

Laboratory Intercalibrations

Setting Performance-Based Data Quality Objectives

Why Conduct Intercalibrations?

- Bight utilizes multiple chemistry laboratories
- Environmental Laboratory Accreditation Program (ELAP) does not provide sufficient assessments of comparability
 - Almost always in the simplest of matrices
- We need a comparability evaluation in native matrix

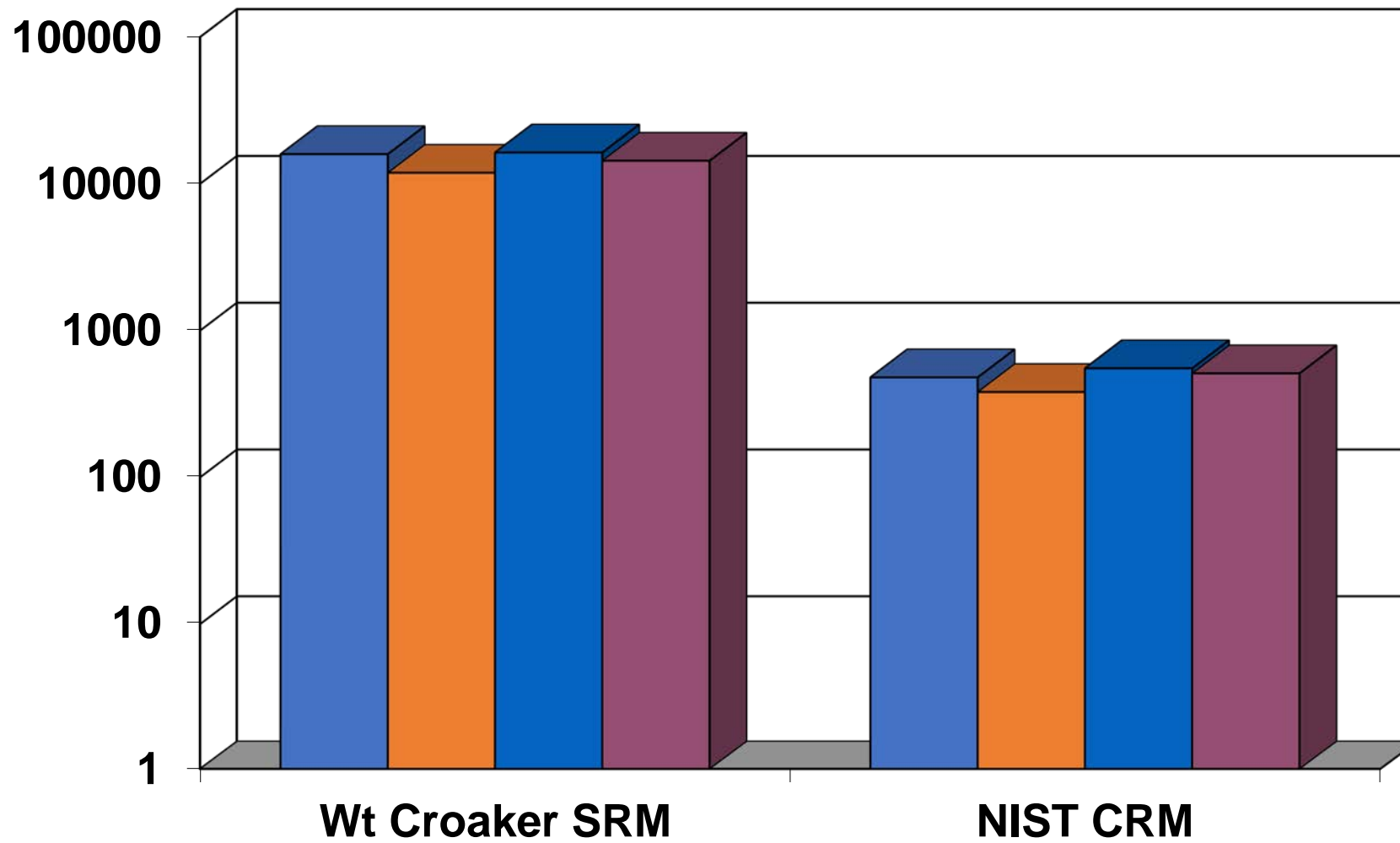
SCCWWRP has Run Many Lab Intercalibrations

- Different measurements
 - Nutrients, metals, organics, CECs, grain size, general parameters, probes toxicity, infauna, algae, vertebrates, microbiology, barcoding
- Different matrices
 - sediment, fresh water, marine water, stormwater, effluent, tissue
- Different labs
 - academic, municipal, private

