THE GLOBAL OPERATIONAL MONITORING OF LARGE LAKES AND RESERVOIRS

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Satellite radar altimetry has the ability to monitor variations in surface water height for large lakes and reservoirs. A clear advantage is the provision of data where traditional gauges are lacking or where there is restricted access to ground-based measurements. A USDA/NASA funded program is performing altimetric monitoring of the largest lakes and reservoirs around the world. The near-real time height measurements are currently derived from NASA/CNES Jason-2/OSTM mission data. Archived data from the NASA/CNES Topex/Poseidon and Jason-1 missions are also utilized to provide time series variations from 1992-2008. In 2010 the program was expanded and enhanced by including the ESA ERS and ENVISAT data sets which will ultimately allow the monitoring of an additional ~500 lakes. Radar, Lidar and ground-based data sets are used for validation exercises and surface elevation product accuracies are found to range from a few centimetres to many tens of centimetres depending on the target size and mission dataset. The database contains graphic and text products, which are available at (http://pecad.fas.usda.gov/cropexplorer/global_reservoir. In particular, the FAS/OGA utilize the products for assessing irrigation potential (and thus crop production estimates), and for general observation of high-water status, short-term drought, longer-term climatic trends, and anthropogenic effects.