***Important information to accompany* *the movies about***

***Coastal Erosion and the Formation of Marine Terraces,   
set of three animations***

**Erosion of beach cliffs by Waves.**

These two movies illustrate the effects on beaches and beach cliffs caused by small waves and by large waves, inspired by the movie "Beach, River of Sand".

Suggested Narration:

During fair weather, ocean waves tend to be small. They use up their energy moving the beach sand around. The sand is our great friend; it acts as a buffer, protecting the coastline.

The large waves that occur during storms often stir up the sand and drop it into the quieter waters offshore, forming an offshore sand bar and leaving a smooth bare-rock beach terrace. When this happens, all the energy of the waves is concentrated on the beach cliffs, eroding them away and widening the wave-cut terrace.

Created by Tanya Atwater using Photoshop and Morph.

**Formation and uplift of a set of marine terraces.**

This movie illustrates how the combination of sea level fluctuations, wave erosion, and land uplift can result in the formation of a "staircase" of marine terraces.

Suggested Narration:

During the ice ages, sea level was falling and rising each time the great ice sheets formed on the continents then melted off again.

*Movie zooms in closer.* Whenever sea level stood still with respect to the land, the waves cut a terrace into the edge of the land.

*Movie zooms in closer.* Many parts of the California coast are being uplifted by tectonic forces. When this is the case, older terraces are uplifted so that each new still-stand cuts a new terrace, which in turn is uplifted. The result is a staircase of terraces.

Created by Tanya Atwater, Carrie Glavitch, and Erich Meyr using Photoshop, Morph, and Flash. The work was partially supportedby a National Science Foundation Director's Award for Distinguished Teaching Scholars, and by grants and services from the U.C.S.B. Office of Instructional Development.

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