GRE阅读综合辅导:63题新东方网络课堂总结(二十二)GRE考试 PDF转换可能丢失图片或格式，建议阅读原文 https://www.100test.com/kao_ti2020/575/2021_2022_GRE_E9_98_85_E8_AF_BB_E7_c86_575810.htm Passage 18 (18/63)问题解决型（自然科学文章）特别套路提出问题：冰期的计时未知Milankovitch proposed in the early twentieth century that the ice ages were caused by variations in the Earth’s orbit around the Sun. For sometime this theory was considered untestable, largely because there was no sufficiently precise chronology计时 of the ice ages with which the orbital variations could be matched.提出解决方法：同位素方法To establish such a chronology it is necessary to determine the relative amounts of land ice that existed at various times in the Earth’s past. A recent discovery makes such a determination possible（）: relative land-ice volume for a given period can be deduced from能从…推出（ratio推出land-ice）*4C the ratio of two oxygen isotopes*4, 16 and 18, found in ocean sediments. Almost all the oxygen in water is oxygen 16, but a few molecules out of every thousand incorporate the heavier isotope 18. When an ice age begins, the continental ice sheets grow, steadily reducing the amount of water evaporated from the ocean that will eventually return to it. Because heavier isotopes tend to be left behind when water evaporates from the ocean surfaces, the remaining ocean water becomes progressively enriched in oxygen 18. The degree of enrichment can be determined by由…决定 analyzing ocean sediments of the period, because these sediments are composed of calcium carbonate (calcium carbonate: n.[化]碳酸钙) shells of

marine organisms, shells that were constructed with oxygen atoms drawn from the surrounding ocean. The higher the ratio of oxygen 18 to oxygen 16 in a sedimentary specimen, the more land ice there was when the sediment was laid down. chronologylt.rationO18/O16 landicelt.CaCO3(CC) &lt.ocean: O18/O16方法的优点：地理连续性和时间连续性As an indicator of shifts in the Earth’s climate, the isotope record*3 has two advantages. First, it is a global record: there is remarkably little variation（地理连续性） in isotope ratios in sedimentary specimens taken from different continental locations. Second, it is a more continuous record（时间连续性） than that taken from rocks on land.（以下是废话）Because of these advantages, sedimentary evidence can be dated with sufficient accuracy by radiometric methods to establish a precise chronology of the ice ages. The dated isotope record shows that the fluctuations in global ice volume over the past several hundred thousand years have a pattern: an ice age occurs roughly once every 100,000 years*6（单独一个数字要看）. These data have established a strong connection between variations in the Earth’s orbit and the periodicity of the ice ages.延伸性内容：其他影响气候的因素有哪些However（与心理预期不同，是重要段落）, it is important to note that other factors, such as volcanic particulates or variations in the amount of sunlight received by the Earth, could potentially have affected the climate. The advantage of the Milankovitch theory is that it is testable: changes in the Earth’s orbit can be calculated and dated by applying Newton’s laws of gravity to progressively earlier configurations of the bodies in the solar system. Yet（极端转

折） the lack of information about other possible factors affecting global climate does not make them unimportant（ ）. 