

# ***LEICA Geoid Model Reader***



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To use the equipment in the permitted manner, please refer to the detailed safety instructions in the User Manual.

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## 1. Introduction

The Geoid Model Reader is used to create a geoid model file that can be interpolated within the program SkiPro. The geoid model may be defined in an ASCII file in any format that contains the following data on each line of the file:

*Longitude, Latitude, Geoid separation*

or

*Grid Easting, Grid Northing, Geoid separation*

The Geoid Model Reader wizard has an easy to use interface for importing geoid models that have been defined in delimited text files and converting them to a common binary format.

## 2. Basic procedure

### 2.1 User Interface

The user interface dialogue box allows the input of all required parameters that determine the input geoid separation file.

#### *Geoid model file*

The name of the ASCII text file containing a description of the geoid model.

#### *Filter*

“Use Import Wizard” lets to use the wizard to define the data from the ASCII file

#### *Co-ordinate Type*

The user can choose between geographical (latitude and longitude) or grid co-ordinates (grid easting and northing).

#### *Linear units / Angular units*

The units corresponding to the data in the file. If geographical co-ordinates are chosen, the linear units frame will not be enabled. If grid co-ordinates are chosen, the angular units frame will not be enabled.

#### *Geoid model spacing*

Parameter that indicates the regular grid spacing between grid points. The units of the spacing will vary according to the co-ordinate type and linear units selected below.

*Point Code*

Some geoid model files include more than one model in each file. The model to which a particular point belongs is defined by a code value. If this parameter is selected, the program will exclude those values in the output file that have the selected code.

*Instrument Type*

**System500.** if you have to create a Geoid Model field file for a System 500 instrument or for a System 1200 instrument which runs a firmware older than Version 4.0. The interpolation method used in this GEM file is bi-cuadratic (9 Points )

**System1200.** if you have to create a Geoid Model field file only valid for a System 1200 with a firmware version upper or equal to Version 4.0. The geoid model file use the selected interpolation method.

*Interpolation Method*

The user can choose between 3 different methods

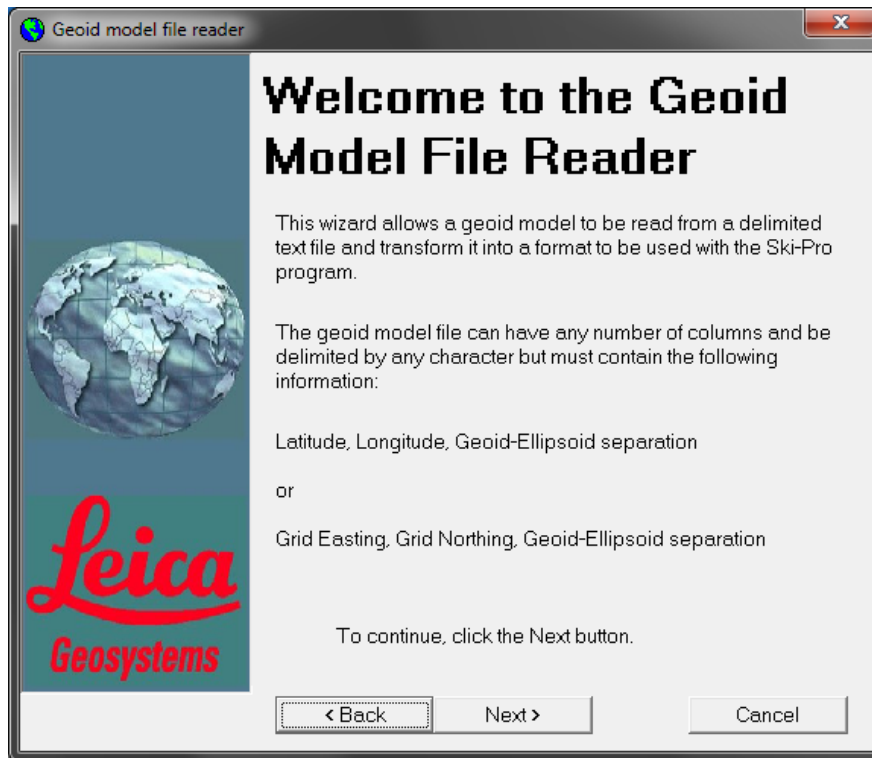
- 4 Points ( Bi-linear )
- 9 Points ( Bi-cuadratic )
- 16 Points ( Spline )

The 'Read' button will start the import wizard.

## 2.2 Import Wizard

The import wizard defines the format of the geoid file so that the data is interpreted correctly. There are three steps to the wizard.

- The input file definition (headers and separations),
- The character / width of the separations,
- The parameter definitions.



