Lake Effect Electrification Data Management Plan
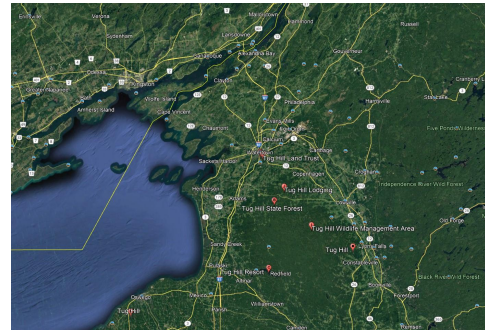## Updated 14 November 2022

Field Phase Dates: November 5, 2022 to January 31, 2023

Location: Upstate New York, Over and Downwind/Lee side of Lake Ontario

Funding: NSF

Participants:

> **State University of New York at Oswego (Lead PI):** Scott Steiger

> **Texas Tech University:** Eric Bruning

> **CIWRO at OU:** Vanna Chmielewski

> **University of Alabama at Huntsville:** Geoffrey Stano

> **Georgia Tech:** John Trostel

> **NCAR/EOL/Data Management & Services (DMS):** Carol Ruchti, Linda Cully

Project Description

The Lake-Effect Electrification (LEE) Project is focused over and east (the typical downwind/lee side) of Lake Ontario between September 2022 and March 2023. Project LEE aims to document, for the first time, the total lightning and electrical charge structures of lake-effect storms and the associated storm environment using a lightning mapping array (LMA), a dual-polarization X-band radar, and balloon soundings that will measure vertical profiles of temperature, humidity, wind, electric field, and hydrometeor types. Previous work has shown that the Great Lakes, especially Lake Ontario, initiate lightning in a mix of precipitation types during lake-effect storms. Most of the Lake Ontario lightning occurs during single, long-axis precipitation bands. Project LEE also affords the opportunity to

improve observations of convective-to-stratiform electrical development due to the shallowness of lake-effect storms and the proximity of these processes to the ground. Finally, lake-effect storm conditions represent minimal thresholds for lightning initiation as many of these storms do not produce lightning.

A more detailed description of the LEE project can be found on the **NCAR EOL LEE Project webpage**.

General Data Management

1. All project participants agree to follow the **LEE Data Policy** and this **LEE Data Management Plan** (this document). This applies to all data collected for the LEE Field project, including NSF PI-supported instrument datasets. All collaborators are expected to make their data publicly available as well. Instrument PIs are committed to following the LEE Data Policy.

2. NCAR EOL will create and provide long term maintenance of the **NCAR EOL LEE Project webpage**.

3. All EOL platform and instrument datasets will follow the **EOL Data Policy** including timely release of quality controlled EOL data and metadata plus full and open sharing of all EOL datasets with the scientific community and public. No requests for additional restrictions of EOL datasets were submitted to the EOL Directorate for the LEE project.

4. Any photographs submitted to the NCAR EOL LEE Data Archive or that are to be displayed anywhere on the NCAR EOL LEE project website must include written permission from all people shown in the photographs.

5. NCAR EOL will maintain a list of publications associated with the LEE Field Project. That list will be accessible on the NCAR EOL LEE Project webpage *Publications* section. Project PIs will be provided instructions on how to submit publication citations to NCAR EOL.

6. NCAR EOL will accept and post LEE meeting presentations (or links to presentations). These will be linked into the *Meetings and Presentations* section of the NCAR EOL LEE Project webpage.

Data Archival

1. NCAR EOL will provide long-term storage, management and online ordering for all datasets submitted to the **NCAR EOL LEE Data Archive** which is accessible via the **Data Access link** on the NCAR EOL LEE Project webpage**.** This archive will include field collected datasets, operational datasets collected by NCAR EOL and links to any datasets archived and managed at accompanying archives.

2. All data from NSF-funded PI instruments will be stored in the NCAR EOL LEE Data Archive or an appropriate, long-term archive as specified and agreed upon by the LEE project PIs.

3. The **LEE Field Catalog** and all contents will be maintained long-term by NCAR EOL. A link to the LEE Field Catalog will be included in the NCAR EOL LEE Data Archive.

4. Data will be archived in the formats specified by the project PIs.
   a. DoW: facility-preferred format and CF-Radial NetCDF
   b. LMAs: Standard ASCII format and NetCDF for flash-level data
   c. Sounding data: Machine-parsable CSV, standard EOL format
   d. EFM data: Machine-parsable CSV
   e. PASIV: Machine-parsable CSV

5. All datasets submitted (*post field phase*) to the NCAR EOL LEE Data Archive will be accompanied by the required **Dataset Documentation and Metadata**.

6. Multiple dataset versions may be submitted to the NCAR EOL Data Archive and all will be retained by NCAR EOL. Only the latest dataset version will be orderable online at any one time. Previous versions of datasets will be provided to users upon request.

7. NCAR EOL will provide an anonymous *(post field phase)* FTP space for all data submitted to the NCAR EOL LEE Data Archive. The NCAR EOL LEE project webpage will include **Data Submission Instructions**.

8. Individual datasets may be password protected and DOIs assigned as specified in the **LEE Data Policy**. **DOI Guidance to authors** will be provided.
   a. NCAR EOL will only assign DOIs to datasets residing in the NCAR EOL LEE Data Archive.
   b. DOIs will not be assigned to Preliminary datasets.

9. All datasets in the NCAR EOL LEE Data Archive that also have DOIs will be linked to the **NCAR GDEX Data Archive**.

In Field Data Collection and Data Sharing

1. In field data collection and data sharing will be provided by the home institutions of each principal investigator.

2. Per the **LEE Data Policy**, "All data shall be promptly provided to other LEE investigators upon request. All LEE investigators will have equal access to all data."

Analysis Products and Software

1. Analysis products and software used to generate them will be archived at the PIs' home institutions, along with substantial documentation of methodologies. It is encouraged that all software necessary to reproduce results be stored on a publicly available repository (such as GitHub) for all data used in manuscripts approved for formal publication.

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