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VEMAP 1: SELECTED MODEL RESULTS

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Summary:

The Vegetation/Ecosystem Modeling and Analysis Project (VEMAP) was a multi-institutional, international effort that addressed the response of biogeography and biogeochemistry to environmental variability in climate and other drivers in both space and time domains. The objectives of VEMAP were to study the intercomparison of biogeochemistry models and vegetation type distribution models (biogeography models) and to determine their sensitivity to changing climate, elevated atmospheric carbon dioxide concentrations, and other sources of altered forcing.

Selected variable output results from the VEMAP Phase I modeling exercise are now available for several combinations of biogeochemistry and biogeography models and climate change scenarios through the ORNL DAAC.

For a description of the models and climate scenarios employed in the VEMAP 1 Project and a discussion of the results please refer to the following publication:

> VEMAP Members. 1995. Vegetation/Ecosystem Modeling and Analysis Project: Comparing biogeography and biogeochemistry models in a continental-scale study of terrestrial ecosystem responses to climate change and CO2 doubling. Global Biogeochem. Cycles 9:407-437.

The companion file, VEMAP1_model_results_readme.pdf, contains a complete listing of the available data files for the respective models, with links to the README files that describe in general the contents and the specific file naming protocols. Also included are descriptions of the various models used in VEMAP 1.

A complete user's guide to the VEMAP Phase 1 database can be found at Phase_1_User_Guide.pdf

The ORNL DAAC maintains additional information associated with the VEMAP Project.

Data Citation:

Cite this data set as follows:

Kittel, T.G.F., N.A. Rosenbloom, T.H. Painter, D.S. Schimel, H.H. Fisher, A. Grimsdell, VEMAP Participants, C. Daly, and E.R. Hunt, Jr. 2004. VEMAP 1: Selected Model Results. ORNL DAAC, Oak Ridge, Tennessee, USA. http://dx.doi.org/10.3334/ORNLDAAC/731.

References:

Kittel, T. G. F., N. A. Rosenbloom, T. H. Painter, D. S. Schimel, and VEMAP Modeling Participants. 1995. The VEMAP integrated database for modeling United States ecosystem/vegetation sensitivity to climate change. Journal of Biogeography 22:857-862.

VEMAP Members. 1995. Vegetation/Ecosystem Modeling and Analysis Project: Comparing biogeography and biogeochemistry models in a continental-scale study of terrestrial ecosystem responses to climate change and CO_2 doubling. Global Biogeochem. Cycles 9:407-437.

Data Format:

VEMAP Grid Characteristics

The grid used for the VEMAP coverage is a 0.5-deg. latitude x 0.5-deg. longitude grid covering the conterminous U.S. Grid edges are aligned with 1.0-deg. and 0.5-deg. latitude-longitude lines; grid centers are located at 0.25-deg. and 0.75-deg. latitude-longitude intersections. Latitude and longitude for each cell are included in the VEMAP data set.

The grid's minimum bounding rectangle (MBR) is defined by grid domain corners. The full 0.5deg. VEMAP grid contains 5520 cells, with 115 columns and 48 rows.

VEMAP grid corners defining the minimum bounding rectangle (MBR).

Grid Position	Longitude*	Latitude
Lower Left Corner	-124.5deg.	25.0deg.
Upper Right Corner	-67.0deg.	49.0deg.

*Negative longitudes are degrees West.

Gridded Data Files

All gridded VEMAP data files are in an ASCII format based on, but not identical to, the SVF format specified by the GENAMAP Geographic Information System (GIS). Typical SVF files have 2 header lines followed by a 6-digit integer array. In contrast, VEMAP files have 5 header lines.

The first 2 lines are a VEMAP data access policy statement, followed by a blank line. These first 3 lines must be removed in order to convert the file to standard SVF format.

The 4th header line is a title line identifying the gridded variable and its units. For continuous data (i.e., non-categorical data sets), we also include the scale factor used to convert values to stored integers. Division are also in the title line.

The 5th header line gives the gridded array's column and row indices (as four 6-digit integers): 1, 115 and 1, 48.

The header lines are followed by the gridded VEMAP integer array, which is dimensioned 115 columns x 48 rows (Section 3). The 6-digit integers in the VEMAP array include at least one blank space so that values in the file are space delimited. The array starts in the northwest corner of the grid, with the column index running west to east and row index running north to south.

> **Layout of the VEMAP gridded array, with grid cell ID numbers.**
>
> **Column 1 - to - 115**
>
> **Row 1**   1   2   3   4   ...115
>
>   116   117   118   119   ...230
>
>   231...
>
> **-to-**
>
> **... Row 48**   ... 5520

The full grid contains 5520 grid cells, 3261 of which are within the boundaries of the conterminous U.S. and predominantly covered by land Background cells (ocean and inland water cells) are assigned the value of -9999.

Example SVF format data file:

VEMAP model results are proprietary and belong to the model group indicated.
For information see README file on ftp.ucar.edu, or contact Tim Kittel (kittel@ncar.ucar.edu).

Evapotranspiration (mm/yr) - Contemporary climate, 355ppm, BIOME2 vveg. SCALED BY: 1.0 (BGC-GESSYS version 2.4, July 1994, U of Montana)
1 115 1 48
-9999 -9999 -9999 721 955 703 316 255 238 282 314 324 335 422 549 340 632 461 470 450 410 165 451 388 300 304 302 299 362 397
370 326 329 334 350 335 325 343 376 375 355 346 390 402 415 448 406 458 431 403 419 449 436 454 466 506 522 -9999 -9999 -9999
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999
-9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999

Document Information:

19-Sep-2004

Document Review Date:

19-Sep-2004

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