Sudip Chakraborty

I investigate the relative influence of different meteorological and land surface parameters, such as convective available potential energy, relative humidity, vertical wind shear, total precipitable water, aerosols, and soil moisture on the mesoscale convective systems, wet season onset, and shallow-deep-convective transition using ground-based measurements and satellites data sets. I am currently studying the influence of atmospheric dynamics (African jets and vorticity), local meteorological conditions (humidity, soil moisture, CAPE, and wind shear), and aerosols on the onset of rainfall reason over the Congo basin. I studied the relative influence of meteorology and aerosols on the longevity, ice water content, and total rain volume at different stages of the convective lifecycle of the mesoscale convective systems, the role of vegetation on the onset of rainy season over the Amazon and the influence of entrainment, boundary layer as well as free tropospheric meteorology, and aerosols on the evolution of shallow to deep convection during the dry-wet transition period. I also studied the transport of aerosols to the middle-upper troposphere by deep convections at different stages of their convective lifecycle. I used different satellite and ground-based measurements for these analyses. My other works include the early drought-warning signal detection over the Great Plains, Texas, and California.

Education

Ph.D. Geological Sciences, Jackson School of Geosciences, the University of Texas at Austin.
Master of Technology, Indian Institute of Technology, Kanpur, India.
Bachelor of Civil Engineering, Government Engineering College, Jalpaiguri, India.

Professional Experience

Postdoctoral Fellow, Jet Propulsion Laboratory, Pasadena, California. October 2018-Present
Postdoctoral Fellow, Department of Atmospheric and Oceanic Sciences, the University of California, Los Angeles. 2017-October 2018
Postdoctoral Fellow, Jackson School of Geosciences, the University of Texas at Austin. June-December 2016.

Publication

Chakraborty, S., R. Fu, D. Rosenfeld, S. T. Massie (2018), Total rainfall volume of the mesoscale convective systems. *Geophysical Research Letters.*

Chakraborty, S., Schiro, K. A., Fu, R., and Neelin, J. D. (2018): On the role of aerosols, humidity, and vertical wind shear in the transition of shallow-to-deep convection at the Green Ocean Amazon 2014/5 site, Atmos. Chem. Phys., 18, 11135-11148, https://doi.org/10.5194/acp-18-11135-2018,2018.

Wright, J. S., R. Fu, J. R. Worden, **S. Chakraborty**, N. E. Clinton, C. Risi, Y. Sun, and L. Yin (2017), Rainforest-initiated wet season onset over the southern Amazon, *Proceedings of the National Academy of Sciences*, doi:10.1073/pnas.1621516114

Chakraborty, S., R. Fu, S. T. Massie, and G. Stephens (2016), Relative influence of meteorological conditions and aerosols on the lifetime of mesoscale convective systems,

Proceedings of the National Academy of Sciences,113(27), 7426-7431, doi:10.1073/pnas.1601935113

Chakraborty, S., R. Fu, J. S. Wright, and S. T. Massie (2015), Relationships between convective structure and transport of aerosols to the upper troposphere deduced from satellite observations, *J Geophys Res-Atmos*, 120(13), 6515-6536.

Rong Fu, Lei Yin, Wenhong Li, Paola A. Arias, Robert E. Dickinson, Lei Huang, **Sudip Chakraborty**, Katia Fernandes, Brant Liebmann, Rosie Fisher and Ranga B. Myneni, Increased dry-season length over southern Amazonia in recent decades and its implication for future climate projection, *Proceedings of the National Academy of Sciences*. 110(45), 18,110–18,115, doi:10.1073/pnas.1302584110.

OUTREACH, SERVICE, AND LEADERSHIP

• Volunteer, Career day, Clover Avenue Elementary School. 2018
I visited the school and met the students to talk about what scientists do. The event was organized by the school to encourage young students to dream about their future.
• Past Member, Language Proficiency Assessment Committee, 2016
Austin Independent School District
Assisted Austin Independent School district in evaluating of the necessity of children from non-native background to learn English before entering kindergarten level.
• Member, The University of Texas Shuttle Committee. 2013- 2014
Assisted the University and the capital metro bus service in organizing various shuttle and bus routes from different locations of the city of Austin to the University.
• Member, Tenant Advisory Board. 2012- 2014
Division of Housing and Food Services, the University of Texas at Austin.
• Chair, Climate Brown Bag. 2012 –2013