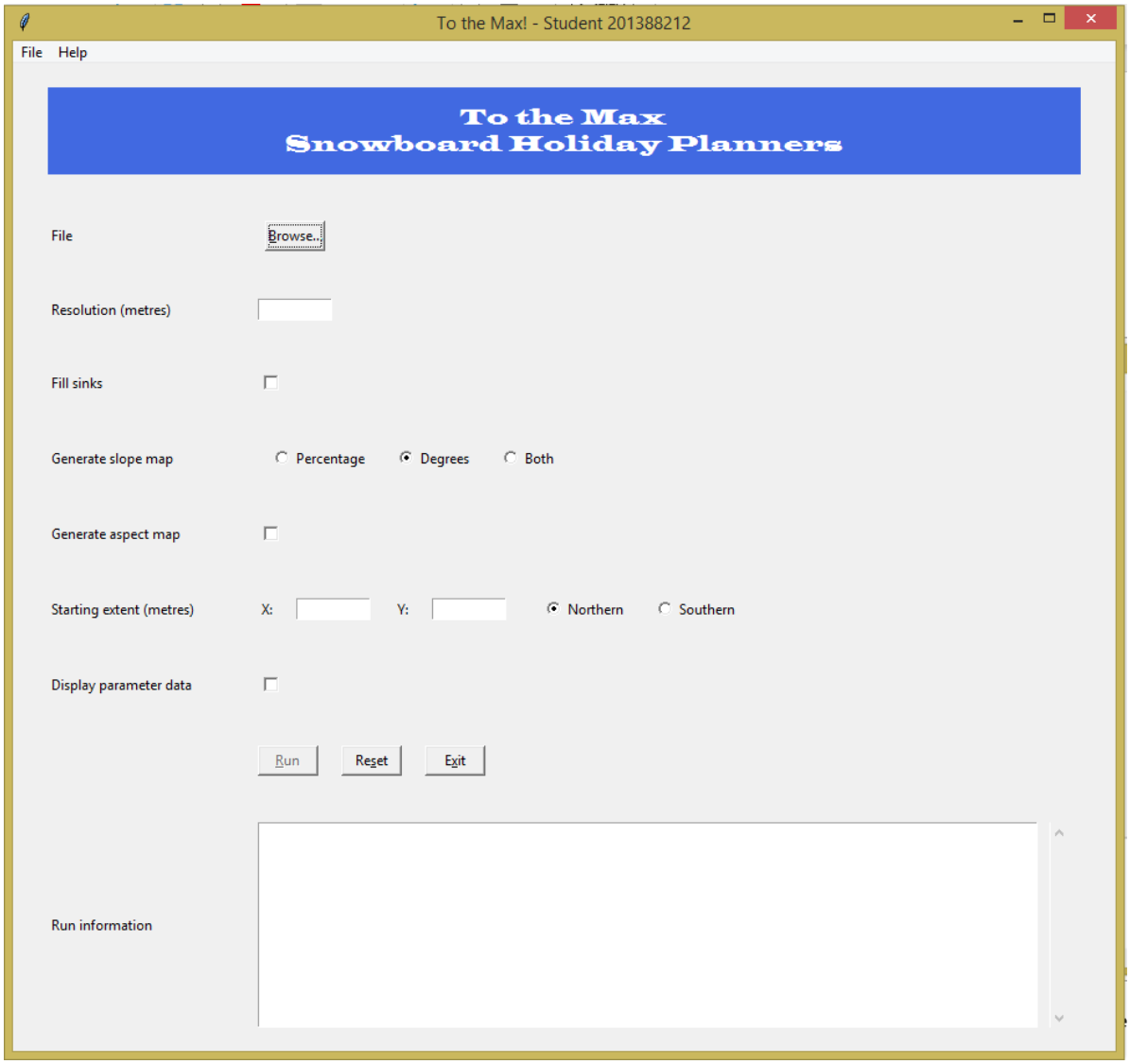
GEOG5003 – Assignment 2 Test Cases

GUI Front-end Window - Initial Display



Expected Output - Summary

Maps (combinations):

- (2 maps) DEM map, slope map in degrees (default combination);
- (2 maps) DEM map, slope map using percentages;
- (3 maps) DEM map, slope map in degrees, slope map using percentages;
- (3 maps) DEM map, slope map in degrees, aspect map;
- (3 maps) DEM map, slope map using percentages, aspect map;
- (4 maps) DEM map, slope map in degrees, slope map using percentages, aspect map.

Output files:

- Slope data in degrees (Default);
- Slope data using percentages;
- Aspect data.

Test #	Description	Comments / Expected Results	Pass / Fail
1	**Navigation**		
1.1	Start app from command line running tothemaxhome.py	Loads GUI front end.	Pass
1.2	Start app from command line running tothemaxmain.py	Runs app without GUI front-end.	Pass
1.3	Exit app using Alt-x	Program exits.	Pass
1.4	Exit app using File > Exit	Program exits.	Pass
1.5	Exit app using Exit button	Program exits.	Pass
1.6	Help > Inputs	Returns tothemaxmain.py -h information. Pop-up window appears.	Pass
1.7	Help > About	Pop-up window appears.	Pass
1.8	Reset fields using Alt-s	URL label cleared. All Entry fields cleared. Generate slope map set to Degrees. Starting extent set to Northern Hemisphere. All Check Buttons unchecked. Run Information cleared.	Pass
1.9	Reset fields using File > Reset	Same as test 1.8.	Pass
1.10	Reset fields using Reset button	Same as test 1.8.	Pass
1.11	Run app using Alt-r	Matplotlib figure appears (if no errors). Contains any confirmation of parameter settings if Display parameter data check button checked at the time. Any errors displayed in Run Information.	Pass
1.12	Run app using File > Run…	Same as test 1.11.	Pass
1.13	Run app using Run button	Same as test 1.11.	Pass
2	**Front-end fields (initial display)**		
2.1	URL label, entry fields, text box	All empty.	Pass
2.2	Radio Buttons set (Generate slope map)	Set to “Degrees” option.	Pass
2.3	Radio Buttons set (Hemisphere)	Set to “Northern” option.	Pass
2.4	Check buttons	All unchecked.	Pass
2.5	Button (Run…)	Disabled.	Pass
2.6	Menu bar (File > Run…)	Disabled.	Pass
2.7	Cursor focus position	Located on Browse… button.	Pass
3	**Front-end fields (after any run)**		
3.1	URL label, entry fields, radio Buttons, check buttons	All unchanged.	Pass
3.2	Text box	Contains any confirmation of parameter settings if Display parameter data check button checked at the time. Any error messages.	Pass
3.3	Cursor focus position	Located on Run… button.	Pass

4	**Front-end fields – File**		
4.1	Empty (initial display)	Run button and File > Run… is disabled to prevent running without data input.	Pass
4.2	Populated after returning from Browse… operation (file selected)	URL parsed into tothemaxmain.py.	Pass
4.3	Cleared after returning from Browse… operation (no file selected)	Run button and File > Run… reverts to being disabled.	Pass
4.4	Cleared after the Reset or File > Reset operations	Run button and File > Run… reverts to being disabled.	Pass
5	**Front-end fields – Resolution (metres)**		
5.1	Empty	No argument parsed. Defaults to 50 (hard coded).	Pass
5.2	Contains at least 1 Alphanumeric character	Run terminates. Error displayed in Run Information.	Pass
5.3	Contains as least 1 space character	Run terminates. Error displayed in Run Information.	Pass
5.4	Contains zero	Run terminates. Error displayed in Run Information.	Pass
5.5	Contains a positive integer	Value parsed into tothemaxmain.py and overrides default. Difference on the x axis range of each subplot / number of cells in rows = this value. Difference on the y axis range of each subplot / number of cells in rows = this value.	Pass
5.6	Contains a negative integer	Run terminates. Error displayed in Run Information.	Pass
5.7	Contains a floating-point number	Run terminates. Error displayed in Run Information.	Pass
6	**Front-end fields – Fill Sinks**		
6.1	Unchecked	No argument parsed. Defaults to N (hard coded). Slope and aspect maps potentially displayed with some NoData cells.	Pass
6.2	Checked	Y parsed into tothemaxmain.py and overrides default. Majority of non-edge cells with NoData will be resolved. Edge cells with NoData remain unresolved and displayed as colourless.	Pass

7	**Front-end fields – Generate slope map**		
7.1	Percentage	P parsed into tothemaxmain.py and overrides default. Slope map (Percentage) displayed in Matplotlib figure at subplot position row:2 column:1.	Pass
7.2	Degrees	D parsed into tothemaxmain.py (same as default). Slope map (Degrees) displayed in Matplotlib figure at subplot position row:2 column:1.	Pass
7.3	Both	B parsed into tothemaxmain.py and overrides default. Slope map (Degrees) displayed in Matplotlib figure at subplot position row:2 column:1. Slope map (Percentage) displayed in Matplotlib figure at subplot position row:2 column:2.	Pass
7.4	Mutually exclusive	Yes.	Pass
8	**Front-end fields – Generate aspect map**		
8.1	Unchecked	No argument parsed. Defaults to N (hard coded). No Matplotlib figure at subplot position row:1 column:2.	Pass
8.2	Checked	Y parsed into tothemaxmain.py and overrides default. Aspect map displayed in Matplotlib figure at subplot position row:1 column:2.	Pass
9	**Front-end fields – Starting Extent (metres) X**		
9.1	Empty	No argument parsed. Defaults to 0 (hard coded). Starting x axis value on all subplots = 0. Ending x axis value on all subplots = number of cells in rows x Resolution.	Pass
9.2	Contains at least 1 Alphanumeric character	Run terminates. Error displayed in Run Information.	Pass
9.3	Contains as least 1 space character	Run terminates. Error displayed in Run Information.	Pass
9.4	Contains zero, positive or negative integer	Value parsed into tothemaxmain.py and overrides default. Starting x axis value on all subplots = this value. Ending x axis value on all subplots = this value + (number of cells in rows x Resolution)	Pass
9.5	Contains a floating-point number	Run terminates. Error displayed in Run Information.	Pass

