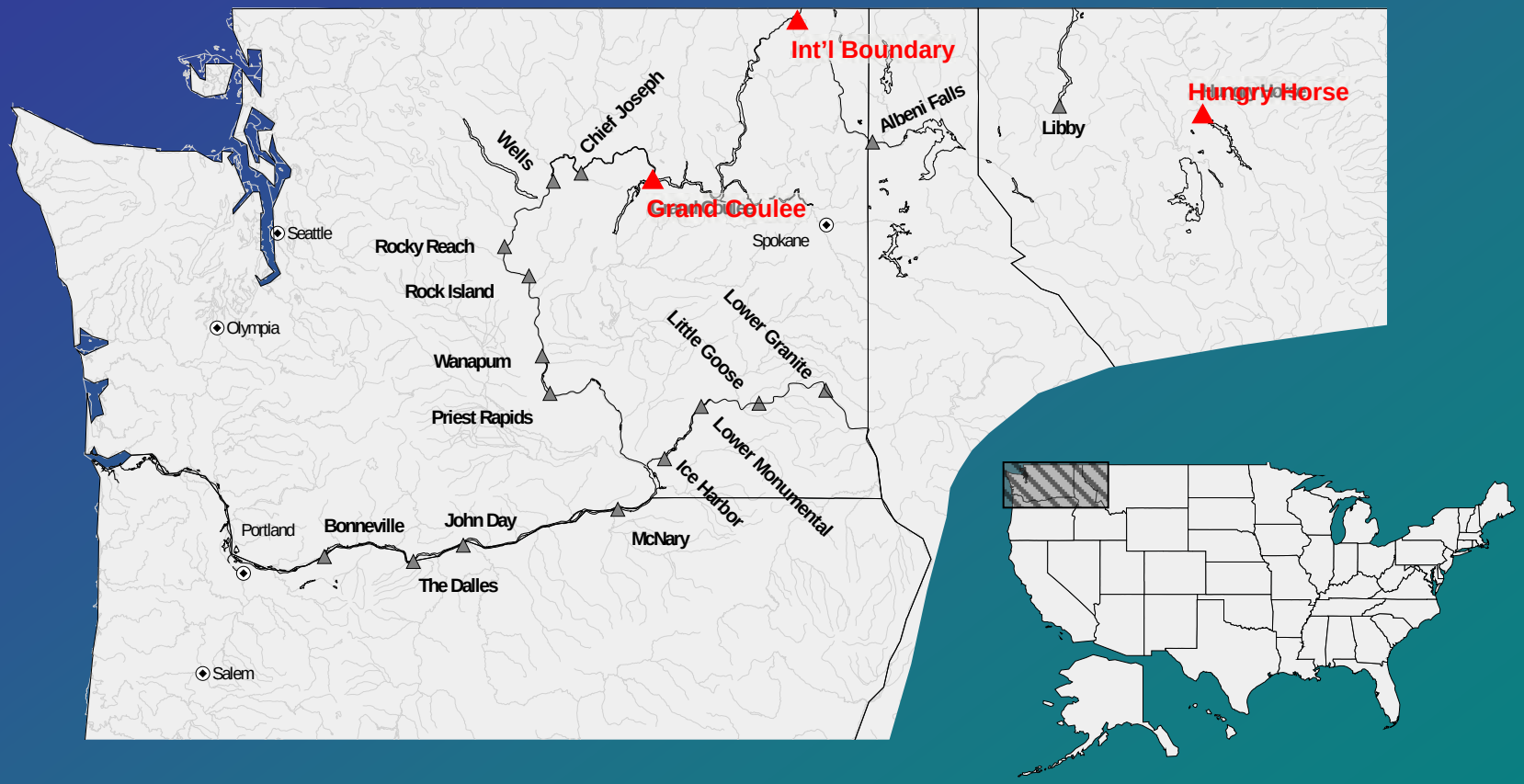
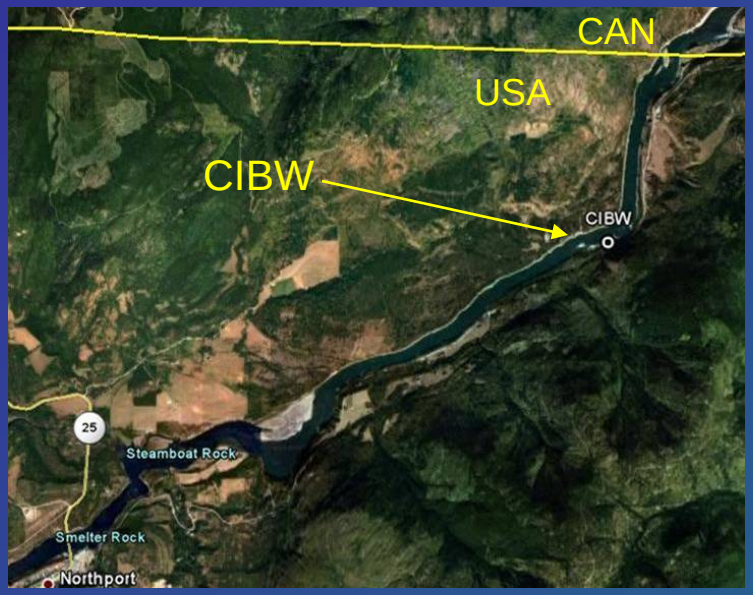
US Bureau of Reclamation Total Dissolved Gas Fixed Monitoring System 2012

	Grand Coulee	Hungry Horse
Drainage Area:	74,700 sq mi	1654 sq mi
Normal Full Pool:	1290.0 ft MSL	3560.0 ft MSL
No. Main Units:	24	4
Hydraulic Capacity:	280,000 cfs	8,900 cfs



Hungry Horse Tailwater (HGHM)

Established: 1998
Dates in Operation: March - September
Calibration Frequency: Bi-weekly



International Boundary (CIBW)

