Bathymetric change surrounding the Alviso pond complex: 2010 - 2012

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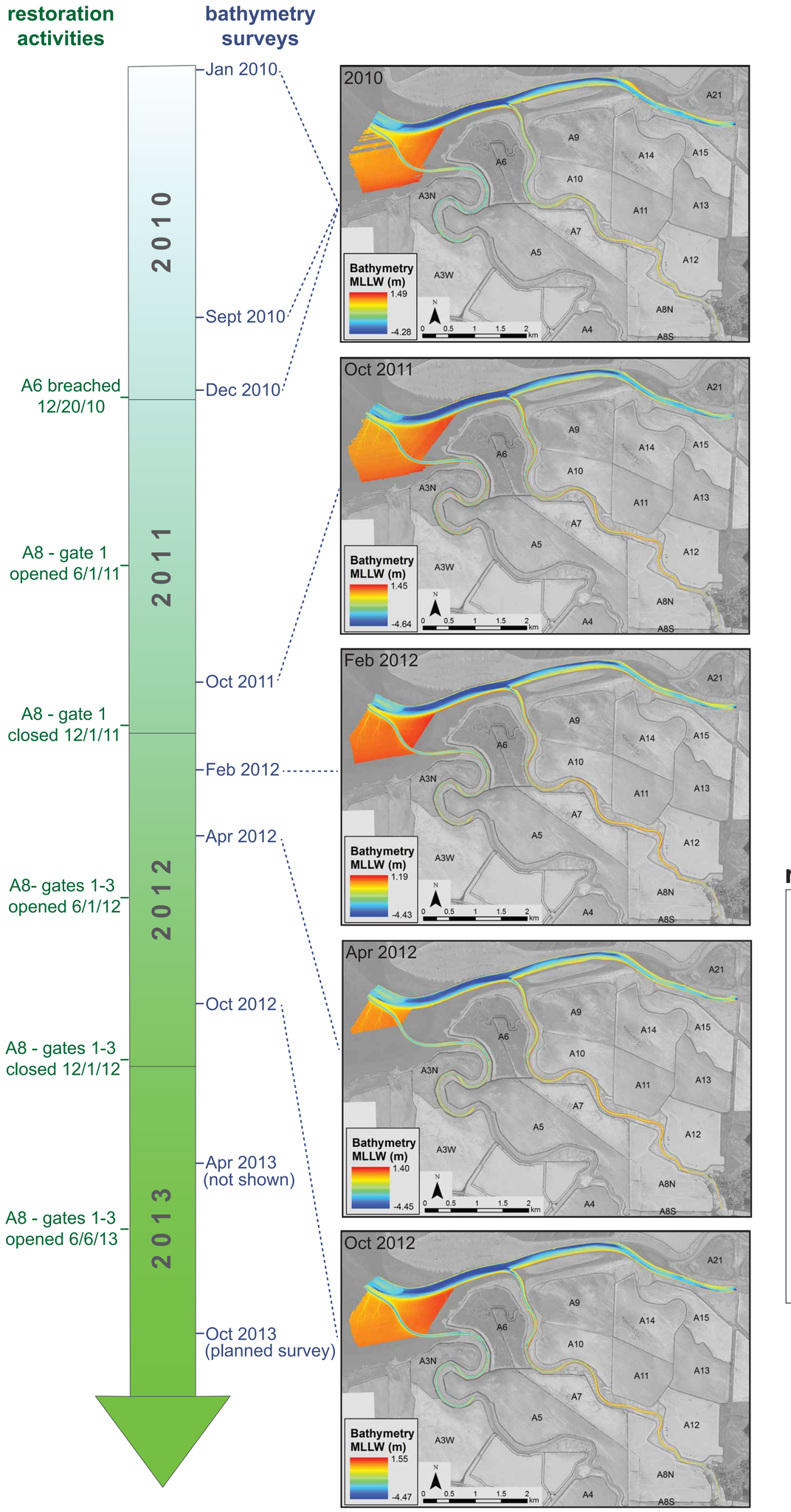
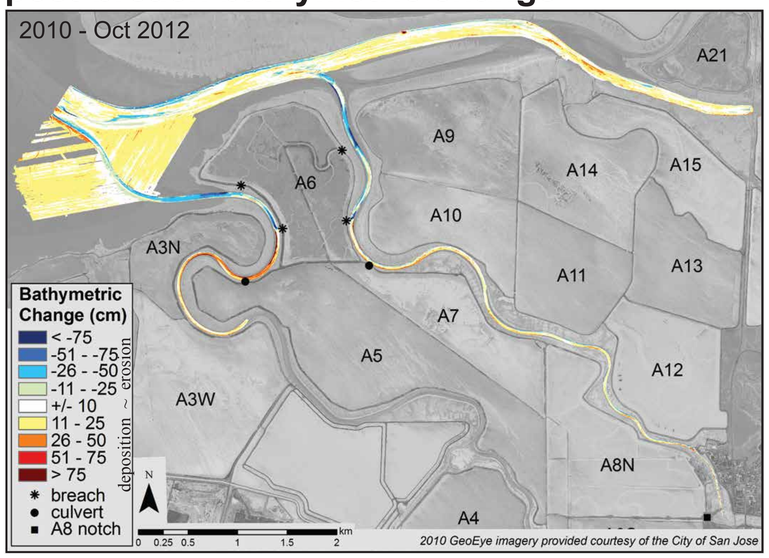
Introduction

