

## I. 英翻中

[1] The mid-ocean ridge is a continuous range of undersea volcanic mountains that encircles the globe, at nearly 60,000 kilometers long. It is a central feature of seafloor terrain and includes a collection of volcanic ridges, fault zones, and other geological features. It formed and evolves as a result of spreading in Earth's lithosphere- the crust and upper mantle- at the divergent boundaries between tectonic plates. (15 points)

[2] A fundamental element of today's climate system is an ocean circulation pattern, called Ocean Conveyor, which distributes vast quantities of heat and moisture around our planet. This global circulation is propelled by the sinking of cold, salty, and therefore dense, ocean waters. In today's ocean, warm, salty surface water from the tropics flows northward. As the warm water reaches high latitudes, it gives up heat and moisture to the atmosphere, leaving cold, salty, dense water that sinks to the ocean floor. (15 points)

[3] Ocean acidification may have severe consequences for marine ecosystems; however, assessing its future impact is difficult because laboratory experiments and field observations are limited by their reduced ecologic complexity and sample period, respectively. In contrast, the geological record contains long-term evidence for a variety of global environmental perturbations, including ocean acidification plus their associated biotic responses. (20 points)

[4] The ocean stores heat, freshwater, salt and carbon dioxide, and transports them around the planet's surface. Because seawater can hold heat much more efficiently than air, the ocean stores about a thousand times more heat than the atmosphere. But the atmosphere moves heat around much faster. The result is that the ocean and atmosphere each transport approximately equal amounts of heat. As air and water temperatures rise, more ice and melt water are moving from land-based sources on Antarctica and Greenland into the ocean. This adds water in the ocean, raising the level of the entire ocean. The sea level has risen 2 millimeters per year over the past century. (20 points)

## II. 中翻英 (每題10分)

[1] 碳循環是指碳在地球的生物圈，大氣圈，水圈和岩石圈中的交換。

[2] 固體地球內部可分為地殼，地函與地核。其中地函包括上地函，過渡帶及下地函。地核包括液態外核與固態內核。

[3] 海洋酸化是指海水的酸鹼值長期的下降。人類活動產生的廢物，例如使用石化燃料產生的二氧化碳，是造成海洋酸化的原因之一。