

# Weekly Update – Laser Scanning

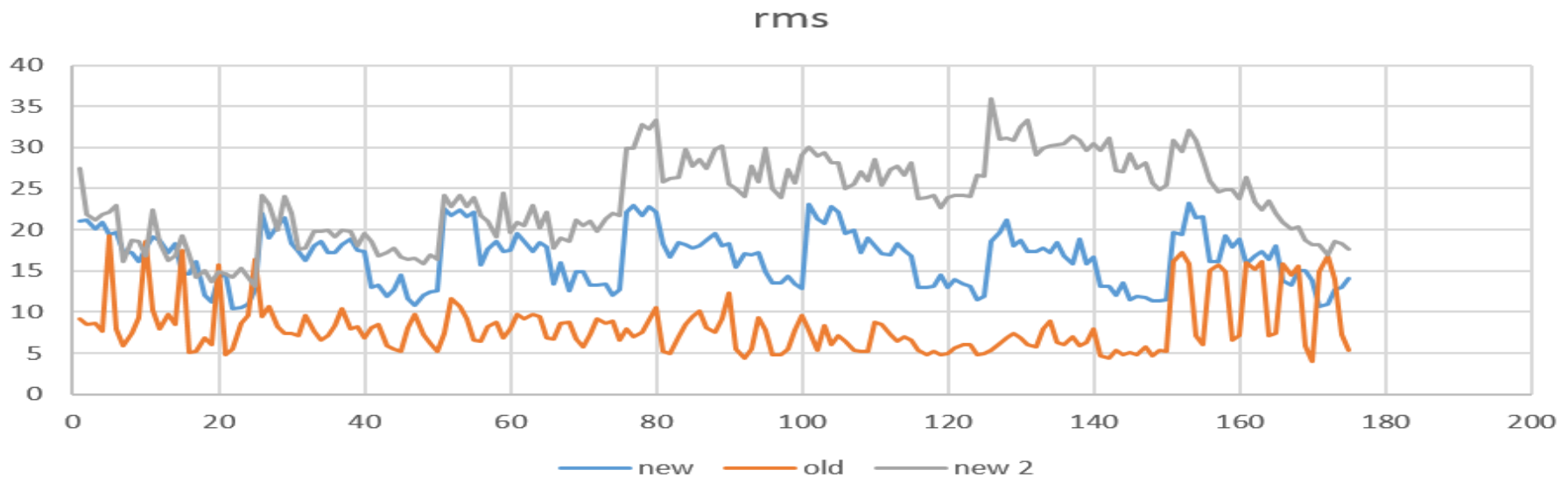
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Nov 30 - 2016

# New optical bench

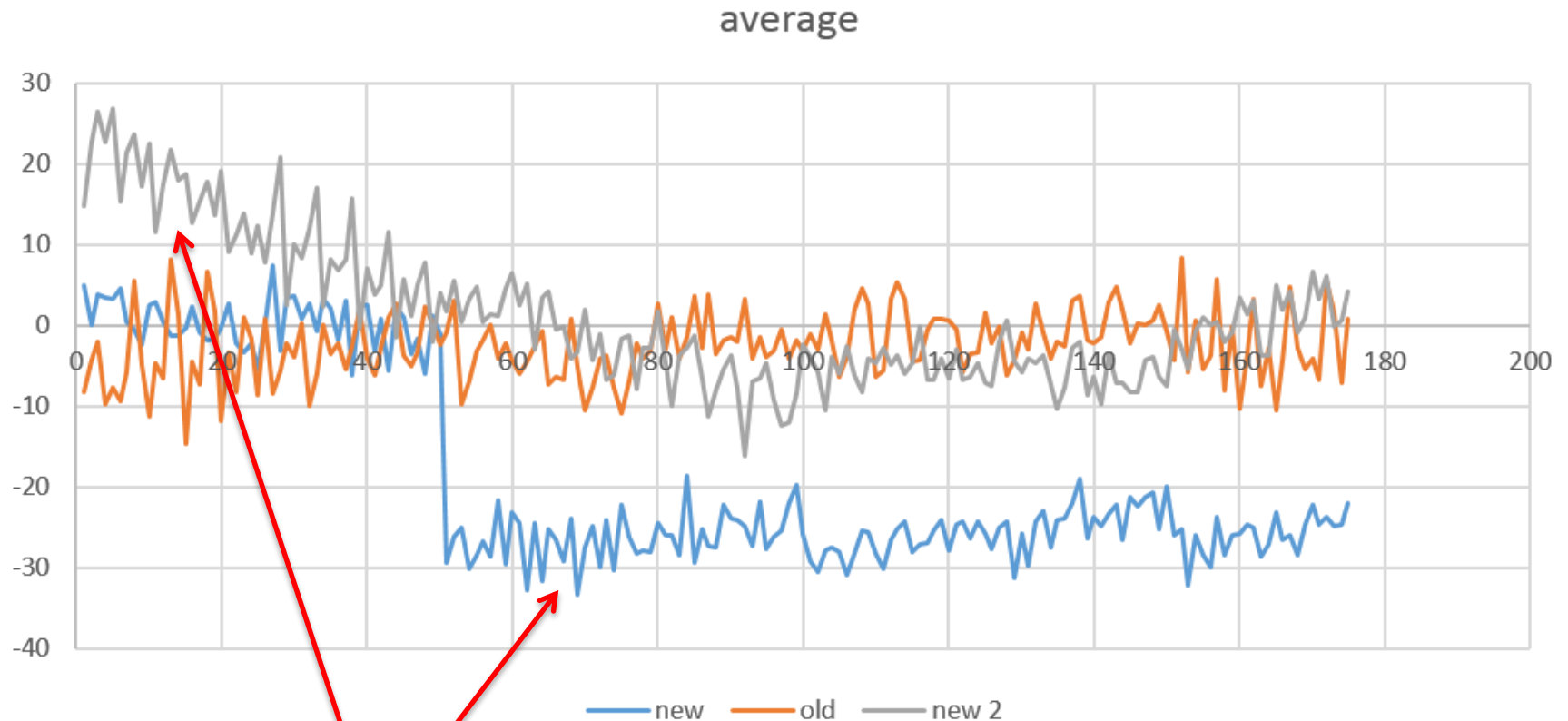
- With the old table, we were able to get a rms of 9.73 (9.74)  $\mu\text{m}$ .
- We are NOT getting that resolution with our new bench.

