



Will Restoration Cause Loss of Mudflats in South San Francisco Bay?

Bruce Jaffe, David Finlayson and Amy Foxgrover

**U.S. Geological Survey Pacific and Coastal Science Center
Santa Cruz, CA**

Bay-Delta Science Conference
September 28, 2010



Will Restoration Cause Loss of Mudflats in South San Francisco Bay?

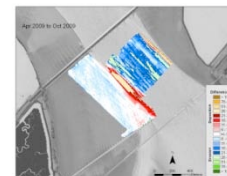
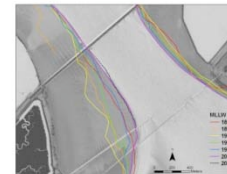
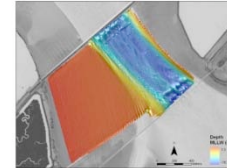
Main Points

- 1) Both long-term and seasonal variability of the mudflats must be understood to interpret post-restoration changes
- 2) Long-term change in mudflat width at SF2 related to deposition in far South San Francisco Bay
- 3) Mudflats at SF2 tend to erode in late spring/summer/fall and accrete during the winter/early spring

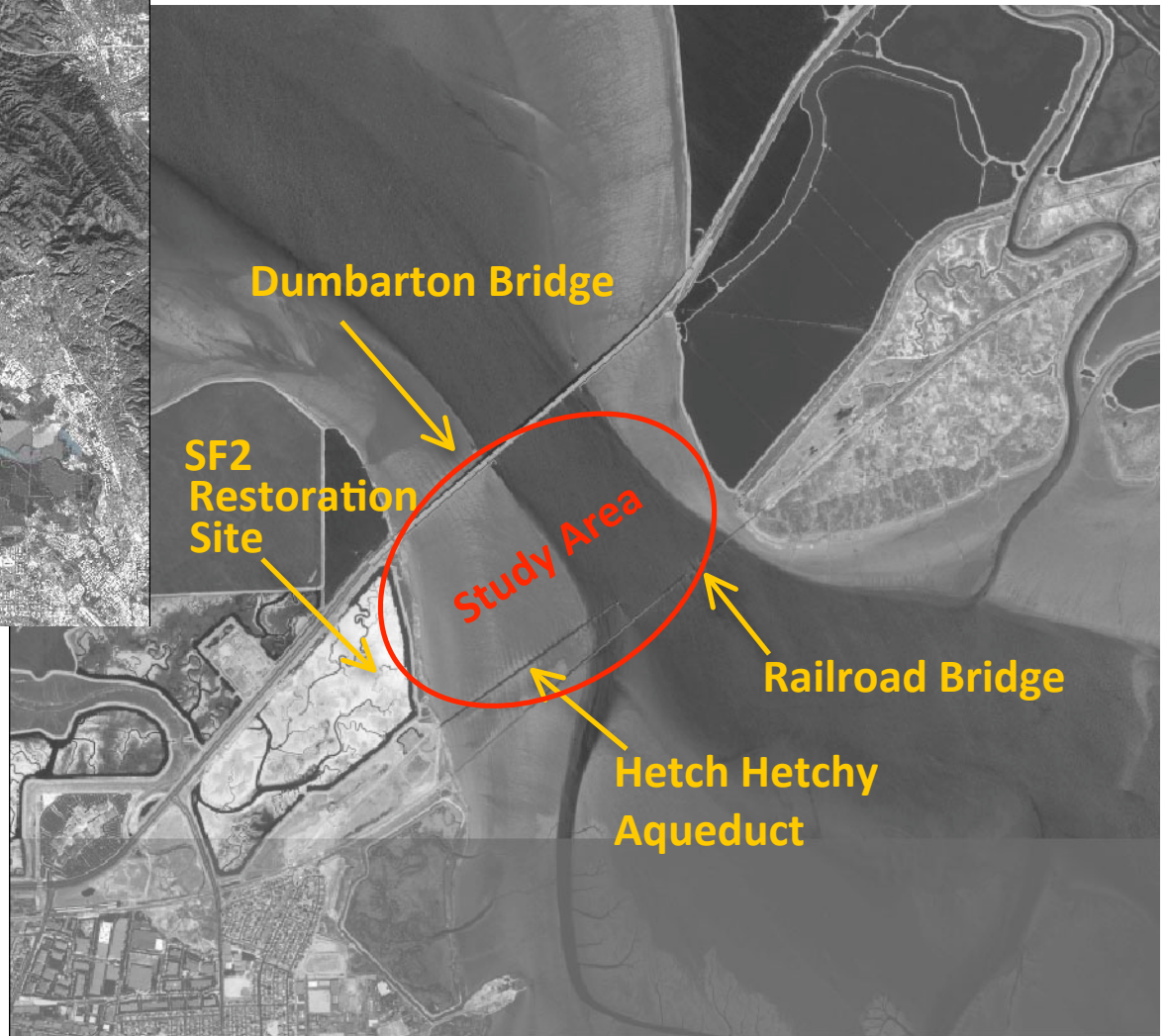
Bay-Delta Science Conference
September 28, 2010

Outline

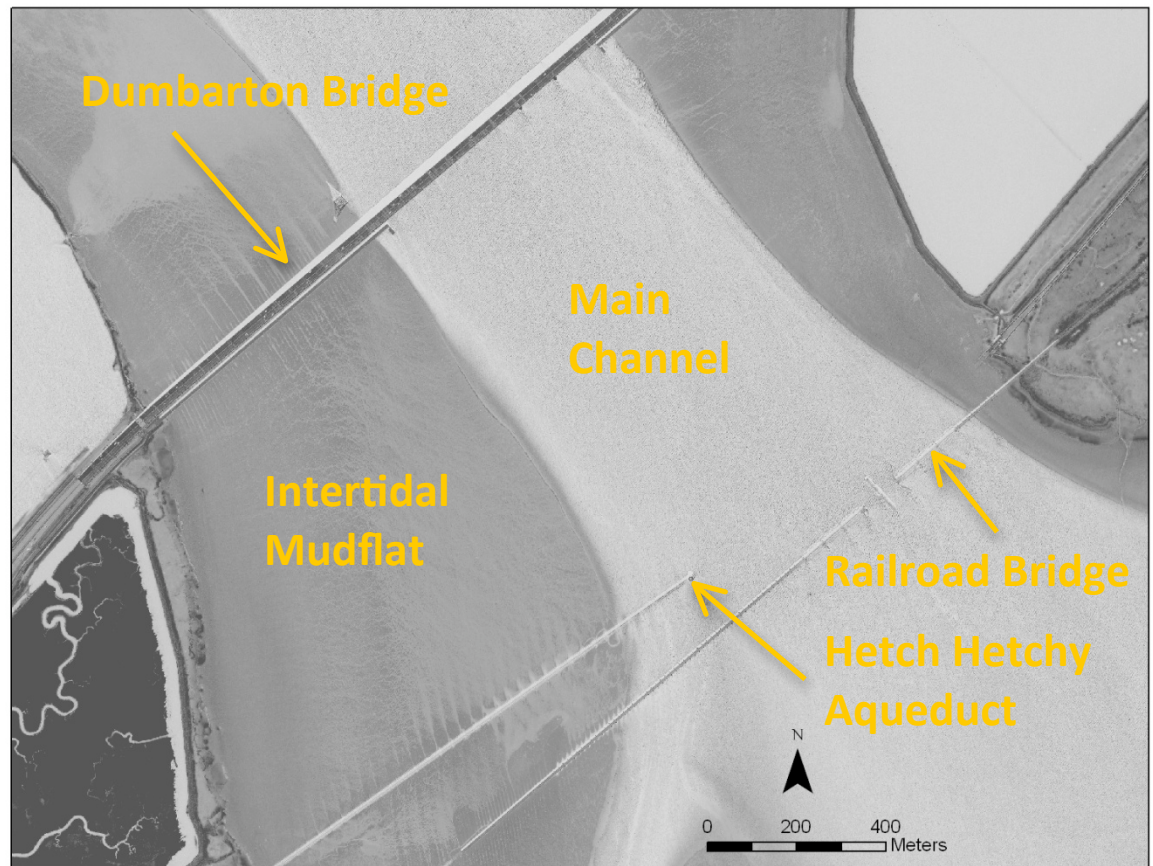
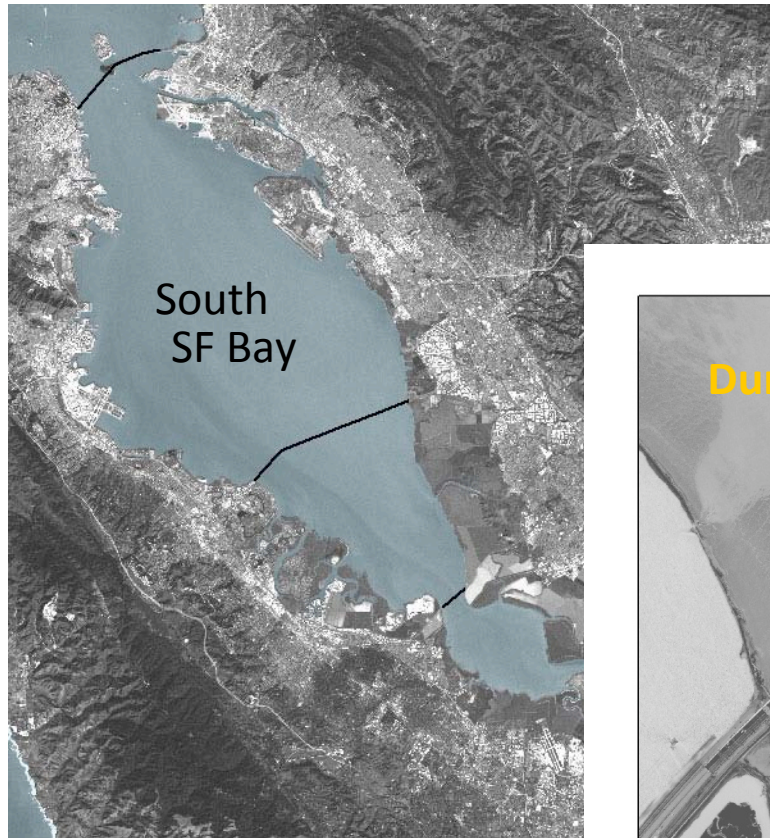
- **Mudflat at SF2 (west side of Bay south of Dumbarton)**
- **Changes in mudflat width since the 1850s**
- **Seasonal change in mudflats**
- **Summary and conclusions**



