*UNEP/GRID Documentation Summary for Data Set:*

# World Soils for Global Climate Modelling (Zobler)

The Zobler "World Soil File for Global Climate Modelling" shows the global distribution of soil types, including data for dominant soil units (classification of soil types), slope classes, soil texture classes and soil phases. These have been generalized from the FAO Soil Map of the World (FAO, 1974) and the Matthews Vegetation data (1984) into one-degree square latitude/longitude grid cells, using a dot grid overlay technique to determine the largest map unit of each one-degree cell. The data are suitable for large-area studies such as climate research with GCMs, or small-scale studies in soils, agriculture, forestry and hydrology (Staub and Rosenzweig, 1987). UNEP/GRID offers users a total of five related data files (described below), which have been extracted from the original "World Soil File" as it was obtained on magnetic tape from the National Geophysical Data Center (NGDC) in Boulder, Colorado, USA.

The five data files available from UNEP/GRID are the following: 1) a generalized version of the soil units with 27 categories, which correspond to the 26 so-called 'Great Soil' groups and ice; 2) the complete version of the soil units with 106 soil classes; 3) the dominant soil slopes with seven slope categories; 4) the dominant soil textures with eight texture categories; and 5) the dominant soil phases with 18 phase categories (not all one-by-one degree land cells have phase values associated with them, and the GRID version of this data layer shows only one out of up to four phases). New legends have been developed for each of the five data layers, which include the same classes but slightly different numbering schemes than the original Zobler "World Soil File".

The five data files extracted by UNEP/GRID from the Zobler "World Soil File for Global Climate Modelling" and distributed in a generic image format all have the following characteristics: spatial resolution of one degree latitude/longitude; one byte or eight bits per pixel; 180 rows (lines or records) by 360 columns (elements/pixels/samples) of data; origin point of 90 degrees North latitude and 180 degrees West longitude; extent to 90 degrees South latitude and 180 degrees East longitude; file size of 64.8 kilobytes each.

The reference to this data set is "Zobler, L., 1986, A World Soil File for Global Climate Modelling, NASA Technical Memorandum 87802, NASA Goddard Institute for Space Studies (GISS), 2880 Broadway, New York, N.Y. 10025, USA". Another useful document for users who may acquire the original data tape from NASA/GISS or the U.S. National Geophysical Data Center (NGDC) is that of "Staub, B. and C. Rosenzweig, Oct. 1987, Global Digital Data Sets of Soil Type, Soil

Texture, Surface Slope and other Properties: documentation of archived data tape, NASA Technical Memorandum #100685, NASA/GISS (address as above), 19 pages."

GRID LEGEND FOR ZOBLER'S "WORLD SOIL FILE" GREAT SOIL GROUPS

| Class# | Soil Classification Unit |
|---|---|
| (0 | Water ) |
| 1 | Acrisols |
| 2 | Cambisols |
| 3 | Chernozems |
| 4 | Podzoluvisols |
| 5 | Rendzinas |
| 6 | Ferralsols |
| 7 | Gleysols |
| 8 | Phaeozems |
| 9 | Lithosols |
| 10 | Fluvisols |
| 11 | Kastenozems |
| 12 | Luvisols |
| 13 | Greyzems |
| 14 | Nitosols |
| 15 | Histosols |
| 16 | Podzols |
| 17 | Arenosols |
| 18 | Regosols |
| 19 | Solonetz |
| 20 | Andosols |
| 21 | Rankers |
| 22 | Vertisols |
| 23 | Planosols |
| 24 | Xerosols |
| 25 | Yermosols |
| 26 | Solonchaks |
| (27 | Permanent Land-Ice) |

