

利用磁化率異向性和脆性細觀結構分析研究東方阿特拉斯的構造演化-突尼斯西北部突尼斯海槽南緣案例研究

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摘要

本研究採用結合磁化率異向性 (AMS) 和結構方法來評估突尼斯阿特拉斯西北部的構造演化。在 18 個地點從阿普第期階至坎帕期階的細粒白堊紀沉積物中共採集了 370 個定向樣本。為了辨識 AMS 訊號的主要磁載體，利用熱磁技術分析了代表性樣本。結果表明，鐵磁性 (s.l) 礦物起的作用很小，這支持了順磁性礦物是主要貢獻者的結論。AMS 結果顯示，12 個地點表現出正常的 AMS 結構，這是弱變形沉積物的典型特徵，具有明確的磁線理和與層面次平行的磁葉理。磁線理僅定義了兩個主要方向，並且主要受該地區記錄的構造變形控制。AMS 和結構分析均表明，阿普第期-阿爾布期地層的伸展方向總體呈南北方向，而阿普第期-阿爾布期地層的縮短方向則呈西北-東南方向。除了森諾曼期-坎帕期地層，AMS 結果與微構造分析不一致外，大致南北向的磁線理歸因於早白堊世同沉積裂谷階段，並且沒有被後期的西北-東南向擠壓階段所覆蓋。因此，可以得出結論，AMS 紋理是在變形的早期階段獲得的，一旦岩化，它幾乎不會受到後續構造運動的改變。此外，AMS 結果也揭示了兩種未定義的結構：一種是沉積結構，兩種是逆結構。綜合磁性和礦物學研究證實了磁性礦物學對最終 AMS 組構的影響。

關鍵字：磁化率異向性 (AMS)、拉伸磁性組構、倒轉盆地、突尼斯西北部、阿普第期-阿爾布期裂谷期、Atlasic 壓縮。



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The use of anisotropy of magnetic susceptibility and brittle mesostructures analysis to investigate the tectonic evolution of the oriental Atlas. Case study of the southern edge of the Tunisian trough, NW Tunisian Atlas

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ABSTRACT

This study used a combination of the Anisotropy of Magnetic Susceptibility (AMS) and the structural method to assess the tectonic evolution of the northwestern Tunisian Atlas. A total of 370 oriented specimens were sampled at 18 sites from fine grained Cretaceous sediments ranging from Aptian to Campanian. In order to identify the main magnetic carriers of the AMS signal, representative samples were analysed using thermomagnetic techniques. The results revealed that ferromagnetic (s.l) minerals play a trivial role, favouring the conclusion that paramagnetic minerals are the main contributors. The AMS results showed 12 sites exhibiting normal AMS fabrics, typical for weakly deformed sediments, with a well-defined magnetic lineation and a magnetic foliation sub-parallel to the bedding plane. Only two main orientations of the magnetic lineation were defined and were greatly controlled by the tectonic deformation recorded in the area. Both AMS and structural analyses illustrate a transition from a generally N-S extensional direction for the Aptian-Albian formations to a NW-SE shortening direction for Cenomanian- Campanian series. Except for the Albian-Cenomanian Formation, where the AMS results discord with the microtectonic analysis, the roughly N-S magnetic lineation was attributed to the lower Cretaceous *syn*-deposit rifting phase and was not overprinted by the later NW-SE compressive phases. Thus, it can be concluded that the AMS texture was acquired during early stages of the deformation and once lithified, it was hardly altered by subsequent tectonic movements. Besides, the AMS results also revealed two undefined fabrics: one sedimentary and two inverse. The integrated magnetic and mineralogical investigations confirmed the influence of the magnetic mineralogy on the resulting AMS fabric.