Established:	1984
Dates in Operation:	Year round
Calibration Frequency:	Bi-weekly (Mar-Oct) Monthly (Oct-Mar)

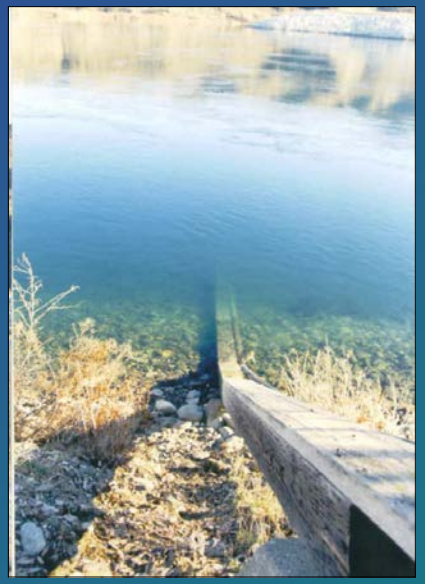
Grand Coulee Dam TDG
Monitoring Locations
GCGW
GCGW
FDRW
Coulee Dam
Grand Coulee
Dam
FDRW
Grand Coulee
Image U.S. Geological Survey
2.40 mi
Electric City
© 2009 Google
Google

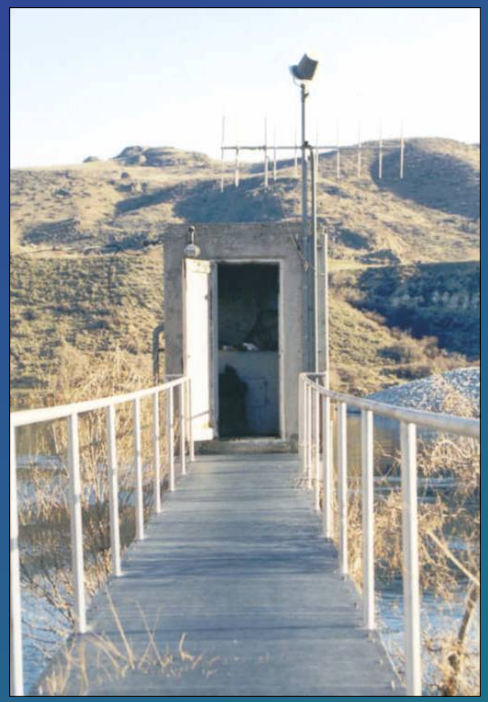
Grand Coulee Forebay (FDRW)

Established: 1997
Dates in Operation: Year round
Calibration Frequency: Bi-weekly (Mar-Oct)
Monthly (Oct-Mar)

Grand Coulee Tailwater (GCGW)

Established:	1983
Dates in Operation:	Year round
Calibration Frequency:	Bi-weekly (Mar-Oct) Monthly (Oct-Mar)





Monitor Equipment

Data Collection Platform (DCP)

Sutron 8210

Sutron SatLink

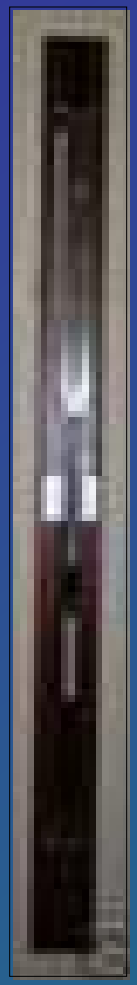
Probes

Sutron Accubar BP Sensor
Accuracy +/- 0.1%

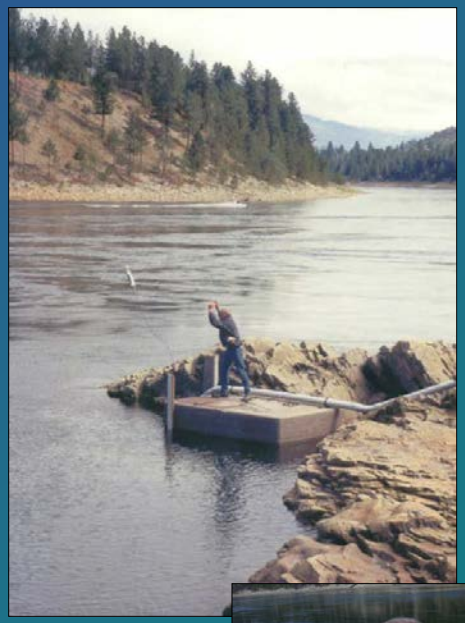
Alpha Designs TDG/Temperature Sensor
Accuracy +/- 0.1%

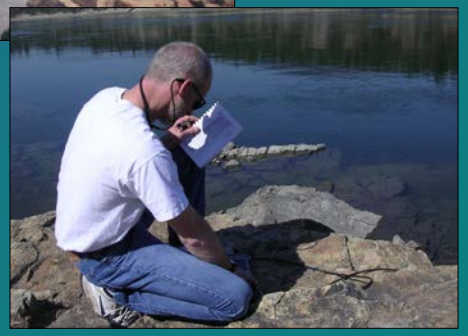
Quality Assurance / Quality Control

In the lab, probes are calibrated to known standards.