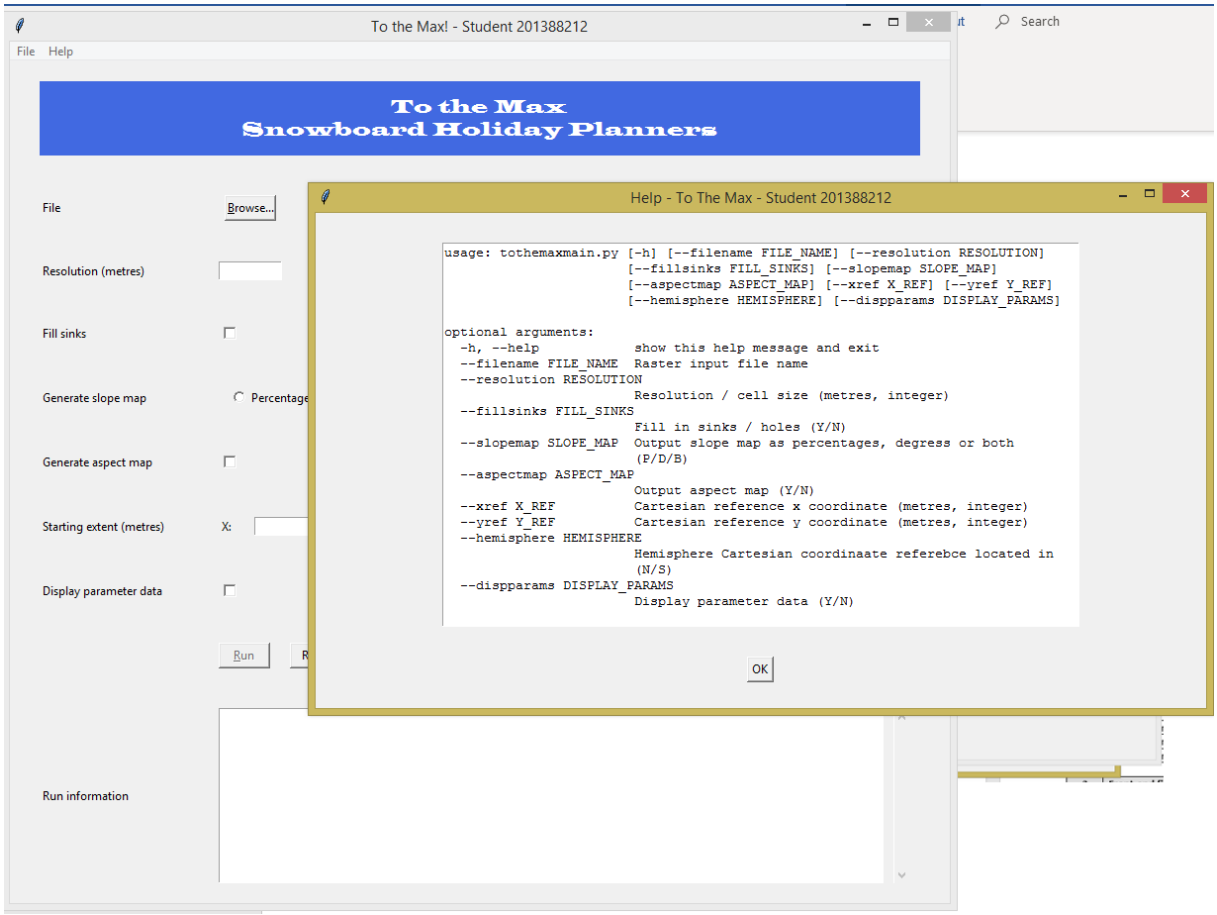
10	**Front-end fields – Starting Extent (metres) Y**		
10.1	Empty	No argument parsed. Defaults to 0 (hard coded). Starting y axis value on all subplots = 0. Ending y axis value on all subplots = number of rows x Resolution.	Pass
10.2	Contains at least 1 Alphanumeric character	Run terminates. Error displayed in Run Information.	Pass
10.3	Contains as least 1 space character	Run terminates. Error displayed in Run Information.	Pass
10.4	Contains zero, positive or negative integer	Value parsed into tothemaxmain.py and overrides default. Starting y axis value on all subplots = this value. If Northern Hemisphere selected: Ending y axis value on all subplots = this value + (number of cells in rows x Resolution) If Southern Hemisphere selected: Ending y axis value on all subplots = this value - (number of cells in rows x Resolution)	Pass
10.5	Contains a floating-point number	Run terminates. Error displayed in Run Information.	Pass
11	**Front-end fields – Hemisphere**		
11.1	Northern	N parsed into tothemaxmain.py and overrides default. Starting / ending y axis values displayed on all subplots is ascending.	Pass
11.2	Southern	S parsed into tothemaxmain.py and overrides default. Starting / ending y axis values displayed on all subplots is descending.	Pass
11.3	Mutually exclusive	Yes.	Pass
12	**Front-end fields – Display parameter data**		
12.1	Unchecked	No parameter information displayed.	Pass
12.2	Checked	Y parsed into tothemaxmain.py and overrides default. Summary of run parameters passed returned.	Pass
13	**Input raster file (snow.slope)**		
13.1	No. of cell values in each row not consistent	Run terminates. Error displayed in Run Information.	Pass
13.2	Cell value not numeric	Run terminates. Error displayed in Run Information.	Pass

14	**Input raster file (georeferenced)**		
14.1	With ncols row	Used to validate no. of data cells input.	Pass
14.2	With nrows row	Used to validate no. of data cells input.	Pass
14.3	With xllcorner row	Used to populate Starting extent (X).	Pass
14.4	With xllcenter row	Used to populate Starting extent (X).	Pass
14.5	With yllcorner row	Used to populate Starting extent (Y).	Pass
14.6	With yllcenter row	Used to populate Starting extent (Y).	Pass
14.7	With cellsize row	Used to populate Resolution. Used to calculated Starting extent (X) when xllcenter input instead of xllcorner. Used to calculated Starting extent (Y) when yllcenter input instead of yllcorner.	Pass
14.8	With nodata_value row	Used to identify NoData input data cells.	Pass
15	**General running of app without errors**		
15.1	Georeferenced input file	Resolution and Starting extents (x & y) prepopulated. 2 to 4 maps generated.	Pass
15.2	Non-georeferenced input file	No front-end fields prepopulated. 2 to 4 maps generated.	Pass
15.3	Elevation map	Generated for every run.	Pass
15.4	Slope map as a Percentage	Generated if selected via front-end.	Pass
15.5	Slope map in Degrees	Generated if selected via front-end.	Pass
15.6	Aspect map	Generated if selected via front-end.	Pass
15.7	At least one downhill cell in a neighbourhood	No affect on number of maps produced or data cell values in slope and aspect maps.	Pass
15.8	No downhill cells in a neighbourhood – sinks not filled	Affected edge cells displayed in slope and aspect map with NoData (NaN) – regardless of whether Fill sinks is selected or not.	Pass
15.9	No downhill cells in a neighbourhood – sinks filled	Resolved with taking the lowest elevation of the eight neighbours.	Pass
15.10	Map located entirely in Northern hemisphere	Starting and ending y axis labels both display North and are ascending.	Pass
15.11	Map located entirely in Southern hemisphere	Starting and ending y axis labels both display South and are descending.	Pass
15.12	Starting and ending extents (y axis) located opposite hemispheres	Starting y axis label displays South. Ending y axis label displays North.	Pass
15.13	Input file contains a NoData cell.	Cell remains as NoData throughout. Corresponding slope map cell contains NoData (NaN). Corresponding aspect map cell contains NoData (NaN).	Pass