Study Area

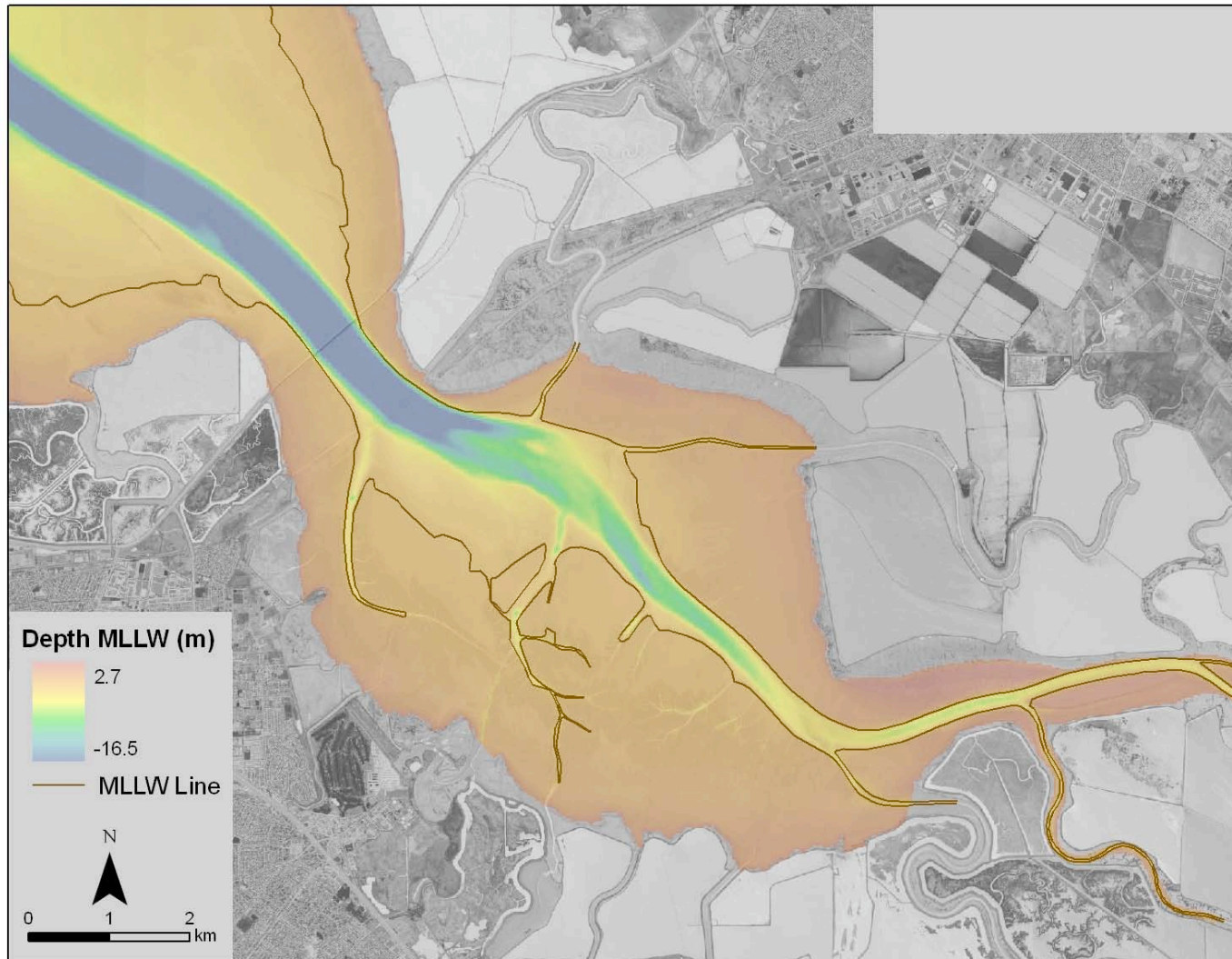


Study Area



2004 IKONOS satellite image courtesy of the City of San Jose

South SF Bay Bathymetry



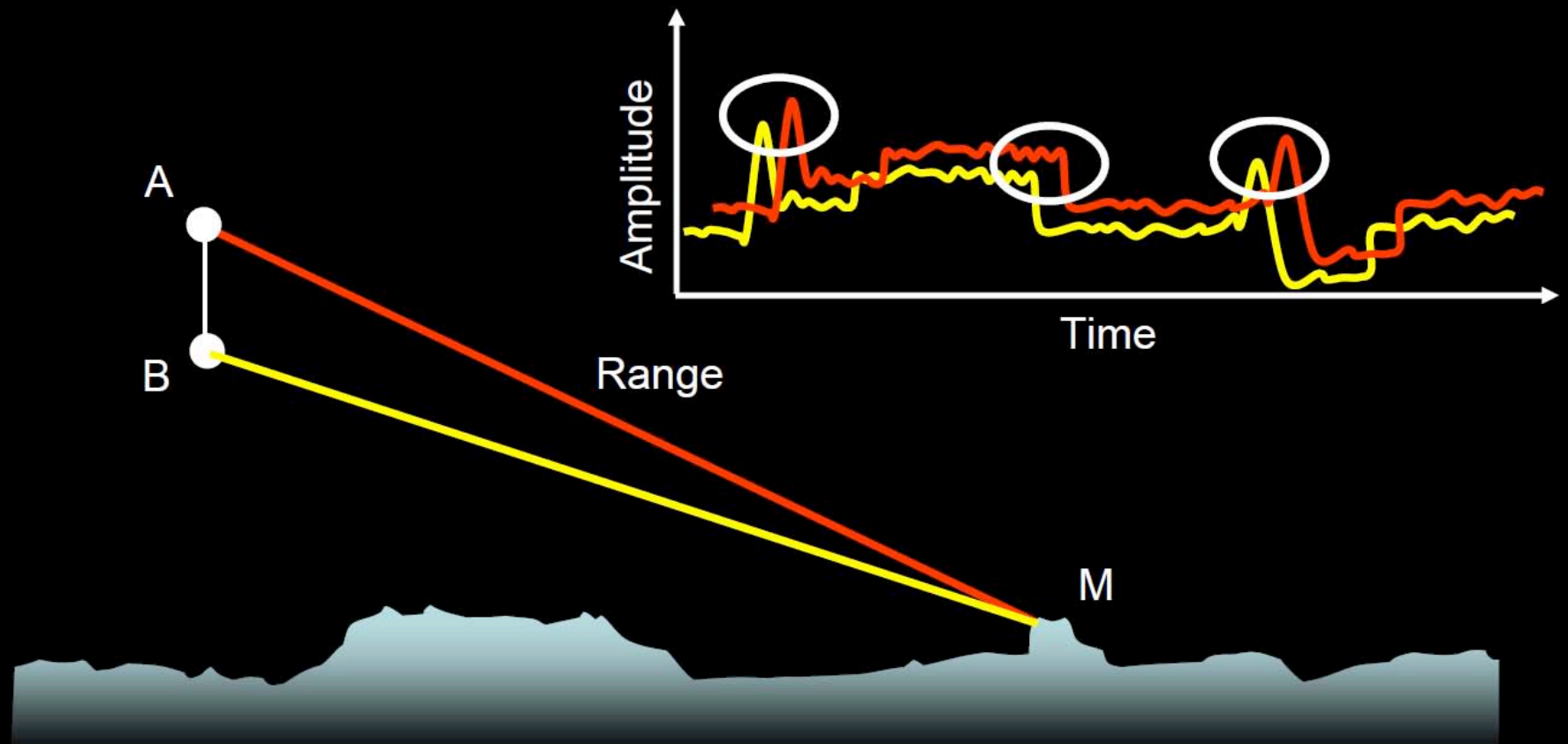
2004 and 2005 data

Measuring seasonal
changes in bathymetry

