

Ecological Data Review

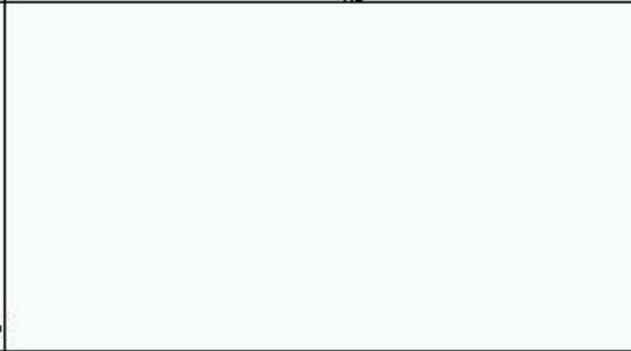
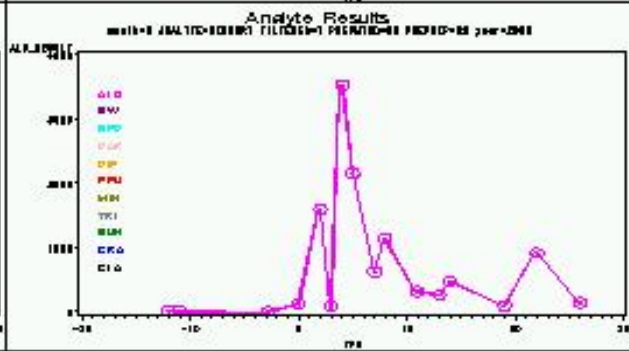
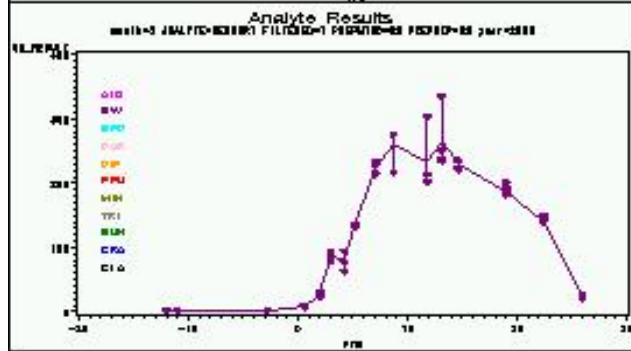
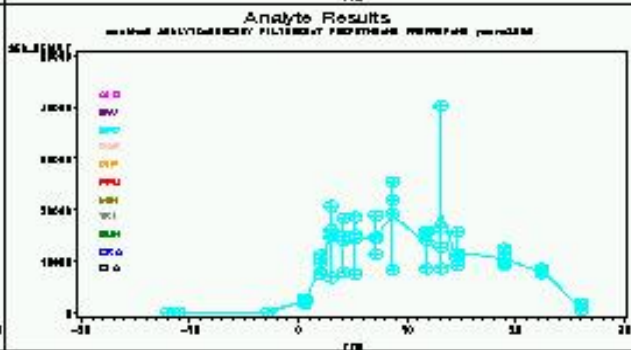
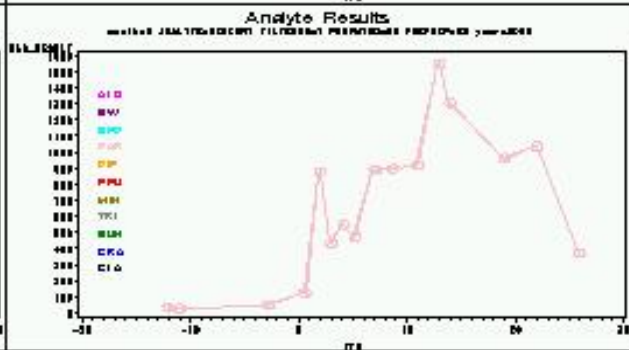
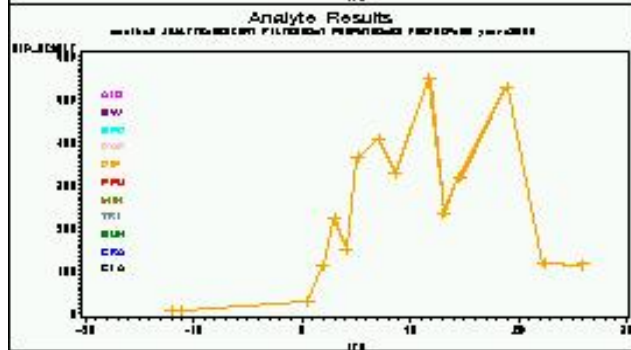
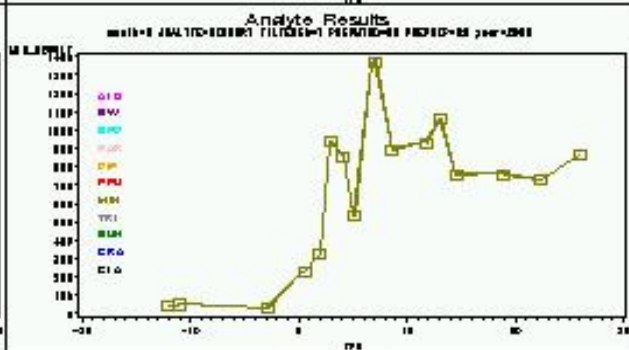
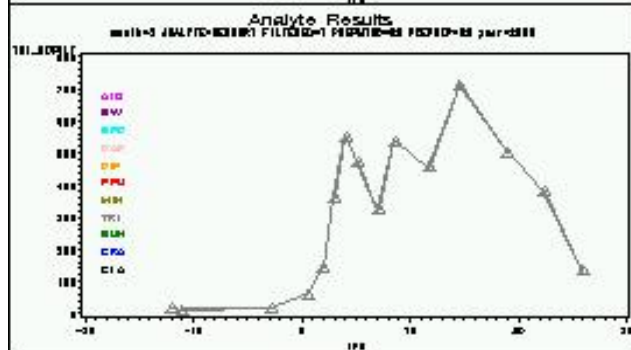
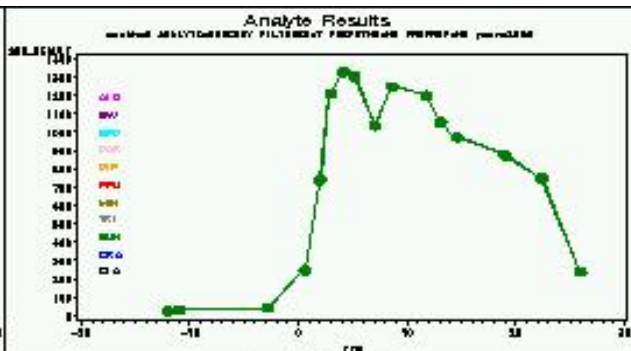
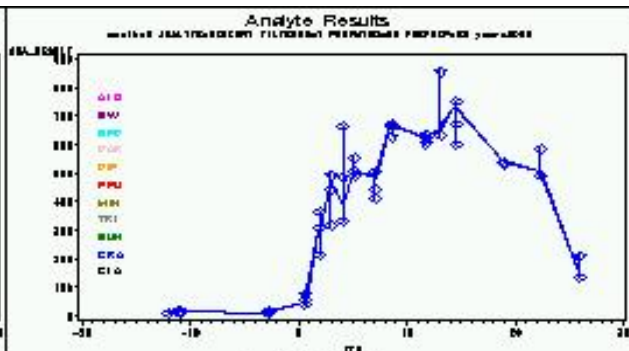
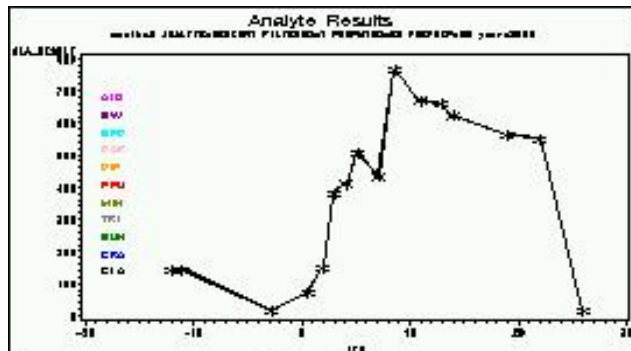
March-May 2006

