

Global Soil Texture and Derived Water-Holding Capacities (Webb et al.)

Summary:

A standardized global data set of soil horizon thicknesses and textures (particle size distributions) was compiled by Webb et al. This data set will be used for the improved ground hydrology parameterization design for the Goddard Institute for Space Studies General Circulation Model (GISS GCM) Model III. The data set specifies the top and bottom depths and the percent abundance of sand, silt, and clay of individual soil horizons in each of the 106 soil types cataloged for nine continental divisions. When combined with the World Soil Data File (Zobler, 1986), the result is a global data set of variations in physical properties throughout the soil profile. These properties are important in the determination of water storage in individual soil horizons and exchange of water with the lower atmosphere. The incorporation of this data set into the GISS GCM should improve model performance by including more realistic variability in land-surface properties.

All data are global at a 1 degree resolution and are provided in ASCII format. The profile data are also offered in ESRI export file format. The primary data consist of depth and particle size (percent sand, silt, and clay) information for each major continent, soil type, and soil horizon. Ocean/continental coding (corresponding to FAO/UNESCO Soil Map of the World) (FAO/UNESCO, 1971-1981) and Zobler soil type classifications (Zobler, 1986) are also included. In addition to the primary data files, there are also four derived data sets available for download: (1) data on potential storage of water in the soil profile, (2) data on potential storage of water in the root zone, (3) data on potential storage of water derived from soil texture, and (4) a data set used to prescribe water-holding capacity in the GISS GCM (Model II).

Data Citation

Cite this data set as follows:

Webb, R. W., C. E. Rosenzweig, and E. R. Levine. 2000. Global Soil Texture and Derived Water-Holding Capacities (Webb et al.). 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/ORNLDAAAC/548](https://doi.org/10.3334/ORNLDAAAC/548).

References:

Food and Agriculture Organization - United Nations Educational, Scientific, and Cultural Organization (FAO-UNESCO). 1971-1981. Soil Map of the World, 1:5,000,000, Volumes II-X. UNESCO, Paris, France.

Webb, R. S., C. E. Rosenzweig, and E. R. Levine. 1991. A Global Data Set of Soil Particle Size Properties, NASA Technical Memorandum 4286. NASA Goddard Institute for Space Studies, New York, New York, U.S.A.

Webb, R. S., C. E. Rosenzweig, and E. R. Levine. 1993. Specifying Land Surface Characteristics in General Circulation Models: Soil Profile Data Set and Derived Water Holding Capacities. *Global Biogeochemical Cycles* 7(1):97-108.

Zobler, L. 1986. A World Soil File for Global Climate Modelling. NASA Technical Memorandum # 87802. NASA Goddard Institute for Space Studies, New York, New York, U.S.A.

Data Format:

For information on parameter/variable names, variable description/definition, units of measurement, and data file format, see these companion files:

ftp://www.daac.ornl.gov/data/global_soil/WebbRosenzweig/comp/readme.txt and
ftp://www.daac.ornl.gov/data/global_soil/WebbRosenzweig/comp/readme2.txt.

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