Transducers for interferometric
sidescan sonar swath bathy system

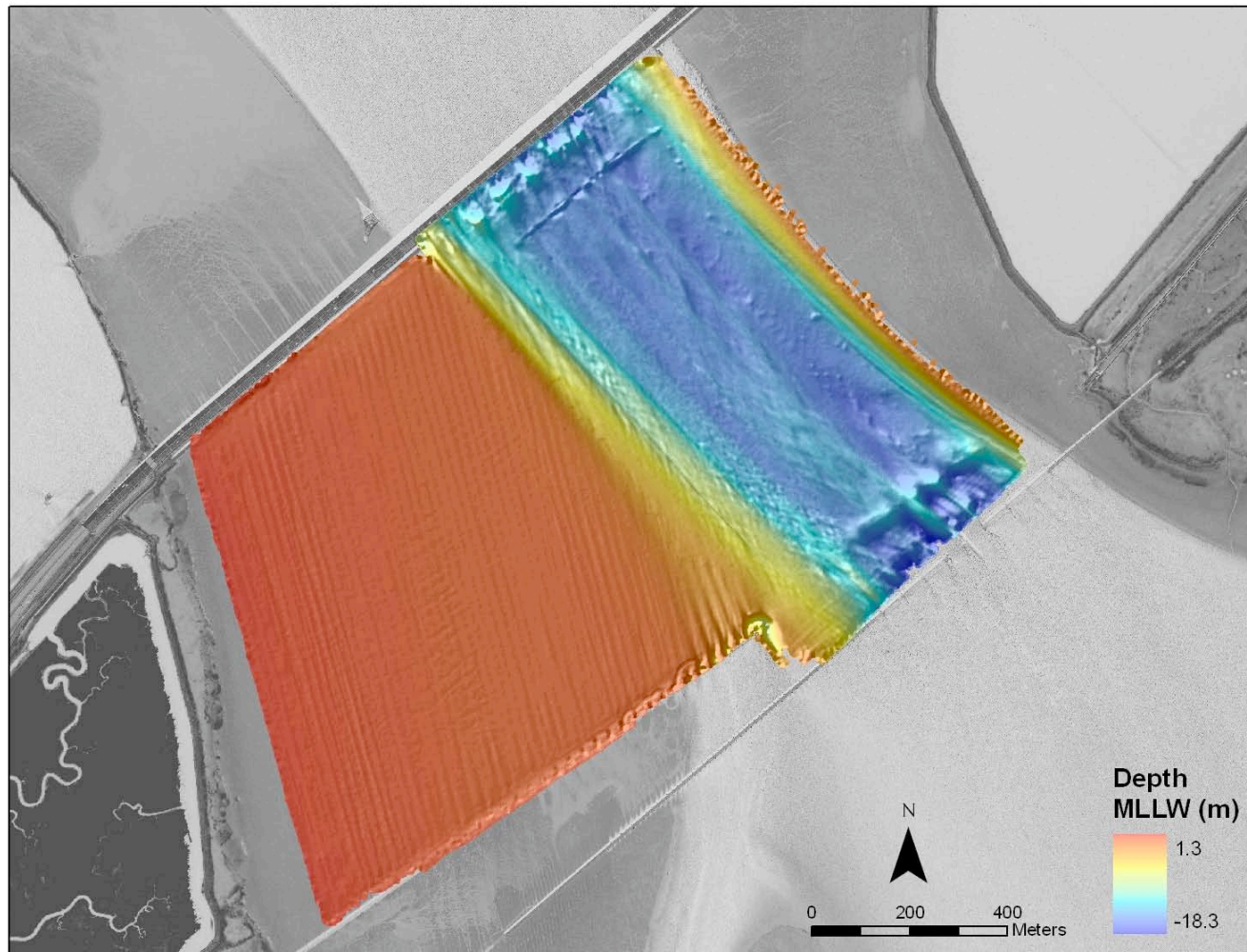


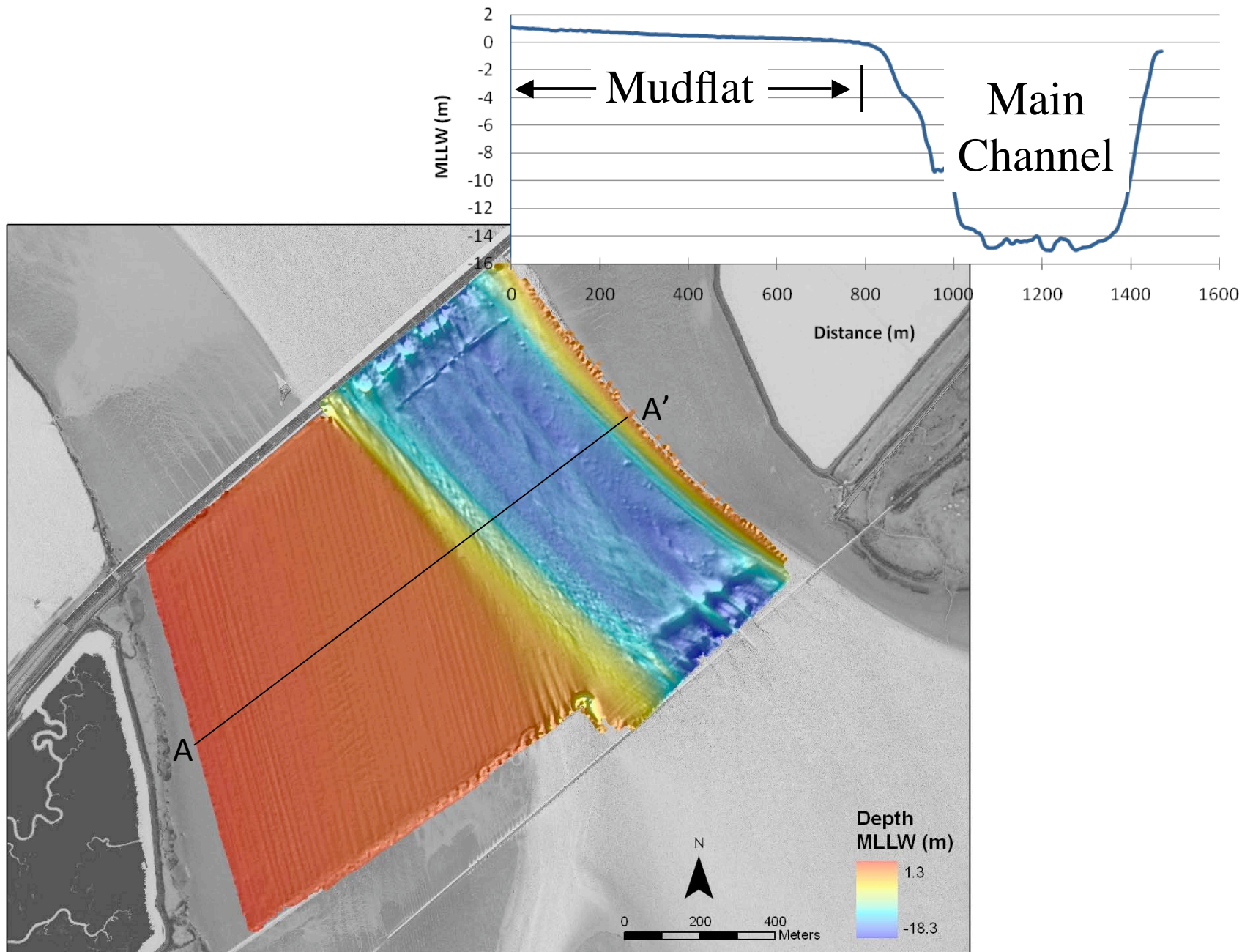
Measuring Bathymetry with Sidescan



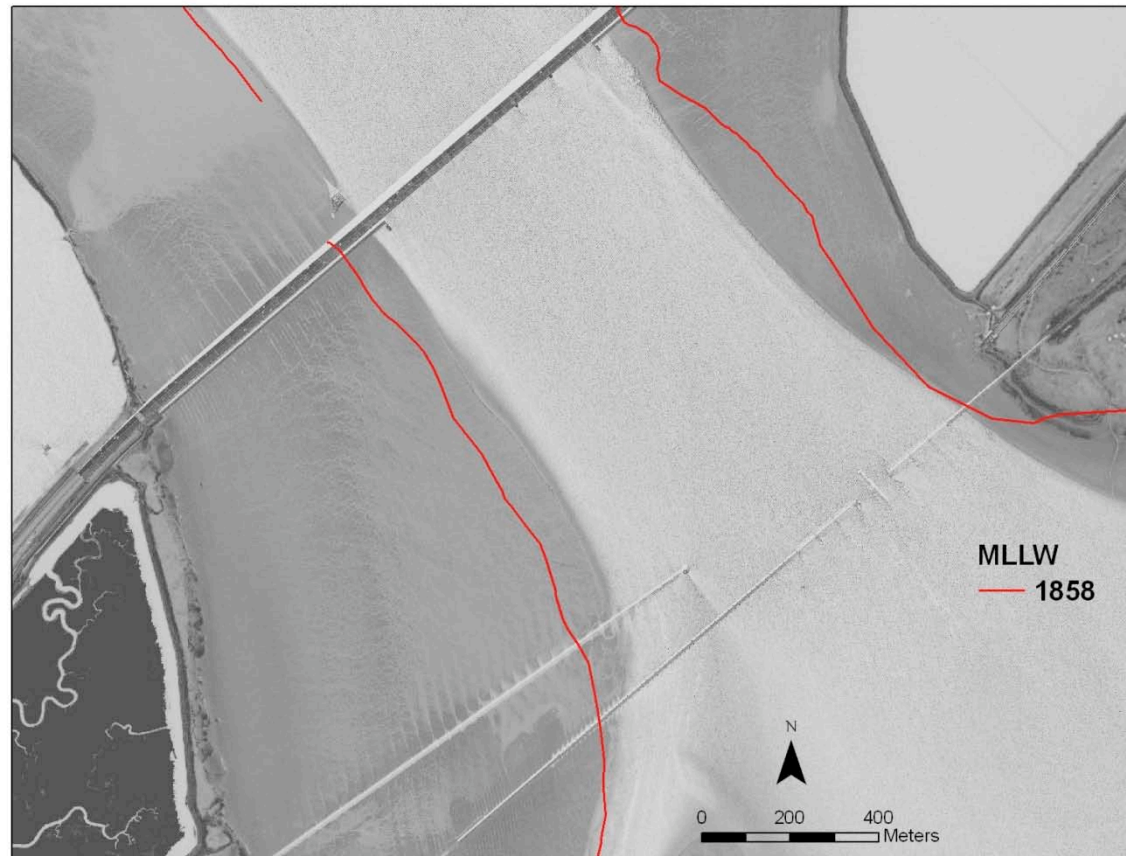
(Lurton, 2002)