# Comparison between scans in fake stove



The feature in the new plots is not visible in the old one

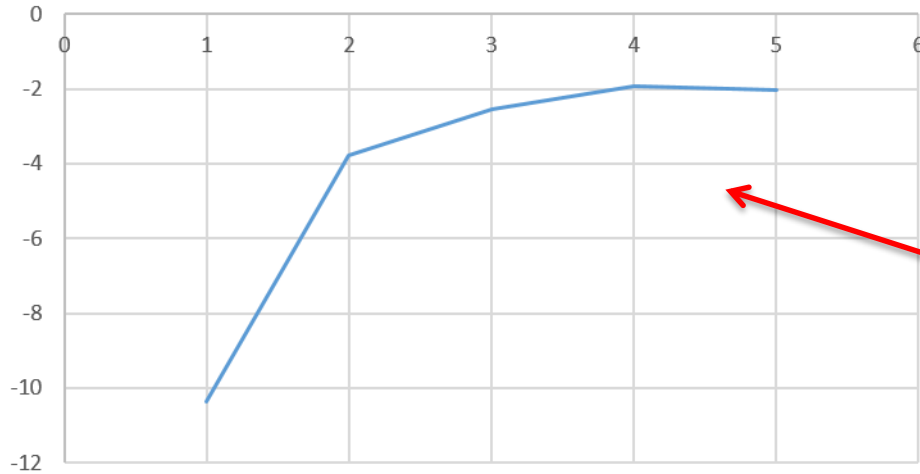
# Comparison between scans in fake stove



When looking into the average of the laser lines, I noticed some times it behaves very strange.

# Change in the mean

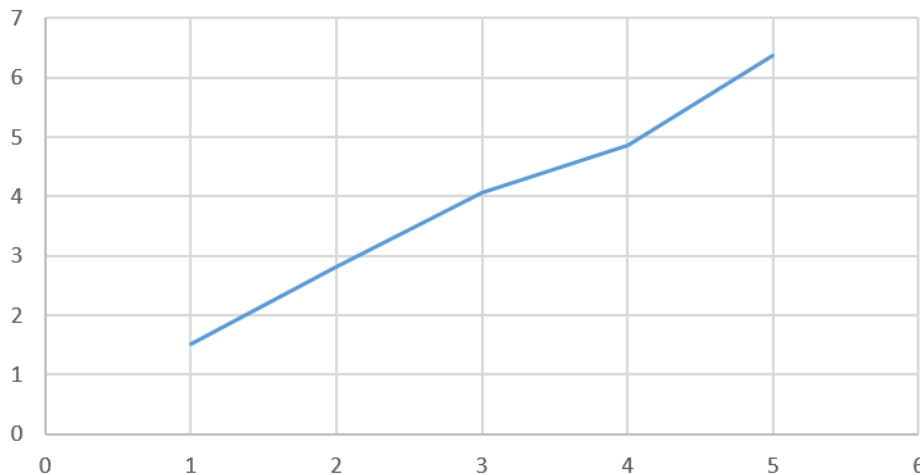
mean changing in time



The old problem seems to be back. However, the room temperature drastically change in the first experiment when the room cool down. Thermocouples registered a difference of  $-2^{\circ}\text{C}$ .

