Standing Crop & Nitrogen Content (FIFE)

Summary:

The FIFE Standing Crop and Nitrogen Content Data Set contains biomass and nitrogen concentration data for live and dead above-ground plant material collected along transects in watersheds within the FIFE study area. The transects were in watersheds that had undergone burning and grazing treatments.

Point physical descriptors (elevation, slope, and soil depth) are also included in the data set. Substantial variation in biomass, and N accumulation occurred over time, with topography, and as a result of grazing and previous burning (Schimel et al. 1991a, Kittel et al. 1990, Turner et al. 1992, Davis et al. 1992).

Table of Contents:

1. Data Set Overview:

Data Set Identification:

Standing Crop & Nitrogen Content (FIFE).
(Standing Crop and Nitrogen Content Along a Transect).

Data Set Introduction:

The FIFE Standing Crop and Nitrogen Content Data Set contains biomass and nitrogen concentration data for live and dead above-ground plant material collected along transects in watersheds within the FIFE study area. Point physical descriptors (elevation, slope, and soil depth) are also included in the data set.

Objective/Purpose:

The objective was to study landscape-scale variation in physiological and biophysical processes and related canopy properties in tallgrass prairie, therefore aid in interpretation and spatial extrapolation of gas exchange measurements made using aerodynamic techniques as part of FIFE.

Summary of Parameters:

Plant biomass, nitrogen concentration, slope, and soil depth.

Discussion:

This data set contains biomass and nitrogen concentration data for live and dead above-ground plant material collected along transects in watersheds within the FIFE study area. The transects were in watersheds that had undergone burning and grazing treatments.

Data were collected on four days, one during each of the IFCs in 1987. Data presented here are by transect point and by IFC for 1987, and are averaged over point replicates. Point physical descriptors (elevation, slope, and soil depth) are also included in the data set. Substantial variation in biomass, and N accumulation occurred over time, with topography, and as a result of grazing and previous burning (Schimel et al. 1991a, Kittel et al. 1990, Turner et al. 1992, Davis et al. 1992).

Related Data Sets:

- Mowing Experiment Biophysical Measurements.
- Vegetation Biomass, Production and Consumption at Selected Sites.
- Biophysical Properties of Vegetation.
- Vegetation Species and Cover Abundance.
- Vegetation Species Reference.

FIS Data Base Table Name:

BIOMASS_TRANSECT_DATA.

2. Investigator(s):

Investigator(s) Name and Title:

Dr. David S. Schimel
Dr. Timothy G.F. Kittel
Dr. William J. Parton

Natural Resources Ecology Laboratory
Colorado State University

Title of Investigation:

Surface Biophysical Properties and Trace Gas Exchange in the Tall Grass Prairie.

Contact Information:

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Requested Form of Acknowledgment.

The Standing Crop and Nitrogen Content Along a Transect data are provided by of D.S. Schimel and T. Kittel (National Center for Atmospheric Research and Colorado State University).

Please cite the following papers:

> Schimel et al. 1991a, Kittel et al. 1990, and Turner et al. 1992.
>
> Citations are given in the *Journal Articles and Study Reports Section*.

3. Theory of Measurements:

Spatial variability in limiting resources for plant growth leads to variation in rates of atmosphere-biosphere exchange of water and carbon dioxide. Current models of biophysical interaction at the land surface generally employ simple representations of vegetation, in which biophysical

processes are assumed to be controlled by temperature, precipitation, and soil hydraulic properties. Ecosystem and physiological models include additional controls over primary production and gas exchange, such as nutrient availability and herbivory. Ecosystem and physiological modelers have consistently identified nutrients to be important regulators of productivity. Because nutrient availability varies at landscape, regional, and global scales, inclusion of nutrient constraints is critical for the correct representation of spatial variability in rates of atmosphere-ecosystem exchange.

4. Equipment:

Sensor/Instrument Description:

- Quadrat sampling frame measuring 0.1 square m was used to identify the plot for vegetation sampling.
- A T-handled probe was used to measure soil depth to a maximum of 50 cm or until bedrock was encountered.
- A Brunton compass was used for slope measurements.
- An inclinometer affixed to a 1-meter ruler was used to measure slope.
- Kjeldahl unit with a block digestor was used for determination of nitrogen.
- Above-ground vegetation samples were collected by hand and then sorted into woody, live and dead fractions
- Vegetation samples were dried in a drying oven.