October 11, 2006

John W. Green

Issues of Statistical Interest

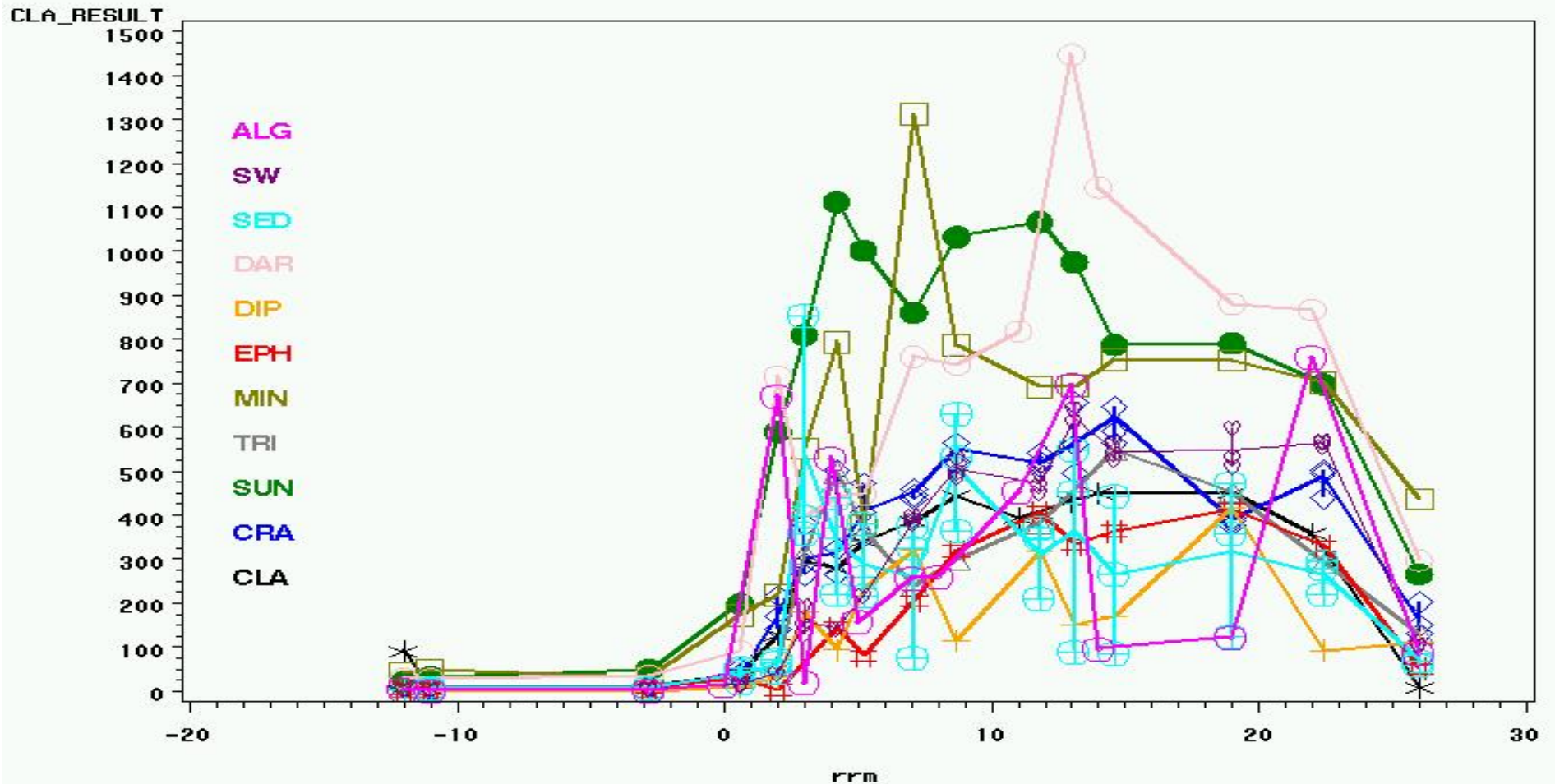
- **Are surface water, sediment, plant and animal tissue measurements at the same location and time on the same analyte correlated?**
- **Are some surface water or sediment analytes correlated with TotHg or MeHg at same location and time?**
- **Only superficial analysis done to date**

