

**Mack Surveillance Panel  
Teleconference Meeting Minutes  
June 20, 2013**

**Attendance**

Allison Athey, Zack Bishop, Bob Campbell, Chris Cauley, Mark Cooper, Jim Gutzwiller, Kurt Johnson, Jim Matasic, Jim McCord, Jim Moritz, Sean Moyer, Jim Rutherford, Elisa Santos, Greg Shank, Mark Sutherland, Robert Warden, Bob Salgueiro, Jim McCord

**Agenda**

***Review Jim Rutherford presentation on UUXO hardware***

- Jim Rutherford reviewed his presentation on Mack T12 reference data with the new UUXO HW data (included as attachment 1).
- There were questions brought up about the ring gaps and whether they are measure by TEI before delivery to the labs. TEI stated that they measure initial ring gap and the data is included in kits. TEI was asked if the ring reject rate due to out of tolerance ring gaps had changed and TEI stated that it had not.
- There was a discussion about looking at initial ring gap data for any correlation to higher OC. It was decided that this was a good idea. Jim Rutherford to add this to the data he presented.
- It was also discussed about looking at total bearing weight loss vs. Lead concentrations. This data will also be added to the analysis.

-There was discussion about whether to utilize UUXO hardware and if utilized how to implement the new hardware. The general consensus was to go ahead and use this hardware for the T11.

**Motion by Jim Matasic and 2<sup>nd</sup> by Bob Campbell :**

**Effective today (6/20/2013) UUXO HW is available for engine builds but must be run in a reference test first. Any time left over on old HW at the time of an UUXO rebuild will be added back to subsequent reference periods.**

**Motion passed with no objections. TMC waived.**

- There was discussion about whether to proceed with ordering more U liners to be used for the T11. The decision was made to go ahead an order more U liners. No decision was made on quantity of liners to be ordered.
- The decision was made to update T11 targets with data from all available valid tests.
- There was a question asked about industry correction factors and calculation methods and whether to remove old labs from targets. No decision was made on this subject

-There was discussion about the path forward for addressing/looking into rings and piston crowns to determine if there is anything that could be affecting the test. Volvo will reach out to both suppliers again to start discussion and possibility of doing same exercise with them as was done with liner supplier.

### ***T-8 piston change***

-TEI presented information regarding T8 pistons. They are now ordered as a kit instead of individual parts. The new pistons that TEI is receiving have a slightly different coating. These pistons are coming from a new domestic supplier.

### ***Face to face meeting in July***

- It was decided that another conference call would be scheduled for July 2<sup>nd</sup>.
- The face to face meeting is to be held July 10<sup>th</sup>-11<sup>th</sup> in San Antonio.



**Oronite**

**ATTACHMENT 1**

## **Mack T12 Reference Data**

Jim Rutherford

6/18/2013



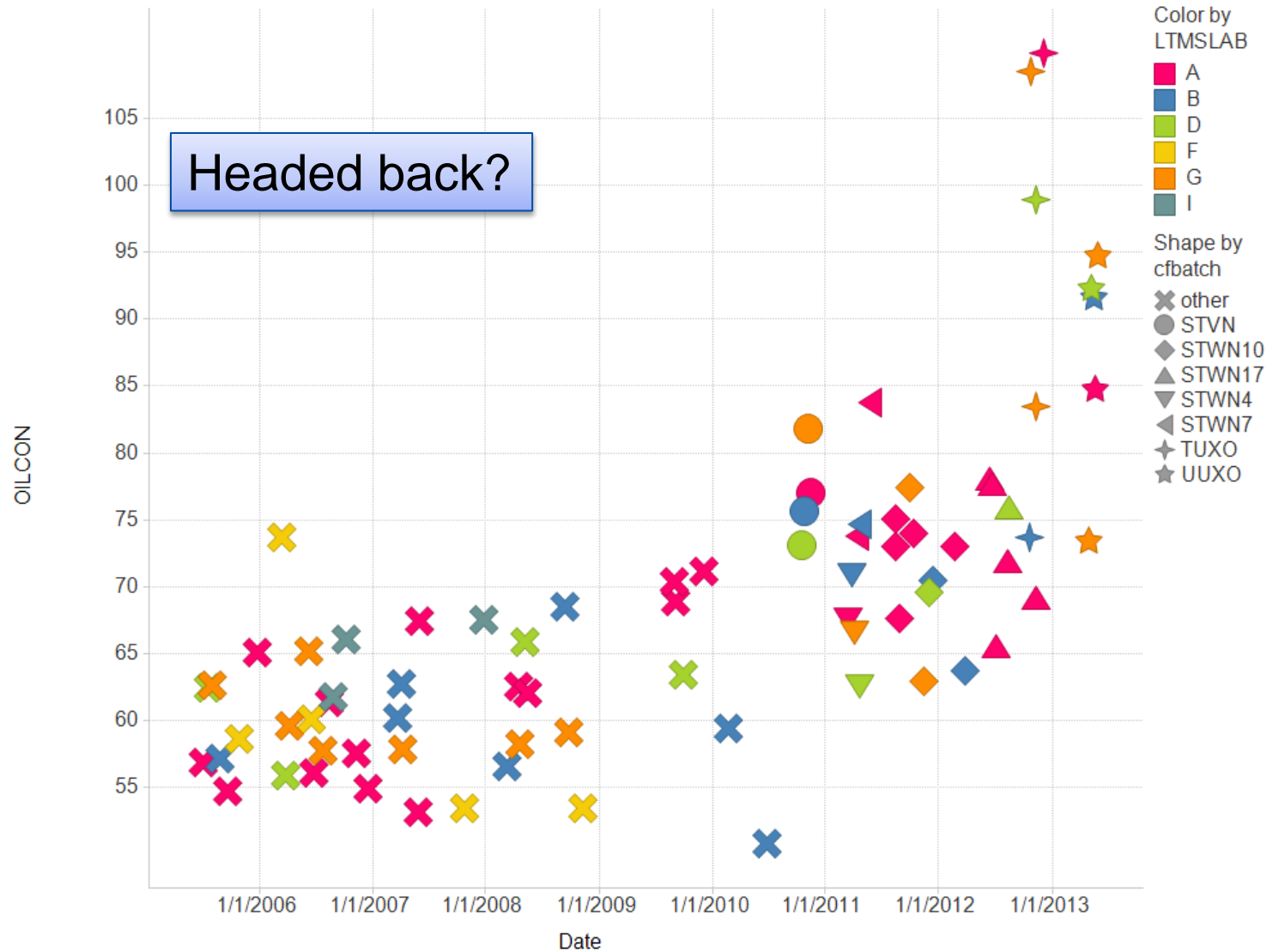
# Overview

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- § Data: 821 and variants, valid tests, sort of chartable
- § The five criteria with the last test added and merits tacked on the end
- § OC versus Pb
- § Ring Gaps
- § Precision by batch
- § Main bearings
- § Soot, Fe, and Pb over time
- § Industry correction factors?

