Teaching Data Analysis and Geostatistics with MATLAB

Essay by Sandra Vega

I have taught Data Analysis and Geostatistics for about 4 years and I have used MATLAB for most of the lab exercises. I found that MATLAB is very versatile and have many options that can assist to learn basic statistics. So, we created a set of lab exercises that went from getting familiar to use MATLAB, throughout statistical concepts till spatial analysis and kriging. My experience is that even I tried that the students learned MATLAB simultaneously with the concepts of the course, they did not learn much MATLAB unfortunately. A good thing was that at least my goals for the course were accomplished. The pitfall was that we gave the students all the steps to follow in MATLAB for the lab exercises, and they did not make any effort to learn MATLAB, as they just followed the instructions.

I believe that the students can learn simultaneously MATLAB and other concepts only if we create exercises that the students can solve by their own, just giving them the main commands. However, this needs to be designed carefully as there is a risk that they can get lost in the way. So, it is important to find a balance. I remember I took a course only in MATLAB at school and the instructor was clever enough to make exercises where we applied MATLAB for some cases in Geosciences. However, I still think that is challenging if you don't want to lose most of the students and fulfill the goals of the course. It may help if the students have taken a MATLAB course previously. However, not all the curricula include MATLAB as a single course, which creates more work for the instructors that would like to apply MATLAB in their particular classes, as I have done.

For all the above expose, I think that participating in this course on "Teaching Computation in the Sciences with MATLAB" could give me a great input on how I can improve incorporating MATLAB in my classes, without losing focus on the main objectives of the courses.