Bathymetry in 2010

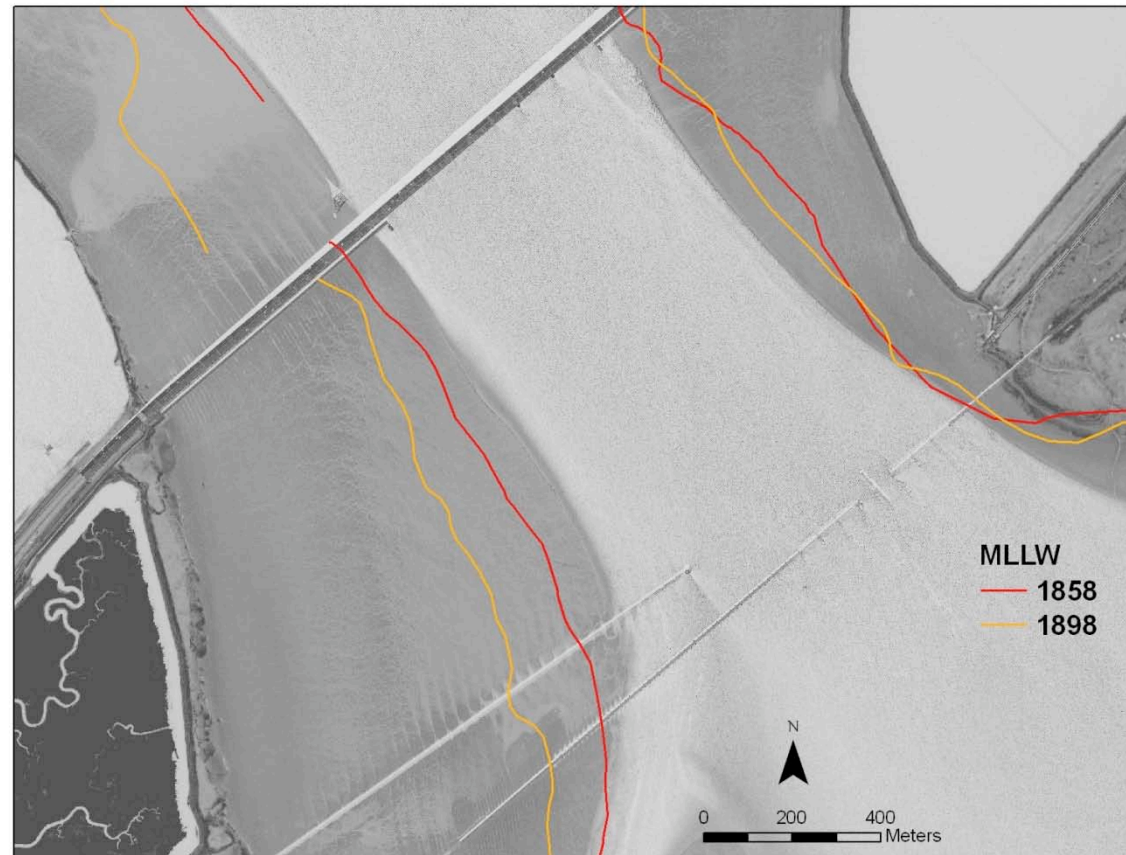




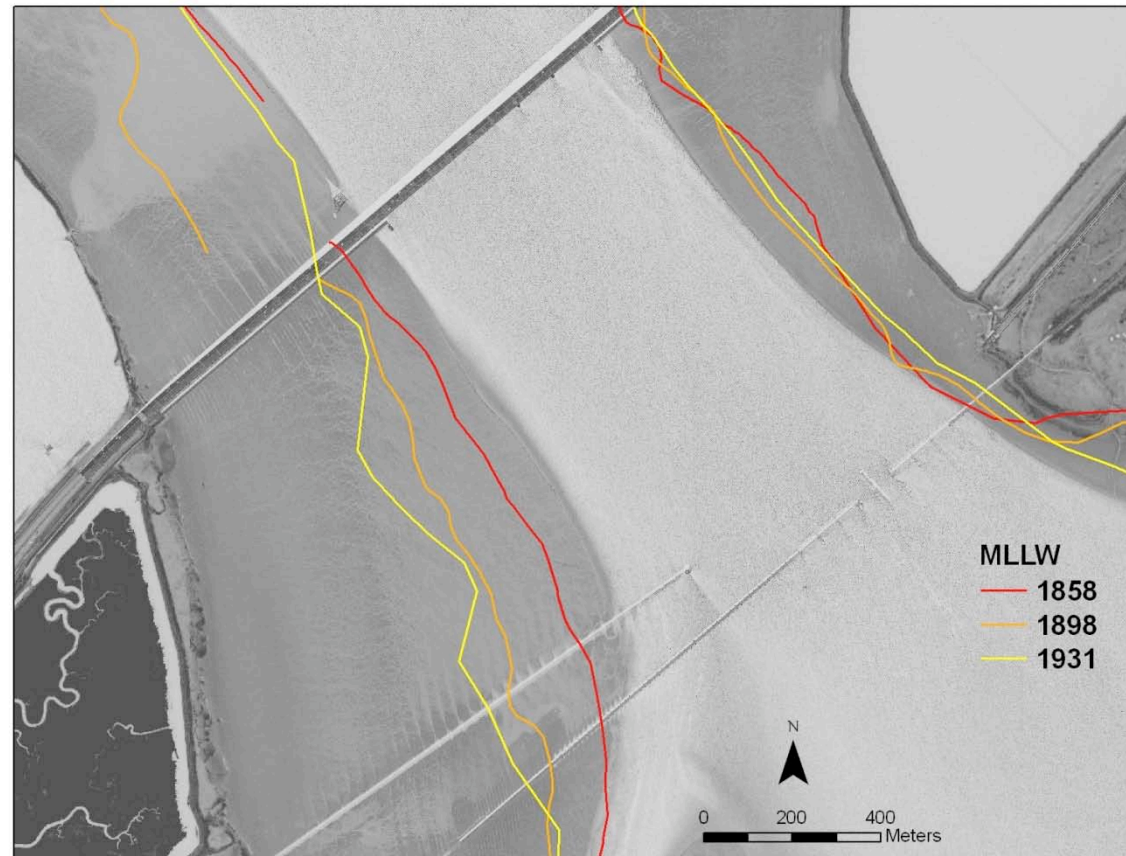
Long-term change in mudflat width



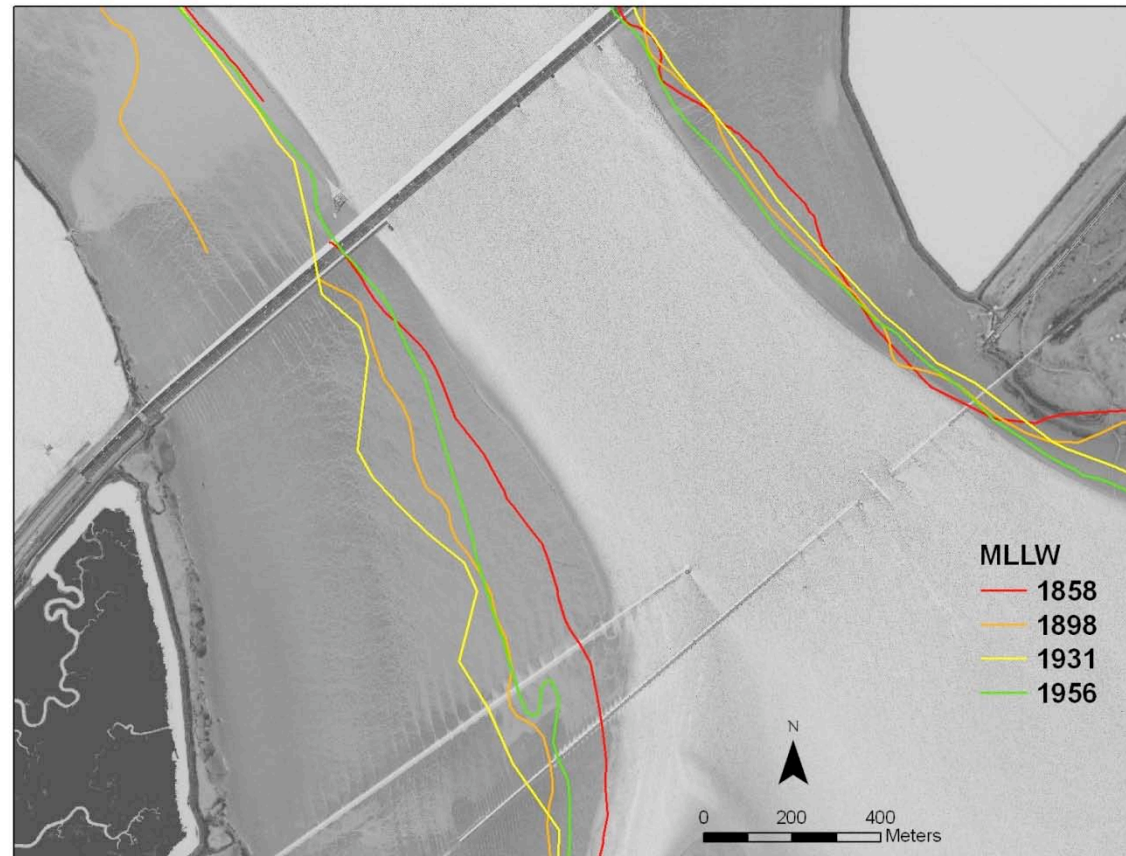