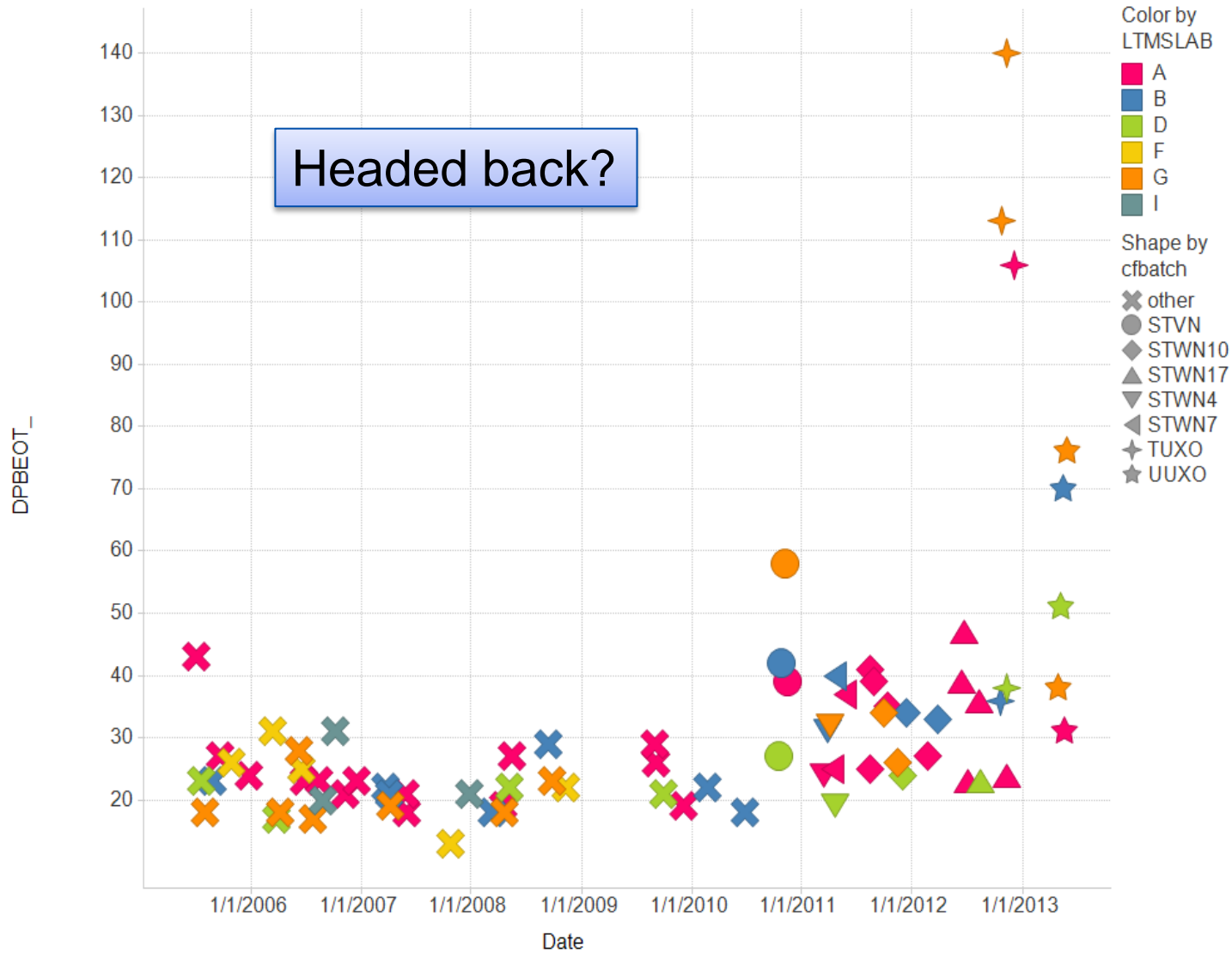


# Oil Consumption



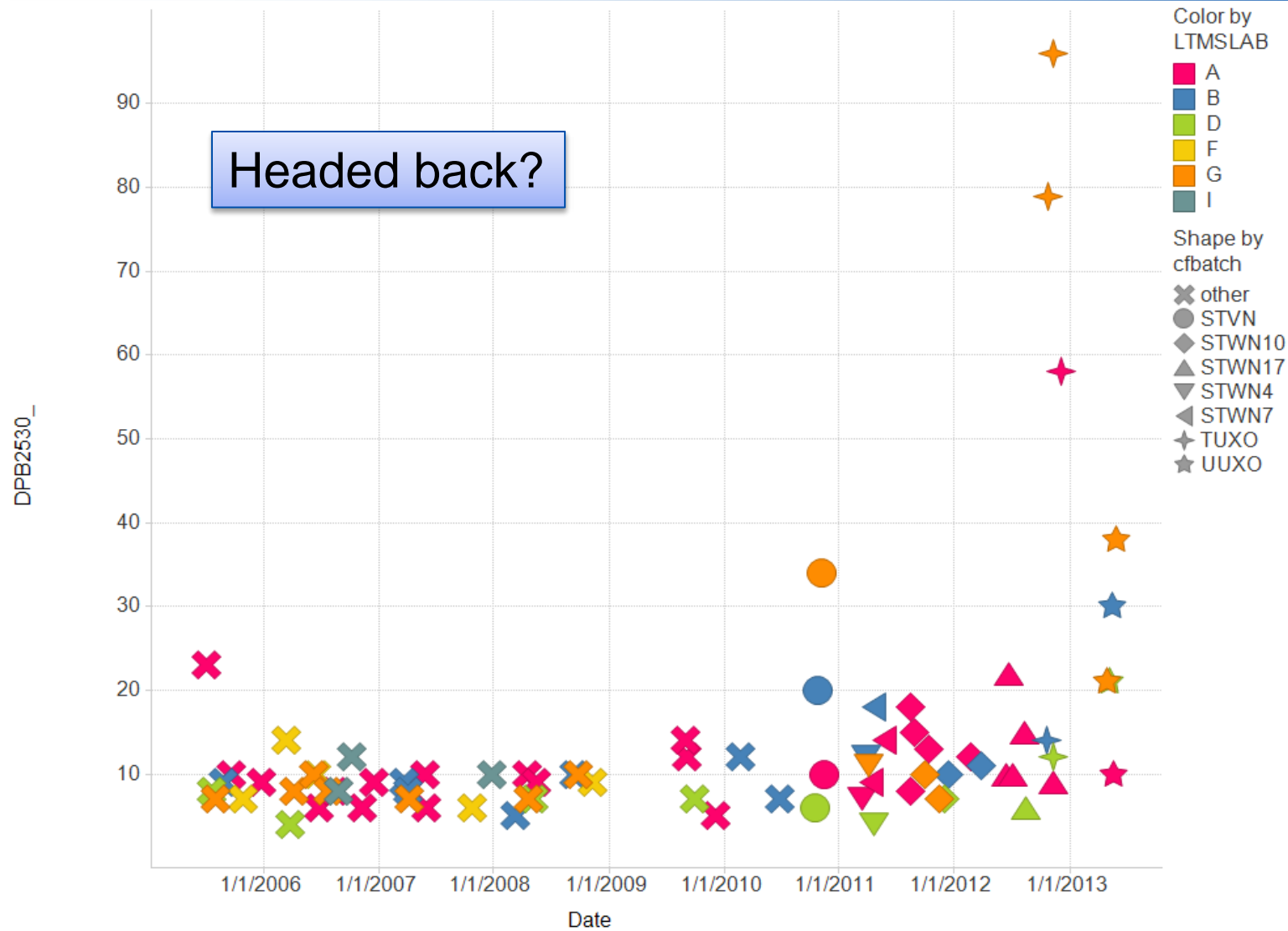


# Lead 0 to 300



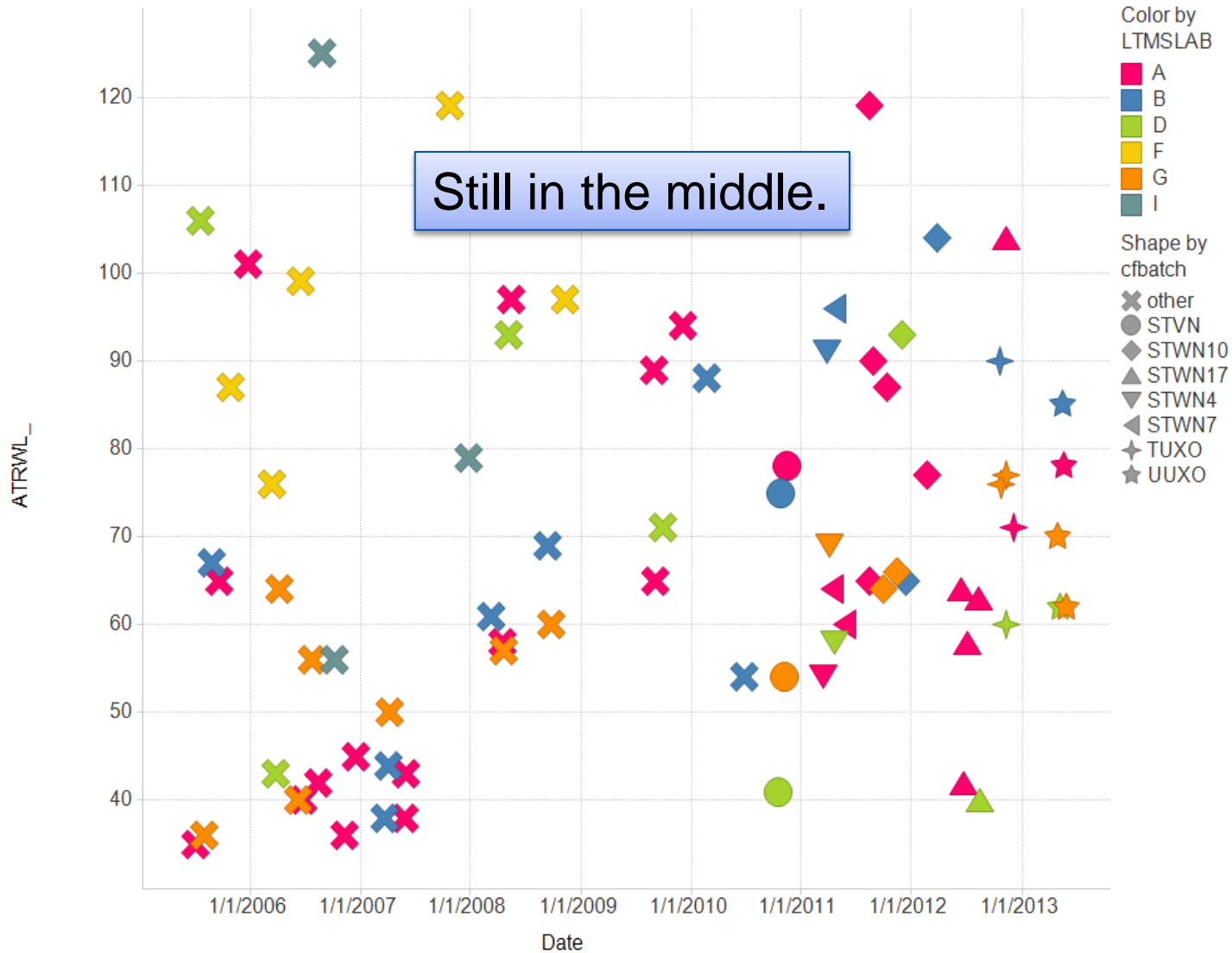


# Lead 250 to 300





# Top Ring Weight Loss

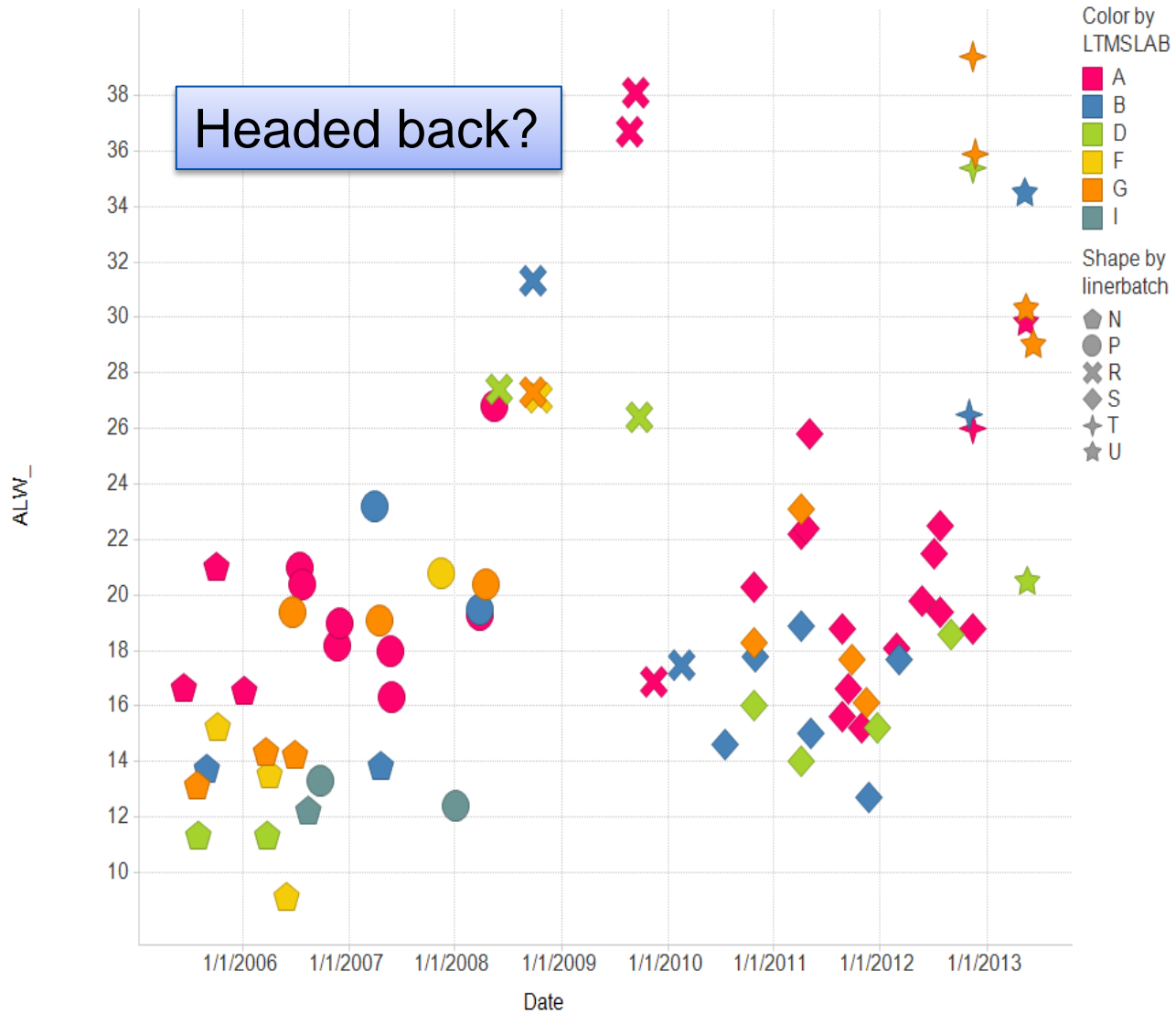




# Liner Wear



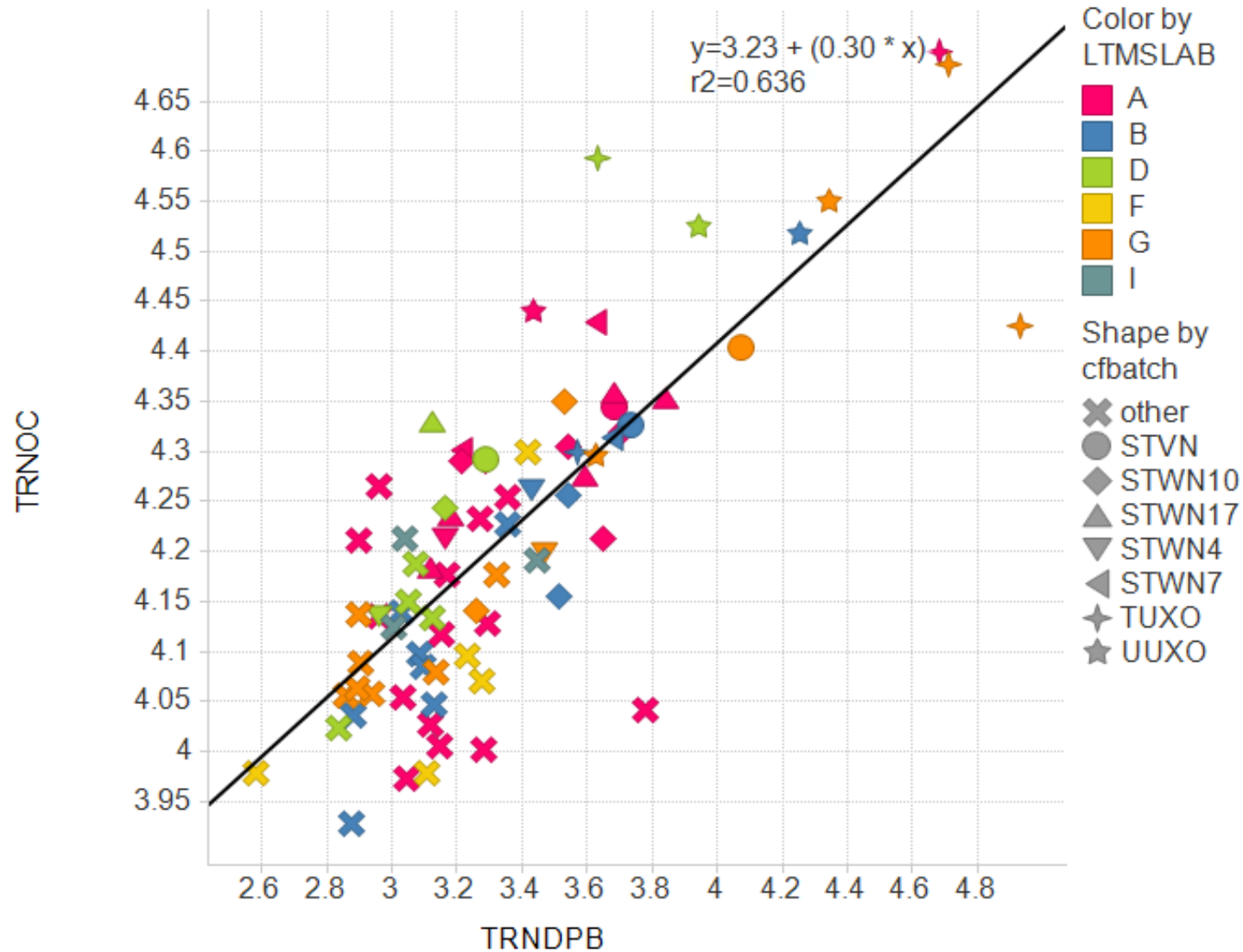
