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/** ----- 11 MEAN AND MAXIMUM RAINFALL (UP TO 1998) -----
/** FILE NAME:          11_Rain.txt
/** AUTHOR:             RENEE SCHICKER
/** SCRIPT CREATED:     26 FEBRUARY 2009
/** SCRIPT UPDATED:     03 NOVEMBER 2009
/**
/** The scripts may be supplied in a more readily useable format if the work is acknowledged
/** CONTACT:            Renee_Schicker@hotmail.com
/**
/** STARTS IN:          ARC
/** SCRIPT USED BY:     00_MASTER.txt
/** USES SCRIPT:         CheckProgGrid.txt      (CREATED: 02 MARCH 2009)
/**
/** INPUT GRIDS:
/**      max_rain        D:\renee_gis\input_data\max_rain
/**      mean_rain       D:\renee_gis\input_data\mean_rain
/**      dem25int        D:\Renee_GIS\Output_data\Organised\03_DEM\dem25int
/**      TempClipBnd     D:\Renee_GIS\Output_data\Organised\02_Setup\TempClipBnd
/**
/** TEMP GRIDS:          98maxrain      98avrain
/**
/** OUTPUT GRIDS:        Max98Rain      Mean98Rain
/**
/** FUNCTIONS USED:      &TYPE          &RUN              SETWINDOW
/**                      SETMASK        MAPEXTENT          &IF &THEN
/**                      [EXIST]         KILL                QUIT (Q)
/**                      &RETURN        GRIDPOLY           ADDITEM
/**                      DROPITEM        EDITCOVER (EC)       EDITFEATURE (EF)
/**                      SELECT          CALCULATE           SAVE
/**                      DELETE          POLYGRID
/**
/**
/** PURPOSE:             To clip the rainfall data (originally in a raster or grid form) for the
/**                      whole of New Zealand to show only the data for the Waikato region.
/**                      This was done by setting the mask and map extent as the
/**                      region_grid. Some form of analysis had to be carried out in order to
/**                      get the clipped Waikato region data. So the easiest way without
/**                      changing the data values was to define the 98maxrain and 98avrain
/**                      grids as floating point values of the original grids (max_rain and
/**                      mean_rain) which had the same floating point values. These could
/**                      have been changed to integer if wished but floating point was how
/**                      the originals were so best leave it as is for the moment.
/**
/** OTHER NOTES:          GRIDCLIP did not work, instead it resized the New Zealand rainfall
/**                      grids to the extent of the Waikato region so the whole of NZ was
/**                      within the Waikato regional boundary.
/**                      Not setting the map extent but having the mask meant the clip was
/**                      done as a rectangle and this included areas outside the Waikato
/**                      Region.
/**                      Converting GRID to COVERAGE (POINT GRID and POLYGRID) and
/**                      clipping using GRIDCLIP or CLIP did not work

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/**      Editing will not work as the conversion to shapefile is necessary but
/**      the rainfall data is lost doing that
/**
/**      ..... HISTORY .....
/**      26 FEBRUARY 2009      Created script.
/**      27 FEBRUARY 2009      Changed the copying of data from floating point to integer to
/**                               floating point to floating point.
/**      02 MARCH 2009        Add &RUN CheckProgGrid.txt to script instead of the written
/**                               process
/**      05 MARCH 2009        Transferred everything over to new DELL GIS computer (other one
/**                               might be replaced at some stage). File path changes made.
/**      9-12 MARCH 2009      Formatted and listed everything, added descriptions and history.
/**      27 APRIL 2009        Check script is consistent with others, update script information.
/**      08 MAY 2009          Cannot access Attribute table in float format .Will try integer.
/**      11 MAY 2009          Added Routines and processes: Grid_2_cover, EDIT_MAX,
/**                               EDIT_MEAN and COVER_2_GRID
/**      13 MAY 2009          region_grid wasn't working so changed name to RegionGrid now
/**                               works.
/**      14 MAY 2009          Clip to the DEM instead of RegionGrid as it should cut out the stuff
/**                               not covered by DEM.
/**      20 MAY 2009          Separate Input data and output data directories, so workspace is set
/**                               to a separate output folder, so reduces the chance of deleting input
/**                               data by accident.
/**      18 JUNE 2009          Set the first mask as TempClipBnd which covers an area slightly
/**                               beyond the Waikato Region. This should include pixels that might
/**                               otherwise be excluded. The second mask is set as the DEM so after
/**                               the rain data has been converted to the same pixel size as the DEM
/**                               it can be clipped by it.
/**      30 SEPTEMBER 2009     Added separate workspaces for each script, so have to add file path
/**                               to find input files, also corrected input and output sections.
/**      03 NOVEMBER 2009     Added some kill commands to delete intermediate grids which will
/**                               Make it a bit easier to find the correct final grids.
/**      *****
/**      *****

