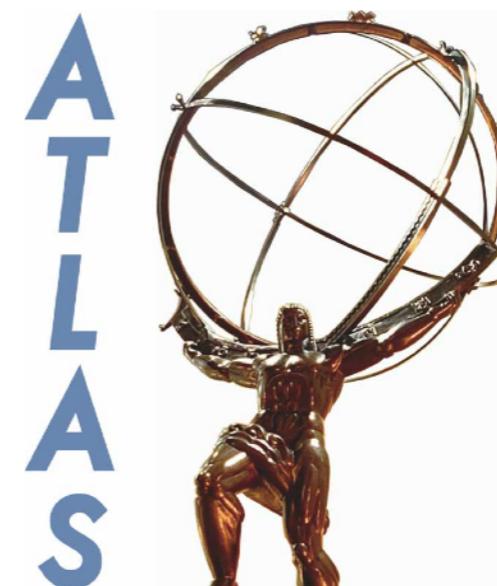


Stave Cooling Pipe Temperature Profile

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Iowa State University

Stave QC discussion, Feb. 8. 2017



Outline

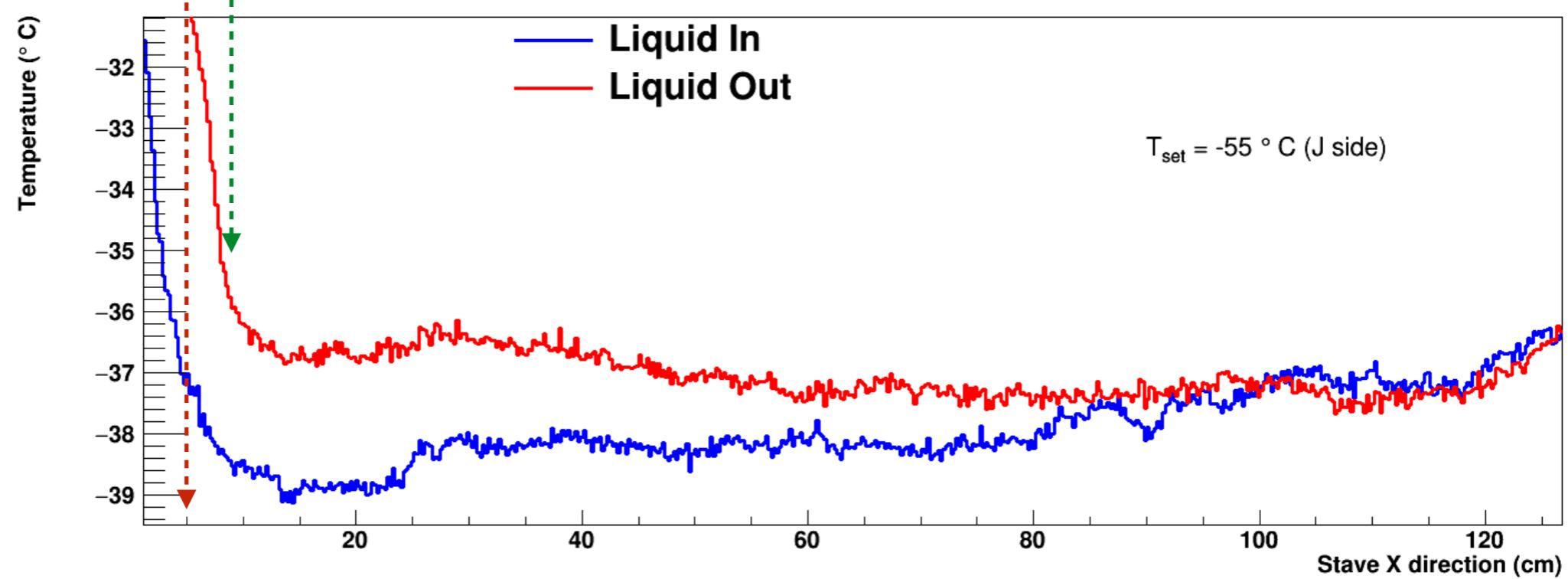
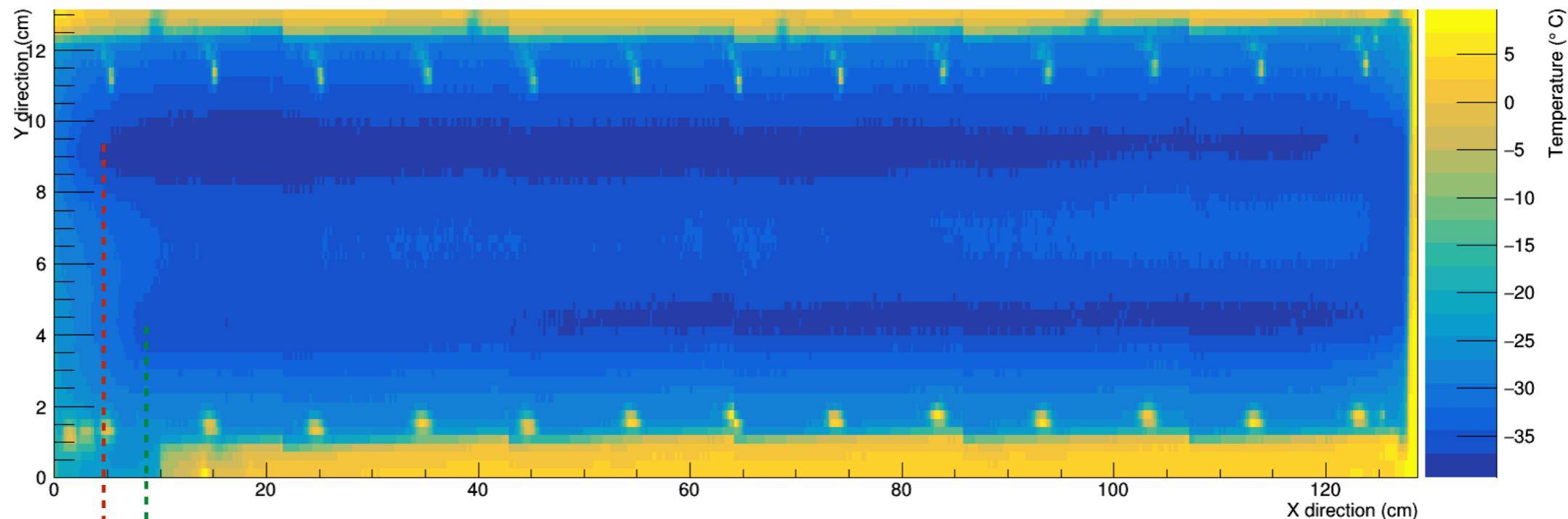
- Stave #3 (no intended flaws), long T slope at the edges of the cooling pipe → Why?
 - ♦ Close to the end of stave card (~8 cm)
 - ♦ The other end (~5 cm)
- Test with Stave #2.
 - ♦ Chiller at -55 C (with edge shelter)
 - ♦ Chiller at -50 C (no shelter, taken by Will in Dec 2016)
 - ♦ Similar found: long slope close to the end of stave card

