

Abstract

A contoured topographic map is perhaps the most familiar way of representing terrain. On a topographic map, all features present on the terrain are projected orthogonally onto a 2-D horizontal datum. Detail is then reduced in scale and represented by lines and symbols. Terrain height and morphological information are represented by contour lines. Since the middle of the 20th century, various digital terrain representation techniques have been developed with the development of computing technology, modern mathematics, and computer graphics. Nowadays, the use of the computer has become a significant landmark in the information field. Indeed, computers have become an important means for the representation of digital terrain surface.

In this research the focus is on the digital surface modeling. ArcGIS software is used to analysis the data through the most critical descriptors of the terrain modeling, first, semivariogram is used to describe the similarity of a DTM surface. Second, slop is used to describe the Complexity (roughness) of a DTM surface. An assessment is done for the two methods of modeling to show their contribution to improve the DTM process output. The usage of semivariogram method has done by calculating the best fit model in different directions, and to get the accurate result of slope method it needs to divide the large areas to small ones.

التجريدة

يتم تمثيل سطح الارض عادة باستخدام الخرائط الطبوغرافية، حيث يتم اسقاط المعالم على سطح ثنائي الابعاد ويتم تمثيلها بخطوط ورموز، أما الارتفاعات فيتم تمثيلها بخطوط كنتور.

قد شهد منتصف القرن العشرين تطور التقنيات الرقمية المستخدمة في تمثيل سطح الارض مع تطور تقنيات الحوسبة والرياضيات الحديثة بالإضافة الى رسومات الكمبيوتر، حتى اصبح استخدام الكمبيوتر جزءاً هاماً في مجال المعلومات، وبالتالي اصبحت اجهزة الكمبيوتر وسيلة اساسية في عملية التمثيل الرقمي لسطح الارض.

في هذا البحث تم التركيز على جانب هام في عملية النمذجة الرقمية لسطح الارض وهي كيفية واستراتيجية الحصول على البيانات ودورها في زيادة دقة النتائج، وذلك باستخدام برنامج ArcGIS للتحكم في خواص نمذجة السطح باستخدام طريقتي Semivariogram و Slope . وقد تم الحصول على نتائج جيدة بزيادة دقة البيانات المتحصل عليها باستخدام نموذج يمثل السطح ودراسته بجميع الاتجاهات (Semivariogram Method) ، وكذلك بتقسيم منطقة الدراسة الى مساحات اصغر لزيادة الدقة (Slope Method).

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