UNIVERSITY OF FLORIDA LIGHTNING RESEARCH GROUP

Department of Electrical and Computer Engineering

Pictures:
The International Center for Lightning Research and Testing (ICLRT) at Camp Blanding, Florida

In October 1994, the University of Florida and Camp Blanding Florida Army National Guard Base signed an agreement forming the International Center for Lightning Research and Testing (ICLRT) for the purpose of advancing the science and technology of lightning. The Center occupies over 100 acres at Camp Blanding, about 45 km north-east of Gainesville, Florida. Airspace is controlled at Camp Blanding so that lightning initiation from overhead thunderclouds using the rocket-and-wire technique can be routinely performed and the resulting triggered lightning studied, in addition to the study of nearby natural lightning (an average of 5 to 6 natural lightning strikes occur on the site each summer). In February 1995, The Electric Power Research Institute (EPRI) donated $1,500,000 (original value) of measurement and other equipment (including six Nicolet digitizing oscilloscopes) to the Center. In May 1997, the University of Florida (UF) in Gainesville donated and installed a 2500 square foot mobile home (value $40,000) to the Center in order to make available both research and living space for UF and visiting investigators. During summers 1995 to 2007 over 40 researchers (excluding UF faculty, students and staff) from 15 countries representing 4 continents have performed experiments at the Center concerned with various aspects of atmospheric electricity, lightning, and lightning protection. Since 2005, the ICLRT has been operated jointly by the University of Florida and the Florida Institute of Technology (FIT). More information on the Center and on the recent results of various experiments are found in the publications listed in the Publication Section below.
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The Lightning Observatory in Gainesville, Florida

In March 1996, University of Florida constructed the five-story New Engineering Building (NEB), on the roof of which is the Lightning Observatory, which includes a glass cupola providing over a 180 degree unobstructed view of the horizon. Lightning electric and magnetic field antennas, an x-ray detector, HF and VHF systems, as well various optical equipment, have been installed on the roof of the NEB. The Observatory is linked to the Camp Blanding facility by a dedicated phone line and is used for studying the various physical processes in natural and triggered lightning.

The Lightning Research Laboratory
On the fifth floor of the NEB, beneath the observatory, is the 1800 square-foot Lightning Research Laboratory where graduate students and visiting scientists are housed and where data is analyzed.

http://www.lightning.ece.ufl.edu/

Publications (1993-2012)

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• "Parameters of Rocket-Triggered Lightning", International Journal of Plasma Environmental Science and Technology (IJPEST), vol. 4, no. 1, March 2010, pp. 80-85, V.A. Rakov


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• "Electromagnetic Pulses Produced by Bouncing-Wave-Type Lightning Discharges", IEEE Trans. on EMC, Special Issue on Lightning, Vol. 51, No. 3, pp. 466-470, August 2009, A. Nag and V.A. Rakov

• "On the NOx production by laboratory electrical discharges and lightning", J. Atmos. Solar Terrestrial Phys., 71 (2009), 1877-1889, V. Cooray, M. Rahman, and V. Rakov

• "On the Electric Field at the Tip of Dart Leaders in Lightning Flashes", J. Atmos. Solar Terrestrial Phys., 71 (2009), 1397-1404, V. Cooray, M. Becerra, and V. Rakov


• "Analysis of microsecond- and submicrosecond-scale electric field pulses produced by cloud and ground lightning discharges", Atmos. Res., 91, 2009, 316-325, A. Nag, B. DeCarlo, and V.A. Rakov

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"Influences of the Presence of a Tall Grounded Strike Object and an Upward Connecting Leader on Lightning Currents and Electromagnetic Fields", IEEE Trans. on EMC, Vol. 49, No. 4, November 2007, pp. 886-892, Y. Baba, and V.A. Rakov


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- "Upward Lightning Discharges: An Update" (Invited), 7th Asia-Pacific International Conference on Lightning, Chengdu, China, November 1-4, 2011, V.A. Rakov.
- "Lightning Parameters for Engineering Applications - an Update on CIGRE WG C4.407 Activities", in Proc. of the XI International Symposium on Lightning Protection (XI SIPDA), Fortaleza, Brazil, October 3-7, 2011, 4 p., V.A. Rakov.
- "FDTD Simulation of Field-Reduction Effect at Ground Due to Corona at Lightning-Triggering Wire" (Invited), XXXth URSI General Assembly and Scientific Symposium, Istanbul, Turkey, August 13-20, 2011, Y. Baba, and V.A. Rakov.
"Evaluation of grounding impedance of a complex lightning protective system using earth ground clamp measurements and ATP modeling", XIV Int. Conf. on Atmospheric Electricity, Rio de Janeiro, Brazil, August 8-12, 2011, accepted, C.T. Mata, A.G. Mata, and V.A. Rakov.


"Positive Lightning: Review and Update" (Invited), in Proc. of the 3rd Int. Symp. on Winter Lightning, Tokyo, Japan, April 5-7, 2011, V.A. Rakov and A. Nag.


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"Recent Topics in Lightning Research", in Proc. of the 4th International Conference on Lightning Physics and Effects (LPE) and GROUND' 2010, Salvador, Brazil, November 7-11, 2010, pp. 270-271, V.A. Rakov

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