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ARIS ASCII Grid Reader for ArcGIS
User's Manual

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http://www.aris.nl/

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1. Introduction

The ARIS ASCII Grid Reader for ArcGIS makes it possible to view files in the ESRI ASCII Grid format in ArcCatalog and ArcMap without having to convert those files.

Spatial models, which have been written outside of standard GIS applications (i.e. written in C/C++ or Fortran), often use the ASCII Grid format for storing intermediate and / or final results. In order to view this data in ArcMap, it is necessary to use ArcToolbox to perform a conversion from ASCII Grid to a native ESRI GRID. This ESRI GRID can then be viewed in ArcMap. Another option would be to use ArcObjects to perform the conversion in the background, and show the result.

ARIS now has a solution, which makes it possible to preview ASCII Grids directly and without conversion in ArcCatalog, and to add them to ArcMap. All the default raster operations in ArcMap (for example the Raster Calculator) can be applied to the ASCII Grid.
Using ASCII Grid files directly also improves overall performance (compared to a background conversion). Initially there is a time gain of about 50% (several seconds for a raster of 500.000 cells), if the same file is used again the gain is even bigger (over 95%). Also, no temporary files are created, whereas a conversion always produces a new file on the hard disk, which need to be cleaned up after some time.
Floating-point and integer type ASCII Grids are recognized automatically, whereas ArcToolbox creates a floating-point grid by default, unless explicitly specified by the user. An important difference between floating-point and integer type rasters is that a *Unique Value Classification* is available for integer rasters.

The ARIS ASCII Grid Reader is implemented as a dll which, once placed in the correct ArcGIS directory, is used to identify files in the ASCII Grid format.

The ARIS ASCII Grid Reader can be used with any version of ArcGIS (ArcView, ArcEditor and ArcInfo, version 8.0 or higher).

2. Installation

2.1 ArcGIS 8.x

Installation of the ASCII Grid Reader is accomplished with the following two steps:

1. The automatic setup (arisasciigrid.exe) needs to be executed by a user with administrative privileges. The setup procedure checks if ArcGIS is installed, and determines the installation directory. Any necessary changes in configuration files for ArcGIS are carried out automatically.
2. Using ArcGIS 8.x, other users who want to use the ASCII Grid Reader will need to finish the setup procedure by clicking on the *Start* button and choosing *Programs | ARIS ASCII Grid Reader for ArcGIS | Install for current user*.
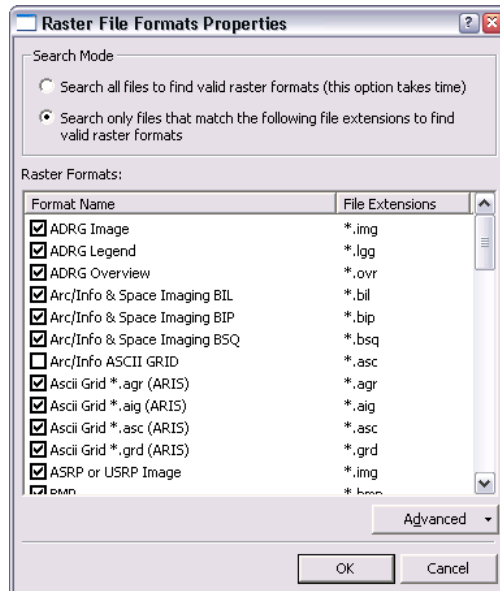
2.2 ArcGIS 9.2

The automatic setup (arisasciigrid.exe) needs to be executed by a user with administrative privileges. The setup procedure checks if ArcGIS is installed, and determines the installation directory. Any necessary changes in configuration files for ArcGIS are carried out automatically.