Stave #3: Temperature profile @ -55 C



L-side.

Long slope
at the end
of stave
card side.

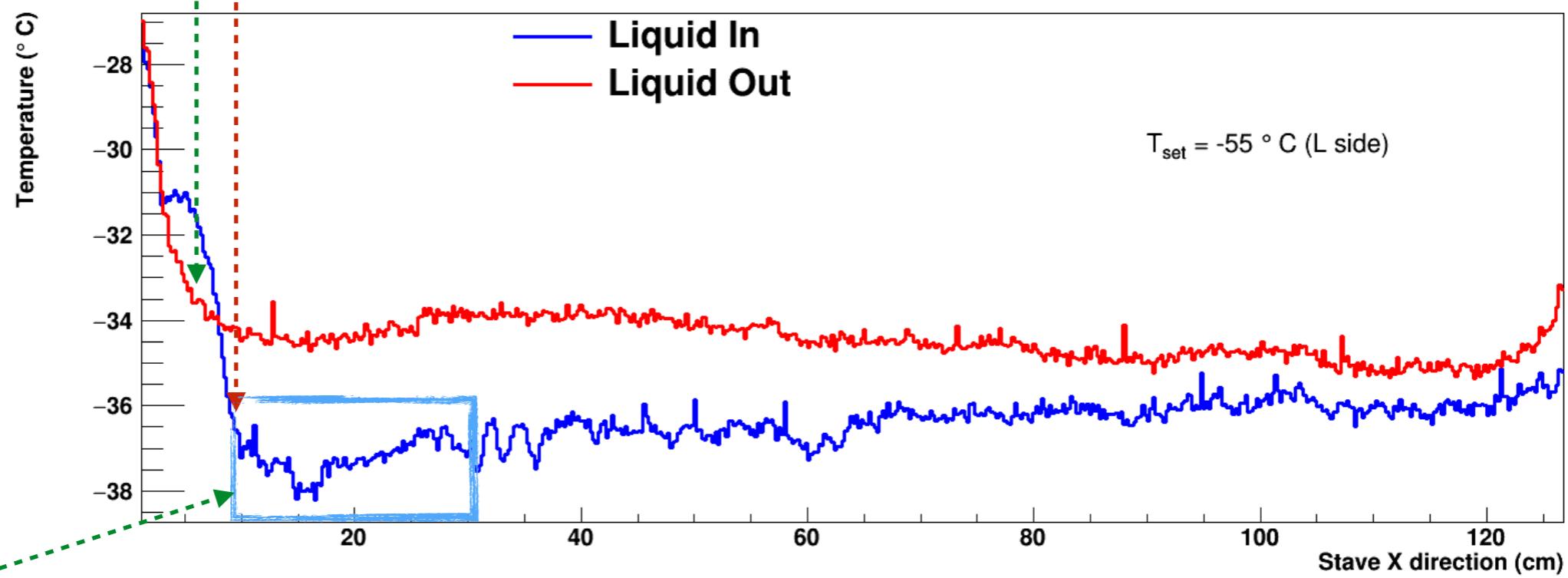
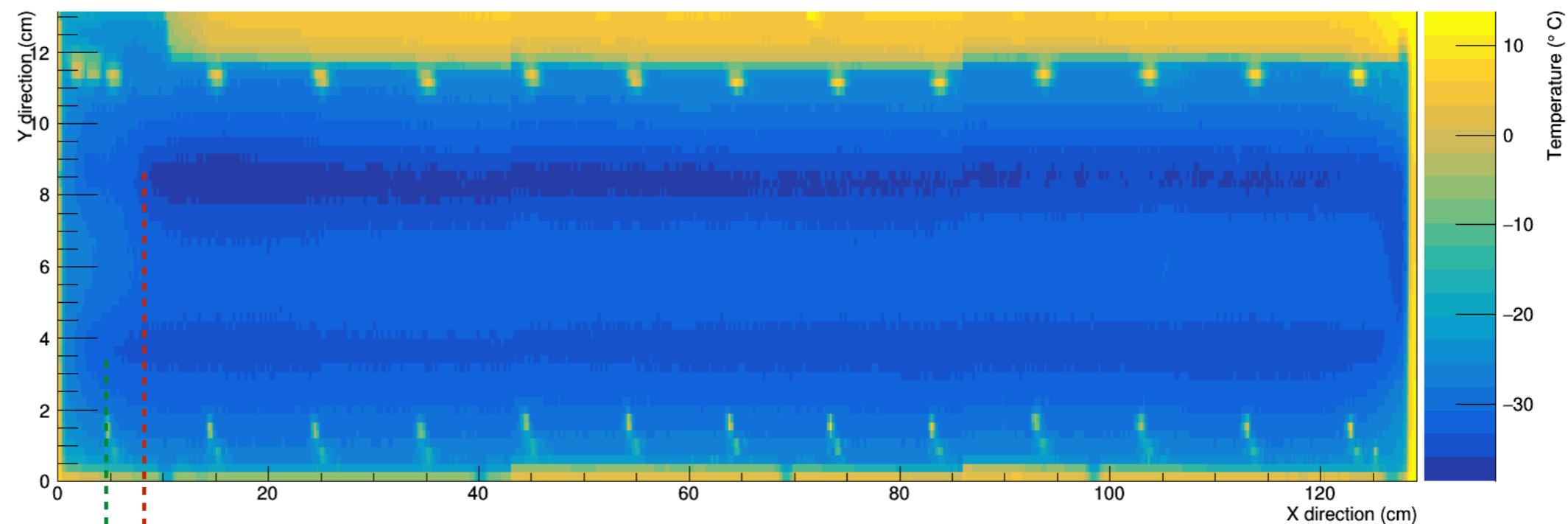


