GRD Extractor

1. Introduction

This program extracts .grd files into a text file which can then be added to an excel sheet for analysis. The user can specify the year and the grid points of their choice. This program has been written in C++. Prior to running the program, certain procedures are to be performed to initialise the program directories and input data sets. In addition to the input grid files, two input files (lat.txt and lon.txt), containing information regarding data points are to be created. The following section elaborates the instructions and point extraction procedures to create lat.txt and lon.txt files.

(The user is solely responsible for the data extracted. It is recommended that the data extracted be checked before being used for analysis)

2. Instructions

- Create a new folder in your C drive and name it GRD.
- Copy all the Grid file to this location.
- Make sure that the grid files are named as "ind****_rfp25.grd", where **** is the corresponding year. *Example: - ind2013_rfp25.grd, this is the grid file for 2013.*
- Now you need to add the input file lat.txt and lon.txt to this directory. The instructions for creating these files are explained in section 3.
- Now run the program file *GRD Extract.exe.*

3. Creating the input files

The lat.txt and lon.txt contains the latitude and longitudes of the area of interest (AOI). If the user has prior knowledge of the required latitude and longitude, these input files can be created as shown below, however the input latitudes and longitudes should be according to the points available in the gridded data set. The data set contains 135 longitudinal points starting at 66.5 with an increment of 0.25 degrees. This means that data at longitudes 66.8 is not a valid input. Similarly there are 129 latitudinal points starting from 6.5 with an increment of 0.25 degrees.

Suppose there are five points within the AOI say 1. (6.5(lat),66.5(lon)), 2. (6.75,66.75), 3. (7,67), 4. (7.25,67.25) and 5. (7.5, 67.5), the corresponding lat.txt and lon.txt should be as shown in figure 1.

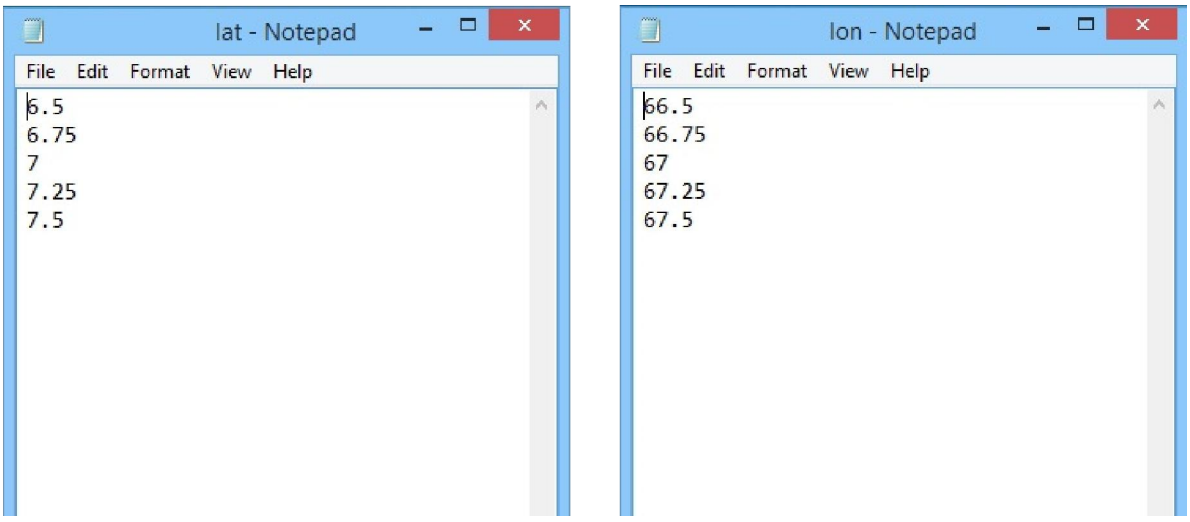


Figure 1: lat.txt and lon.txt for the mentioned AOI.