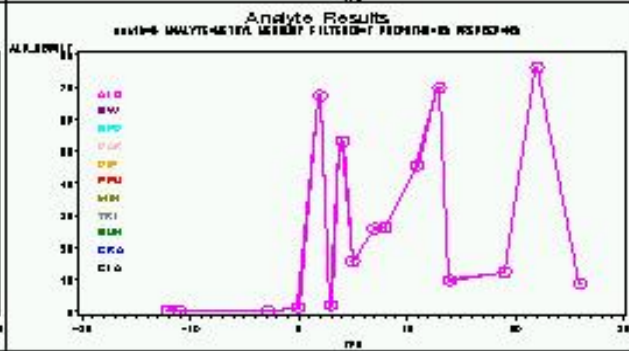
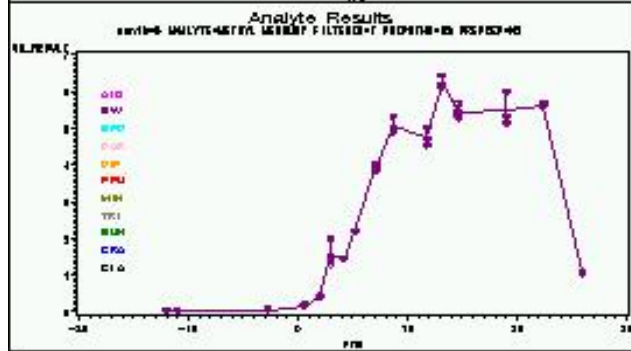
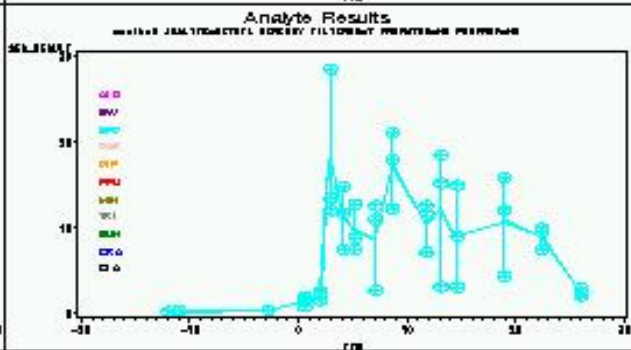
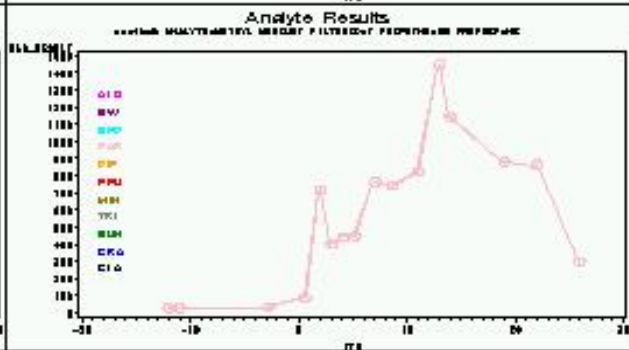
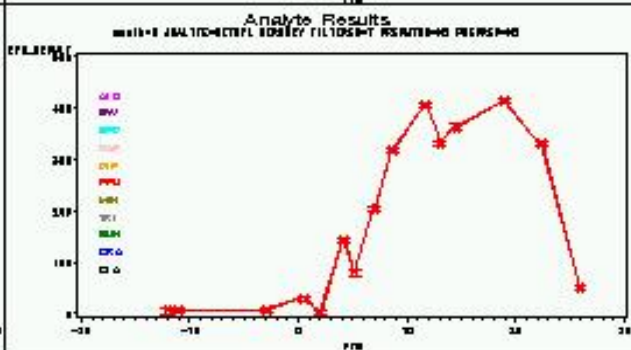
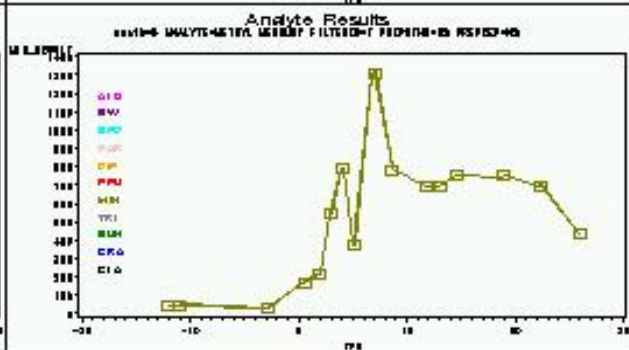
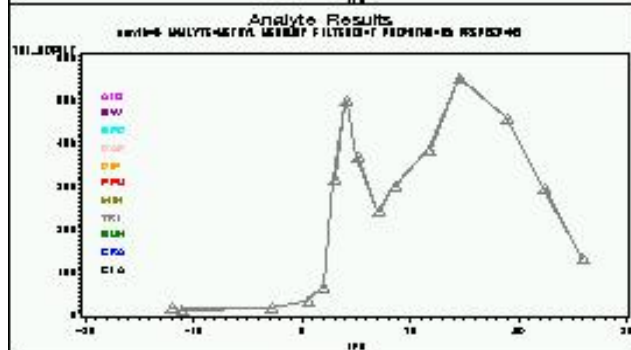
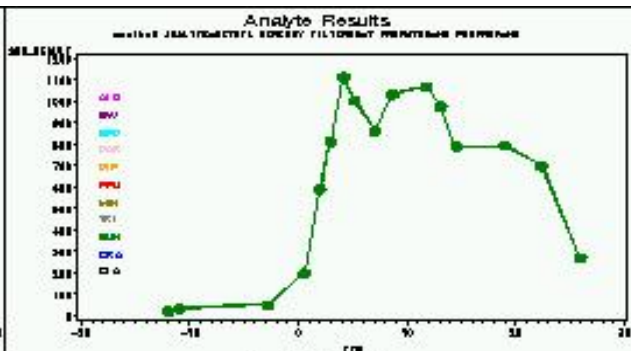
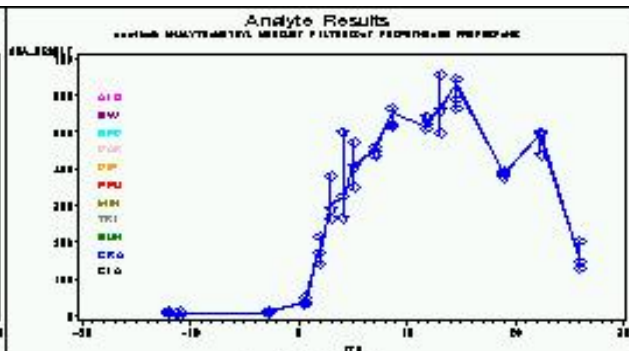
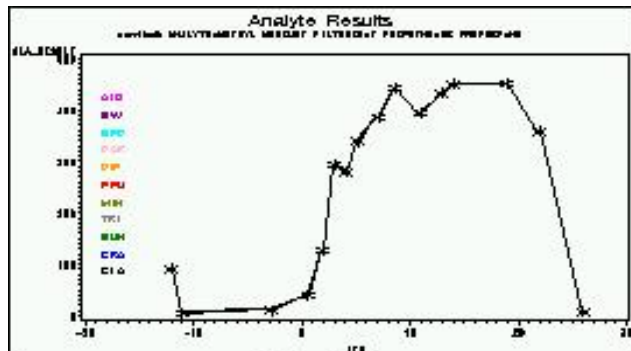


