Data file formats

This section provides an overview of the file formats supported by Source. Table 1 lists the supported time-series data file formats. Raster data file formats are listed in Table 2. Several GIS, graphics and other formats that are also recognised by Source are listed in Table 3 but are not otherwise described in this guide. Click on the link associated with each file extension to go directly to information about that time series.

Note: Formats with the ** symbol are part of the GDAL raster formats. A complete list of these is provided here.

Table 1. Text-based time-series data file formats

File extension	Description
.AR1	Annual stochastic time series
.AWB	AWBM daily time series
.BSB	SWAT BSB time series
.BSM	BoM 6 minute time series
.CDT	Comma delimited time series
.CSV	Comma-separated value
.DAT	F.Chiew time series
.IQQM	IQQM time series
.MRF	MFM monthly rainfall files
.PCP	SWAT daily time series
.SDT	Space delimited time series
.SILO5	SILO 5 time series
.SILO8	SILO 8 time series
.TTS	Tarsier daily time series

Table 2. Text-based raster data file formats

File extension	Description
.ASC**	ESRI ASCII grids
.MWASC	Map window ASCII grids
.TAPESG	Grid-based Terrain Analysis Data

Table 3. Other supported file formats

File extension	Description
.SDB	Source Database
.FLT	ESRI Binary Raster Interchange format
.JPG	GEO JPG Image (also .JPEG), and must have an associated .jgw world file
.MIF	MapInfo Interchange
.SHP**	ESRI Shape files
.TIF**	GeoTIFF Image (also .TIFF)

.TILE	Tiled Raster Files
.TNE	Tarsier Node Link Network Files
.TRA	Tarsier Raster Files
.TSD	Tarsier Sites Data Files
.ADF**	ArcINFO/ESRI Binary Grid
.IMG**	ERDAS Imagine

Note: Source will warn you if you import data containing negative numbers. Also, the presence of any zero values in the data stream will hamper your ability to adjust the Y-axis to show log values in the Charting Tool.

Annual stochastic time series

The .AR1 format contains replicates of annual time-series data generated using the AR(1) stochastic method. The file format is shown in Ta ble 4. This format is not the same as the AR(1) format (.GEN) generated and exported by the Stochastic Climate Library.

Table 4. AR1 data file format

Row	**Column (space-separated)**		
	1	2	3..*nypr*
1	*desc*		
2	*nypr*	*nr*	
odd	*rn*		
even	*value*	*value*	*value*

where:

desc is a title describing the collection site

nypr is the number of years per replicate

nr is the number of replicates

rn is the replicate number in the range 1..*nr*

value is one of the *nypr* data points per row for the replicate, to three decimal places.

ESRI ASCII grids

The .ASC format is a space delimited grid file, with a 6 line header as shown in Table 5. Values are not case sensitive and arranged in space delimited rows and columns, reflecting the structure of the grid. Units for cell size length depend on the input data, and could be either geographic (eg degrees) or projected (eg metres, kilometres). Units are generally determined by the application, with metres (m) being common for most TIME-based applications. For a file format description, refer to:

http://resources.esri.com/help/9.3/arcgisengine/com_cpp/gp_toolref/spatial_analyst_tools/esri_ascii_raster_format.htm

Arcinfo grid coverages can be converted to .ASC files using ESRI's GRIDASCII command. ASC files can be imported into ArcGIS using the ASCIIGRID command.

Table 5. .ASC data file format

Row	**Column (space-delimited)**		
	1	2	3..*n*
1	ncols	*nc*	
2	nrows	*nr*	
3	*xref*	*x*	
4	yref	*y*	
5	*cellsize*	*size*	
6	nodata_value	*sentinel*	
7..*n*	*value*	*value*	*value*

where:

nc is the number of columns

nr is the number of rows

xref is either XLLCENTER (centre of the grid) or XLLCORNER (lower left corner of grid)

yref is either YLLCENTER (centre of the grid) or YLLCORNER (lower left corner of grid)

(x,y) are the coordinates of the origin (by centre or lower left corner of the grid)

size is the cell side length

sentinel is a null data string (eg -9999)

value is a data point. There should be *nc* × *nr* data points.

AWBM daily time series

An AWBM daily time series format file (.AWB) is an ASCII text file containing daily time series data formatted as shown in Table 6. Dates (the year and month) were optional in the original AWBM file format, but are not optional in the format used in Source.