In case if the user doesn't know the locations of the points within their AOI, the following steps describes a way of identifying the points. For visualizing the points within the AOI ArcGIS is used.

- Open your AOI in Esri ArcGIS.
- Now copy the shapefile grid location folder provided with this program to your ArcGIS connected folder.
- The folder contains a shapefile "Grid Location" containing all the data points in the 0.25*0.25 degree gridded rainfall dataset from IMD. Add this to your ArcGIS project.
- Now you can see the grid points with in your AOI. See figure 2.

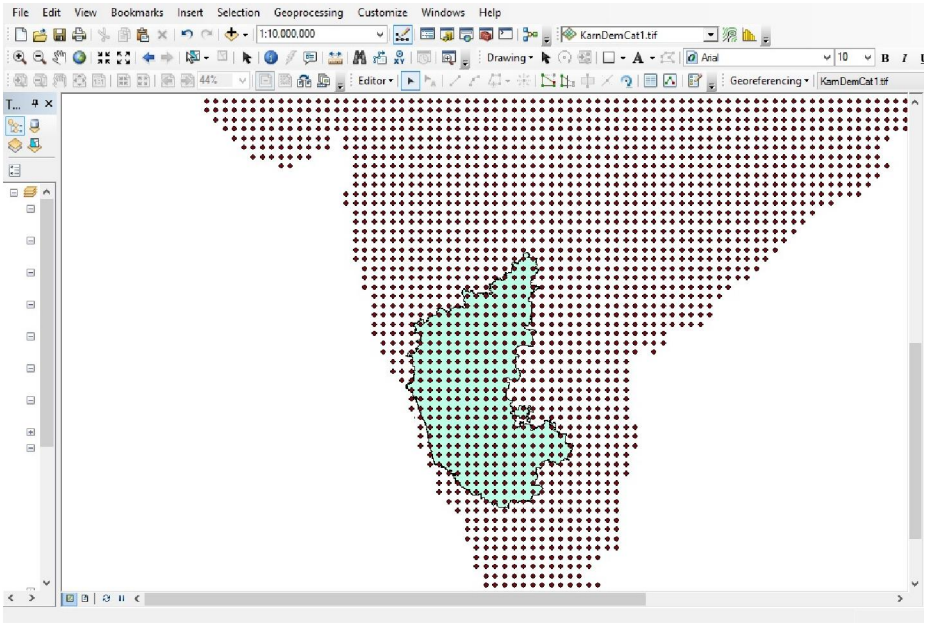


Figure 2: 0.25*0.25 degree rainfall grid points with in Karnataka.

- Now start editing your grid points from the editor options.
- Select all the points within your AOI. You can press and hold the shift key to select multiple points.
- Now open the attribute table and copy the selected points. See figure 3.