2.3 ArcGIS 9.3 and ArcGIS 9.3.1

In ArcGIS 9.3 and 9.3.1 disable the default *.asc:
- Open in ArcMap or ArcCatalog the menu "Tools" / "Options"
- Select the tab "Raster".
- On this tab click button "File Formats".
- Uncheck the "Arc/Info ASCII GRID *.asc" format.
- Currently this will have no effect: This is a bug being fixed by ESRI in ArcGIS 10

To disable the default *.asc format, until the ESRI bug fix, do the following:
- In the <program files>\ArcGIS\bin directory: make a backup copy of RasterFormats.dat
- Edit RasterFormats.dat (with Notepad or any other text editor).
- Remove the reference to "*.asc" this is the row that looks like:

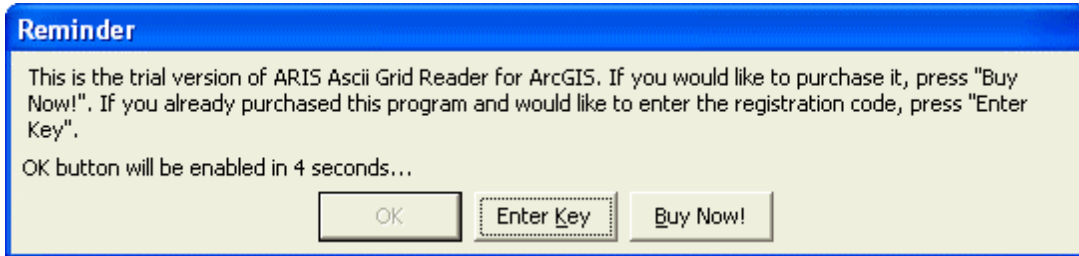   <e on="y" nm="Arc/Info ASCII GRID" ex="*.asc" et="ASC" at="0x2f" />

- Save RasterFormats.dat and start ArcMap or ArcCatalog.

2.4 De-installation

De-installation of the ASCII Grid Reader is straightforward, but make sure you exit all ArcGIS applications before de-installing the ASCII Grid Reader.
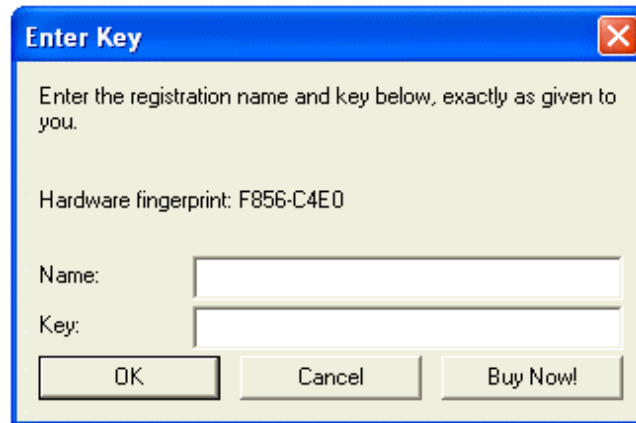
3. Registration

The distributed version of the ASCII Grid Reader is a fully functional version, except that there is a reminder message shown, each time you open an ASCII Grid file.

Pressing the *Buy Now!* button will take you to our online store, where you can order this product. Note that you will need the hardware fingerprint of the computer where you want to install the tool, shown in the dialog below (appears when you press *Enter Key*). After you complete your purchase, a personal registration key will be sent to you by email. Please store this key in a safe place.
Pressing the *Enter Key* button will present you with the following dialog, where you must enter your name and the registration key.
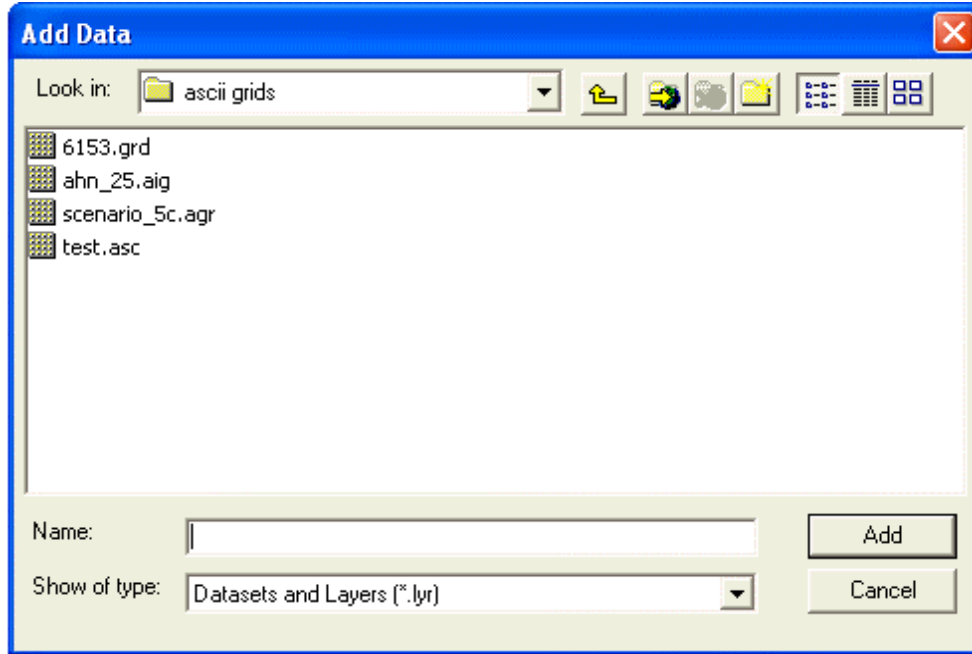