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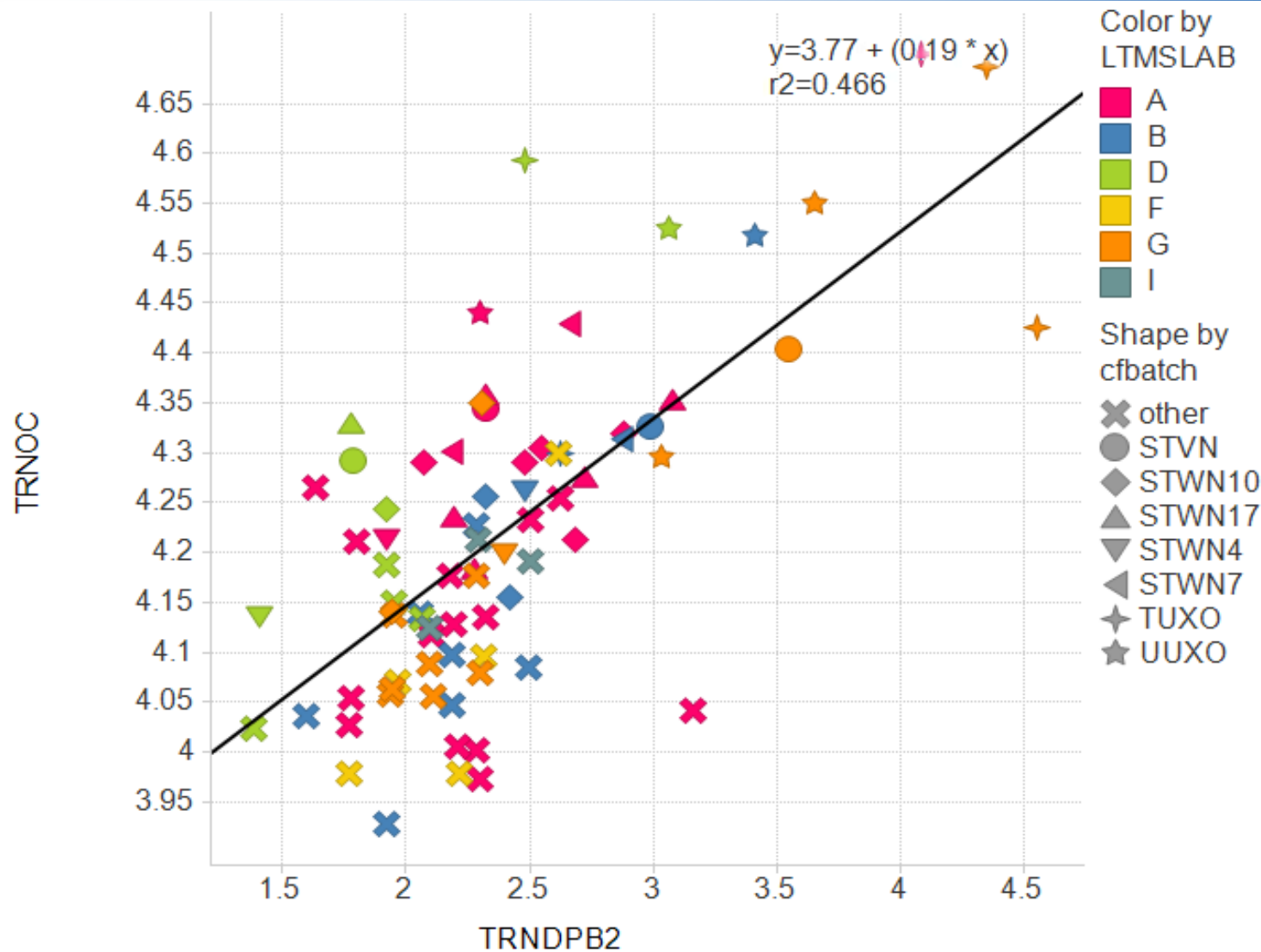


# OC versus Pb





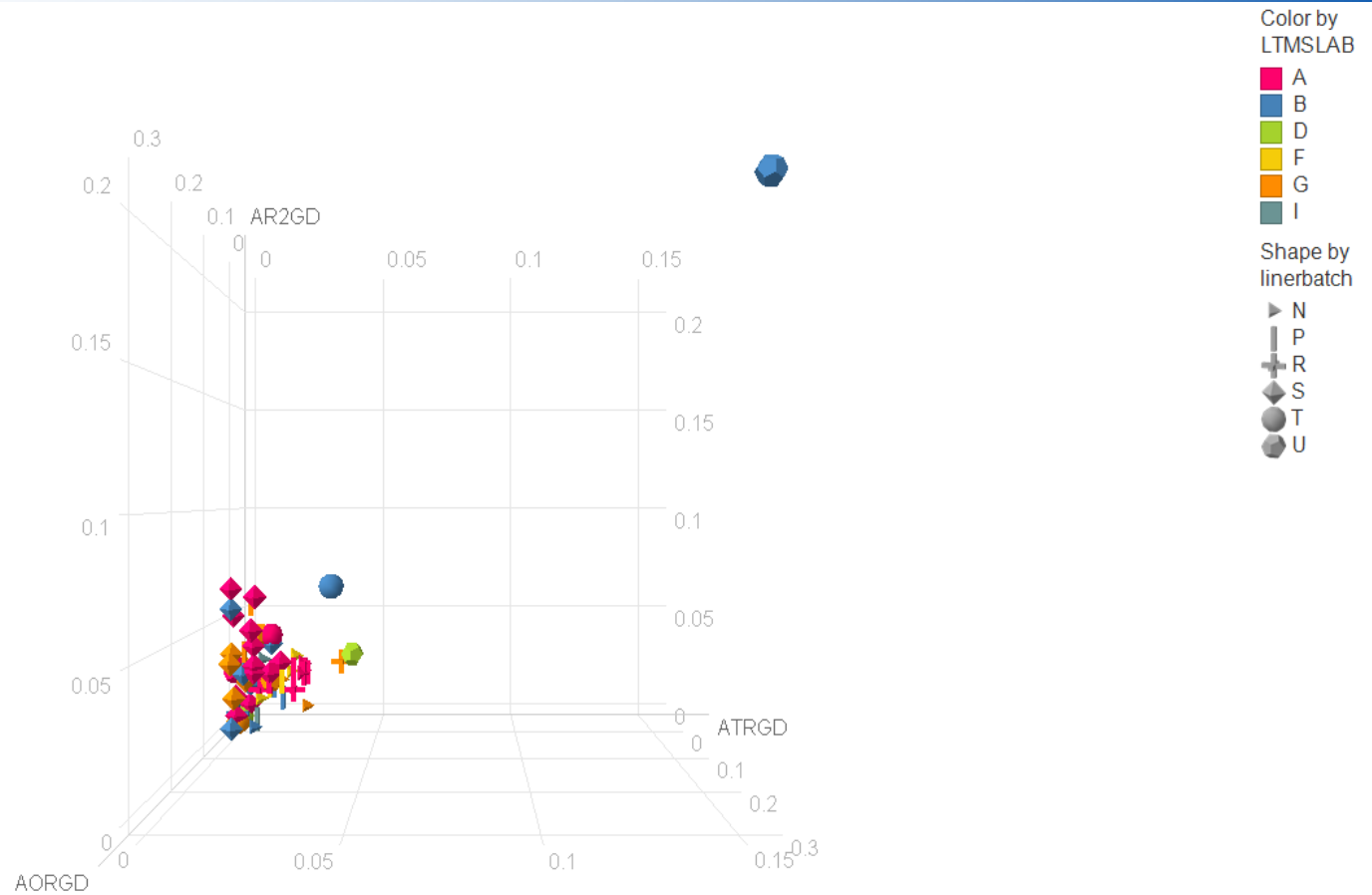
# OC versus Pb2



# Ring gaps



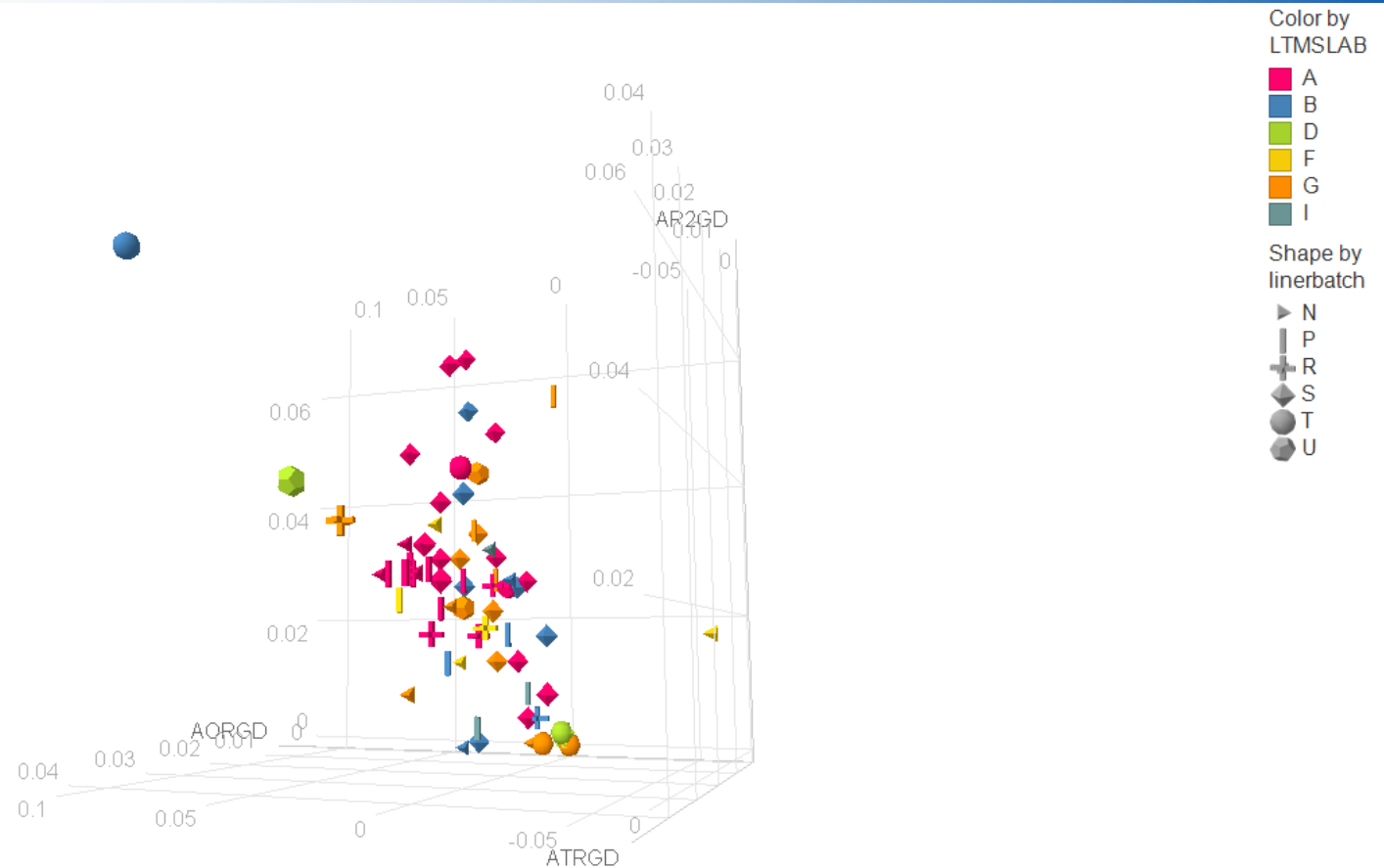
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# Ring gaps