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&TYPE Starting rain routine...

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&CALL CLIP_GRID
&CALL GRID_2_COVER
&CALL EDIT_MAX
&CALL EDIT_MEAN
&CALL COVER_2_GRID
&CALL CLIP_GRID2

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&RETURN

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/**      *****

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&ROUTINE CLIP_GRID

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/* Clips a wide area around the Waikato to try catch the larger pixels
/* A second clip will be carried out after the pixel size has been reduced

/* Need to use GRID so run the associated script to do this
&RUN d:\renee_gis\Scripts\CheckProgGrid.txt

/*set window
/*&TYPE set window to TempClipBnd...
SETWINDOW D:\Renee_GIS\Output_data\Organised\02_Setup\TempClipBnd
SETMASK D:\Renee_GIS\Output_data\Organised\02_Setup\TempClipBnd
&TYPE mask set
/*MAPEXTENT D:\Renee_GIS\Output_data\Organised\02_Setup\TempClipBnd
/*&TYPE map extent set

/*Convert the max rain to integer
&IF [EXIST 98maxrain -grid] &THEN KILL 98maxrain all
&TYPE Converting max_rain to integer
98maxrain = int(D:\renee_gis\input_data\max_rain + .5)

/*Convert the mean rain to integer
&IF [EXIST 98avrain -grid] &THEN KILL 98avrain all
&TYPE Converting mean_rain to integer
98avrain = int(D:\renee_gis\input_data\mean_rain + .5)

&IF [EXIST 98avrain -GRID] &THEN KILL 98avrain ALL
&IF [EXIST 98maxrain -GRID] &THEN KILL 98maxrain ALL

SETMASK off
Q
&RETURN

/*****
&ROUTINE GRID_2_COVER

/** This converts the rainfall from a raster (1 km pixel size) to a cover (vector format)
/** then is reconverted to a raster of 25 m pixel size which is then clipped to the region
/** Area. These two raster layers are used to extract the continuous rainfall data from.
/** The covers are then used to determine classes and catagorical versions are created also.

&IF [EXIST 98_max_rain -COVER] &THEN KILL 98_max_rain
&IF [EXIST 98_mean_rain -COVER] &THEN KILL 98_mean_rain
&IF [EXIST TempAvRain -GRID] &THEN KILL TempAvRain ALL
&IF [EXIST TempMaxRain -GRID] &THEN KILL TempMaxRain ALL
&IF [EXIST Rain98Av -GRID] &THEN KILL Rain98Av ALL
&IF [EXIST Rain98Max -GRID] &THEN KILL Rain98Max ALL

GRIDPOLY 98maxrain 98_max_rain
GRIDPOLY 98avrain 98_mean_rain
/*****
/**
Continuous Rainfall
**
/*****

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POLYGRID 98\_mean\_rain TempAvRain GRID-CODE

25

y

POLYGRID 98\_max\_rain TempMaxRain GRID-CODE

25

y

/\* Need to use GRID so run the associated script to do this

&RUN d:\renee\_gis\Scripts\CheckProgGrid.txt

/\*set window

SETWINDOW D:\Renee\_GIS\Output\_data\Organised\03\_DEM\dem25int

SETMASK D:\Renee\_GIS\Output\_data\Organised\03\_DEM\dem25int

&TYPE mask set

Rain98Av = int(TempAvRain)

Rain98Max = int(TempMaxRain)

