**Lesson Plan Summary for ‘Coast Line Evolution ’**

**1 Summary**

Students explore coastline evolution processes, with a focus on wave-driven processes by calculations in an associated spreadsheet. By doing these calculations themselves, students can gain ideas about the factors that influence the coastline evolution. This assignment is takes ~3 hours for students to complete.

**2 Learning Goals**

Topical Goals

Understanding the factors that control coastline evolution process in a wave-dominated environment.

Figure out the main factors and their role on the calculation of alongshore current and sediment transport.

Learn about the determination of coastline changes with time.

Explore the influence of sediment flux changes to the system, and the global changes on the coastline evolution process.

Quantitative Skills Goals

Use spreadsheet to make simple calculation, and to explore the relationship between 2 variables by plotting analysis.

Develop a sense of how changes in input parameters affect model output.

**3 Context to use**

This activity works when assigned as a problem set and is set to be completed individually. It provides a means for student to more deeply understand the physical process, and can serve as a simple approach to explore numerical modeling for students in oceanography, and civil engineering majors.

This activity could be assigned after students have developed a basic understanding of sediment transport, coastline evolution and wind functions, it also requires modest mathematical skills. The equations used in the spreadsheet indicate the most important process in the model, and are shown to students to know more quantitatively the physical process, and the practice of relationship between different factors is given as a means for assessing their role on this process.

**4 Teaching Notes and Tips**

The CSDMS Educational Repository features a downloadable lecture on Coastal Evolution that you may find useful:

<http://csdms.colorado.edu/wiki/SurfaceDynamics_Modeling_CMT>

**5 Assessment**

Grading involves checking for mathematically correct answers and reasonable verbal explanations. The instructor can check the students ability to make annotated graphs (with units). In evaluating the reports, we place greater emphasis on demonstration of a reasonable thought process than on arrival at the correct answer.