GRID LEGEND FOR ZOBLER'S "WORLD SOIL FILE" SOIL UNIT TYPES

| Class# | Soil Unit Codes and Names (Dominant Types) | | |
|---|---|---|---|
| (0 | | Water) | |
| 1 | | E | Rendzinas |
| 2 | | I | Lithosols |
| 3 | | U | Rankers |
| | A | ACRISOLS | |
| 11 | | AO | Orthic Acrisols |
| 12 | | AF | Ferric Acrisols |
| 13 | | AH | Humic Acrisols |
| 14 | | AP | Plinthic Acrisols |
| 15 | | AG | Gleyic Acrisols |
| | B | CAMBISOLS | |
| 21 | | BE | Eutric Cambisols |
| 22 | | BD | Dystric Cambisols |
| 23 | | BH | Humic Cambisols |
| 24 | | BG | Gleyic Cambisols |
| 25 | | BX | Gelic Cambisols |
| 26 | | BK | Calcic Cambisols |
| 27 | | BC | Chromic Cambisols |
| 28 | | BV | Vertic Cambisols |
| 29 | | BF | Ferralic Cambisols |
| | C | CHERNOZEMS | |
| 31 | | CH | Haplic Chernozems |
| 32 | | CK | Calcic Chernozems |
| 33 | | CL | Luvic Chernozems |
| 34 | | CG | Glossic Chernozems |
| | D | PODZOLUVISOLS | |
| 41 | | DE | Eutric Podzoluvisols |

| | | |
|---|---|---|
| 42 | DD | Dystric Podzoluvisols |
| 43 | DG | Gleyic Podzoluvisols |

F FERRALSOLS

| | | |
|---|---|---|
| 51 | FO | Orthic Ferralsols |
| 52 | FX | Xanthic Ferralsols |
| 53 | FR | Rhodic Ferralsols |
| 54 | FH | Humic Ferralsols |
| 55 | FA | Acric Ferralsols |
| 56 | FP | Plinthic Ferralsols |

G GLEYSOLS

| | | |
|---|---|---|
| 61 | GE | Eutric Gleysols |
| 62 | GC | Calcaric Gleysols |
| 63 | GD | Dystric Gleysols |
| 64 | GM | Mollic Gleysols |
| 65 | GH | Humic Gleysols |
| 66 | GP | Plinthic Gleysols |
| 67 | GX | Gelic Gleysols |

H PHAEOZEMS

| | | |
|---|---|---|
| 71 | HH | Haplic Phaeozems |
| 72 | HC | Calcic Phaeozems |
| 73 | HL | Luvic Phaeozems |
| 74 | HG | Gleyic Phaeozems |

J FLUVISOLS

| | | |
|---|---|---|
| 81 | JE | Eutric Fluvisols |
| 82 | JC | Calcaric Fluvisols |
| 83 | JD | Dystric Fluvisols |
| 84 | JT | Thionic Fluvisols |

K KASTENOZEMS

| | | |
|---|---|---|
| 91 | KH | Haplic Kastenozems |
| 92 | KK | Calcic Kastenozems |
| 93 | KL | Luvic Kastenozems |

| | | |
|---|---|---|
| L | | LUVISOLS |
| 101 | LO | Orthic Luvisols |
| 102 | LC | Chromic Luvisols |
| 103 | LK | Calcic Luvisols |
| 104 | LV | Vertic Luvisols |
| 105 | LF | Ferric Luvisols |
| 106 | LA | Albic Luvisols |
| 107 | LP | Plinthic Luvisols |
| 108 | LG | Gleyic Luvisols |
| M | | GREYZEMS |
| 111 | MO | Orthic Greyzems |
| 112 | MG | Gleyic Greyzems |
| N | | NITOSOLS |
| 121 | NE | Eutric Nitosols |
| 122 | ND | Dystric Nitosols |
| 123 | NH | Humic Nitosols |
| O | | HISTOSOLS |
| 131 | OE | Eutric Histosols |
| 132 | OD | Dystric Histosols |
| 133 | OX | Gelic Histosols |
| P | | PODZOLS |
| 141 | PO | Orthic Podzols |
| 142 | PL | Leptiv Podzols |
| 143 | PF | Ferric Podzols |
| 144 | PH | Humic Podzols |
| 145 | PP | Placic Podzols |
| 146 | PG | Gleyic Podzols |
| Q | | ARENOSOLS |
| 151 | QC | Cambic Arenosols |
| 152 | QL | Luvic Arenosols |
| 153 | QF | Ferric Arenosols |