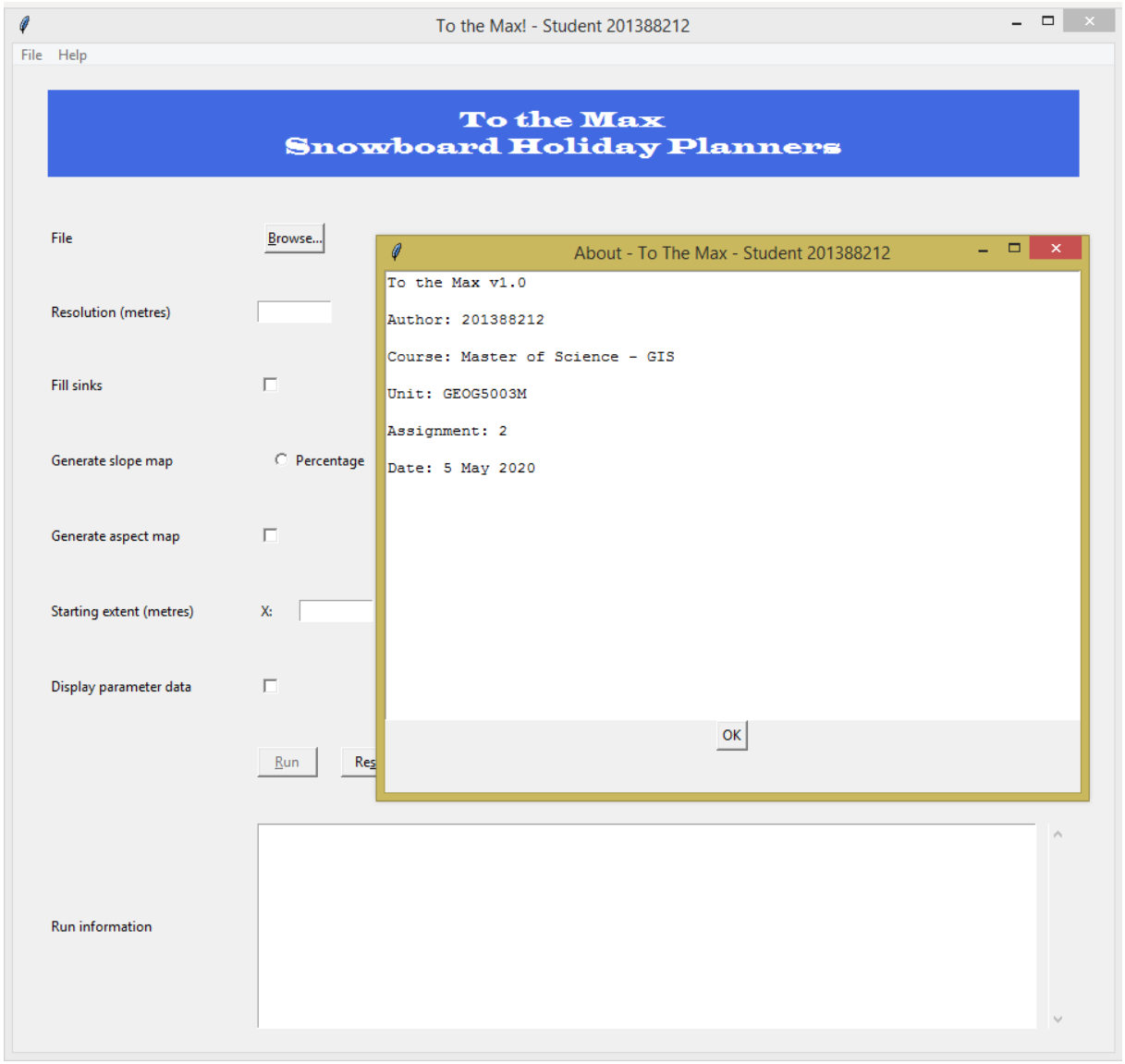
16	Output files		
16.1	snow_slope_map_perc.txt (Slope map data as a percentage)	File not georeferenced. Format and layout matches input file. File overwritten for each run. Contains same number of rows and cells as in input file. Each data cell is in float format with precision to 1 decimal place. NoData is represented as NaN.	Pass
16.2	snow_slope_map_deg.txt (Slope map data in degrees)	File not georeferenced. Format and layout matches input file. File overwritten for each run. Contains same number of rows and cells as in input file. Each data cell is in float format with precision to 1 decimal place. NoData is represented as NaN.	Pass
16.3	snow_aspect_map.txt (Aspect map data)	File not georeferenced. Format and layout matches input file. File overwritten for each run. Contains same number of rows and cells as in input file. Each data cell is in integer format. NoData is represented as NaN.	Pass

GEOG5003M – Assignment 2 Testing Evidence

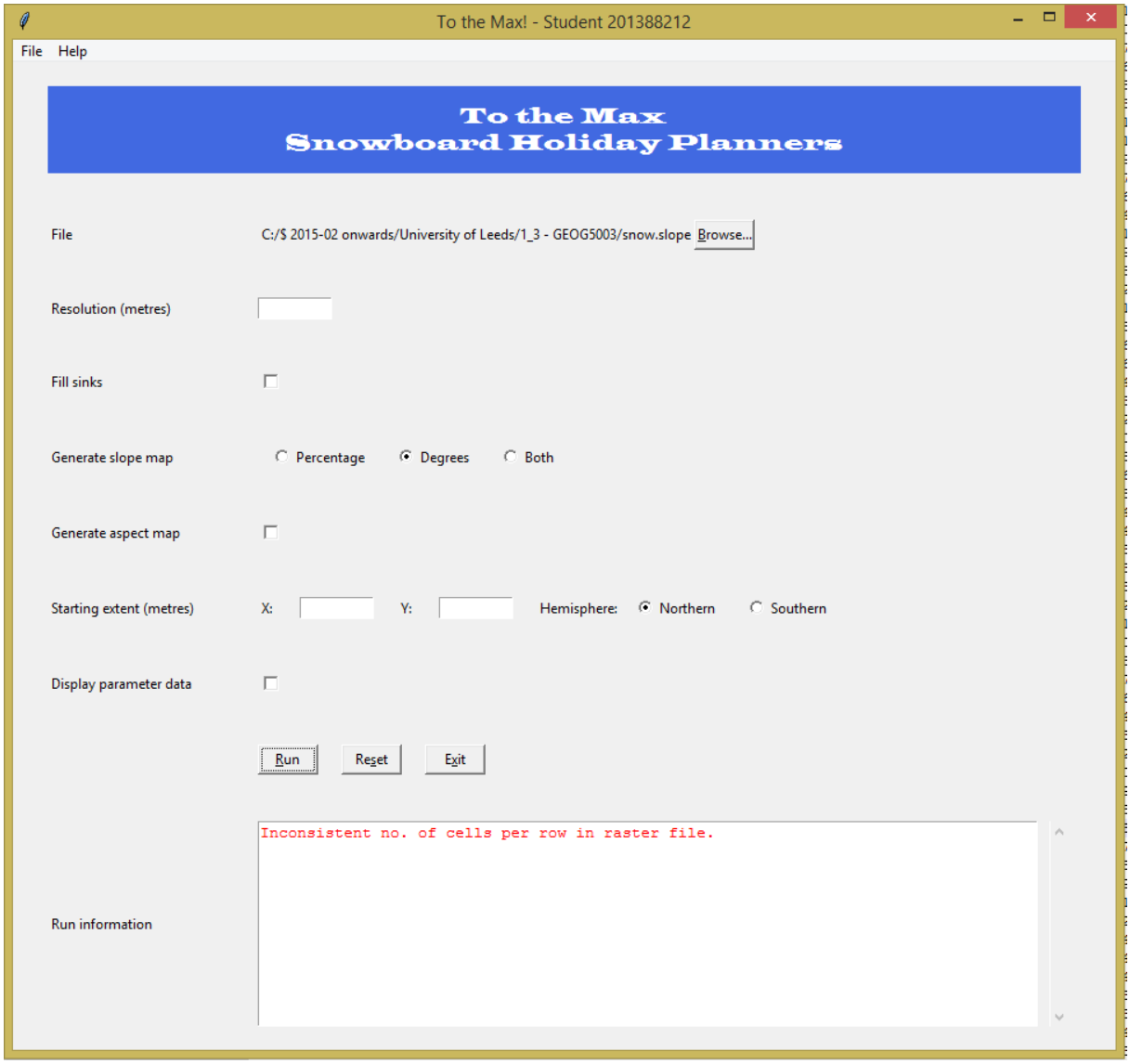
Test Case 1.6 – Help information.



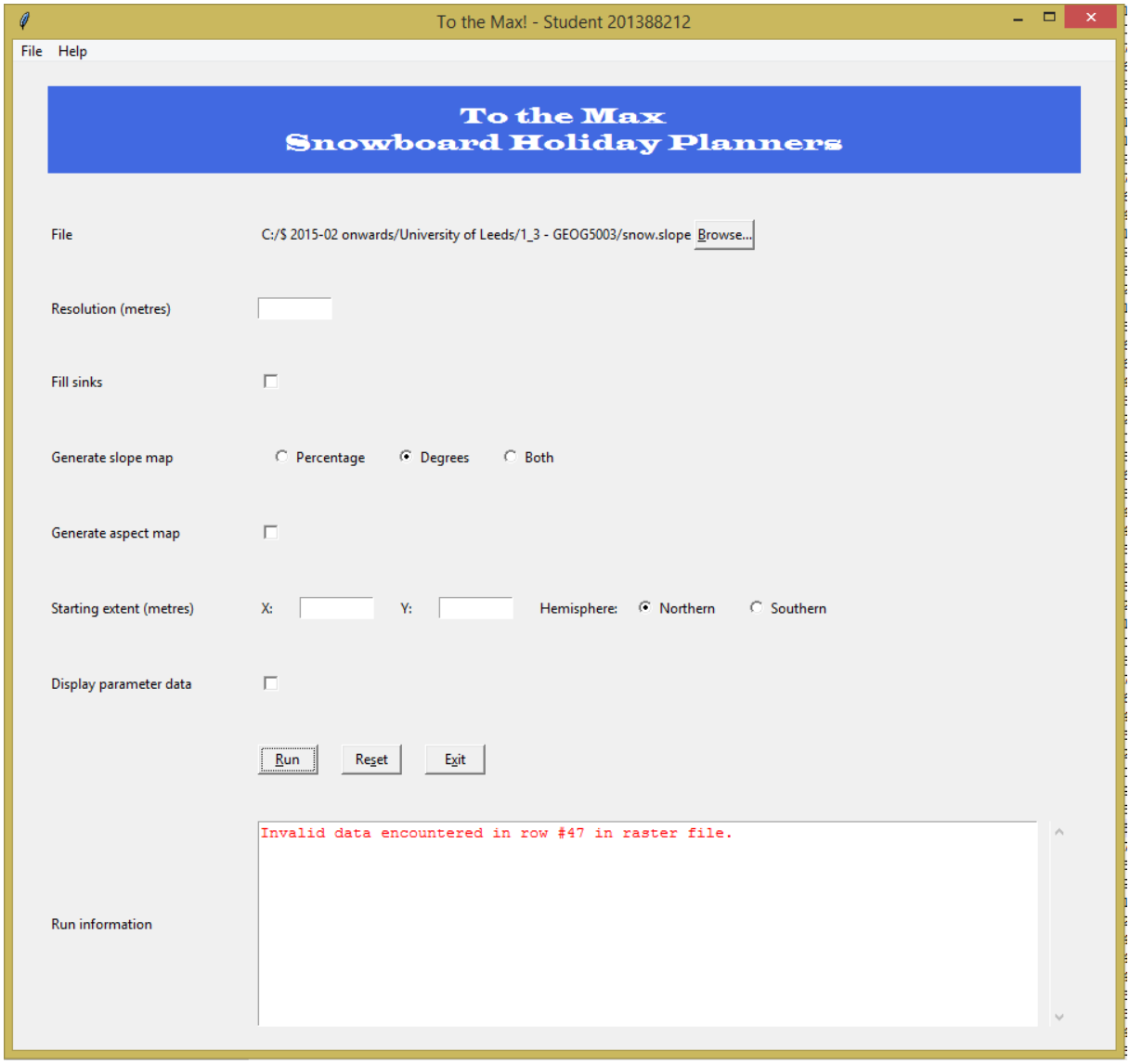
Test Case 1.7 – About information.