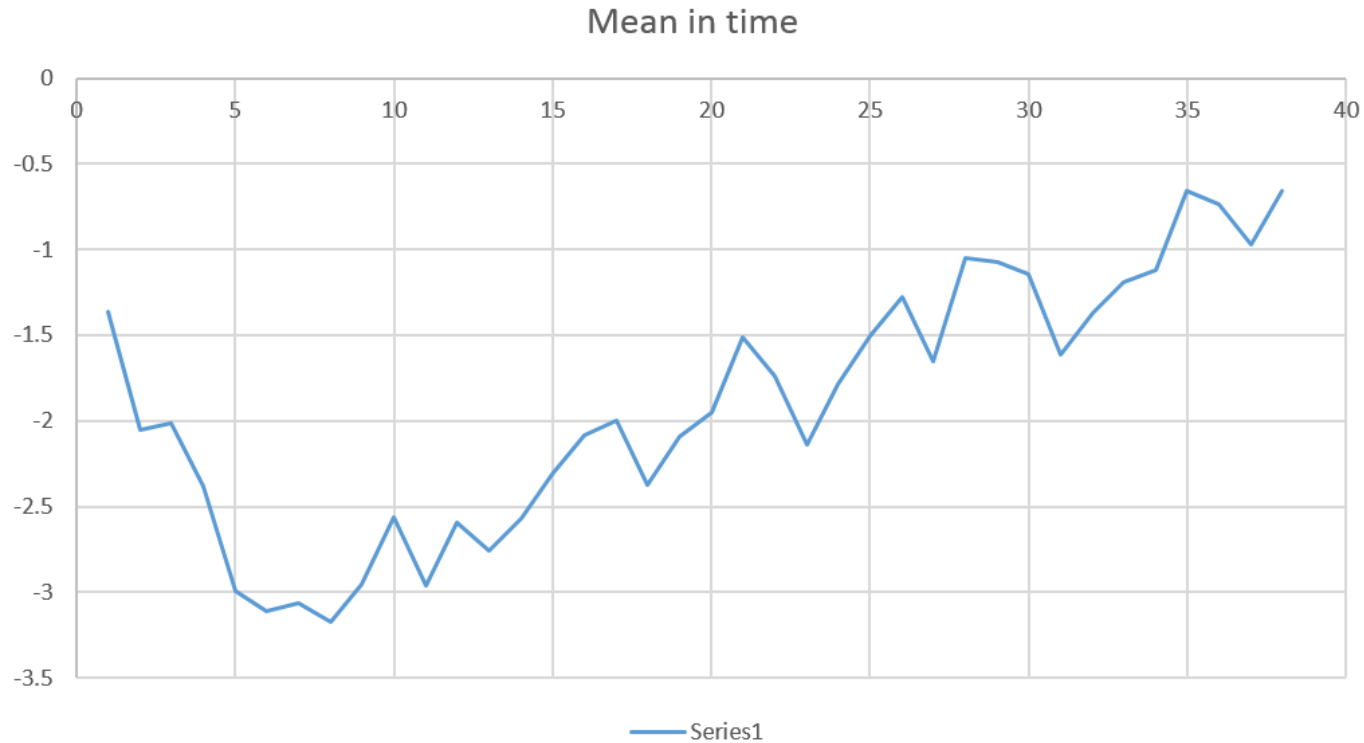
These plots are residual of the mean of the full 7 areas (17.5 cm) scans.

Mean changing in time



When the room's temperature was stable. I took data again and the result was different. The thermocouples didn't show any larger difference between temperatures ( $<1\text{ um}$ ).

