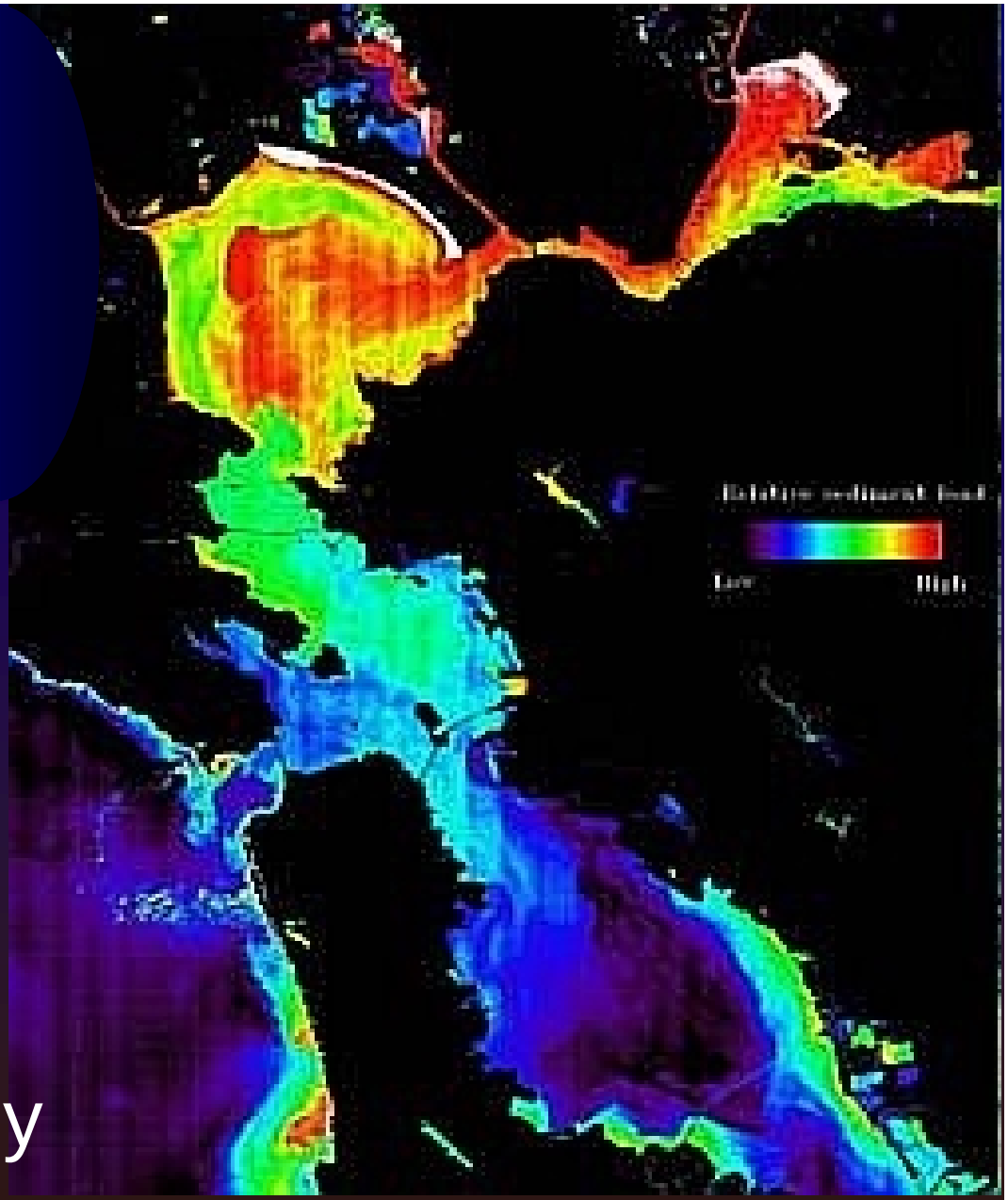
Item #3b

Water Year 2003 data

Hg flux analysis

Cross-sectional variability studies

U.S. Geological Survey
