Using Google Earth to Create Virtual Fieldtrips

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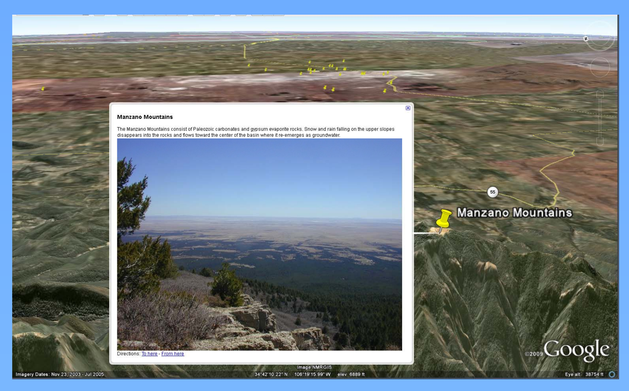
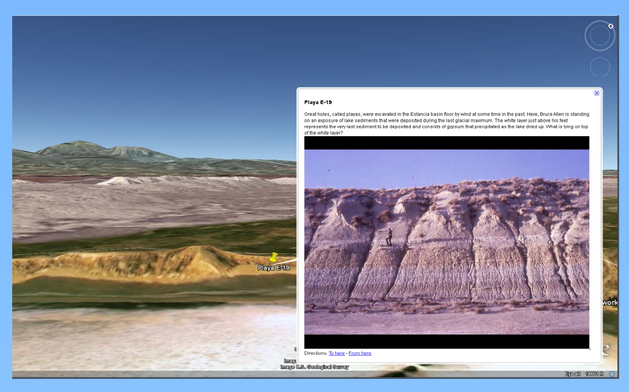
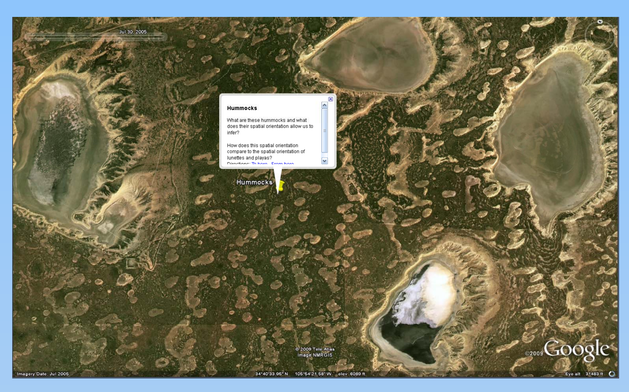
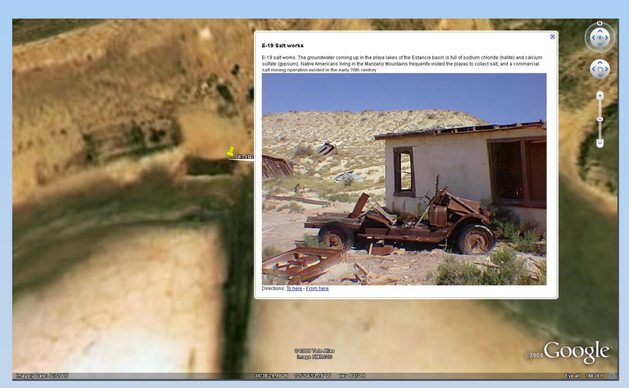
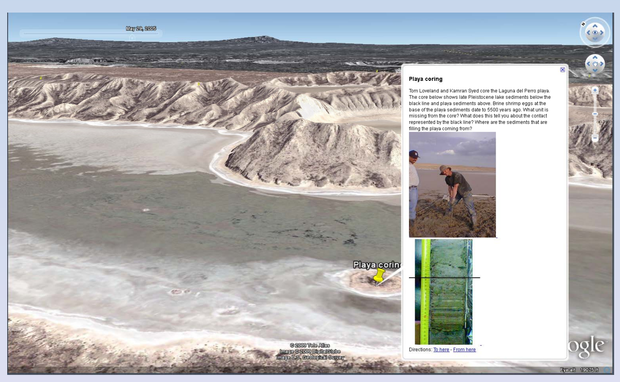
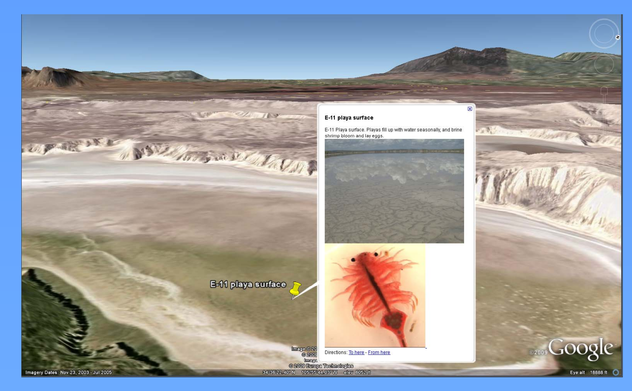
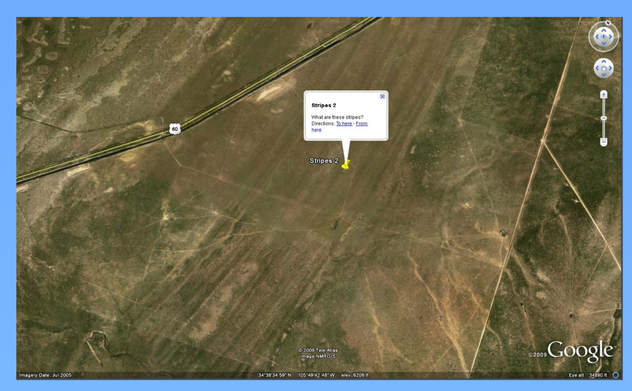
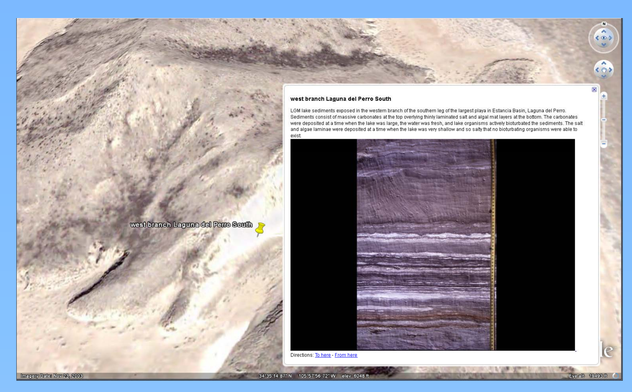
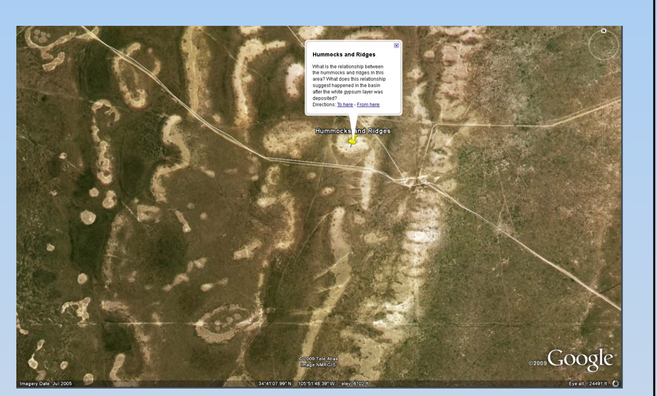
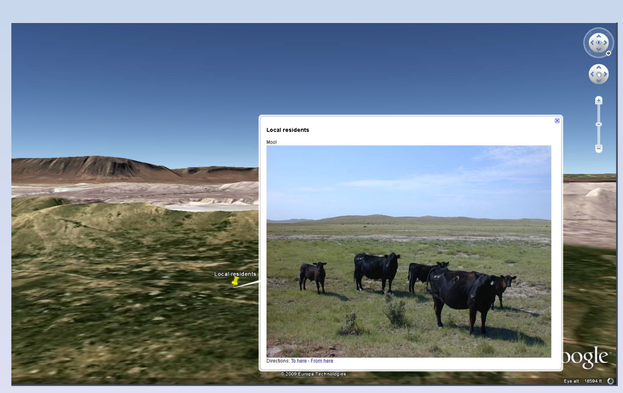
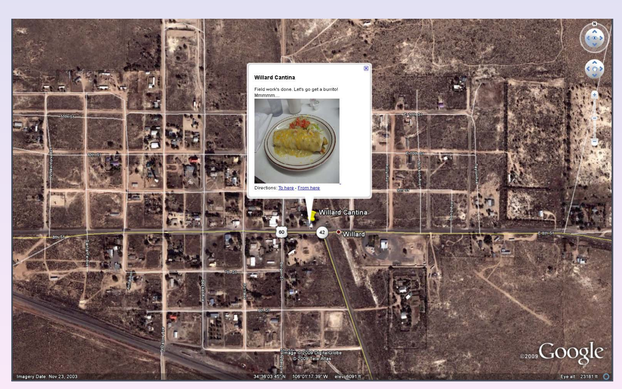
ESCI/GEOG 231: Geomorphology - Surface processes and the evolution of landforms

Pedagogical goals

This course is about the chemical, physical, and biological processes acting at Earth's surface that create various landforms. The course is usually taught in the fall semester, when it is possible to take students into the field. This year I had to teach it in the spring, which necessitated finding replacements for the field exercises. As a result, I've been using ArcMap GIS exercises and Google Earth.

Explanation of the assignment

I created a virtual fieldtrip to my research area in central New Mexico to introduce my students to a wide variety of landforms produced by climate change. The Estancia Basin held a 1,000 km^2 lake 20,000 years ago, during the last ice age, but is presently dry. Shorelines from the lake are very obvious in the air photos in Google Earth. The lake dried up about 12,000 years ago, depositing a layer of salt all over the basin floor that was subsequently blown into a series of sand dunes. Thereafter, the lake rose a final time, reworking the sand dunes into a number of beach ridges. The lake then dried up again, and between 7,000 and 5,500 years ago, big holes were excavated by winds into the old lake floor, with the excavated sediment piled up as dunes on the downwind side of each hole. Photographs embedded into the Google Earth placemarks allowed the students to see a variety of features at the outcrop scale. Students worked with the placemarks and photos over two class periods to unravel the climatic history of the basin from the landforms.