Intercalibration Approach

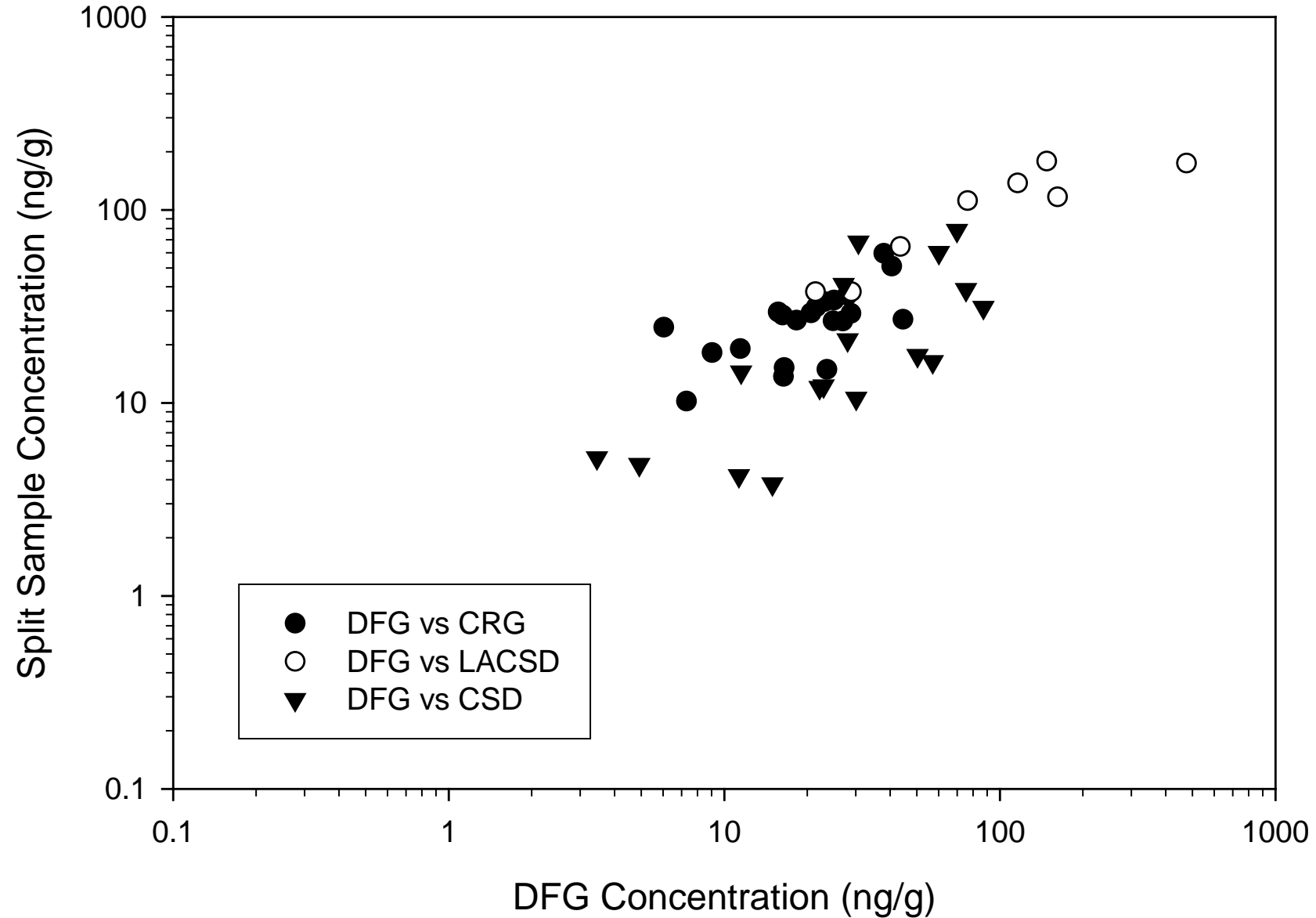
- Recruit participating laboratories
- Create study design
 - Scoring algorithm for assessing comparability
- Collect, homogenize, and distribute blinded samples
- Compile and analyze results
 - Identify successes and failures
- Repeat intercalibration after resolving issues

Presurvey Tissue Intercalibration Total DDT (ug/kg)

