

Database Code: TD018

Title: Nitrogen fixation and respiration potential of conifer logs at Andrews Experimental Forest, 1987 to 2006

Abstract:

These data provide a time series of changes in nitrogen fixation rates, and respiration rates for four common PNW species. The purpose is to understand when these rates reach a maximum.

Keywords: Coarse woody debris; Coarse woody debris - terrestrial; Logs; Long-Term Ecological Research (LTER); Moisture content; Moisture stress; N-fixation; Nitrogen; Nitrogen fixation; Organic matter; Respiration; Respiration rates; Snags; Inorganic nutrients; Inorganic nutrients; Organic matter; Long-Term Ecological Research (LTER); water content; respiration rates; respiration; nitrogen fixation; inorganic nutrients; coarse woody debris; nitrogen; organic matter; terrestrial ecosystems; logs; moisture stress;

Date data commenced: 1987-03-01

Date data terminated: 2006-05-15

Principal Investigator: Mark E. Harmon

List of Entities:

1. Acetylene Reduction and Respiration: Raw Data
2. Acetylene Reduction and Respiration: Means and Std. Errors
3. Tissue and overall Log Densities
4. Weighted average Respiration Rate for Log and Tissue Samples

1. Acetylene Reduction and Respiration: Raw Data

Attribute List:

DBCOD	N	N	char(5)	enum			
ENTITY	N	N	numeric(2,0)	range	1.0000	1.0000	number
STUDYID	Y	N	char(4)	place			
YEAR	Y	N	numeric(4,0)	range			YYYY
TIME	Y	N	numeric(4,0)	range	4.0000	248.0000	number
SITE	Y	Y	char(1)	enum	1.0000	6.0000	
SPECIES	Y	N	char(4)	taxa			
TISSUE	Y	N	char(2)	enum			
POSITION	Y	N	char(1)	enum			
NUMBER	Y	N	numeric(4,0)	range	1.0000	741.0000	number
REP	Y	N	char(1)	freetext			
ETHYLENE	N	Y	numeric(6,3)	range	-3.8800	75.9250	ppm
ETIME	N	Y	numeric(3,0)	range	0.0000	29.0000	hours
PRODE	N	Y	numeric(7,3)	range	-3.7090	129.7900	nmol/g*day
CO2	N	Y	numeric(6,3)	range	-0.3600	3.3000	%
TIMECO2	N	Y	numeric(5,2)	range	-0.0100	4.7500	hours
RESPIR	N	Y	numeric(7,4)	range	-2.4400	9.7300	umol/g*hr

DRYWT	N	N	numeric(4,2)	range	0.1300	3.8300	g
WETWT	N	Y	numeric(4,2)	range	0.9500	3.7600	g
MC	N	Y	numeric(6,1)	range	6.5000	1488.0000	%
OXYGEN	N	N	numeric(2,0)	range	0.0000	2.0000	%
SAMPLEDATE	N	N	date	range	3/15/1987	5/15/2006	YYYY-MM-DD
					12:00:00 AM	12:00:00 AM	

## 2. Acetylene Reduction and Respiration: Means and Std. Errors

### Attribute List:

DBCOD	N	N	char(5)	enum			
ENTITY	N	N	numeric(2,0)	range	2.0000	2.0000	number
STUDYID	Y	N	char(4)	place			
YEAR	Y	Y	numeric(4,0)	range	5/1/1987	5/1/2006	YYYY
					12:00:00 AM	12:00:00 AM	
TIME	Y	N	numeric(4,0)	range	0.0000	140.0000	number
SPECIES	Y	N	char(4)	taxa			
TISSUE	Y	N	char(2)	enum			
MEANPRODE	N	N	numeric(8,3)	range	0.0000	28.7100	nmol/g*day
STDERRE	N	N	numeric(7,3)	range	0.0000	20.2940	nmol/g*day
NE	N	N	numeric(3,0)	range	0.0000	24.0000	number
MEANRESP	N	N	numeric(7,4)	range	0.0000	8.7240	umol/g*hr
STERRR	N	N	numeric(7,4)	range	0.0000	1.4245	umol/g*hr
NRESP	N	N	numeric(3,0)	range	3.0000	24.0000	number
MC	N	N	numeric(6,1)	range	0.0000	575.6000	%
STDERRMC	N	N	numeric(5,1)	range	0.0000	230.0000	%
NMC	N	N	numeric(3,0)	range	0.0000	24.0000	number

