

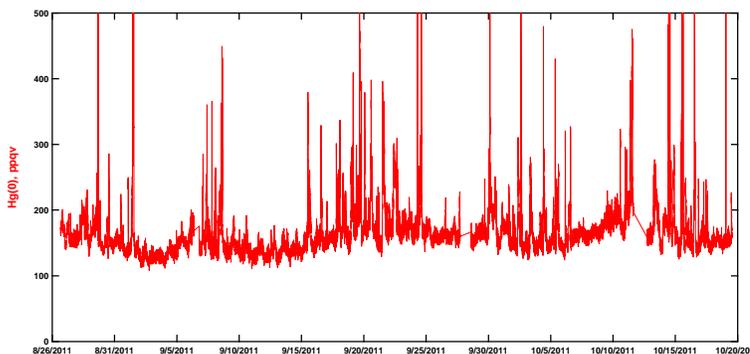
***Institute for Climate & Atmospheric Science
Department of Earth & Atmospheric Sciences
University of Houston
<http://www.imaqs.uh.edu/ICAS/>***



The **Atmospheric Sciences Program at UH** is only a few years old and we are building a world-class foundation that couples measurements and numerical modeling on regional-to-global scales. In the Houston area we operate HNet (<http://www.hnet.uh.edu/>), five air quality monitoring sites that encompass the metropolitan region. Real-time data collected at these sites allows us to study urban emissions, a diverse suite of industrial emissions, and the complex chemistry involving these mixtures mingling with natural terrestrial and marine emissions. In particular, we are interested in halogen radical chemistry intersecting with reactive nitrogen, ozone, and mercury. We are uniquely poised to be leaders in this area. The group has extensive experience using data from satellite platforms to study numerous trace gases including carbon dioxide. We operate a suite of remote sensing instruments situated on campus atop Moody Tower, and some from mobile platforms surveying the local area. Together our faculty, postdoctoral fellows, graduate and undergraduate students form a solid team with diverse experience and knowledge to study important issues impacting planet Earth on various scales.

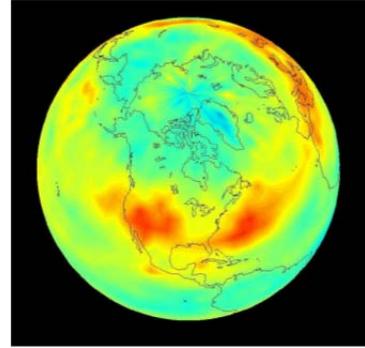


Dr. ROBERT TALBOT is Professor of Atmospheric Chemistry and Director of the Institute for Climate and Atmospheric Science (ICAS). His research interests encompass regional-to-global scale atmospheric circulations and associated transport of trace constituents. Dr. Talbot's primary research areas include: distribution, speciation, and chemistry of mercury in the Earth's atmosphere; intercontinental transport of trace gases and aerosols; regional tropospheric chemistry and climate change in southeastern Texas; climate-air quality connections; biosphere-atmosphere exchange of trace gases; and development of advanced instrumentation for the measurement of reactive trace gases and aerosols (ground and aircraft platforms). Dr. Talbot has been part of the NASA Global Tropospheric Chemistry program since 1983, serving on the science team for 20 major airborne expeditions supported by this program. His work on diverse topics has appeared in more than 250 papers in high-impact professional journals and he is an ISI Highly Cited Researcher. Dr. Talbot operates and air quality station in Nanjing China, and is adjunct Professor of Atmospheric Chemistry in the School of Atmospheric Science at Nanjing University. He also serves as Vice Chair for the Institute for Climate and Global Change Research at Nanjing University. Dr. Talbot is currently measuring the greenhouse gases CO_2 , CH_4 , N_2O , SF_6 and speciated mercury in Houston. A time series plot of elemental mercury is shown in the adjacent figure. The numerous spikes are indicative of the many sources of atmospheric mercury in the Houston area. We are working to identify the specific sources and employing a 3-d regional model to understand mercury better in an urban/industrial area. Phone: (713) 893-1670 Email: rtalbot@uh.edu

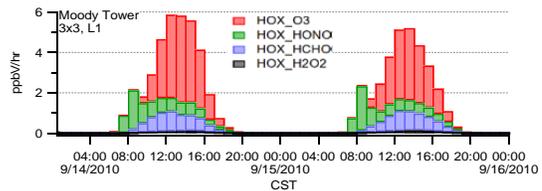


Dr. XUN JIANG is an assistant professor at University of Houston. Her primary research is elucidating the carbon cycle through the satellite data (*e.g.*, AIRS, TES, GOSAT, and OCO-2) and chemistry-transport models (*e.g.*, GEOS-Chem, MOZART-2, and IMATCH). An example of the AIRS mid-tropospheric CO_2 in July

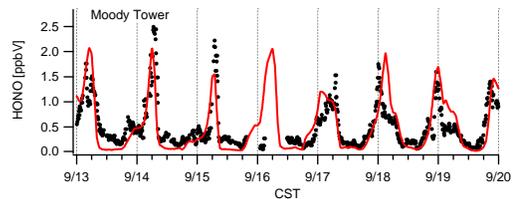
2007 is shown in the figure. She is particularly interested in exploring the variability of CO₂ and utilizing the models to simulate and inverse the CO₂ sources and sinks. Other topics she is pursuing include the coupling between the troposphere and stratosphere, the role of ozone in the global climate change, and the influence of solar cycle on the climate.