Sacramento, CA



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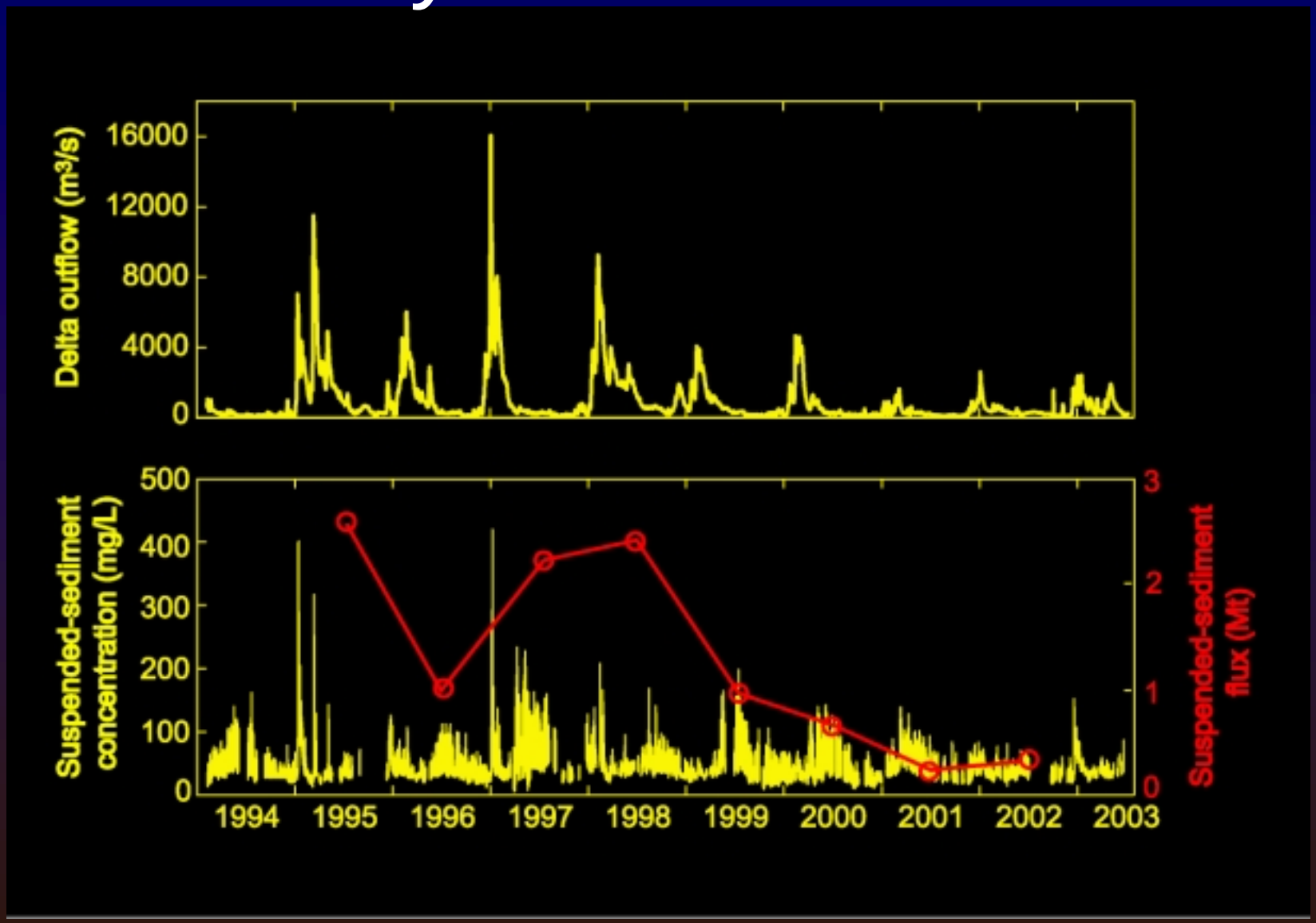
Ten year data record



