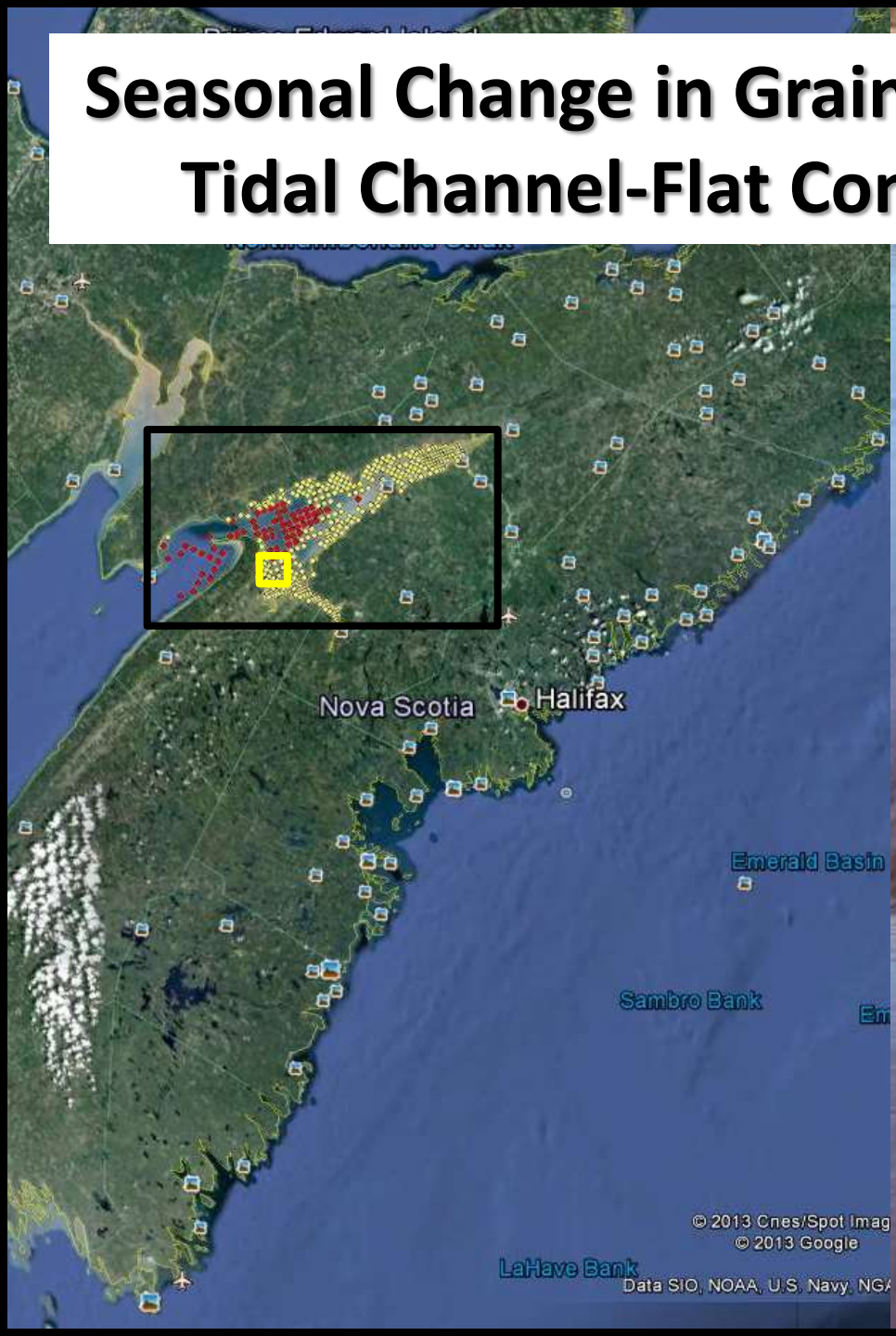
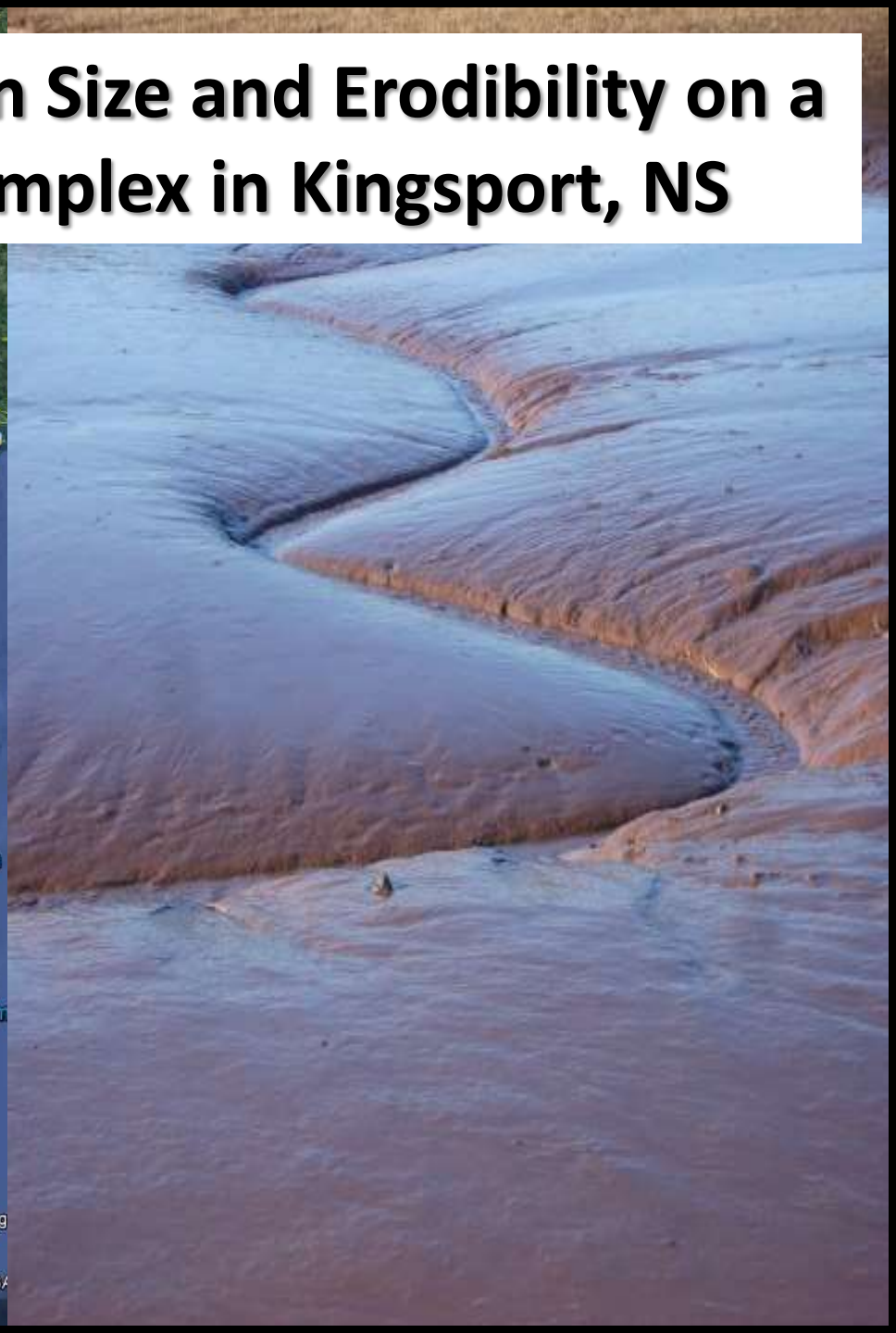
Seasonal Change in Grain Size and Erodibility on a Tidal Channel-Flat Complex in Kingsport, NS