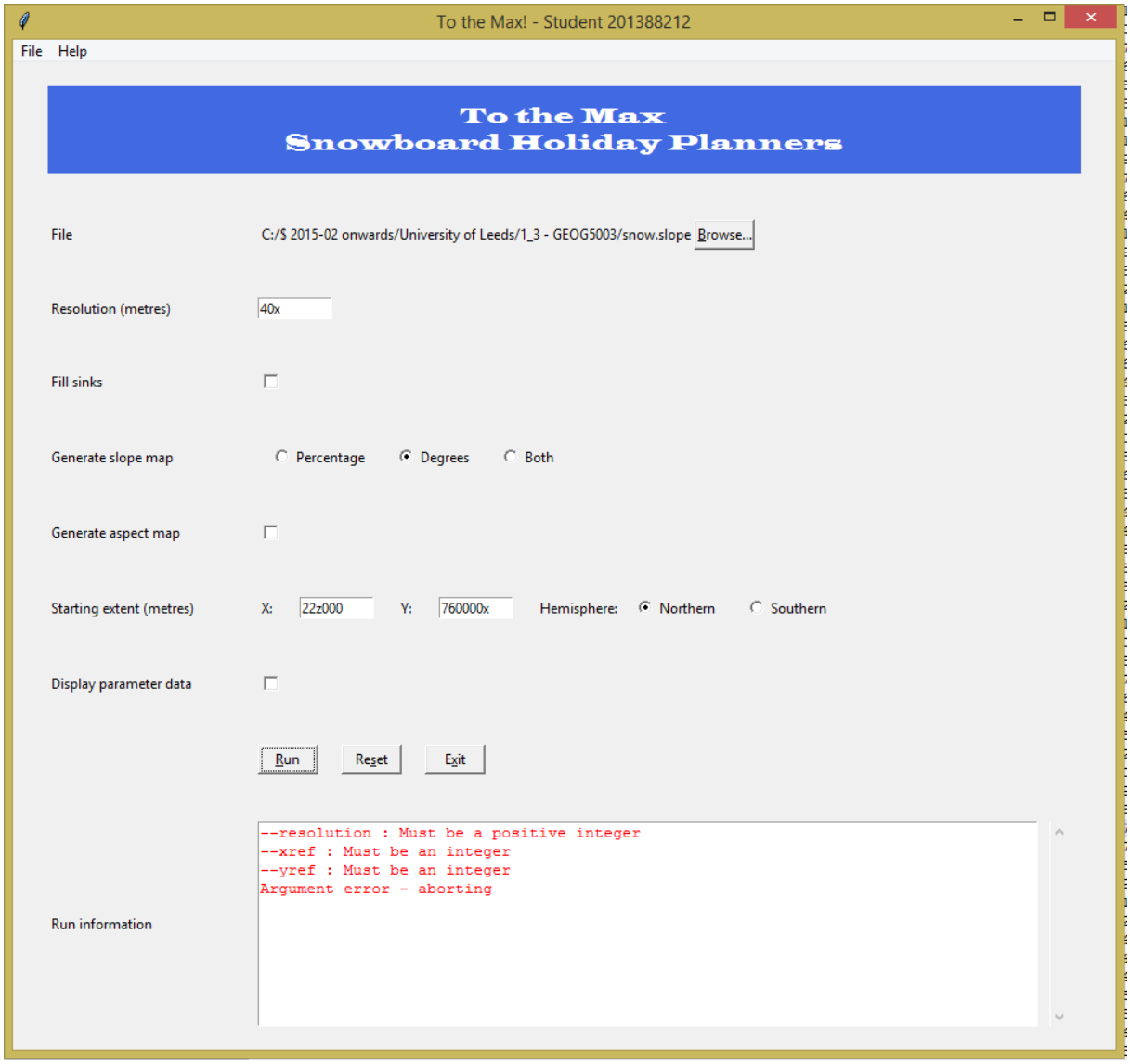
Test Case 13.1 – Corrupt input file (1).



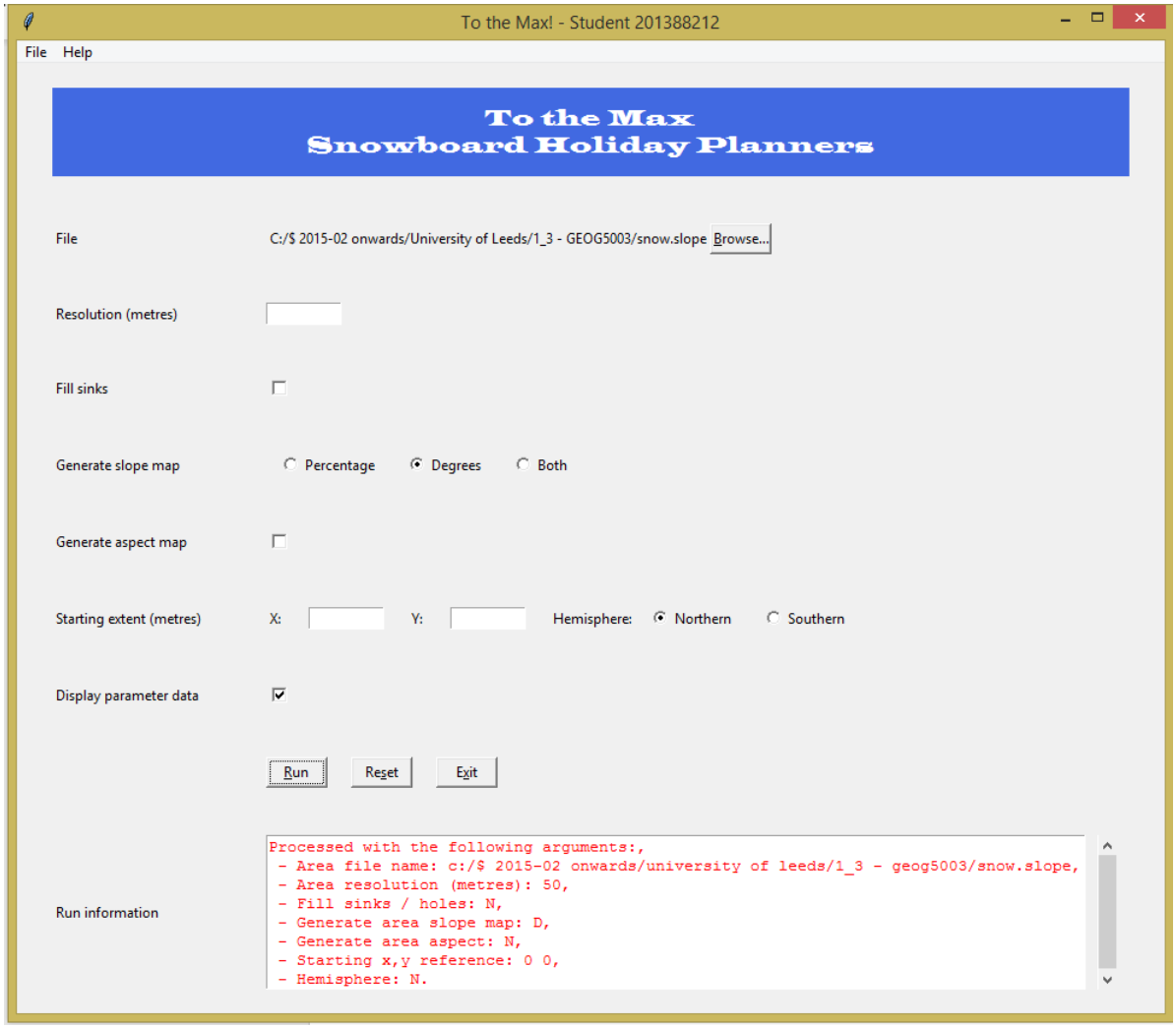
Test Case 13.2 – Corrupt input file (2).

