

SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)
Tools and Technology in support of Integrated Applications (2)

Author: Dr. Sevda R. Ibrahimova
Azerbaijan National Aerospace Agency, Azerbaijan, s_ibrahimova@yahoo.com

SPACE TECHNOLOGY FOR NATURAL HAZARDS DETECTION IN AZERBAIJAN

Abstract

The salinization of soils develops in different natural conditions of migration of salts. For elaboration of methods for struggle against the salinization, first of all, it is needed to determine their spatial location. As Azerbaijan is an ancient agricultural region, as a result of thousand years influence of anthropogenic factors the saline soils obtained a wide distribution there. With this purpose the present work is elaboration of the method of distinction of saline soils, creation of map of soil salinity on the basis of space images and GIS technology, and also effective washing of heavy saline soils. The location of saline soil is defined with the map created on the basis of space images. Mapping techniques that can be used to inventory and monitor soil salinity over large areas in more efficient, time-effective and less expensive ways are required for precision agriculture and sustaining soil productivity in many parts of the world. Predictive mapping techniques, such as linear and multiple regression, fuzzy logic, neural network, and classification and regression trees have been used to develop soil and natural resource maps. Remote-sensing data have been used successfully in mapping soil salinity for decades. The principle behind this success is based on the dramatic effects that soil salinity has on soil physical, chemical and biological properties. The quantities and changes in soil properties can be monitored using remote sensing. It is known, that the problem of soil salinity is complicated and many-factors. That's why for output of the methods of the fight with the salinity it is necessary to define their space situation on salinity degree. A new method for recognition of soil salinization is offered. With this purpose side by side with the traditional methods of researches it is planned to construct the digital model, which will be constructed on the basis of high resolution space images as SPOT and IKONOS. The offered method of analysis is put on the first plan of the calculation of the context information. If there is a statistic connection between neighboring elements of images, then it gives rise to local extensive context. The sources of context information are found in the same images, expressing in the form of rules of the extensive organization of elements at description of the investigated territory. The use of methods of fractal analysis and different Veyvlet transformation allow raising reliability in definition of soil salinity on space images.