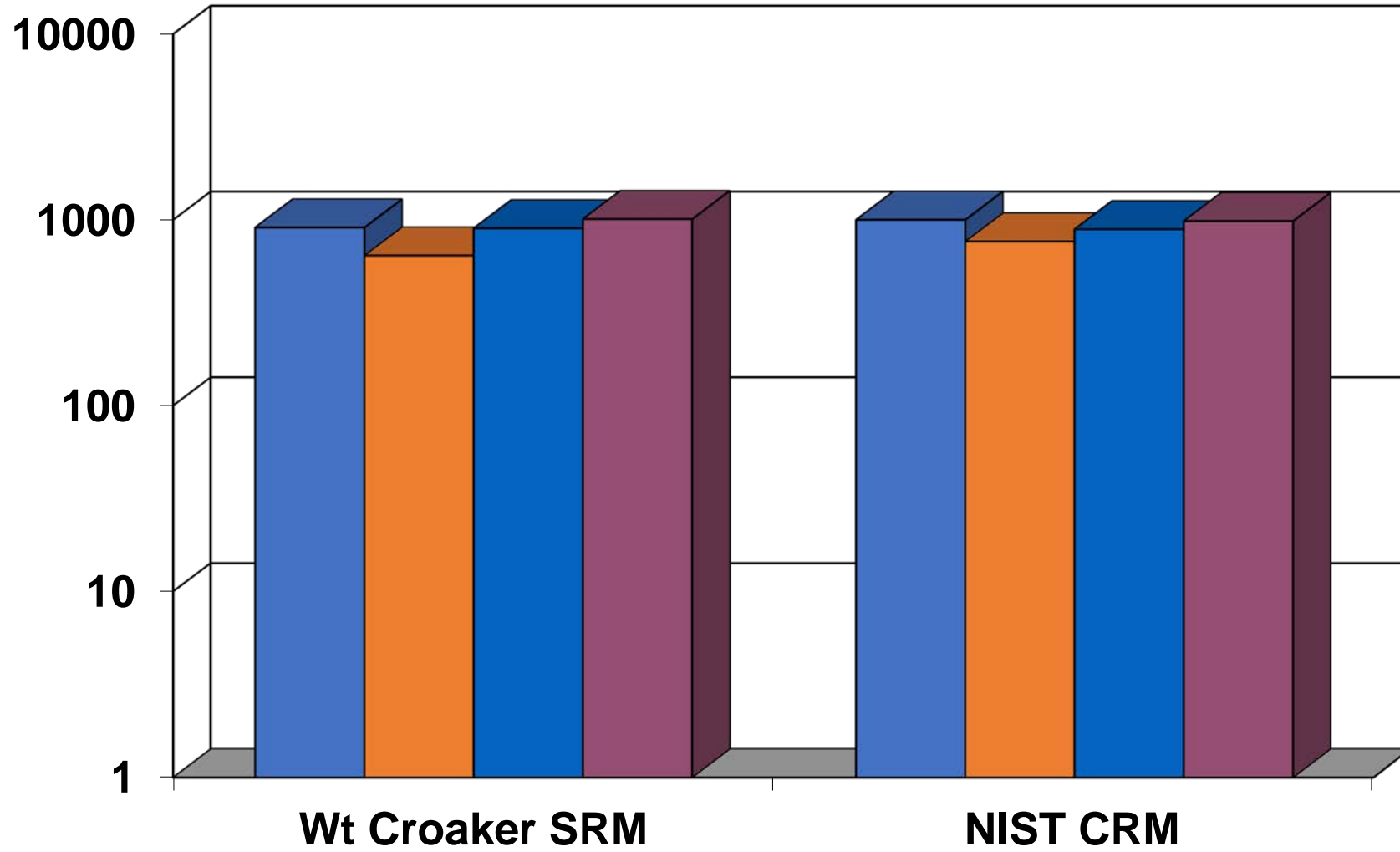


IN-STUDY SPLIT SAMPLES

Total DDT(ND=0.5 MDL)