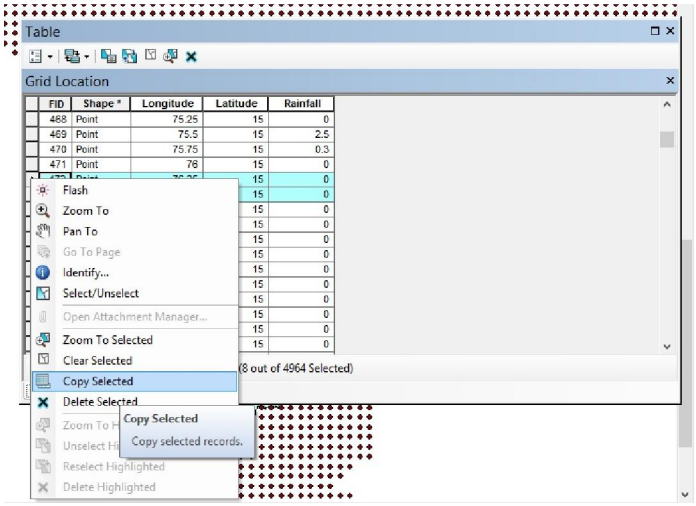
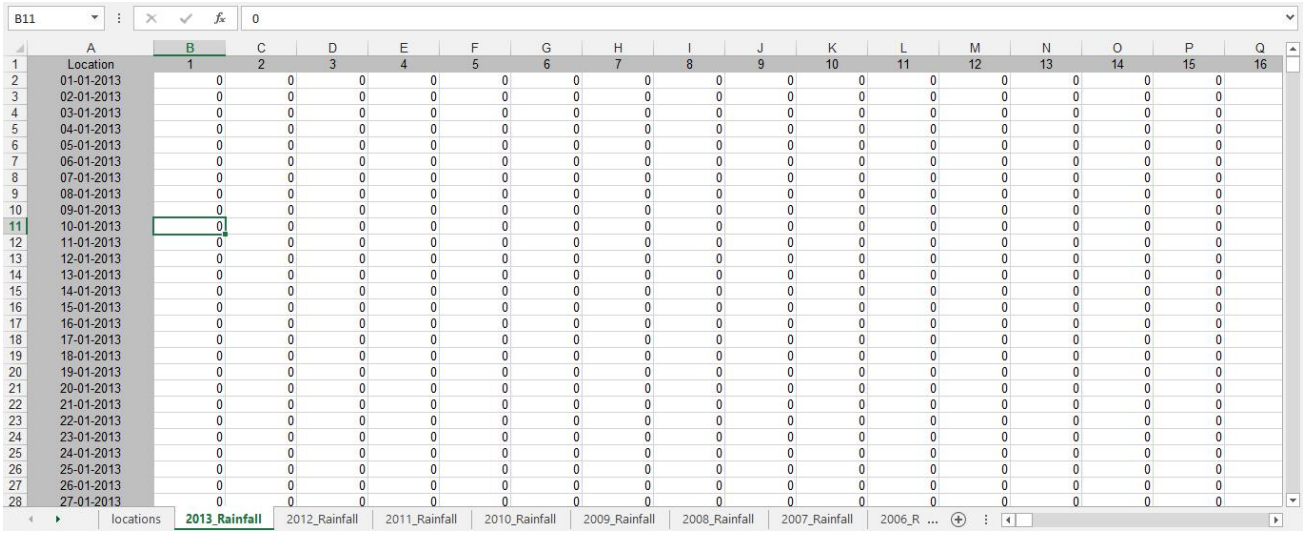


Figure 3: Copying the selected files.

- Now open a new text file and paste these values.
- You will get the latitudes and longitudes for your AOI.
- Now you could create the lat.txt and lon.txt as described earlier. See figure 1.

4. Output file

- Once the input files are prepared the program *GRD Extract.exe* can be executed. Follow the onscreen instructions to finish the extraction.
- After successful extraction the GRD folder now contains output text file for each year with the name format as rfp_****.txt, where **** corresponds to the particular year. Example: - rfp_2013.txt is the output file for the year 2013.
- Open the output text file and copy the contents to an excel sheet.
- Each row corresponds to the data for 01/01/year, and each column corresponds to the locations in the order as given in your lat.txt and lon.txt files.
- You can also add a date column to the left and a point row to the top for convenience. See figure 4.
- *However, the data locations may not be in the order of your lat lon input, but will be such that the top left point is first and the bottom right point is the last location in the excel sheet.*



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Location	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2	01-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	02-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	03-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5	04-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6	05-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	06-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	07-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	08-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10	09-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11	10-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12	11-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	12-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14	13-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	14-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	15-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	16-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	17-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	18-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20	19-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	20-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22	21-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
23	22-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
24	23-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25	24-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26	25-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
27	26-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
28	27-01-2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Figure 4: Data extracted to excel sheet.

(The user is solely responsible for the data extracted. It is recommended that the data extracted be checked before being used for analysis)

The program has been coded by *Sinan Nizar*, Research scholar NITK-Surathkal (zinan.dx@gmail.com). Enjoy!!