

LBA-ECO CD-04 Leaf Litter Data, km 83 Tower Site, Tapajos National Forest, Brazil

Revision date: January 13, 2011

Summary:

Above-ground litter productivity was measured in a 18 ha plot adjacent to the eddy flux tower at the logged forest tower site, km 83, Tapajos National Forest, Para, Brazil. Thirty litter baskets distributed within the grid were visited bi-weekly (Goulden et al., 2004). Oven dry mass of leaves, wood, reproductive parts and miscellaneous components of the collected litter was determined for each collection. Collections covered a pre-harvest period (Sept 2000 - July 2001) and a post-harvest period (Aug 2001-Mar 2003). There is one comma-delimited data file with this data set.

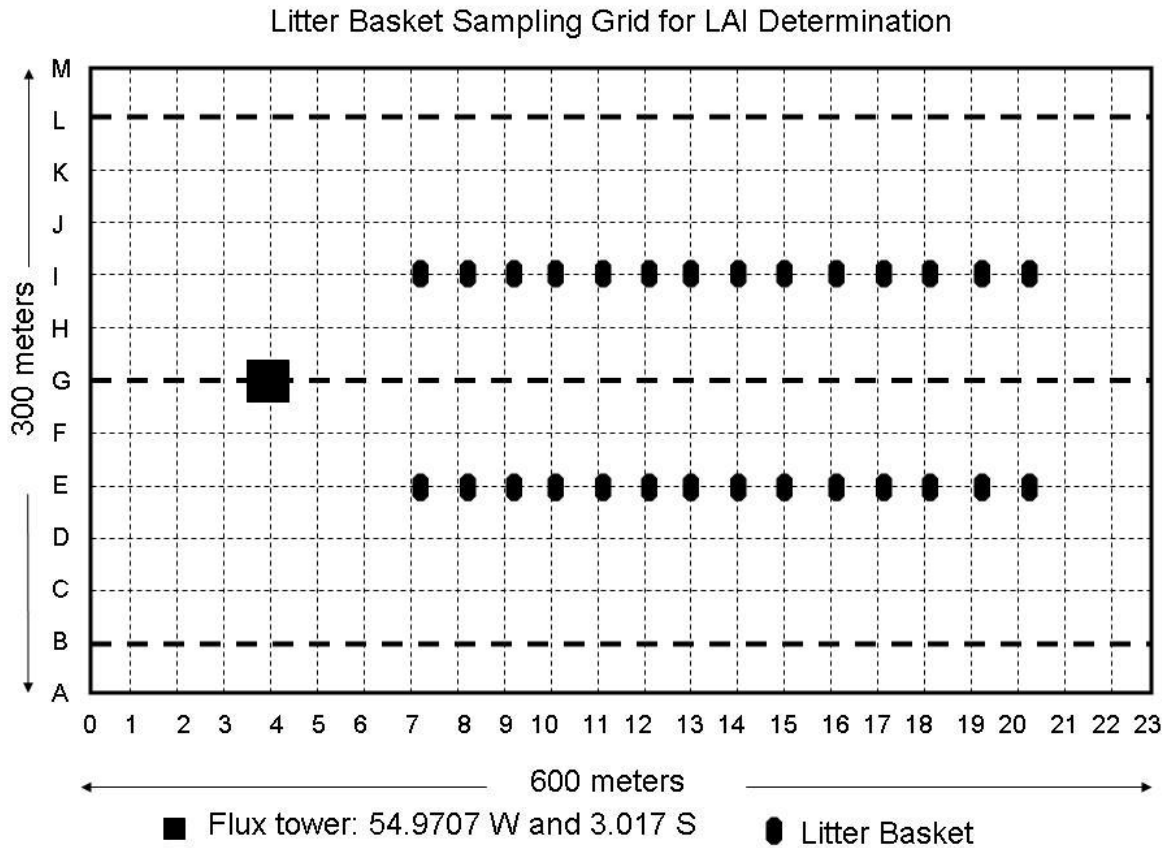


Figure 1. Leaf litter basket locations

Data Citation:

Cite this data set as follows:

Figuera, M., C.A.D. de Sousa, M. Menton, R. Juarez, H.R. da Rocha, S.D. Miller, and M.L. Goulden. 2011. LBA-ECO CD-04 Leaf Litter Data, km 83 Tower Site, Tapajos National Forest, Brazil. Data set. Available on-line [<http://daac.ornl.gov>] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A. [doi:10.3334/ORNLDAAC/991](https://doi.org/10.3334/ORNLDAAC/991)

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This data set was archived in January of 2011. Users who download the data between January 2011 and December 2015 must comply with the LBA Data and Publication Policy.

Data users should use the Investigator contact information in this document to communicate with the data provider. Alternatively, the LBA Web Site [<http://lba.inpa.gov.br/lba/>] in Brazil will have current contact information.

Data users should use the Data Set Citation and other applicable references provided in this document to acknowledge use of the data.

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1. Data Set Overview:

Project: LBA (Large-Scale Biosphere-Atmosphere Experiment in the Amazon)

Activity: LBA-ECO

LBA Science Component: Carbon Dynamics

Team ID: CD-04 (Goulden / Rocha)

The investigators were Goulden, Prof. Michael L.; Menton, Mary Catherine; Miller, Dr. Scott Dennis; Rocha, Prof. Humberto Ribeiro da; Figuera, Michela; Cleilim Albert Sousa and Robinson Juarez . You may contact Miller, Dr. Scott Dennis (smiller@albany.edu) and Goulden, Dr. Michael L. (mgoulden@uci.edu)

LBA Data Set Inventory ID: CD04_Leaf_Litter

Carbon and water cycles in a forest ecosystem are highly dependent on the canopy structure and biomass. However there have been few studies that have quantified the dynamic relationship between biomass and atmospheric fluxes from tropical forest ecosystems. As National Forests in the Amazon region are increasingly opened to logging, the lack of information on the relationships between biomass and C cycling complicates our understanding of the potential impacts of these activities. This study measured the temporal dynamics of above-ground litter production in a primary forest, the Tapajos National Forest, before and after a selective harvest of commercial species. Above-ground litter productivity was measured in a 18 ha plot adjacent to the eddy flux tower at km 83, Tapajos National Forest, Para, Brazil. Thirty litter baskets distributed on two transects within the grid were visited bi-weekly. Oven dry mass of leaves, wood, reproductive parts and miscellaneous components of the collected litter was determined. Before the harvest (Sept 2000 through July 2001) mean annual litter production was 4.41 Mg C ha⁻¹ compared to a mean value of 3.96 Mg C ha⁻¹ after logging (Aug 2001-Aug 2002). These data suggest logging caused a reduction in litter productivity of approximately 10%. No further modifications to the data are anticipated.

Related Data Sets

- [LBA-ECO CD-04 Dendrometry, km 83 Tower Site, Tapajos National Forest, Brazil](#) (Dendrometry study at the same site)
- [LBA-ECO CD-04 Leaf Area Index, km 83 Tower Site, Tapajos National Forest, Brazil](#) (LAI from the same site calculated using a different method)
- [LBA-ECO CD-04 Biomass Survey, km 83 Tower Site, Tapajos National Forest, Brazil](#) (DBH of trees from same site)

2. Data Characteristics:

Litter productivity at the km 83 tower site in the Tapajos National Forest was measured bi-weekly between September 2000 and March 2003 and the mean values for the collections are reported in a single comma-delimited ASCII file: CD04_km83_litter.csv .