Collection Environment:

Ground-based.

Source/Platform:

Ground.

Source/Platform Mission Objectives:

The aim was to measure biophysical properties.

Key Variables:

Above-ground biomass and nitrogen content of live, dead, and woody plants.

Principles of Operation:

For the nitrogen analysis, organic nitrogen in the sample was converted to ammonium-nitrogen with concentrated sulfuric acid containing substances that promote this conversion. The ammonium-nitrogen was then determined from the amount of ammonia liberated by distillation of the digest with an alkali.

Above-ground samples for biomass analysis were sorted into live, dead and woody fractions and then dried to constant weight.

Sensor/Instrument Measurement Geometry:

Except for the quadrat frame, the instrumentation used here does not rely on measurement geometry. The metal quadrat sampling frame is 0.1 m square.

Manufacturer of Sensor/Instrument:

Sampling frame and soil depth rod was fabricated in a local shop.

Calibration:

Specifications:

Not applicable.

Tolerance:

Not applicable.

Frequency of Calibration:

Not applicable.

Other Calibration Information:

Not applicable.

5. Data Acquisition Methods:

Plant properties and processes were measured on the ground, using the portable field instruments; and in the laboratory using balances and nitrogen analyzer.

Data samples were collected and measurements were made along east-west transects that spanned watersheds within the FIFE study area, beginning and ending on uplands. Each transect was run in a different prairie treatment area so that their effects could be assessed. The treatments and associated watersheds are as shown below:

Treatment	Watershed Identifier*
long-term unburned-ungrazed (at least through 1987)	UB in sitegrid ID 332-BMN and N4 in sitegrid ID 2619-BMN
annually burned-ungrazed	1D in sitegrid ID 2929-BMN
biennially burned-ungrazed	2D in sitegrid ID 2931-BMN
burned-grazed	R5 in sitegrid ID 1544-BMN

```
and R6 in sitegrid ID1246-BMN
```

* = for the exact location of the watersheds within the Konza Prairie LTER site (UB, N4, 1D, and 2D) see the Miscellaneous Geographic Raster Images document and the data file KTRT_MAP.GRF in the REF_DATA folder on FIFE CD-ROM Volume 5.

All above-ground live and dead plant material were harvested from each plot. Soil depth was measured using a probe.

Mesoslopes, slopes between transect points, were measured using a Brunton compass.

Harvested plant material was separated into live and dead grass, and woody material. Each fraction was dried to constant weight and analyzed for total nitrogen.

6. Observations:

Data Notes:

Not available.

Field Notes:

The location and land management categories for each transect are shown below:

```
TRANSECT NUMBER:  871        (STATION_NAME = S1D)
Watershed: Konza 1D, FIFE sitegrid ID = 2929-BMN
Management: Annually Burned/Ungrazed
Length: 275 m
Beginning Coordinates:  4328280 N (+/-10 m)   710779 E (+/-5 m)
End Coordinates:        4328280 N             711060 E
UTM length discrepancy (UTM - field measured length): +6 m
TRANSECT NUMBER:  872        (S2D)
Watershed: Konza 2D, FIFE sitegrid ID = 2931-BMN
Management: Biennially Burned/Ungrazed (unburned in 1987)
Length: 285 m
Beginning Coordinates:  4328221 N (+/-10 m)   711157 E (+/-5 m)
End Coordinates:        4328187 N             711445 E
UTM length discrepancy (UTM - field measured length): +5 m
TRANSECT NUMBER:  873        (SN4)
Watershed: Konza N4, FIFE sitegrid ID = 2619-BMN
Management: Unburned/Ungrazed (through 1987)
Length: 400 m
Beginning Coordinates:  4328874 N (+/-10 m)   708868 E (+/-5 m)
End Coordinates:        4328874 N             709263 E
UTM length discrepancy (UTM - field measured length): -5 m
TRANSECT NUMBER:  874        (SRG)
Watershed: R6, FIFE sitegrid ID = 1544-BMN, southwest from FIFE
sitegrid ID = 1445-BRL
Management: Burned/Grazed
Length: 250 m
Beginning Coordinates:  4330975 N (+/-10 m)   713795 E (+/-5 m)
```

```
End Coordinates:        4330975 N             713540 E
UTM length discrepancy (UTM - field measured length): +5 m
TRANSECT NUMBER:  875        (SUB)
Watershed: Konza UB, FIFE sitegrid ID = 3322-BMN
Management: Unburned/Ungrazed
Length: 282 m
Beginning Coordinates:  4327383 N (+/-10 m)   709467 E (+/-5 m)
End Coordinates:        4327383 N             709756 E
UTM length discrepancy (UTM - field measured length): +7 m
TRANSECT NUMBER:  876        (SR5)
Watershed: R5, near FIFE sitegrid ID = 1246-BMN
Management: Burned/Grazed
Length: 400 m
Beginning Coordinates:  4331686 N (+/-10 m)   714206 E(+/-5 m)
End Coordinates:         4331686 N (+/-10 m)   713799 E(+/-5 m)
UTM length discrepancy (UTM - field measured length): +7 m
```

