

Chronostratigraphy

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This exercise has been adapted from modules developed by the Department of Geology, University of South Carolina.

1. Introduction

Stratigraphers, or those geologists investigating time and relatedness of rock layers (strata), may employ chronostratigraphic charts such as this [wheeler diagram](#), to visualize the geological changes that have occurred at a particular locality as a function of time.

As an example, imagine observing a beach for several thousands of our human lifetimes. You would see through time the effects of erosion and sedimentation as they degraded or extended the shoreline back and forth. Additionally you would observe that the Earth's sea level is variable, rising or falling many tens of meters from its initial position. These sea level excursions and the geometry of the shelf margin drive the changes you would see. Using some fundamental principles and a little technology, now you will be the geologists and investigate what kind of geological changes an ancient beach experienced.

2. Exercise 1

If you have a Quicktime application, use it to view this animation of how sedimentary changes recorded in rock relate to a wheeler diagram ([click here](#)). Watch the animation only once and then print out your own [stratigraphic chart](#) (which has already been interpreted based on seismic data) and empty wheeler diagram.

Gather at least four different colors that you can use to shade in the different stratigraphic sections of the chart with. Examine the stratigraphic chart based on seismic data on the top first. Notice the legend in the upper right corner and identify from the bottom up: the basement rock, proximal fan, marine shale (offshore sediment), nearshore sediment and alluvium (where ravinement and sediment input takes place).

Next notice the sequence of numbers from 1 - 30 that intersect the boundaries between sedimentary rock units (strata). Through this the time relatedness of the strata is easy to follow. Examine strata 1 - 7 and then notice that the 8th strata overlaps the 7th but does not overlap to the sequence boundary (basement).