



Land cover in the Guayas Basin using SAR images from low resolution ASAR Global mode to high resolution Sentinel-1 images

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Remotely sensed images allow a frequent monitoring of land cover variations at regional and global scale. Recently launched Sentinel-1 satellite offers a global cover of land areas at an unprecedented spatial (20 m) and temporal (6 days at the Equator). We propose here to compare the performances of commonly used supervised classification techniques (i.e. k-nearest neighbors, linear and Gaussian support vector machines, naive Bayes, linear and quadratic discriminant analyzes, adaptative boosting, loggit regression, ridge regression with one-vs-one voting, random forest, extremely randomized trees) for land cover applications in the Guayas Basin, the largest river basin of the Pacific coast of Ecuador (area $\sim 32,000$ km²). The reason of this choice is the importance of this region in Ecuadorian economy as its watershed represents 13% of the total area of Ecuador where 40% of the Ecuadorian population lives. It also corresponds to the most productive region of Ecuador for agriculture and aquaculture. Fifty percents of the country shrimp farming production comes from this watershed, and represents with agriculture the largest source of revenue of the country. Similar comparisons are also performed using ENVISAT ASAR images acquired in global mode (1 km of spatial resolution). Accuracy of the results will be achieved using land cover map derived from multi-spectral images.