Long-term change in mudflat width



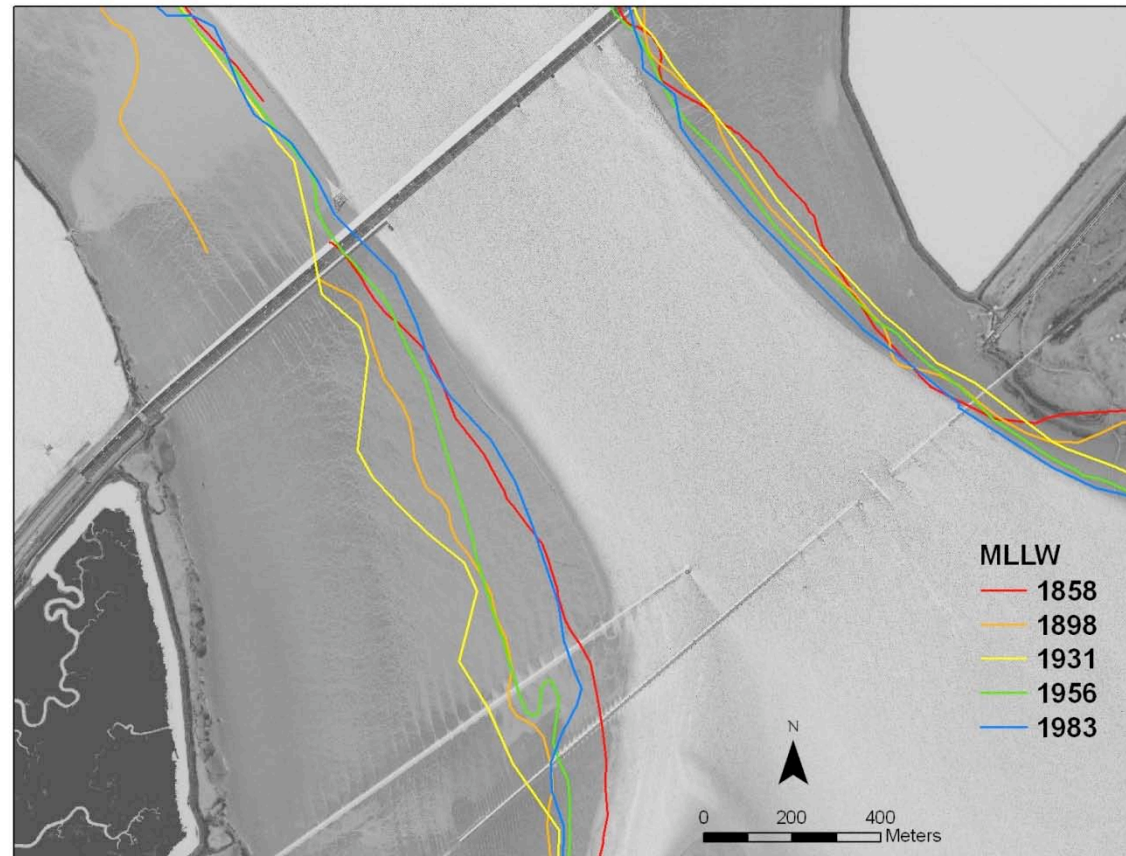
Long-term change in mudflat width



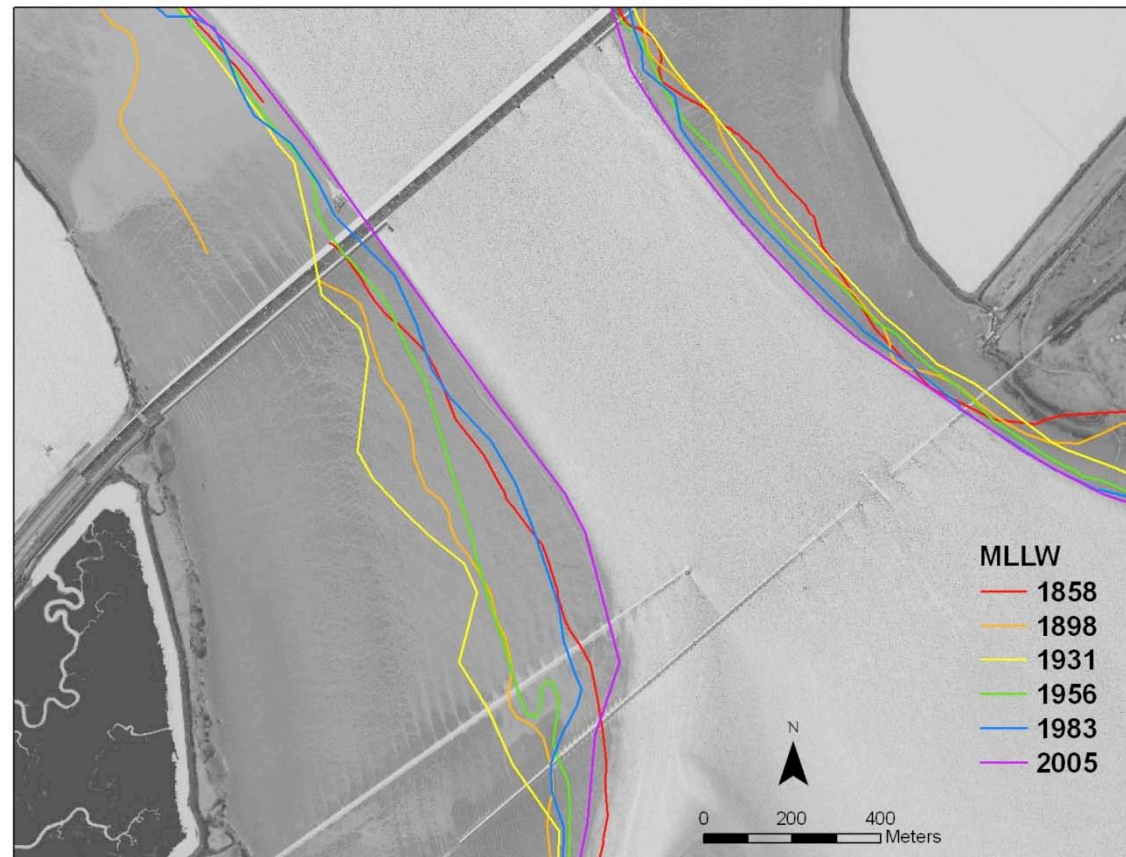
