

**MWR 2231 (DS) Horvath
Reviewer B 5/24/07**

This paper performs a classification of cyclones that appear in the Adriatic Sea basin based on a four year (2002-2005) subjective analysis of an ECMWF T511 dataset. I believe the author is looking into a rather interesting case study with a scientifically sound methodology but there are numerous problems in the manuscript that I believe need to be addressed before the manuscript is deemed publishable. I've highlighted some of the issues that I have with paper below:

Major Issues:

- The manuscript needs to be edited by someone that is highly proficient in English to correct the numerous grammatical mistakes. I will try to highlight some of the mistakes below that I noticed in the paper.
- In section 4, you provide only one example of type A-I, A-II, B-I, B-II, and AB cyclones and you imply that the synoptic conditions were similar with all of the systems classified in each respective category. I'm not sure that this is the most effective way to treat this issue. I would recommend performing a composite analysis of all the A-I, A-II, B-I, B-II and AB cyclones to see what the revealing composite synoptic pattern reveals.
- I would recommend better highlighting all of your figures. For instance I think you need to clearly label which panel is Figure a and Figure b. Also, I would recommend highlighting the land masses in a bold color so that reader can easily discern the land masses. Other comments on your Figures:
 - On Page 17 you refer to Figs. 8a-b but when you refer to this you're only referring to the March 6, 2005 storm system. Why then is there also a March 3, 2003 figure?
 - Also on Page 17, you refer to Figs. 9a-9b which has dates of 00-12Z on November 4, 2002 but in the text on page 17 you state that the date is November 13. Please clarify.
 - On Page 18, you refer to Figs. 10a-10b which has dates of 18Z July 24 and 06Z July, 2002 but in the text on page 18 you state that the date is 18Z July 25. Please clarify.
 - On Page 19, you refer to Figs. 11a-11b which has dates of 18Z February 13 and 06Z February 14, 2005 but in the text on page 19 you state that the date is November 13, 2005. Please clarify.
- I would recommend breaking up Section 4 into subsections where you can describe the characteristics of each cyclone class. I had a very difficult time reading section 4 and I believe subsets would improve the reading of this section.
- Numerous times throughout the manuscript you refer to a cyclone being steered by the upper level pattern. This may be nit-picky but I prefer to think that a cyclone is constantly developing to a new location based partially on the forcing of the upper levels.
- You also state that numerous cyclones were partially steered by diabatic forcing and I think it would be beneficial to provide some prove and/or modeling of this before stating this in your manuscript.

Other comments:

Page 17:

- In the last paragraph you mention the trof axis shifting from N-S to NE-SW and this would be consistent with a trof becoming more positive tilt with time.

Page 18:

- You refer the reader to note the thermal anomaly but then you don't include a figure. I would recommend including a figure with this statement.
- I would remove the sentence where you state that the system had a westward tilt with height. To me this is implied by the deepening of the system that you mention in the next sentence.
- What do you mean that the system vertical axis tilted clockwise with time? I don't understand what you're trying to convey here.

Grammatical recommendations:

General statement – There were numerous instances where you need to change the nouns from plural to singular and vice-versa. Also there were numerous spelling mistakes throughout the manuscript.

Page 2:

- Second paragraph, fifth line, please add “towards the Adriatic”

Page 3:

- Fourth line of introduction please change “cyclonic activity” to “cyclone activity”
- Second paragraph, lines 2 and 6, please change “Gulf of Genoa” to “the Gulf of Genoa”

Page 4:

- 3rd line, please change “Pyrenees” to “the Pyrenees”
- 3rd line, second paragraph, please change “Central Mediterranean” to “the central Mediterranean”
- 9th, 10th and 12th line, second paragraph, please change “Adriatic”, “Adriatic”, and “northern Adriatic” to “the Adriatic”, “the Adriatic”, and “the northern Adriatic” respectively.