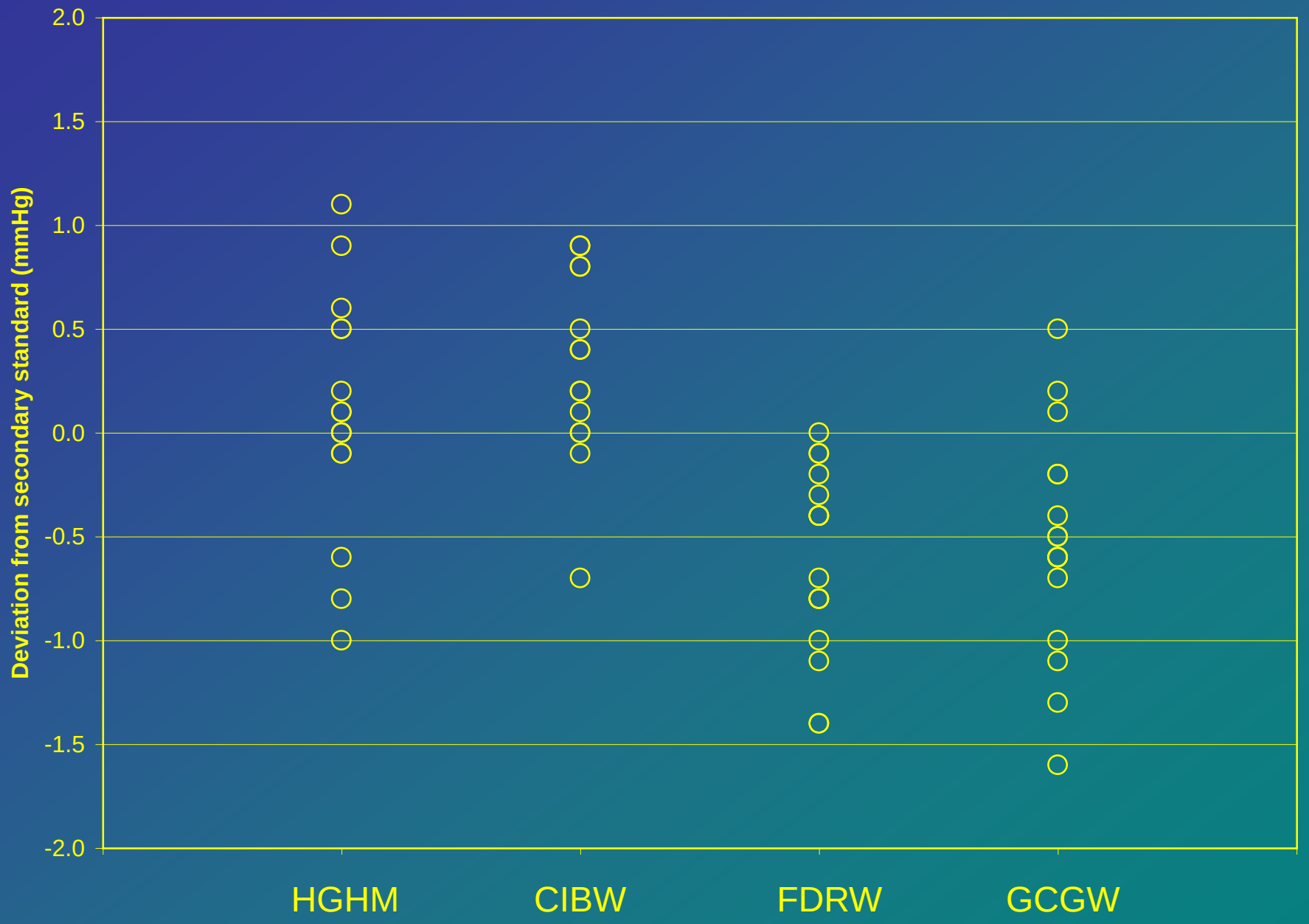


In the field, a secondary standard probe is deployed for comparison.