Table 6. AWB data file format

Row	**Column (space-separated)**			
	1	2..*ndays*+1	*ndays*+2	*ndays*+3
1..*n*	*ndays*	*value*	*year*	*month*

where:

ndays is the number of days in the month (28..31)

value is the data point corresponding with a given day in the month (ie. *ndays* columns)

year is the year of observation (four digits)

month is the month of observation (one or two digits).

SWAT BSB time series

A .BSB is a line-based fixed-format file, typically used by applications written in FORTRAN. The SWAT BSB subbasin output file contains summary information for each of the subbasins in a watershed. The reported values for the variables are the total amount or weighted average of all hydrological response units (HRUs) within the subbasin. The format is shown in Table 7. For more details, refer to the SWAT 2012 input/output manual (Arnold *et al.*, 2012).

The .BSB file format specifies data time step numbers, but not dates. When imported into Source via File Data Sources, the user has the opportunity to manually set the correct data start date.

Table 7. .BSB data file format (first 7 data columns only). The .BSB format also includes an 8 line header, which is not shown.

Row	**Character positions (space delimited)**						
	7..10	12..19	21..24	25..34	35..44	45..54	55..64
1	SUB	GIS	MON	AREAkm2	PRECIPmm	SNOMELTmm	PETmm
2..*n*	*id*	*gis*	*mon*	*area*	*precip*	*snomelt*	*pet*

where:

id is the basin identifier (4-digit integer, left aligned, e.g. "1")

gis is the GIS value (8-digit integer, right-aligned, eg. "1")

month is the month (or day of year for daily data) of observation (4-digit integer, right-aligned, eg. "0")

area is the basin area in square kilometers (real, right aligned, eg "1.14170E+02")

precip is the basin precipitation in millimetres (real, right aligned, eg "1.2000").

snomelt is the basin snow melt in millimetires (real, right aligned, eg "0.111E+01")

pet is the basin potential evapotranspiration (PET) in millimetres (real, right aligned, eg "0.900E+01")

BOM 6 minute time series

A .BSM (also .PLUV) is a fixed-format file, typically supplied by the Australian Bureau of Meteorology for 6 minute pluviograph data. The file has two header lines (record types 1 and 2) followed by an arbitrary number of records of type 3. The formats of record types 1..3 are shown in Table 8, Table 9 and Table 10, respectively.

All fields in .BSM files use fixed spacing when supplied, but Source can also read spaced-separated values.

Rainfall data points:

- Each row of data contains all of the observations for that day;
- The number of observations for a day depends on the observation interval. For example, if the observation interval is 6 minutes, there will be 24×60÷6=240 observations (raini fields) in each row of data;
- Each rain field is in FORTRAN format *F7.1* (a field width of seven bytes with one decimal place);
- Assuming that observations are numbered from 1..*n*, the starting column position of any given raini field can be computed from 14+7×i;
- The unit of measurement is tenths of a millimetre (eg. a rainfall of 2 mm will be encoded as "20.0").
- Values are interpreted as follows:
    - 0.0 means there was no rain during the interval.
    - a positive non-zero value is the observed rainfall, in tenths of a millimetre, during the interval.
    - If there is zero rain for the whole day, no record is written for that day.

Missing data:

- A sentinel value of -9999.0 means that no data is available for that interval;
- A sentinel value of -8888.0 means that rain may have fallen during the interval but the total is known only for a period of several intervals. This total is entered as a negative value in the last interval of the accumulated period. For example, the following the following pattern would show that a total of 2 millimetres of rain fell at some time during an 18-minute period: **-8888.0-8888.0 -20.0**
- If an entire month of data is missing, either no records are written or days filled with missing values (-9999.0) are written. No attempt is made to write dummy records if complete years of data are missing.