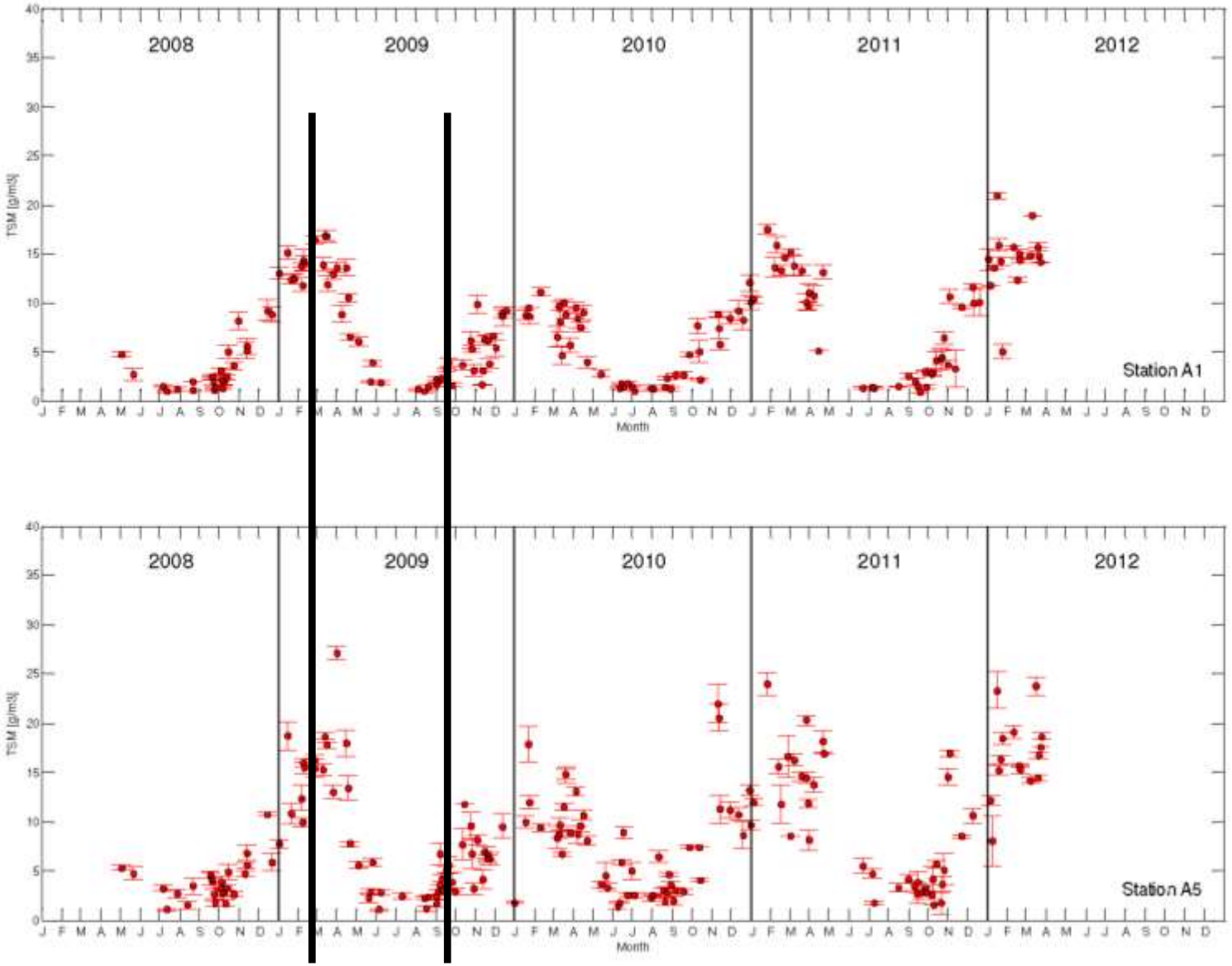




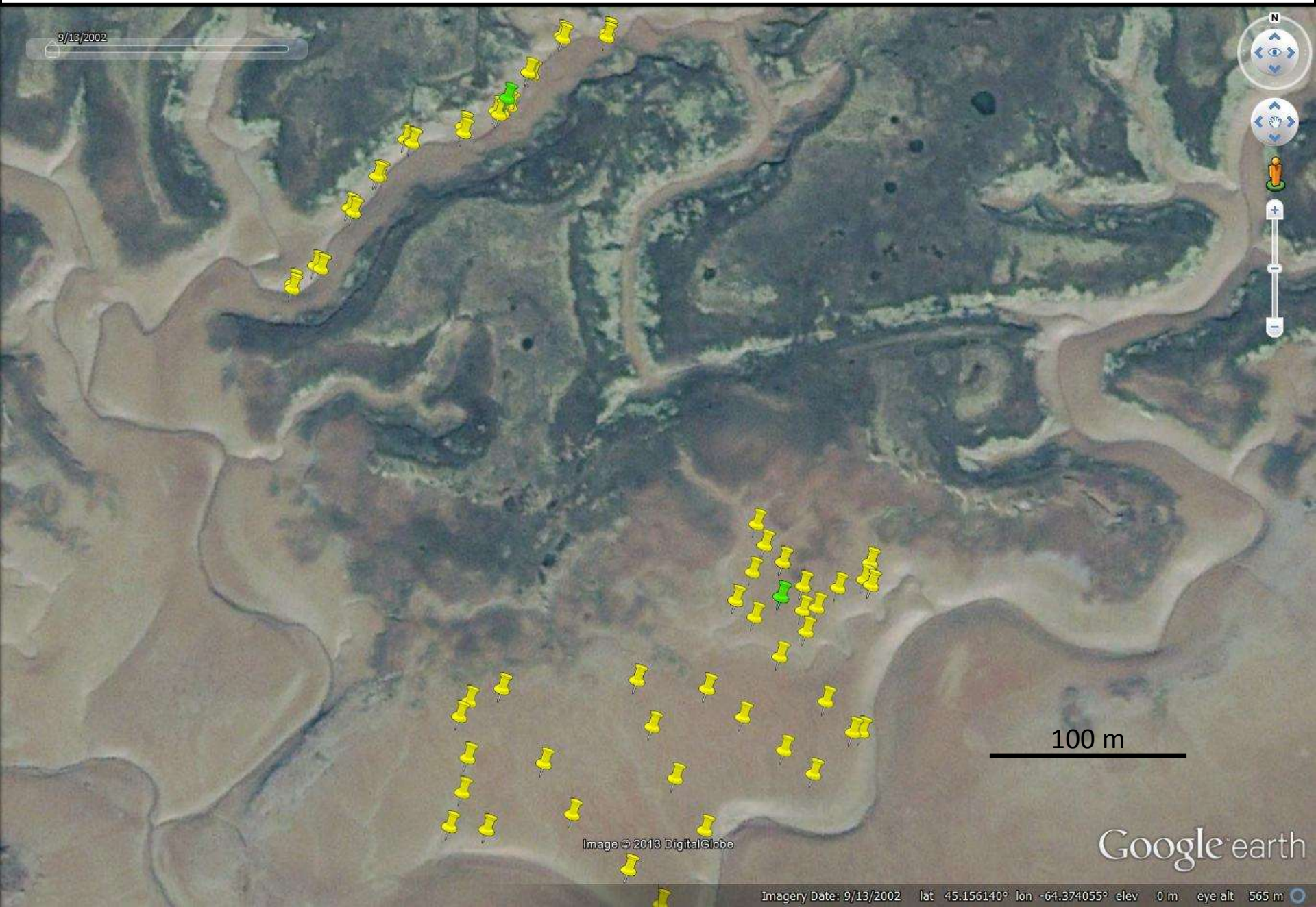
Talk Outline

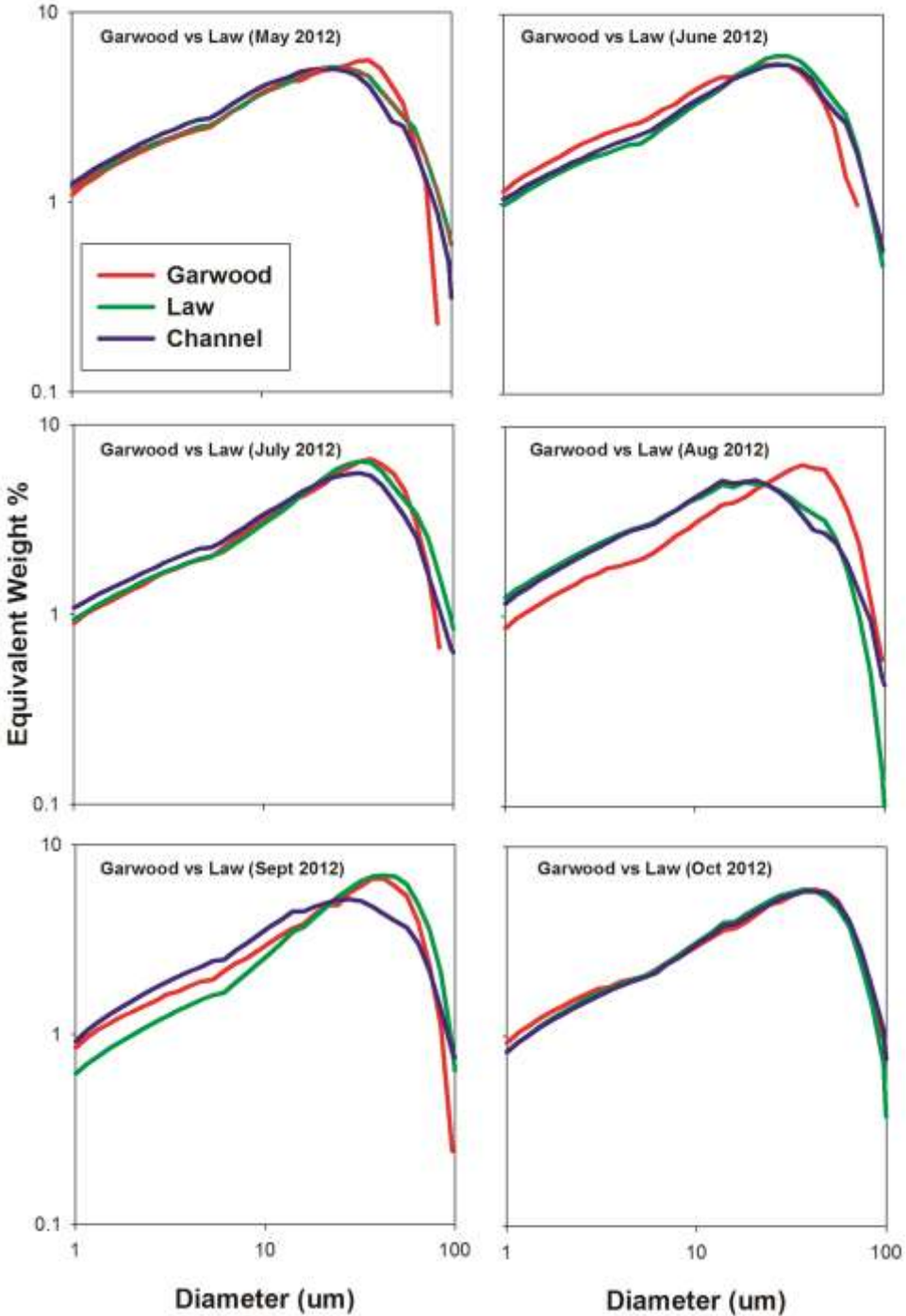
- Seasonal Change in Grain Size
- Seasonal Change in Erodibility
- Sediment Budget Calculations
- Lessons Learned, Challenges (Summary)
- What's Next