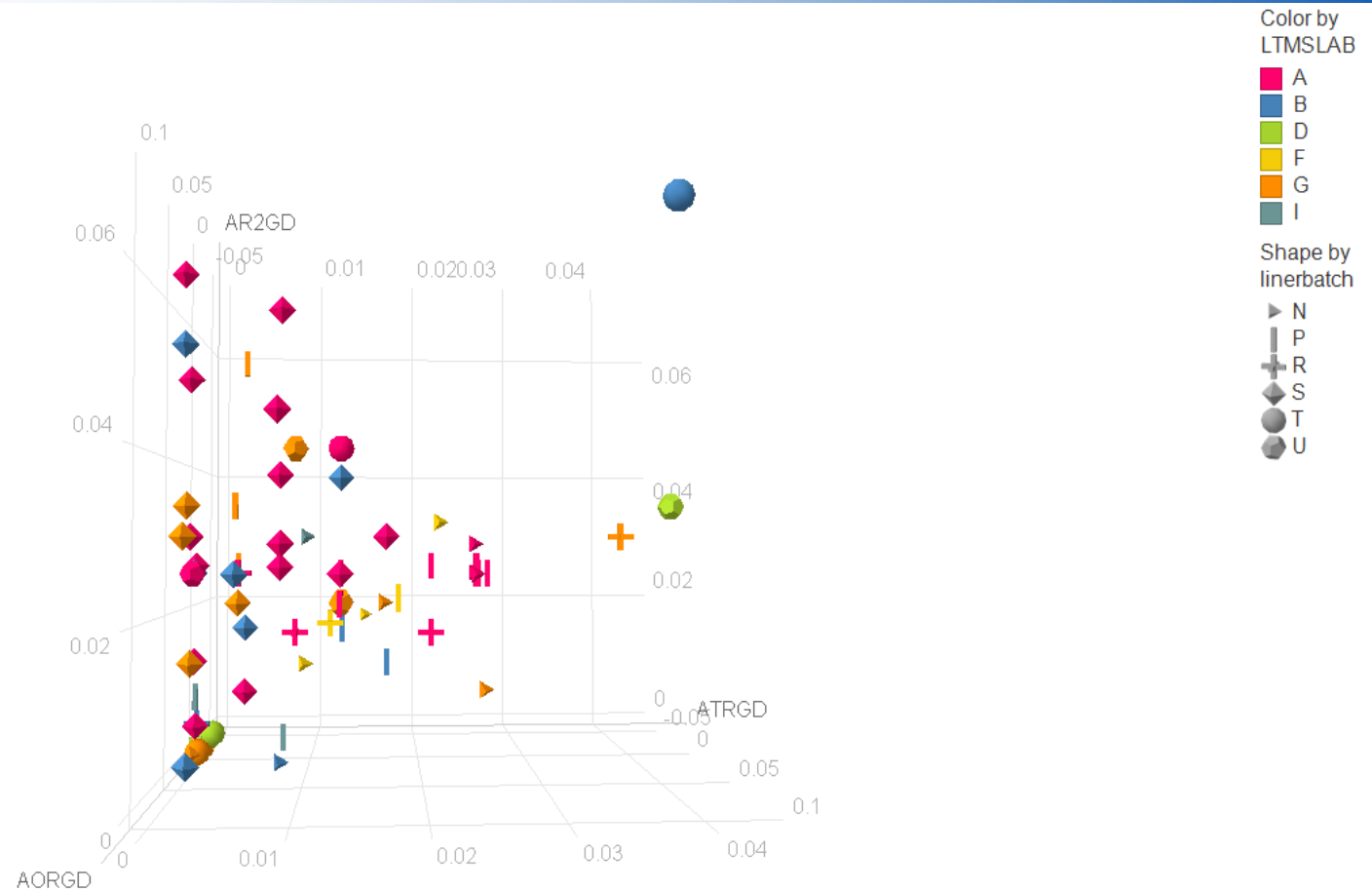


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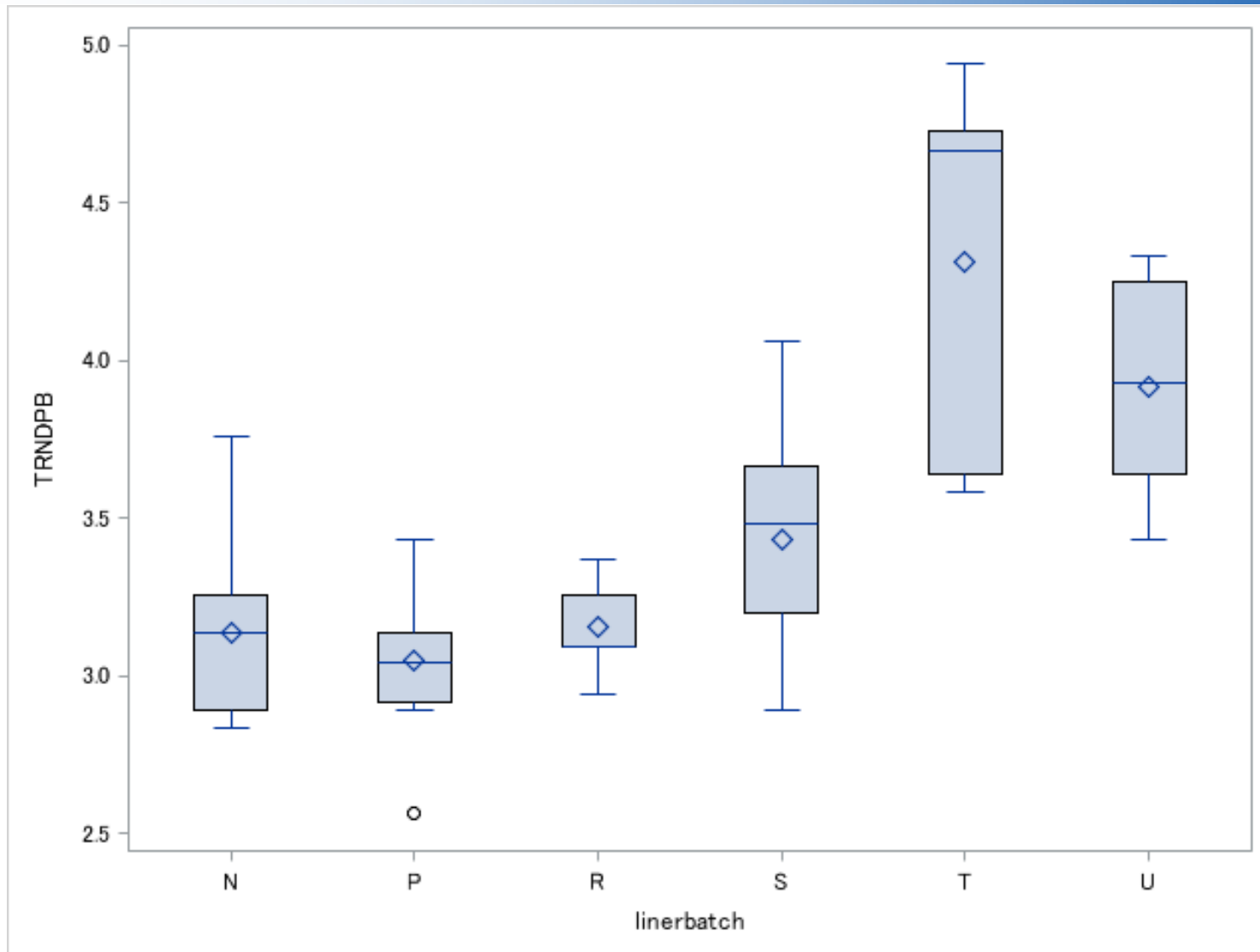