Example file

```
61078 1
61078 2 WILLIAMTOWN RAAF
61078 19521231 .0 .0 .0 [etc., 240 values]
61078 1953 1 1 .0 .0 .0 [etc., 240 values]
61078 1953 1 3 .0 .2 .0 [etc., 240 values]
61078 1953 115 .0 .0 .2 [etc., 240 values]
61078 1953 118 .0 .0 .0 [etc., 240 values]
61078 1953 212 .0 .0 .0 [etc., 240 values]
61078 1953 213 .0 .0 .0 [etc., 240 values]
61078 1953 214 .0 .0 .0 [etc., 240 values]
61078 19521231 .0 .0 .0 [etc., 240 values]
61078 19521231 .0 .0 .0 [etc., 240 values]
```

The following notes are taken from the Bureau of Meteorology advice:

- All data available in the computer archive are provided. However very few sites have uninterrupted historical record, with no gaps. Such gaps or missing data may be due to many reasons from illness of the observer to a broken instrument. A site may have been closed, reopened, upgraded or downgraded during its existence, possibly causing breaks in the record of any particular element.
- Final quality control for any element usually occurs once the manuscript records have been received and processed, which may be 6-12 weeks after the end of the month. Thus quality-controlled data will not normally be available immediately, in "real time".

Table 8. .BSM data file format (record type 1)

Row	Character positions (space padded)			
	1..16	7..15	16	17..*n*
1..*n*	*snum*	*blank*	1	*blank*

where:

snum is the station number

blank ASCII space characters

Table 9. .BSM data file format (record type 2)

Row	Character positions (space padded)					
	1..6	7..12	13..16	17..18	19..20	21..*n*
1..*n*	*snum*	*blank*	*year*	*month*	*day*	$\{rain_i...\}$

where:

snum is the station number

year is the year of the observation (four digits)

month is the month of the observation (one or two digits, right-aligned, space padded)

day is the date of the observation (one or two digits, right-aligned, space padded)

$rain_i$ is a rainfall data point as explained below.

Comma delimited time series

A .CDT comma delimited time-series format file is an ASCII text file that contains regular (periodic) time-series data. The file type commonly has no header line but, if required, it can support a single line header of "Date,Time series 1".

You can use the .CDT format to associate observations with a variety of time interval specifications. Table 10 shows how to structure annual data, Table 11 how to specify daily data aggregated at the monthly level, and Table 12 the more traditional daily time series (one date, one observation). Table 13 explains how to supply data in six-minute format.

Table 10. .CDT data file format (annual time series)

Row	**Column (comma-separated)**	
	1	2
1..*n*	*year*	*value*

where:

year is the year of observation (four digits, eg. 2011)

value is the observed value (eg. 9876).

Table 11. .CDT data file format (time series with monthly data)

Row	**Column (comma-separated)**	
	1	2
1..*n*	*mm/yyyy*	*value*

where:

mm is the month of observation (two digits, eg. 09)

yyyy is the year of observation (four digits, eg. 2011)

value is the observed value (eg. 2600).

Table 12. .CDT data file format (daily time series with daily data)

Row	**Column (comma-separated)**	
	1	2
1..*n*	*date*	*value*

where:

date is the date of observation in ISO format (eg. 2000-12-31)

value is the observed value (eg. 2600).

Table 13. .CDT data file format (six-minute time series)

Row	**Column (comma-separated)**		
	1	2	3..*n*
1..*n*	*date*	*time*	*value*

where:

date is the date of observation in ISO format (eg. 2000-12-31)

time is the time of observation in hours and minutes (eg 23:48)

value is the observed value (eg. 10).

Comma-separated value

A comma separated value or .CSV file is an ASCII text file that contains data in a variety of representations. When a .CSV contains regular (periodic) time-series data, there are at least two columns of data. The first contains a time-stamp and the remaining columns contain data points associated with the time-stamp. The format is shown in Table 14. All columns are separated using commas. Annual data can be entered using the notation *01/yyyy*, where *yyyy* is a year. Header lines in .CSV files are usually optional.

Table 14. .CSV data file format

Row	**Column (comma-separated)**	
	1	2..*n*
1	Date	*desc*
2..*n*	*date*	value

where:

desc is a title for the column (header rows are often optional)

date is a date in ISO 8601 format ("yyyy-MM-dd HH:mm:ss" where " HH:mm:ss" is optional)

value is a data point (eg a real number with one decimal place)

F.Chiew time series

A .DAT is a two-column daily time-series file with the fixed format shown in Table 15. Note that the first two characters in each line are always spaces with the data starting at the third character position.

Table 15. .DAT data file format

Row	**Character positions (space padded)**				
	1..2	3..6	7..8	9..10	12..20
1..*n*	*blank*	*year*	*month*	*day*	*value*

where:

blank is ASCII space characters

year is the year of the observation (four digits)

month is the month of the observation (one or two digits, right-aligned, space padded)

day is the date of the observation (one or two digits, right-aligned, space padded)

value is the data point (real, two decimal places, right aligned, eg "1.20").