Stave #3: Temperature profile @ -55 C



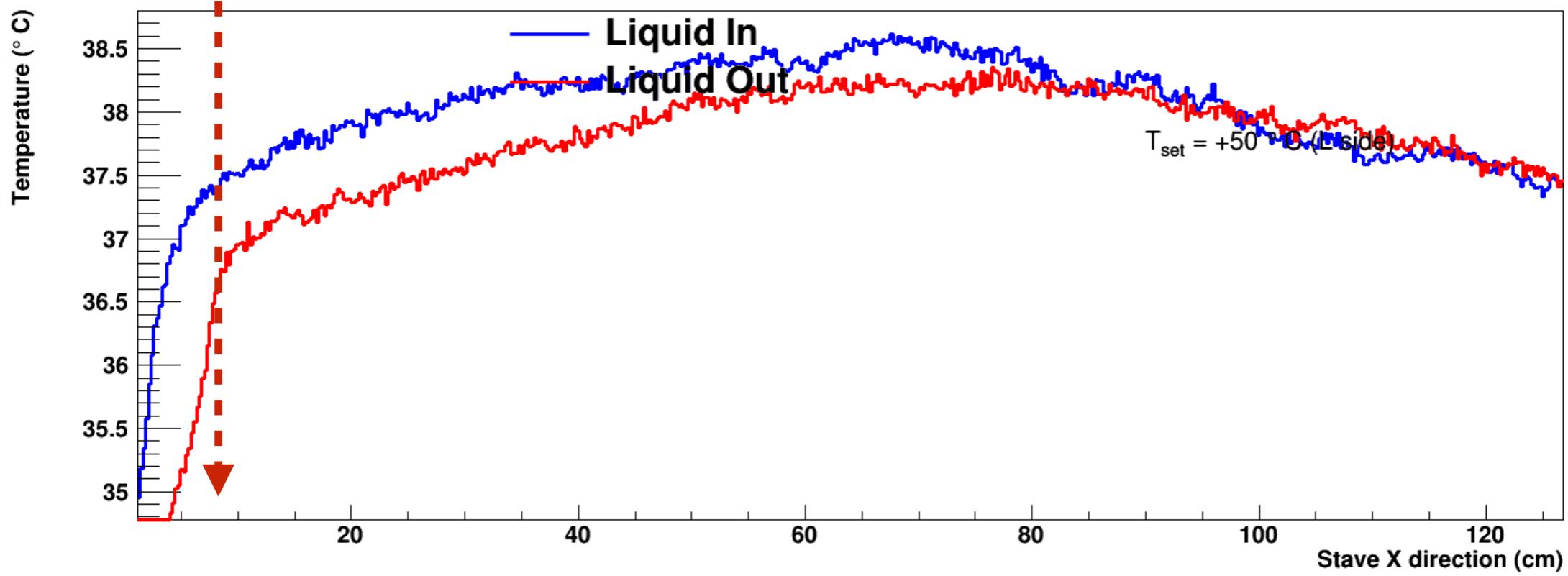
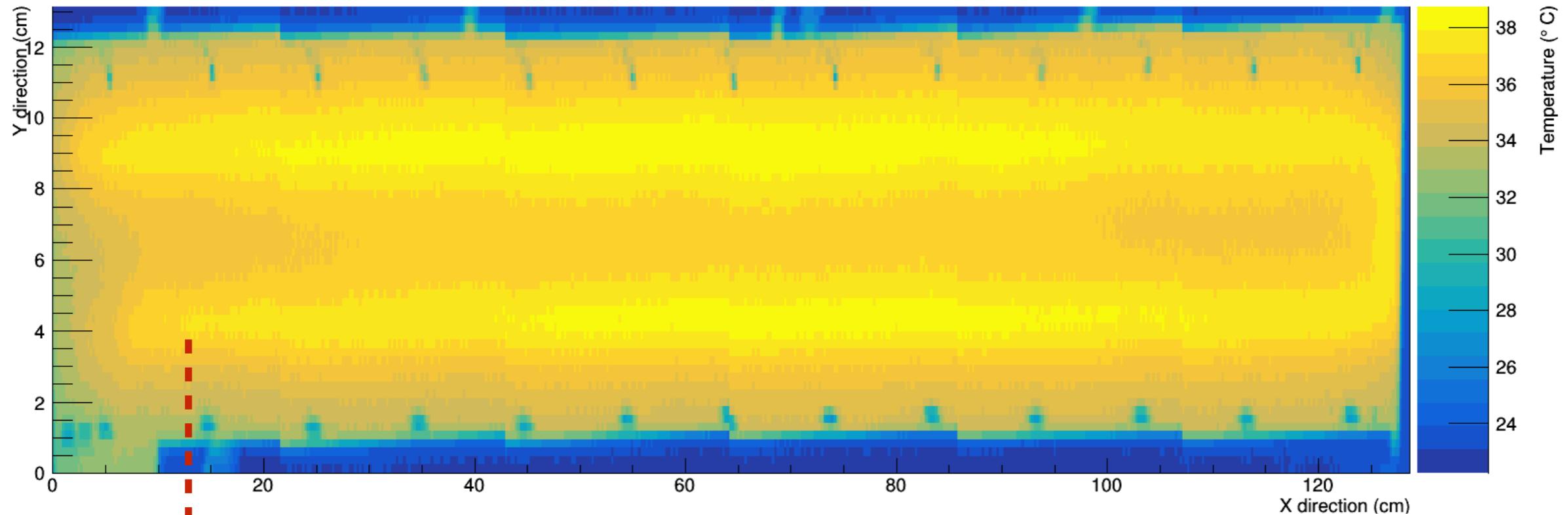
J-side.

Long slope
at the end
of stave
card side.