# Ring gaps





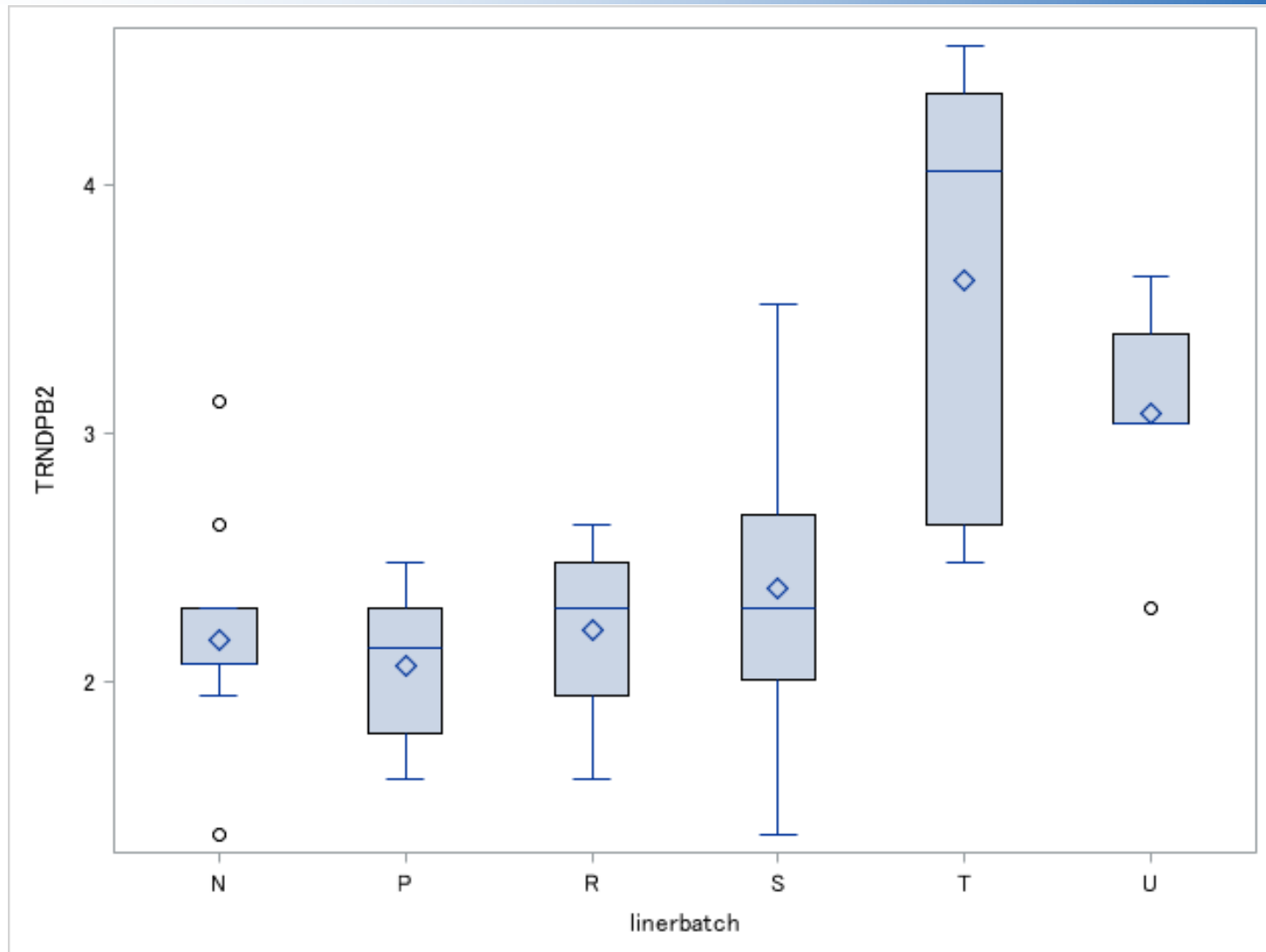
# Precision





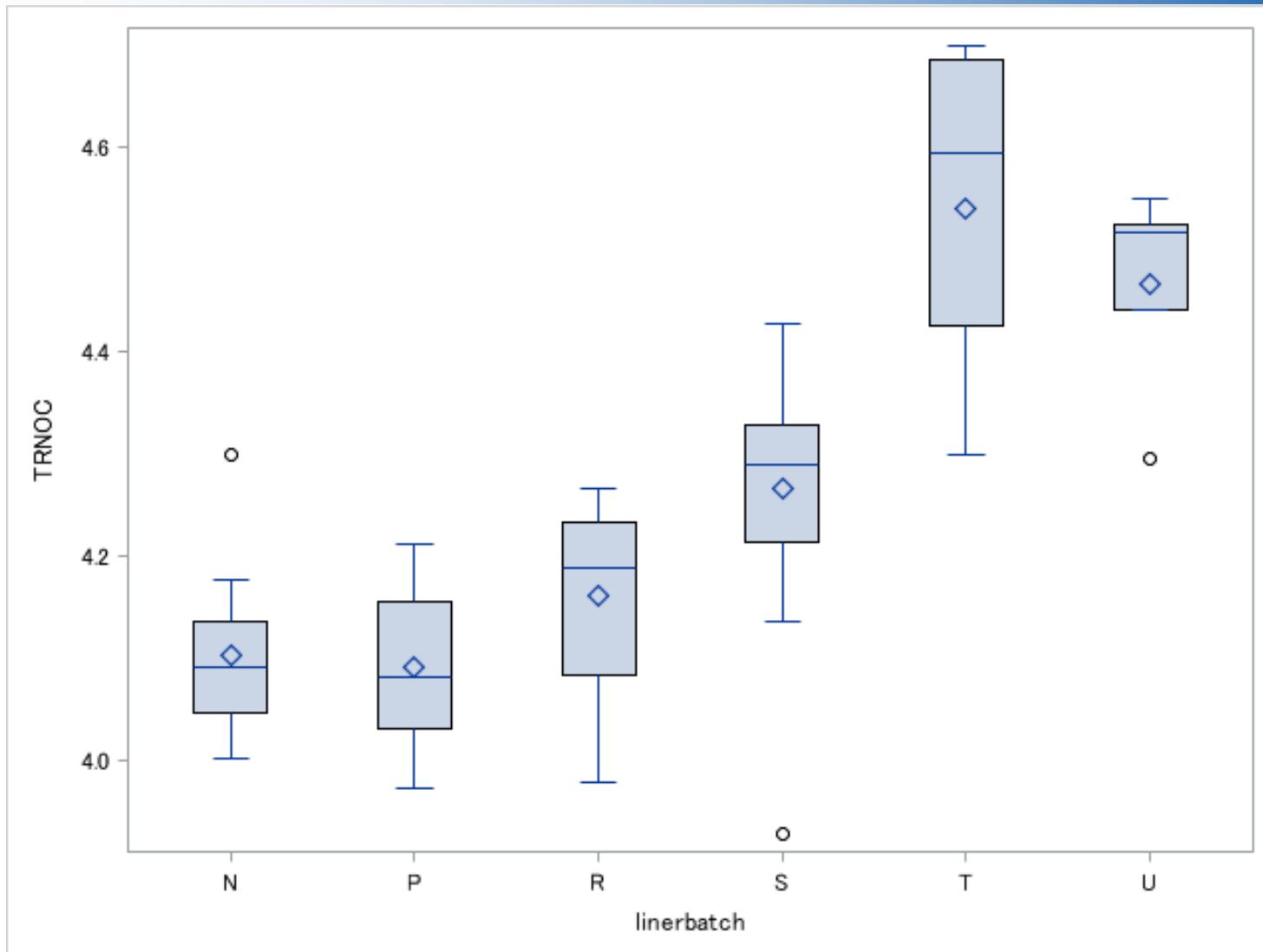


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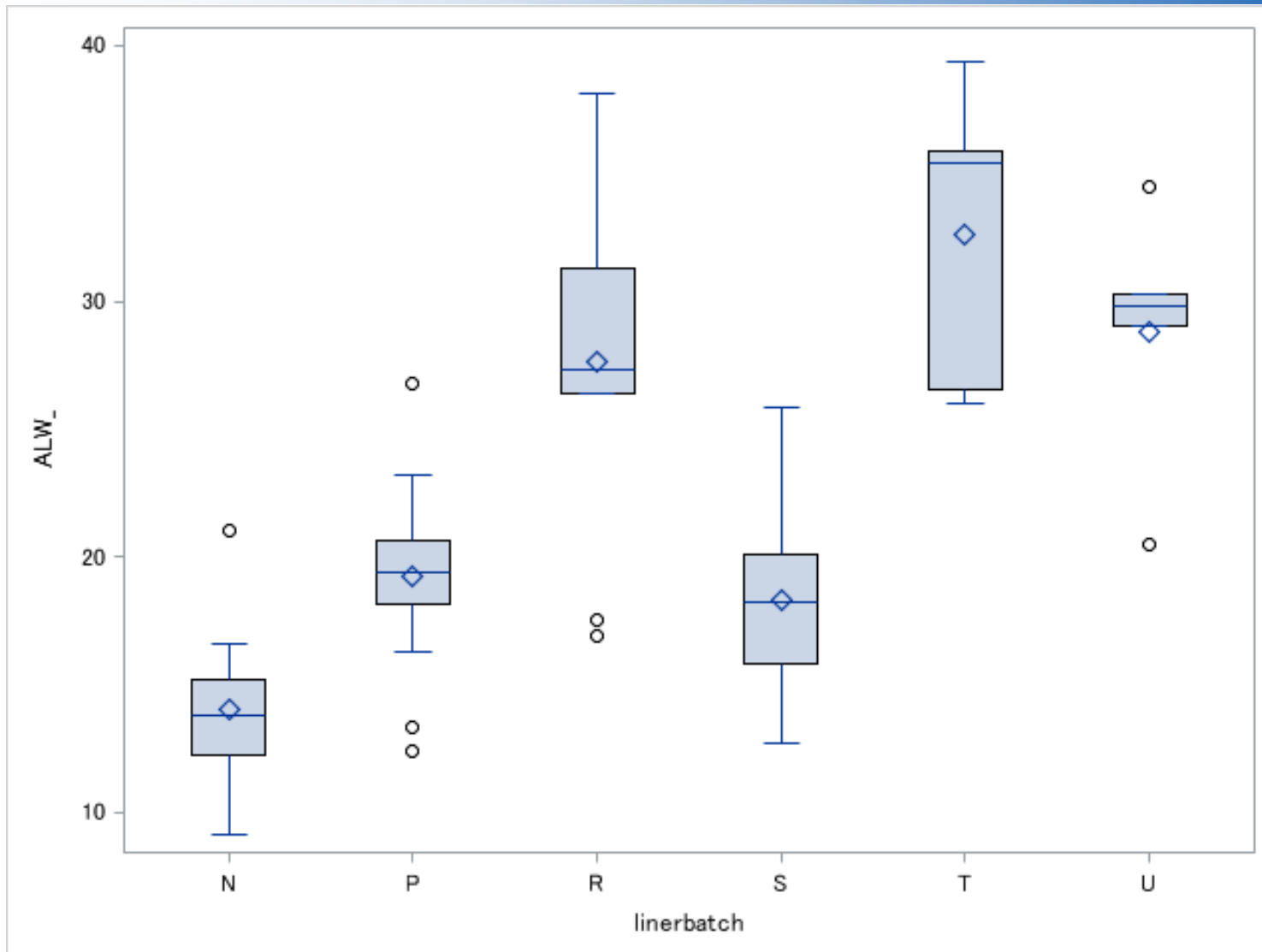


