GeoClass.txt

SLC classes divide the subbasins of the model based on land use etc. The *GeoClass.txt* file describes the characteristics of all classes. The SLC classes are defined as combinations of soil type and land use/land cover, but can also have other properties that separates them. SLC stands for Soil type - Land use Combination. The classes as defined in HYPE act as Hydrological Response Units (HRU).

Lakes, rivers and glaciers make up special classes. There can be only one of each special class in a model. All other classes are land classes made up by combinations of land use and soil type. Two land classes can have the same land use and soil type, but differ in other aspects, e.g. soil depth or crop/vegetation. Additional information for land classes are tile drainage depth and stream drainage depth.

File content

The *GeoClass.txt* file is located in the [modeldir](#) folder. Information for a SLC is given on a single row in the file. The information is given with a predefined order of columns. The column values are separated by blanks or tabs. Comment rows can be added and are denoted with a '!' in the first position. A maximum of 1000 classes can be defined. The order of SLC:s in *GeoClass.txt* is the same order that is used in [GeoData.txt](#) (`slc_nn`).

Example snippet of a *GeoClass.txt* file structure:

```
! Three classes in this set up:
! grass on sand, forest on sand, forest on till soil.
! Two landuses: 1=grass, 2=forest and two soil types: 1=sand, 2=till
! No Lu  St  C1 ...
1    1   1   1  ...
2    2   1   2  ...
3    2   2   2  ...
```

Description of class characteristics provided in *GeoClass.txt* columns:

Column	Unit	Data	Description
1	-	SLC	Soil type-land use combination. Should be 1,2,3... in order. The number is the same used for the class's area fraction (`slc_nn`) in [GeoData.txt](#).
2	-	Land use/Land cover code	An integer 1,2,3,.. The land use code is determined by the modeller, e.g. 1 could be water, 2 grass, 3 forest. Used for land use dependent model parameters.
3	-	Soil type code	An integer 1,2,3,.. The soil type code is determined by the modeller, e.g. 1 could be peat, 2 till soil, 3 sand. Used for soil type dependent model parameters.
4	-	Main crop cropid	An integer 1,2,3,.. The cropid is determined by the modeller, and couples the class to a vegetation/crop in [CropData.txt](#). Used for nutrient simulation and irrigation classes. If not relevant, e.g. for water classes, set to 0.

Column	Unit	Data	Description
5	-	Second crop cropid	An integer 1,2,3,... Some agriculture land has a secondary crop, e.g. a catch crop. If not relevant set to 0.
6	-	Crop rotation group	An integer 0,1,2,... Determines which crops/classes are inter-changed on a piece of land. 0=no crop rotation for this class, 1=class belong to crop rotation group 1, etc. The classes within the same crop rotation group will exchange soil nutrients. The crop rotation is only used for NP-simulations.
7	-	Vegetation type	The vegetation types are pre-defined in HYPE: 1=open, 2=forest, 3=water. The vegetation type is only used for NP-simulations (atmospheric deposition) and snow output (C106-C214). If not set (0) vegetation type 1 will be used.
8	-	Special class code	Some classes are special and separated by this code. Use 0 for all others. The following classes are pre-defined in HYPE: 1=outlet lake, 2=internal lake, 3=glacier, 11=local stream, 12=main river.
9	m	Tile depth	Distance from soil surface to (average) tile drainage system level. Set to 0 to not use tile drainage routine.
10	m	Stream depth	Distance from soil surface to local stream depth. The depth may not be larger than the total soil profile depth for the class (last column).
11	-	Number of soil layers	May be 1 to 3. For water classes set 1 layer with depth 1 m (the values are not used).
12	m	Soil layer depth	Distance from the soil surface to the bottom of the uppermost soil layer.
13	m	Soil layer depth	Distance from the soil surface to the bottom of the second soil layer. Must be larger than (or equal) to previous depth. If less than two layers set value equal to soil layer one.
14	m	Soil layer depth	Distance from the soil surface to the bottom of the third soil layer. Must be larger than (or equal) to previous depth. If less than three layers set value equal to soil layer two.