

B Grid data file formats

PCRaster

PCRaster is a unique raster based GIS package ideally suited for dynamic modelling. Information on the PCRaster native format (and a free version, including tools for conversion) can be obtained from <http://www.pcraster.nl>.

USGS BIL / BSQ / BIP

These files consist of an ASCII header file (with content information) and a binary data file. The ASCII description files support the following formats:

- Band sequential (BSQ) multiband images
- Band interleaved by line (BIL) multiband images
- Band interleaved by pixel (BIP) multiband images

In order to support time steps an addition has been made to the .hdr file. A USGS BIL, BIP and BSQ file always have a *.hdr header file that contains the settings for the dataset. So as to add support for time data in these files the following changes must be made:

- Add a line to the header file with the number of time blocks: for example nBlocks 3.
- The nBands property in the header file represents the number of available parameters.

Creating a dynamic bil file:

*Create the binary file in BSQ, BIL or BIP format. If you use for example ArcView to create *.BSQ binary files for each time step, then you can use the DOS copy command to add files together as follows:*

Copy /B timestep1.bsq /B + timestep2.bsq /B + timestep3.bsq /B + ... timestepN.bsq /B destination.bsq /B

For more information on the copy command, go to the Start Run menu and type copy /? and press enter.

Example of a header file:

ByteOrder I

Layout BIL

nRows 2

nCols 2

nBands 1

nBlocks 1

nBits 32

BandRowBytes 8

TotalRowBytes 8

BandGapBytes 0

NoData -999

ULXmap 163900

ULYmap 522900

Xdim 10000

Ydim 10000

Image file

The binary image file for the BIL/BIP/BSQ image format is merely a bit stream of the image data. How the image data is arranged in that bit stream defines whether it is a BIL, BIP, or BSQ image.

Band interleaved by line data stores pixel information band by band for each line, or row, of the image. For example, given a three-band image, all three bands of data are written for row one, all three bands of data are written for row two, and so on, until the total number of rows in the image is reached.

Band interleaved by pixel data is similar to BIL data, except that the data for each pixel is written band by band. For example, with the same three-band image, the data for bands one, two, and three is written for the first pixel in column one; the data for bands one, two, and three is written for the first pixel in column two; and so on. Band sequential format stores information for the image one band at a time. In other words, data for all pixels for band one is stored first, then data for all pixels for band two, and so on.

For further information see:

<http://www.esri.com/library/whitepapers/pdfs/eximgav.pdf>

ESRI ASCII

ASCII grids are stored in a format compatible with ESRI (and many other) software. The ASCII raster file format is a simple format that can be used to transfer raster data between various applications. The header data includes the following keywords and values:

- ncols - number of columns in the data set.
- nrows - number of rows in the data set.
- xllcenter or xllcorner - x-coordinate of the centre or lower-left corner of the lower-left cell.
- yllcenter or yllcorner - y-coordinate of the centre or lower-left corner of the lower-left cell.
- cellsize - cell size for the data set.
- nodata_value - value in the file assigned to cells whose value is unknown. This keyword and value is optional. The nodata_value defaults to -9999.

The first row of data is at the top of the data set, moving from left to right. Cell values should be *delimited by spaces*. No carriage returns/linefeeds are necessary at the end of each row in the data set. 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.

Example:

```
ncols 4
nrows 3
xllcorner 175208.9306
yllcorner 320440.9027
cellsize 25
NODATA_value -9999
```

```
12  13  14  15
```

```
12  13  14  15
```

```
12  14  14  15
```

<https://publicwiki.deltares.nl/display/FEWSDOC/ArcInfoAscii>