Correlations Among “Species” for Same Analyte

Analyte Results

month=5 ANALYTE=METHYL MERCURY FILTERED=T PREPMTHD=NS PREPREP=NS





Correlations Among “Species” for Same Analyte

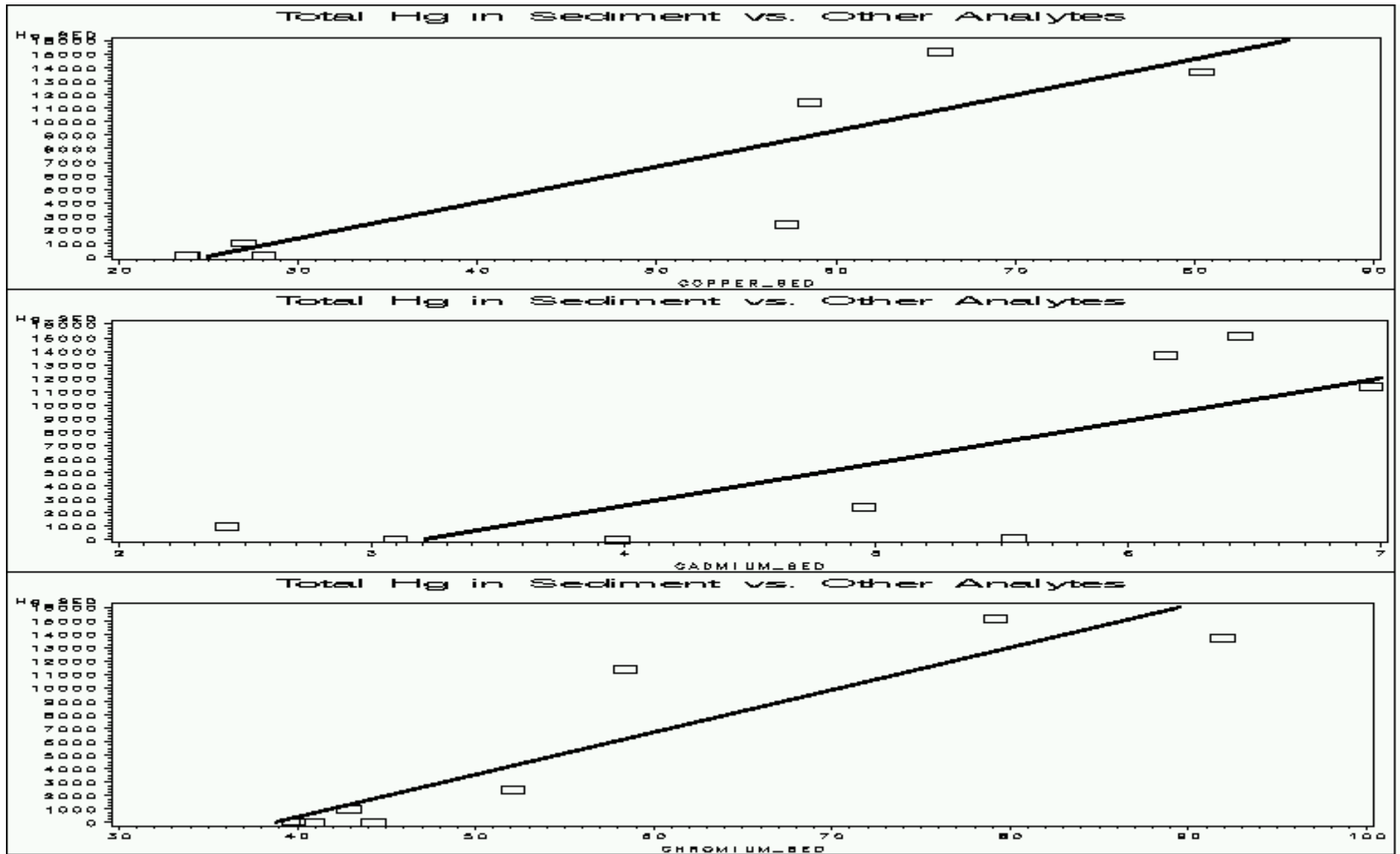
- *Clam, crayfish, trichoptera ,
ephemeroptera, diptera, sunfish, darter,
minnow, sediment, surface water*
measurements of TotHg and MeHg at
same location and time are all