IQQM time series

An .IQQM time-series format file is an ASCII text file that contains daily, monthly or annual time-series data. The file has a five line header formatted as shown in Table 21. The header is followed by as many tables as are needed to describe the range delimited by *fdate..ldate*. The format of each table is shown in Table 17.

Each value is right-justified in 7 character positions with one leading space and one trailing quality indicator. In other words, there are five character positions for digits which are space-filled and right-aligned. The first value in each row (ie the observation for the first day of the month) occupies character positions 5..11. The second value occupies character positions 12..18, the third value positions 19..25, and so on across the row. In months with 31 days, the final value occupies character positions 215..221. The character positions corresponding with non-existent days in a given month are entirely blank. The *mtotal* and *ytotal* fields can support up to 8 digits. Both are space-filled, right-aligned in character positions 223..230.

The quality indicators defined by IQQM are summarised in Table 23. At present, Source does not act on these quality indicators.

Missing data points are generally represented as "-1?". A value is also considered to be a missing data point if it is expressed as a negative number and is not followed by either an "n" or "N" quality indicator.

Divider lines consist of ASCII hyphens (0x2D), beginning in character position 5 and ending at position 231.

Example file

```
Title: Meaningful title     Date:06/08/2001 Time:11:38:25.51
Site : Dead Politically Correct Person's Creek
Type : Flow
Units: ML/d
Date : 01/01/1898 to 30/06/1998     Interval : Daily
Year:1898
     ------------------------------------ ------------------------------------
       01    02    03    04   05    06 ...  28    29    30    31     Total
     ------------------------------------ ------------------------------------
Jan    3     4     3     4    3      4       2    3     2     3       224
Feb    2     3     2     3    2      3       2                          134
Mar    3    22     4     2    2      2       1    2     1     2       84
Apr    1     2     1     2    1      2       1    1     1             37
May    1     1     4     3   53     33       1    1     1     1       143
Jun    1     1     0     1  -1?      7       63   58    52            816
Jul   48    43    40    36   33     30       77   70    63    59      1389
Aug   54    49    46    41   39     35       30   28    26    420     2433
Sep   880  362   282   256  245    215      241   39   36            4414
Oct   35    33    31    31   29     28       22   28    20    17      783
Nov   15    16    15    18   16     15       11   12    11            415
Dec   12    11    11    11   11     10       9     8    9     8       422
--------------------------------------- ------------------------------------
                                                                      11294
```

Table 16. IQQM data file format (header)

Row	Character range	Key	Character range	Value
1	1..6	Title:	8..47	*title*
	54..58	Date:	59..68	*cdate*
	71..75	Time:	76..86	*ctime*
2	1..6	Site:	8..47	*site*
3	1..6	Type:	8..22	*type*
4	1..6	Units:	8..17	*units*
5	1..6	Date:	8..17	*fdate*
	19..20	to	22..31	*ldate*
	36..45	Interval:	47..*n*	*interval*

6	<<blank line>>

where:

title is a string describing the file's contents

cdate is the date on which the time series was created (dd/mm/yyyy)

ctime is the time on *cdate* when the time series was created (hh:mm:ss.ms)

site is a string describing the measurement site

type is a string specifying the data type (eg. precipitation, evaporation, gauged flow)

units is a string specifying the units of data (eg. mm, mm*0.1, ML/day)

fdate is the first date in the time series (dd/mm/yyyy)

ldate is the last date in the time series (dd/mm/yyyy)

interval is a string defining the collection interval (eg. daily, monthly)

Table 17. IQQM data file format (table)

Row	**Logical column (fixed width)**		
	1	2..13	14
+0	Year: *year* Factor= *factor*		
+1	<<divider line>>		
+2		*dd*	Total
+3	<<divider line>>		
+4.. +15	*mmm*	*value*	*mtotal*
+16	<<divider line>>		
+17			*ytotal*
+18	<<divider line>>		

where:

year defines the year implied for the following table (yyyy)

factor (if present) each value in the table is multiplied by factor (if omitted, the default is 1.0)

dd is the day of the month from 01..31 (zero-padded)

mmm is the first three characters of the name of the month (eg. Jan, Feb)

value is a data point. There should be as many data points in the row as the month has days

mtotal is the sum of the daily values in the month

ytotal is the sum of the monthly values in the year.