Lower T

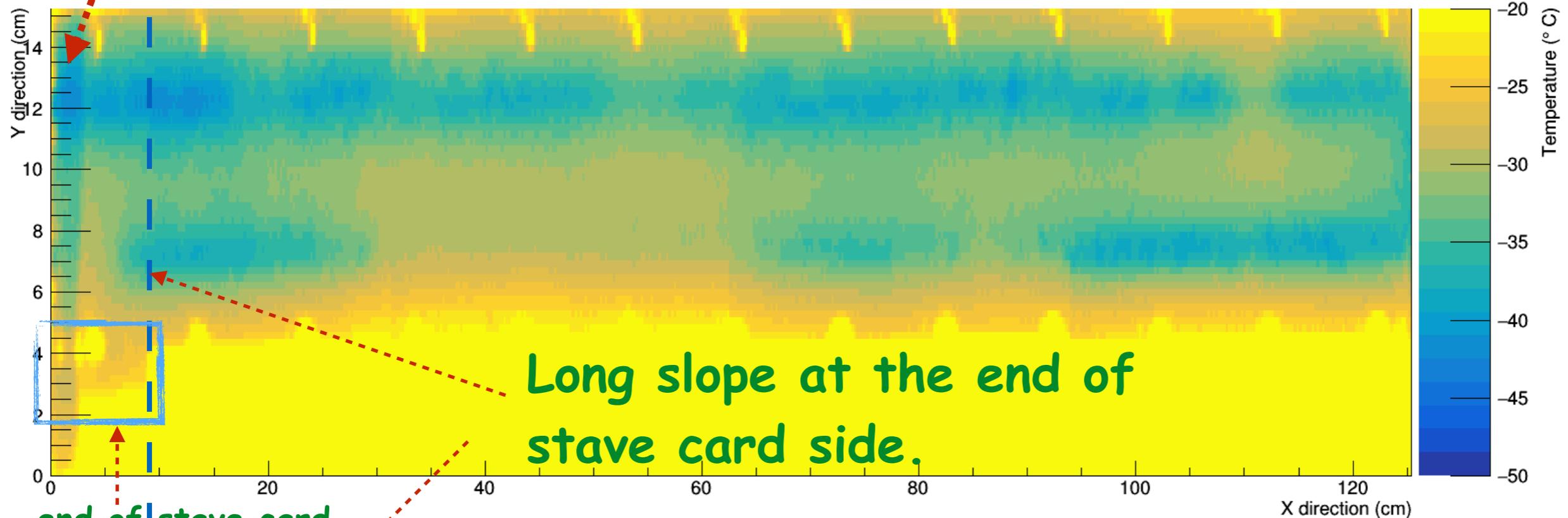
Stave #3: Temperature profile @ +50 C



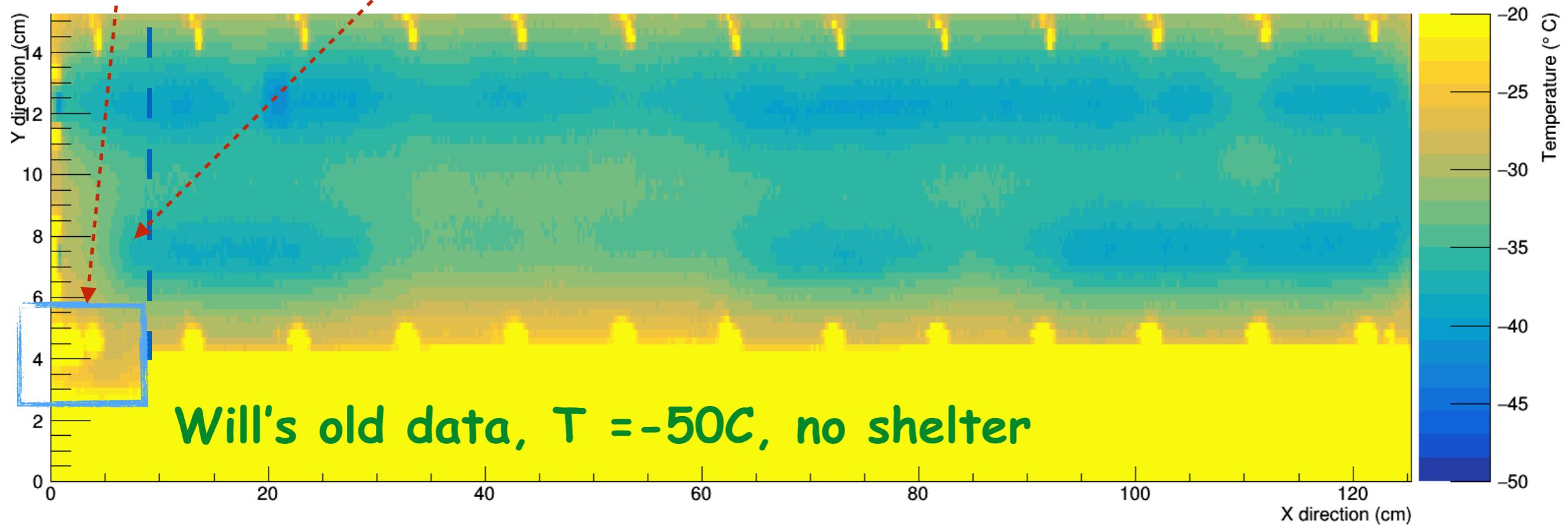
Stave #2: Temperature profile @ -50 (-55) C