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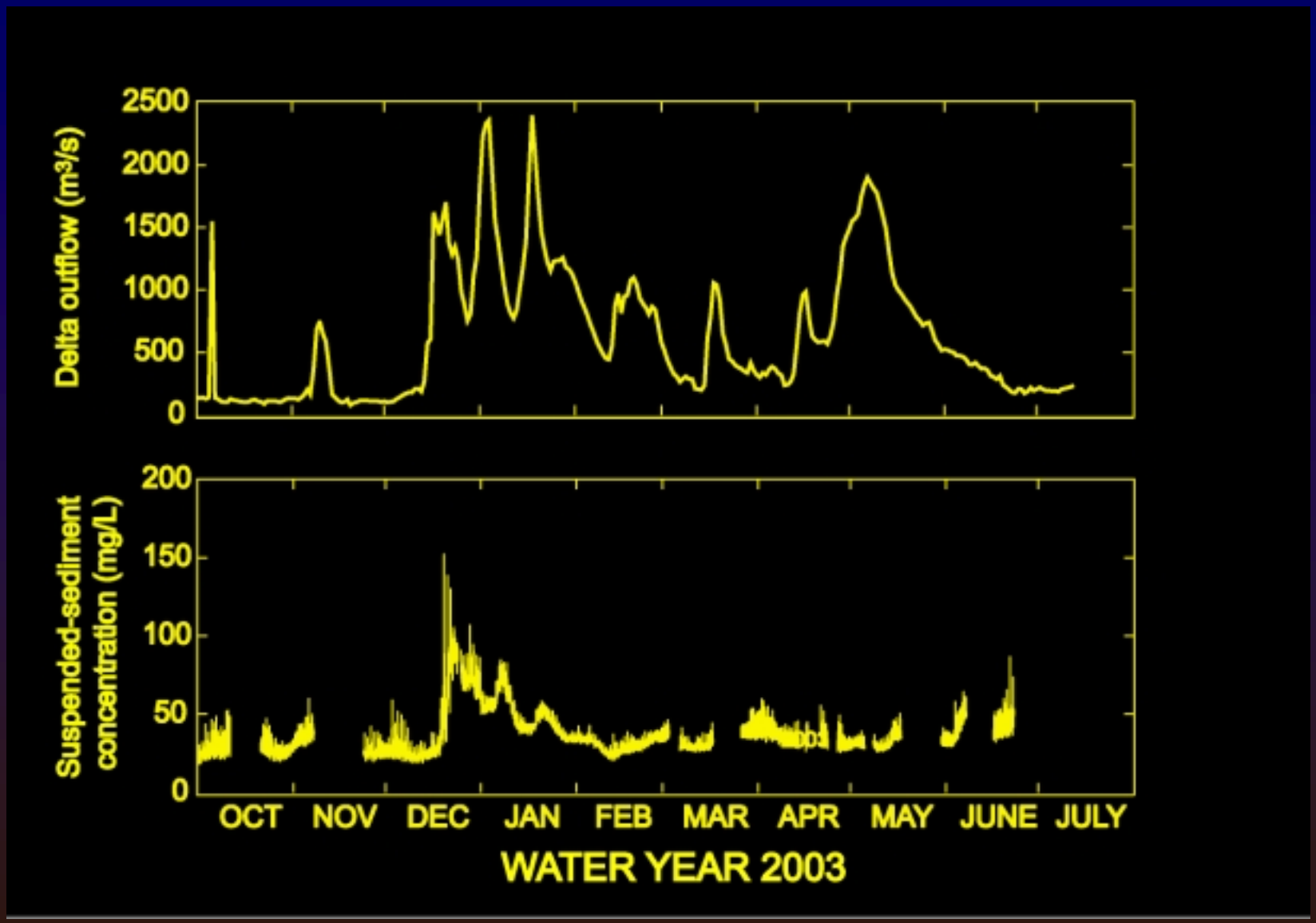
WY 2003 data



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WY 2002/2003 comparison

- Flow: 15% more water transported during wet season 2003 than 2002
- SSC: Mean SSC 6% higher during wet season 2003 than 2002
- “Wet season” means period between first elevated flow and SSC and last elevated flow and SSC (Nov. 2001 – Jan. 2002, Dec. 2002 – Feb. 2003)

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Hg load calculation assuming flood/ebb asymmetry

- Differentiate flood and ebb using velocity/salinity record
- Apply regression to SSC data, recomputing Hg time-series
- Repeat load estimation method for SSC (McKee et al.) with Hg time-series
  - Includes correction for dispersive flux (tidally advected portion of flux)

However……..