Table 18. IQQM data file format (quality indicators)

Character	**Interpretation**
" " (space)	Accept *value* as is
*	Multiply *value* by +1,000.0
e	The *value* is only an estimate
E	The *value* is only an estimate but it should be multiplied by 1,000
n	Multiply *value* by -1.0
N	Multiply *value* by -1,000.0

?	Missing data indication (typically input as "-1?")

MFM monthly rainfall files

A .MRF text file format contains a header line followed by a line giving the number of years of data. Data are formatted in lines with year given first, followed by 12 monthly values, all space separated. The format is shown in Table 19.

Table 19. .MRF data file format

Row	Column (space-delimited)	
	1	2..13
1	*desc*	
2	*nyears*	
3..*n*	*years*	*mvalue*

where:

desc is a string describing the file's contents (eg "Swiftflow River @ Wooden Bridge")

nyears states the number of years (rows) of data in the file

year is the year of observation (four digits)

mvalue is a data point. Each year should have 12 data points in the order January...December.

Map window ASCII grids

The .MWASC ASCII grid is similar to .ASC except that the coordinates are offset by 1/2 cell size and the header rows do not have titles. Thus there are six header rows with parameters only, followed by the gridded data. The format is shown in Table 20.

Table 20. MWASC data file format

Row	Column (space-delimited)	
	1	2..*n*
1	*nc*	
2	*nr*	
3	xc	
4	*yc*	
5	*size*	
6	*sentinel*	
7..*n*	*value*	*value*

where:

nc is the number of columns

nr is the number of rows

(xc,yc) are the coordinates of the center of the call at the lower left corner of the grid

size is the cell side length

sentinel is a null data string (eg. -9999)

value is a data point. There should be *nc* × *nr* data points.

SWAT daily time series

A SWAT daily rainfall time-series format file (.PCP) is an ASCII text file that contains daily time-series rainfall data. The file has a four line header followed by daily data values as shown in Table 21. For more details, refer to the SWAT 2012 input/output manual (Arnold *et al.*, 2012).

Table 21. .PCP data file format

Row	Column (space-delimited)	
	1	2
1	*desc*	
2	*Lati*	*lat*
3	*Long*	*lon*
4	*Elev*	*mahd*
5..*n*	*yyyydddvvv.v*	

where:

desc is a string describing the file's contents (eg. "Precipitation Input File")

lat is the latitude of the site in degrees (eg 14.77)

lon is the longitude of the site in degrees (eg 102.7)

mahd is the elevation of the site in metres (eg 167)

yyyy is the year

ddd is the Julian day offset within the year

vvv.v is the data value expressed as four digits with one decimal place. Missing data is written as "-99.0"

Space delimited time series

A space- or tab-delimited (.SDT) column time-series format file is an ASCII text file that contains time-series data. There is no header line in the file. The format is shown in Table 22. Monthly and annual data can be entered using month and/or day number as 01. These files can be created in a spreadsheet application by saving correctly formatted columns to a text (.TXT) format.

Table 22. .SDT data file format

Row	**Column (space-delimited)**			
	1	2	3	4
1..*n*	*year*	*month*	*day*	*value*

where:

year is the year of observation (four digits)

month is the month of observation (one or two digits)

day is the day of observation (one or two digits)

value is the data value to three decimal places (eg. 14.000).

SILO 5 time series

A QDNR .SILO5 daily time-series format file is an ASCII text file that contains daily time-series data. The format is shown in Table 23. This format sometimes uses the .TXT file extension.

Table 23. SILO 5 data file format

Row	**Column (space-delimited)**				
	1	2	3	4	5
1..*n*	*year*	*month*	*day*	*jday*	*value*

where:

year is the year of observation (four digits)

month is the month of observation (one or two digits)

day is the day of observation (one or two digits)

jday is the Julian day offset within the year (one, two or three digits)

value is a data point.

SILO 8 time series

The .SILO8 format contains the full 8 column daily data set from the SILO data base. The file can have multiple header lines, enclosed in inverted commas. The format of data rows is shown in Table 24.

