National Climatic Data Center

DATA DOCUMENTATION

FOR

DATA SET 9603 (DSI-9603)

National Lightning Detection Network (NLDN)

January 31, 2007

National Climatic Data Center
151 Patton Ave.
Asheville, NC 28801-5001 USA

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Table of Contents

1. Abstract: These lightning data are incidents of lightning strokes that have been detected by the U.S. National Lightning Data Network (NLDN) sensors and by lightning detectors outside the Continental U.S. These data are retrieved from NOAAPORT and are encoded in binary. U.S. data are identified by their message ID SFUS41 and non-U.S. data by their message ID SFPA41. Decoder software developed at the National Climatic Data Center (NCDC) converts the binary format to a formatted ASCII record. A detailed description of the ASCII record are provided below.

2. Element Names and Definitions:

POS: 1-4
Year
The year the data were observed. A four-digit number.

POS: 5-6
Month
The month the data were observed. Range of values are 01 to 12.

POS: 7-8
Day
The day the data were observed. Range of values are 01 to 31.

POS: 9-10
Hour
The hour the data were observed. Range of values are 00 to 23.

POS: 11-12
Minute
The minute the data were observed. Range of values are 00 to 59.

POS: 13-14
Second
The second the data were observed. Range of values are 00 to 59.

POS: 15
Not Used

POS: 16-24
Latitude
Latitude of the lightning stroke. Format XXX.XXXXX.

MIN: -90.00000 MAX: 90.00000

POS: 25
Not Used

POS: 26-35
Longitude
Longitude of the lightning stroke. Format XXXX.XXXXX.

MIN: -180.00000 MAX: 180.00000

Western hemisphere longitudes range from 0 to -180 degrees, eastern hemisphere longitudes range from 0 to 180 degrees.

POS: 36

Not Used

POS: 37-38

Message Type
This field identifies whether this record was U.S. continental data or an international location.

Values are “FL” and “RT”.

A value of “FL” stands for FLASH and identifies this record as U.S. data.
A value of “RT” stands for Real-Time data type and identifies this record as international data.

POS: 39

Not Used

POS: 40-41

Stroke Type
This field identifies whether this lightning stroke was cloud-to-ground or cloud-to-cloud.

Values are “CG” for cloud-to-ground and “CC” for cloud-to-cloud. FLASH (FL) data are always cloud-to-ground while REAL-TIME (RT) data can be either type.

POS: 42

Not Used

POS: 43-46

Stroke Kiloamps
The stroke kiloamperes.

MIN: -254 MAX: 254

POS: 47

Not Used

POS: 48-49

Deciseconds
Tenths of a second.

MIN: 0 MAX: 9

POS: 50

Not Used

POS: 51-52

Stroke Multiplicity

If the “message type” is Flash (FL), then the value is the stroke multiplicity; otherwise, the value is 0.

MIN: 0 MAX: 15

The NCDC archive began in 2006, but NCDC does have a source to obtain data for the period of 1997-2005. Below is the format for the 1997-2005 format. Files are space separated.

Column	Format
Date	yyyy/mm/dd
Time	hh24:mi:ss.mil
Lat	Decimal Latitude
Lon	Decimal Longitude (west < 0)
Type	0 is cloud to ground, 3 is cloud to cloud
Amplitude	Amplitude of the lightning strike
Error Flag	0 is good, 1 mean lat/lon is probably > 10km off

To compute the convective weather index, we only use those strikes where the AMPLITUDE >= 20 in absolute value. This is to account for new sensors and increasing sensitivity. We tested this to compare against old lightning data and the cut of 20 seems to work well.

3. Start Date: 20060101

4. Stop Date: Present

5. Coverage:

a. Southernmost Latitude: 90° S. Latitude
b. Northernmost Latitude: 90° N. Latitude
c. Westernmost Longitude: 180° W. Longitude
d. Easternmost Longitude: 180° E. Longitude

6. How to Order Data:

Ask NCDC’s Climate Services about the cost of obtaining this data set.
Phone: 828-271-4800
FAX: 828-271-4876
E-mail: **NCDC.Orders@noaa.gov**

7. Archiving Data Center:

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001
Phone: (828) 271-4800.

8. Technical Contact:

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151 Patton Avenue
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Phone: (828) 271-4800.

9. Known Uncorrected Problems: None.

10. Quality Statement:

Disclaimer: While every effort has been made to ensure that these data are accurate and reliable within the limits of the current state of the art, NOAA cannot assume liability for any damages caused by any errors or omissions in the data, nor as a result of the failure of the data to function on a particular system. NOAA makes no warranty, expressed or implied, nor does the fact of distribution constitute such a warranty.

This dataset underwent minimal quality control checks which included verifying that the latitude, longitude, stroke kiloamps, multiplicity, and deciseconds values are within defined limits. NCDC can make no statements relative to any quality control performed prior to receiving the data.

11. Essential Companion Datasets: None.

12. References: None; information provided with original documentation.

13. Revisions: 1/31/07 - In pos. 43 - 46 the descriptions was changed from "MIN: -154 MAX: 154" to "MIN: -254 MAX: 254".