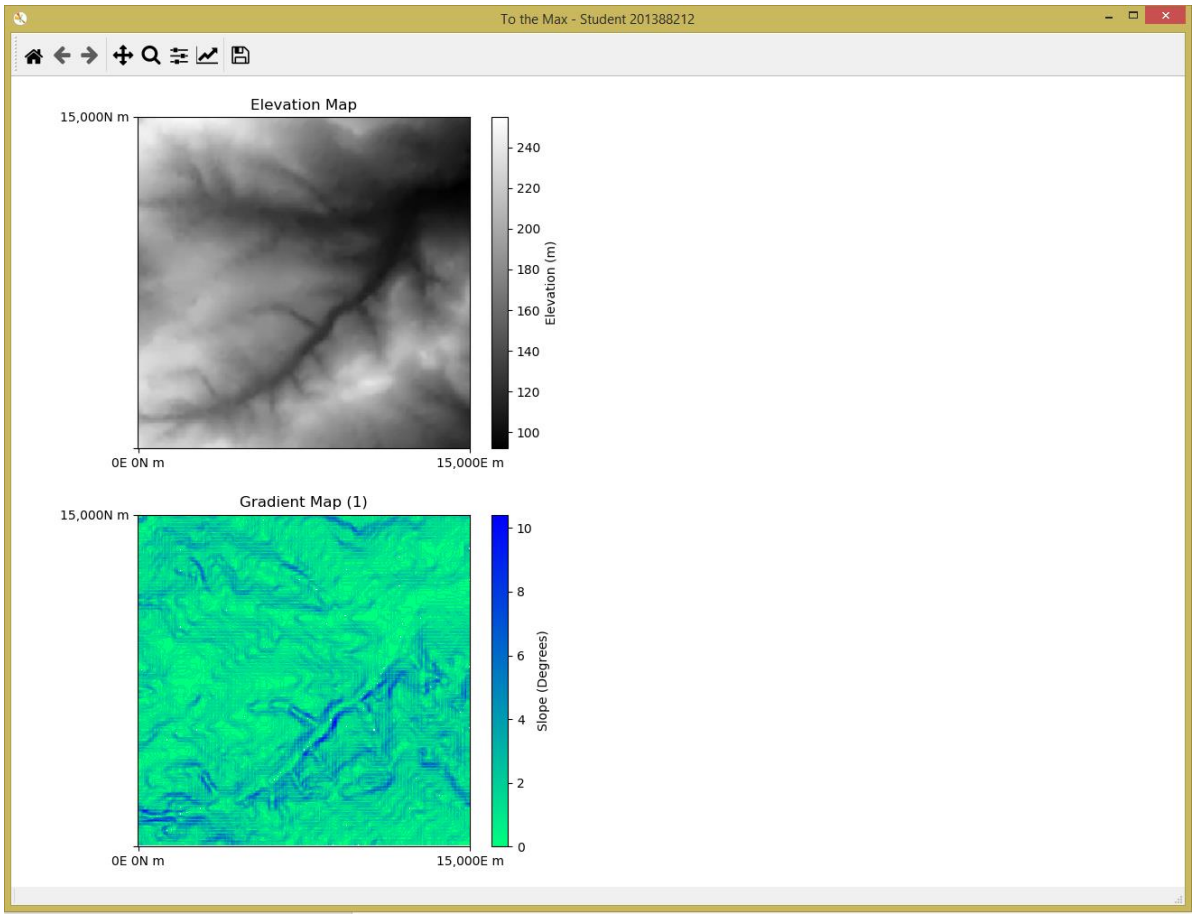


Test Cases 5.2, 9.2, 10.2 – Invalid parameter data.

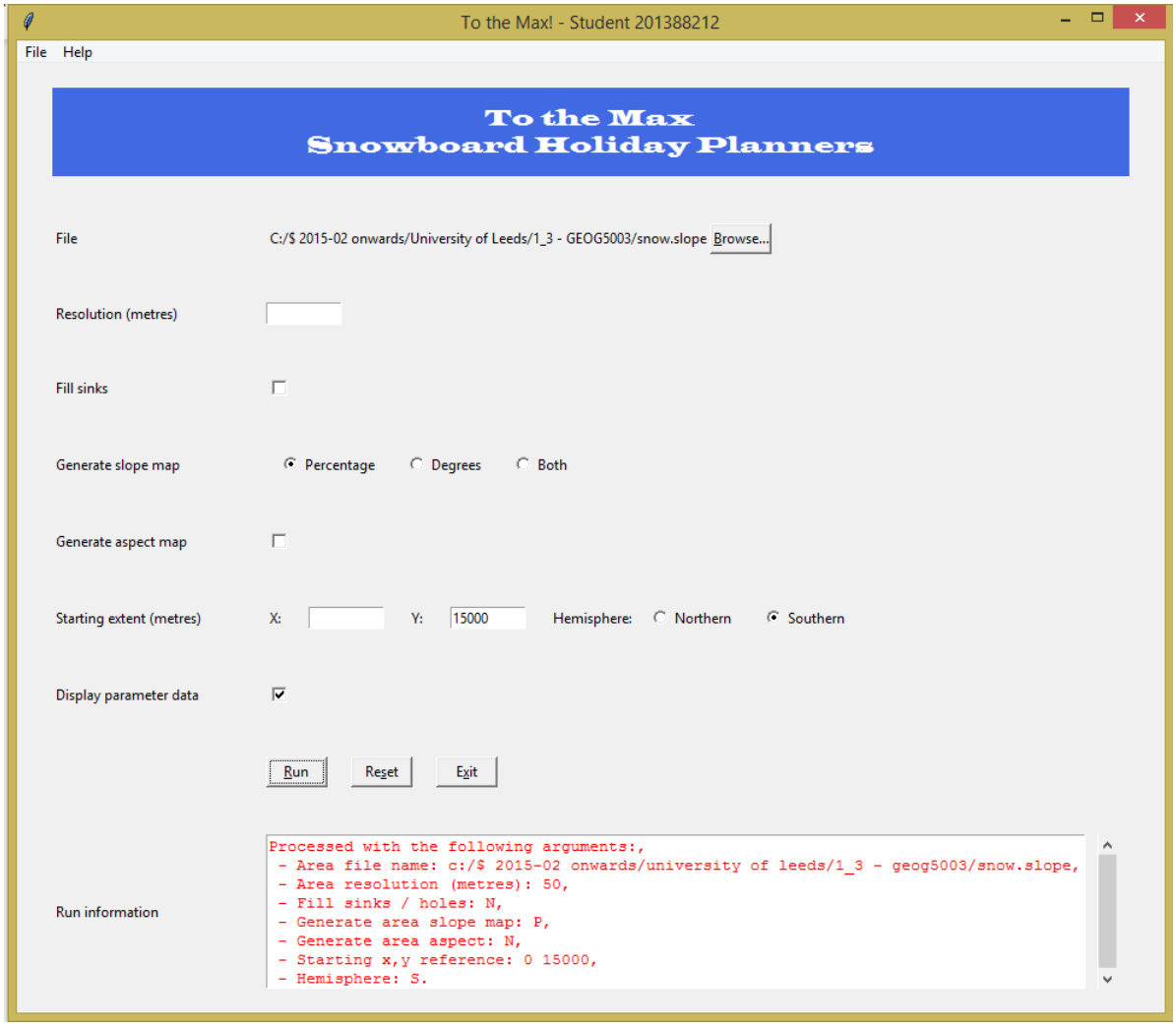


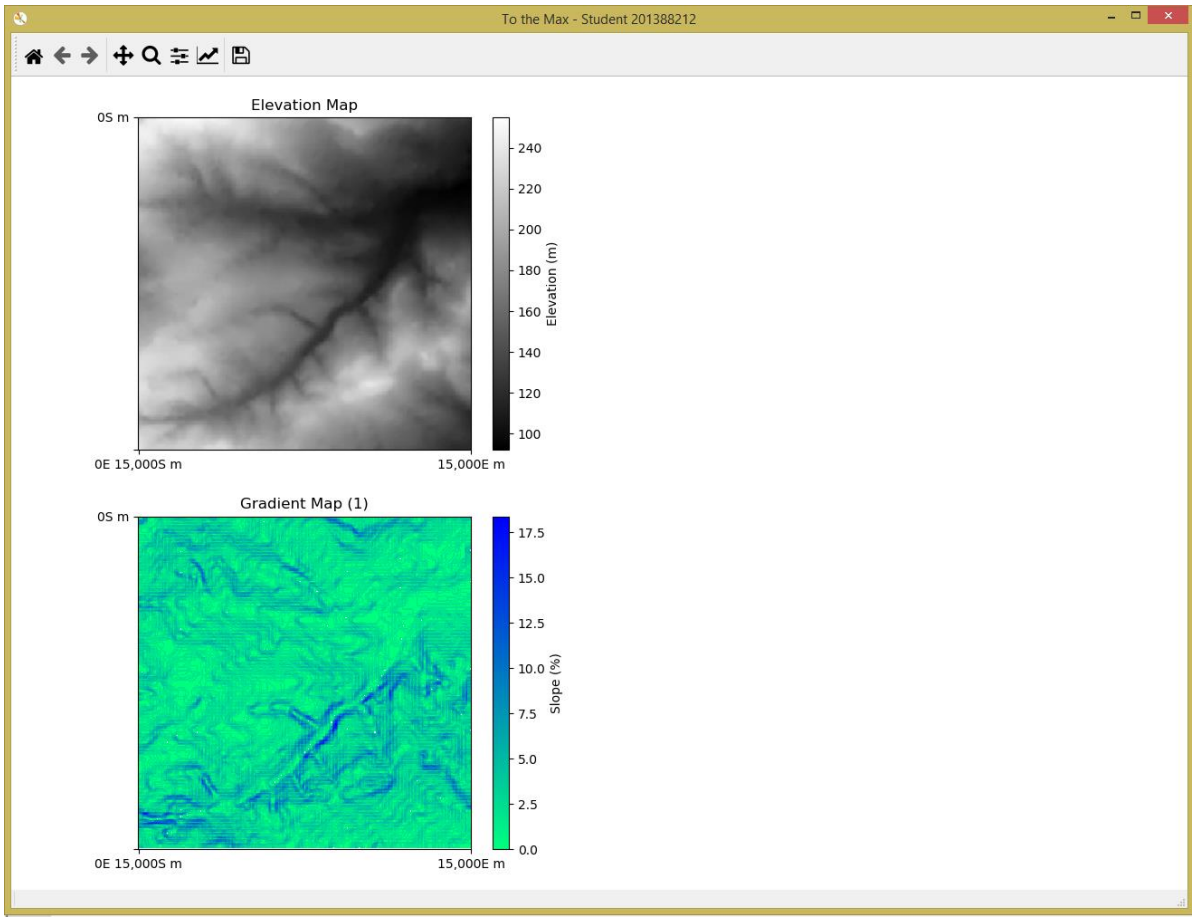
Test Cases 5.1, 6.1, 7.2, 8.1, 9.1, 10.1, 11.1 – Standard run with no overrides.



