RELAMPAGO - Remote Sensing of Electrification, Lightning, And Meso-scale/micro-scale Processes with Adaptive Ground Observations.

Steve Nesbitt [1], Paola Salio [2], Celeste Saulo [2 3]

snesbitt@illinois.edu

[1] University of Illinois at Urbana-Champaign, Urbana, Estados Unidos

[2] Centro de Investigaciones del Mar y la Atmósfera. CONICET-UBA. Departamento de Ciencias de la Atmósfera y los Océanos. FCEN-UBA. Instituto Franco-Argentino sobre Estudios de Clima y sus Impactos UMI 3351 CNRS-CONICET-UBA. Buenos Aires. Argentina.

[3] Servicio Meteorológico Nacional. Buenos Aires. Argentina.

Abstract

RELAMPAGO (Remote sensing of Electrification, Lightning, And Meso-scale/micro-scale Processes with Adaptive Ground Observations) is proposed to be an international multi-agency experimental field program to study the multi-scale aspects of convective storms that have extreme characteristics and impacts, produce an extreme precipitation, and have extreme impacts on the Earth system. The convection on the lee side of the Andes in Central Argentina and downstream into Uruguay, Paraguay and southern Brazil produces severe societal and economic impacts on this densely populated and key agricultural region. Reports of hail, strong straight line and tornadic winds, flooding, and dangerous lightning are common, but not as common as would be expected based on satellite proxies of convection and precipitation. In this data sparse, but modernizing region, we do not know much about aspects of these systems including what governs their structure, initiation and life cycle, extreme behavior, hydrometeorological impacts, connections with the Earth system, as well as similarities and differences with severe weather-producing systems observed in the US and elsewhere. Models exert poor representation and predictability of these systems on nowcasting, synoptic-scale weather to climate timescales. The impacts of these storms on the global electric circuit, aerosol, IN, and CCN budgets, the water cycle, regional and global atmospheric composition and chemistry, and climate variability can be better constrained by detailed observations of the processes occurring in these extreme storms.