Grid Import and Export Utilities for HEC-DSS

HEC programs such as HEC-HMS and GageInterp may require that parameter grids boundary conditions or initial conditions. The programs require that these grids must be stored as DSS grid records in the same grid system as the other grid data used by the program. A GIS program with that supports raster data, like ArcInfo® or GeoMedia®, is generally required to create such grids, but those programs do not support DSS grids as a data format. Two utility programs are available to bridge the gap between raster GIS and grids in DSS through the use on an intermediate ASCII text file.

The programs are named *asc2dssGrid* and *dss2ascGrid*, and can be run from a Windows or UNIX command line or can be incorporated into scripts for integration between DSS and GIS programs.

The intermediate ASCII file is formatted for compatibility with the ArcInfo® ASCIIGRID command. The files consist of a six-line header followed by an array of values laid out like an image of the grid. The six header lines are:

NCOLS	<number of grid columns (integer)>
NROWS	<number of grid columns (integer)>
XLLCORNER	<Lower-Left X Coordinate (real)>
YLLCORNER	<Lower-Left Y Coordinate (real)>
CELLSIZE	<Cell size (real)>
NODATA_VALUE	<Value that indicates null cell>

The NODATA value defaults to -9999.

Importing grids to DSS with *asc2dssGrid*

The *asc2dssGrid* utility takes the following arguments

INPUT=<name of ASCII input file>
DSS=<name of DSS file>
PATH=<complete DSS path name>
GRIDTYPE=<HRAP, SHG, or UTM>
Zone=<UTM zone identifier>
DUNITS=<data units>
DTYPE=<data type>

The arguments can be given in any order. The DUNITS and DTYPE arguments are optional. The imported grid's units default to mm if DUNITS is absent. If the PATH argument contains valid times in both the

D and E parts, the imported grid's data type will default to PER-CUM. If the E part (end time) is blank, the data type will default to INST-VAL. If the GRIDTYPE argument is absent, the grid type will be read from the A part of the path argument.

For example, the command:

```
asc2dssGrid in=grid.asc dss=mydss.dss
   path=/HRAP/TEST/PRECIP/23JUN2003:0100/23JUN2003:0200/IMPORT/
```

will treat the contents of the ASCII file *grid.asc* as though they were PER-CUM precipitation data reported in millimeter, and create an HRAP grid record with the given path in the given DSS file.

The program has some simple checks for data errors, such as missing files, unsupported data types, and unsupported cell sizes. It does not check for unsupported unit names or unreasonable data values.

The following command could be used to import an elevation grid for lapse computations.

```
asc2dssGrid in=elev.asc dss=mydss.dss DTYPE=INST-VAL
   DUNITS=METERS path=/SHG/ROGUE/ELEVATION///IMPORT/
```

Exporting grids from DSS with *dss2ascGrid*

The *dss2ascGrid* utility takes the following arguments:

> OUTPUT=<name of ASCII output file>
> DSS=<name of DSS file>
> PATH=<complete DSS path name>
> PRECISION=<number of decimal places>

The arguments can be given in any order. The following command will write the contents of a DSS grid record to an ASCII text file, which can be imported directly into ArcInfo®.

```
asc2dssGrid OUTPUT=precip_grid.asc dss=mydss.dss PREC=2
   path=/HRAP/TEST/PRECIP/23JUN2003:0100/23JUN2003:0200/IMPORT/
```

The text file may need additional modification before it can be imported to other GIS or surface analysis programs.