GEOL 352 – Environmental Geology Seminar

Term: Fall 2014
Time: 0935-1130, Wednesday
Room: Room 316 Delehanty Hall, Trinity Campus

Instructors: Paul Bierman and Veronica Sosa-Gonzalez
Emails: paul.bierman@uvm.edu
             vsosago1@uvm.edu
Offices: Delehanty 307 (Paul)
            Delehanty 314 (Veronica)

Course Description

Our world is facing many environmental issues for which the understanding of Earth as a system is critical to crafting meaningful and workable solutions. Global warming, the world-wide modification of our landscapes, and the dispersion of persistent pollutants including organic chemicals and heavy metals are just a few of the environmental issues for which a global perspective and an appreciation of the deep time and geologic principals is important. These issues are closely related to water quantity and quality, and are exacerbated in rapidly-developing countries. As the BRIC nations – Brazil, Russia, India, and China – develop at a rapid pace and become increasingly important players in the world’s economy, the need for solutions to address water-related issues grows larger.

This seminar is designed for students in any science or environmental major interested in water quantity and quality concerns in rapidly-developing countries, specifically the BRIC – Brazil, Russia, India and China – nations.

Course Goals

The goal of this course is to use both faculty and student lead discussions and short lectures to provide background information on the four BRIC nations and their environmental issues, specifically their concerns around water quality and the erosion, movement, and deposition of sediment by rivers and streams. This information will serve as the framework we use when thinking about solutions to these environmental concerns. We will spend a significant amount of the seminar reading and discussing papers about these issues, considering the role of science and research in these countries, thinking about solutions for the water issues and the roles of scientists and policy makers.

We have the following learning goals for students in this course:

1. Improve your knowledge of the current status of water quality concerns in the BRIC nations
2. Contrast and compare the situation of these four countries within themselves and with other countries
3. Critically read and discuss scientific papers
4. Increase your comfort making short summary presentations to your peers.
5. Be able to propose and discuss solutions to water-related environmental issues in these countries

Evaluation

1. Attendance and participation (25% of the grade)
Everyone is expected to attend as many classes as possible and while in class to actively engage in discussions. Please let the instructors know if you will miss a class.

2. Case study presentations and leading class discussions (75% of the grade)
Working in groups, students will choose two different countries to study. They will examine water quality issues in one of the countries selected, and erosion/sedimentation issues in the other country. Pick a different country for each of the two modules so as to broaden your geographic horizons. For both modules, the groups will find several articles, that when considered, together capture the environmental concern of choice (water quality or erosion/sedimentation) and the socioeconomic climate/social response to the environmental concern country. Please, make sure these papers are interesting and readable – best would be mix of accessible, popular writing and scientific papers so we as a group see a variety of writing styles and approaches. During the 2 weeks your group is responsible for, you will, as a group:

1. Submit to Paul, at least one week before your group leads the class, PDFs of the papers you have chosen for class discussion.
2. Be ready the week before your class to give a 3 minute synopsis of the upcoming papers.
3. Prepare, for the class your group is leading, a 10-15 minute lecture (in PowerPoint or a PDF), giving background material to help everyone understand the papers for which you are leading the discussion. Your presentation should be submitted to Paul before class time.
4. Lead class for a day. During that day, your group will start by presenting your short introductory lecture and then actively leading the discussion. As a group, you should be able to address questions related to your papers and to keep the discussion moving along at a brisk pace.

Schedule
The course is divided into three modules. The first module will introduce the BRIC countries, set their socioeconomic and demographic background, as well as their water quality and quantity concerns using short lectures and discussions of papers selected by the instructors. There will be interactive activities to complement the lectures and discussions during the first module. The last two modules will be student led - featuring paper discussions and short presentations from teams of students.

Module 1: Water quality and quantity concerns. Introduction to BRIC nations

Module 2: Presentations and student-guided discussions: chemical and biological water quality issues in the BRIC nations

Module 3: Presentations and student-guided discussions: erosion and sedimentation in the BRIC nations.