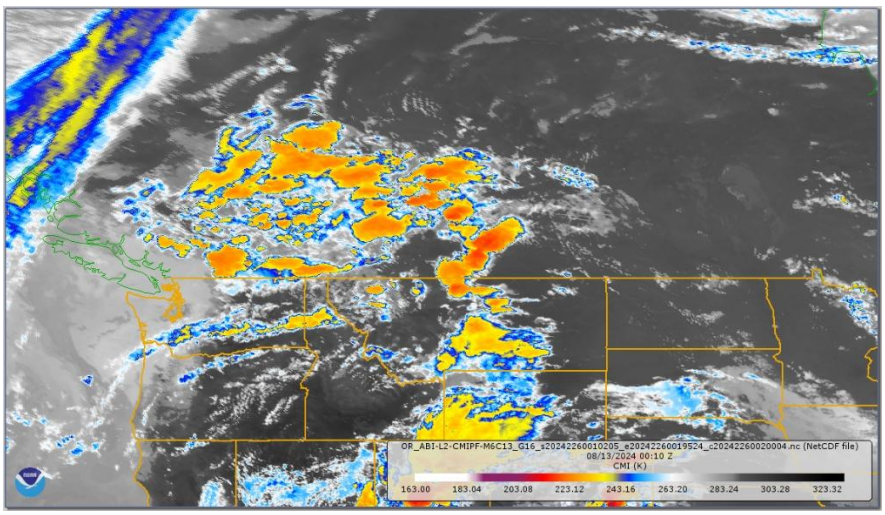
Wang et al. (W25) have offered an intriguing analysis of pyroCb effects on long-range transport and downstream effects. Reading the manuscript with great interest, I encountered a puzzling situation worth bringing to the authors' attention.

Their Figure 4 is the focal point for a detailed illustration of pyroCb-generated clouds and trajectories launched therefrom, in order to make a long-range connection with their Europe focal zones. Whereas W25 appropriately invoke (and cite) an established pyroCb-cloud-detection method combining window IR brightness temperature (BT) and shortwave-window IR brightness temperature difference (BTD), their illustration in Figure 4 comes up short in multiple respects. This came to my attention because the routine, pyroCb monitoring performed within the Worldwide PyroCb Information Exchange (https://groups.io/g/pyrocb) resulted in no pyroCb events in the northwestern USA or southwestern Canada on 12 August 2024 (local time). See Peterson et al. (2025) for a description of the WPIE methodology. Two pyroCbs were identified, but in Northwest Territories north of 60◦N.

I reviewed GOES data for evidence of pyroCbs closer to Figure 4's target features and thereby discovered that the GOES imagery shown in Figure 4 does not apply to the date/time given in the labeling and caption (00:10 and 00:50 UTC 13 August 2024). An example of GOES 16 Channel 13 BT at 00:10 UTC 13 August 2024 (Day number 226) is shown below.



Comparing this with Figure 4a-b reveals a totally different cloud landscape between the two. Thus it appears that the Figure 4 imagery is in error. I checked imagery from 24 hours earlier and later and did not find anything resembling a match with Figure 4. That raises the question of when the cloud fields in Figure 4 occurred. To the extent that the Figure 4 image and trajectory analysis informs W25's findings and conclusions, it appears that this apparent error should be addressed.

Another perceived shortcoming of Figure 4 and attendant discussion is that no fires were identified as the source of pyroCb convection. Given the fact that the WPIE did not document any pyroCbs near the launch points of Figure 4's trajectories, it is suggested that any new source-receptor analysis performed by W25 include a pyroCb image analysis that includes identification of the fire generating the pyroconvection. Lastly, it would be helpful for W25 to use trajectory launch altitudes representative of the cloud heights inferred from the GOES BT imagery. Presently, W25 use 3, 5, and 7 km above ground level, which are low relative to expectations for exhaust from a mature pyroCb.

References

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