SMEX02 Regional Vegetation Sampling Data, Iowa, Version 1

USER GUIDE

How to Cite These Data

As a condition of using these data, you must include a citation:

Anderson, M. 2003. *SMEX02 Regional Vegetation Sampling Data, Iowa, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. https://doi.org/10.5067/0Q8WOQ3RC8DQ. [Date Accessed].

FOR QUESTIONS ABOUT THESE DATA, CONTACT NSIDC@NSIDC.ORG

FOR CURRENT INFORMATION, VISIT https://nsidc.org/data/NSIDC-0188

National Snow and Ice Data Center

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1 DETAILED DATA DESCRIPTION

1.1 Format

Data are provided as ASCII text files.

1.2 File Naming Convention

"IA_LAI_Raw.txt" contains the raw data; "IA_LAI_Sum.txt" contains the summary data.

1.3 Spatial Coverage

Southernmost Latitude: 41.7° N

Northernmost Latitude: 42.7° N

Westernmost Longitude: 93.8° W

Easternmost Longitude: 93.2° W

1.4 Temporal Coverage

Dates for sampling were 29 and 30 June, and 3, 9, 28, and 29 July 2002.

1.5 Parameter or Variable

1.5.1 Parameter Description

The parameters are plant height, row spacing, stand density, and leaf area index (LAI).

The following table describes each column in the "IA_LAI_Raw.txt" data file.

Column heading	Description
SITE	Site location number
SAMPLE	Sampling point 1-5 for each site location
Latitude	Latitude of the sampling site
Longitude	Longitude of the sampling site
UTM_East	UTM Easting in meters (Zone 15)
UTM_North	UTM Northing in meters (Zone 15)
LAI	Leaf Area Index
Date	MM/DD/YYYY
DAY	Numerical day of the year (Julian date)
Time	HHMMSS (Central Standard Time)

Column heading	Description
Adjusted	Readings corrupted by sun glare were adjusted by an interpolated estimate

The following table describes each column in the "IA_LAI_Sum.txt" data file.

Column heading	Description
SITE	Site location number
Latitude	Latitude of the sampling site
Longitude	Longitude of the sampling site
UTM_East	UTM Easting in meters (Zone 15)
UTM_North	UTM Northing in meters (Zone 15)
DOY	Numerical day of the year (Julian date)
date	MM/DD/YYYY
LAI-Mean	Mean Leaf Area Index
LAI-StDev	Standard deviation of Leaf Area Index
Crop	C=Corn, S=Soy
Row_Spacing in m	Space between rows in meters
Row_Density	Number of plants in one meter
Height in m	Vegetation height in meters

1.5.2 Unit of Measurement

- LAI - The ratio of the area of the upper side of the leaves projected onto a flat surface to the area of the surface.
- Row spacing - The distance in meters between the center of one plant row to the center of the next crop row.
- Row density - The number of plants in one meter within a row.
- Height - The height of the upper leaves in a crop row.

1.5.3 Parameter Source

LAI is measured by a plant canopy analyzer. Row spacing, row density, and plant height were measured manually.

1.5.4 Sample Data Record

The following sample is taken from the "IA_LAI_Raw.txt" data file.

SITE	SAMPLE	Latitude	Longitude	UTM_East	UTM_North	LAI	Date	DOY	TIME	Adjusted
IA01	1	42.65988	-93.71737	441207	4723296	2.45	6/30/2002	181	11:53:30	**
IA01	2	42.65988	-93.71737	441207	4723296	2.71	6/30/2002	181	11:55:24	**
IA01	3	42.65988	-93.71737	441207	4723296	1.87	6/30/2002	181	11:57:01	
IA01	4	42.65988	-93.71737	441207	4723296	2.06	6/30/2002	181	11:58:21	

The next sample is taken from the "IA_LAI_Sum.txt" data file.

SITE	Latitude	Longitude	UTM_East	UTM_North	DOY	date	LAI-Mean	LAI-StDev	Crop	Row_Spacing in m	Row_Density	Height in m
IA01	42.65988	-93.71737	441207	4723296	181	6/30/2002	2.252	0.023	C	0.75	7	1.524
IA02	42.58718	-93.70582	442086	4715215	181	6/30/2002	2.612	0.034	C	0.75	7	2.1336
IA03	42.50662	-93.71921	440911	4706278	181	6/30/2002	1.29	0.072	S	0.75	30	0.381
IA04	42.41222	-93.72801	440099	4695803	181	6/30/2002	2.39	0.089	C	0.75	6	1.524
IA05	42.34171	-93.72867	439977	4687974	181	6/30/2002	1.398	0.025	C	0.75	6	1.397

2 DATA ACQUISITION AND PROCESSING

2.1 Theory of Measurements

The purpose of vegetative sampling is to provide an estimate of the variation in the vegetative components in the corn and soybean fields across the SMEX02 study sites. Sampling dates are provided in the data files for each field.

2.2 Data Acquisition Methods

Five locations were sampled in each field in the IA regional soil moisture sampling site. Samplers chose locations far enough away from each other to gain independent samples. At each location, leaf area was measured at four locations (in-row, ¼ across row, ½ across row, ¾ across row) with the plant canopy analyzer. The first sampling position was between the first row and the row to the left.

Leaf area was measured in the inter-row region at least one meter away from where the manual samples were taken. The analyzer was set to average four locations into a single value, so one observation was taken above the canopy and four beneath the canopy; in the row, ¼ of the way across the row, ½ of the way across the row, and ¾ of the way across the row. This gave a good spatial average for row crops of partial cover. The sampler always stood with the back to the sun (if it was shining). A lens cap that blocks ¼ of the sensor view was always in place and positioned so the sun and the sampler were never in the view of the sensor.

2.3 Derivation Techniques and Algorithms

2.3.1 Error Sources

In the final processing, certain LAI readings were determined to have been corrupted by sun glare. These readings were adjusted or recovered by replacing an interpolated estimate. This was done for approximately 36 of the 236 readings, and one reading was determined to be too corrupted to adjust. A value of "-99" indicates missing or corrupt data.

2.4 Sensor or Instrument Description

LAI sampling was done using LI-COR LAI-2000 instruments.

3 REFERENCES AND RELATED PUBLICATIONS

Please see the SMEX02 site for more information, and the AMSR-E site to access data.

4 CONTACTS AND ACKNOWLEDGMENTS

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5 DOCUMENT INFORMATION

5.1 Publication Date

September 2003

5.2 Date Last Updated

16 April 2021