7. Data Description:

Spatial Characteristics:

The FIFE study area, with areal extent of 15 km by 15 km, is located south of the Tuttle Reservoir and Kansas River, and about 10 km from Manhattan, Kansas, USA. The northwest corner of the area has UTM coordinates of 4,334,000 Northing and 705,000 Easting in UTM Zone 14.

Spatial Coverage:

Data samples were collected and measurements were made along east-west transects that spanned watersheds within the FIFE study area, beginning and ending on uplands. Detailed information on the starting point for each of the six transects is in the *Field Notes Section*. Transect lengths varied from 250 to 400 m.

All watersheds were in the NW quadrant of the FIFE study area. Four of the watersheds (UB, 1D, N4, and 2D) are within the Konza Prairie LTER site.

Spatial Coverage Map:

Not available.

Spatial Resolution:

Sample plots of 0.1 square m were laid down at about 25-meter intervals along each transect. At each interval, three replicate plots chosen at random distances normal to the transect, (i.e., along with the contour) were selected.

Projection:

Not available.

Grid Description:

Not available.

Temporal Characteristics:

Temporal Coverage:

Samples were taken along the transect during each of the IFC's in 1987. Soil depth measurements were taken only during IFC-1 (28-MAY-87) and mesoslope measurements were taken only during IFC-2 (29-JUN-87).

Temporal Coverage Map:

Not available.

Temporal Resolution:

Transects were run on four days (listed below), one day during each of the Intensive Field Campaigns in 1987. Six transects were run on each of these days (see the *Field Notes Section* for a description of these transects.)

28-MAY-87
29-JUN-87
13-AUG-87
12-OCT-87

One each during each of the 1987 Intensive Field Campaigns.

Data Characteristics:

The SQL definition for this table is found in the BIOMASS.TDF file located on FIFE CD-ROM Volume 1.

Parameter/Variable Name

Parameter/Variable Description	Range	Units	Source
SITEGRID_ID This is a FIS grid location code. Site grid codes (SSEE-III) give the south (SS) and east (EE) cell			FIS

number in a 100 x 100 array of 200 m square cells. The last 3 characters (III) are an instrument identifier.			
STATION_ID This contains the number assigned to the transect along which the data was collected. This and the LOCN_ID will give the location of the collection point.			FIS
OBS_DATE The date of the observations.	min = 28-MAY-87 max = 12-OCT-87		FIS
LOCN_ID The location ID of the collection point. It is also the distance along the transect from the starting point.	min = 0, max = 400	[meters]	FIS
ELEV The elevation of the collection point above sea level.	min = 368, max = 440	[meters]	FIS
MESOSLOPE The mesoslope of the point, in percent, as measured by a Brunton compass. East-facing slopes are positive, and west-facing are negative.	min = -32, max = 27, missing = -9999	[percent]	FIS
MICROSLOPE The microslope of the point, in degrees, as measured by an inclinometer. East-facing slopes are positive, and west-facing are negative.	min = -22.3, max = 19.3, missing = -9999	[degrees]	FIS
SOIL_DEPTH The soil depth at the collection point. missing = -9999.99	min = 0.04, max = 0.5,	[meters]	FIS
LIVE_BIOMASS The live-grass, above-ground biomass, as dry weight.	min = 0, max = 5655	[kg] [hectar^-1]	FIS