Long-term change in mudflat width



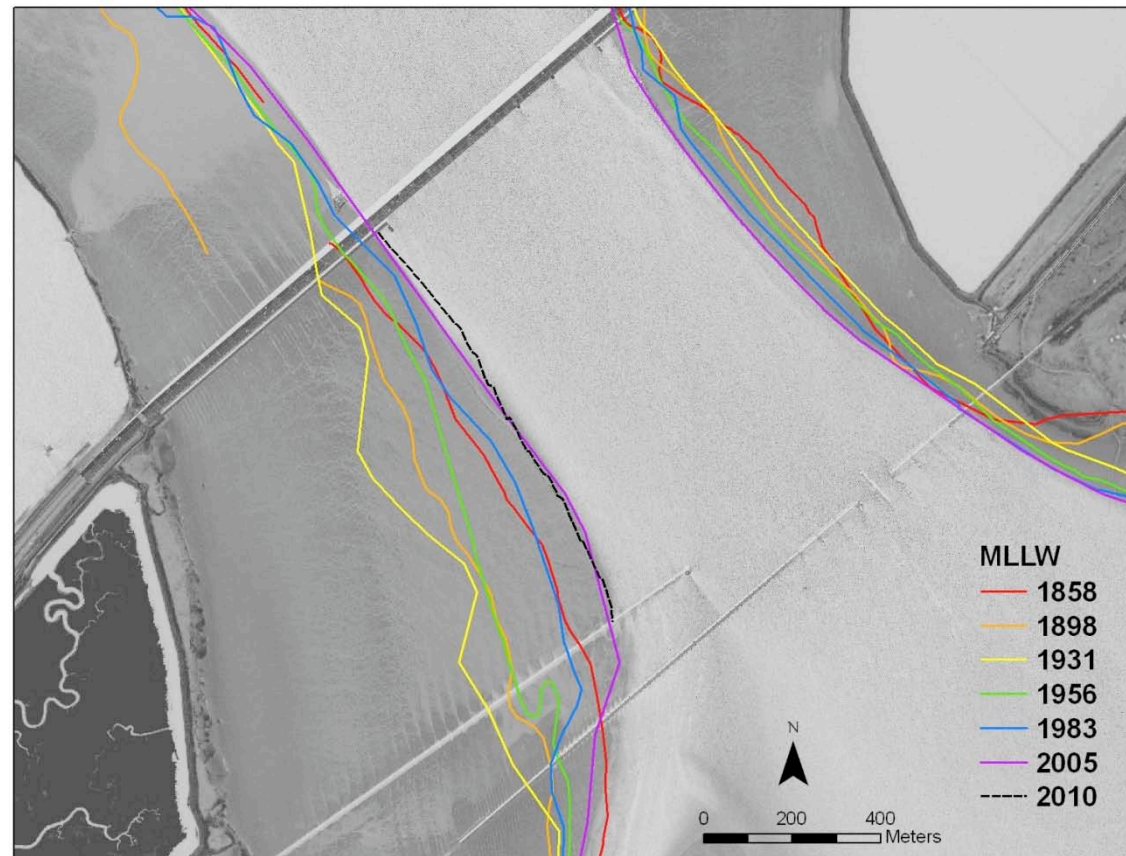
Long-term change in mudflat width



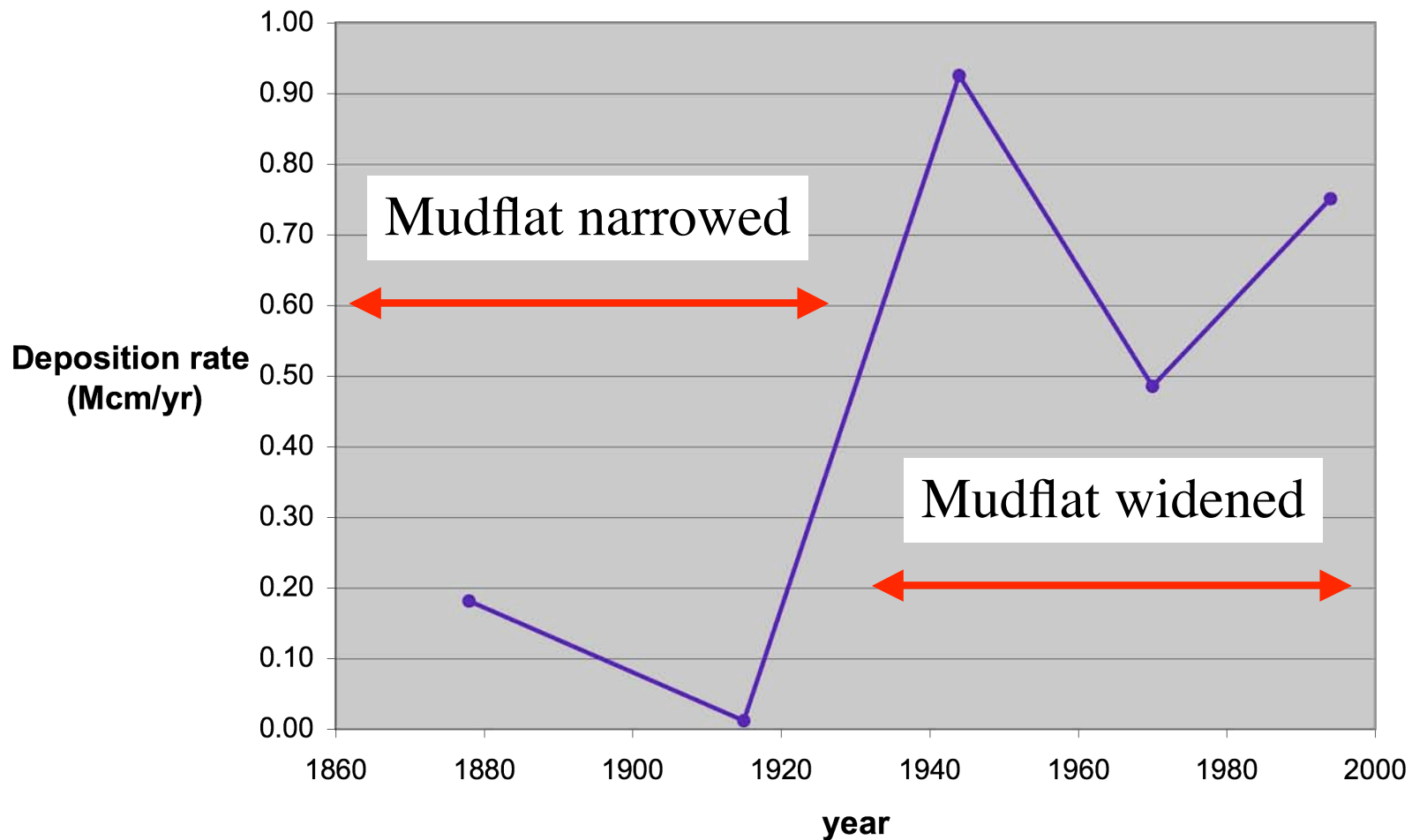
Long-term change in mudflat width