Remote Sensing Suspended Particulate Matter (SPM) Data Minas Basin (MERIS)



Monthly Grain Size Sampling (DIGS)

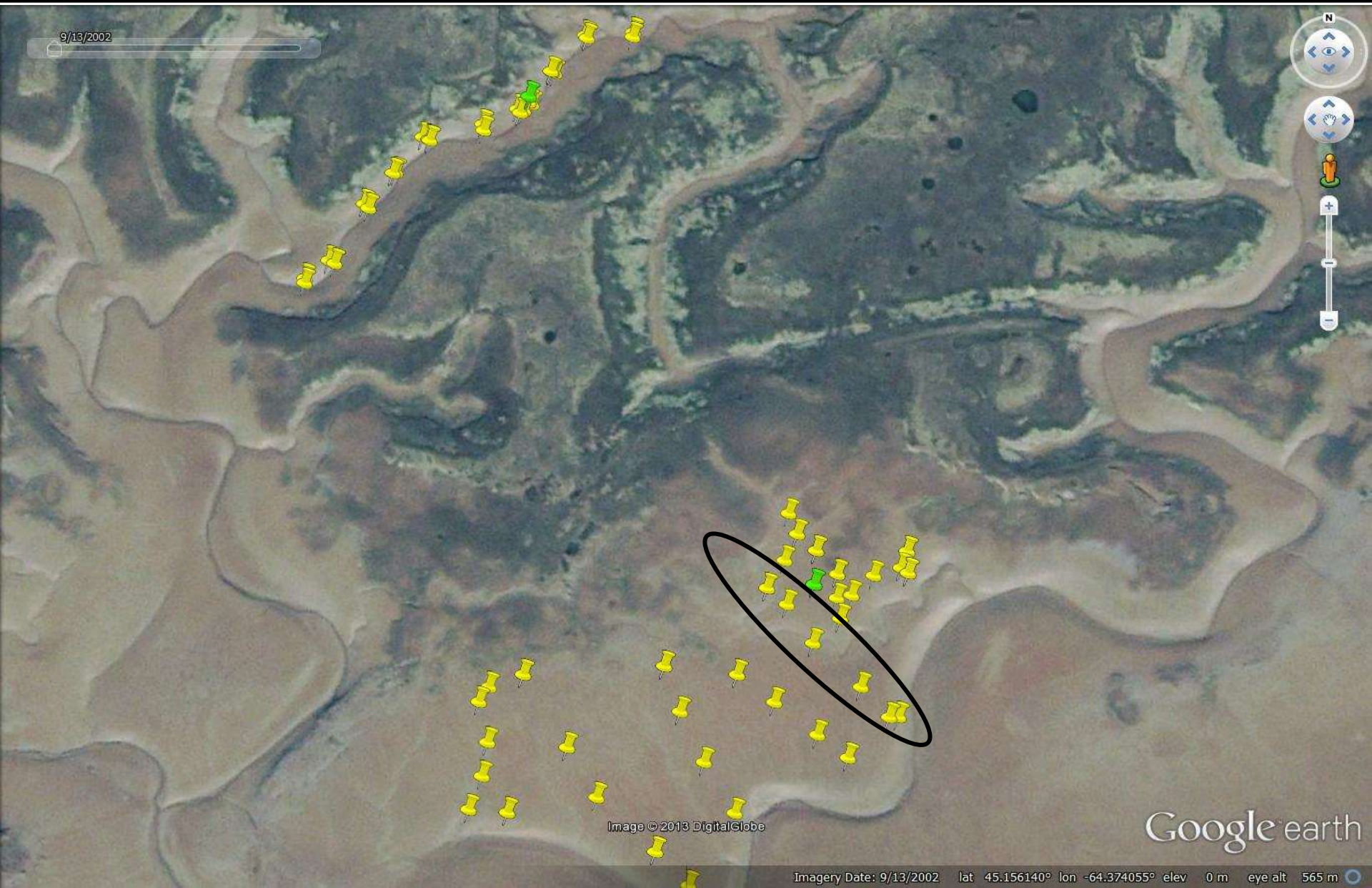


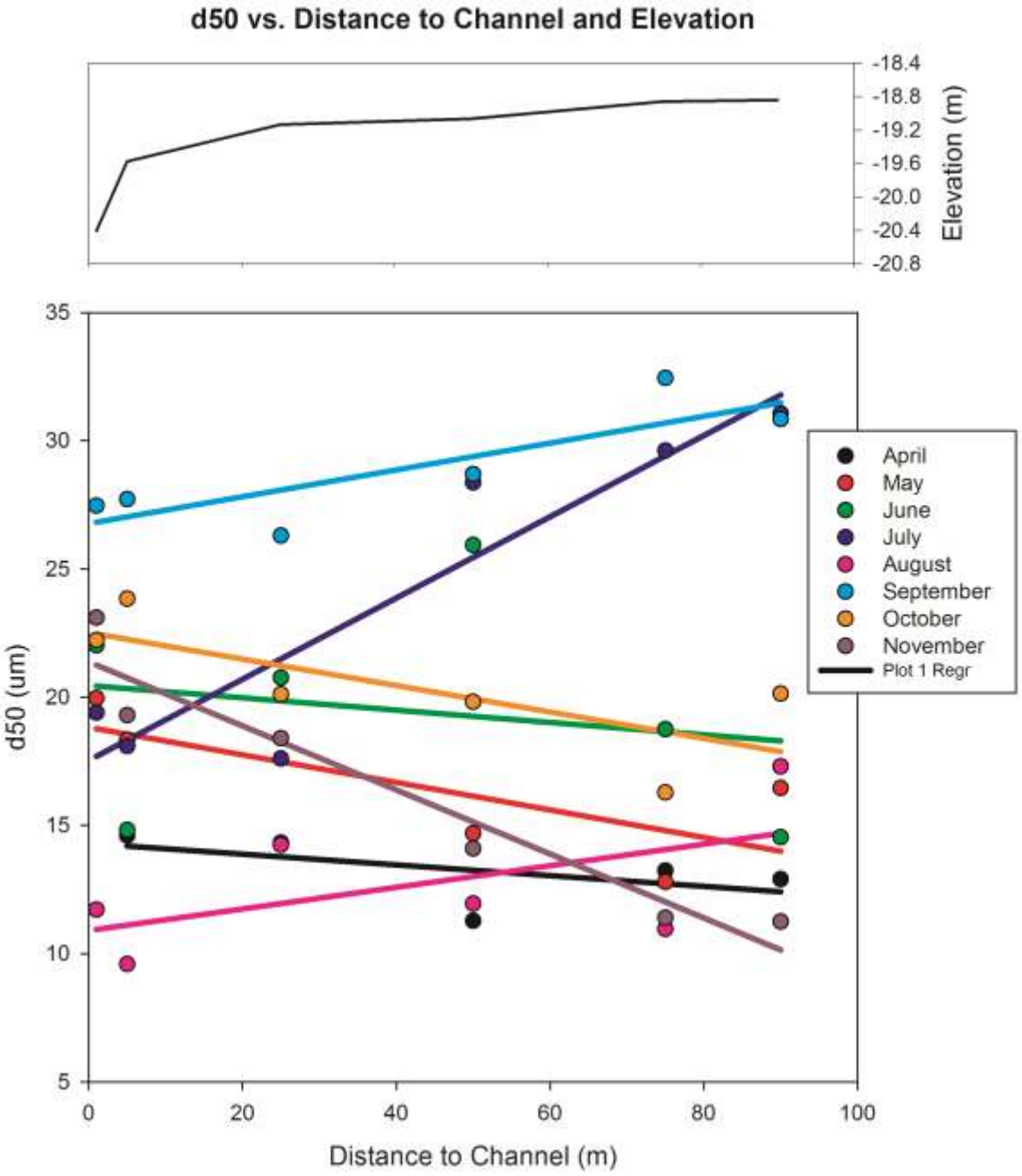


Highlights (Avg. Grain Size)

- Fine in April, May (F & C)