SETMASK off

Q

&IF [EXIST TempAvRain -GRID] &THEN KILL TempAvRain ALL

&IF [EXIST TempMaxRain -GRID] &THEN KILL TempMaxRain ALL

&RETURN

/\*\*\*\*\*

/\*\* Categorical Rainfall \*\*

/\*\*\*\*\*

&ROUTINE EDIT\_MAX

DROPITEM 98\_max\_rain.pat 98\_max\_rain.pat class\_max

ADDITEM 98\_max\_rain.pat 98\_max\_rain.pat class\_max 5 5 I

&RUN d:\renee\_gis\scripts\checkprogedit.txt

EC 98\_max\_rain

EF polygon

SELECT for GRID-CODE = -9999

DELETE

SELECT for GRID-CODE LE 150

CALCULATE class\_max = 150

SELECT for GRID-CODE GT 150 AND GRID-CODE LE 200

CALCULATE class\_max = 200

SELECT for GRID-CODE GT 200 AND GRID-CODE LE 250

CALCULATE class\_max = 250

SELECT for GRID-CODE GT 250 AND GRID-CODE LE 300

CALCULATE class\_max = 300

SELECT for GRID-CODE GT 300 AND GRID-CODE LE 350

CALCULATE class\_max = 350

SELECT for GRID-CODE GT 350 AND GRID-CODE LE 400

CALCULATE class\_max = 400

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SAVE
Q
&RETURN
/*****
&ROUTINE EDIT_MEAN

DROPITEM 98_mean_rain.pat 98_mean_rain.pat class_max
ADDITEM 98_mean_rain.pat 98_mean_rain.pat class_max 5 5 I
&RUN d:\renee_gis\scripts\checkprogedit.txt

EC 98_mean_rain
EF polygon

SELECT for GRID-CODE = -9999
DELETE
SELECT for GRID-CODE LE 100
CALCULATE class_max = 100
SELECT for GRID-CODE GT 100 AND GRID-CODE LE 150
CALCULATE class_max = 150
SELECT for GRID-CODE GT 150 AND GRID-CODE LE 200
CALCULATE class_max = 200
SELECT for GRID-CODE GT 200 AND GRID-CODE LE 250
CALCULATE class_max = 250
SELECT for GRID-CODE GT 250 AND GRID-CODE LE 300
CALCULATE class_max = 300
SELECT for GRID-CODE GT 300 AND GRID-CODE LE 350
CALCULATE class_max = 350
SAVE
Q

&RETURN
/*****
&ROUTINE COVER_2_GRID

&IF [EXIST MeanRainGrid -GRID] &THEN KILL MeanRainGrid ALL
&IF [EXIST MaxRainGrid -GRID] &THEN KILL MaxRainGrid ALL

POLYGRID 98_mean_rain MeanRainGrid class_max
25
Y

POLYGRID 98_max_rain MaxRainGrid class_max
25
Y

&RETURN
/*****
&ROUTINE CLIP_GRID2
/* Need to use GRID so run the associated script to do this
&RUN d:\renee_gis\Scripts\CheckProgGrid.txt

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```
/*set window
/*&TYPE set window to dem25int...
SETWINDOW D:\Renee_GIS\Output_data\Organised\03_DEM\dem25int
SETMASK D:\Renee_GIS\Output_data\Organised\03_DEM\dem25int
&TYPE mask set
/*MAPEXTENT D:\Renee_GIS\Output_data\Organised\03_DEM\dem25int
/*&TYPE map extent set

/*Convert the max rain to integer to clip the reduced pixel sized grid by the DEM
&IF [EXIST Max98Rain -grid] &THEN KILL Max98Rain all
&TYPE Clipping maxraingrid
Max98Rain = int(MaxRainGrid)

/*Convert the mean rain to integer to clip the reduced pixel sized grid by the DEM
&IF [EXIST Mean98Rain -grid] &THEN KILL Mean98Rain all
&TYPE Clipping meanraingrid
Mean98Rain = int(MeanRainGrid)

SETMASK off
Q

&IF [EXIST MeanRainGrid -GRID] &THEN KILL MeanRainGrid ALL
&IF [EXIST MaxRainGrid -GRID] &THEN KILL MaxRainGrid ALL
&RETURN
```