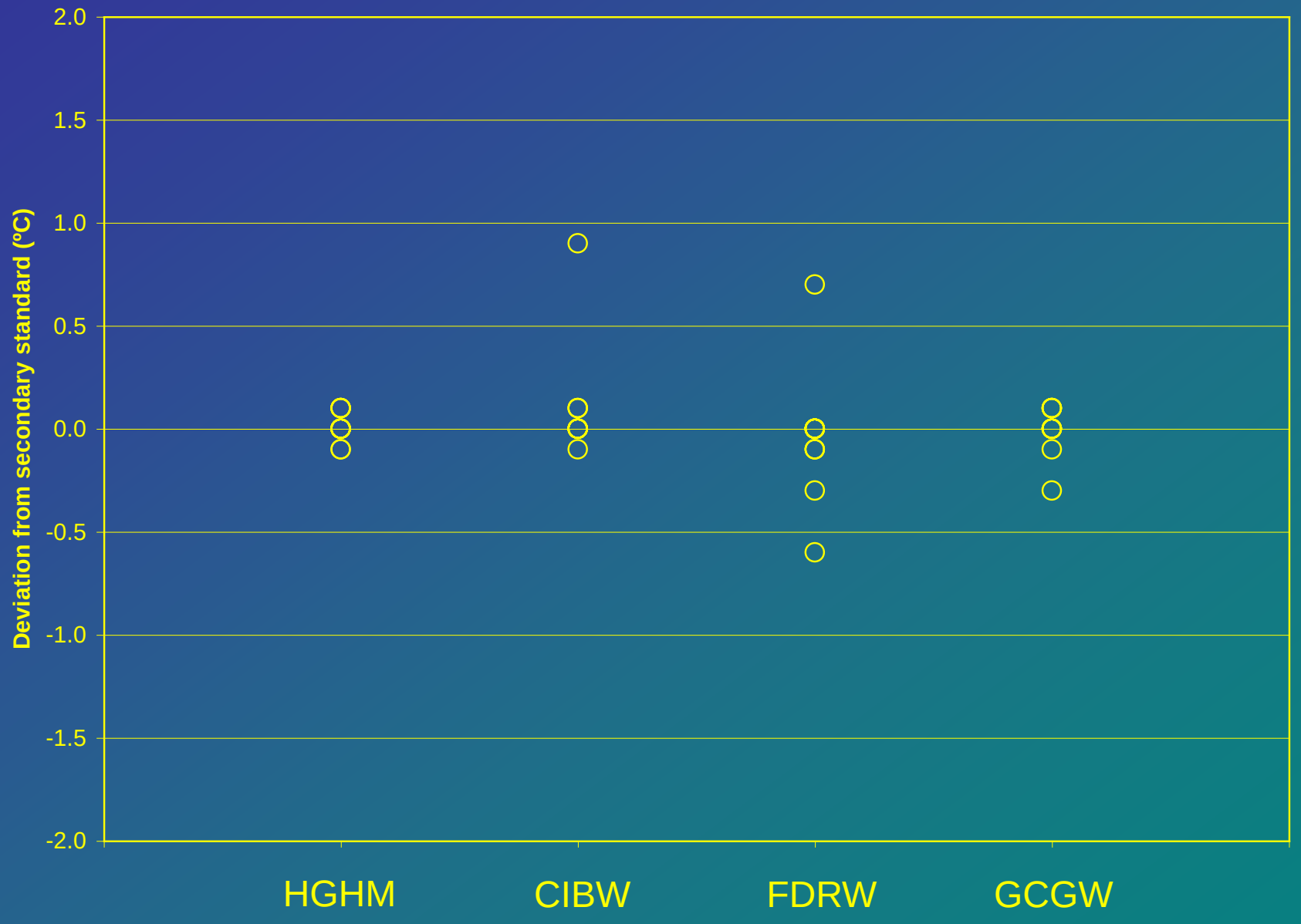




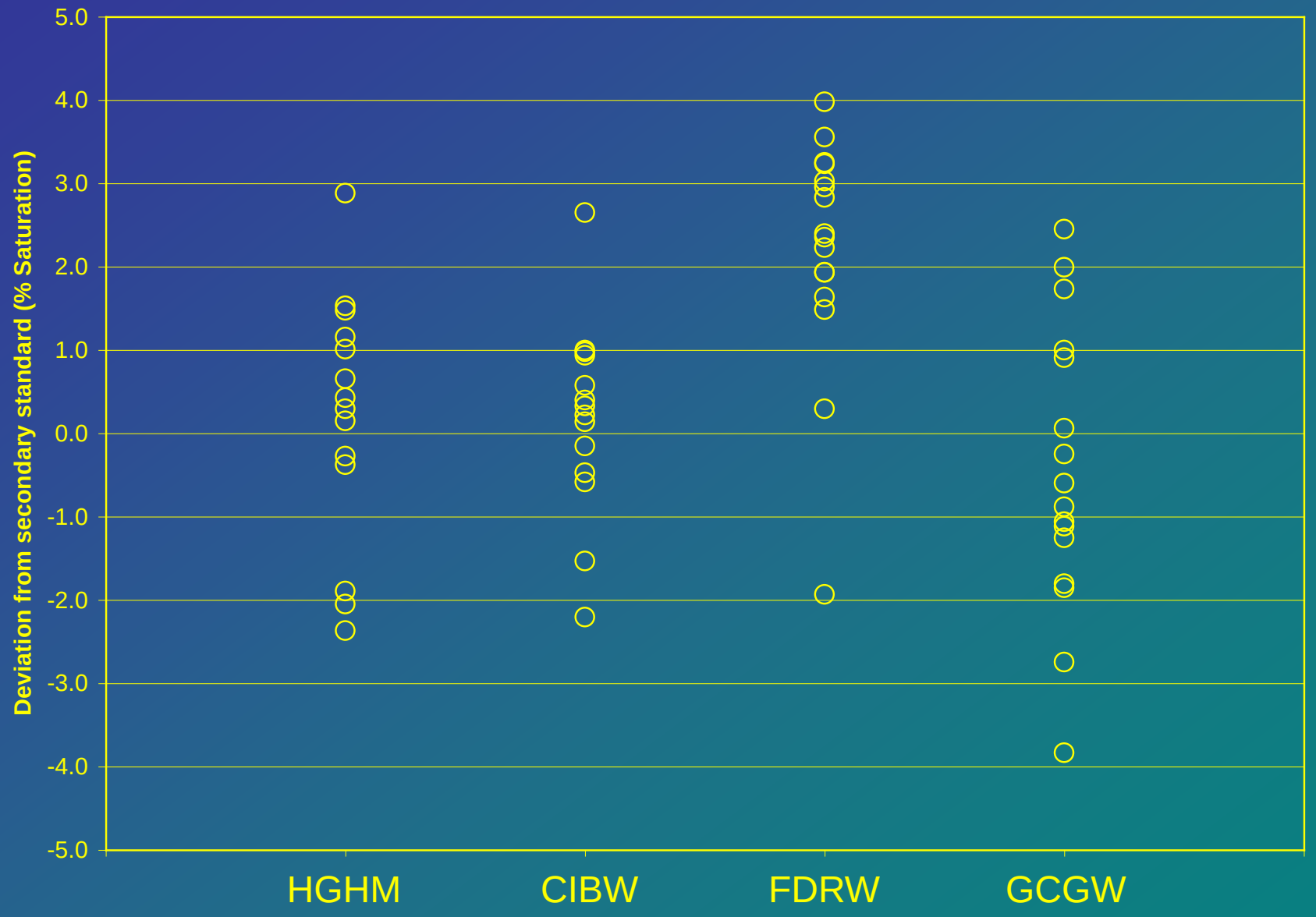
Field measurement comparisons – Atmospheric pressure