- Coarsening in June, July
- Fine in August (F & C)
- Coarsening in Sept, Oct (F & C)
  - Lag in Channel

Cross Flat Grain Size – Distance to Channel



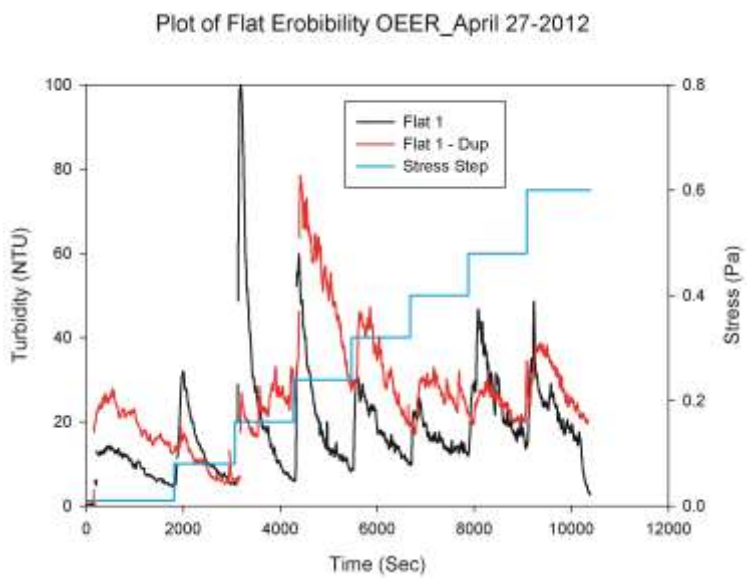


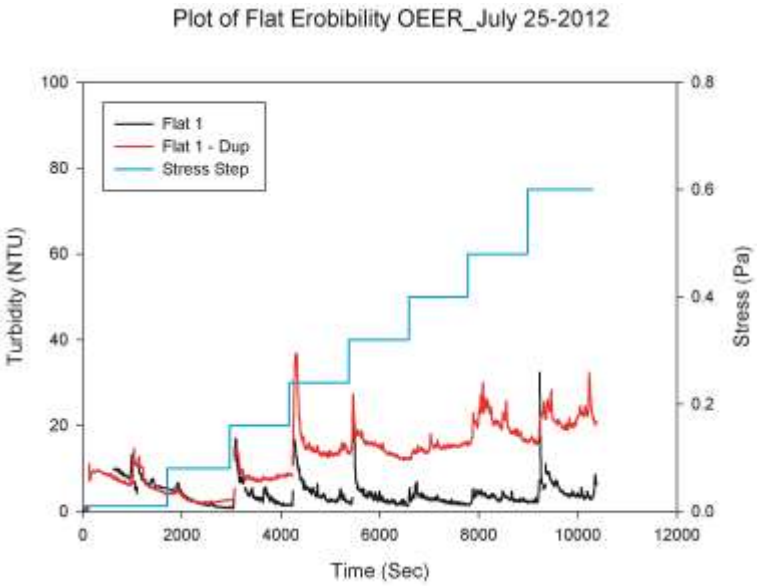
Highlights (Trends)

