

Interactive comment on “Ensemble cloud-resolving modelling of a historic back-building mesoscale convective system over Liguria: The San Fruttuoso case of 1915” by Antonio Parodi et al.

Anonymous Referee #2

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This work shows the benefits of using numerical methods combined to historical documents to offer a detailed insight into an event that it's not only historically relevant but it's also still observed in the present days. It is commendable that the authors take into account the 56 members ensemble of the 20th century reanalysis project version 2c for members dynamics exploration given the sparse surface data in 1915. Results are shown for the four members reproducing the best strong convergence over the Liguria sea.

General comments:

C1

1. Even if 56 members on the 20th century reanalysis were studied, only four of them reproducing the best the event's dynamics were taken into account while showing the results. It would be interesting to have some comments about the members showing very "non-realistic dynamics" and also about the mean ensemble.
2. Convective systems are generally associated with vertical motion. WRF outputs offers 3D information allowing the generation of vertical cross-section plots or Skew-T diagrams, none of them are shown in the paper. Some graphs and words about this should be added.
3. In general the writing style and content is of good quality but the graphs are not at the same level of quality. Fig. 2 has a background hard to see, Fig. 3 has low quality, Fig. 8 is upgradable, etc. (Check the Specific comments).
4. While the convergence line is a very important criteria for dynamics exploration, it hasn't been shown in any figure. Lines 273 and 274 signals the coordinates of this line but a graphical representation would clarify it.

Specific comments:

- L113 cites WRF version 2 while the work uses WRF version 3, the correct citation would be thus Skamarock et al. 2008 (NCAR/TN-475+STR)
- L128 shows a good example in dates using sometimes upper-case and not using this. This is reproduced all over the paper. Consistency in the style should be shown.
- L179 makes reference to Fig. 2b where it's shown 500hPa Geopotential but this is not stated in the text. Please add a comment on this field.
- L280 text makes reference to QPF even if this abbreviation hasn't been introduced. Please define it.
- L281 addresses Fig. 13 while it should be Fig. 11
- L296 mentions a panel 6 which it's not shown in Fig. 10

C2

- L316 justifies the use of different periods for QPE and QPF but it should be possible to take into account the same period from simulations.
- L347 uses the acronym MET even if it hasn't been defined. Please define it.
- Fig. 2 has a background difficult to read an thus it's hard to identify the location of the fields. Also Fig 2b is not being used in the text correctly.
- Fig. 3 could be maybe digitized for better quality
- Fig. 4 uses different domains and colours are hard to interpret.
- Fig. 8 should show better the topography as seen by the WRF model and also the convergence line grid points over the Liguria sea. It also calls it the "Genoa 1915 event" even if the paper states "The San Fruttuoso Case of 1915"

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C3