# Precision



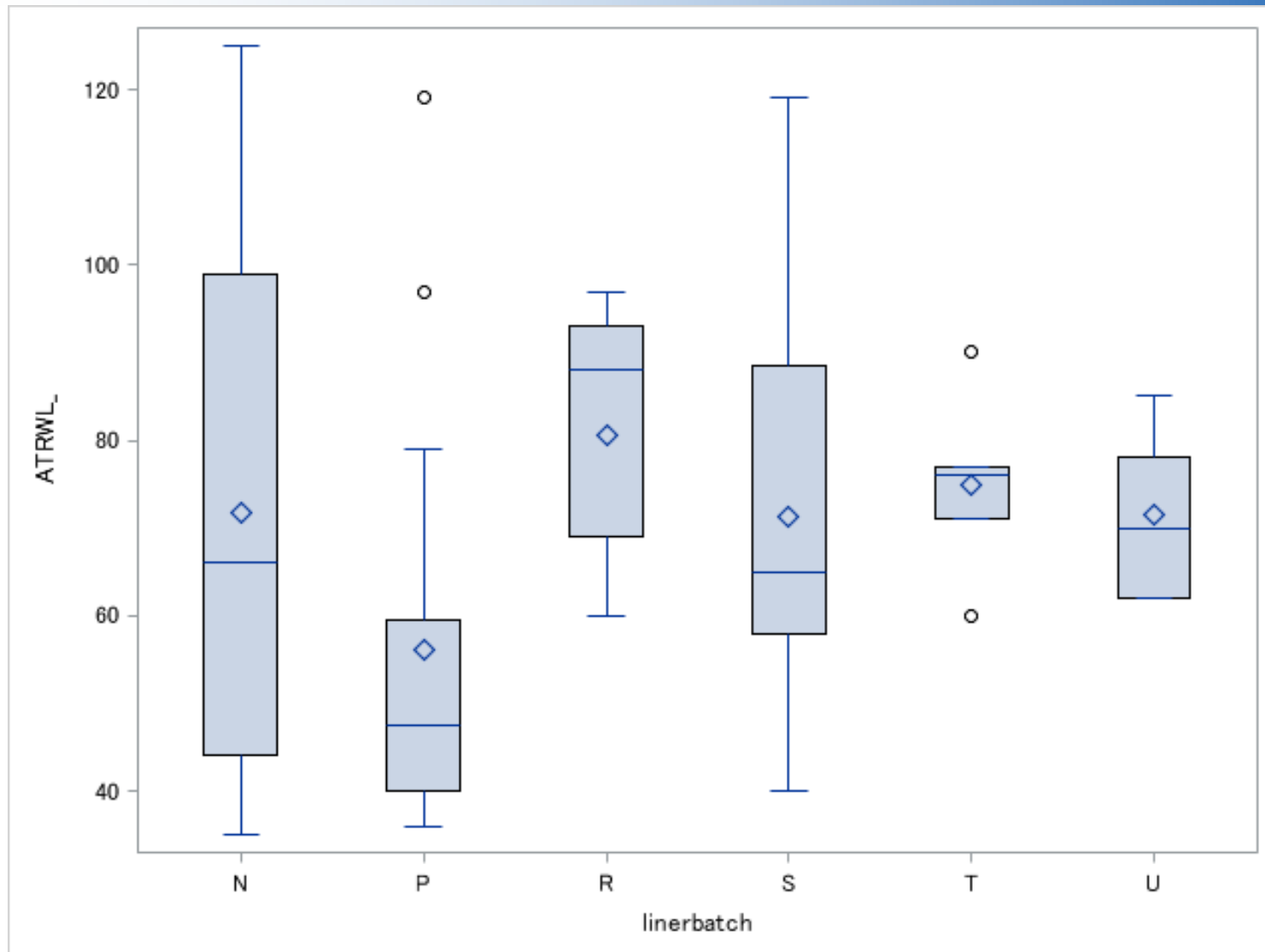


# Precision





# Precision



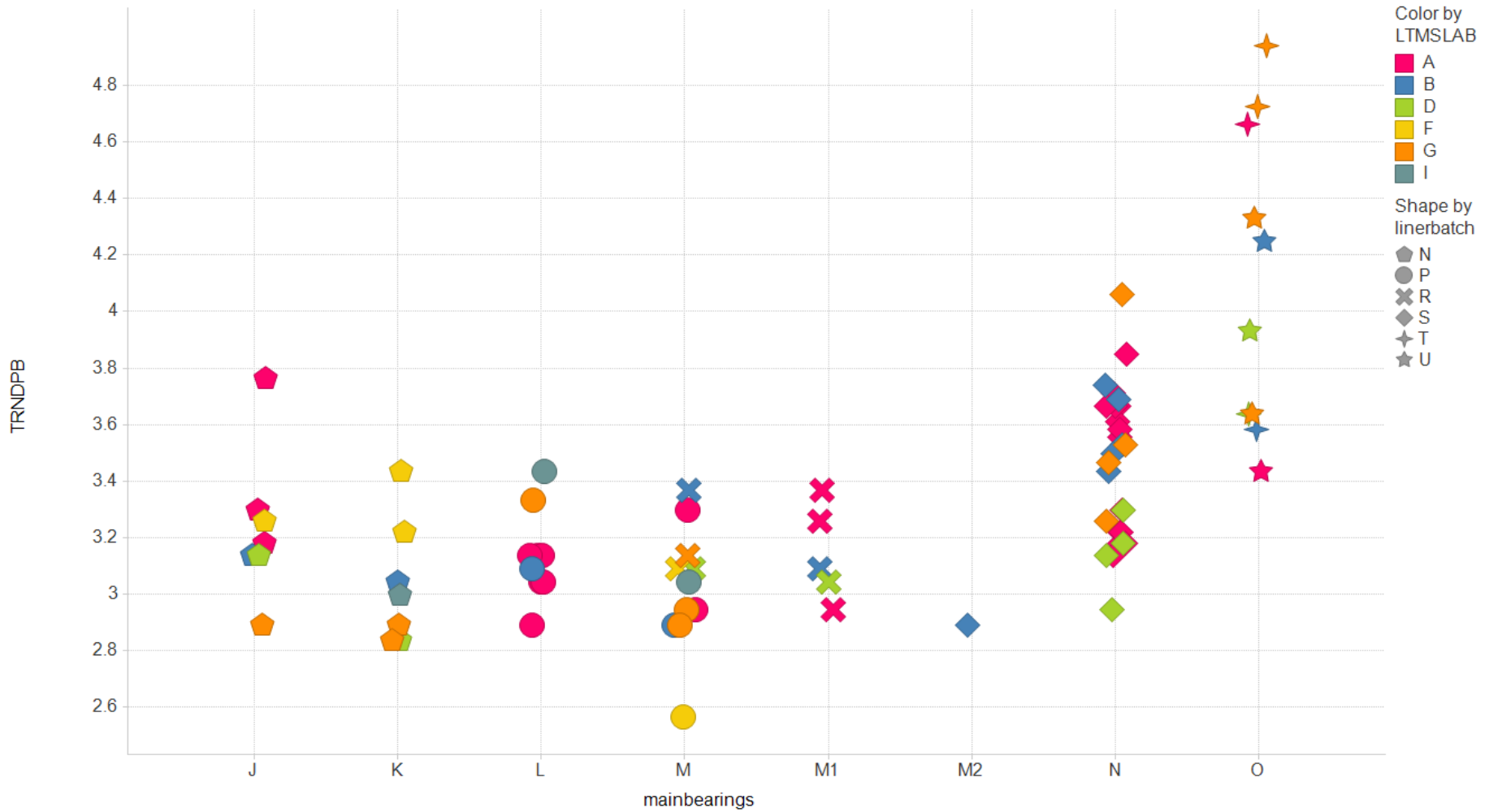


# Precision

Liner Batch / n	N / 14		P / 16		R / 9		S / 28		T / 5		U / 5 (w/ 91078)		U / 4 (w/o 91078)	
	mean	s	mean	s	mean	s	mean	s	mean	s	mean	s	mean	s
TRNDPB	3.1360	0.2573	3.0511	0.2074	3.1545	0.1458	3.4346	0.2803	4.3107	0.6477	3.9165	0.3849	3.9863	0.4064
TRNDPB2	2.1750	0.3867	2.0647	0.2568	2.2125	0.3265	2.3757	0.4586	3.6236	0.9871	3.0861	0.5052	3.0965	0.5827
TRNOC	4.1023	0.0760	4.0915	0.0797	4.1620	0.0975	4.2658	0.1000	4.5410	0.1738	4.4659	0.1036	4.5084	0.0476
ALW_	14.0	2.9	19.2	3.4	27.6	7.3	18.3	3.1	32.6	6.0	28.8	5.1	28.5	5.8
ATRWL_	72	28	56	24	81	14	71	20	75	11	71	10	72	12

