C., Hatfield, J., Guan, K., Peng, B., Frankenberg, C. From the Ground to Space: Using Solar-Induced Chlorophyll Fluorescence to Estimate Crop Productivity. *Geophysical Research Letters*, 47, e2020GL087474, 2020. doi:10.1029/2020gl087474.
- [9] He, L., Wood, J., Sun, Y., Magney, T., **Dutta, D.**, Köhler, P., Zhang, Y., Yin, Y., Frankenberg, C. Tracking Seasonal and Interannual Variability in Photosynthetic Downregulation in Response to Water Stress at a Temperate Deciduous Forest. *JGR: Biogeosciences*, 125, e2018JG005002., 2020. doi:/10.1029/2018jg005002.
- [8] Cheng, R., Magney, T. S., **Dutta, D.**, Bowling, D. R., Logan, B. A., Burns, S. P., Blanken, P. D., Grossmann, K., Lopez, S., Richardson, A. D., Stutz, J., and Frankenberg, C. Decomposing reflectance spectra to track gross primary production in a subalpine evergreen forest. *Biogeosciences*, 2020. doi:10.5194/bg-2020-41.
- [7] **Dutta, D.**, Schimel, D. S., Sun, Y., van der Tol, C., and Frankenberg, C. Optimal Inverse Estimation of Ecosystem Parameters from Observations of Carbon and Energy Fluxes. *Biogeosciences*, vol. 16, no. 1, pp. 77-103, 2019, doi:10.5194/bg-16-77-2019.
- [6] Magney, T.S., Frankenberg, C., Kohler, P., North, G., Davis, T.S., Dold, C., **Dutta, D.**, Fisher, J.B., Grossman, K., Harrington, A., Hatfield, J., Stutz, J., Sun, Y., and Porcar-Castell, A. Disentangling changes in the spectral shape of chlorophyll fluorescence: Implications for remote

- sensing of photosynthesis, *JGR:Biogeosciences*, vol. 124, issue. 6, pp. 1491-1507, June 2019, doi:10.1029/2019JG005029.
- [5] **Dutta, D.**, and Kumar, P. A Framework for Global Characterization of Soil Properties Using Repeat Hyperspectral Satellite Data. *IEEE Transactions on Geoscience and Remote Sensing*, vol. 57, issue. 6, pp:3308-3323, Dec 2018, doi:10.1109/TGRS.2018.2883311.
- [4] **Dutta, D.**, Kumar, P., and Greenberg, J. A., Effects of Spatial Filtering for Characterizing Soil Properties from Imaging Spectrometer Data. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. PP, no. 99, pp. 1-22, May 2017, doi:10.1109/JSTARS.2017.2701809.
- [3] **Dutta, D.**, Wang, K., Lee, E., Goodwell, A., Woo, D., Wagner, D., and Kumar, P. Characterizing Vegetation Canopy Structure using Airborne Remote Sensing Data. *IEEE Transactions on Geoscience and Remote Sensing*, vol. 55, no. 2, pp. 1160-1178, Feb 2017, doi:10.1109/TGRS.2016.2620478. *This paper was featured in the cover of the Journal in the February 2017 issue.*
- [2] **Dutta, D.**, Goodwell, A. E., Kumar, P., Garvey, J. E., Darmody, R. G., Berretta, D. P., and Greenberg, J. A., On the Feasibility of Characterizing Soil Properties from AVIRIS Data. *IEEE Transactions on Geoscience and Remote Sensing*, vol. 53, no. 9, pp. 5133-5147, Sep 2015, doi:10.1109/TGRS.2015.2417547. *This paper was featured in the cover of the Journal in the September 2015 issue.*
- [1] Goodwell, A.E., Zhu, Z., **Dutta, D.**, Greenberg, J.A., Kumar, P., Garcia, M.H., Rhoads, B.L., Holmes, R.R., Parker, G., Beretta, D.P., and Jacobson, R.B., Assessment of Floodplain Vulnerability during Extreme Mississippi River Flood 2011. *Environmental Science & Technology*, 2014, vol. 48, no. 5, pp. 2619-2625, 2014, doi:10.1021/es404760t.

