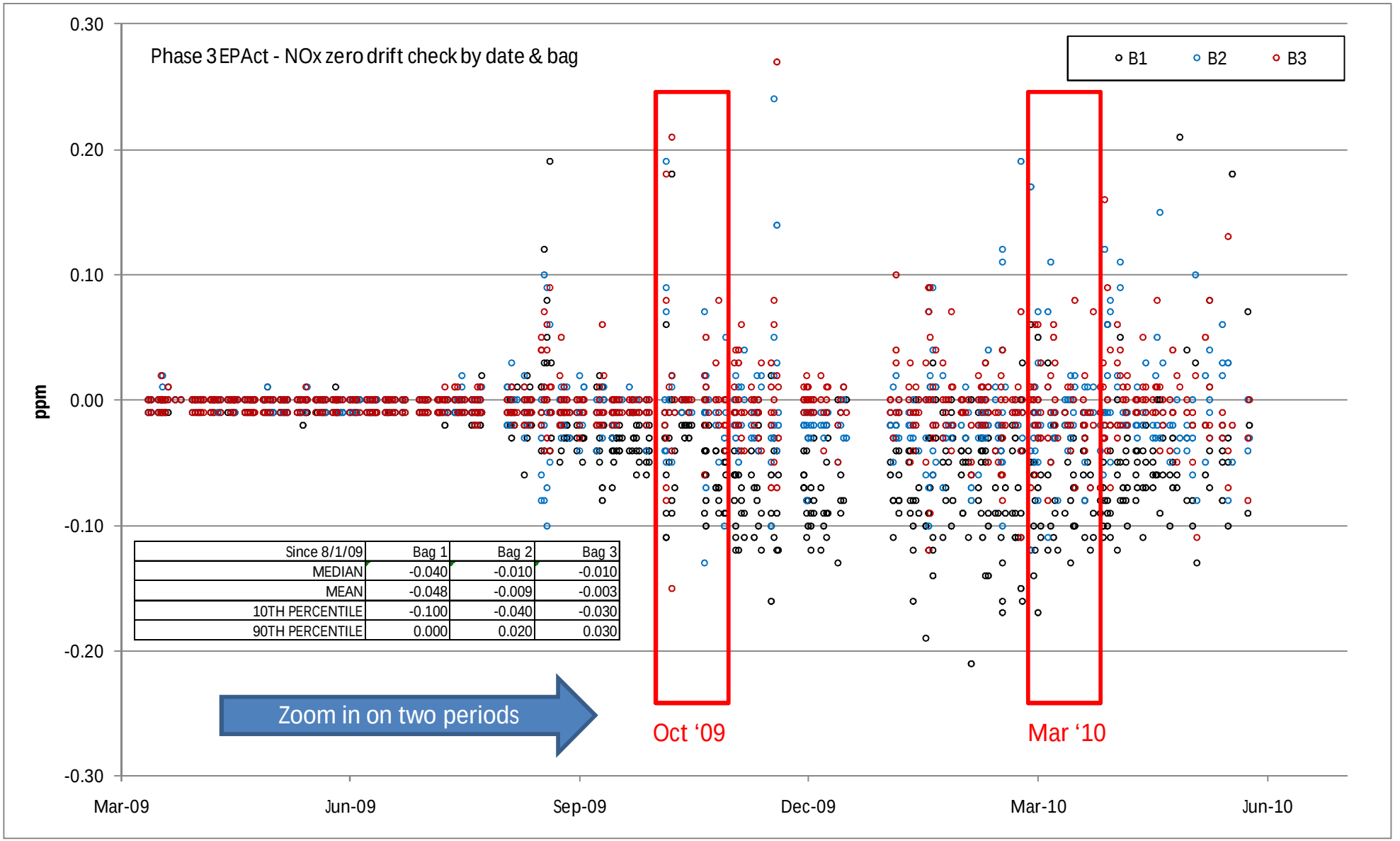
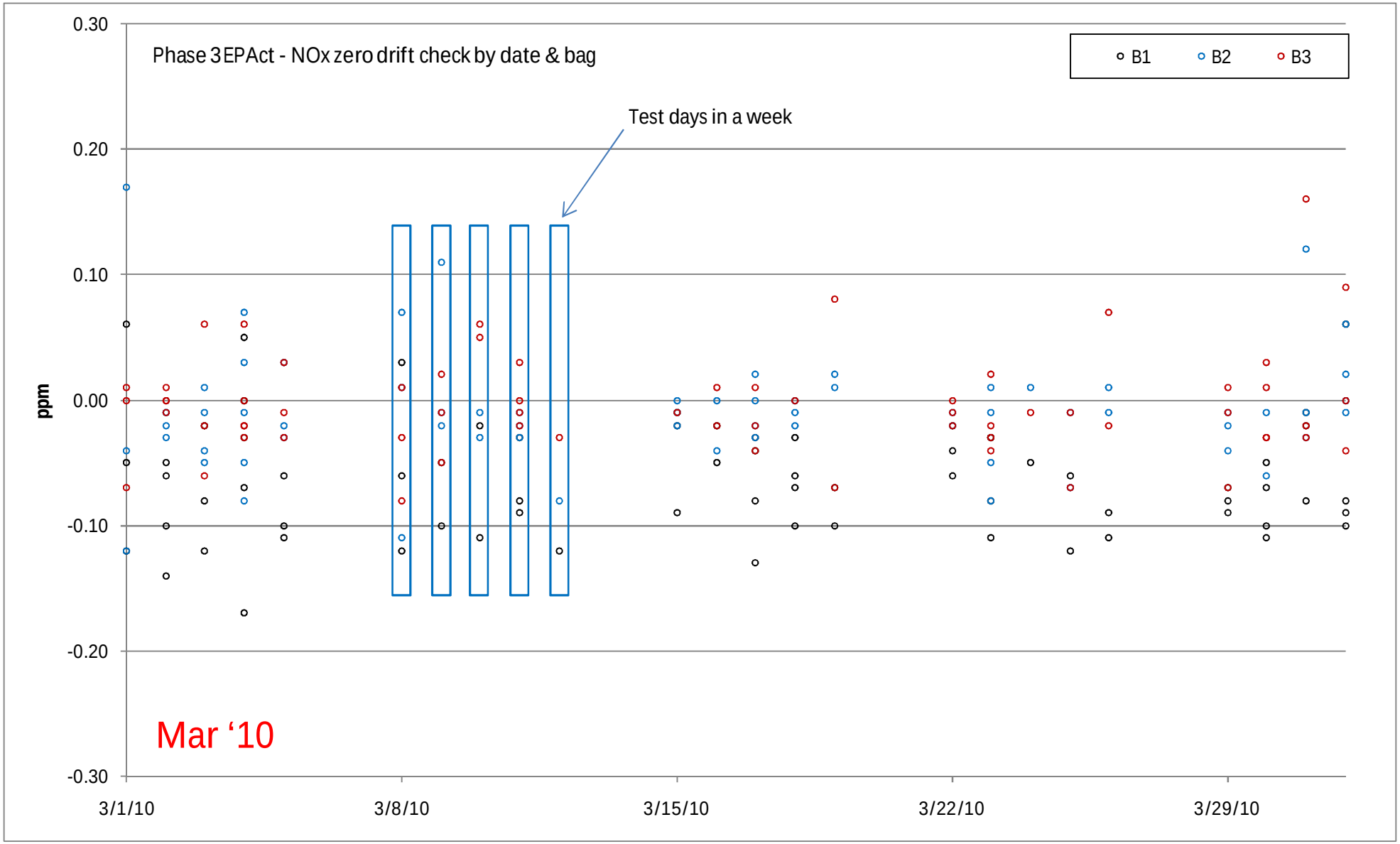
NOx Analyzer Zero Drift Behavior in EPAct/V2/E-89