DEAD_BIOMASS The dead-grass, above-ground biomass, as dry weight.	min = 0, max = 13497	[kg] [hectar^-1]	FIS
WOODY_BIOMASS The woody, above-ground biomass, as dry weight.	min = 0, max = 4254	[kg] [hectar^-1]	FIS
LIVE_N_CONC The live-grass, above-ground nitrogen concentration. biomass]	min = 0, missing = -9999	[g N] [kg^1	FIS
DEAD_N_CONC The dead-grass, above-ground nitrogen concentration. missing = -9999 biomass]	min = 0, max = 17.46,	[g N] [kg^1	FIS
WOODY_N_CONC The woody, above-ground nitrogen concentration. missing = -9999 biomass]	min = 0, max = 21.32,	[g N] [kg^1	FIS
LIVE_N_PER_AREA The live-grass, areal nitrogen concentration. missing = -9999	min = 0, max = 49.45,	[g N] [hectar^-1]	FIS
FIFE_DATA_CRTFCN_CODE The FIFE Certification Code for the data, in the following format: CPI (Certified by PI), CPI-??? (CPI - questionable data).	CPI=Checked by Principal Investigator	**	FIS
LAST_REVISION_DATE data, in the format (DD-MMM-YY).	max = 28-AUG-89		

Footnote: ** Decode the FIFE_DATA_CRTFCN_CODE field as follows:

The primary certification codes are: EXM Example or Test data (not for release) PRE Preliminary (unchecked, use at your own risk) CPI Checked by Principal Investigator (reviewed for quality) CGR Checked by a group and reconciled (data comparisons and cross checks)

The certification code modifiers are: PRE-NFP Preliminary - Not for publication, at the request of investigator. CPI-MRG PAMS data which is "merged" from two separate receiving stations to eliminate transmission errors. CPI-??? Investigator thinks data item may be questionable.

Sample Data Record:

SITEGRID	STATION_ID	OBS_DATE	LOCN_ID	ELEV	MESOSLOPE	MICROSLOPE
3322-BMN	875	28-MAY-87	25	425	22	19.3
3322-BMN	875	29-JUN-87	25	425	22	10.3
3322-BMN	875	13-AUG-87	25	425	22	16.3
3322-BMN	875	12-OCT-87	25	425	22	15.7

SOIL_DEPTH	LIVE_BIOMASS	DEAD_BIOMASS	WOODY_BIOMASS	LIVE_N_CONC	DEAD_N_CONC
.07	978	8754	91	17.97	11.46
-9999.99	1941	7215	587	9.59	12.28
-9999.99	2896	4417	147	9.34	12.03
-9999.99	0	5473	583	0	6.49

WOODY_N_CONC	LIVE_N_PER_AREA	FIFE_DATA_CRTFCN_CODE	LAST_REVISION_DATE
9.72	17.58	CPI	28-AUG-89
12.65	18.62	CPI	28-AUG-89
6.64	27.06	CPI	28-AUG-89
8.35	0	CPI	28-AUG-89

8. Data Organization:

Data Granularity:

Sample plots of 0.1 square m were laid down at about 25-meter intervals along each transect. Transects were run on four days, one day during each of the Intensive Field Campaigns in 1987. Six transects were run on each of these days.

A general description of data granularity as it applies to the IMS appears in the EOSDIS Glossary.

Data Format:

The CD-ROM file format consists of numerical and character fields of varying length separated by commas. The character fields are enclosed with a single apostrophe. There are no spaces between the fields. Each file begins with five header records. Header records contain the following information: Record 1 Name of this file, its table name, number of records in this file, path and name of the document that describes the data in this file, and name of principal investigator for these data. Record 2 Path and filename of the previous data set, and path and filename of the next data set. (Path and filenames for files that contain another set of data taken at the same site on the same day.) Record 3 Path and filename of the previous site, and path and filename of the next site. [Path and filenames for files of the same data set taken on the same day for the previous and next sites (sequentially numbered by SITEGRID_ID)]. Record 4 Path and filename of the previous date, and path and filename of the next date. (Path and filenames for

files of the same data set taken at the same site for the previous and next date.) Record 5 Column names for the data within the file, delimited by commas. Record 6 Data records begin.