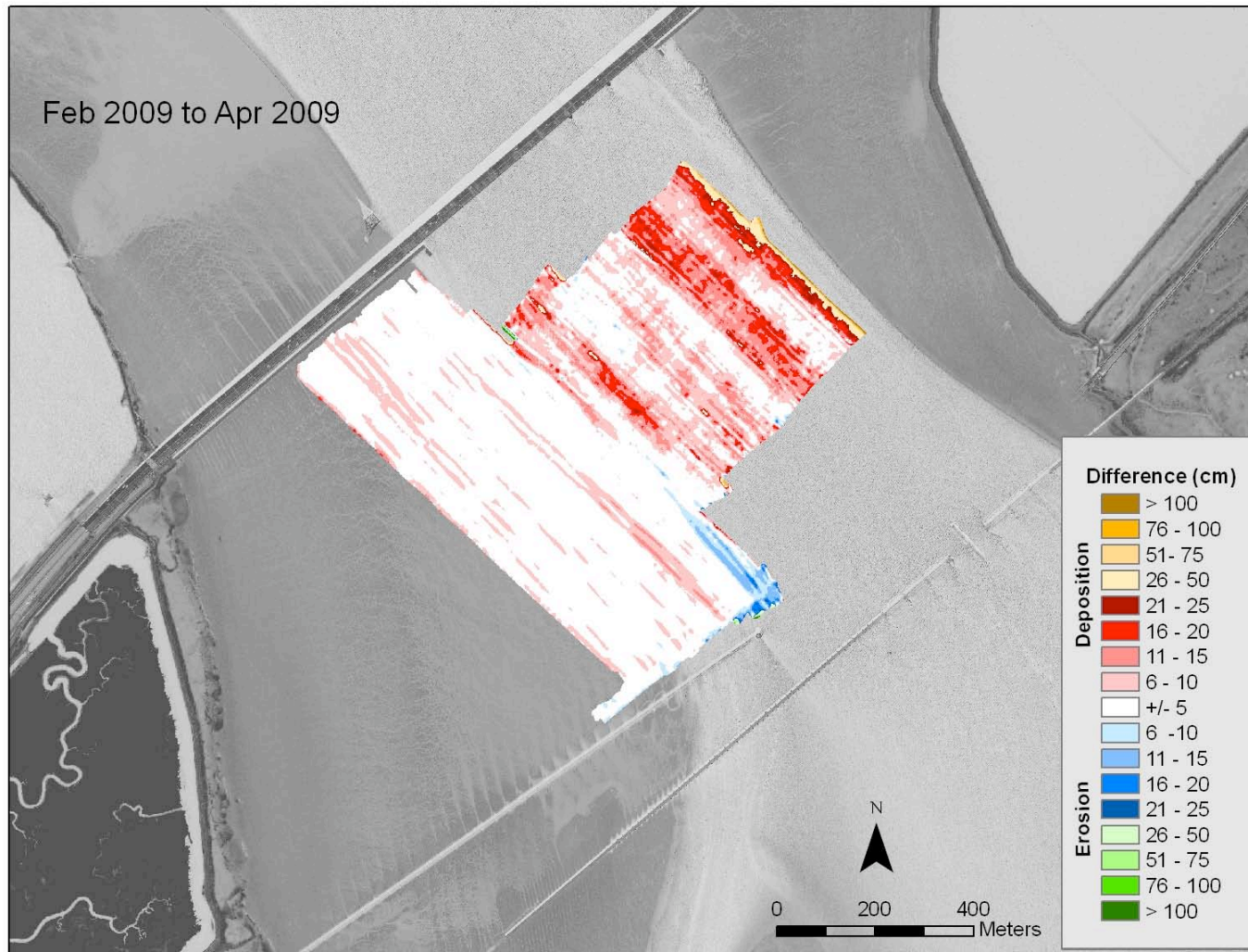
Long-term change in mudflat width



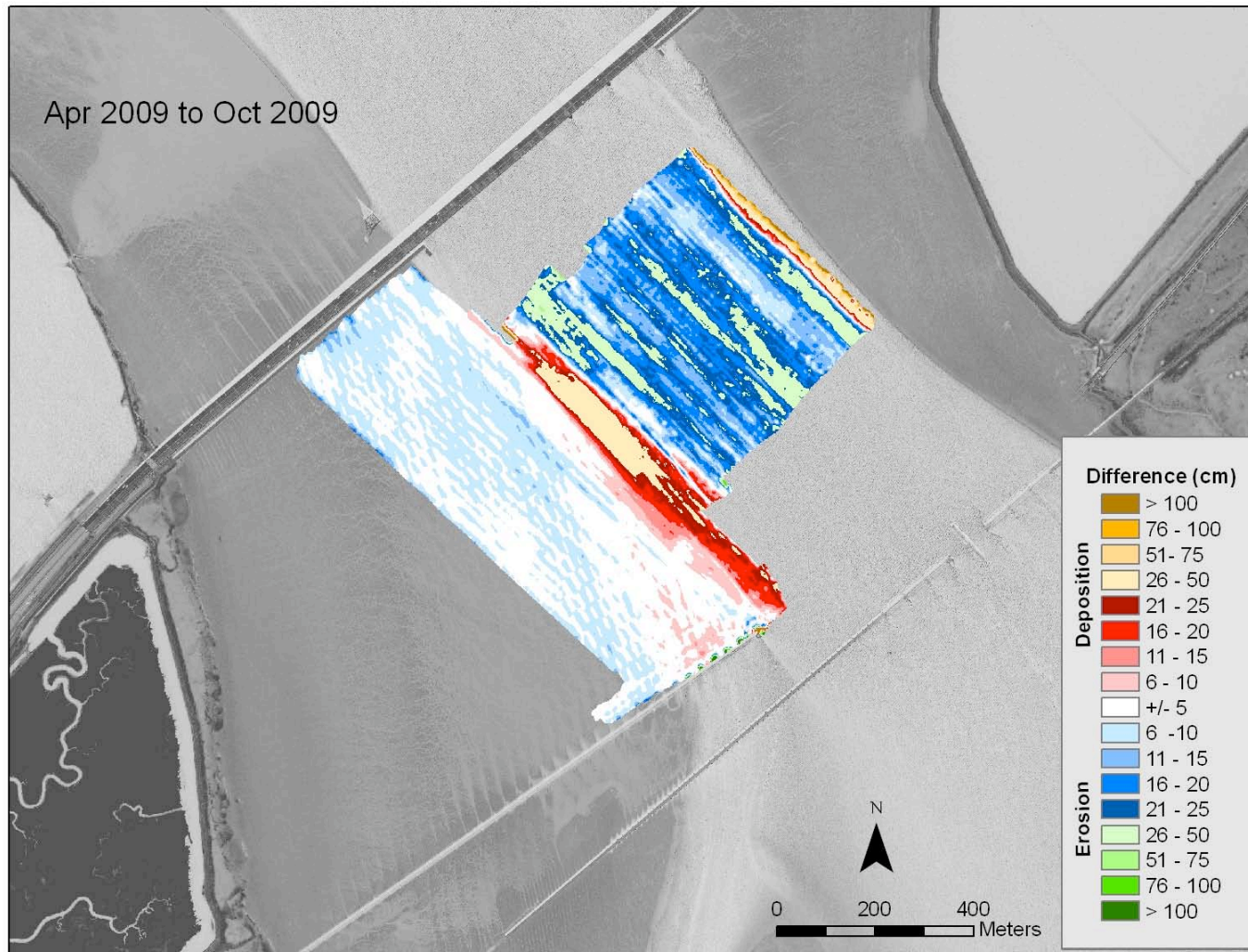
Mudflat width at SF2 related to deposition in far South Bay