NOx Zero Drift by Date & Bag

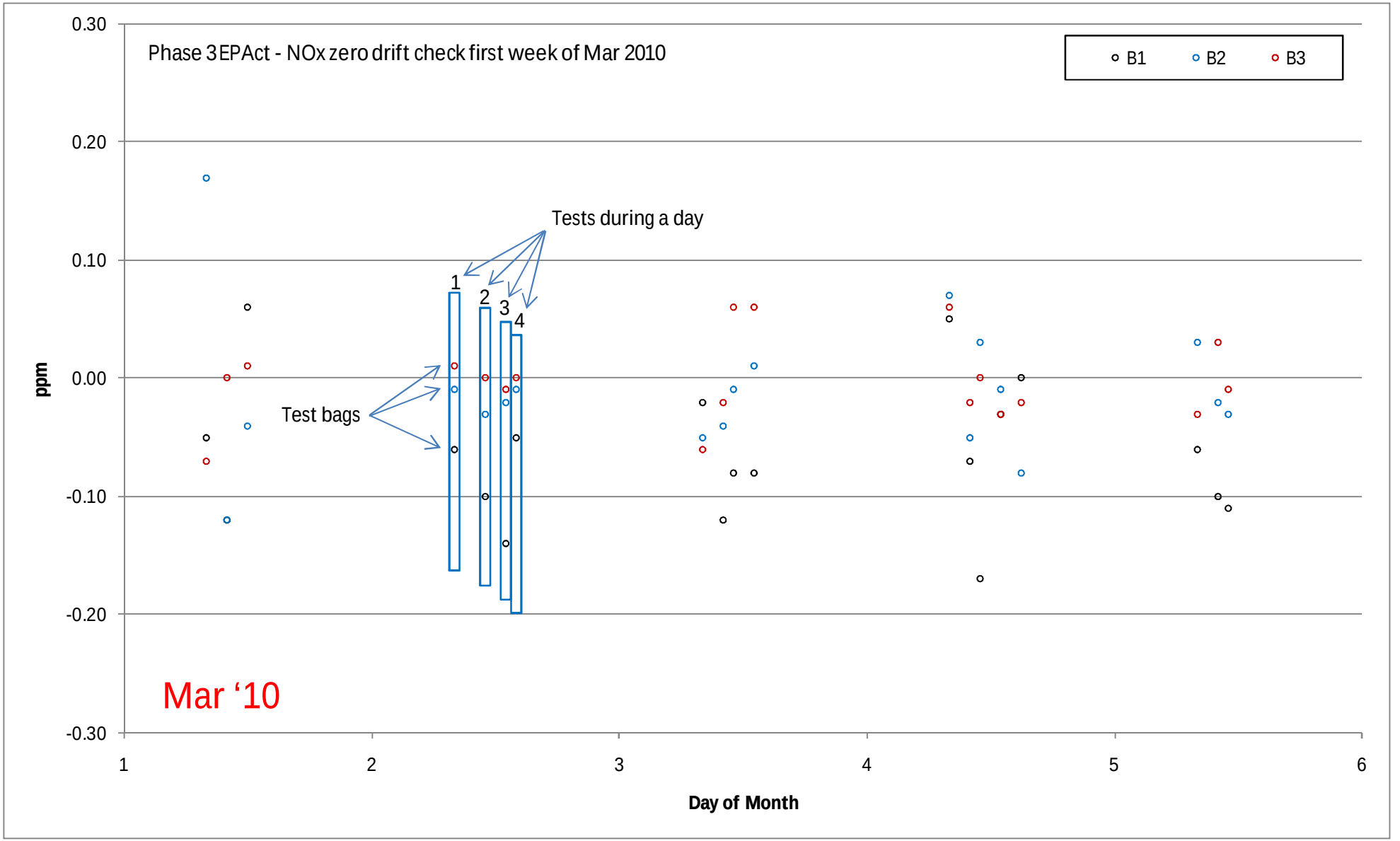


Since 8/1/09	Bag 1	Bag 2	Bag 3
MEDIAN	-0.040	-0.010	-0.010
MEAN	-0.048	-0.009	-0.003
10TH PERCENTILE	-0.100	-0.040	-0.030
90TH PERCENTILE	0.000	0.020	0.030