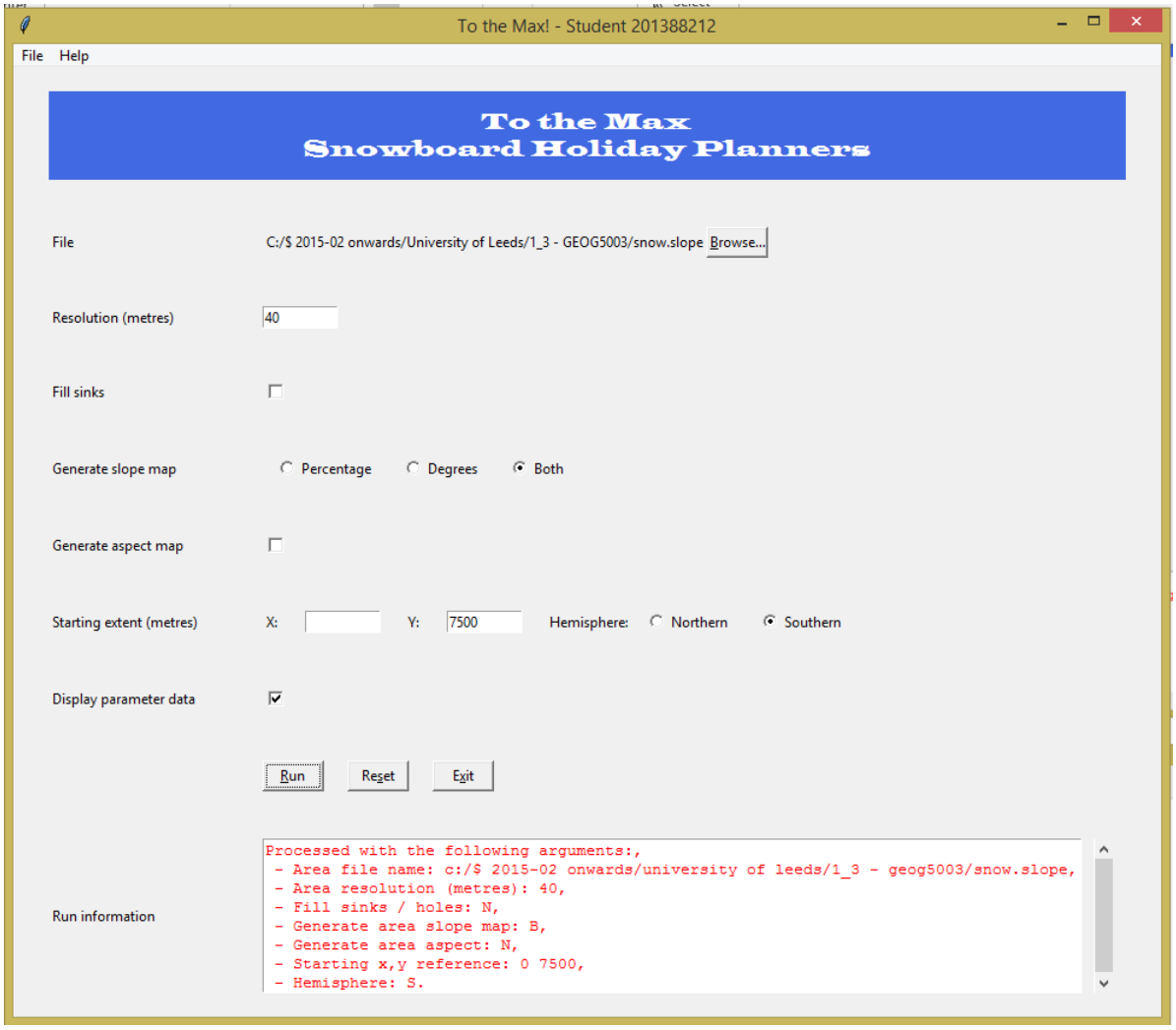


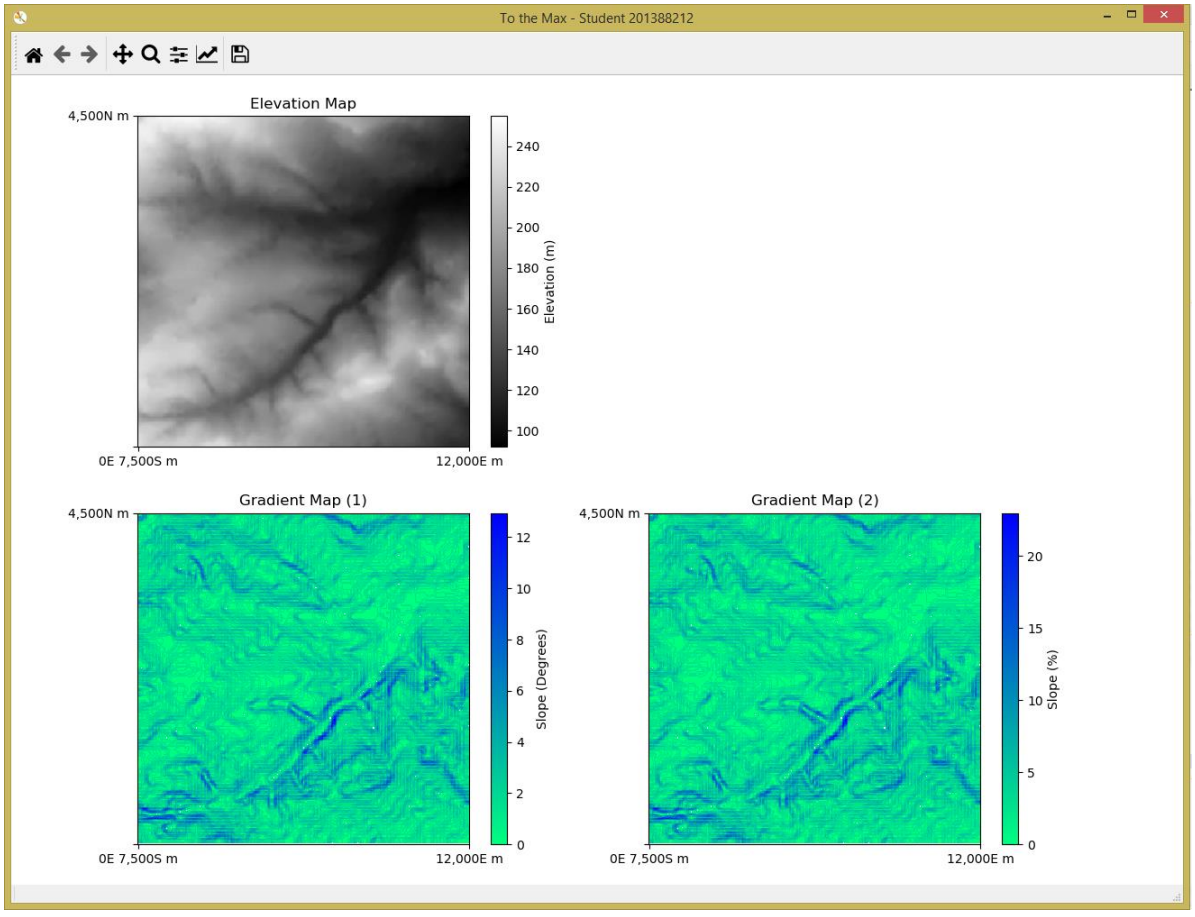
Test Cases 10.4, 11.2, 15.11 – Southern hemisphere labels.