With shelter, $T = -55C$



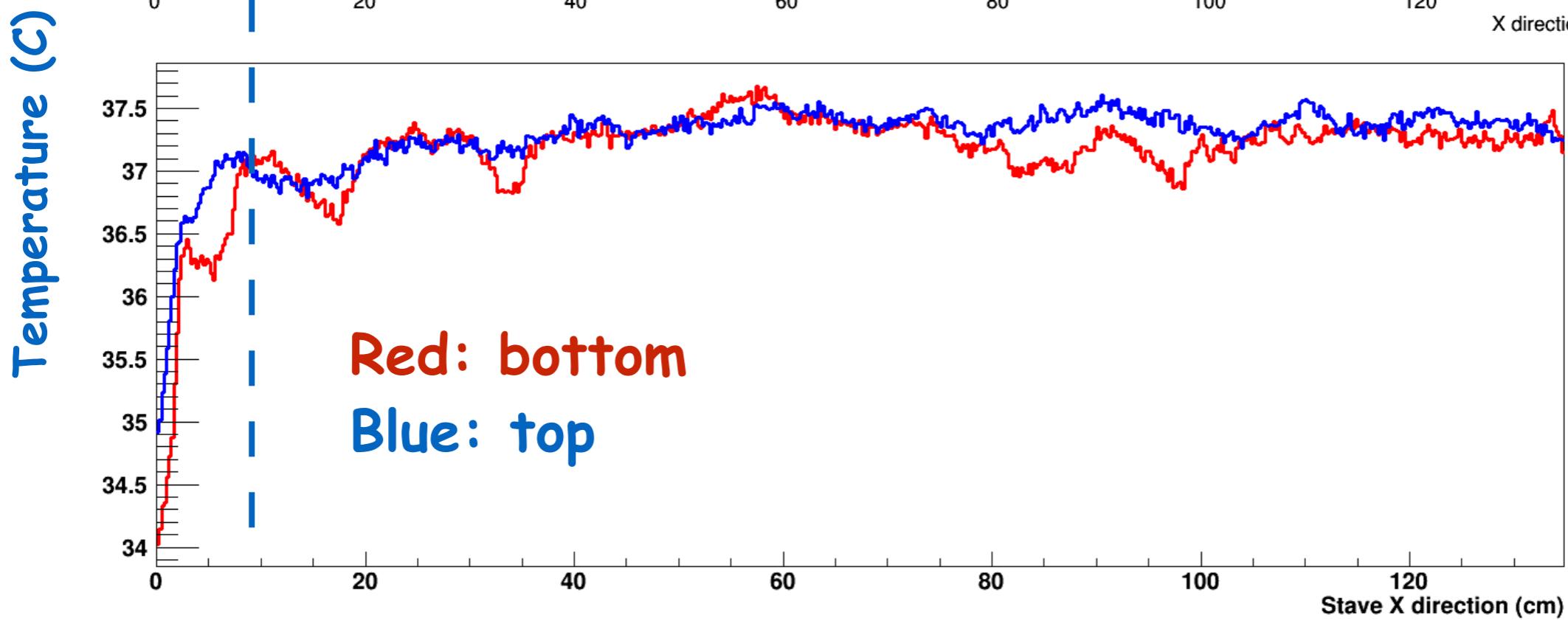
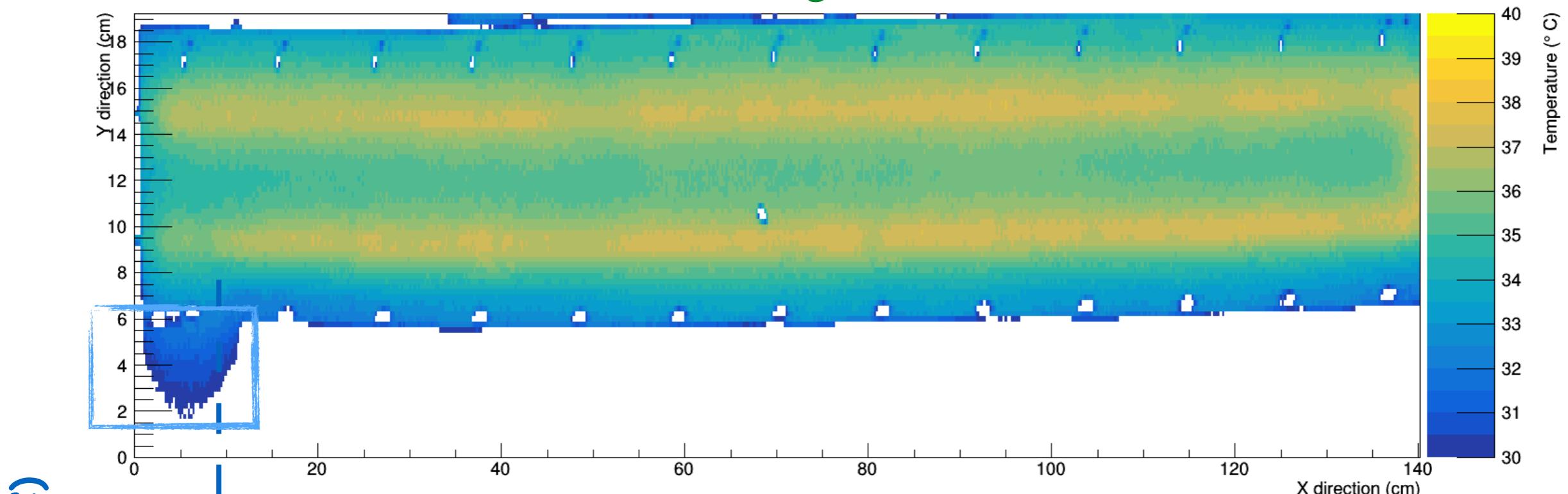
!!! Stave #2 with flaws



