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CORRECTION OF ATMOSPHERIC EFFECTS ON LANDSAT DATA

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The Mexican Ministry of Agricultural and Water Resources, by means of the National Water Planning Commission, has applied remote sensing since 1972 to inventory land use in Mexico. The purpose of this work has been to develop the techniques which permit to eliminate the atmospheric influence on LANDSAT data and reduce them to values related with intrinsic properties of the objects of interest on earth. The result was an algorithm (SIADATM) incorporated to SIADIS system, a system of automatic interpretation of satellite images, which works in a PDP 11/70 computer. SIADAIM is based on an energy conservation equation and the corrective terms are the atmospheric transmittance and all the contributions due to scattering in the sensor's view path, which do not come from the object on earth. Some hypothesis must be assumed about atmospheric structure, atmospheric scattering and surface reflectance in order to calculate each correction term. In SIADATM were considered a plane parallel atmosphere, scattering in simple form according to Rayleigh's theory and a Lambertian model of surface reflectance. Since it was assumed an atmosphere scattering in simple form, some of the components of the correction due to scattering in the view path vanish. The only terms which remain are the reflected radiation in the object's surroundings and the direct solar radiation in the view path. So, the atmospheric correction is carried out with three terms, from which only one is now calculated from LANDSAT data, and is so called the surroundings contribution. The others are obtained from measurements made on ground, and have been carried out by the Geophysics Institute of the National University of Mexico. In this work, the LANDSAT data of some selected pilot zones were corrected by SAIDATM algorithm and then classified by pattern recognition techniques by SAIDIS system. The results obtained are promising since an improve-

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ment in security classification has been observed. Likewise, a better definition of frontier between classes has been observed. Now, the advantages of the use of these reduced values in multitemporal analysis, water quality, plague detection, etc., are investigated.