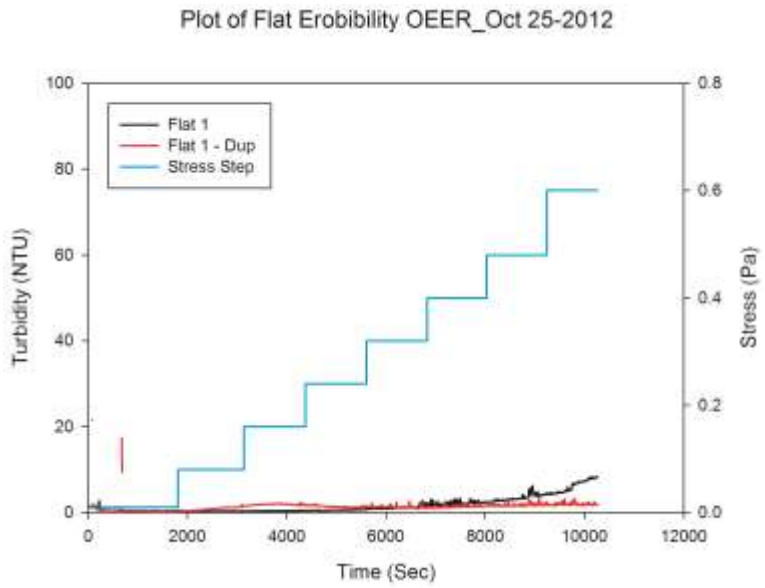
- Apr, May ↓ d50,↑ (m)
- June, as A,M
  - Transition
- Jul, Aug, Sept
  - ↑d50 , ↑ (m)
- Oct, Nov as Apr, May,
  - ↓ d50,↑ (m)