Each field represents one of the attributes listed in the chart in the *Data Characteristics Section* and described in detail in the TDF file. These fields are in the same order as in the chart.

9. Data Manipulations:

Formulae:

Derivation Techniques and Algorithms:

Calculation of nitrogen mass derived for live biomass fraction only:

N_Mass = N_L x Biomass_L

where:

N_L = Nitrogen content of live plant fraction ([kg N][kg plant material^-1])
Biomass_L = Biomass per hectar as dry weight of live plant fraction ([kg][hectar^-1])
N_Mass = Nitrogen content of live plant material ([kg N][hectar^-1]

Data Processing Sequence:

Processing Steps:

Not available at this revision.

Processing Changes:

None.

Calculations:

Special Corrections/Adjustments:

None.

Calculated Variables:

Nitrogen content of live plant material

Graphs and Plots:

None.

10. Errors:

Sources of Error:

Natural spatial variability is the primary source of error.

Quality Assessment:

Data Validation by Source:

All calculations were checked by the Investigators. Data values in FIS was checked against source data sets.

Confidence Level/Accuracy Judgment:

Measurement error was small relative to natural spatial variability. Consequently, data more than adequately reflect spatial heterogeneity due to landscape processes and land management.

Measurement Error for Parameters:

No quantitative assessment was made, see the *Confidence Level/Accuracy Judgment Section*.

Additional Quality Assessments:

FIS staff applied a general Quality Assessment (QA) procedure to the data to identify inconsistencies and problems for potential users. As a general procedure, the FIS QA consisted of examining the maximum, minimum, average, and standard deviation for each numerical field in the data table. An attempt was made to find an explanation for unexpected high or low values, values outside of the normal physical range for a variable, or standard deviations that appeared inconsistent with the mean. In some cases, histograms were examined to determine whether outliers were consistent with the shape of the data distribution.

The discrepancies, which were identified, are reported as problems in the *Known Problems with the Data Section*.

Data Verification by Data Center:

The data verification performed by the ORNL DAAC deals with the quality of the data format, media, and readability. The ORNL DAAC does not make an assessment of the quality of the data itself except during the course of performing other QA procedures as described below.

The FIFE data were transferred to the ORNL DAAC via CD-ROM. These CD-ROMs are distributed by the ORNL DAAC unmodified as a set or in individual volumes, as requested. In addition, the DAAC has incorporated each of the 98 FIFE tabular datasets from the CD-ROMs into its online data holdings. Incorporation of these data involved the following steps:

- Copying the entire FIFE Volume 1, maintaining the directory structure on the CD-ROM;
- Using data files, documentation, and SQL code provided on the CD-ROM to create a database in Statistical Analysis System (SAS); and
- Creating transfer files to transfer the SAS metadata database to Sybase tables.

Each distinct type of data (i.e. "data set" on the CD-ROM), is accompanied by a documentation file (i.e., .doc file) and a data format/structure definition file (i.e., .tdf file). The data format files on the CD-ROM are Oracle SQL commands (e.g., "create table") that can be used to set up a relational database table structure. This file provides column/variable names, character/numeric type, length, and format, and labels/comments. These SQL commands were converted to SAS code and were used to create SAS data sets and subsequently to input data files directly from the CD-ROM into a SAS dataset. During this process, file names and directory paths were captured and metadata was extracted to the extent possible electronically. No files were found to be corrupted or unreadable during the conversion process.

Additional Quality Assurance procedures were performed as follows:

- Statistical operations were performed to calculate minimum and maximum values for all numeric fields and to create a listing of all values of the character fields. During this process, it was determined that various conventions were used to represent missing values. (Note: no modifications were made to any data by the DAAC). In most cases, missing value identification conventions were discussed in the accompanying .doc file. Based on a visual check of the minimum and maximum values, no glaring errors or holes were identified that might indicate errors introduced during CD-ROM mastering by the FIFE project or data ingest by the DAAC.
- Some minor inconsistencies and typographical errors were identified in some of the character fields and column labels, however, no modifications were made to the data by the DAAC.
- Some conversions of ASCII data were necessary to move the data from a DOS platform to a UNIX platform. Standard operating system conversion utilities were used (e.g., dos2unix).
- Much of the metadata required for archival is imbedded in the narrative documentation accompanying the data sets and extracted manually by DAAC staff who have read the .doc files provided on the CD-ROM and have hand entered this information into the metadata database maintained by the DAAC. QA procedures have been performed on these metadata to identify and eliminate typographical errors and inconsistencies in naming conventions, to ensure that all required metadata is present, and to ensure the accuracy of file names and paths for retrieval.
- Data requested for distribution to users are checked to verify that files copied from disk to other media remain uncorrupted.