Dr. BERNHARD RAPPEGLUECK is an associate professor with Current research combining the fields of meteorology and atmospheric chemistry and involves both experimental field work and numerical modelling. Main research targets include (1) study of trace gases in atmospheric photochemical processes (e.g. carbon monoxide [CO], volatile organic compounds [VOC], nitrogen oxides [NO_x], peroxyacyl nitrates [PANs], ozone [O₃], sulfur dioxide [SO₂]), their origins and their fates in the unpolluted and polluted atmosphere, (2) atmospheric radical chemistry involving formaldehyde [HCHO], hydrogen peroxide [H₂O₂] and nitrous acid [HONO], (3) boundary layer processes and mesoscale meteorology, (4) source apportionment and (5) the application, validation and development of chemistry-transport modelling such as WRF-CMAQ.

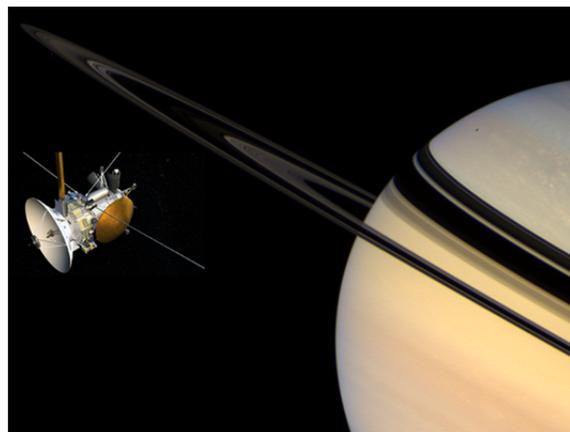


As an example the figure shows a comparison of CMAQ model results versus HONO measurements atop the UH Moody Tower as well as a CMAQ study on the contributions of O₃, HONO, HCHO, and H₂O₂ to HO_x production for two days of the measurement period. Phone: (713) 893-1298 Email: brappenglueck@uh.edu



Dr. LIMING LI is a research assistant professor with research interests in the exploration of planetary atmospheres by combining observations, theories, and numerical models. He is particularly interested in atmospheric dynamics, global heat budget, and

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climate change on the outer planets (i.e., Jupiter, Saturn, Uranus, and Neptune) and Titan. One of his recent studies is to explore the equatorial winds and stratospheric oscillation on Saturn (Li et al., *Nature-Geoscience*, 2011), which is based on the multi-instrument observations from the spacecraft-Cassini (shown in the adjacent figure). Dr. Li also has interests in the atmospheric and oceanic sciences on the terrestrial planets (i.e., Venus, Earth, and Mars) with emphasizing atmospheric energetics and hydrological cycle. Phone: (713) 893-1720 Email: lli7@mail.uh.edu



Dr. BARRY LEFER is an associate professor whose primary research interests are to build a better understanding of the chemical and meteorological conditions that result in ozone exceedances in urban area and to develop and apply new in situ and remote sensing measurement methods to solve atmospheric problems. His current research projects include: (1) an analysis of the impact of clouds and aerosols on ozone production in Houston, Dallas, and Los Angeles; (2) the monitoring of a suite traces gases (O₃, CO, NO, NO₂, NO_y, SO₂) and meteorological measurements from five different sites in Houston; (3) Ozonesonde and radiosonde balloon measurements from four sites Texas and Oklahoma; (4) the development and deployment of a new instrument to measure ozone production directly; (5) using lidar and radiosondes to understand the relationship of boundary layer growth rates and ozone exceedances; (6) airborne trace gas measurements in the L.A. Basin. Phone: (713) 893-1741 Email: blefer@uh.edu

STUDENTS: Institute for Climate and Atmospheric Science at the University of Houston has expertise in satellite remote sensing, regional-to-global air quality, and development of scientific instrumentation. State-of-the-art facilities include advanced instrumentation and computing resources. Students interested in numerical modeling, field measurements, and data analyses are encouraged to apply. Students with a strong background in mathematics, chemistry, and physics are highly desirable.

Applying for Admission

Questions pertaining to application documents, procedure, and status should be addressed to the advising assistant, Sylvia Marshall (smarshall@uh.edu). Questions pertaining to academic program and requirements should be addressed to the graduate advisor, Dr. Xun Jiang (xjiang4@mail.uh.edu).

Website for Ph.D. in Atmospheric Sciences Degree Program

<http://www.geosc.uh.edu/graduate/degree-programs/phd-atmospheric/index.php>

Website for Masters of Science Atmospheric Sciences Degree Program

<http://www.geosc.uh.edu/graduate/degree-programs/ms-atmospheric/index.php>

Deadlines:

Domestic students: The first Friday of July for the Fall, the first Friday of December for the spring, and April 1st for the summer.

International students: General application deadlines are April 1st for the Fall semester, Oct. 1st for the Spring semester, and April 1st for summer enrollment.

Financial Aid

Each year the Institute awards a number of graduate teaching and research assistantships. The Robert and Margaret Sheriff SEG Fellowship is available for first year international students.

Field campaign in Fort Worth, TX in June 2011.



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EARTH AND ATMOSPHERIC SCIENCES

The University of Houston is an Equal Opportunity/Affirmative Action Institution. Minorities, women, veterans and persons with disabilities are encouraged to apply.