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State Key Laboratory of Isotope Geochemistry

学术报告

Magmatic Response to slab tearing

报告专家：**A/Prof. Gideon Rosenbaum**

(University of Queensland, Brisbane, AUS)

报告时间：**6 月 8 日（周五）上午 10:00**

报告地点：**综合楼 702 会议室**

A/Prof. Gideon Rosenbaum's research focuses on convergent plate boundary processes in modern and ancient environments. He has worked on plate boundary segmentation and oroclinal bending in the Mediterranean Sea, South America, Eastern Australia and Central Asia. His research was published in more than 90 research papers (including Nature, Geology, EPSL…), and is cited >3300 times. Rosenbaum received his PhD in 2004 from Monash University (Melbourne, Australia). He subsequently held a two-year postdoctoral fellowship at Johannes Gutenberg University (Mainz, Germany), before taking a lecturer position at the University of Queensland in 2006. He has received the Chris Powell Medal from the Geological Society of Australia, and serve as the Associated Editor of JGR-Solid Earth (2006-current) and Lithosphere (2016-current).

ABSTRACT: Subduction zone magmatism is predominantly controlled by the release of fluids from the subducting slab and the resulting partial melting within the overlying mantle wedge. However, there are many examples where neither the position of specific volcanoes relative to the subducting slab, nor the geochemical characteristics of the magmatic products, are consistent with this scenario. In this presentation, I will demonstrate that the source of such volcanoes is commonly driven by a tear in the subducting slab, which inevitably occurs in areas where the subduction zone is segmented or strongly contorted. Tear-related magmatism commonly gives rise to ultrapotassic lavas enriched in incompatible elements and may also result in geochemical anomalies such as copper and gold mineralisation. Two major examples will be discussed. In the first example, from the Mediterranean Sea, slab tearing took place in response to along-strike variations in the rates of trench retreat. In the second example, from the Ecuadorian Andes, the edge of a flat slab segment is responsible for slab contortion, tearing and magmatism.