Table 24. SILO 8 data file format

Row	Column (space-delimited)							
	1	2	3	4	5	6	7	8
1..*n*	*maxt*	*mint*	*rain*	*evap*	*rad*	*vpress*	*maxrh*	*minrh*

where:

maxt is the maximum temperature

mint is the minimum temperature

rain is the rainfall

evap is the evaporation

rad is the radiation

vpress is the vapour pressure

maxrh is the maximum relative humidity

minrh is the minimum relative humidity.

Grid-based Terrain Analysis Data

A .TAPESG file is a three column raster data format, with space separated values. Each line consists of the X coordinate, Y coordinate, and value. The format is shown in Table 25.

Table 25. .TAPESG data file format

Row	**Column (space-delimited)**		
	1	2	3..*n*
1	*x*	*y*	*value*

where:

(x,y) are coordinates

value is a data point.

Tarsier daily time series

The Tarsier daily time-series format file (.TTS) is an ASCII text file that contains daily time-series data. The file has a 21-line header (Table 27) followed by daily data values in the format shown in Table 26.

Table 26. Tarsier daily time series

Line	Purpose
1	The Tarsier version number header
2	Reference to author of Tarsier modelling framework
3	File path and name
4	Name of software used to create the file
5	Date and time file was created
6	Tarsier timer series data class (eg. TTimeSeriesData)
7	File version number
8	Number of header lines (set to 1)
9	1. (the number 1 followed by a period)
10	Number of daily data entries in the file
11	**Xlabel** is always Date/Time for time-series data
12	**Y1Label Y1** fixed field, does not change
13	**Y2Label Y2** fixed field, does not change
14	**Units** followed by Data units
15	**Format** followed by format information (eg. 1)
16	**Easting** followed by grid position east in metres
17	**Northing** followed by grid position north in metres
18	**Latitude** followed by the latitude of the site in decimal degrees
19	**Longitude** followed by the longitude of the site in decimal degrees
20	**Elevation** followed by the elevation of the site in metres
21	Header character (usually an asterisk; ASCII 42, ASCII hex 2A)

Table 27. TTS data file format

Row	Column (space-separated)			
	1	2	3	4
1..21	*header*			
22..*n*	*year*	*jday*	*value*	*qual*

where:

header is a 21-line header. Refer to Table 32

year is the year of observation (four digits)

jday is the Julian day offset within the year (one, two or three digits)

value is a data point including optional decimal places (eg 14 or 14.000)

qual is a quality indicator ("." ASCII 46 = "data ok/present"; "-" ASCII 45 = "data missing").

Example file header

```
Tarsier modelling framework, Version 2.0.
:  Created by Fred Watson.
:  File Name : C:\data\TIME\TIMEExample.tts
:  Generated from TIME Framework
:  Date : 24/12/200411:59:30PM
:  File class: TTimeSeriesData.
FileVersion unknown
HeaderLines 1
1.
NominalNumEntries 10
XLabel Date/Time
Y1Label Y1
Y2Label Y2
Units mm.day^-1
Format 1
Easting 0.000000
Northing 0.000000
Latitude 0.000000
Longitude 0.000000
Elevation 0.000000
*
```

Climate data formats - ASCII grids

The Climate data import tool will import any grids that follow the ESRI ASCIIGrid format and are in latitude-longitude projection. Therefore, it replaces the need to use a large set of Data Drills (eg. 10,000) by importing ASCIIGrid files of the catchment directly. The main benefits of ASCIIGrids are that the files are smaller and easier to manage, and Silo can usually supply them more easily than thousands of Data Drills.

When using ASCIIGrids of PET from SILO for hydrological purposes, request daily MWet (Morton's areal potential). If data is for agricultural purposes, request daily FAO56 (Penman-Monteith).

Table 28 shows what type of gridded data file format can be used for input data in the Climate data import tool.

Table 28. Climate data import tool (gridded data file formats)

File format	Rainfall	PET
ASCIIGrids	✓	✓
Climate Atlas of Australia	✓	✓
QDNR Silo	✓	
Silo 2006 standard	✓	✓
Silo comma delimited	✓	
Silo Morton	✓	✓

Note: Before importing ASCIIGrid files that have been obtained from Silo at different times (eg. data for 1950-2004 obtained in 2005 and data for 2004-2007 obtained in 2007), refer to the links described below.