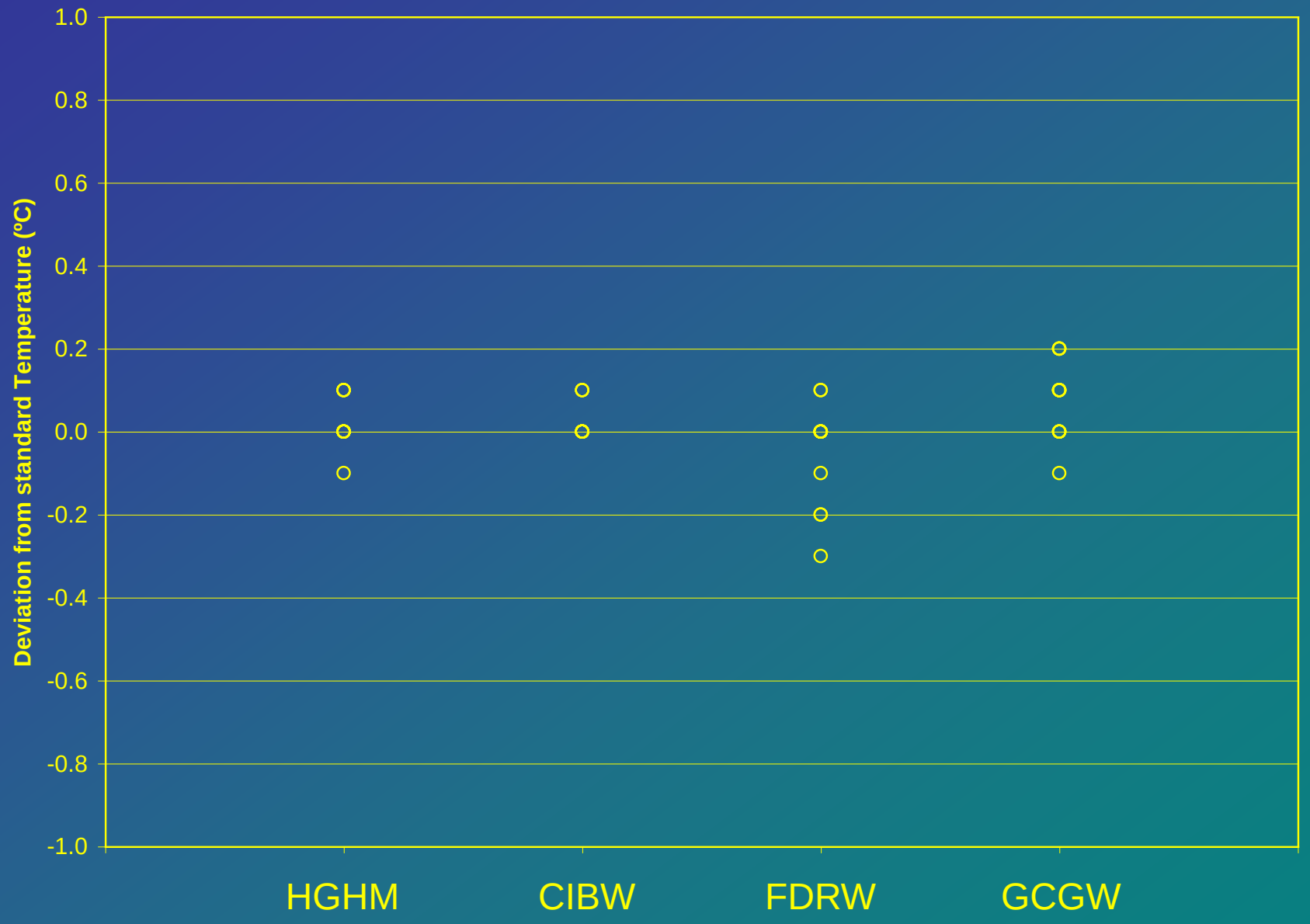
Field measurement comparisons - Temperature



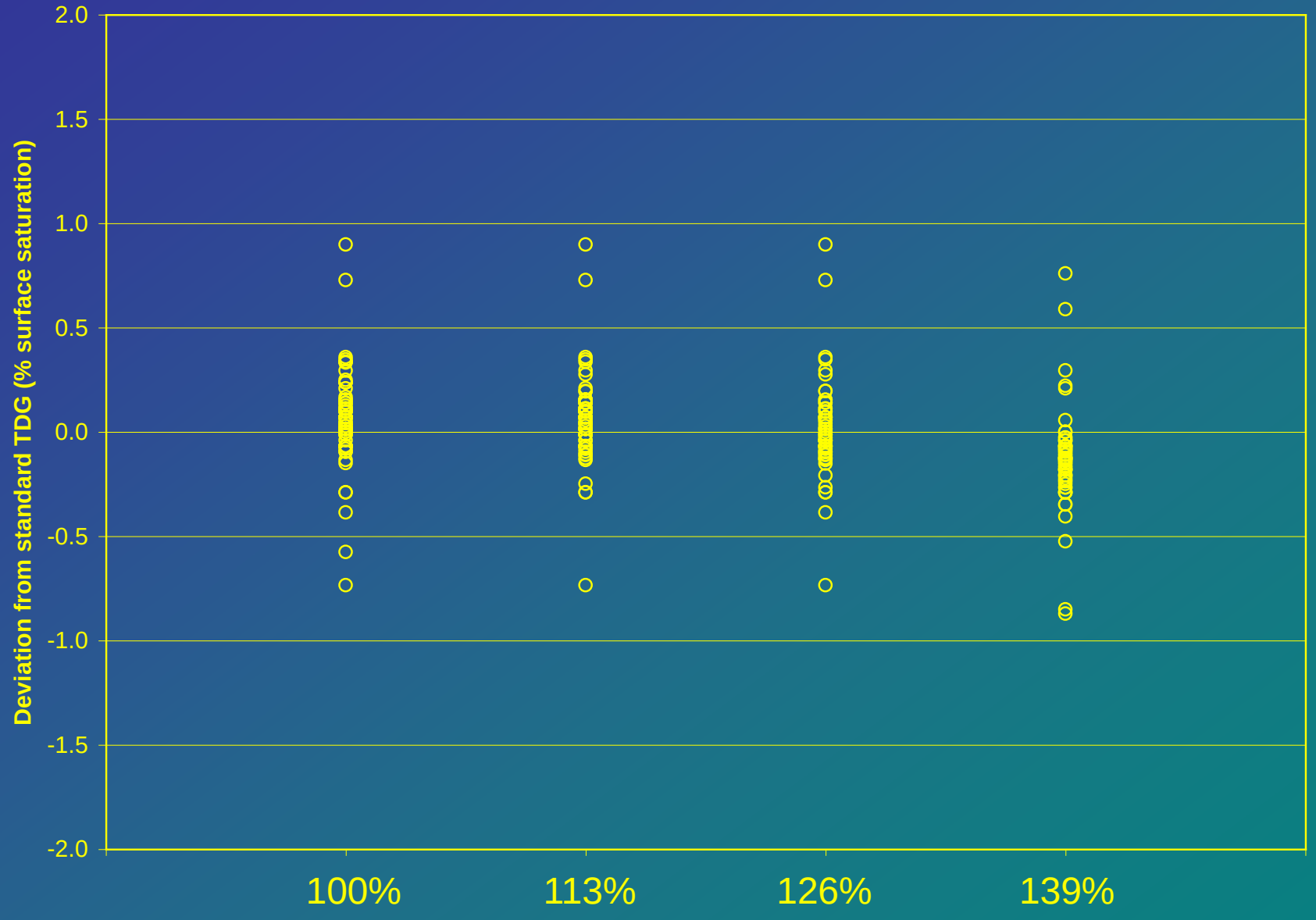
Field measurement comparisons – TDG Saturation