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Hg flux estimate must be corrected for dispersive flux of Hg, not SSC

- McKee et al. performed flux analysis with three sets of SSC/velocity data from 1994-1995
- Analysis only good for SSC fluxes
- Apply Hg-SSC regression to 1994-1995 SSC data, re-do dispersive flux analysis

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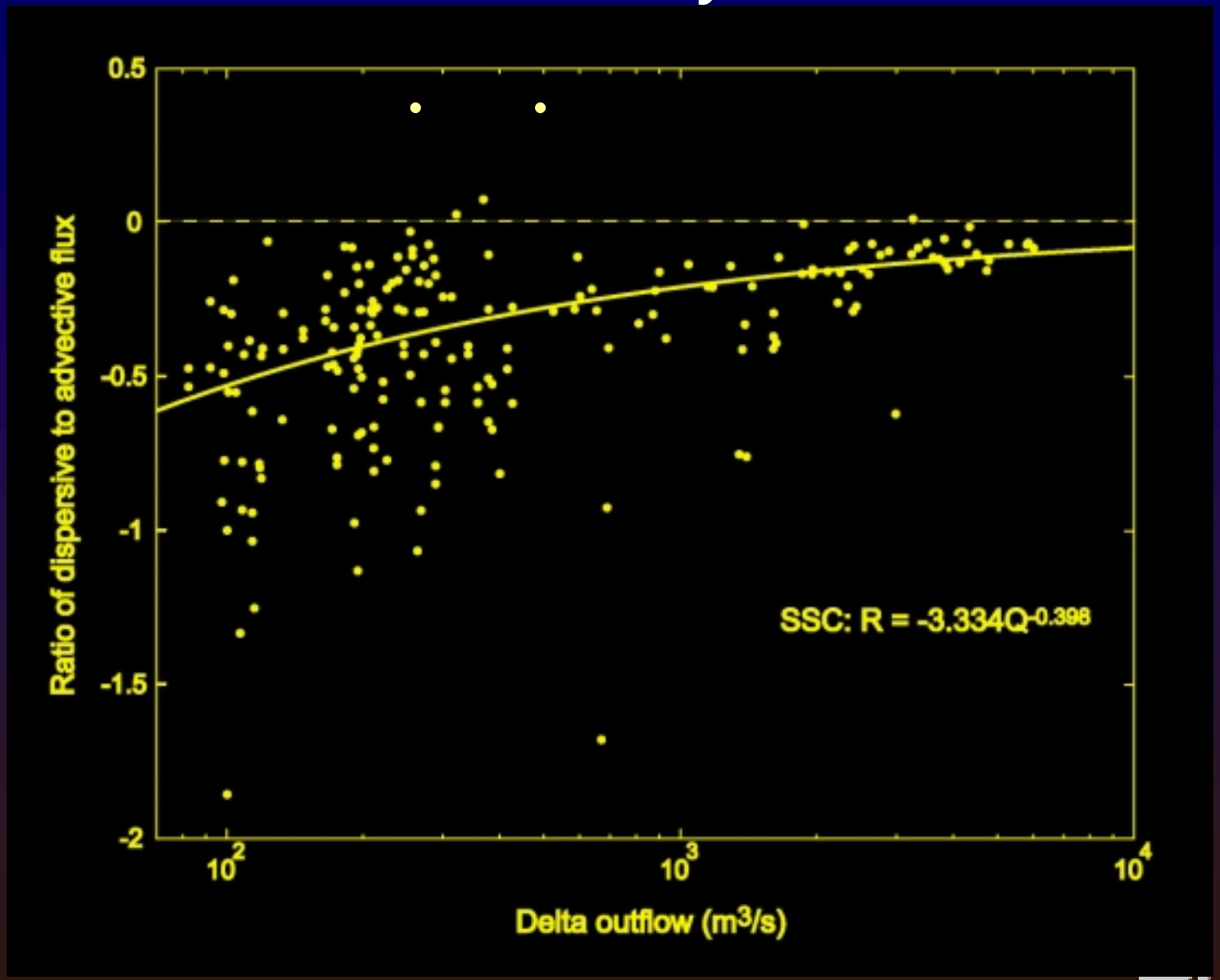
SSC analysis