Column Number	Heading	Units/format	Description
1	Date	yyyy/mm/dd	Sample date
2	Day_cum		"Days since January 1, 2000"
3	Wt_leaves	g/m2	Mean dry weight of identifiable leaves and leaf fragment in the collected litter divided by trap area (1.0 m2)

4	Wt_wood	g/m2	Mean dry weight of wood in the collected litter divided by trap area (1.0 m2)
5	Wt_reprod_tiss	g/m2	Mean dry weight of identifiable fruits and flowers in the collected litter divided by trap area (1.0 m2)
6	Wt_misc	g/m2	Mean dry weight of unidentifiable organic material and insects in the collected litter divided by trap area (1.0 m2)
7	Wt_litter	g/m2	Mean dry weight of total litter collection divided by trap area (1.0 m2)

Example data records:

Date,Day_cum,Wt_leaves,Wt_wood,Wt_reprod_tiss,Wt_misc,Wt_litter
2000/09/26,269,54.1,19.2,6.34,6.04,85.69
2000/10/10,283,23.86,13.91,6.72,5.36,49.84
2000/10/24,297,21.74,8.51,4.58,5.03,39.86
...
2001/01/16,381,11.57,5.6,2.43,3.82,23.41
2001/01/30,395,12.8,6.17,1.42,2.2,22.58
2001/03/26,450,17.84,7.45,0.63,1.25,27.16

Site boundaries: (All latitude and longitude given in decimal degrees)

Site (Region)	Westernmost Longitude	Easternmost Longitude	Northernmost Latitude	Southernmost Latitude	Geodetic Datum
Para Western (Santarem) - km 83 Logged Forest Tower (Para Western (Santarem))	-54.9707	-54.9707	-3.017	-3.017	World Geodetic System, 1984 (WGS-84)

Time period:

- The data set covers the period 2000/09/01 to 2003/03/10.
- Temporal Resolution: bi-monthly

Platform/Sensor/Parameters measured include:

- FIELD INVESTIGATION / WEIGHING BALANCE / LITTER CHARACTERISTICS
- FIELD INVESTIGATION / WEIGHING BALANCE / BIOMASS

3. Data Application and Derivation:

Seasonal patterns in litter quantity and composition are essential components of C cycle models. Comparison of pre- and post-harvest data allows for the quantification of the impact of selective harvesting on canopy size and productivity.

4. Quality Assessment:

Data have been reviewed and no problems found.

5. Data Acquisition Materials and Methods:

This work was done at the Tapajos National Forest (TNF), a 6,000,000 ha conservation area of humid tropical forest with a mean canopy height of 40 m. The study site is located 50 km south of Santarem, Para via an access road at km 83 of the Santarem-Cuiaba Highway. Mean annual precipitation of 1,911 mm has been recorded at a weather station in Belterra, Para 50 km from the study sites (INEMET 1992), with a dry season extending from August through November.

A 18 ha plot adjacent to the eddy flux tower at km 83, Tapajos National Forest, was established in September 2000. Thirty litter baskets were located on two E-W transects within the grid. Each litter basket measured 1 m x 1 m and was supported 0.1 m above the ground. Baskets were visited bi-weekly starting in late September 2000 and litter collections followed Newbould (1970). Litter from each basket was air-dried at the LBA laboratory in Santarem, sorted into 4 categories (leaves, wood (< 2 cm diameter), reproductive parts and miscellaneous (material that could not be identified as well as insect bodies and frass). Each sub-sample was then oven dried at 50 degrees Celsius and weighed to determine mass.

6. Data Access:

Data are available through the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC).

Data Archive Center:

Contact for Data Center Access Information:

E-mail: uso@daac.ornl.gov
Telephone: +1 (865) 241-3952

7. References:

Goulden, M.L., S.D. Miller, H.R. da Rocha, M.C. Menton, H.C. de Freitas, A.M.E.S. Figueira, and C.A.D. de Sousa 2004. Diel and seasonal patterns of tropical forest CO₂ exchange Ecological Applications 14(4) Supplement, 2004, pp. S42-S54.

Newbould, P.J. 1970. Methods for estimating the primary production of forests. IBP Handbook No. 2. Blackwell Scientific Publications, Oxford, England. 62 p.