

HYPRES Database Version 1.1

Revisions and updates to the Hydraulic Properties of European Soils (HYPRES) database

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Introduction

The original HYPRES database was developed in the mid 1990's as part of an EU funded Human Capital and Mobility programme and brought together data of soil hydrological properties from a number of European countries.

The pedotransfer functions derived from the database [1] are still widely used and the data have also been used in a number of studies relating to predictions of hydraulic conductivity [2,3] and on estimating plant available water.

However, the database itself has remained largely untouched. A review of the profile data contained within the HYPRES database was recently undertaken [4] in order to evaluate the potential for using HYPRES data to augment the SPADE/M [5] database.

This review revealed a few inconsistencies in the data formats and some values within HYPRES. More recently, there was a proposal to investigate the role of soil parent material and land use on the hydrological properties of the HYPRES soils. Both these activities prompted a 'light touch' revision of HYPRES (to Version 1.1) to correct inconsistencies in data format, to check and validate potential errors and to standardize the data formats throughout.

This presentation outlines these changes and illustrates some of the recent work on upgrading the existing HYPRES database to Version 1.1 so that it meets current standards.

Methods

The review of the profile data contained within the HYPRES to potentially augment the SPADE/M database [5] was documented [4] and provided the basis for the revisions to HYPRES to correct inconsistencies in data format, to check and validate potential errors and to standardize the data formats throughout.

Apart from a substantial effort to convert all the various locally derive georeferences [5] to a common standard, the methods employed to revise the data were simply to list the data within key fields and standardize the terminology throughout. Unrealistic values or duplicate data were checked against the original data wherever possible and amendments made.

More recently, there was a proposal to investigate the role of soil parent material and land use on the hydrological properties of the HYPRES soils which led to the creation of separate fields within HYPRES detailing the land use and parent material previously held solely within the BASICDATA.SITEDESCRIP field. These were recorded using a hierarchical approach to facilitate analyses at different levels of detail.

Results

Some of the main changes include:

- 111 records in the BASICDATA table were found to have no soil horizon data and were deleted leaving 1679 records
- Additional data that were taken from the UNSODA database [6] and extended the range of countries for which there were data in HYPRES to include Russia, Poland and Switzerland (country codes 7, 48 and 41 respectively) were unintentionally omitted from the original report.
- Where possible, the georeferences were converted to the INSPIRE compliant ETRS 1989 projection system. The locations of 1538 sample sites were identified.
- The original HYPRES database had three different versions of the FAO soil classification system [BASICDATA.FAO]. These have been updated to more closely match the 1994 revised version of the Soil Map of the World Legend [7].
- Depth to groundwater values were revised. Where the bottom depth was greater than the top depth, these were reversed. Where the indicator value was NA this was to represent 'Not Applicable' while ND indicated 'Not Determined'. These were not applied consistently so they were changed to 'no data' throughout.
- Removal of flag 's' in the RAWRET table where the pressure head was not zero.
- 2 duplicate records were deleted from the RAWPSD table.
- The land use and soil parent material information was stored as free text within the BASICDATA table. Initially, this information was extracted to two separate fields and then the terminology used throughout was standardized. A hierarchical approach was adopted to facilitate grouping of data and the parent material more closely matched that of the SGDBE [8].

References:

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Conclusions

This 'light touch' revision of the HYPRES database is the first since the database was created. The main changes; INSPIRE compliant georeferencing, more explicit data on land use and parent material and updating of soil classification should allow HYPRES to be more compatible with new EU databases whether as a stand-alone dataset or one which becomes incorporated into new databases.

The minor changes to the soil hydrological data should not undermine the derived pedotransfer functions which remain valid while the more accessible land use and parent material data may be used to explore methods to refine future pedotransfer functions.

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