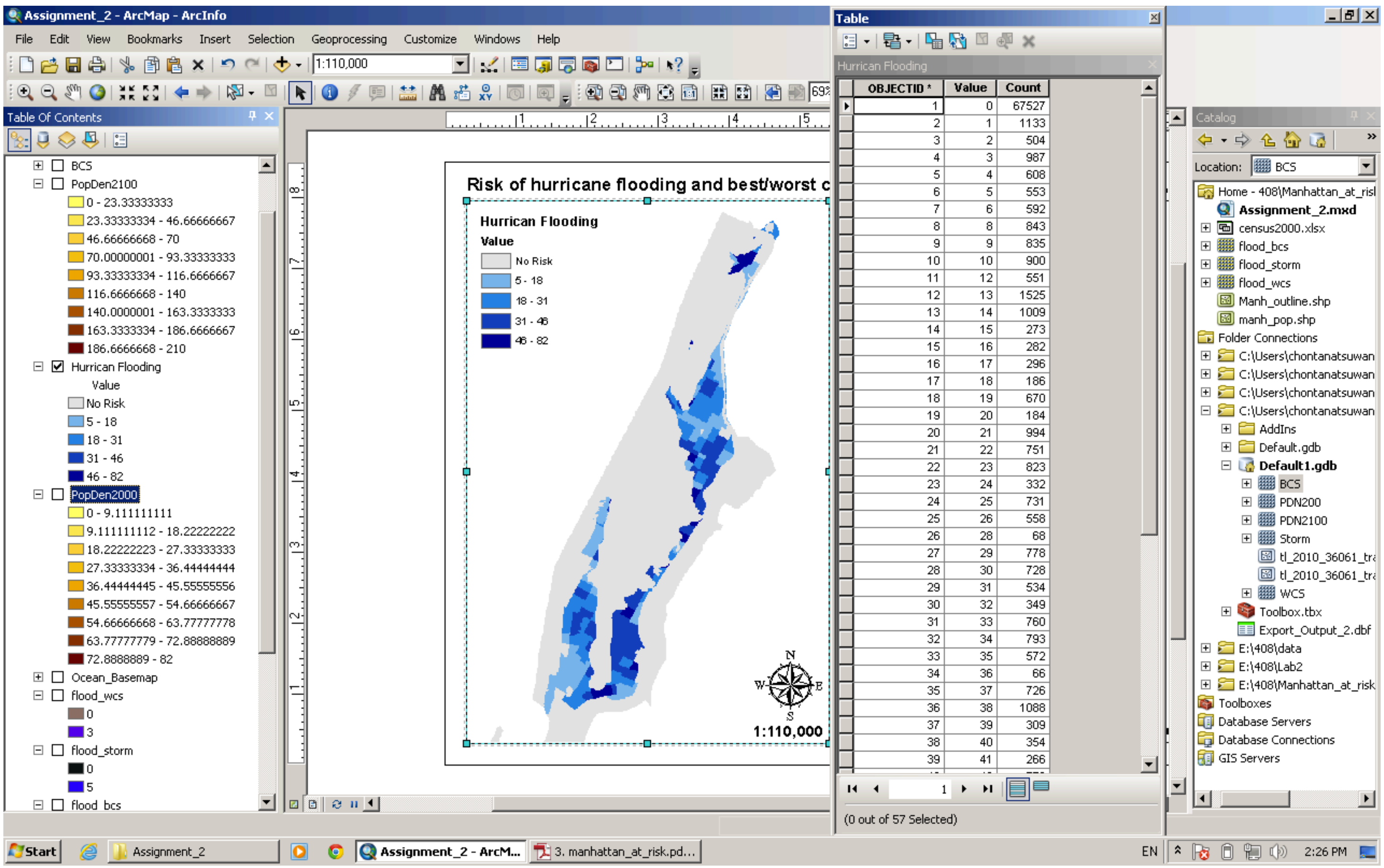
Assignment 2: Manhattan at Risk

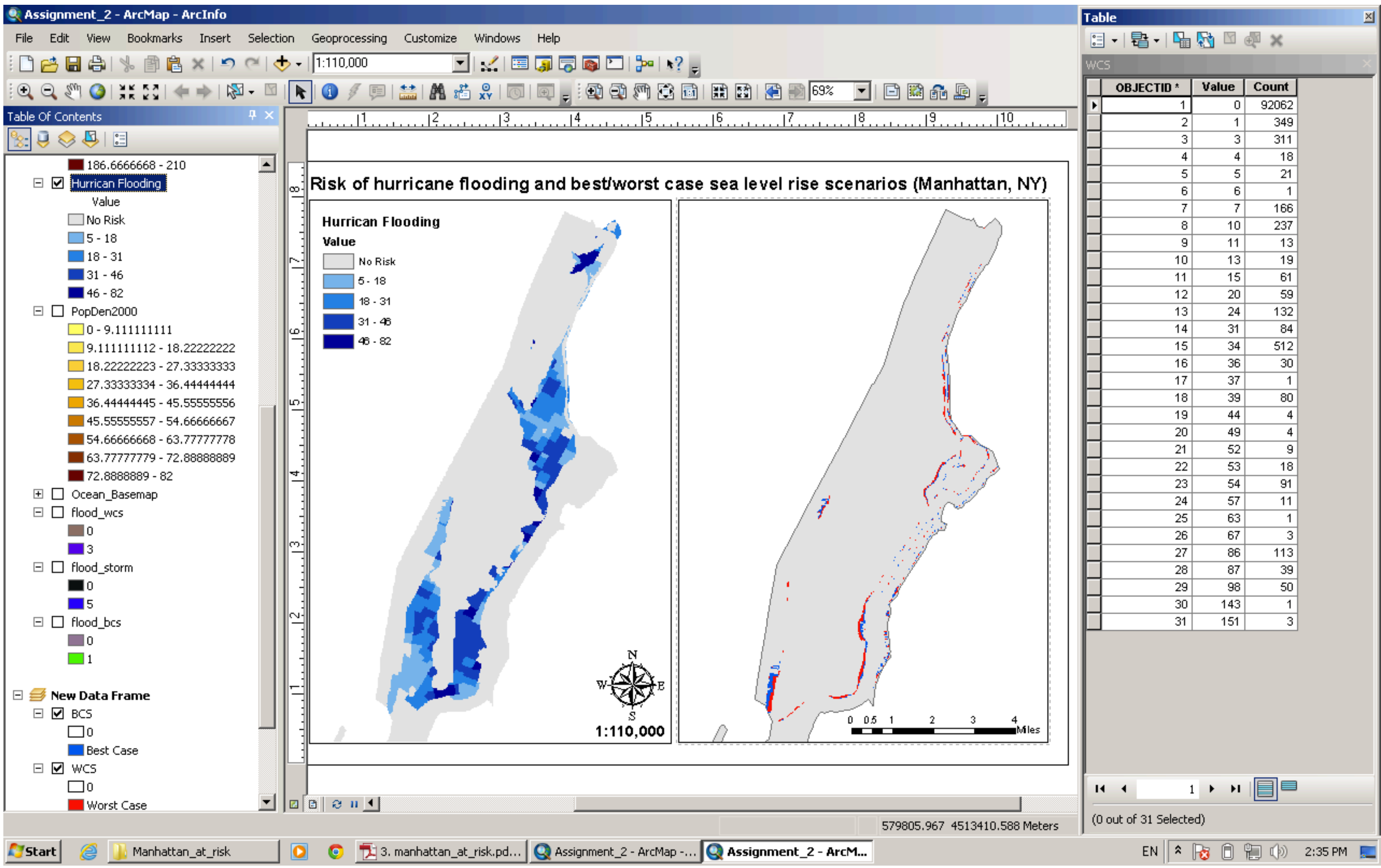
According to the purpose of this topic that needs to answer the theoretical questions. The risk of natural phenomenon to the people in Manhattan, New York City were the issue taken into the study.

