***Lab 1: Landuse and Hydrology, learning ArcGIS***

**III. Grid Calculations**

**Table: Summary statistics for two watersheds (or “basins” or “catchments”)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **% Change**  **1992-2001** | **% Agriculture**  **2001** | **% Forest**  **2001** | **% Wetland**  **2001** | **% Urban**  **2001** |
| **Des Plaines** |  |  |  |  |  |
| **Kankakee** |  |  |  |  |  |

1. *Plot the data for the two gages (dp\_5532500.cvs & ka\_5515500.cvs in the gages folder on the Q:drive) in excel to compare their responses. The .csv files contain no units but the values are peak daily discharge expressed in cubic feet per second (cfs). The data is expressed daily over the course of one year (2001). Put both hydrographs on the same plot for ease of comparison. Are they showing a hydrologic response to landcover change? How can you tell by looking at the hydrographs?*

***SEE next Page for Final Project Deliverables and Requirements***

**Final Report (due Wed. September 10, 2014):**

* *2 page report (1.5 spaced, figures excluded)*
* *Figures and Tables (include all in the report):*
  + *Site map (Lab1A deliverable = good starting point – update with Kankakee, Des Plaines Watershed boundaries)*
  + *Table that include the summary statistics for the topography of the two watersheds (Lab 1B deliverable)*
  + *Table that includes the summary statistics for landcover change in the two watersheds (Lab 1C deliverable)*
  + *Hydrographs for both gages on one plot (Lab 1C deliverable)*

You have already created a version of the site map and built the two tables during lab time. Once you have plotted the hydrographs, you are ready to make an interpretation of how landcover change has affected the hydrology of the upper Illinois basin. Discuss the results and the assumptions that this investigation has built upon. Focus more on results and interpretation than on methods. Avoid procedural details about how you did the lab and how ArcGIS works. Simply pick an aspect of the study that interests you, and for which you can support your interpretation with evidence from the GIS analysis.

Report should: (1) Motivate the problem; (2) Define your approach; (3) Use Figures and Tables with meaningful captions to efficiently present the results (Figs, Tables and Captions do not count against your 2 page limit); and (4) Discuss your findings, including any cautions about limitations/weaknesses in the analysis.

Have a friend read and critically assess your first draft and then refine and polish it. You will be graded in part on your writing.

Here are some things to think about as you frame your brief report:

1. How do these results support the idea that urbanized basins may escalate flood risk?

2. Do the Des Plaines and Kankakee basins provide a fair comparison for evaluating the impacts of landcover change? Why or why not?

3. Is the method used in this investigation robust? Can it apply to other landscapes? What are its weaknesses? How could you improve on it?

Feel free to focus on other aspects of this investigation if something has caught your interest. If you are unsure of its relevance, come talk to your instructor or TA. Remember that the quality of your discussion of these issues depends on how well you link your ideas to the tables and plots you have produced.