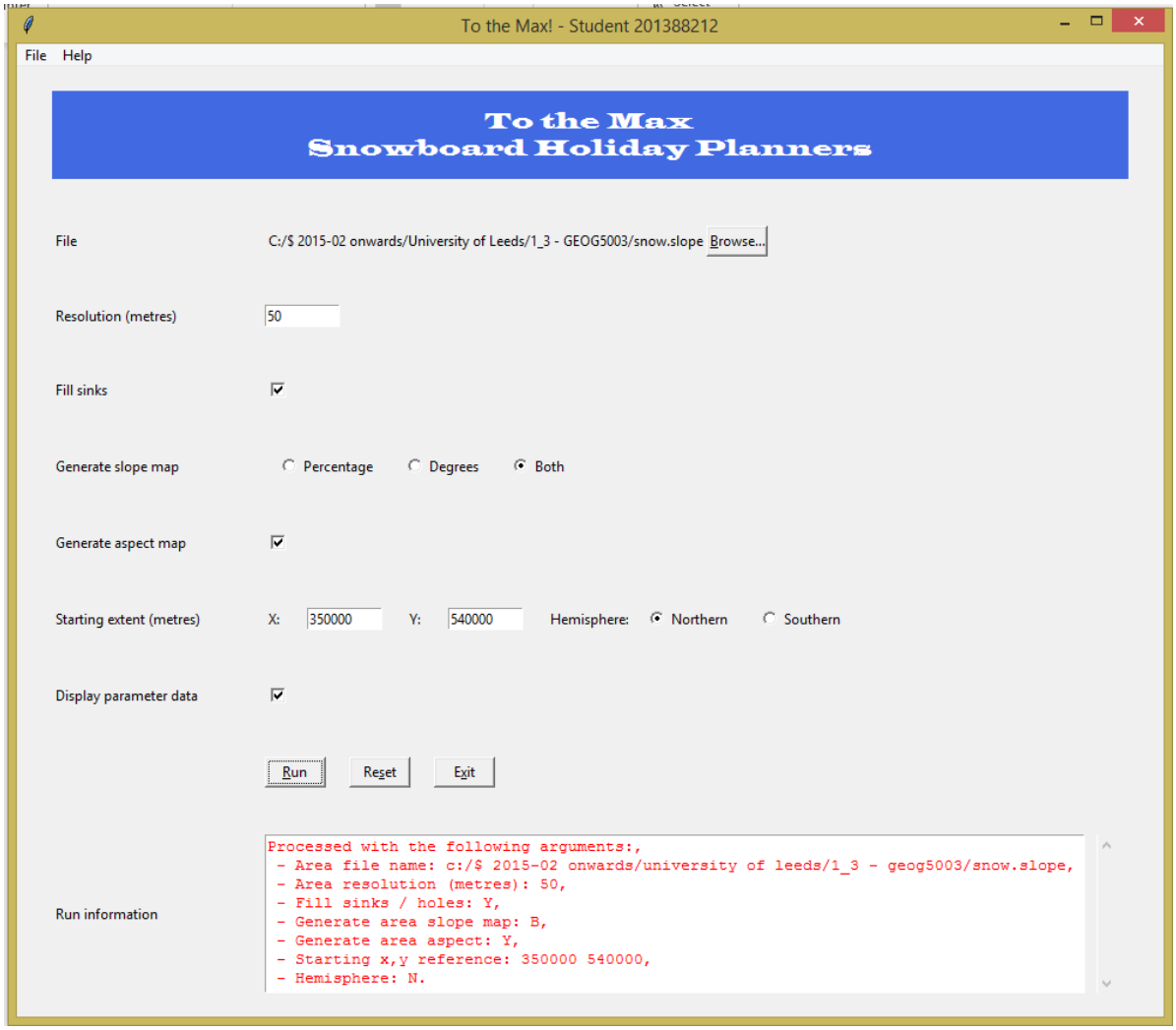


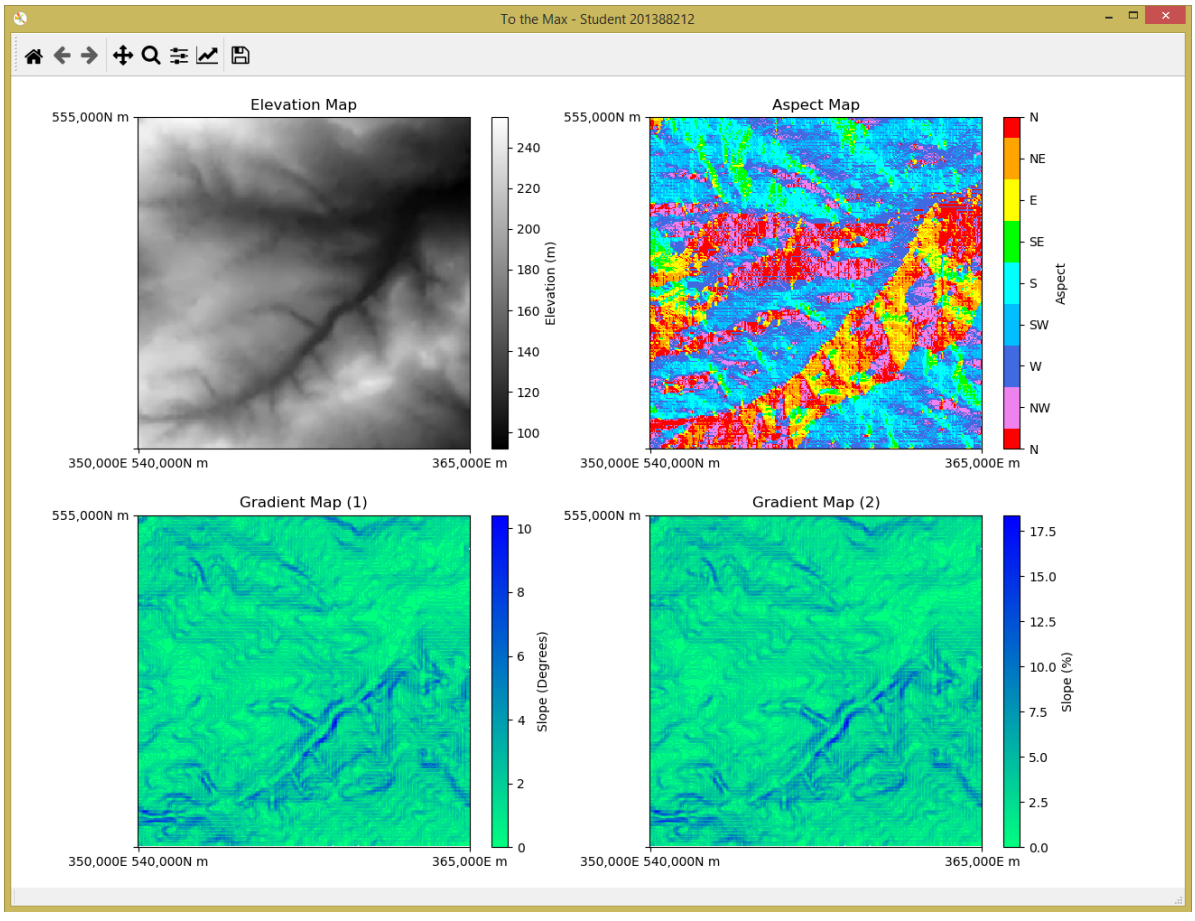
Test Cases 15.12 – Y axis label either side of equator.