As errors are discovered in the online tabular data by investigators, users, or DAAC staff, corrections are made in cooperation with the principal investigators. These corrections are then distributed to users. CD-ROM data are corrected when re-mastering occurs for replenishment of CD-ROM stock.

11. Notes:

Limitations of the Data:

Not available.

Known Problems with the Data:

errors in the data have been reported:

Results of the FIS staff quality assessment:

> The data provider reported missing values as '-9999.99'. But the QA analysis revealed that missing values are '-9999', '-9999.9' or '-9999.99'.

Usage Guidance:

See Schimel et al. (1991a) and other references in the *Journal Articles and Study Reports Section* for scientific context of the data set.

Any Other Relevant Information about the Study:

The transect numbers given in the *Field Notes Section* are the same as the FIFE Station_IDs given in the chart in the *Data Characteristics Section*.

12. Application of the Data Set:

This data set can be used for interpretation and spatial extrapolation of gas exchange measurements made using aerodynamic techniques.

13. Future Modifications and Plans:

The FIFE field campaigns were held in 1987 and 1989 and there are no plans for new data collection. Field work continues near the FIFE site at the Long-Term Ecological Research (LTER) Network Konza research site (i.e., LTER continues to monitor the site). The FIFE investigators are continuing to analyze and model the data from the field campaigns to produce new data products.

14. Software:

Software to access the data set is available on the all volumes of the FIFE CD-ROM set. For a detailed description of the available software see the *Software Description Document*.

15. Data Access:

Contact Information:

ORNL DAAC User Services
Oak Ridge National Laboratory

Telephone: (865) 241-3952
FAX: (865) 574-4665

Email: ornldaac@ornl.gov

Data Center Identification:

ORNL Distributed Active Archive Center
Oak Ridge National Laboratory
USA

Telephone: (865) 241-3952
FAX: (865) 574-4665

Email: ornldaac@ornl.gov

Procedures for Obtaining Data:

Users may place requests by telephone, electronic mail, or FAX. Data is also available via the World Wide Web at http://daac.ornl.gov.

Data Center Status/Plans:

FIFE data are available from the ORNL DAAC. Please contact the ORNL DAAC User Services Office for the most current information about these data.

16. Output Products and Availability:

The Standing Crop and Nitrogen Content Along a Transect data are available on FIFE CD-ROM Volume 1. Portions of this data set are in two different locations on FIFE CD-ROM Volume 1. Data from five of the six transects (see the *Field Notes Section* for transect descriptions) are in the following location:

\DATA\BIOLOGY\BIOMASS\GRIDxxxx\ydddgrid.BTR

where *xxxx* is the four digit code for the location within the FIFE site grid. Note: capital letters indicate fixed values that appear on the CD-ROM exactly as shown here, lower case indicates characters (values) that change for each path and file.

The format used for the filenames is: *ydddgrid.sfx*, where *grid* is the four-number code for the location within the FIFE site grid, *y* is the last digit of the year (e.g., 7 = 1987, and 9 = 1989), and *ddd* is the day of the year (e.g., 061 = sixty-first day in the year). The filename extension (.*sfx*), identifies the data set content for the file (see the *Data Characteristics Section*) and is equal to .BTR for this data set.

Data from the sixth transect was not received in time to integrate it with the data listed above. These data can be found in the GRABBAG section of the CD-ROM.

17. References:

Satellite/Instrument/Data Processing Documentation.

Nelson, D.W., and L.E. Sommers. 1980. Total nitrogen analysis of soil and plant tissues. J. Assoc. Official Anal. Chem. 63:770-778.

Journal Articles and Study Reports.

