三維區域地質模型建立-深澳禮樂電廠資料分析

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摘要

　　傳統地質製圖是以野外調查為主，但是野外工作中卻存在一些限制，例如植生配覆蓋或是部分區域很難以到達，使得製圖時因缺乏露頭與位態資料，致推測及建構圖資，無法建立合理的地質模型。本研究區域範圍為台灣電力公司深澳及禮樂電廠，本研究計畫係利用高解析度數值高程模型(1m-DEM)來識別地表面特徵進而判釋層面線型、三角切面，搭配地表量測露頭的平均位態。利用地礦中心的礦坑坑道圖資建立地下礦坑點資料，也就是分布在煤礦內的斜坑與片坑中實測高程與座標點，選定礦坑具有分析意義的資料點，接續做聯合回歸並得出最佳的結果，經過不斷的軟體執行資料的分析與驗證，並比對相關圖資，據此建立各調查區域的控制層面。在建立模型過程中不斷反覆做資料點回歸並檢視成果並求得最佳解即最小的 RMSE，完成各調查區域控制層面後並與判釋的層面線型及三角切面與地表平均位態等資料一起做聯合回歸，建立地質模型後與各線型及切面的位態做差異分析比較，並持續精進軟體分析的功能以完成三維調查區域地質模型建立。

關鍵字： 1m-DEM、地礦中心

Establishment of 3D regional geological model – data analysis of Shen-ao and Li-le mine

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Abstract

Traditional geological mapping is mainly based on field investigation, but there are some limitations in field work, such as vegetation coverage or some areas are difficult to reach, which makes it impossible to establish a reasonable geological model due to the lack of outcrop and location data during mapping. In this research project, the high-resolution digital elevation model (1m-DEM) is used to identify ground surface features and interpret the linear and triangular sections of the layer, and the average position of the outcrop is measured by using a high-resolution digital elevation model (1m-DEM). The underground pit point data is established by using the pit tunnel map of the geology and mining center, that is, the measured elevation and coordinate points in the inclined pit and sheet pit distributed in the coal mine, and the data points with analytical significance of the pit are selected, and the joint regression is carried out and the best results are obtained. Through continuous analysis and verification of the data performed by the software, and the relevant drawings are compared, the control level of each survey area is established accordingly. In the process of establishing the model, we continue to repeatedly do data point regression and review the results and find the best solution, that is, the minimum RMSE, after completing the control level of each survey area, and do joint regression together with the interpreted layer line type, triangular section and average surface position and other data, after establishing the geological model, we will analyze and compare the difference with the position of each line type and section, and continue to improve the function of software analysis to complete the establishment of the geological model of the 3D survey area.

Keywords: 1m-DEM、Geological Survey and Mineral Research Centre.