significantly, highly positively
correlated
 - *Algae* TotHg and MeHg is not significantly
correlated with any of the others
 - Only May data can be so analyzed

Correlations Among “Species” for Same Analyte

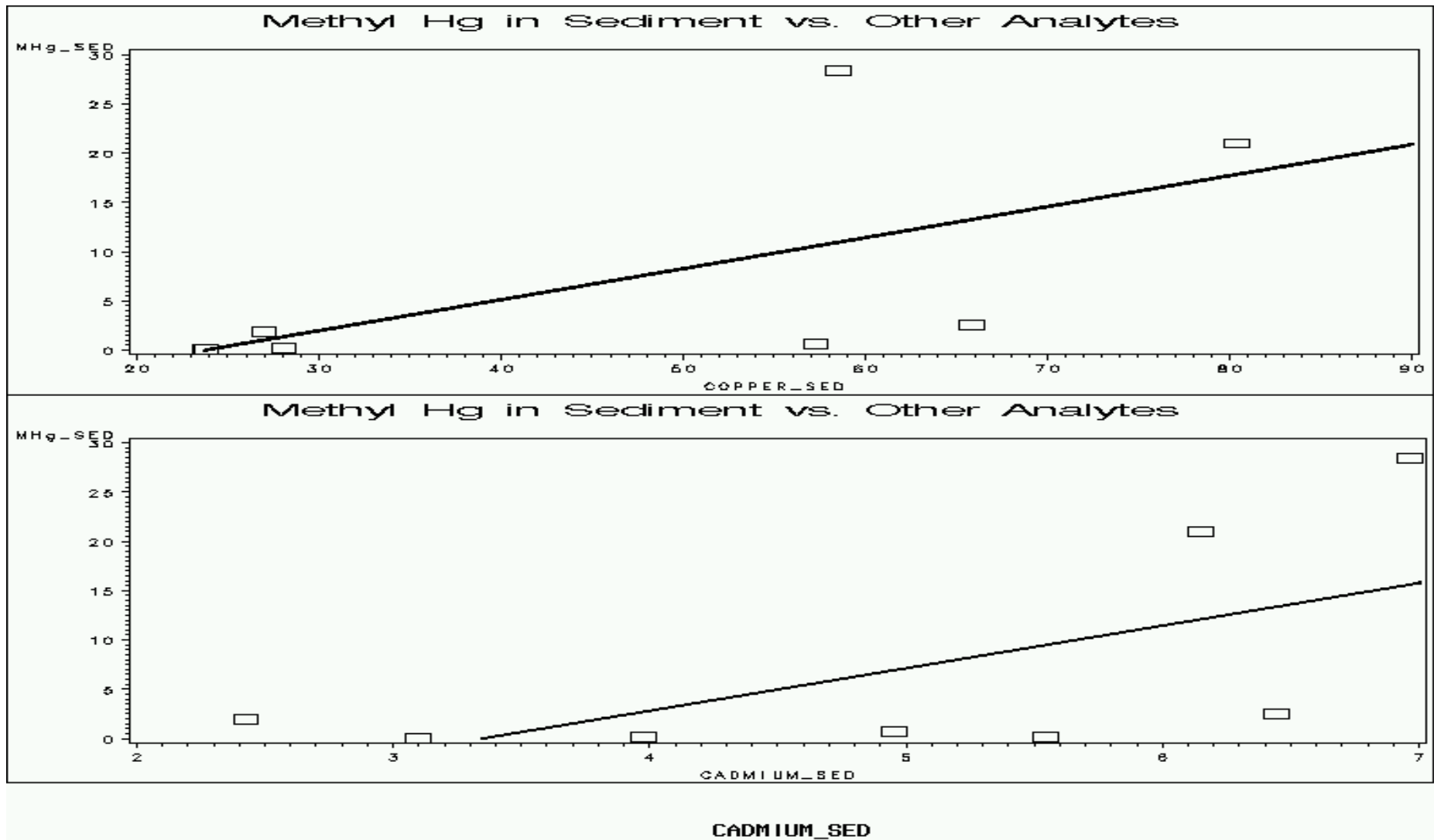
- **If these correlations hold, it should not be necessary to continue sampling all species**
 - **Need seasonality, storm info before eliminating species**

