Development of Salt Marsh Monitoring Methodology Using Remote Sensing and GIS

Y.Q. Wang, PI
Department of Natural Resources Science
University of Rhode Island

For more information
http://www.ltrs.uri.edu
New Satellite Data in Salt Marsh Change Monitoring

Given that salt marsh monitoring requires repeatable and reliable updates of cover maps, exploration of new data and approaches that could efficiently update the salt marsh maps are necessary. Recent development of high spatial resolution satellite remote sensing data can meet the needs of the project.

For example, The QuickBird-2 satellite, launched in October 2001, possesses 0.61-meter spatial resolution for the panchromatic band and 2.5-meter spatial resolution for the multispectral bands (visible to near infrared).

The capability of repeated data acquisition by QuickBird-2 should be tested and evaluated for the practice in salt marsh change monitoring.
Objectives

• Document historical salt marsh coverage and detect the aerial changes in the Gateway NPS areas using historical aerial photographs and obtain the most recent salt marsh map from QuickBird-2 satellite remote sensing data

• Compare and validate the agreement between satellite derived salt marsh map and the delineation result from historical aerial photographs, so that we can repeat monitoring of salt marsh change in a regular time frame, reliable accuracy, and reasonable cost

• Develop a working protocols that are transferable among NPS projects for salt marsh mapping and monitoring.
Project Progress

Project duration: 09/2003-08/2005

QuickBird image acquired September 10, 2003

First fieldwork conducted: October 31, 2003
QuickBird satellite image of the Jamaica Bay shows spatial distribution of the salt marsh. The image was acquired on September 10, 2003. This is a true color display with 2.5-m resolution.
QuickBird 2 panchromatic image with 0.6-meter spatial resolution
QuickBird 2 multispectral image with 2.5-meter spatial resolution. This is a pseudo color display (Bands 4, 2, 1 in RGB)
QuickBird 2 multispectral image with 2.5-meter spatial resolution. This is a true color display (Bands 3, 2, 1 in RGB)
Yellow dots show the locations of salt marsh ground checking conducted on October 31, 2003.
Geo-referenced (GPS) field photos.
Examples of GPS Georeferenced Field Photos
Examples of GPS Georeferenced Field Photos
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