Virtual Fieldtrip – US West Coast versus US East Coast
Comparing Coastal Features and Processes along Opposite Coasts

Two Virtual Field Trips: San Diego North County and Northwestern Florida

Introduction: This virtual fieldtrip is actually two fieldtrips, and it takes you first to the west coast and then to the east coast to compare coastal features and processes, including wave action, beach sand source and movement, coastal bluff and dunes, and human interferences. The first fieldtrip is to the shoreline of San Diego North County in Southern California, and your trip guide is Chris Metzler, earth science professor at MiraCosta College (Part I). The second fieldtrip is to northeast Atlantic shore of Florida, and your trip guide is Joann Mossa, geography professor at the University of Florida (Part II). The due date for this extra credit, and all other extra credit, is listed in your syllabus.

This extra credit assignment is worth a maximum of 10 points.

Directions: Below are the two links where you will be taking your virtual fieldtrips. There is a question-set worksheet below for each fieldtrip. There is a total of 30 questions. Fill out the questions as you go, or after you are finished with each trip.

Fieldtrip #1: The first virtual fieldtrip to the San Diego North County beaches can be found at Chris Metzler's Coastal Erosion Field Trip Webpage at URL:

http://www.miracosta.cc.ca.us/home/cmetzler/field_trip/top.html

Fieldtrip #2: The second virtual fieldtrip to a Northeast Florida beaches can be found at Joann Mossa's Coastal Dynamics of Northwestern Florida webpage URL:

http://fcit.usf.edu/florida/teacher/science/mod2/resources/coastal.pdf

VIRTUAL FIELDTRIP WORKSHEET

A .doc file of this document can be downloaded by clicking here

PART I: Chis Metzler's Virtual Fieldtrip on Coastal Erosion of San Diego's North County Beaches and Bluffs

http://www.miracosta.cc.ca.us/home/cmetzler/field_trip/top.html

Directions: Below are 15 questions that pertain to the virtual fieldtrip found at the above URL. The questions are arranged according to the various topics covered throughout the trip.

Classification of San Diego North County Shoreline

1) What type of shoreline does San Diego North County have? Describe it.

What are the Major Rock Units of San Diego North County Sea Bluffs

2) List the following information for ALL THREE of the major rock formations observed along the bluffs.

a) Rock formation name

b) Principle type(s) of rock that makes up each formation

c) The geologic age of each rock formation

d) Relative erodability (Strong, medium, or weak)

3) Which of these rock units is considered the most durable, resistant unit – forming the steepest part of a bluff?

4) Which of these rock units is considered the least durable, resistant unit – prone to greatest bluff failure?

Agents, Processes and Activities that Cause Sea Bluff Erosion

5) List thee (3) natural agents, processes or features that help cause bluff erosion?

6) List the two (2) human activities that help cause bluff erosion?

7) How does climate fluctuations over the last few centuries compare with today's climate in terms of local bluff erosion?

Agents, Processes and Activities that Reduce or Slow Sea Bluff Erosion

8) List the three (3) human activities that help reduce or slow bluff erosion?

9) Which one appears to be the most affective in reducing bluff erosion? Why?

10) List the two (2) adverse (negative) effects that seawalls have on the beach.

Seawalls and Rip-Rap

11) Describe and explain the seawalls along the North County shoreline, in terms of:

a) Where the seawalls are constructed along a beach

b) The various materials that make up a seawall.

c) How much they cost.

d) Their intended purpose.

e) Some negative, uninteded effects.

12) Where are piles of rip rap placed along a beach, what are they made of, how much do they cost, and what is their intended purpose?

13) List advantages that rip-rap has over seawalls in protecting bluffs.

14) List disadvantages that rip-rap has over seawalls in protecting bluffs.

15) Which one would you choose if you were a bluff homeowner? Why?

PART II: Joann Mossa's Virtual Fieldtrip on Coastal Dynamics of Northeast Florida's Beaches and Dunes

http://fcit.usf.edu/florida/teacher/science/mod2/resources/coastal.pdf

Directions: Below are 15 questions that pertain to the virtual fieldtrip found at the above URL. The questions are arranged according to the various topics covered throughout the trip.

Beach and Dune Shoreline Geography

1) What are the two principle materials that Florida beaches made of?
List and describe the following:

a) Principle mineral(s)

b) Sediment grain size(s)

c) Source of the sediment?

2) Describe the beaches in Northeastern Florida
Make sure to include dimensional characteristics like Width and Slope

3) What are the Florida shoreline dunes made of?
List and describe the following

a) Principle mineral(s)

b) Sediment grain size(s)

c) Source of the sediment?

4) Describe the coastal dunes in Northeastern Florida
Make sure to include dimensional characteristics like Width and Slope

5) Compare and contrast the two different shorelines of the local barrier islands:

a) Describe the similarities and between the open-ocean shorelines and the lagoonal shorelines, in terms of beach size, slope and sediment characteristics. Why the similaries between the two?

b) Describe the similarities and differences between the open-ocean shorelines and the lagoonal shorelines, in terms of beach size, slope and sediment characteristics. Why the difference between the two?

Agents, Processes and Activities that Cause Changes to Beaches and Dunes

6) List and describe the agents or processes that move the beach material.

7) List and describe the agents or processes that move the dune material.

8) What is the relationship between the beaches and the coastal dunes?

9) Did you see examples of both beach and dune erosion and deposition? List and describe what you observed.

10) What are the significant causes of beach and dunes erosion here?

Processes and Activities that Reduce or Slow Down Beach and Dune Erosion

11) What are the natural means of stabilizing the coastal dunes? How and why does it work?

12) List the ways that humans have tried to help reduce or slow coastal erosion.

Processes and Activities that have Adverse Effects on Beaches and Dunes

13) What are the similarities and differences between groins and rip rap revetments, in terms of:

a) What they are made of.

b) Their location/orientation to the shore.

c) Their intended purpose.

14) What are the negative effects that groins and rip rap revetments have on beaches and dunes?

Comparison of West and East Coast Shorelines

15) Make a simple comparison between the two shorelines that you studied during the two virtual fieldtrips.

a) What did you find similar, in terms of the features and processes that occur on both West and East coast shorelines?

b) What did you find significantly different?

c) Which shoreline would you prefer to spend time at? Why?