Once you have entered a valid registration key, press *OK*. This key will be stored on your pc.

4. Using ASCII Grid files

After the setup procedure has finished, ASCII Grid files can be used in ArcMap and ArcCatalog with the standard functions: In ArcMap, use the *Add Data* button to add an ASCII Grid to the map:

Note: Only ASCII Grid files that have a file extension *.asc, *.grd, *.agr or *.aig can be used. Other file extensions will be ignored.

Likewise, all standard function, such as the *Raster Calculator* and other *Spatial Analyst functions* are available.

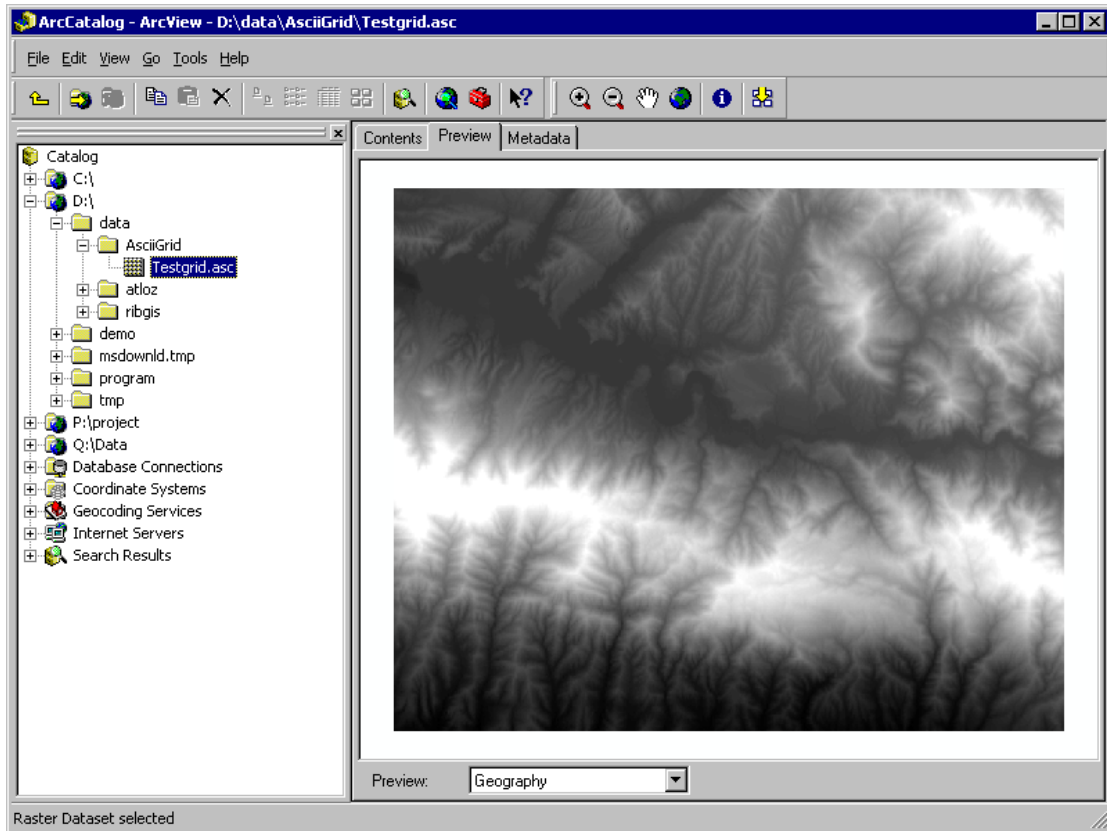ArcCatalog recognizes ASCII Grids automatically.