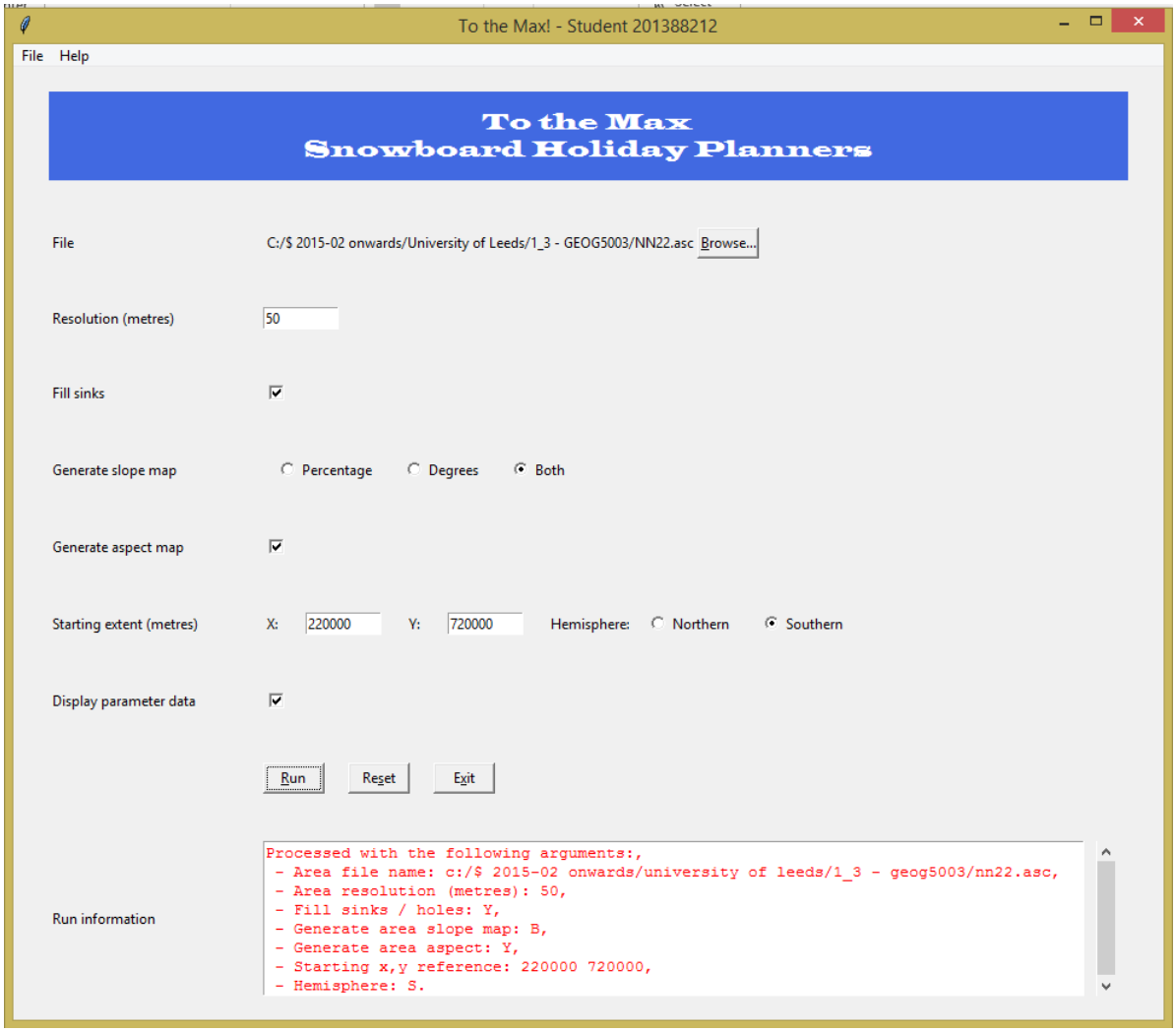


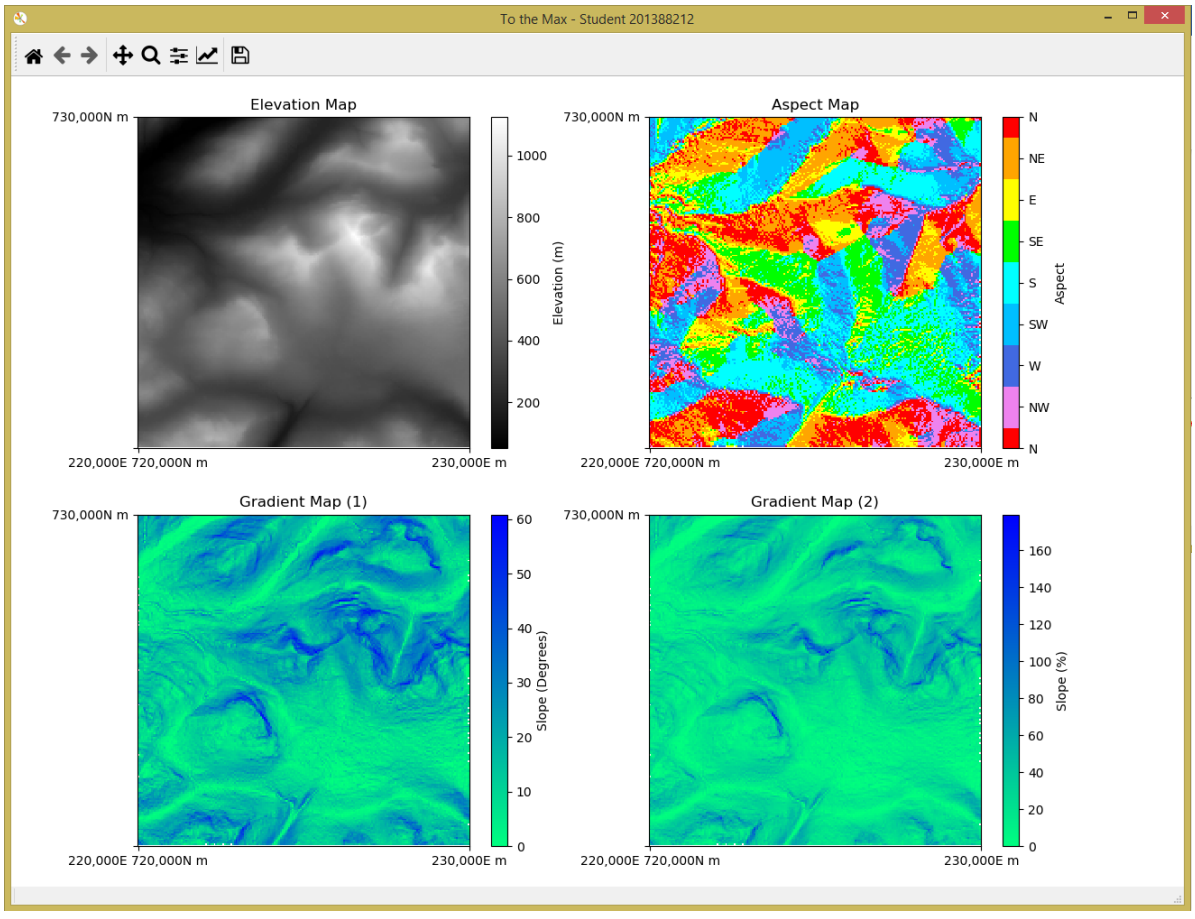
Test Cases 5.5, 6.2, 7.3, 8.2, 9.4, 10.4, 11.1, 12.2, 16.1-3 – Standard run with full set of overrides.



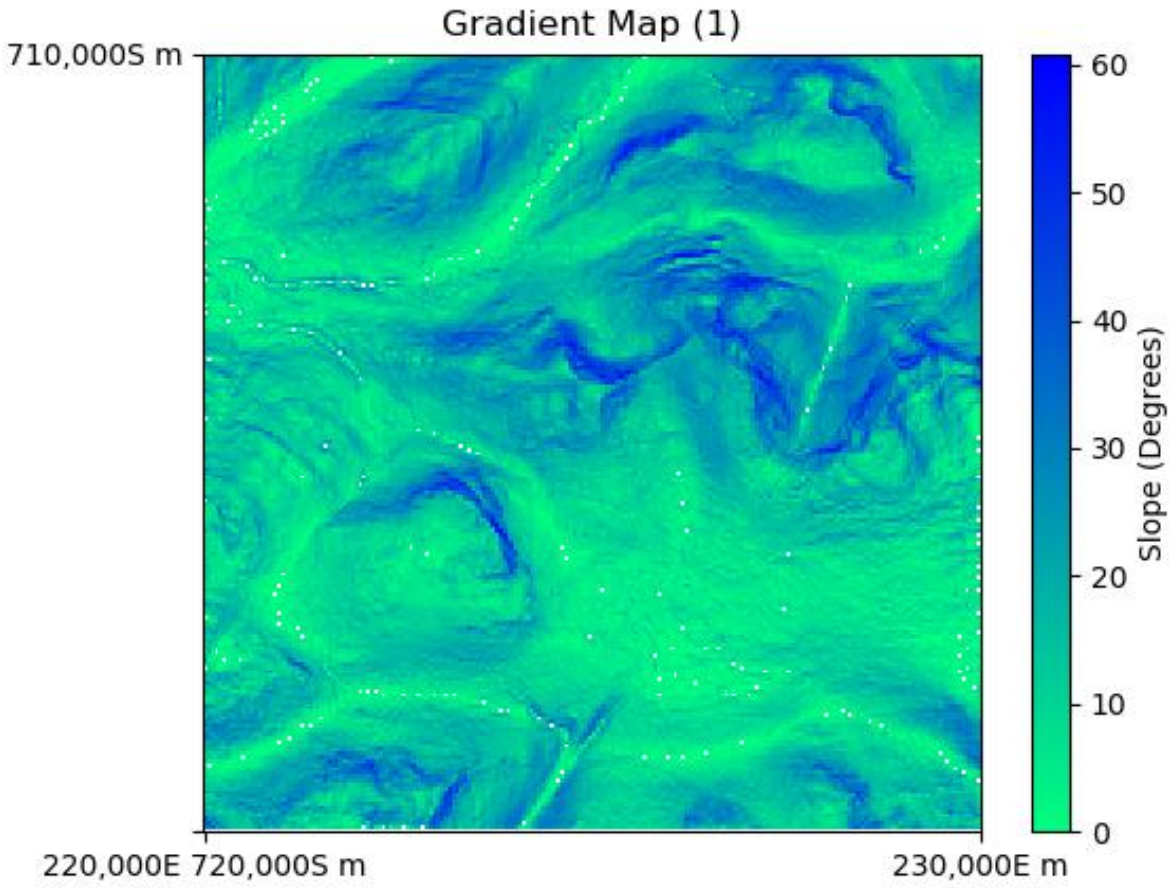


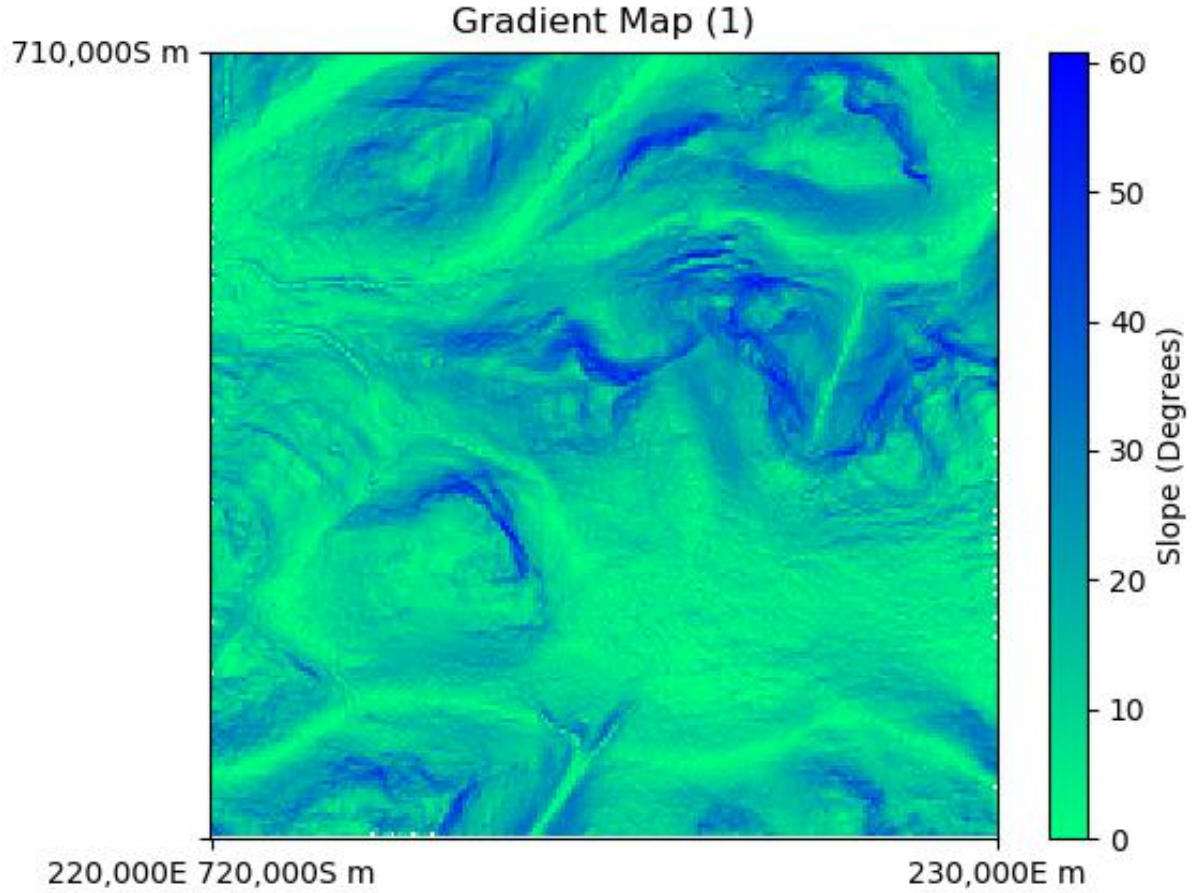
Test Cases 14.1-3, 14.5, 14.7, 15.1, 15.3-7. 15.9-10, 16.1-3 – Georeferenced input file.





Test Cases 6.1-2, 15.8-9 – Sink handling





Test Cases 16.1-3 – Output file.

Refer to following output files:

- Related to snow.slope
  - slope_map_perc_1.txt
  - slope_map_deg_1.txt
  - aspect_map_1.txt

- Related to nn22.asc (geo-referenced)
  - slope_map_perc_2.txt
  - slope_map_deg_2.txt
  - aspect_map_2.txt