

# **MEGAN Community Data Portal (CDP) User Guide**

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The latest version of this guide and any updates on MEGAN code and input data are described at <http://lar.wsu.edu/megan/guides.html>

The Model of Emissions of Gases and Aerosols from Nature (MEGAN) requires landcover and weather variables to drive biogenic emission variations. The weather variables currently must be provided by the user. Global distributions of landcover variables are available at a base resolution of 30 seconds latitude X 30 seconds longitude (~ 1km<sup>2</sup>) in ARCGIS format. The Input Data Preprocessors User Guide (see <http://lar.wsu.edu/megan/guides.html>) describes how to regrid these files to a specific model domain using GIS. Lower resolution files are available in NETCDF format.

The MEGAN code and input data can be downloaded from the MEGAN CDP which is located on the NCAR community data portal (URL: <http://cdp.ucar.edu>). Enter "MEGAN" into the search box. First time users will need to register before you can view or download the data.

As of October 1, 2007, the MEGAN CDP has the following folders and data:

## Contents of the MEGAN CDP

### MEGAN Version 2.0

```
|
| - CODE
|   |
|   | - MEGANv2.03.tar.gz
|   |
|   | INPUT
|   |   |
|   |   | - ESRI_GRID_30sec
|   |   |   |
|   |   |   | - EF
|   |   |   |   |
|   |   |   |   | - EF.zip
|   |   |   |   | - ef21.zip
|   |   |   |   | - efmt21.zip
|   |   |   | - EF_PFT
|   |   |   |   |
|   |   |   |   | - EFPFT.zip
|   |   |   | - LAI
|   |   |   |   |
|   |   |   |   | - LAI03fall.zip
|   |   |   |   | - LAI03spring.zip
|   |   |   |   | - LAI03summer.zip
|   |   |   |
|   |   |
|   |
|
```

- PFT
  - PFT.zip
  - PFT21.zip
- WP
  - WP.zip
- NETCDF\_150sec
  - EF
    - EF.zip
    - ef21.zip
    - efmt21.zip
  - EF\_PFT
    - EFPFT.zip
  - LAI
    - LAI20.zip
  - PFT
    - PFT.zip
    - PFT21.zip
  - WP
    - WP.zip
- NETCDF\_30min
  - EF
    - EF.zip
    - ef21.zip
    - efmt21.zip
  - EF\_PFT
    - EFPFT.zip
  - LAI
    - LAI20.zip
  - PFT
    - PFT.zip
    - PFT21.zip



ociall200021: ocimene (OCIM variable in EFMAP\_LAI.csv)  
pinaall200021: alpha-pinene (APIN variable in EFMAP\_LAI.csv)  
pinball200021: beta-pinene (BPIN variable in EFMAP\_LAI.csv)  
saball200021: sabinene (SABI variable in EFMAP\_LAI.csv)

This is version 2.1 of the MEGAN monoterpene emission factors. They are representative of present day emissions (year 2000). These data were released in August 2007.

**EF\_PFT:** Emission factors for individual PFTs. This is made available for models that provide their own PFTs. The units are  $\mu\text{g compound m}^{-2} \text{ h}^{-1}$ .

There is currently 1 EF\_PFT dataset:

**EFPFT.zip** contains isoall2000. This is version 2.0 of the MEGAN PFT emission factors. This is the PFT isoprene emission factors described in Guenther et al. 2006.

**LAI:** Leaf Area Index (LAIv) averaged over vegetation covered surfaces. The units are  $\text{m}^2$  per  $1000 \text{ m}^2$ . Divide by 1000 to get units of  $\text{m}^2 \text{ m}^{-2}$  which is required for the EFMAP\_LAI.csv input file for MEGAN code

**LAI03spring.zip** contains

LAIv200301: LAIv for January 2003  
LAIv200302: LAIv for February 2003  
LAIv200303: LAIv for March 2003  
LAIv200304: LAIv for April 2003

**LAI03summer.zip** contains

LAIv200305: LAIv for May 2003  
LAIv200306: LAIv for June 2003  
LAIv200307: LAIv for July 2003  
LAIv200308: LAIv for August 2003

**LAI03fall.zip** contains

LAIv200309: LAIv for September 2003  
LAIv200310: LAIv for October 2003  
LAIv200311: LAIv for November 2003  
LAIv200312: LAIv for December 2003

**LAI20.zip** contains

LAIv200301: LAIv for January 2003  
LAIv200302: LAIv for February 2003  
LAIv200303: LAIv for March 2003  
LAIv200304: LAIv for April 2003  
LAIv200305: LAIv for May 2003  
LAIv200306: LAIv for June 2003  
LAIv200307: LAIv for July 2003  
LAIv200308: LAIv for August 2003  
LAIv200309: LAIv for September 2003  
LAIv200310: LAIv for October 2003  
LAIv200311: LAIv for November 2003

LAIv200312: LAIv for December 2003

This is version 2.0 of the MEGAN LAIv. This is the LAIv data described in Guenther et al. 2006.

**PFT:** fraction of a grid covered by a plant functional type for the year 2001. The units are non-dimensional. Note that the PFTs do not necessarily add up to one since part of the grid may not have vegetation (e.g. barren, rock, ice, water).

Version 2.0 has 6 PFTs:

BTR: broadleaf trees

FTD: fineleaf deciduous trees

FTE: fineleaf evergreen trees

CRP: crops

GRS: grass

SHR: shrub

Version 2.1 combines FTD and FTE into a single category (NTR=needleleaf trees)

It is an input for determining PFT weighted emission factors

**PFT21.zip** contains

btr200121: fraction of grid covered by broadleaf trees

ntr200121: fraction of grid covered by needleleaf trees

grs200121: fraction of grid covered by grass

crp200121: fraction of grid covered by crops

shr200121: fraction of grid covered by shrubs

Version 2.0 is the PFT data described in Guenther et al. 2006.

**WP:** Wilting point. The soil moisture level below which plants cannot extract water from soil. The units are  $\text{m}^3 \text{m}^{-3}$ . It is an input for the MEGAN algorithm characterizing the response of isoprene emission to soil moisture (equation 20 in Guenther et al. 2006)

**WP.zip** contains

WPtop: WP for top soil layer

WPbot: WP for lower soil layer

This is version 2.0 of the MEGAN WP. This is the WP data described in Guenther et al. 2006.

### III. OUTPUT FOLDER

This folder will contain emission rates generated using MEGAN with the provided driving variables. We will provide this after posting a version of the MEGAN FORTRAN code which will have more choices of input formats for weather (temperature, solar radiation) driving variables. Users currently must generate their own MM5 weather model outputs. We will also post weather data in the INPUT folder so that users can compare their model output for selected test cases.