Davis, F.W., D.S. Schimel, M.A. Friedl, J.C. Michaelsen, T.G.F. Kittel, R. Dubayah, and J. Dozier. 1992. Covariance of Biophysical Data With Digital Topographic and Landuse Maps Over the FIFE Site. J.Geophys. Res. 97:19009-19021.

Kittel, T.G.F., A.K. Knapp, T. Seastedt, and D.S. Schimel. 1990. A Landscape View of Biomass, LAI, and Photosynthetic Capacity. pp. 66-69. In: Symposium on FIFE: First ISLSCP Field Experiment. F. Hall and P.J. Sellers (eds.). American Meteorological Society. Boston, Mass.

Parton, W.J., D.S. Schimel, C.V. Cole, and D.S. Ojima. 1987. Analysis of Factors Controlling Soil Organic Matter Levels in Great Plains Grasslands. Soil Sci. Soc. Am. J. 51:1173-1179.

Schimel, D., M.A. Stillwell, and R.G. Woodmansee. 1985. Biogeochemistry of C, N, and P in a Soil Catena of the Shortgrass Steppe. Ecology 66:276-282.

Schimel, D.S., T.G.F. Kittel, A.K. Knapp, T.R. Seastedt, W.J. Parton, and V.B. Brown. 1991a. Physiological Interactions Along Resource Gradients in a Tallgrass Prairie. Ecology 72:672-684.

Schimel, D.S., T.G.F. Kittel and W.J. Parton. 1991b. Terrestrial Biogeochemical Cycles: Global Interactions With the Atmosphere and Hydrology. Tellus 43 AB:188-203.

Schimel, D.S., F.W. Davis, and T.G.F. Kittel. 1992. Spatial Information for Extrapolation of Canopy Processes. In: Scaling and Physiological Processes: Leaf to Globe. J Ehleringer and C. Field (eds.). Academic Press. San Diego. In press.

Turner, C.L., T.R. Seastedt, M.I. Dyer, T.G.F. Kittel, and D.S. Schimel 1992. Effects of Management and Topography on the Radiometric Response of Tallgrass Prairie. J. Geophys. Res. 97:18,855-18,866.

Archive/DBMS Usage Documentation.

Contact the EOS Distributed Active Archive Center (DAAC) at Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee (see the *Data Center Identification Section*). Documentation about using the archive and/or online access to the data at the ORNL DAAC is not available at this revision.

18. Glossary of Terms:

A general glossary for the DAAC is located at Glossary.

19. List of Acronyms:

CD-ROM Compact Disk-Read Only Memory CSU Colorado State University DAAC Distributed Active Archive Center EOSDIS Earth Observing System Data and Information System FIFE First ISLSCP Field Experiment FIS FIFE Information System IFC Intensive Field Campaign ISLSCP International Satellite Land Surface Climatology Project ORNL Oak Ridge National Laboratory SQL Structured Query Language URL Uniform Resource Locator UTM Universal Transverse Mercator

A general list of acronyms for the DAAC is available at Acronyms.

20. Document Information:

May 9, 1994 (citation revised on October 14, 2002).

Warning: This document has not been checked for technical or editorial accuracy by the FIFE Information Scientist. There may be inconsistencies with other documents, technical or editorial errors that were inadvertently introduced when the document was compiled or references to preliminary data that were not included on the final CD-ROM.

Previous versions of this document have been reviewed by the Principal Investigator, the person who transmitted the data to FIS, a FIS staff member, or a FIFE scientist generally familiar with the data.

Document Review Date:

January 9, 1996.

Document ID:

ORNL-FIFE_BIOMASS.

Citation:

Cite this data set as follows:

Schimel, D. S., T. G. Kittel, and W. J. Parton. 1994. Standing Crop and Nitrogen Content (FIFE). Data set. Available on-line [http://www.daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A. doi:10.3334/ORNLDAAC/118. Also published in D. E. Strebel, D. R. Landis, K. F. Huemmrich, and B. W. Meeson (eds.), Collected Data of the First ISLSCP Field Experiment, Vol. 1: Surface Observations and Non-Image Data Sets. CD-ROM. National Aeronautics and Space Administration, Goddard Space Flight Center, Greenbelt, Maryland, U.S.A. (available from http://www.daac.ornl.gov).

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