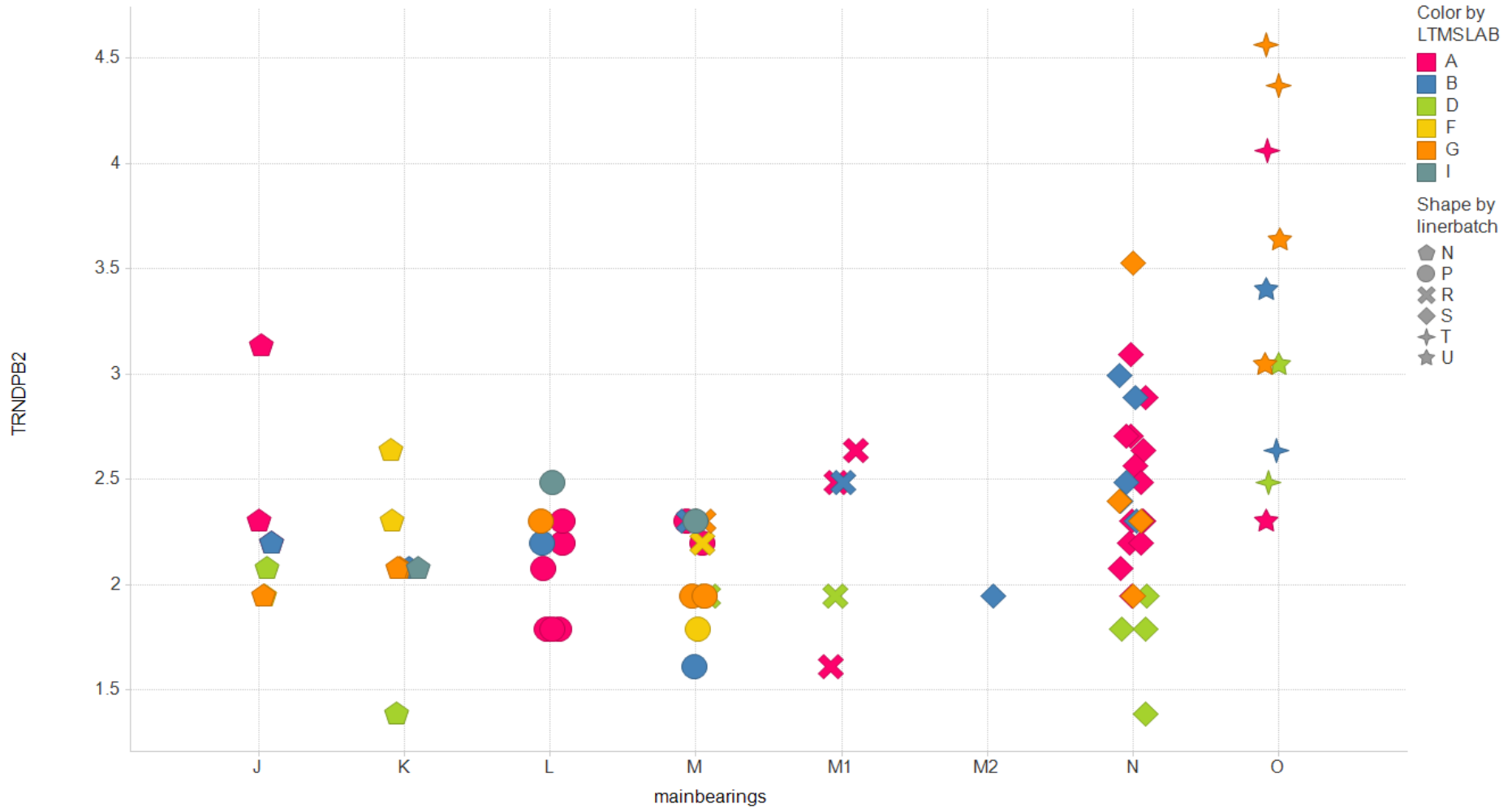


# Main bearings



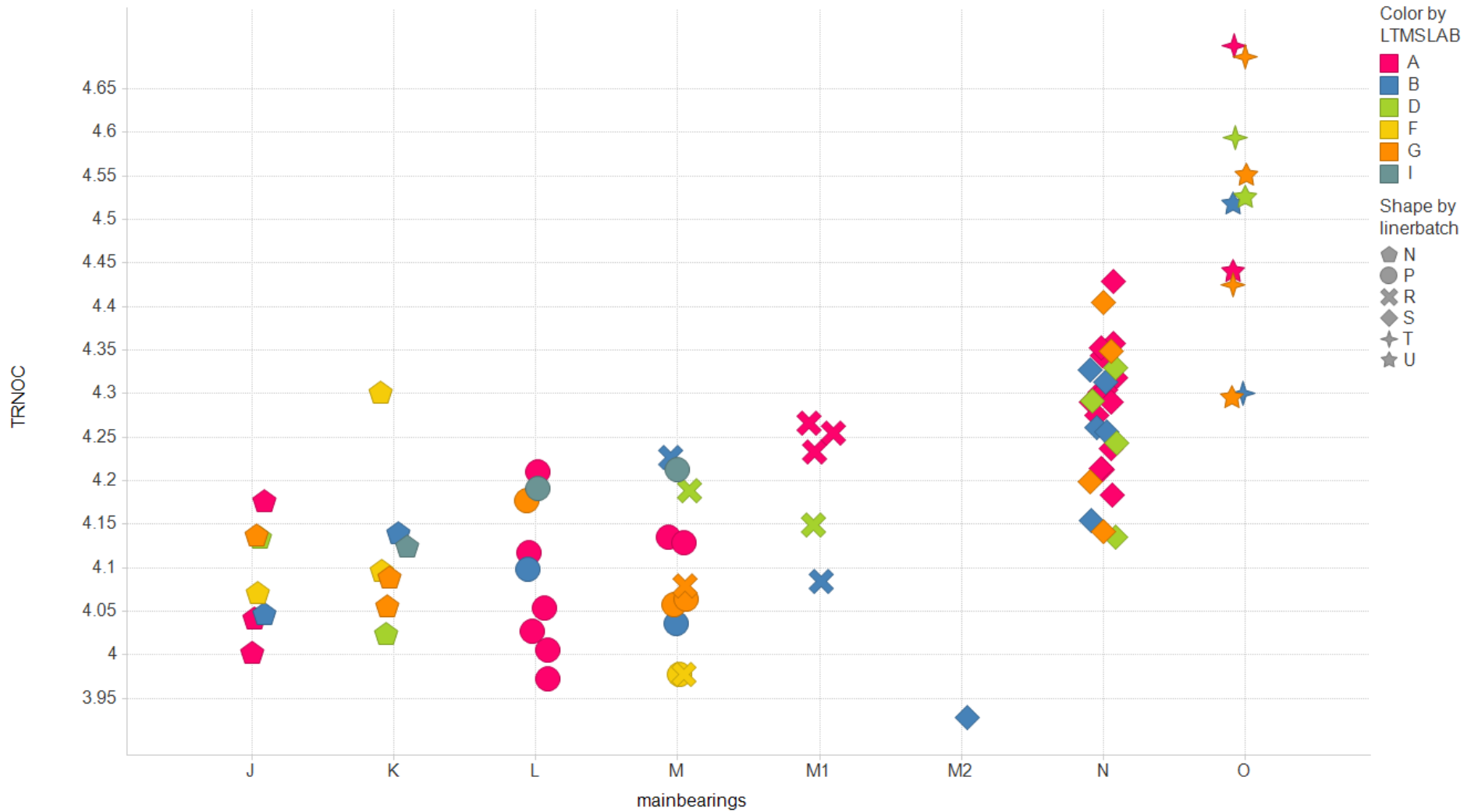


# Main bearings





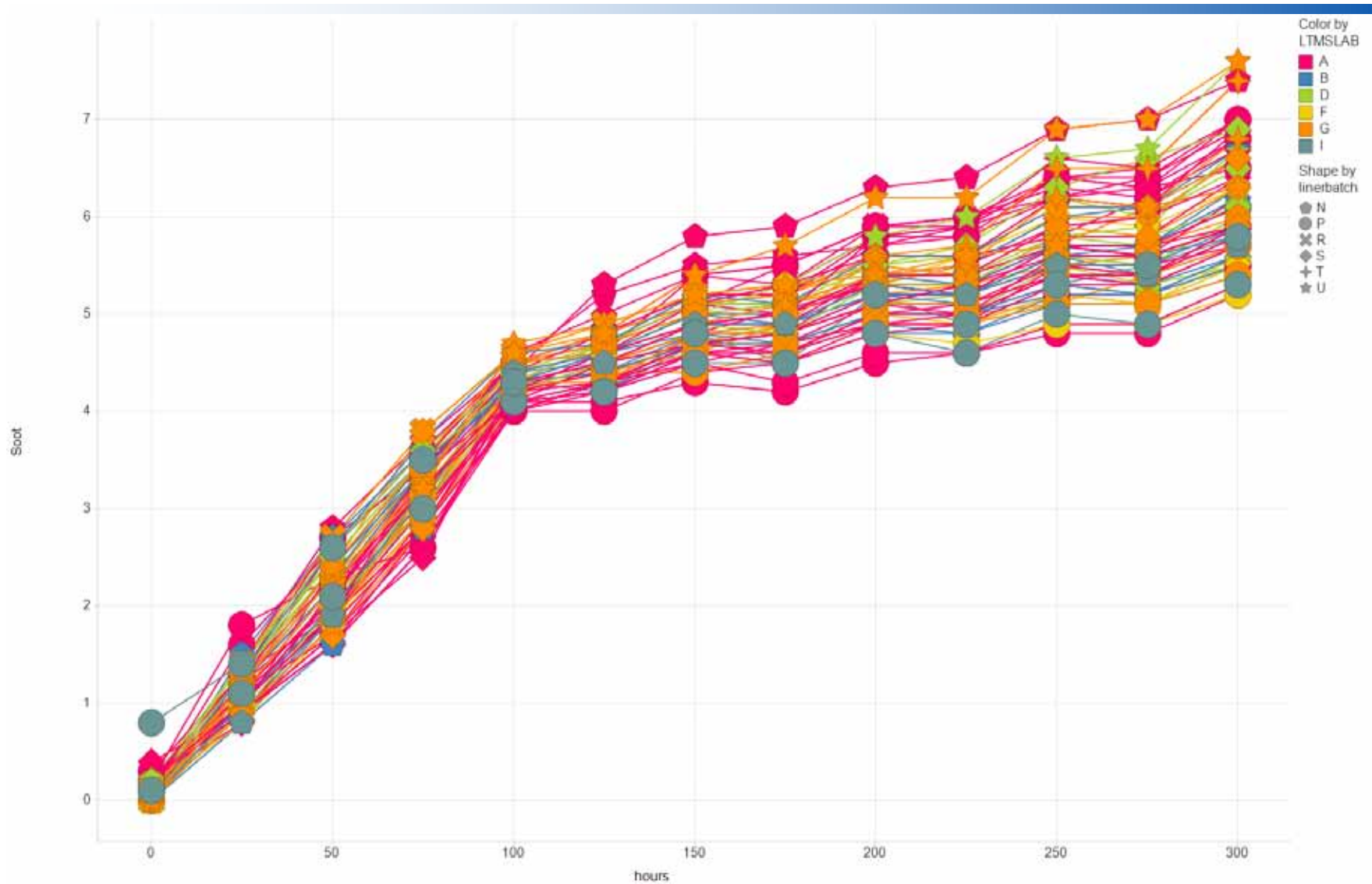
# Main bearings





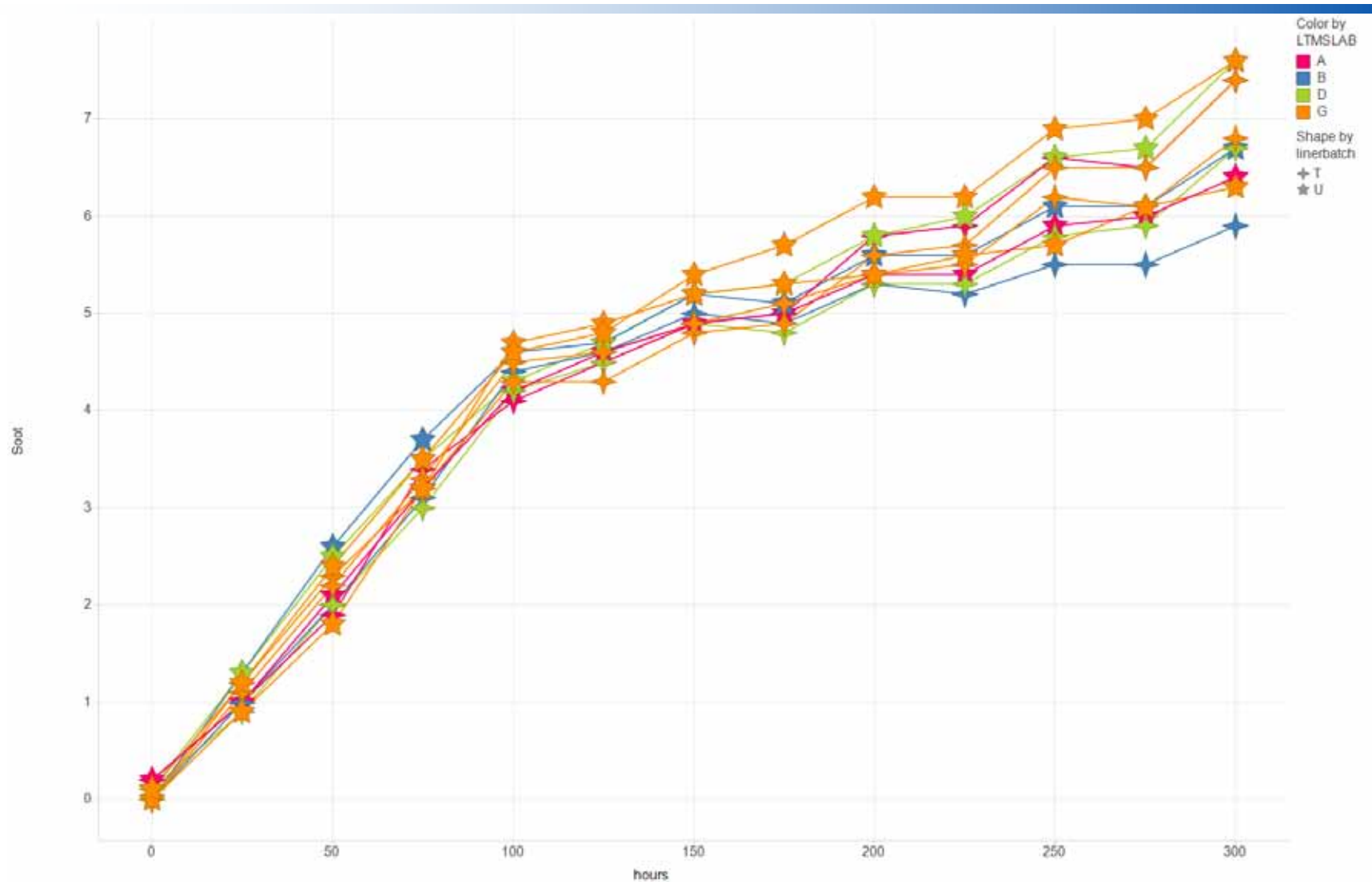


# Soot over time



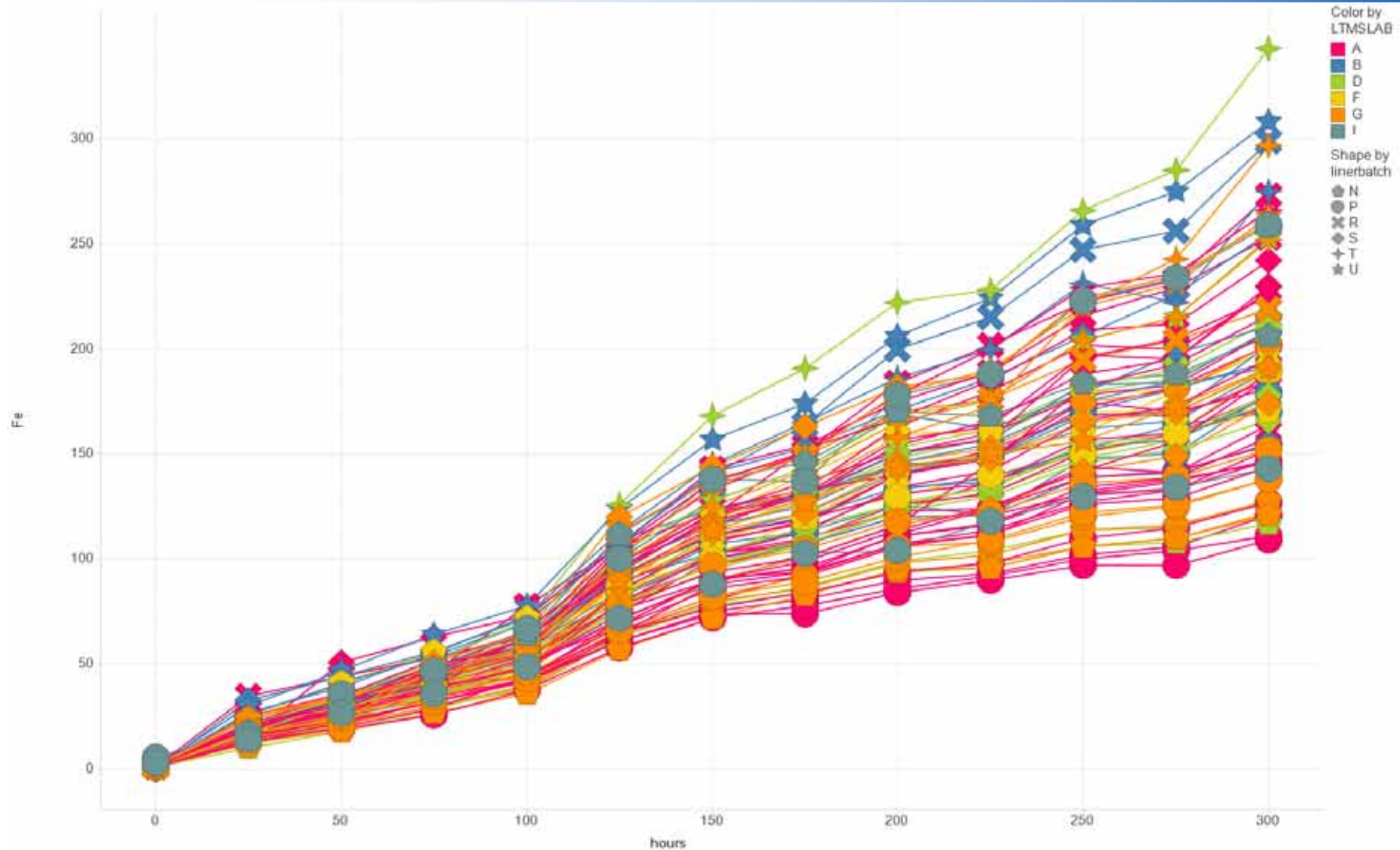


# Soot over time



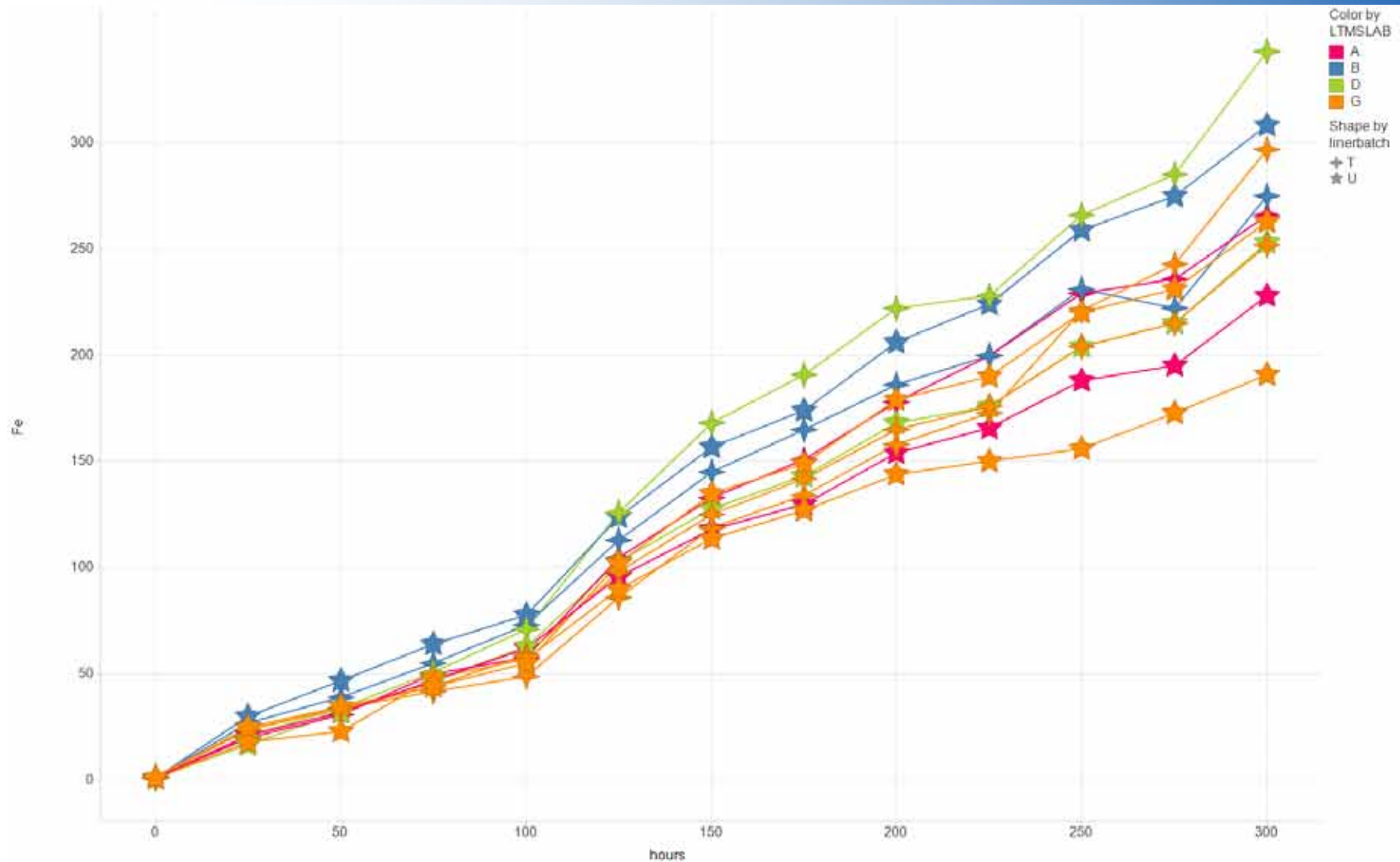


# Fe over time



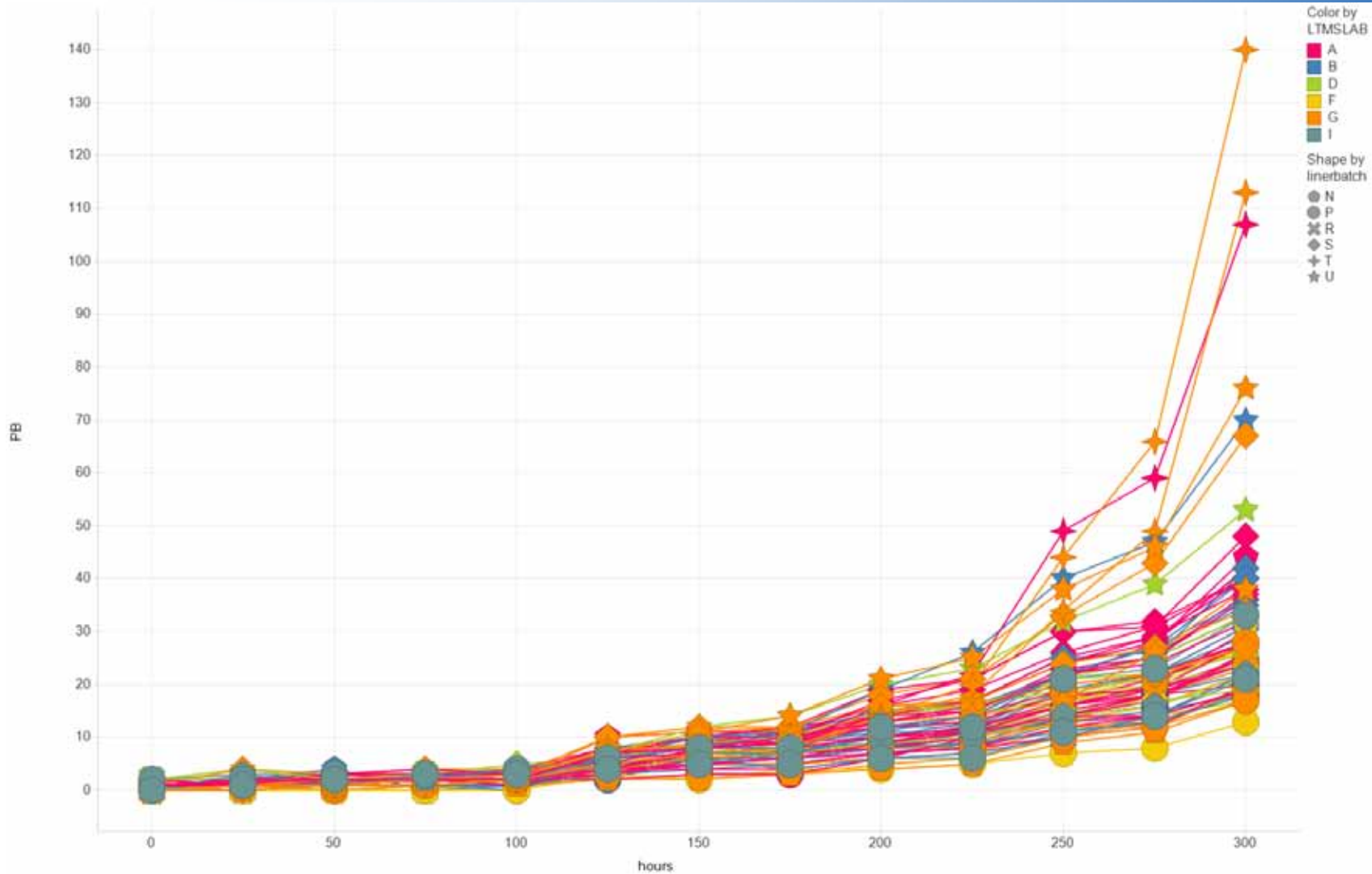