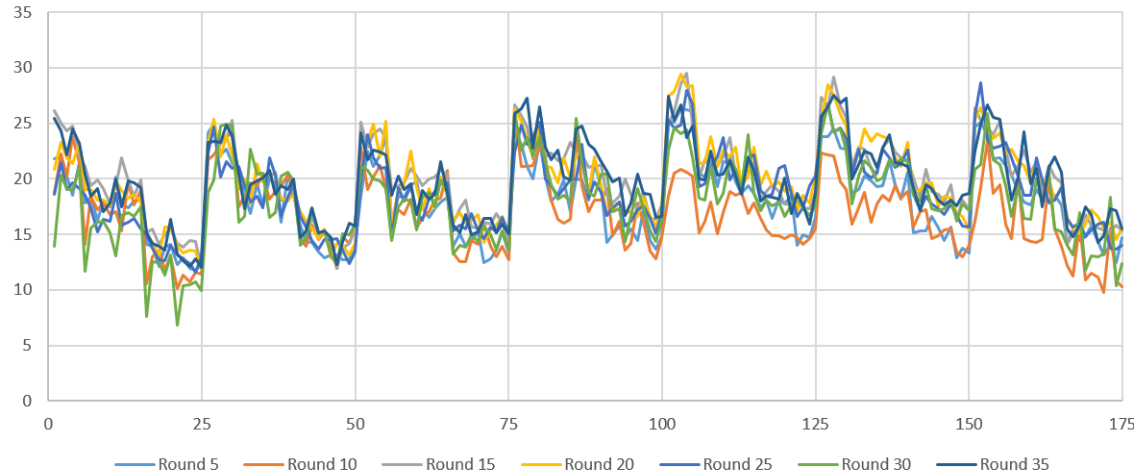
# Change in the mean II (all night)



Run the same experiment over 39 scans, and the mean did something I have never seen; it went down and then up. It never hit a maximum. Accidentally I didn't recorded the thermocouples... I'm taking data with this again.

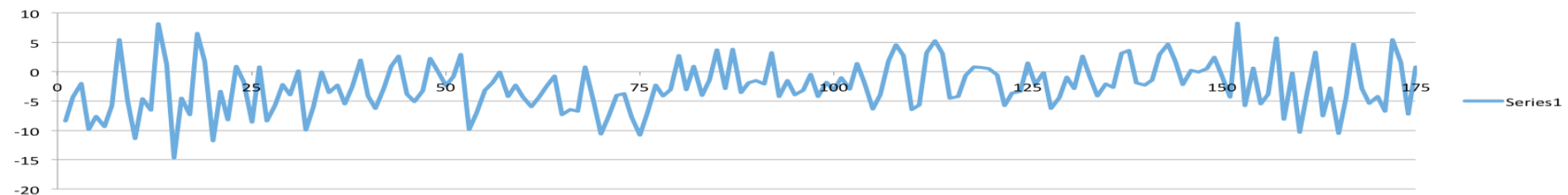
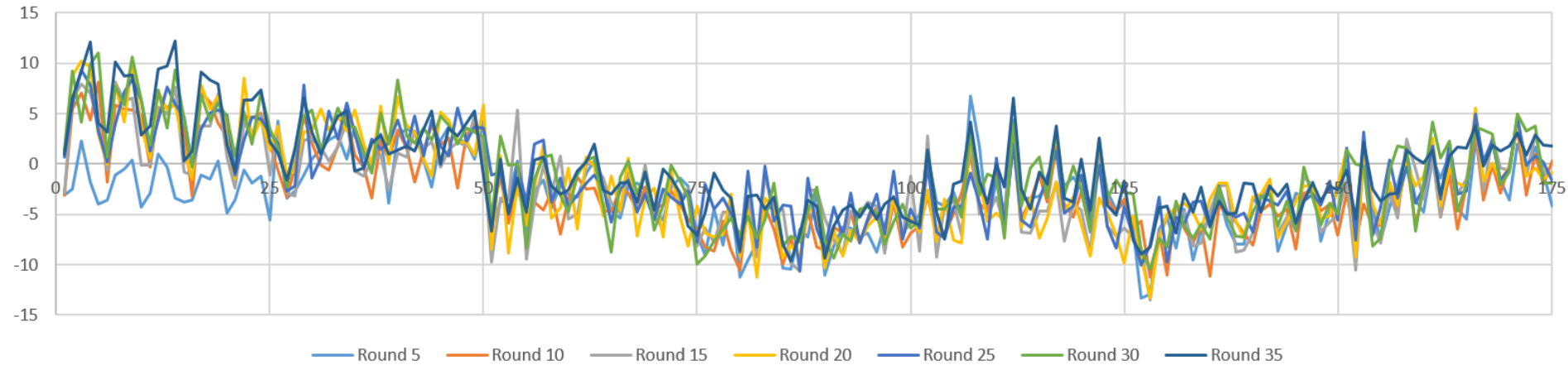
# Change in the mean III (AI night)

rms



From the same experiment, the rms looks the same for different rounds, and in the plot of the lines there are not 'weird' features.

Laser Lines



# Comments

When no-moving the cart, the rms for the laser lines further from the camera is barely 5  $\mu\text{m}$ . So something must be happening in the position where the data is being taken. Linear stage not being well-screwed on the optical bench?

Need to start working on changing the setup.

No Moving