### 2.2.1 File Definition (Steps 1 & 2)

Define the character that delimits the data columns

Start import at line:

Delimiter character

☐ Tab ☒ Space ☐ Semi-colon ☐ Other  ☐ Comma ☐ Columns

☒ Treat consecutive characters as one.

Preview of file: C:\SWDC\Projects\PC\GeoidModelReader\geoids\UTM21\_Sur\OUTPUT.DAT

|   |            |            |        |
|---|------------|------------|--------|
| 1 | -30.000000 | 299.000000 | 19.422 |
| 2 | -30.000000 | 299.016667 | 19.390 |
| 3 | -30.000000 | 299.033333 | 19.358 |
| 4 | -30.000000 | 299.050000 | 19.327 |
| 5 | -30.000000 | 299.066667 | 19.297 |
| 6 | -30.000000 | 299.083333 | 19.268 |
| 7 | -30.000000 | 299.100000 | 19.238 |
| 8 | -30.000000 | 299.116667 | 19.209 |
| 9 | -30.000000 | 299.133333 | 19.180 |

< Back    Next >    Cancel

#### *Start import at line*

If the geoid file contains a header then the header data will be ignored if the user decides to import the data from the line following the header. This parameter allows the user to indicate how many lines the header occupies in the file.

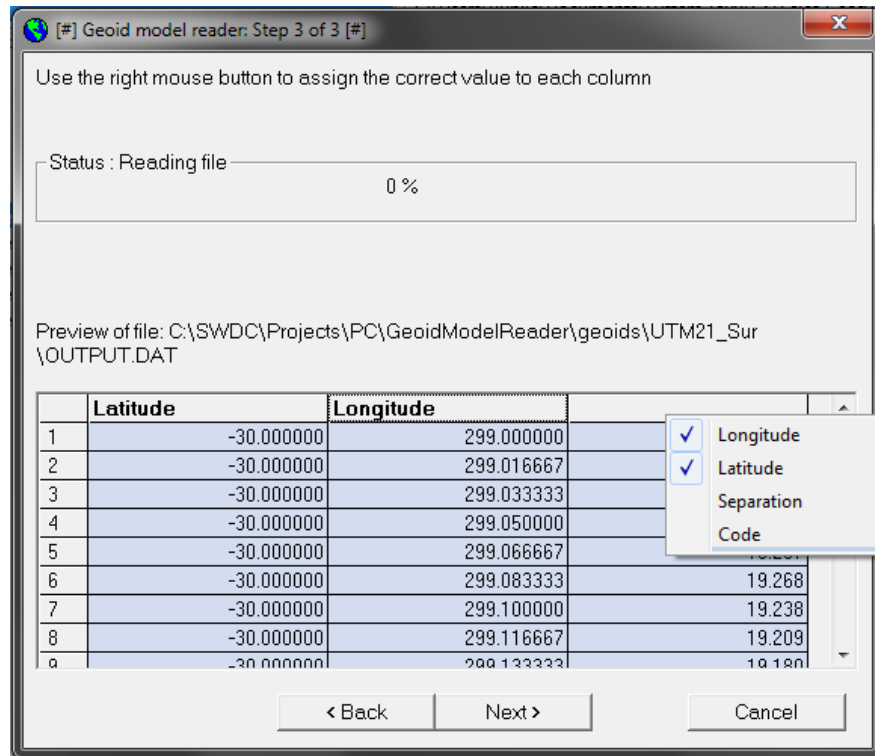
#### *Delimiting character*

If the user has chosen to use a delimiting character, the delimiting character can be defined during this step of the wizard.

#### *Treat consecutive characters as one*

This parameter will allow several identical characters (e.g. spaces) in the file to be treated as one character. This makes visualisation and the parameter definition step easier.

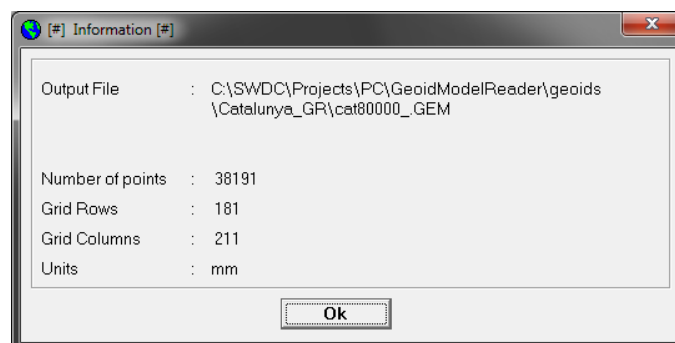
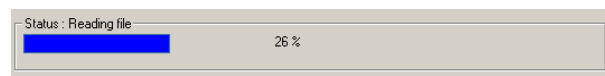
## 2.2.2 File Definition (Steps 1 & 2)



The last step of the wizard allows the user to define the location of the relevant parameters in the data file. To assign parameters to a column, right click on the column and select the appropriate parameter.