## 3. Tissue and overall Log Densities

### Attribute List:

DBCOD	N	N	char(5)	enum			
ENTITY	N	N	numeric(2,0)	range	3.0000	3.0000	number
STUDYID	N	N	char(4)	place			
YEAR	Y	N	numeric(4,0)	range			YYYY
TIME	Y	N	numeric(4,0)	range	0.0000	140.0000	number
SUB	Y	N	char(2)	enum			
SPECIES	Y	N	char(4)	taxa			
SUBDEN	N	N	numeric(5,3)	range	0.1480	0.5710	g/cm3

LOGDEN	N	N	numeric(5,3)	range	0.1920	0.4540	g/cm3
SAMPLEDATE	N	Y	date	range	3/18/1991	3/17/1998	YYYY-MM-DD
					12:00:00	12:00:00	
					AM	AM	

#### 4. Weighted average Respiration Rate for Log and Tissue Samples

**Attribute List:**

DBCOD	N	N	char(5)	enum			
ENTIT	N	N	numeric(2,0)	range	4.0000	4.0000	number
STUDYID	N	N	char(4)	place			
TIME	Y	Y	numeric(4,0)	range	1.0000	140.0000	number
SPECIES	Y	N	char(4)	taxa			
SECTION	Y	Y	char(1)	freetext			
LOGETHYL	N	Y	numeric(8,3)	range	0.0000	8.9640	nmol/g*day
LOGRESP	N	Y	numeric(7,2)	range	0.0000	2.8000	ug/g*day
LOGMC	N	Y	numeric(5,1)	range	0.0000	438.0000	%

Attributes Definitions:

CO2

CO2 increase over incubation

DBCOD

FSDB Database code

DRYWT

Dry weight

ENTIT

Entity number

ETHYLENE

Ethylene produced during incubation

ETIME

Length of the ethylene incubation

LOGDEN

Mean density of the log at sample time. used to calculate the relative mass of a tissue type.

LOGETHYL

Weighted mean rate of ethylene production for entire log. tissue samples were weighted by relative mass (dry weight basis)

LOGMC

Weighted mean moisture content for logs. tissue values were weighted by relative mass.

LOGRESP

Weighted mean respiration potential at 15 deg C for entire logs. tissue samples were weighted by relative mass (dry weight basis)

MC

Moisture content of the samples

MEANPRODE

Mean production rate of ethylene on a gram dry weight per day basis

MEANRESP

Mean respiration rate (dry weight basis)

NE

Number of samples used to calculate the mean ethylene production

NMC

Number of samples used to calculate the moisture content

NRESP

Number of samples used to compute the respiration rate

NUMBER

Number of test tube used for incubation

OXYGEN

Oxygen at start of the ethylene incubation

POSITION

Position in cross-section sampled

PRODE

Production rate of ethylene on a gram dry weight per day basis

REP

Replicate for species and tissue type

RESPIR

Respiration rate at 15 deg C (dry weight basis)

SAMPLEDATE

Date of sample collection

SECTION

Cross-section of log the tissue samples were pooled from.

SITE

Site that the log samples were removed from; refers to sites described under TD14 studies

SPECIES

Species of the log sampled; follows garrison conventions

STDERRE

Standard error of ethylene production. note that all negative values were set to 0 before calculation.

STDERRMC

Standard error of the moisture content

STERRR

Standard error of the respiration measurements (dry weight basis)

STUDYID

Location of the sample collection

SUB

Tissues of the log sampled. also called substrate.

SUBDEN

Mean density of tissue at sample time.

TIME

Time in months that the log has been rotting in the field.

TIMECO2

Length of the CO2 incubation

TISSUE

Tissue type of the log sampled

WETWT

Wet weight

YEAR

Year of sample collection

Enumerated Domains:

Enumerated Domain for Attribute: DBCODE

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Enumerated Domain for Attribute: POSITION

T	Top of log
S	Side of log
B	Bottom of log
M	Mixed position; taken from any position randomly

Enumerated Domain for Attribute: SITE

1	End of 327 road
4	W of 350 road near junction of 350 and 1506

Enumerated Domain for Attribute: TISSUE

HW	Heartwood
IB	Inner bark
OB	Outer bark
SW	Sapwood

Enumerated Domain for Attribute: DBCODE

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Enumerated Domain for Attribute: TISSUE

HW	Heartwood
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IB	Inner bark
OB	Outer bark
SW	Sapwood

Enumerated Domain for Attribute: DBCODE  
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Enumerated Domain for Attribute: SUB	
HW	Hardwood
IB	Inner bark
OB	Outer bark
SW	Softwood

Enumerated Domain for Attribute: DBCODE  
TD018 FSDb database code TD018