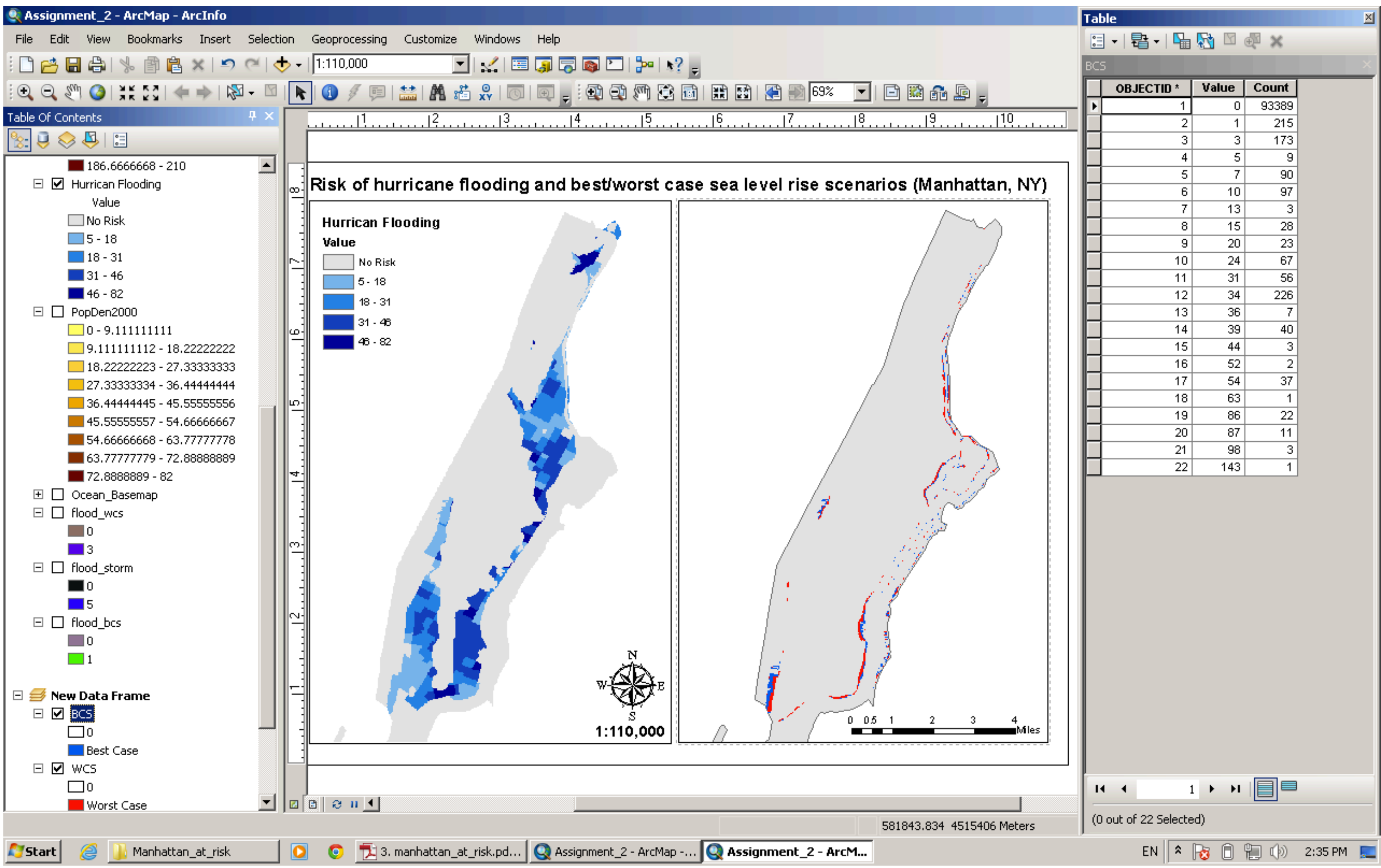
Four data files namely: manh_pop, flood_bcs (best-case scenario for sea level rise), flood_storm (sea level rise due to a hurricane), and flood_wcs (worst-case scenario for sea level rise) were employed in the study. In addition, a shape file called manh_pop which included population numbers for 2000 and 2100 years by census tract was also included. Adding fields to data table is area of sampled area. By using Add Field in Data Management Tools; the name of field and other values were placed before clicking on Calculate Geometry. Then, population data and calculated area data were used for calculating the population densities. In the Field's Properties, Field Calculator was chosen. To calculate the new field, the Population data (2000) was divided by area which calculated earlier, then, multiply by 900 square meters: ([Pop2000] ÷ [Area_m]) X 900 (30x30 m.); Called PopDen2000. Changed manh_pop's class and selected PopDen2000 field in Symbology to classify into five classes. PopDen2000 was converted from shape file to grid through Feature To Raster in Conversion Tools for being the same type of data. Used Raster Calculator for overlaying by multiplying flood_strom and PopDen2000 followed by divided by five (a default value) as to get raster file "Hurricane flooding".

For the next question, PopDen2100 was added then computed in the same way as PopDen2000. Converted PopDen2100 to grid and used it to calculate BCS by "flood_bcs" x "PopDen2100". Did the same method to WCS "flood_wcs" x "PopDen2100" ÷ 3 (default value of Worst Case Scenario). Finally, fields of attribute tables, which are BCS, WCS and Hurricane flooding, were exported to Microsoft Excel files to sum the amount of each case.

Conclusively speaking, all results are satisfied. For the risk of hurricane flooding data, it shows and can be evaluated the risk of hurricane flooding by obligating population data and density of population to identify the dangerous areas where people live densely. Other flood data can be used, as well, for cutting off some areas with no risk. Best and worst case sea level rise scenarios perform a probability of sea level rise in the future by overlapping, comparing and evaluating them. The data also shows the areas where flooding has very little chance to occur. It might, however, be flooded from rising of sea level in the future. It can be noticed as well that some areas like Harem River located far away from the main river has more chance to be flooded and impacted than areas closed by the coastal line.