The available parameters in the drop-down list will change according to the parameters selected in the user interface screen (Latitude, Longitude, Easting, Northing, Separation, Code).

Once all of the columns have been defined, the 'Next' button will start the data import and write the geoid model file in a binary format. The output file name will be displayed together with the file information.



The output file (.gem) is a binary file that contains a header section along with the geoid-ellipsoid separations for each grid position.

### 3. Geoid Use in Ski-Pro

#### 3.1 Geoid Interpolator

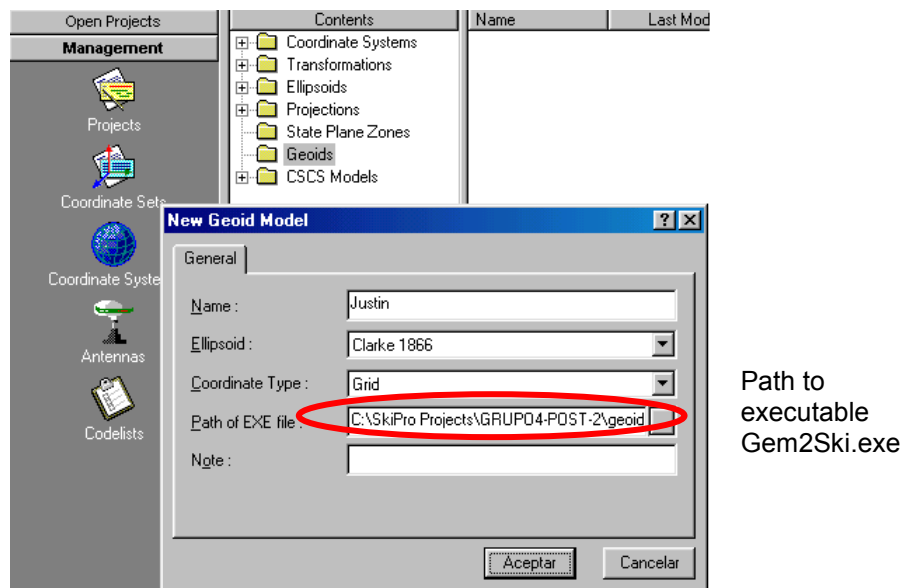
Ski-Pro uses its own geoid interpolator as a formless program. The gem file created by the Geoid Model Reader is read by Ski-Pro and the geoid separations are read into the Ski-Pro project. The gem file needs to be kept in the same directory as the following files,



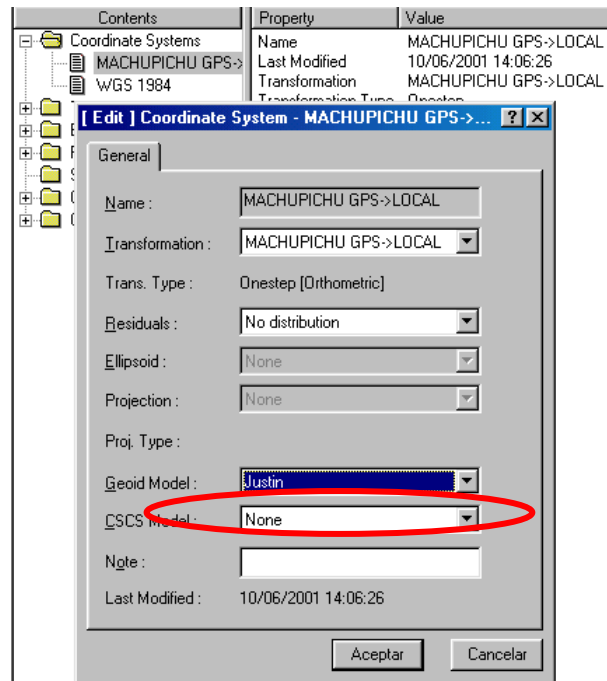
gem2ski.ini consists of one line - *geoidfilename.gem UK* - where *geoidfilename.gem* is the name of the geoid file that has been created with the geoid file reader program (UK is simply an indication of the program language).

#### 3.2 Defining the geoid

Create a new geoid model in Ski-Pro, taking care that the correct ellipsoid is chosen:



Assign the new geoid model to the current co-ordinate system:



### 3.2 Calculating geoid separation values

After associating the co-ordinate system to the current project, the geoid separation values may be calculated from the 'Tools' menu.



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