Stave QMUL: +40 C

L-side

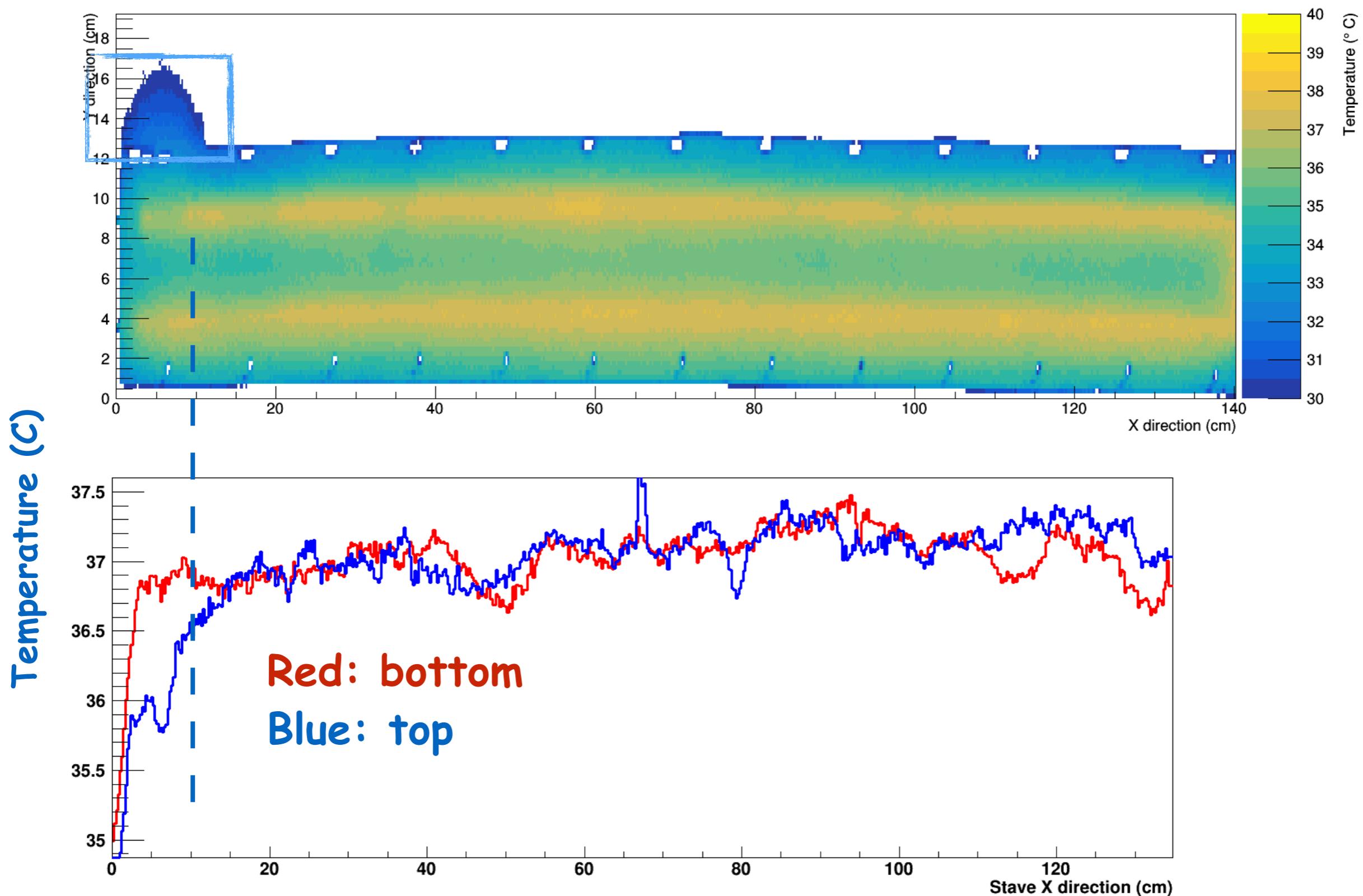
QMUL's stave shows similar slop around cooling pipe inlet outlet edge.