For Climate Atlas of Australia file types, see the Bureau of Meteorology's web site:

http://www.bom.gov.au/climate/data/index.shtml

For QDNR Silo; Silo 2006 standard; Silo comma delimited; Silo Morton; Silo original standard see the Queensland Government Department of Environment and Resource management (QDERM) website:

http://www.longpaddock.qld.gov.au/silo/

CentralMeridian, FirstParallel, SecondParallel, OriginLatDD, OrginLongDD, EastFalseOrigin and NorthFalseOrigin are parameters to transform the Albers or Lambert projections of the scenario data into latitude and longitude co-ordinates of the climate ASCII grid data. They have been set to defaults for all of Australia and can be altered to better represent your modelling location. It is recommended that the Australian standard be adopted. Table 29 specifies the Albers projection parameter values for Australia and Queensland.

Table 29. Albers projection parameter values (Australia & QLD)

Field	Units	Australian Standard	Queensland ERA value
Projection		Albers	Albers
Central Meridian	Decimal degree	132.0	146.0
First Parallel	Decimal degree	-18.0	-13.1667
Second Parallel	Decimal degree	-36.0	-25.8333
Origin Latitude	Decimal degree	0.0	0.0
Origin Longitude	Decimal degree	132.0	146.0
East False Origin	Metres	0.0	0.0

North False Origin	Metres	0.0	0.0

For importing all other file formats, only the Universal Transverse Mercator (UTM) Zone needs to be defined. The UTM is a geographic coordinate system that provides locations on the Earth's surface. It divides the Earth into 60 zones, from West to East. Australia falls into zones 49-56. Refer to the Geosceience Australia website (www.ga.gov.au) for details about the UTM zones in Australia.

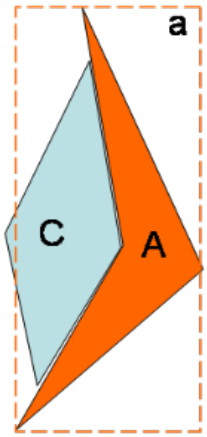
ASCIIGrid advanced example 1

Suppose you have data for one catchment and you want to use it to analyse a second catchment that is mostly in the same area, but with a small part that falls outside the available data.

In the example shown in Figure 1, the rectangle "a" indicates the area covered by the ASCIIGrid files. Shape "A" is the original catchment that the data was obtained for, and shape "C" is the catchment that you want to analyse. The problem is that part of "C" is outside of rectangle "a".

Providing that you are willing to accept that the results will be of lower quality, and also providing that no part of "C" is further than 10 kilometres from the boundary of "a" then the pre-processor will use the data from the nearest cell in "a" for the portion of "C" that is outside of "a". This is identical to the behaviour of the "Import rainfall data from SILO" option. To do this the prototypeRaster can be any raster (ASCIIGrid file) from "a".

Figure 1. Importing ASCIIGrid files (case 1)



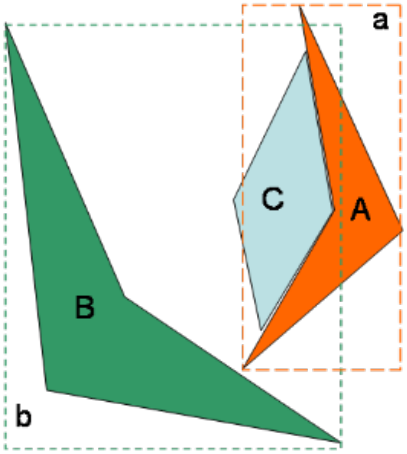
ASCIIGrid advanced example 2

An additional set of data "b" that was used to analyse catchment "B" (Figure 2).

Grid "a" covers the period 1950-2004 and grids "b" covers the period 1987 to 2007. If you need to compare events in 2006-2007 for catchment "C" with the long term (50 years), you need to make use of data from both sets "a" and "b".

In this example the prototypeRaster should again be any raster from set "a". Note that by doing so the Climate Data Import Tool will again handle the small part of "C" that is outside of "a" in the same way as it did in Case 1, even when it is using data from "b". Therefore, if a small portion of a catchment is outside one set of grids then make your *prototypeRaster* one of that same set.

Figure 2. Importing ASCIIGrid files (case 2)


a
C
A
B
b

References

Arnold, J.G., J.R. Kiniry, R. Srinivasan, J.R. Williams, E.B. Haney, S.L. Neitsch (2012) *Soil & Water Assessment Tool: Input/Output Documentation Version 2012*. Texas Water Resources Institute. TR-439.