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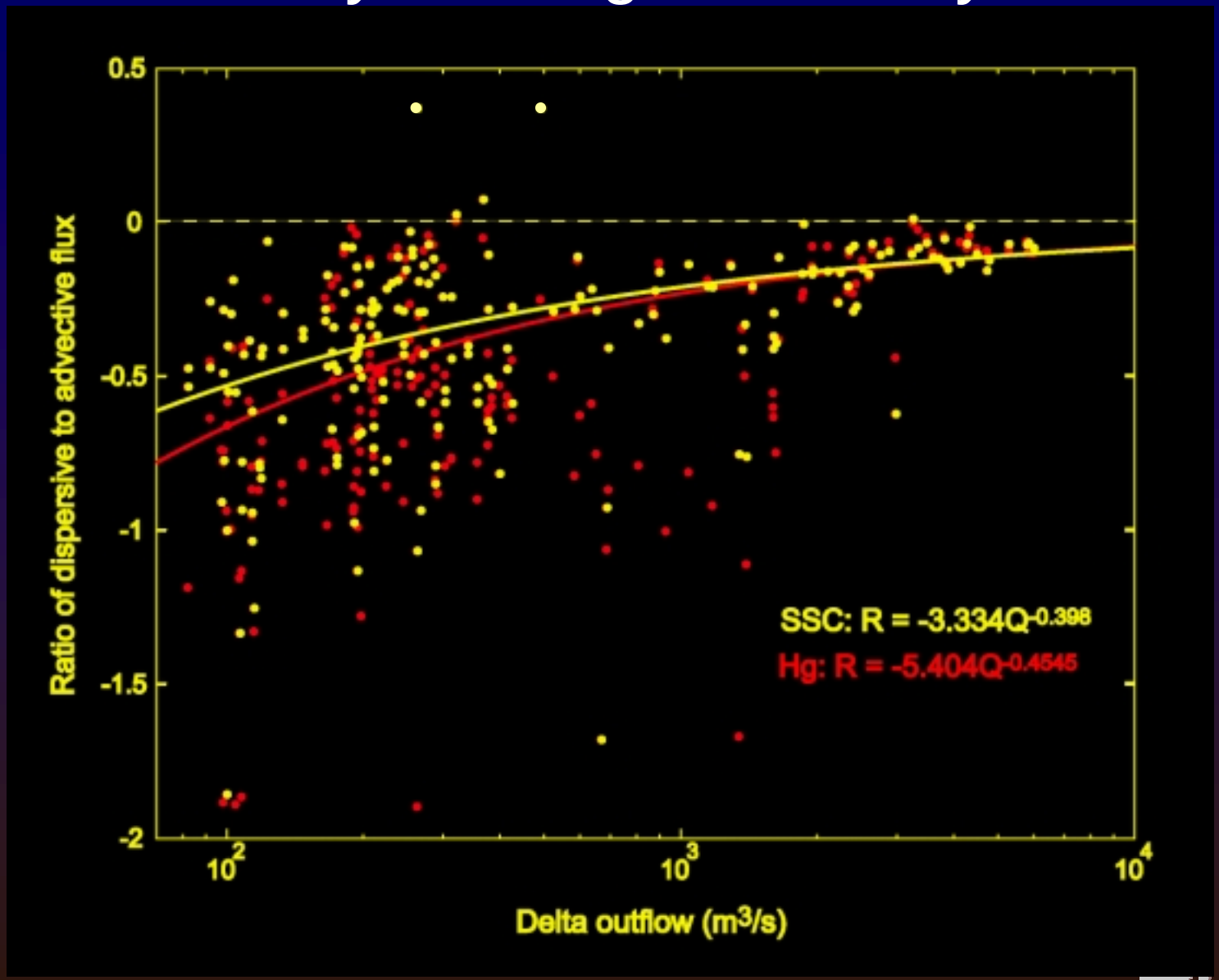
Side-by-side Hg/SSC analysis



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Cross-sectional variability (again)

- How does SSC vary in space and time at Mallard Island?
- Does the Hg-SSC relation vary in space and time? (Foe)

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Methods

- Point and depth-integrated water sampling over full tidal cycle, at several locations within channel
- Concurrent ADCP sampling for velocity and backscatter
- Perform during low-flow and high-flow condition

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Other sites of interest

- Benicia
  - Deployment planned with USGS Hydrodynamics group, sediment analysis tacked on
  - Characterize lateral and vertical variability, and attempt to estimate sediment fluxes
- Rio Vista
  - Investigation planned under the USGS Delta sediment project
  - Determine if Yolo Bypass water/sediment hugs the shore, and if Hg-SSC relation is different

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