## CONFERENCE PROCEEDINGS

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- [1] **Dutta, D.**, and Jain, A., Modelling of Indian summer monsoon rainfall using global climatic teleconnection data. *Proc. of VI EWRA Intl. Symposium, Water Engineering and Management in the Changing Environment, 29 June - 02 July, 2011, Catania, Italy.*

## CONFERENCE PRESENTATIONS

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- [17] European Geophysical Union, General Assembly, 2020 (Presentation). “*Remote Quantification of Land Surface Temperature and Evapotranspiration Using Thermal Infrared Observations from Unmanned Aerial Systems.*”, Drewry, D., Dutta, D., Mallick, K., Johnson, W., and Brockers, R.
- [16] Discussion Meeting on Scale Issues in Hydrology, Hassan, Karnataka, 2019 (Presentation). “*Scale Issues in High Resolution Remote Sensing for Land Surface Modeling*”, Dutta, D.
- [15] JPL Research Day, JPL Pasadena, California, USA, 2019 (Poster). “*Quantifying Information Content of Flux and Remote Sensing Observations for Constraining Key Parameters in Process Based Modeling of Crops*”, Dutta, D. and Frankenberg, C.
- [14] American Geophysical Union Meeting, Washington D.C., USA, 2018 (Poster). “*Inverse Optimal Estimation of Ecosystem Parameters Using Constraining Flux and Remote Sensing Observations.*”, Dutta, D., Schimel, D. S., Magney, T.S., van der Tol, C., and Frankenberg, C.

- [13] JPL Postdoc Research Day, JPL Pasadena, California, USA, 2018 (Poster). “*Optimal Inverse Estimation of Ecosystem Parameters from Observations of Carbon and Energy Fluxes*”, Dutta, D., Frankenberg, C., and Schimel, D. S.
- [12] American Geophysical Union Meeting, New Orleans, Louisiana, USA, 2017 (Poster). “*Characterizing the Diurnal Cycle of Land Surface Temperature and Evapotranspiration at High Spatial Resolution using Thermal Observations from sUAS.*”, Dutta, D., Drewry, D., Johnson, W., and Brockers, R.
- [11] JPL Postdoc Research Day, JPL Pasadena, California, USA, 2017 (Poster). “*Characterizing the Diurnal Cycle of Land Surface Temperature and Evapotranspiration using Thermal Observations from Small UAVs*”, Dutta, D., Drewry, D., Johnson, W., and Brockers, R.
- [10] American Geophysical Union Meeting, San Francisco, California, USA, 2016 (Presentation). “*A Framework for Using Repeat Hyperspectral Satellite Measurements for Global Characterization of Soil Properties.*”, Dutta, D., and Kumar, P.
- [9] JPL Research Poster Conference, JPL Pasadena, California, USA, 2016 (Poster). “*Autonomous Small UAVs for In-Situ Observation of Ecosystem Properties from Leaf to Canopy.*”, Brockers, R., Drewry, D., Delaune, D., and Dutta, D.
- [8] American Geophysical Union Meeting, San Francisco, California, USA, 2015 (Poster). “*Effect of Spatial Resolution for Characterizing Soil Properties from Imaging Spectrometer Data.*”, Dutta, D., Kumar, P., and Greenberg, J. A.
- [7] HypsIRI Science and Applications Workshop, Caltech, Pasadena, California, USA, 2015 (Presentation). “*Effect of Spatial Resolution for Characterizing Soil Properties from Imaging Spectroscopy Data.*”, Dutta, D., Kumar, P. and Greenberg, J. A.
- [6] HypsIRI Science Symposium, Greenbelt, M.D. Washington D.C., USA, 2015 (Presentation and Poster). “*High Resolution Imaging Spectroscopy for Characterizing Soil Properties Over Large Areas.*”, Dutta, D., Kumar, P. and Greenberg, J. A.
- [5] Critical Zone Observatory for Intensively Managed Landscapes, Meeting Urbana, Illinois, USA, 2015 (Poster). “*Characterizing Vegetation Canopy Structure from Airborne Remote Sensing Data.*”, Dutta, D. Wang, K., Lee, E., and Kumar, P.,
- [4] American Geophysical Union Meeting, San Francisco, California, USA, 2014 (Poster). “*High Resolution Imaging Spectroscopy for Characterizing Soil Properties Over Large Areas.*”, Dutta, D. and Kumar, P.,
- [3] American Geophysical Union Meeting, San Francisco, California, USA, 2013 (Poster). “*Mapping of Soil Properties in the Mississippi Floodway Using Imaging Spectrometer Data*”, Dutta, D. Goodwell, A.E., Greenberg, J.A., Kumar, P., Garvey, J.E., Darmody, R.G., and Berretta, D.P.
- [2] HypsIRI Science and Application Workshop, JPL, Caltech, Pasadena, California, USA, 2013 (Presentation). “*Mapping of Soil Properties in the Mississippi Floodway Using Imaging Spectrometer Data*”, Dutta, D. Goodwell, A.E., Greenberg, J.A., Kumar, P., Garvey, J.E., Darmody, R.G., and Berretta, D.P.
- [1] American Geophysical Union Meeting, San Francisco, California, USA, 2012 (Presentation). “*Impact Assessment of Large Scale Floods using Imaging Spectroscopy*”, Dutta, D. and Kumar, P.