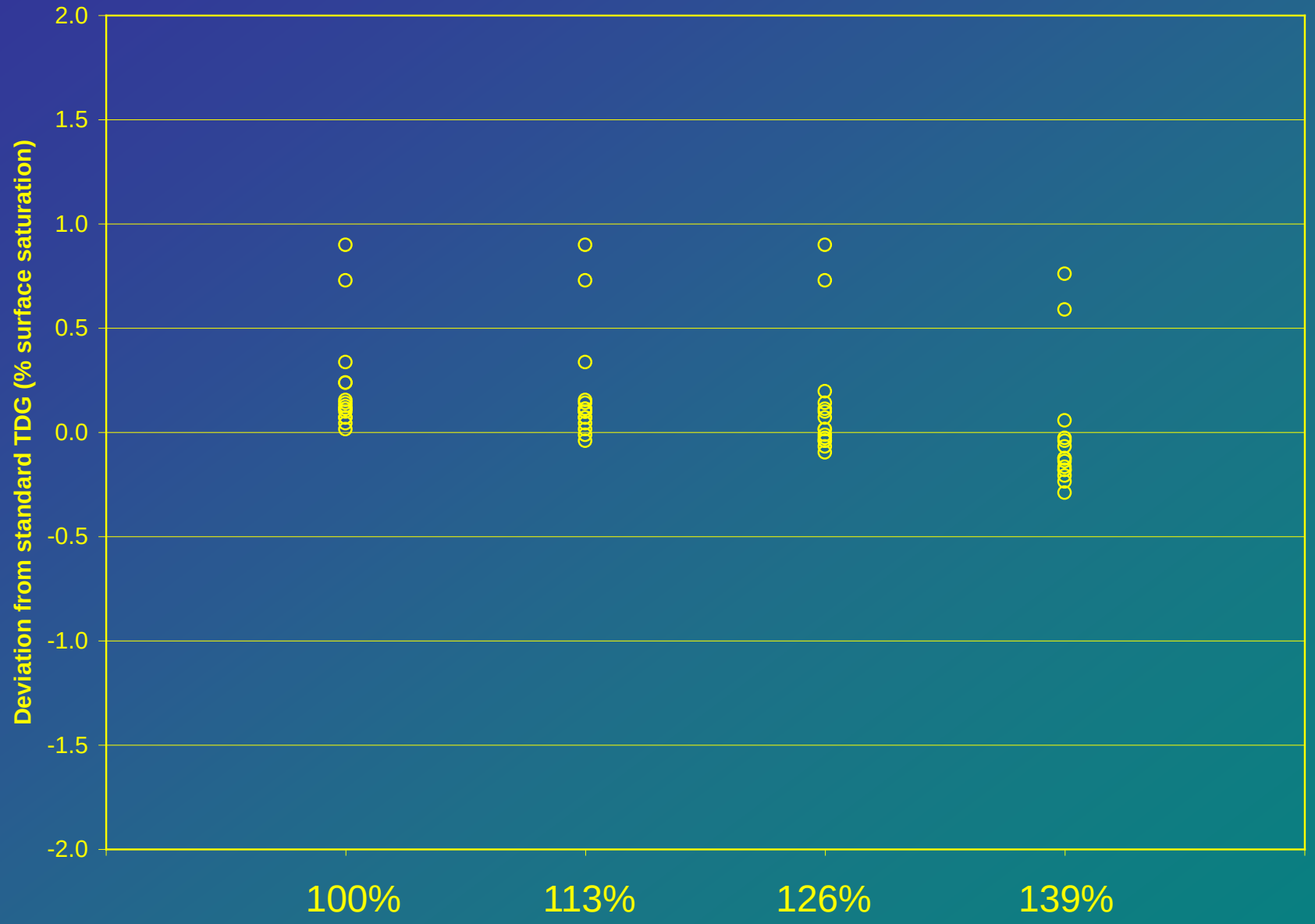
Temperature Calibration Data



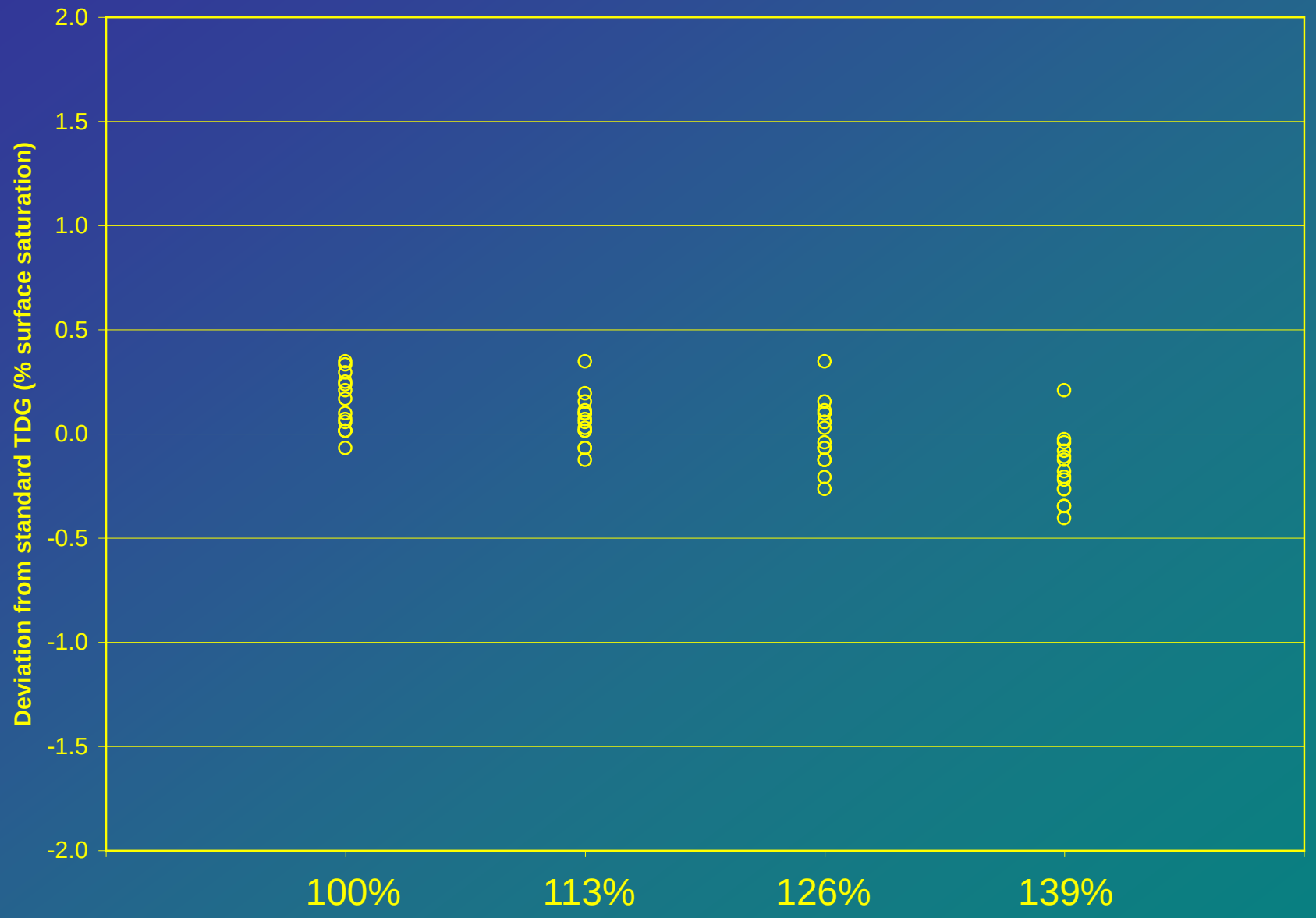