Correlations among Analytes at same Time and Location

- **TotHg sediment samples highly correlated with cadmium, chromium, copper**
- **MeHg sediment samples moderately correlated with cadmium, copper**



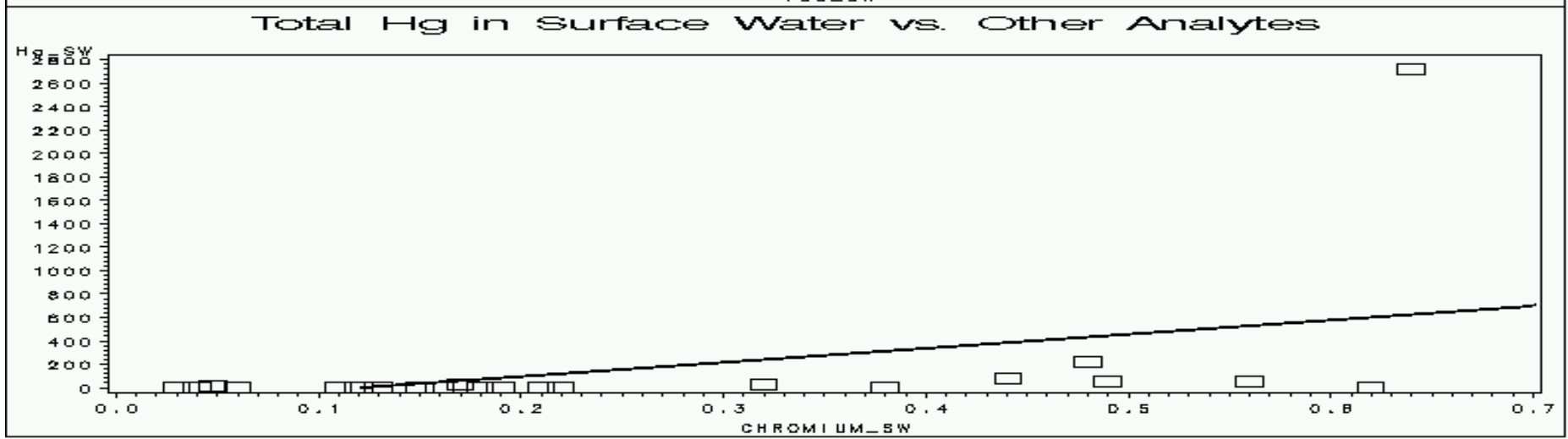
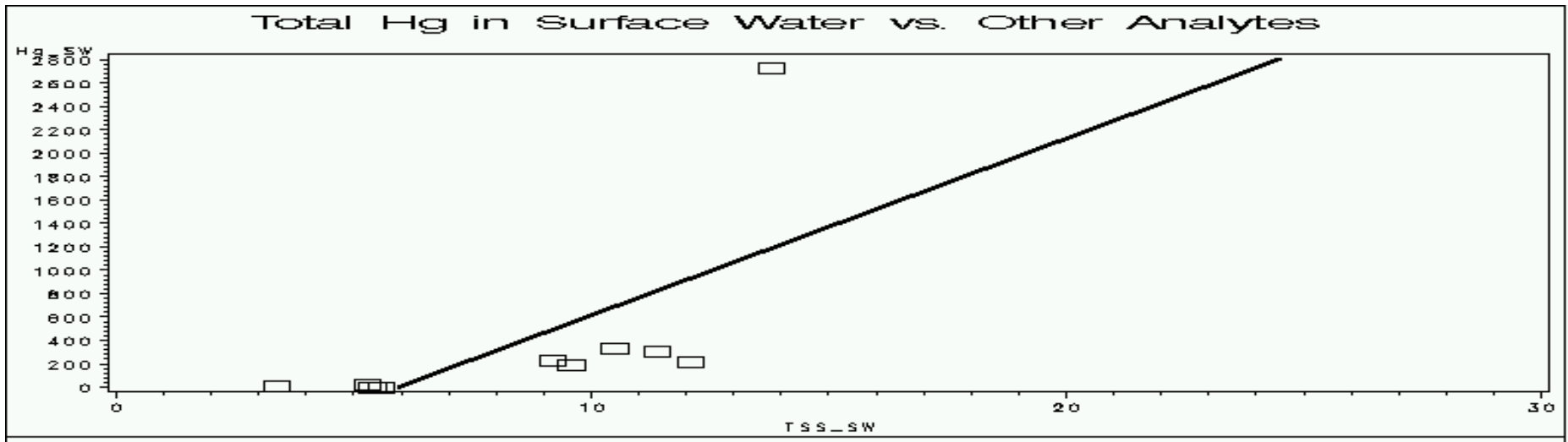
Correlations of Total Hg with other analytes in sediment is based large part on the small number of observations of these analytes