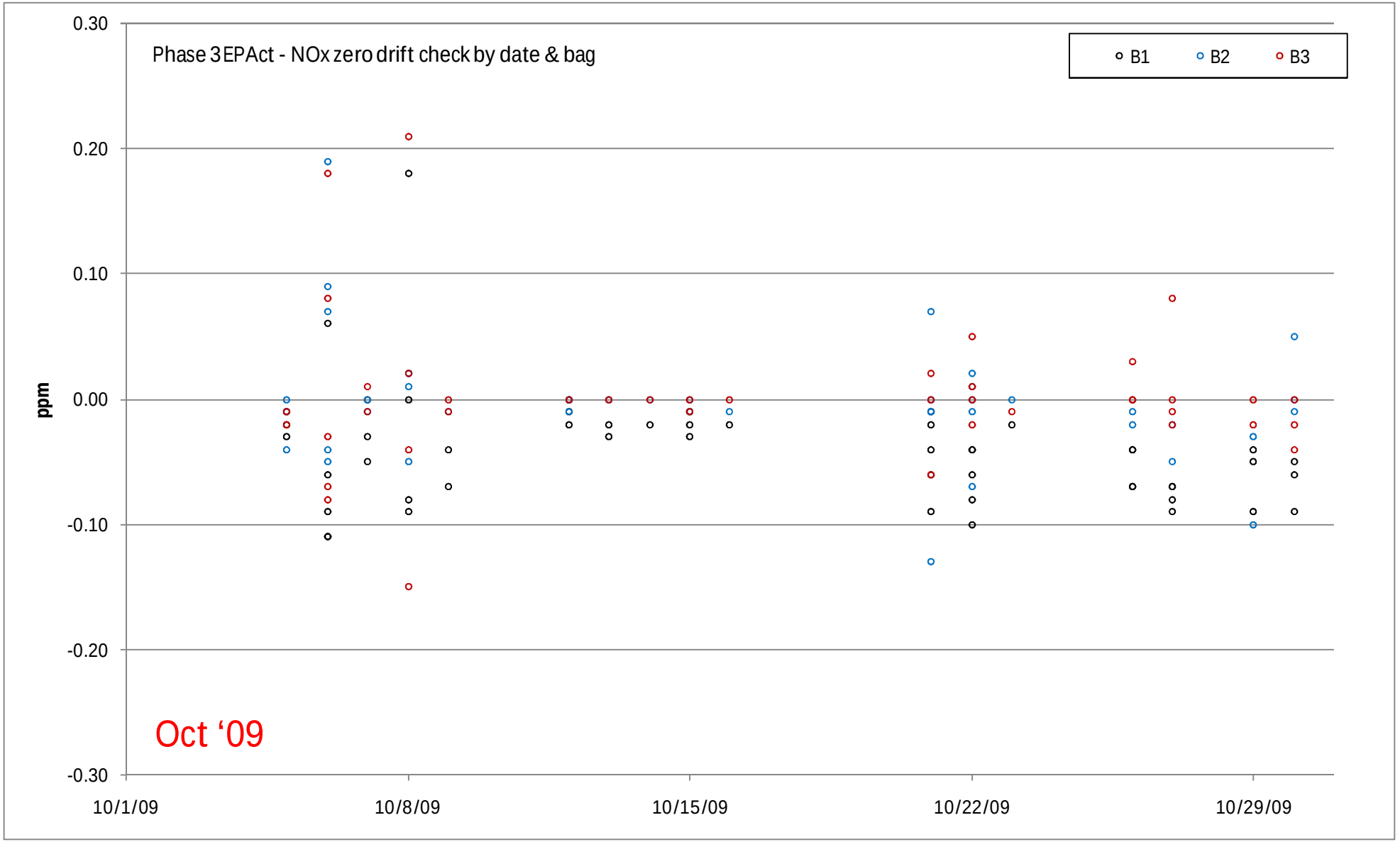
NOx Zero Drift by Date & Bag



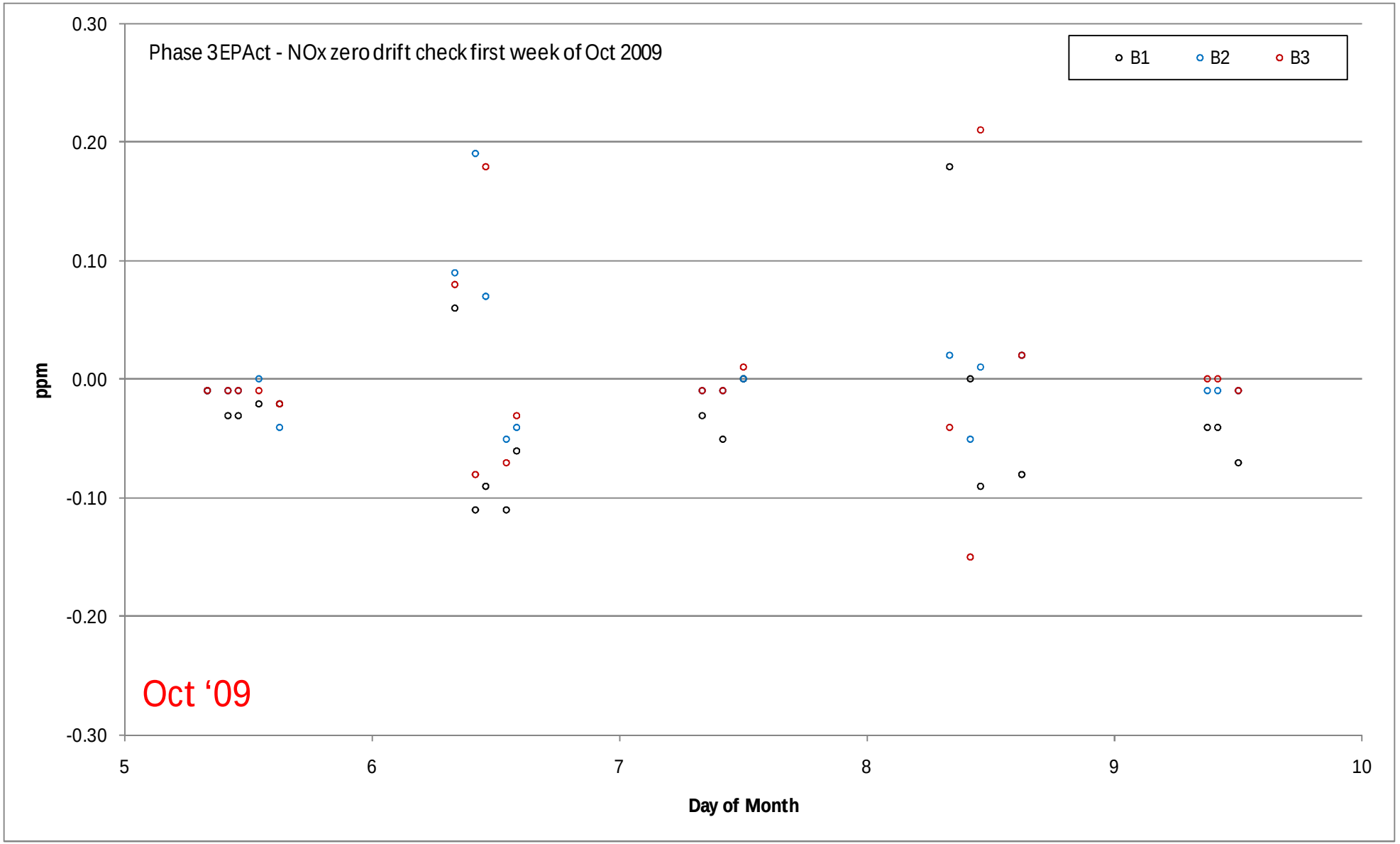
NOx Zero Drift by Date & Bag



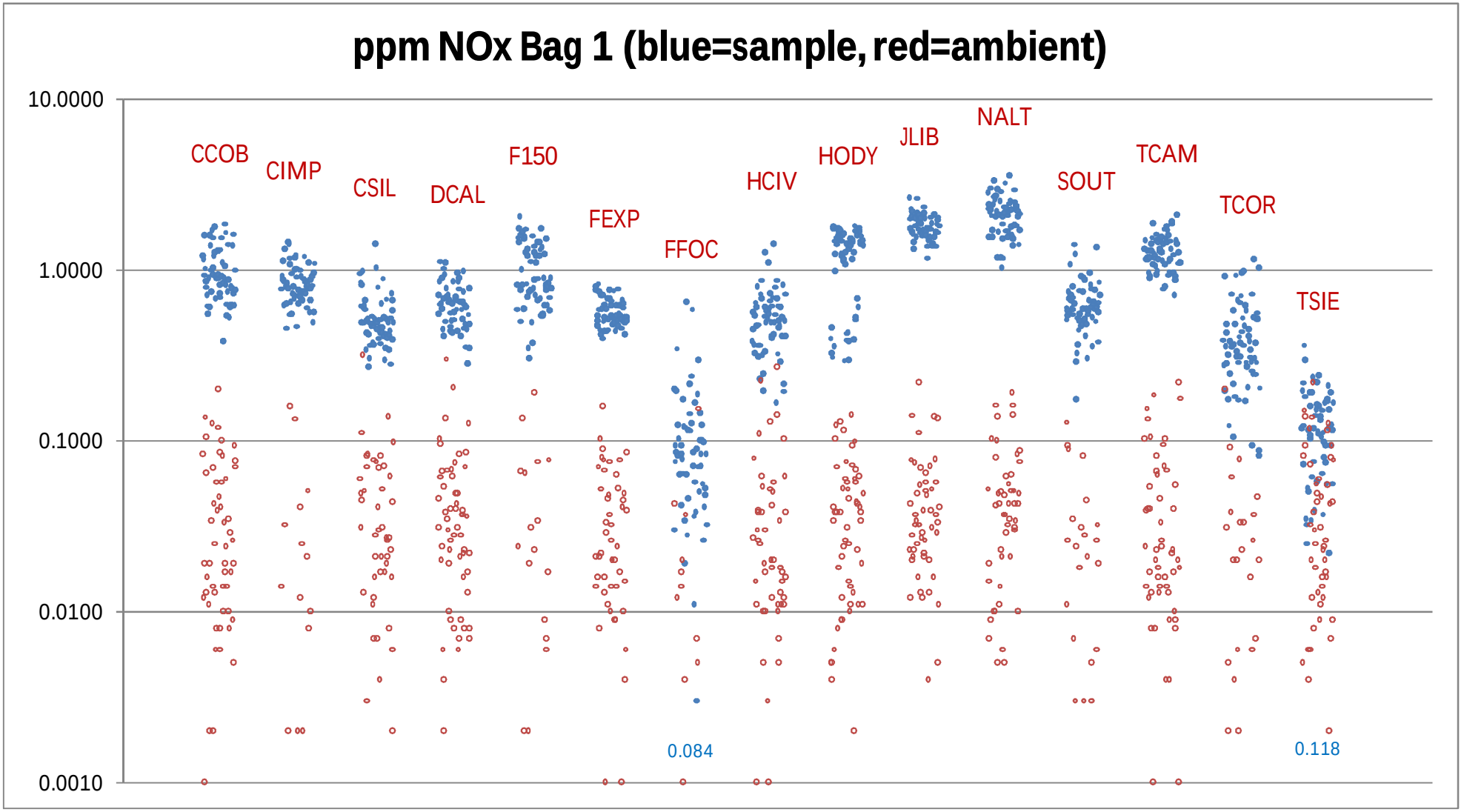
NOx Zero Drift by Date & Bag



NOx Zero Drift by Date & Bag

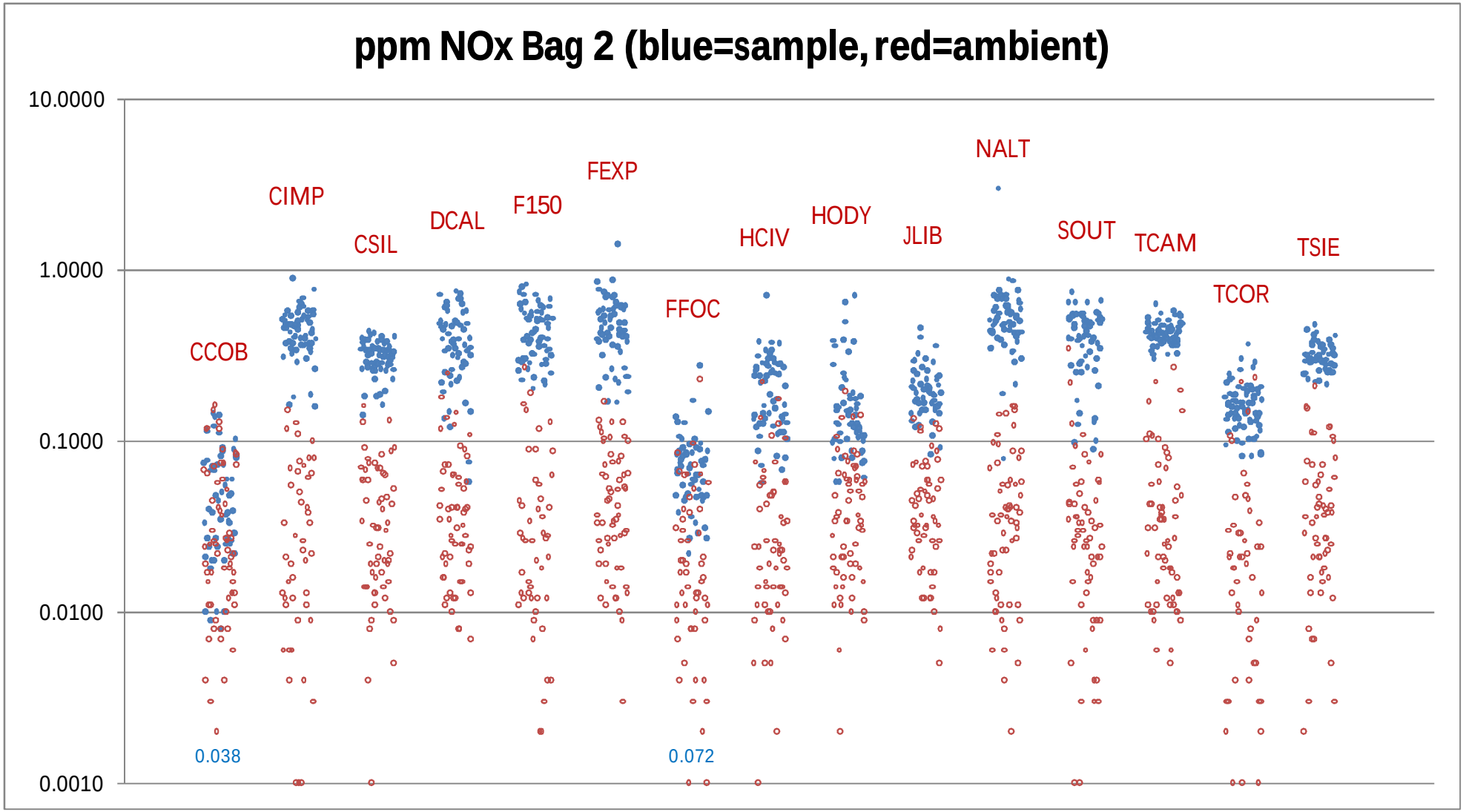


Examination of Sample and Ambient NOx



CIMP, F150, FFOC, SOUT and TCOR have >50% ambient zeros (presumably defined as a reading <0.0005)

Examination of Sample and Ambient NOx



CIMP, F150 and TCOR have >25% ambient zeros (presumably defined as a reading <0.0005)

Conclusions on NOx Zero Drift Behavior

- Zero drift does not appear to follow a predictable pattern between bags or over the course of a day
  - Most likely explanation is increased noise in analyzer electronics, suggestive of component malfunction or failure (as opposed to true systematic “drift” in signal)
    - Analyzer has been rebuilt since program data was taken, including replacement of optics and circuit boards associated with measurement reliability
    - No information is available on whether the analyzer continues to exhibit drift behavior
- It’s unclear whether the drift measurement taken at the end of each phase (shown in the plots) is representative of the measurement process during the preceding bag reads
  - Trying to correct the data may not improve precision of measurements significantly