

ABSTRACT

The importance of remote sensing in its various types aerial photos, satellite images, radar and others is that all the mentioned types help in the process of continuous monitoring of earth resources. They also provide more information about the earth, that the digital image acquired a great significance in surveying and for the production of topographic maps. Therefore it has become important to process the digital image by enhancing and improving the clarity and classifying its features so as to obtain the required information.

Some tests and treatments using the ERDAS IMAGINE software were carried out to enhance and classify features on (digital images) the satellite image (Landsat 4) which cover Khartoum State at a resolution of 30m. This image was taken at the year 2000.

The image did not need to be adjusted as it was coordinated to (x=431747, y=1742920) for upper left corner and (x=465405.5, y=1704986) for lower right corner.

In this research it has been found that the Histogram equalization provides a better result when it is used to improve the digital image contrast. This is so because it redistributes pixels uniformly.

Edge sharpening of the features that appear in a digital image can be successfully executed using kernel high- pass filter. On the other hand kernel low -pass filter always provides good results when image smoothing is required.

It is also found that unsupervised classification can be used when there is less information about the data before classification. In addition to that good classification results can be obtained when the study area is partly familiar. In such cases supervised classification represents a better choice.

الملخص

تظهر أهمية الاستشعار عن بعد بجميع أنواعه ، الصور الجوية ،صور الاقمار الصناعية الرادار وغيرها ، على أنها تساعد في عملية المراقبة المستمرة للأرض ومواردها، وتقدم معلومات غزيرة عن الأرض حيث ان الصورة الرقمية اكتسبت أهمية كبيرة في الأعمال المساحية وإنتاج الخرائط الطبوغرافية وبالتالي أصبح من الأهمية بمكان معالجة الصورة الرقمية وذلك بضبطها وتحسين درجة الوضوح وتصنيف المعالم عليها للحصول علي المعلومات المطلوبة.

تم عمل بعض الإختبارات و المعالجات الخاصة بتحسين وتصنيف الصور الرقمية علي صورة اقمار صناعية(Land sat 4) تغطي ولاية الخرطوم بدرجة وضوح 30 م التقطت بالعام 2000 باستخدام برنامج ERDAS IMAGINE.

الصورة لم تكن بحاجة لعملية ضبط حيث انها كانت مضبوطة باحداثيات $(x=431747, y=1742920)$ للركن الشمالي الغربي و $(x=465405.5, y=1704986)$ للركن الجنوبي الغربي.

في هذا البحث تم التوصل الي ان التحسين باستخدام المد المتساوي لمدرجات التكرار يعطي افضل النتائج وذلك لتحسين تباين الصورة الرقمية كما ان تحسين الحواف و ابراز الظواهر الحدودية يمكن تنفيذه بنجاح عند استخدام مرشحات الانتقال العالي وفي حالة استخدام مرشحات الانتقال المنخفض نتحصل علي صورة منعمة كما ان ذلك يساعد في ازالة ضجيج الصورة.

يمكن استخدام التصنيف غير المراقب في حالة عدم توفر معلومات كافية عن الصورة قبل التصنيف، وعندما تكون منطقة الدراسة مألوفة إلى حد ما يمكن الحصول على نتائج تصنيف جيدة حيث ان استخدام التصنيف المراقب في مثل هذه الحالات يمثل الخيار الافضل.

Dedication

To:

My mother...

My father...

My sister...

My brother...

And my friends...

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