| | | | |
|---|---|---|---|
| 154 | | QA | Albic Arenosols |
| | R | | REGOSOLS |
| 161 | | RE | Eutric Regosols |
| 162 | | RC | Calcaric Regosols |
| 163 | | RD | Dystric Regosols |
| 164 | | RX | Gelic Regosols |
| | S | | SOLONETZ |
| 171 | | SO | Orthic Solonetz |
| 172 | | SM | Mollic Solonetz |
| 173 | | SG | Gleyic Solonetz |
| | T | | ANDOSOLS |
| 181 | | TO | Ochric Andosols |
| 182 | | TM | Mollic Andosols |
| 183 | | TH | Humic Andosols |
| 184 | | TV | Vitric Andosols |
| | V | | VERTISOLS |
| 191 | | VP | Pellic Vertisols |
| 192 | | VC | Chromic Vertisols |
| | W | | PLANOSOLS |
| 201 | | WE | Eutric Planosols |
| 202 | | WD | Dystric Planosols |
| 203 | | WM | Mollic Planosols |
| 204 | | WH | Humic Planosols |
| 205 | | WS | Solodic Planosols |
| 206 | | WX | Gelic Planosols (no occurrences) |
| | X | | XEROSOLS |
| 211 | | XH | Haplic Xerosols |
| 212 | | XK | Calcic Xerosols |
| 213 | | XY | Gypsic Xerosols |
| 214 | | XL | Luvic Xerosols |

| | | |
|---|---|---|
| Y | YERMOSOLS | |
| 221 | YH | Haplic Yermosols |
| 222 | YK | Calcic Yermosols |
| 223 | YY | Gypsic Yermosols |
| 224 | YL | Luvic Yermosols |
| 225 | YT | Takyric Yermosols |
| Z | SOLONCHAKS | |
| 231 | ZO | Orthic Solonchaks |
| 232 | ZM | Mollic Solonchaks |
| 233 | ZT | Takyric Solonchaks |
| 234 | ZG | Gleyic Solonchaks |
| (250 | | Permanent Land-Ice) |

GRID LEGEND FOR ZOBLER'S "WORLD SOIL FILE" SLOPE CLASSES

| Class# | Slope Classes (per cent) |
|---|---|
| (0 | Water) |
| 1 | 0 to 8% |
| 2 | 8 to 30% |
| 3 | greater than 30% |
| 4 | 0to30% |
| 5 | 0 to 8%; greater than 30% |
| 6 | 8 to 30%; greater than 30% |
| 7 | 0 to 8%; 8 to 30%; greater than 30% |
| (250 | Permanent Land-Ice) |

GRID LEGEND FOR ZOBLER'S "WORLD SOIL FILE" TEXTURE CLASSES

| Class# | Texture Classes |
|---|---|
| (0 | Water) |
| 1 | Coarse |
| 2 | Medium |
| 3 | Fine |
| 4 | Coarse- Medium |
| 5 | Coarse - Fine |
| 6 | Medium - Fine |
| 7 | Coarse - Medium - Fine |
| 8 | Organic |
| (250 | Permanent Land-Ice) |

GRID LEGEND FOR ZOBLER'S "WORLD SOIL FILE" PHASE CLASSES

| Class# | Phase Classes |
|---|---|
| (0 | Water) |
| 1 | Stony |
| 2 | Lithic |
| 3 | Petric |
| 4 | Petroferric |
| 5 | Petrocalcic |
| 6 | Petrogypsic |
| 7 | Fragipan |
| 8 | Duripan |
| 9 | Saline |
| 11 | Phreatic |
| 12 | Cerrado |
| 13 | Sodic |
| 21 | Permafrost |
| 22 | Permafrost; intermittent |
| 23 | Glacier (i.e., land-ice) |
| 24 | Ponded |
| 25 | Dunes, Sands |
| 26 | Rock debris |
| 27 | Unknown |