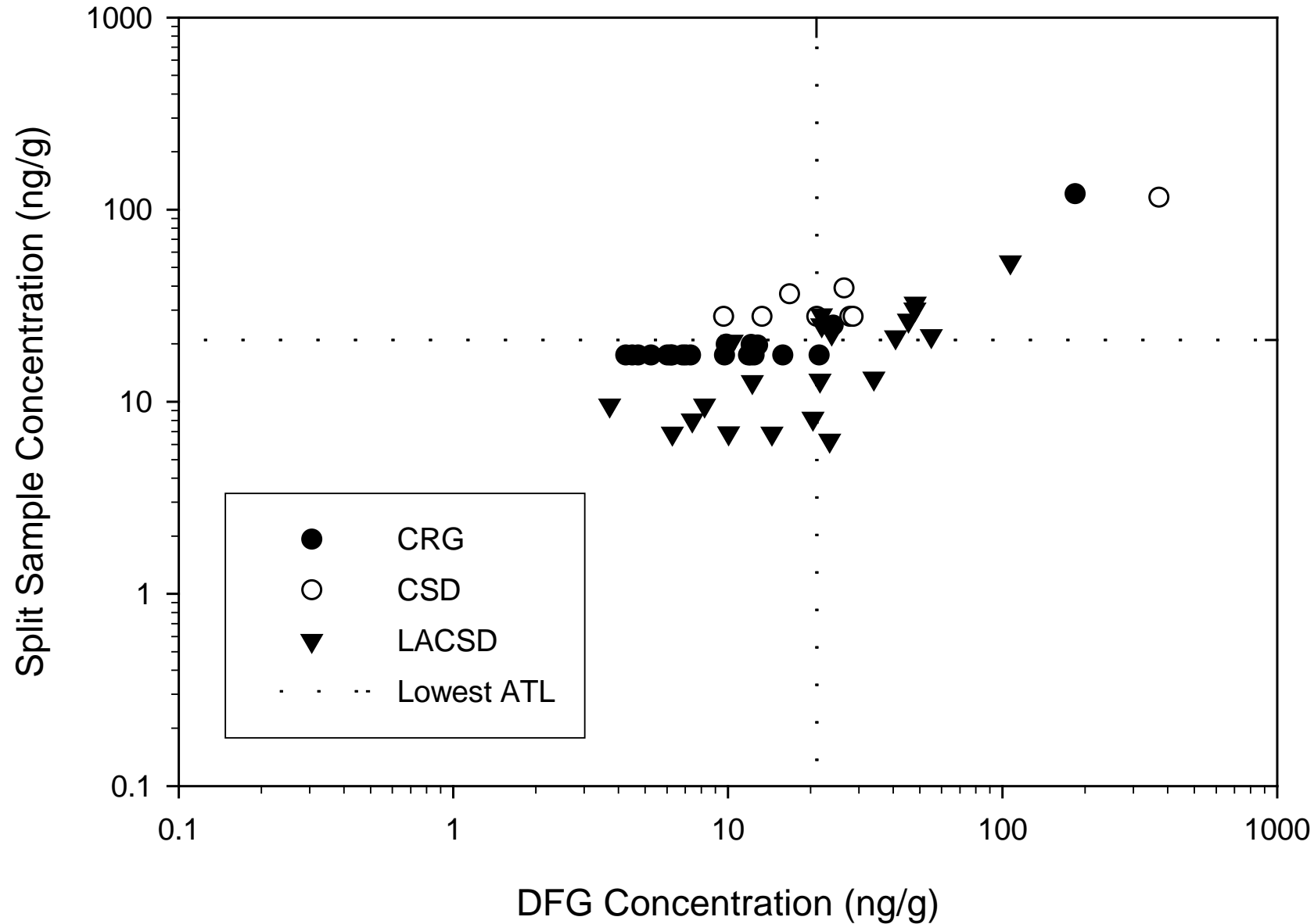


Presurvey Tissue Intercalibration Total PCB (ug/kg)



IN-STUDY SPLIT SAMPLES

Total PCB Common Congeners (ND=0.5 MDL)



Split Sample Scoring Similarity

(PCB Advisory Tissue Level = 21 ng/ wet g)

		Statewide Lab	
		> ATL	< ATL
Other Labs	> ATL	31%	6%
	< ATL	8%	55%

Bight Intercalibration is Just Beginning

- Recruited 12 labs so far
- Created a relatively simple study design
- Writing our intercalibration SOP now

Bight '18 Intercalibration Participants

Laboratory	Sediment Metals	Sediment Organics	Tissue Metals	Tissue Organics
CLAEMD	X	X	X	X
LACSD	X	X	X	X
OCSD	X	X	X	X
CSD	X	X	X	X
NOAA	X	X	X	X
MLML			X	
Physis	X	X	X	X
Weck	X	X	X	X
CCSF	X		X	
Axis		X		X
ALS		X		X
Eurofins	X	X	X	X
Brooks	X		X	

Basic Intercalibration Design Elements

- Two matrices, 3 replicates of each
- Certified Reference Material
 - Tissue: DORM-4 (metals), NIST 1946 (organics)
- Field Reference Material
 - Locally caught target species
- Goal is within lab variability \approx among lab variability

Intercalibration Scoring

	Metals	Organics
Certified Reference Material	$\pm 30\%$ of certified value	$\pm 40\%$ of grand mean for 70% of analytes
Field Reference Material	$\pm 30\%$ of grand mean	$\pm 40\%$ of grand mean for summed compound class

The Bight Schedule

- Workplan - Jan 2018
- Intercalibration design - Feb 2018
- Intercalibration evaluation - April 2018
- Second iteration (if necessary) – June 2018
- Begin sample distribution – July 2018