Assignment_2 - ArcMap - ArcInfo
File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help
Table Of Contents
BCS
PopDen2100
0 - 23.33333333
23.33333334 - 46.66666667
46.66666668 - 70
70.00000001 - 93.33333333
93.33333334 - 116.6666667
116.6666668 - 140
140.0000001 - 163.3333333
163.3333334 - 186.6666667
186.6666668 - 210
Hurrican Flooding
Value
No Risk
5 - 18
18 - 31
31 - 46
46 - 82
PopDen2000
0 - 9.111111111
9.111111112 - 18.22222222
18.22222223 - 27.33333333
27.33333334 - 36.44444444
36.44444445 - 45.55555556
45.55555557 - 54.66666667
54.66666668 - 63.77777778
63.77777779 - 72.88888889
72.8888889 - 82
Ocean_Basemap
flood_wcs
0
3
flood_storm
0
5
flood_bcs
Risk of hurricane flooding and best/worst c
Hurrican Flooding
Value
No Risk
5 - 18
18 - 31
31 - 46
46 - 82
1:110,000
Table
Hurrican Flooding
OBJECTID * Value Count
1 0 67527
2 1 1133
3 2 504
4 3 987
5 4 608
6 5 553
7 6 592
8 8 843
9 9 835
10 10 900
11 12 551
12 13 1525
13 14 1009
14 15 273
15 16 282
16 17 296
17 18 186
18 19 670
19 20 184
20 21 994
21 22 751
22 23 823
23 24 332
24 25 731
25 26 558
26 28 68
27 29 778
28 30 728
29 31 534
30 32 349
31 33 760
32 34 793
33 35 572
34 36 66
35 37 726
36 38 1088
37 39 309
38 40 354
39 41 266
(0 out of 57 Selected)
Catalog
Location: BCS
Home - 408\Manhattan_at_risl
Assignment_2.mxd
census2000.xlsx
flood_bcs
flood_storm
flood_wcs
Manh_outline.shp
manh_pop.shp
Folder Connections
AddIns
Default.gdb
Default1.gdb
BCS
PDN200
PDN2100
Storm
WCS
Toolbox.tbx
Export_Output_2.dbf
E:\408\data
E:\408\Lab2
E:\408\Manhattan_at_risk
Toolboxes
Database Servers
Database Connections
GIS Servers
Start
Assignment_2
Assignment_2 - ArcM...
3. manhattan_at_risk.pd...
2:26 PM


Assignment_2 - ArcMap - ArcInfo
File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help
1:110,000
Table Of Contents
186.6666668 - 210
Hurrican Flooding
Value
No Risk
5 - 18
18 - 31
31 - 46
46 - 82
PopDen2000
0 - 9.111111111
9.111111112 - 18.22222222
18.22222223 - 27.33333333
27.33333334 - 36.44444444
36.44444445 - 45.55555556
45.55555557 - 54.66666667
54.66666668 - 63.77777778
63.77777779 - 72.88888889
72.8888889 - 82
Ocean_Basemap
flood_wcs
0
3
flood_storm
0
5
flood_bcs
0
1
New Data Frame
BCS
0
Best Case
WCS
0
Worst Case
Risk of hurricane flooding and best/worst case sea level rise scenarios (Manhattan, NY)
Hurrican Flooding
Value
No Risk
5 - 18
18 - 31
31 - 46
46 - 82
N
W
E
S
1:110,000
0 0.5 1 2 3 4
Miles
579805.967 4513410.588 Meters
Table
WCS
OBJECTID * | Value | Count
1 | 0 | 92062
2 | 1 | 349
3 | 3 | 311
4 | 4 | 18
5 | 5 | 21
6 | 6 | 1
7 | 7 | 166
8 | 10 | 237
9 | 11 | 13
10 | 13 | 19
11 | 15 | 61
12 | 20 | 59
13 | 24 | 132
14 | 31 | 84
15 | 34 | 512
16 | 36 | 30
17 | 37 | 1
18 | 39 | 80
19 | 44 | 4
20 | 49 | 4
21 | 52 | 9
22 | 53 | 18
23 | 54 | 91
24 | 57 | 11
25 | 63 | 1
26 | 67 | 3
27 | 86 | 113
28 | 87 | 39
29 | 98 | 50
30 | 143 | 1
31 | 151 | 3
(0 out of 31 Selected)
Start
Manhattan_at_risk
3. manhattan_at_risk.pd...
Assignment_2 - ArcMap -...
Assignment_2 - ArcM...
EN
2:35 PM



OBJECTID *	Value	Count
1	0	93389
2	1	215
3	3	173
4	5	9
5	7	90
6	10	97
7	13	3
8	15	28
9	20	23
10	24	67
11	31	56
12	34	226
13	36	7
14	39	40
15	44	3
16	52	2
17	54	37
18	63	1
19	86	22
20	87	11
21	98	3
22	143	1

Risk of hurricane flooding and best/worst case sea level rise scenarios (Manhattan, NY)