

Interactive comment on “Cold fronts – a potential air quality threat over the Yangtze River Delta, China” by Hanqing Kang et al.

Anonymous Referee #2

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This paper tries to reveal impacts of synoptic process on local/regional air quality. The authors focus on cold fronts and their related weather process. This kind of large scale weather system can of course influence local air quality, during its different stage of passing the concerned site. The discussion in this paper is of scientific meaning.

My major concern is on the title, since a cold front itself cannot be a threat on air quality. Usually we consider the passage of a cold front as a cleaner to local air pollutants, since stronger winds may accompany to the cold front. Therefore the title is misleading.

Because of the title and related conceptual confusion, many phenomena and processes are not described/interpreted properly in this paper. It happens also for some concluding sentences.

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In addition, this is only a case study for 18 days of weather processes.

Other points:

1)Page 1 line 29: "The results of this study indicate that cold fronts are potential bringers of atmospheric pollutants. . .", not exactly real.

2)Page 2 line 11: "Cold fronts are important pollutant transport pathways", what does 'pathway' mean here?

3)Page 3 line 1: " Therefore, cold fronts are a potential threat to air quality along its transport pathway", this is never a logic conclusion to previous sentences.

4)Page 8 line 3: " Observations revealed that the cold front was a carrier of aerosol particles which increased PM2.5 concentration over YRD in 21 January. This finding. . .", The cold front carries the air pollutants? Or just the fact is that the air pollutants accompanies the cold front?

5)Page 10 line 14: "Through the horizontal advection process, the cold airmass brought aerosols from the NCP to the YRD", what is the evidence?

6)Page 14 line 8: "Cold fronts are important PM2.5 transport pathways", Cold front is. . . transport pathway? What do you mean?

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