Correlations of Methyl Hg with other analytes in sediment is based on the small number of non-zero observations of these analytes

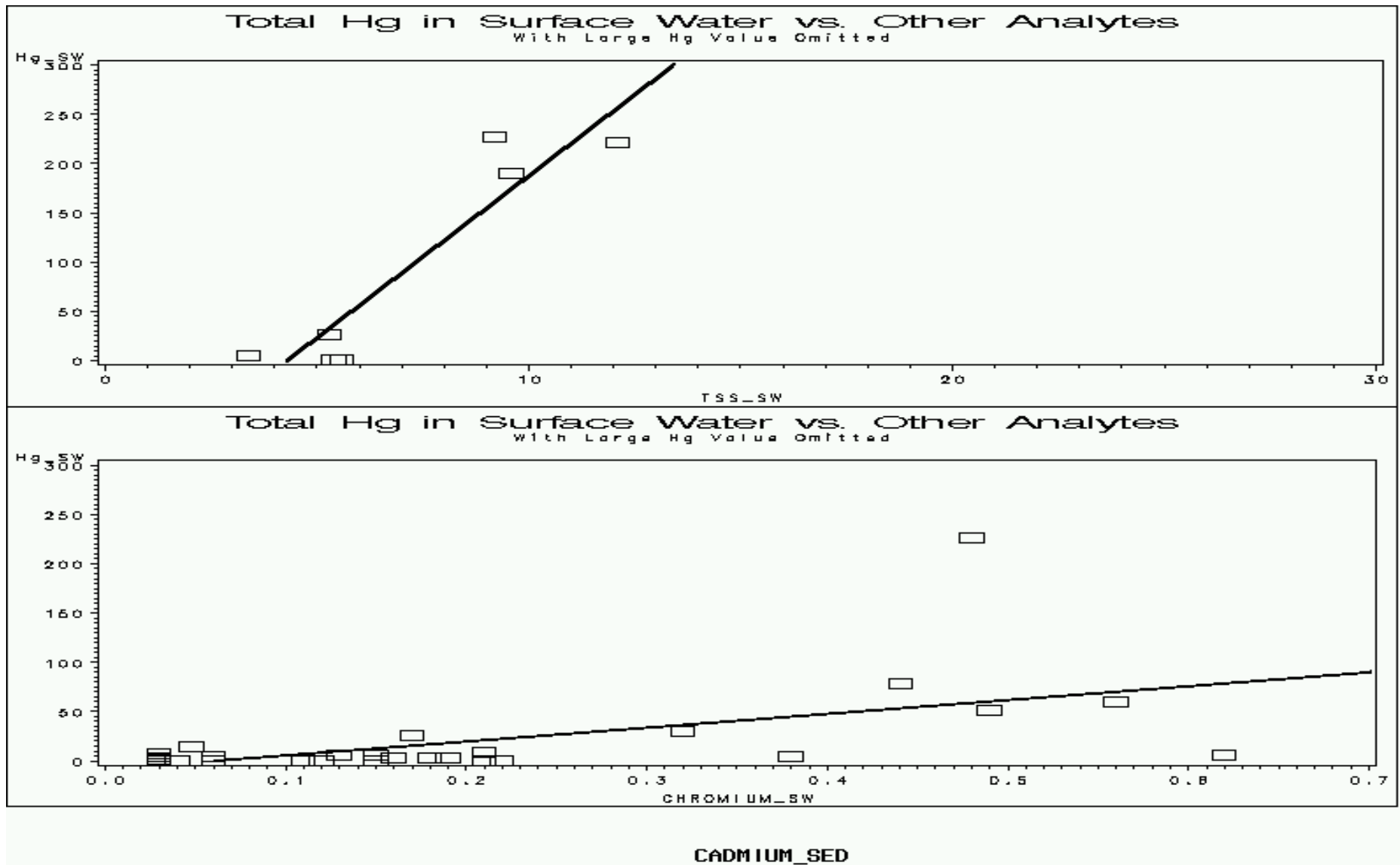
Correlations among Analytes at same Time and Location

- **TotHg surface water samples highly correlated with chromium, TSS**
 - Moderately correlated with copper
- **MeHg surface water samples highly correlated with cadmium, chromium, copper, TSS**
 - Moderately correlated with lead

