

Physics 699 , Assignment 2

Summarize the following papers and answer questions listed below.

1. Read the chapters on geophysical and geodetic evidence for continental drift from Wegener (1912). Summarize Wegeners' arguments in favour of continental drift from these chapters. Which of these arguments are still valid?
2. Read McKenzie (1967). Summarize the evidence from this paper that support the idea of global plate tectonics.
3. Read McKenzie and Morgan (1969). There are 16 possible types of triple junction, but not all are stable. Explain what makes a triple junction unstable.

How many types of triple junction can be found on Earth today? As a starting point, use the map at : http://en.wikipedia.org/wiki/File:Plates_tect2_en.svg
You may need to use other references to identify some of the plate boundaries. Which types of triple junction aren't found on Earth at present?

4. Read Atwater (1970) and summarize the tectonic history of western North America. Where has the East Pacific Rise gone?
5. Read Carey (1975) that summarizes the theory of the expanding Earth. What evidence does Warren Carey present in favour of this theory?

At the end of the paper he proposes some test that could validate this theory. With the benefit of hindsight, comment on these tests.

References

Wegener A, The Origin of Continents and Oceans, (1912). If you don't want to read the German version, look for the 1966 English translation, published by Dover. There is a copy in Rutherford library.

McKenzie DP and RL Parker, The North Pacific : An example of tectonics on a sphere, *Nature*, 216, 1276-1280.

McKenzie DP and WJ Morgan, the evolution of triple junctions, *Nature*, 224, 125-133, 1969.

Atwater T, Implications of plate tectonics for the Cenozoic Tectonic evolution of Western North America, *GSA Bulletin*, 81, 3513-3536, 1970.

Carey SW, The expanding Earth – an Essay Review, *Earth Science Reviews*, 11, 105-143, 1975.