Figure 1. Preview of an ASCII Grid shown in ArcCatalog.

With the ARIS ASCII Grid Reader an ASCII Grid is automatically stretched between the low and high values within the grid.

5. Projections

Projection information is passed to ArcMap and ArcCatalog, if a projection file accompanies the ASCII grid. Projection files should have the same name as the ASCII file, but with a .prj extension. For instance, if the ASCII grid is named *myraster.asc*, the projection file should be called *myraster.prj*. Both files should be placed in the same folder.

Even if all your data uses the same projection, you can still add a projection file to the asciigrid, since this will stop ArcMap from warning you that your raster doesn't contain projection information.

The easiest way to find a valid projection file is to browse the ArcGIS installation folder, in the subfolder *Coordinate Systems*. For instance, the projection file for WGS 1984 can be found in *C:\Program Files\ArcGIS\Coordinate Systems\Geographic Coordinate Systems\World*. Just copy this file to the folder containing your ASCII grid and rename the copy to match the base name of the grid.

6. FAQ

Q: Only "Administrator" can see ASCII Grids.

A: Log in to your ordinary user account. Then, from the *Start Menu*, choose *Programs > ARIS ASCII Grid Reader > Install for current user*.

Q: I installed the ASCII Grid Reader, but ArcMap and ArcCatalog still don't see ASCII Grids.

A: There can be several reasons for ArcGIS not to recognize ASCII Grids, some of which are:

- You have Windows NT 4.0: There is an issue with that version of Windows that we haven't been able to work around yet. In most cases it should work, though. Please contact us at helpdesk@aris.nl for more information.
- Something went wrong during the installation. You can try to run ArcMap or ArcCatalog as administrator once, open at least one raster file, then try again from your ordinary user account. If it still doesn't work, contact us at helpdesk@aris.nl.
- If you have ArcGIS version 9.x, you can try to manually install the ASCII Grid Reader, locate asc.dll on your filesystem, and then use the menu *Tools > Options > Raster > File Formats* to add it to ArcMap or ArcCatalog.

Q: Some ASCII Grids work, others don't, why is that?

A: The ASCII Grid Reader currently only recognizes files that have a file extension *.asc, *.grd, *.agr or *.aig. If your files are called, say, myraster.ras, or any other file extension, you have no option other than renaming it. If that's not feasible for you, send us an email and we'll consider adding your file extension in the next version.

A: Possibly your ASCII Grid is not in the correct format, see chapter 8 to check if your file complies with the ESRI ASCII Grid Format.

Q: All my ASCII Grids show up twice in ArcCatalog, why?

A: One of those two has this icon: 📋, the other has this one: 🔲, right? This is caused by ArcGIS recognizing *.asc* files as text tables by default. It doesn't harm, but if you want, you can turn off the text tables. Start ArcCatalog, open the *Tools > Options* menu and choose the *General* tab. Under *Which types of data do you want the Catalog to show* make sure *Text Files* is unchecked.

Q: Does the ASCII Grid Reader work with ArcGIS 9.2, 9.3 and 9.3.1?

A: Yes, ASCII Grid Reader version 2.x works with ArcGIS 9.2, 9.3 and 9.3.1 (in ArcGIS 9.3 and 9.3.1 a bug is present, see question below).