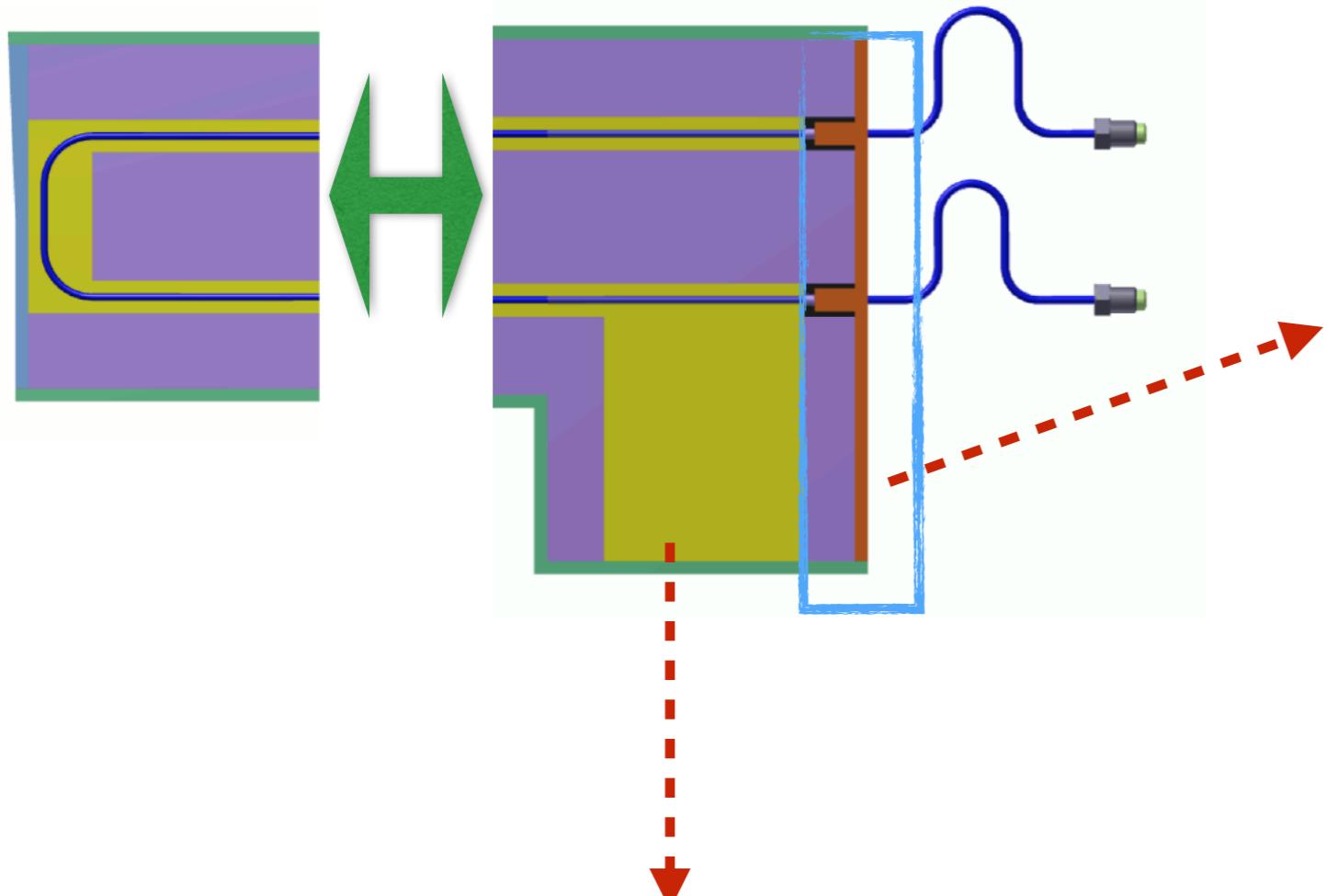
Stave QMUL: +40 C

J-side

QMUL's stave shows similar slop around cooling pipe inlet outlet edge.



Possible explanation



- Heat transfer through the high thermal conductivity foam around the end of stave card.
- What is the material at the edge? Might have high thermal conductivity, as well?

Summary



- Temperature profiles of the cooling pipe show a long slope close to the edge around the end of stave card side.
- The similar T slope found with different staves at low or high Temperature:
 - ◆ Stave #2 with intended flaws.
 - ◆ Stave #3 without intended flaws.
 - ◆ Stave QMUL no intended flaws.



backup

QMUL: +40 C