# Fe over time



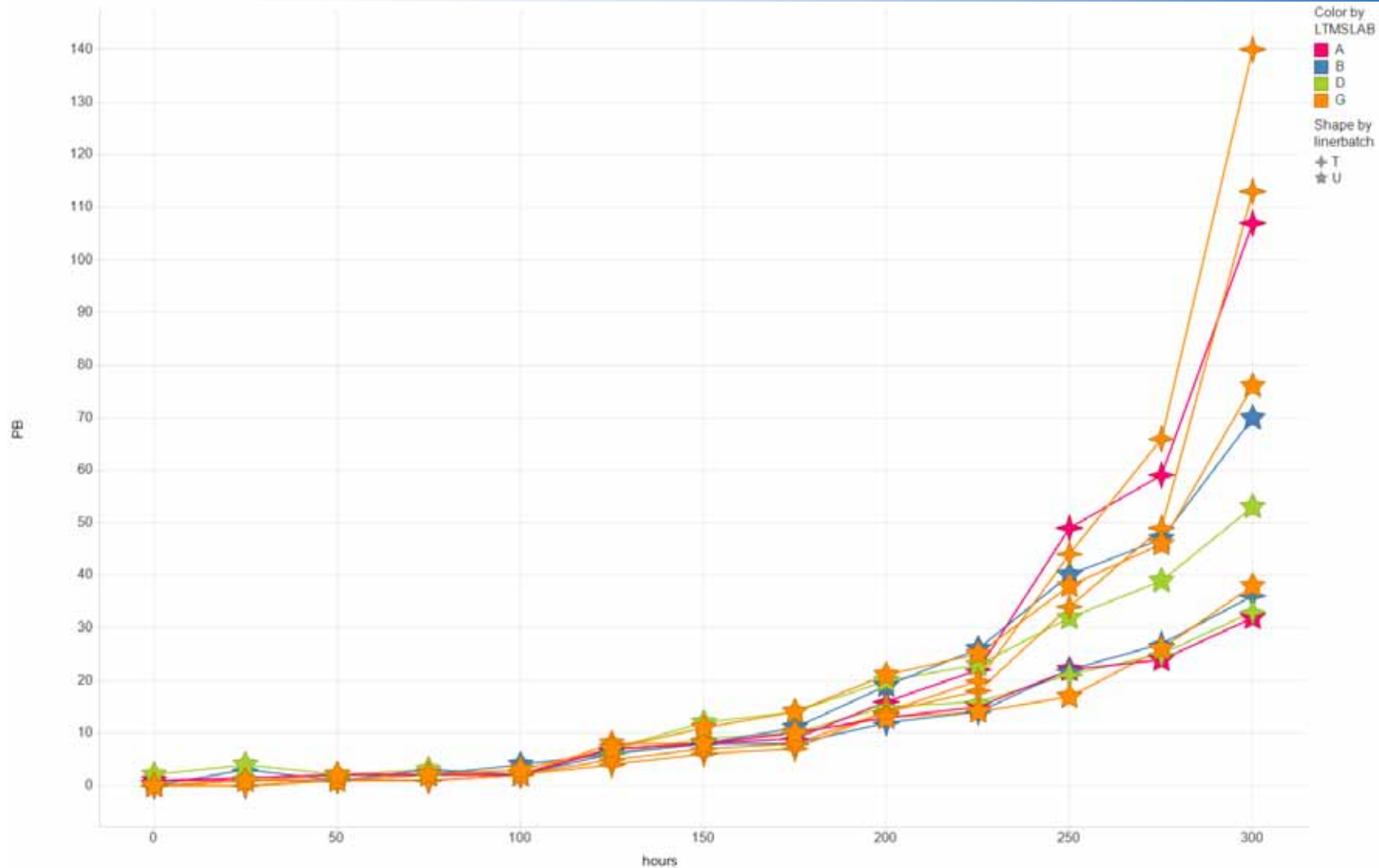


# Pb over time





# Pb over time





# Industry Correction Factors

The way we did them last time

		TRNDPB	TRNDPB2	TRNOC	ALW_	ATRWL_
	Target	3.106	2.125	4.093	16.2	62
with 91078	Predicted	3.927	3.109	4.480	27.8	85
	ICF	0.791	0.683	0.914	0.583	0.729
without 91078	Predicted	4.017	3.172	4.523	27.6	84
	ICF	0.773	0.670	0.905	0.587	0.738