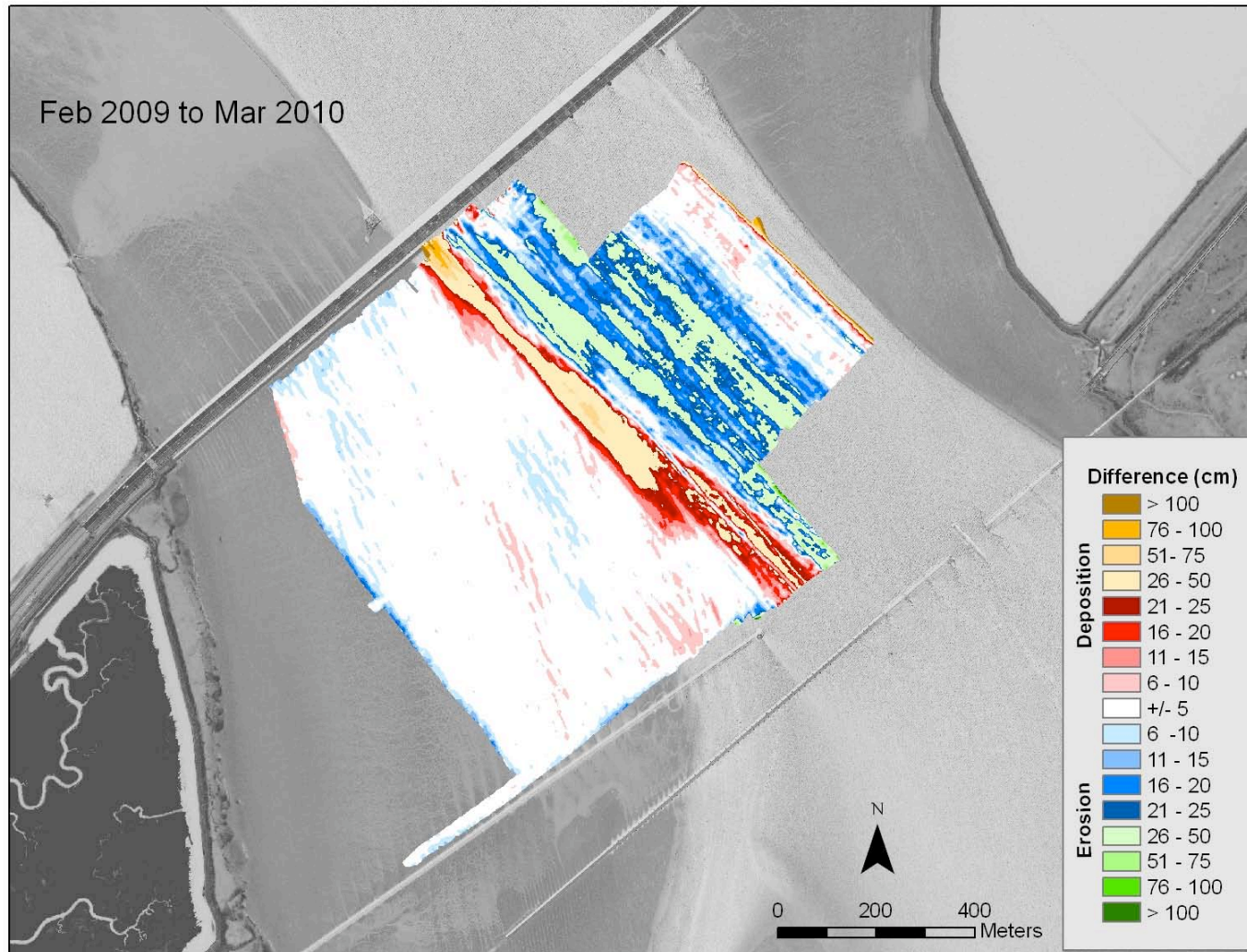
Seasonal change: accretion during winter/spring



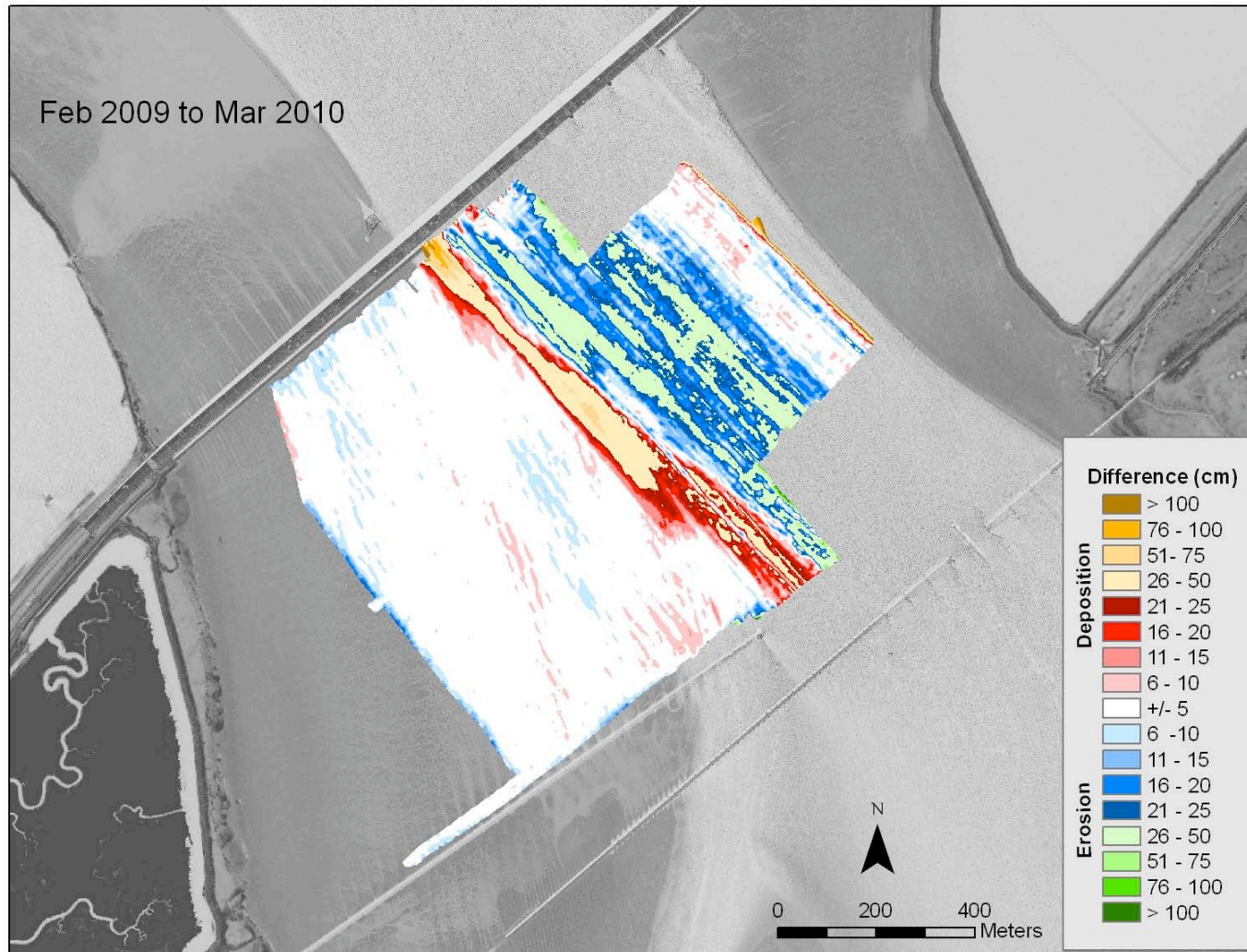
Seasonal change: erosion during spring/summer/fall



One year of change: little net change on mudflats



One year of change: little net change on mudflats



- Mudflat
bayward edge
accreting

- Main
channel
mostly
erosional

Summary

- **Intertidal mudflat width at SF2 decreased from the 1850s to 1930s and has increased since then**
- **Change in mudflat width related to deposition in far South Bay (> deposition, > mudflat width)**
- **Mudflats accrete during winter/early spring**
- **Mudflats erode during late spring/summer/fall**

Conclusions

- **Widening of SF2 mudflats since the 1930s bodes well for mitigating mudflat loss from restoration**
- **However, sediment supply to far South Bay is critical for maintaining mudflats and reductions in sediment supply could result in loss of mudflats**
- **Improving estimates of future sediment supply to far South Bay are key to predicting likely mudflat change in the future**