Total Dissolved Gas Calibration Data – All Data



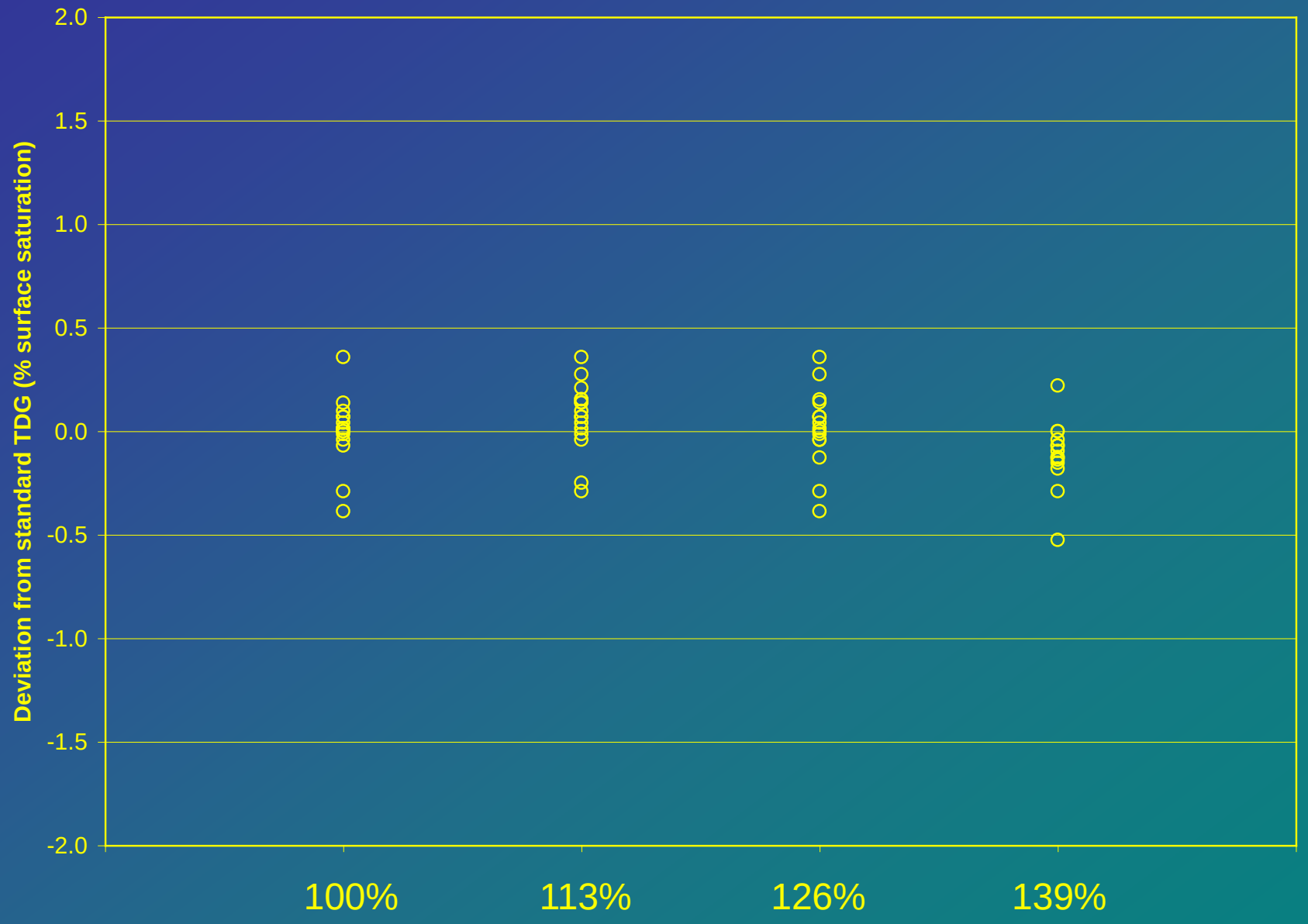
Total Dissolved Gas Calibration Data - HGHM



