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MEASURING THE NILE AND THE AMAZON RIVERS THROUGH SATELLITE REMOTE SENSING

Abstract

New procedures to measure the lengths of rivers are presented. The images are those downloaded from NASA-GEOCOVER and MODIS-TERRA databases. GEOCOVER composites are available free of charge as ortho-rectified mosaics of LANDSAT color frames of ETM+-bands 2B4G7R with ground resolution of 15 meters. MODIS tiles are downloaded as individual bands (1,2,6) and then are locally corrected to precise level and framed. The mosaics are organized in a databank supported by a date version of INPE's Image Processing System dubbed SPRING. The new version allows the analyst to edit the lines of the rivers directly in the monitor providing new basis of efficiency and accuracy in photo-interpretation. The longest streams of both rivers were mapped from their uppermost headwaters until their more distant mouths in the oceans. For the Nile that means the Kagera River in Burundi and the Damietta mouth in the Mediterranean Sea. For the Amazon is the Apacheta Creek in Southern Peru and the Marajo Bay in the Atlantic Ocean. According to these procedures the lengths of the rivers are 6878 km for the Nile and 6993 km for the Amazon. The authors recommend the application of this methodology to review the lengths of others mighty rivers of the planet since GEOCOVER-MODIS frames are available for any terrestrial site on Earth and GIS is a world-wide disseminated tool.