In 2010 the USGS mapped the bathymetry in the vicinity of the Alviso Pond complex including the main channel of South Bay, shallow intertidal mudflats, and Alviso and Guadalupe Sloughs to establish baseline bathymetry prior to the breaching of Pond A6 levees and opening of gates at Pond A8 (Foxgrover et al., 2011). Interferometric sidescan swath mapping was used to generate high resolution (1 m cell size) bathymetric grids of the far South Bay extending east of Calaveras Point to where Coyote Creek meets the railroad bridge, and down Alviso Slough to just past the A8 notch. Since 2010 we have conducted five additional surveys to monitor bathymetric change in this region as restoration progresses. Our next survey is scheduled for October 2013.



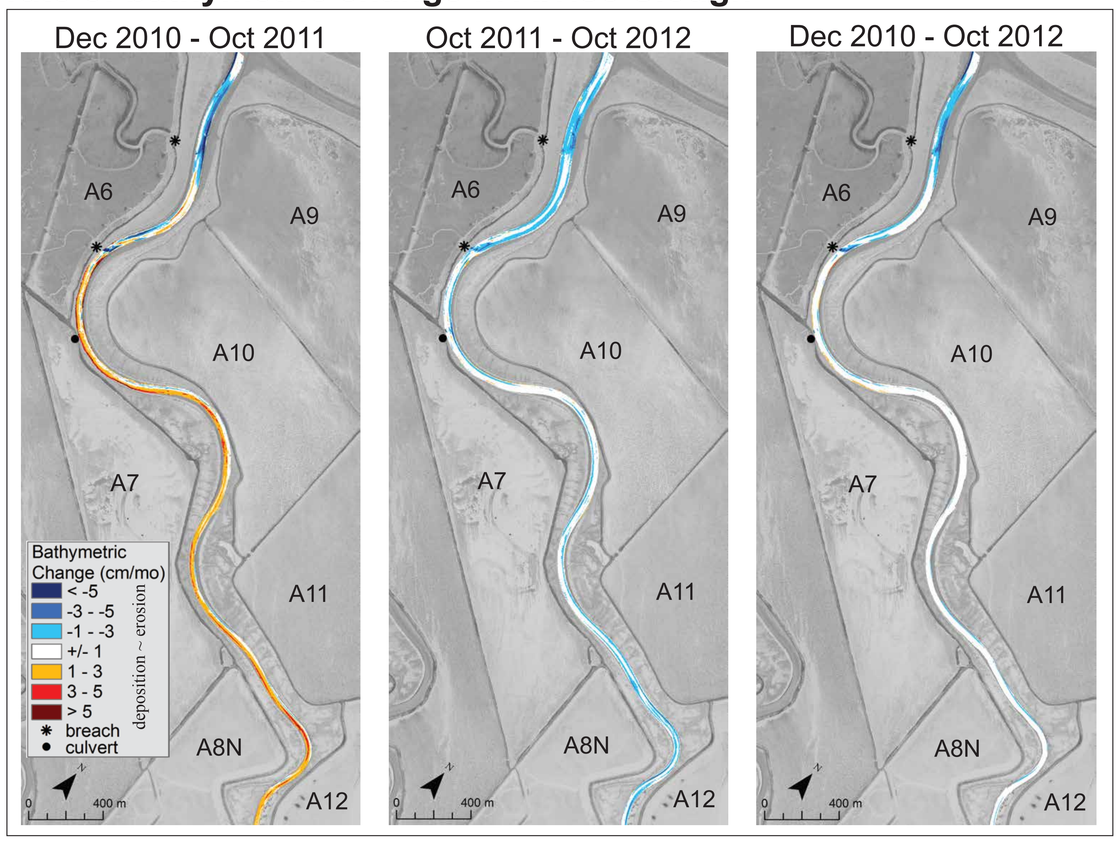
post-breach bathymetric change



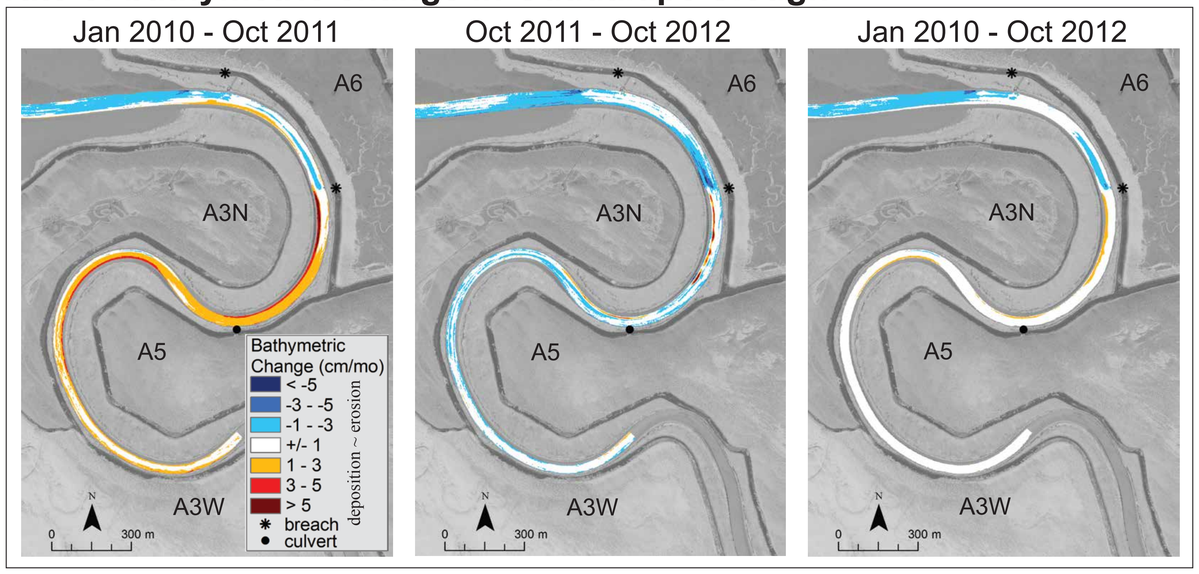

collecting swath bathymetry in Alviso Slough


A6 breach at high tide

rate of bathymetric change in Alviso Slough



rate of bathymetric change in Guadalupe Slough



Conclusions

The greatest erosion has occurred within Alviso and Guadalupe sloughs bay-ward of the southern A6 breaches. Erosion on the order of 20+ cm dominates these reaches of the sloughs, and localized erosion directly adjacent to the breaches exceeds 75 cm. Changes within the sloughs south of the A6 breaches are more subtle and largely depositional. A major concern with restoration activities is whether or not the breaching of A6 levees would cause erosion of the adjacent intertidal flats, so far this has not been the case.

References

Foxgrover et al., 2011, 2010 Bathymetry and Digital Elevation Model of Coyote Creek and Alviso Slough, South San Francisco Bay, California: U.S. Geological Survey Open-File Report 2011-1315, 21 p., available at: http://pubs.usgs.gov/of/2011/1315.