Q: I have removed ASCII Grid Reader. However when I start ArcGIS I still see pop-up messages telling me I have to register.

A: Before de-installing ASCII Grid Reader make sure you have no ArcGIS applications running. If, by accident, you did remove ASCII grid reader when ArcMap or ArcCatalog was still running your best bet is to re-install ASCII grid reader and then remove it again after you exited all ArcGIS applications.

Q: Does the ASCII Grid Reader work with ArcIMS?

A: It should work with ArcIMS version 4.0.1 or higher. If you have version 4.0.1, you need to install the correct patch, see http://support.esri.com/index.cfm?fa=knowledgebase.techarticles.articleShow&d=26413 for details.

Q: In ArcGIS 9.2 and higher, default support has been added for ASCII grid. Do I still need the ARIS ASCII Grid Reader?

A: The default ASCII Grid support in ArcGIS 9.2 and higher shows the grid stretched between a theoretically minimum and maximum. This usually results in a grey or black image. The ARIS ASCII Grid Reader shows your grid stretched between the

minimum and maximum values in the ASCII Grid file and thus gives a realistic view of you grid.

A: In ArcGIS 9.2 default only *.asc is supported by ESRI. The ARIS ASCII Grid Reader supports *.asc, *.agr, *.aig and *.grd.

Q: In ArcGIS 9.3 and 9.3.1 *.asc does not show a realistic view of the grid?

A: Due to a bug in ArcGIS 9.3 and 9.3.1 disabling the Arc/Info ASCII GRID (*.asc) does not have any effect. ArcGIS still uses the ESRI reader for *.asc. See chapter 2 for instructions to remove the default *.asc reader.

7. History

This is the version history for the ARIS ASCII grid reader. The version number can be found by locating the file *asc.dll*, in a default ArcGIS installation this file should be in the folder *C:\Program Files\Common Files\ESRI\Raster\usr\lib\NTx86\RasterFormats*. Right click on this file and choose *Properties*. The *Version* tab contains version information.

Version	Features
1.0	First release
1.1	Added support for .grd and .agr file name extensions
1.2	Added support for projections in a .prj file
1.2.1	ArcGIS does not crash anymore when removing ASCII grids
1.2.2	ArcGIS 9.1 does not disappear anymore when starting up with ASCII Grid Reader
	Solved the popup message flood occurring sometimes when starting an unregistered version of ASCII Grid Reader
	ArcGIS does not crash anymore when previewing a .prj file
	Check on locked files when removing/updating ASCII grid reader installation
2.0.1	Installation procedure support for installing with ArcGIS 9.2
	Added support for .aig file name extension
2.0.2	Documentation update for ArcGIS 9.3 and 9.3.1

8. The ESRI ASCII Grid Format

This description is taken from the ArcGIS Desktop documentation.

The ASCII file must consist of header information containing a set of keywords, followed by cell values in row-major order. The file format is:

```
<NCOLS xxx>
<NROWS xxx>
<XLLCENTER xxx | XLLCORNER xxx>
<YLLCENTER xxx | YLLCORNER xxx>
<CELLSIZE xxx>
{NODATA_VALUE xxx}
row 1
row 2
.
.
.
row n
```

where xxx is a number, and the keyword nodata_value is optional and defaults to -9999. Row 1 of the data is at the top of the raster, row 2 is just under row 1, and so on. For example:

```
ncols 480
nrows 450
xllcorner 378923
YLLCORNER 4072345
cellsize 30
nodata_value -32768
43 2 45 7 3 56 2 5 23 65 34 6 32 54 57 34 2 2 54 6
35 45 65 34 2 6 78 4 2 6 89 3 2 7 45 23 5 8 4 1 62  ...
```

The nodata_value is the value in the ASCII file to be assigned to those cells whose true value is unknown. In the raster they will be assigned the keyword NODATA.

Cell values should be delimited by spaces. No carriage returns are necessary at the end of each row in the raster. The number of columns in the header is used to determine when a new row begins.

The number of cell values must be equal to the number of rows times the number of columns, or an error will be returned.

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