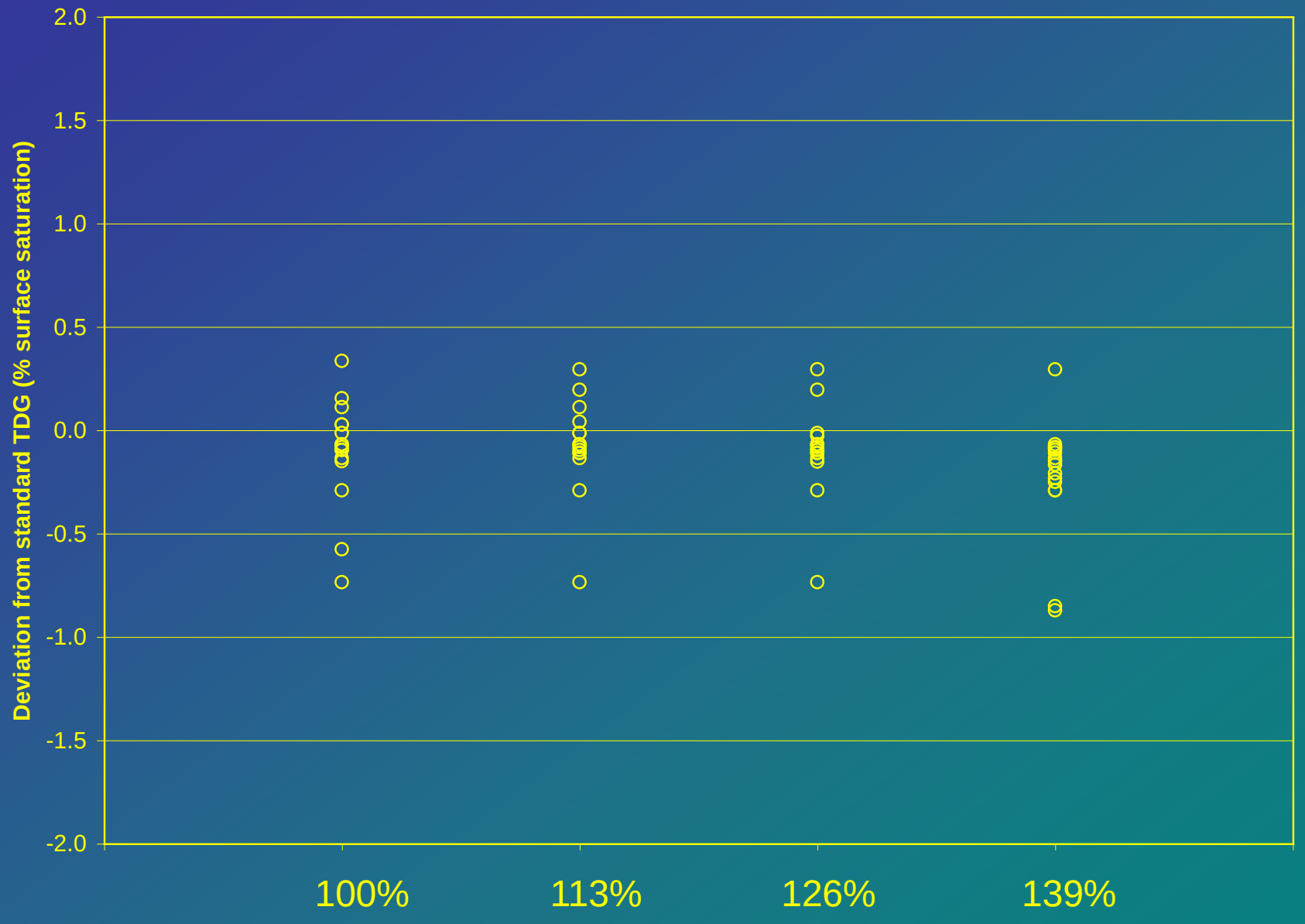
Total Dissolved Gas Calibration Data - CIBW



Total Dissolved Gas Calibration Data - FDRW



Total Dissolved Gas Calibration Data - GCGW



US Bureau of Reclamation 2012 Calibration Summaries

	Temperature (ºC)	TDG Pressure (mmHg)			
		100%	113%	126%	140%
Mean	0.02	0.06	0.06	0.01	-0.13
Median	0.00	0.06	0.07	-0.01	-0.13
Standard Deviation	0.09	0.24	0.22	0.23	0.24
Variance	0.01	0.06	0.05	0.05	0.06
Minimum	-0.30	-0.74	-0.74	-0.74	-0.87
Maximum	0.20	0.90	0.90	0.90	0.76
n	61	61	60	60	61

Problems in 2012

- GCGW – Bad TDG sensor; repaired 2/25
- GCGW – Bad temperature sensor; repaired 6/19
- GCGW – Blown fuse to DCP; repaired 6/20
- CIBW – Problem with DCP; repaired 7/23
- HGHM – Torn TDG membrane

New for 2013

- Begin transition to Hydrotech Compact MS probes
- Upgrade DCPs to Sutron 9210 and Satlink models