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Different Strategies On Soil Mapping By Using Laboratory And Orbital Spectral Information

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Recent Conferences have attempt to the importance of spatial information, such as land use, urban evaluation and soils to assist social decisions. Thus, it has been strongly showed the necessity of global geospatial information distribution for community. How can this be done, since we have too many areas and few pedologists? The usual parameters used to develop a soil survey can be improved by new information obtained by remote sensing techniques, thus, helping on a better decision. The objective of this work was to generate soil maps by different remote sensing strategies. The study area is located in Brazil, in a 474 ha bare soil area. A 1 ha sampling grid was established, where each point was soil sampled and analysed at two depths (0-20; 80-100 cm). It was generated soil maps by the following methods. (a) Soil Map 1 (SM1); Field traditional soil survey was developed (real truth). (b) Laboratory soil reflectance data was acquired (450-2,500 nm). The spectral information of both depths was simultaneously analysed (cluster analysis), which grouped the most similar points in the grid and obtained Soil Map 2 (SM2). (c) For the same locations (pixels), reflectance data was obtained from a TM-Landsat image (atmospheric processed; reflectance transformed). The soil surface information of the pixel for all bands was simultaneously evaluated by cluster analyses. The grouping allowed the development of Soil Map 3 (SM3). (d) For Soil Map 4 (SM4) we demarked 3 toposequences in the area. We collected the spectral information of the pixels that belongs to the sequences, and thus, only these were inserted in statistics. Cluster grouped the pixels *in* topossequences. The spectral information of each group was used to make a su-

pervised classification in all study area. Cross-table analysis was performed between SM1 and all other SMs for comparison. SM1, SM2, SM3 and SM4, generated 11, 9, 6 and 5 soil classes (groups) respectively. It was observed that laboratory spectral analysis (SM2) resulted in the most similar soil map to the traditional. This occurs because it evaluates soil samples collected at field what allowed to acquire information about two important depths for soil classification. Landsat image by cluster grouping in all image (SM3) had a lower density of classes, since pixel information is only for surface and some different soils can have similar surface spectral information. On the other hand, results indicate that the confusion is mainly for ultisols, since oxisols had high significance. Strategy on taking information only on toposequences showed the less number of classes. Although, the similarity with soil traditional map limits showed a very important strategy to determine main soil classes with less spectral information.
Key words: Soil mapping, remote sensing, digital soil mapping, sols and satellite.