

皖北新元古界软沉积物液化变形-塌落叠合构造的古地震成因研究

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引用本文: 王熙,王明镇.2013.皖北新元古界软沉积物液化变形-塌落叠合构造的古地震成因研究[J].地球学报,34(3):318-324.

DOI: 10.3975/cagsb.2013.03.07

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中文摘要:在皖北新元古界四十里长山组下部粉砂岩层中,发育有一个软沉积物液化变形-塌落叠合构造。观测剖面共分为三部分:下部为海啸砾岩未变形层,中部为液化均一层、球枕状层和塌落叠合层,上部为震积不整合面,不整合面之上为海啸砾岩未变形层。共同构成一个完整的地震-海啸震积岩序列。中部的液化均一层、球枕状层和塌落叠合层是震积事件的主旋回层。对剖面特征及成因机理研究分析后发现,该剖面位于浅海陆棚边缘斜坡相带。在古地震多旋回脉动震颤作用下,经液化均一变形,负载体下沉滑覆及盖层塌落多重叠合,最终形成具有软沉积物变形特征的叠合构造。四十里长山组沉积期,位于浅海陆棚边缘斜坡地带的粉砂质软沉积物,为震颤变形的能量转化提供了物质基础。而强地震的多旋回脉动作用,给软沉积物液化均一变形、负载体下沉滑覆、盖层塌落叠合等提供了原动力。

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A Study of Paleoseismic Causes of Neoproterozoic Soft-sediments Liquefaction Deformation and Slump Composite Structures in Northern Anhui Province

Abstract:Liquefaction deformation-slump composite structures of soft-sediments are developed in the bottom siltstone layer of Neoproterozoic Sishilichangshan Formation in northern Anhui Province. Detailed observation reveals that this section can be divided into three parts. The lower part is a tsunamite layer with no deformation, the middle part is a composite structure which includes liquefaction homogeneous layer, ball-pillow-like layer and slump composite layer, and the upper part is a seismic unconformity layer covered with tsunamite undeformed layer. These parts form a complete earthquake-tsunami seismites sequence, with the middle composite structure being the main cycle layer in this seismites event. Based on an analysis of section characteristics and formation mechanism, the authors found that the section is located in the shallow continental shelf margin of the slope facies. In the paleoseismic multicycle and pulsed tremor, the liquefied homogeneous deformation, load stem subsidence and caprock collapse experienced multiple superimposition, and all these factors ultimately formed a composite structure with soft-sediment deformation features. The powder sandy soft sediments in the shallow continental shelf margin of the slope zone provided the material foundation for tremor deformation energy conversion in Sishilichangshan Formation sediment period. The multicycle pulse of a strong earthquake provided the driving force for the soft sediment liquefaction uniform deformation, load stem subsidence, caprock collapse and superimposition.


keywords:[slump composite structures](#) [ball-pillow-like layer](#) [seismite](#) [multicycle pulse](#) [homogeneous layer](#)

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