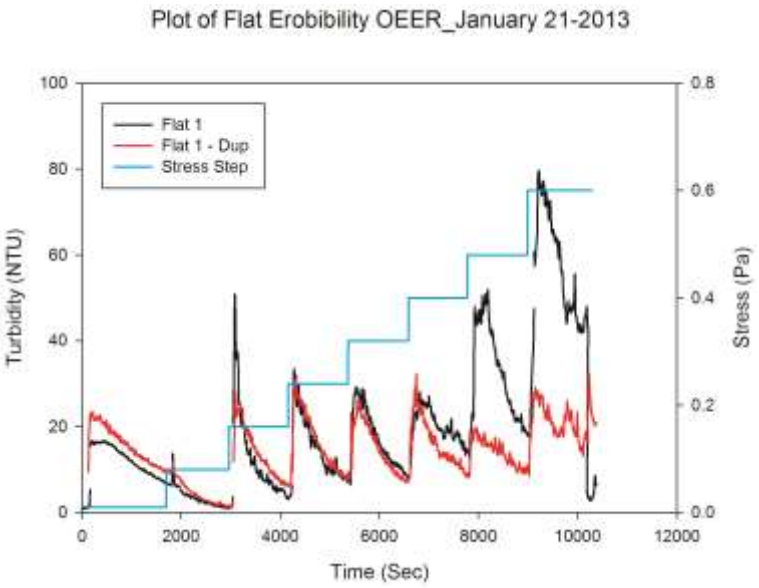
Gust Chamber

Flat Erodibility

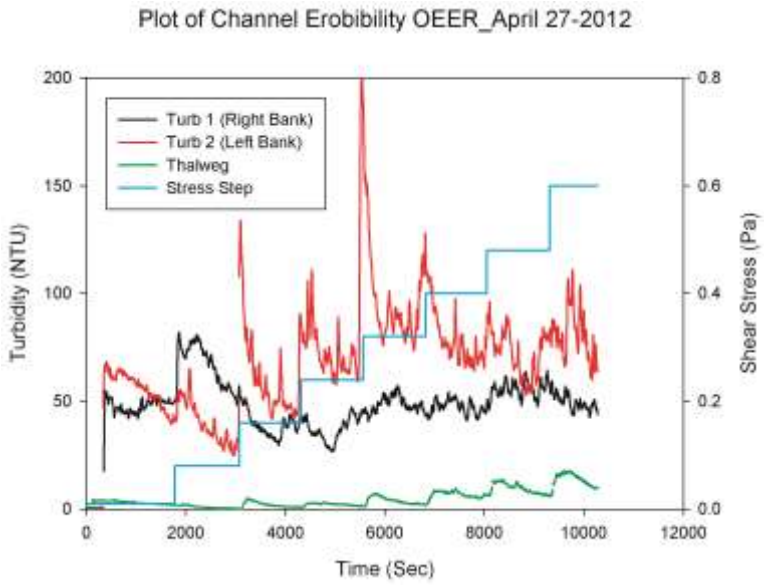


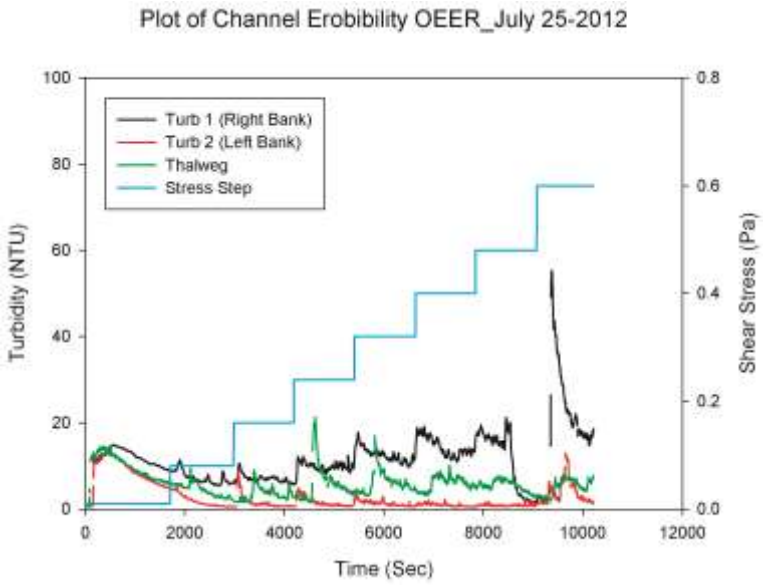


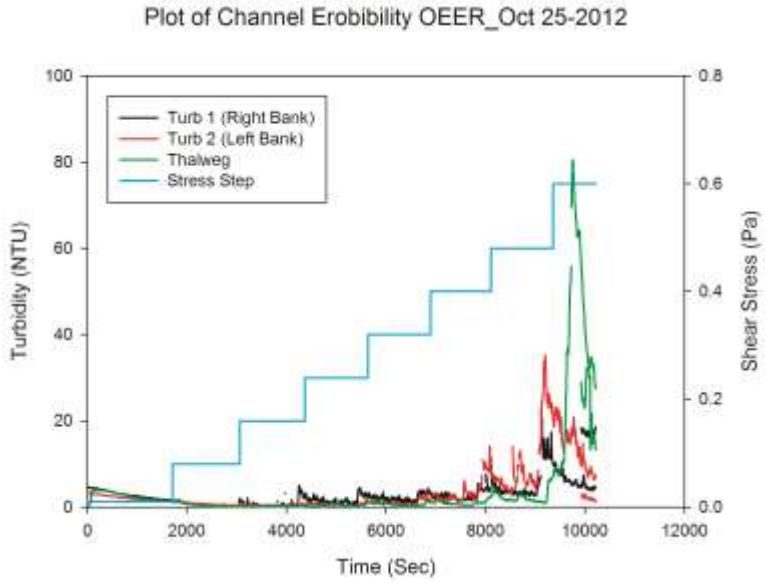


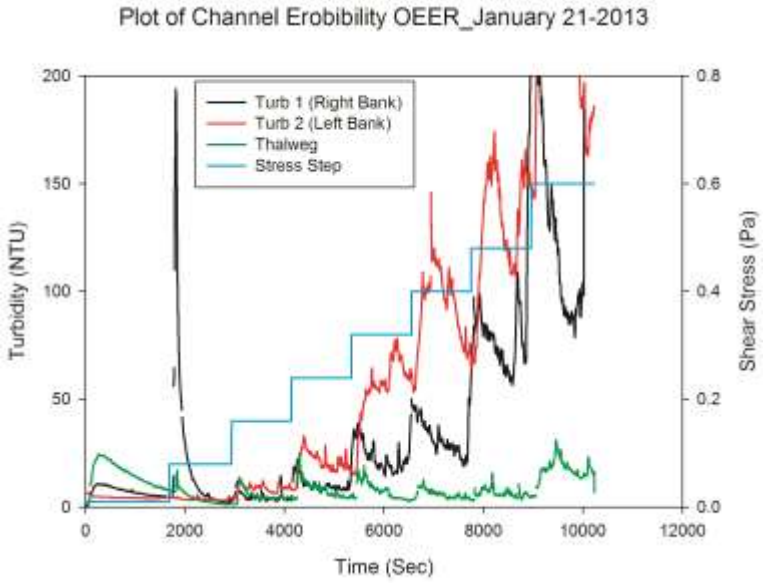


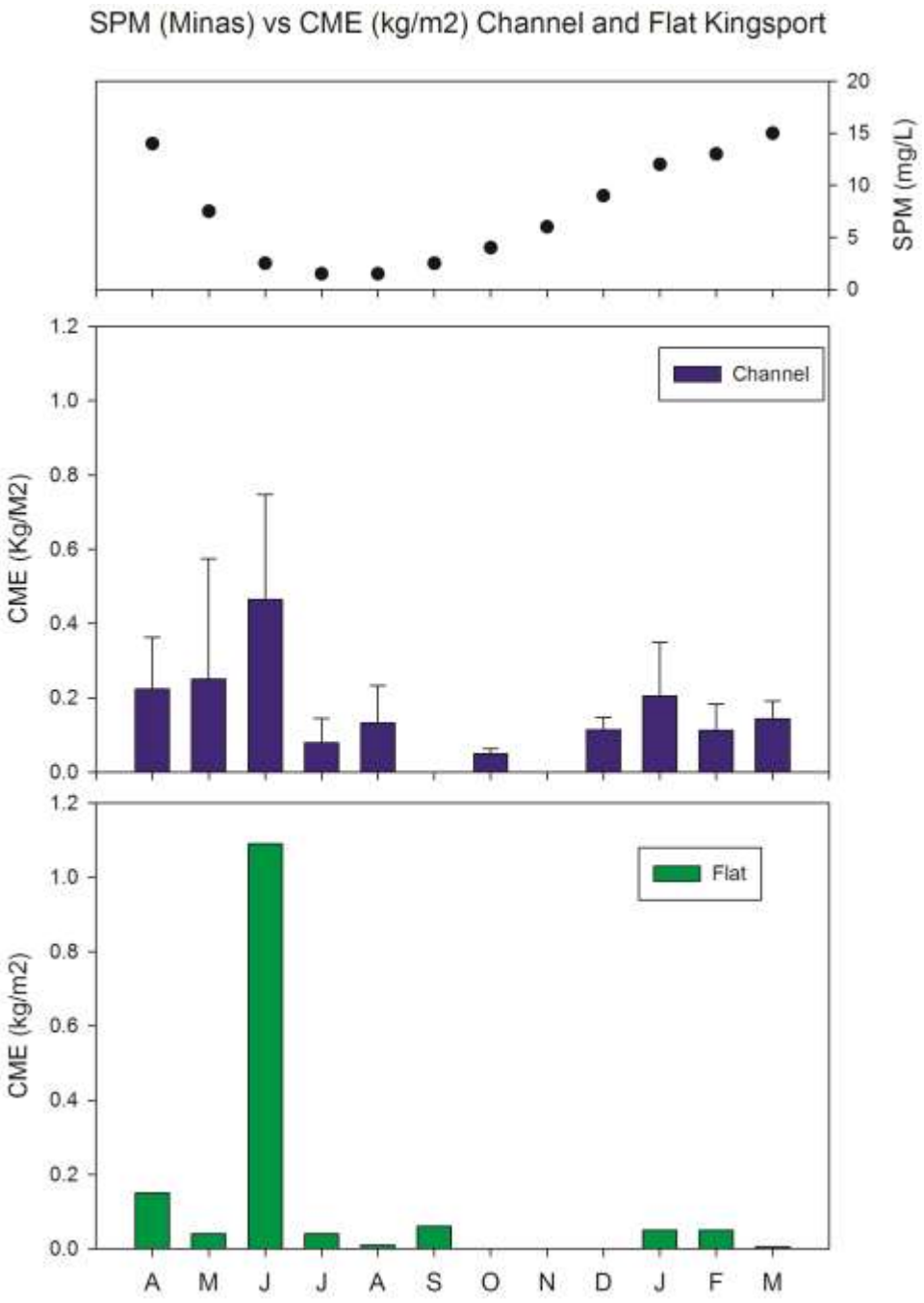
Channel Erodibility







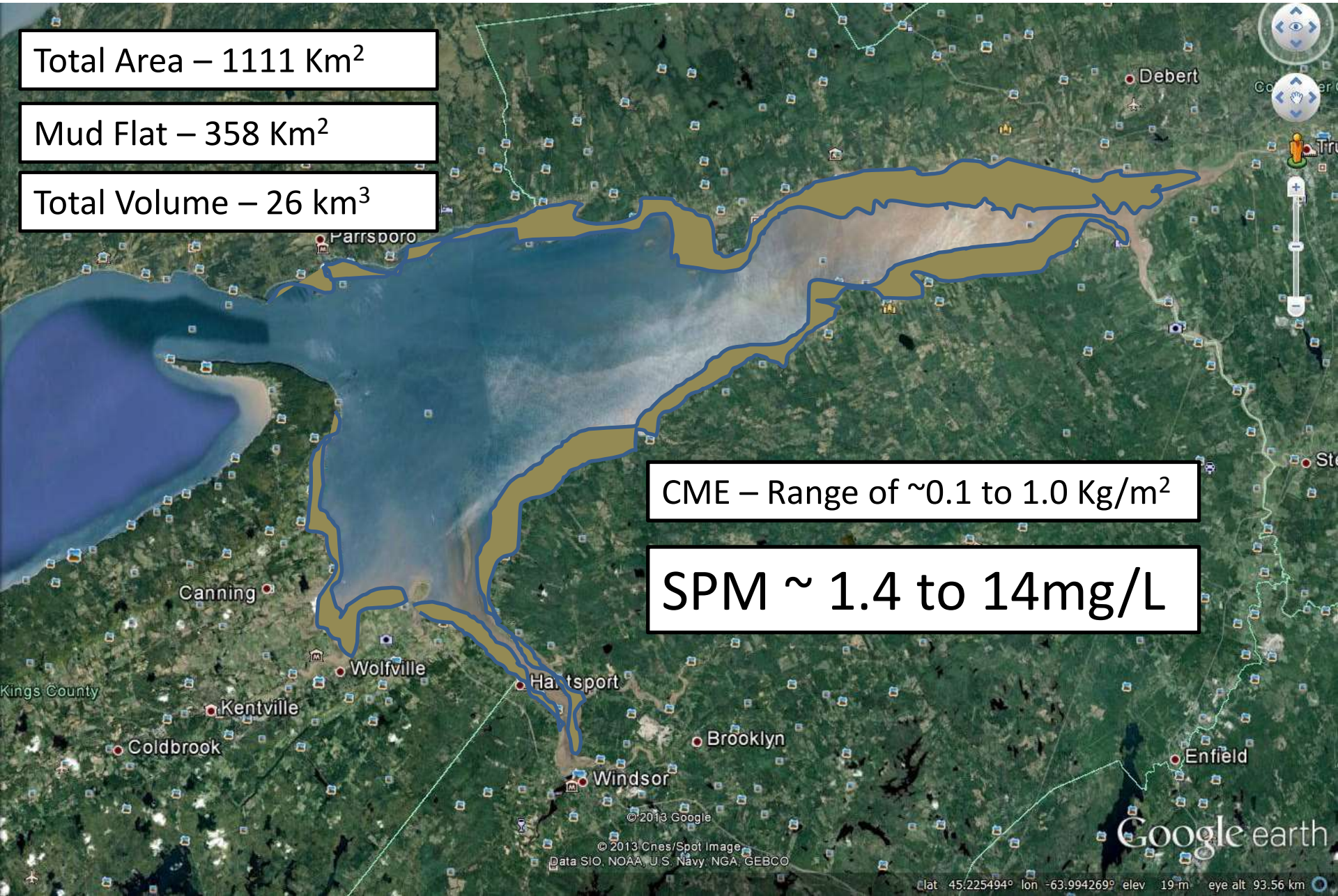




Highlights (Trends)

- Apr, May, June
  - ↑ erodibility
- July, Aug, Sept, Oct, Nov
  - Low erodibility
- Dec, Jan, Feb, Mar
  - Increasing erodibility
- Time lag b/w ↑ erodibility and ↑ SPM

Minas Basin – Cobequid Bay Sediment Mass Balance



Summary

- Grain Size change likely due to sediment availability. Channels are conduit for sediment, broadcast finer grains farther up the flat with higher concentration in suspension.
- Erodibility shows a distinct seasonal cycle with approximately an order of magnitude difference over a yearly cycle.
- The order of magnitude difference in erodibility could explain the order of magnitude difference in SPM during summer and winter.
- At present an equilibrium between Inputs (River Run-off, Sea, Cliff Erosion) balances output between accumulation (deposition) and output of material (Sea) to maintain the constant SPM Cycle.
- Changes to these dynamics could have an effect on this equilibrium. (i.e. tidal power)
- **An updated sediment budget is required. (Sea, Rivers, Cliffs)**
- **Modelling with accurate sediment transport parameters is needed to validate spatial and temporal dynamics.**

CCGS Hudson Cruise – June 4th to 16th
Minas Basin and Cobequid Bay

Acknowledgements

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