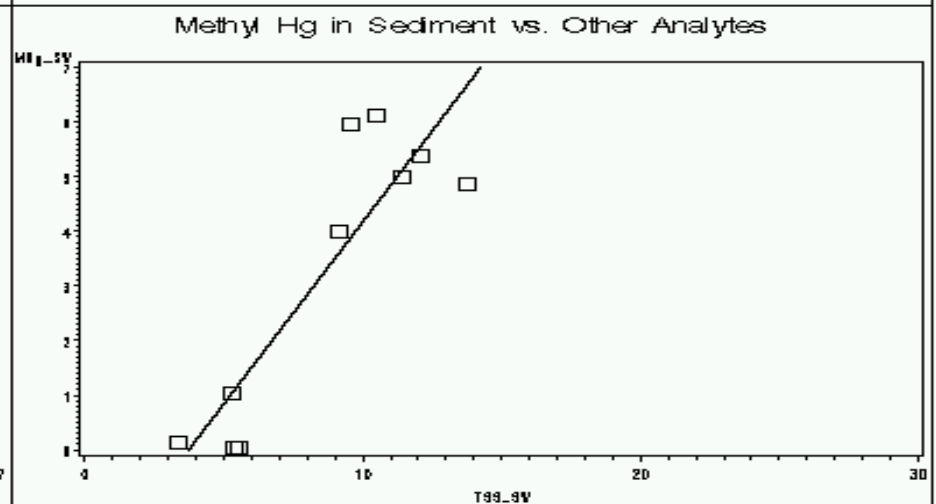
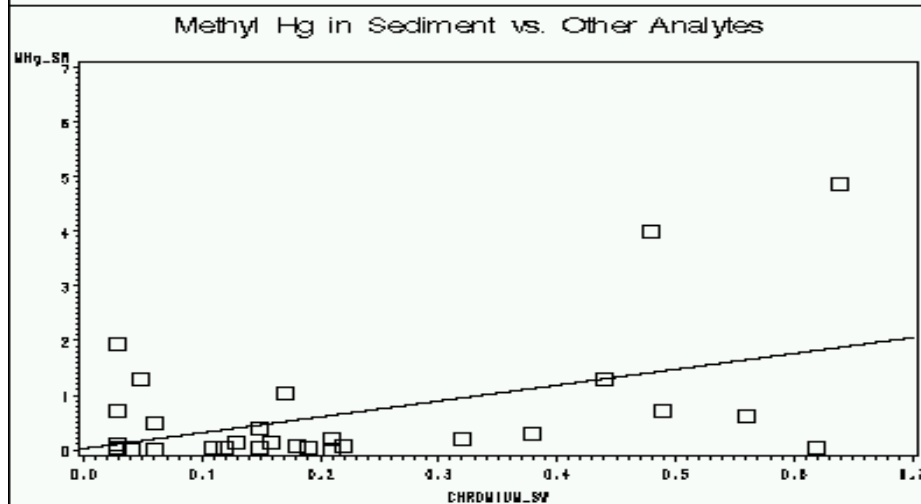
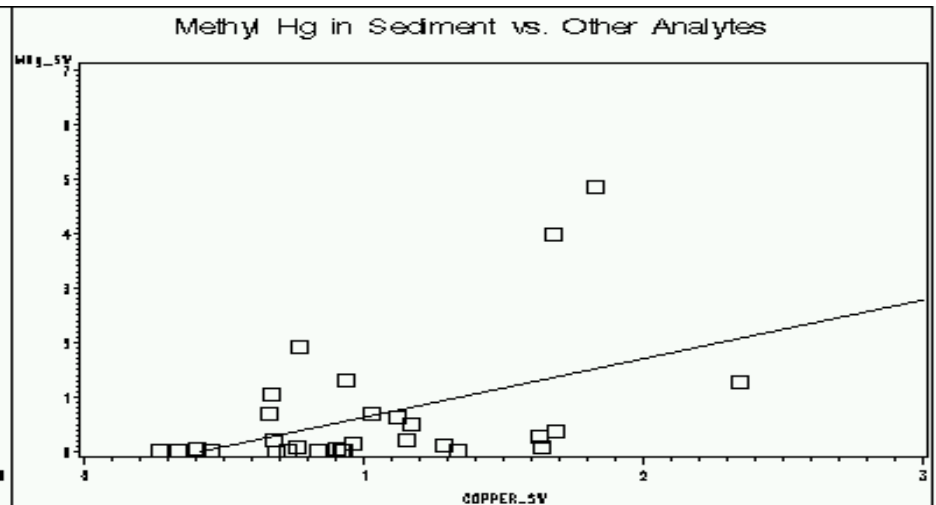
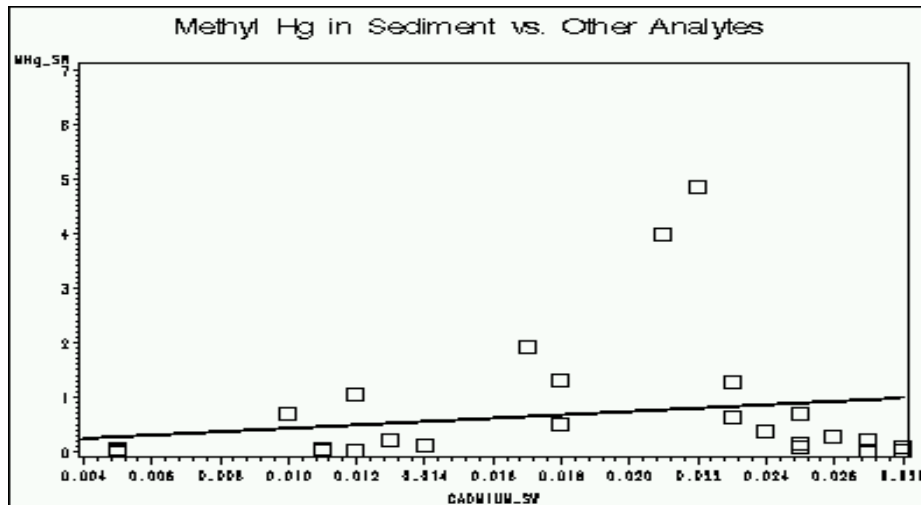


CADMIUM_SED

Single large Hg value makes correlations hard to interpret



With largest Hg value omitted, correlations persist but are driven by a small number of observations. Meaning, if any, unclear.



Correlation of MeHg in surface water with TSS seems real, if based on few observations. The other correlations are more questionable in significance.

Chemical Measurements

- **Measurements of analytes other than TotHg, MeHg, taken primarily at RRM 0.6, 3, 8.7, and 26 plus control locations**
 - **Little replication**
 - **Meaningful correlations consequently difficult to determine**