ZP11/Jim Smoot/Weekly Notes
9/23/14

MSFC EARTH SCIENTISTS SELECTED TO RECEIVE AMERICAN METEOROLOGICAL SOCIETY AWARD (mail to: dale.quattrochi@nasa.gov/256-9617887; Jluvall@nasa.gov/256-961-7886). Drs. Dale Quattrochi and Jeff Luvall from ZP11 have been selected to receive the 2015 American Meteorological Society (AMS), Helmut E. Landsberg Award at the AMS Annual Meeting to be held in Phoenix, AZ on 1/4-8/15. The Landsberg award recognizes an individual or team for exemplary contributions to the fields of urban meteorology, climatology, or hydrology, including, but not restricted to, achievements through measurements or modeling that provide an improved understanding of atmospheric processes in urban environments, enhanced urban meteorological or air quality forecasting capabilities, advances in identifying and quantifying beneficial and adverse impacts in urban areas. Drs. Quattrochi and Luvall will receive the award for their "Original contributions and leadership in using high-resolution thermal remote sensing data to understand the urban heat island effect and its environmental consequences".

ATTENDANCE AT NATIONAL CLIMATE ASSESSEMENT WORKSHOP ON IMPACTS OF CLIMATE CHANGE IN THE UNITED STATES (mail to: dale.quattrochi@nasa.gov/256-961-7887). Dr. Dale Quattrochi participated in a workshop for drafting of a scientific assessment for the National Climate Assessment (NCA), which is part of the U.S. Global Climate Change Program, on "The Impact of Climate Change on Human Health in the United States", that was held in Washington, DC on 9/10-11/14. Dr. Quattrochi is an author contributor to a chapter being written on Extreme Weather and Impacts on Human Health in the U.S. within the overall purview of climate change. NCA reports are submitted as required to the U.S. Congress every four years to provide input on the state of current and future climate impacts on the U.S.

JOURNAL ARTICLE FOR PUBLICATION (email to: william.koshak@nasa.gov 256-961-7963): A journal article with title, "A Return Stroke NO_x Production Model", authors W. Koshak (NASA/MSFC/ZP11), R. Solakiewicz (Chicago State University), and H. Peterson (Bureau of Indian Affairs) has been accepted for publication in the American Meteorological Society (AMS) Journal of Atmospheric Sciences. The article introduces a model for estimating the nitrogen oxides (NO_x) production from a lightning return stroke channel. It employs a realistic Modified Transmission Line Model (MTLM) return stroke current that propagates vertically upward along a stepped leader channel of 0.1 cm radius. The full nonlinear differential equation for the return stroke channel radius, $r(z,t)$, is solved numerically using Mathematica V9.0.1.0. Channel conductivity and channel air density are adjustable constants, and the model employs typical atmospheric profiles of temperature, pressure, and density. The nitrogen oxides production from each 1 m segment of the channel is computed using conservation of energy and equilibrium freeze-out temperature chemistry. The model provides rigorous results that can be used to improve regional air quality and global climate/chemistry modeling.

JOURNAL ARTICLE FOR PUBLICATION (email to: william.koshak@nasa.gov 256-961-7963; rich.blakeslee@nasa.gov 256-961-7962): A journal article with title, "Variability of CONUS Lightning in 2003-12 and Associated Impacts", authors: W. Koshak (NASA/MSFC/ZP11), K. Cummins (Univ. AZ), D. Buechler (UAH), B. Vant-Hull (CCNY), R.

Blakeslee (NASA/MSFC/ZP11), E. Williams (MIT), and H. Peterson (BIA) has been accepted for publication in the American Meteorological Society (AMS) Journal of Applied Meteorology and Climatology. The study supports NASA's participation in the National Climate Assessment (NCA) program by examining in detail specific lightning related properties that are useful indicators of climate and assessing climate-induced changes in lightning as it impacts the United States.

JOURNAL ARTICLE FOR PUBLICATION (email to: william.koshak@nasa.gov 256-961-7963; rich.blakeslee@nasa.gov 256-961-7962): A journal article with title, "Global Patterns of Lightning Properties Derived by Optical Transient Detector (OTD) and Lightning Instrument Sensor (LIS)", authors S. Beirle (Max-Planck Institute for Chemistry), W. Koshak (NASA/MSFC/ZP11), R. Blakeslee (NASA/MSFC/ZP11), and T. Wagner (Max-Planck Institute for Chemistry) has been accepted for publication in the open access journal Natural Hazards and Earth System Sciences. The article provides global results of several OTD/LIS-inferred lightning characteristics (e.g., number of optical events and groups per lightning flash, mean flash duration, footprint, and radiance). Special attention is given to the spatial distribution of the lightning characteristics, particularly land/ocean differences.