Page 6:

- 3rd line, second paragraph, please change “smaller region” to “a smaller region”
- 4th line, second paragraph, please change “that provides” to “and provides”
- 2nd line in the Data and Methodology section, please change “using similar” to “using a similar” and also “analysis in Meteorological” to “analysis in the Meteorological”

Page 7:

- The accepted American spelling of “Centre” is “Center”. Please make this change. In addition, there are two more occurrences of this on page 17.
- Second line of second paragraph, please correct spelling of “intensive” to “intense”

Page 9:

- First sentence of the second paragraph (ie....Two main types of Genoa....” should be reworded.
- 5th line, second paragraph, please change “northern Adriatic” to “the northern Adriatic” and “tracks start to diverge” to “the tracks start to diverge”
- 6th line, second paragraph, I don’t like the wording of “a part of the cyclones”. Perhaps “a subset of cyclones” would be a better choice?

Page 10

- Last sentence of the second full paragraph, please change “.....to the Adriatic while only the latter track is being of interest to this study” to “.....to the Adriatic while only the latter track is of interest to this study”.
- 3rd line of the 3rd full paragraph, please change “...approximately half of the total number of Genoa cyclones refers to shallow cyclones” to “...approximately half of the total number of Genoa cyclones are shallow cyclones”

Page 12

- First sentence of the first paragraph, please change “Adriatic Sea” to “the Adriatic Sea”
- Second sentence of the first paragraph, please reword to “This type of intrinsic Adriatic cyclone is classified as a Type B cyclone in this study.”
- Second sentence of the second full paragraph, I would recommend changing to something similar to “This type of cyclones has a considerably shorter life-time scale and is less intense than the northern Adriatic type”. Please note the correct spelling of intense.

- 5th line of second full paragraph, I would recommend changing “....season of the year, what implies” to “.....season of the year, which implies”
- 6th line of second full paragraph, I would recommend changing “....much higher if no circulation criterion were applied.” to “....much higher if a circulation criterion were not applied.”
- The sentence “Thus, in the case of use of weakly constrained MSLP criteria.....” in the second full paragraph, I would recommend changing as I had a very difficult time following what you were trying to state.

Page 13:

- I would recommend changing the first sentence of the first full paragraph to “There is an indication of a third group of cyclones that originate in the Adriatic region which appears to be attached to the western coast of the middle and southern parts of the Dinaric Alps.”
- 4th line of third full paragraph, I would recommend changing “this type of rather rare events” to “this type of rather rare event”.
- 7th line of third full paragraph, I would recommend changing “This type of cyclones....” to “This type of cyclone....”

Page 14:

- The second sentence of the second full paragraph I would recommend changing to “These cyclones form in several cyclogenesis areas of the western Mediterranean, such as the Pyrenees, Iberia, Atlas, Aloboran Sea and the Atlantic Ocean.”
- Fifth line of the second full paragraph, I’m not sure I like the wording of “viscous” in this instance.
- 8th line of the second full paragraph, please change “in western Mediterranean” to “in the western Mediterranean”.
- 1st full sentence of the third paragraph, I would recommend changing “.....the Italian peninsula to Adriatic Sea” to “.....the Italian peninsula to the Adriatic Sea”.
- I would recommend rewording the last 3 sentences of Section 3. All of these sentences sound very awkward to me.

Page 15:

- First sentence of the second full paragraph of section 4, I would recommend changing “....cyclone types that attained the most attention...” to “cyclone types that have attained the most attention...”

Page 16:

- You state that a vortex was created on the SW edge of the ridge. What ridge? Atmospheric, terrain? Please clarify.
- 7th line of the first full paragraph, please correct the spelling of “localisation” to “localization”
- 1st full sentence of the second full paragraph, you mention a meso-β mountain range. What range?

Page 17:

- I would recommend changing “....the Adriatic basin and continued its life cycle in Ionian Sea.” to “....the Adriatic basin and continued its life cycle in the Ionian Sea.”
- 3rd line of the first full paragraph, I would recommend changing “....the cyclone moved over to Tyrrhenian Sea.....” to “.....the cyclone moved over the Tyrrhenian Sea.....”
- 4th line of the first full paragraph, I would recommend changing “.....taking the usual path to Ionian Sea....” to “.....taking the usual path to the Ionian Sea....”
- 6th and 7th line of the first full paragraph you mention the high middle Apennines. This wording is very awkward and I would recommend rewording this.
- 11th line of the first full paragraph, I would recommend changing “....while lee centre...” to “....while the lee center....”

Page 18:

- Last sentence of first paragraph, I would recommend changing “In general, it appears that to certain extent...” to “In general, it appears that to a certain extent...”
- 5th line of second full paragraph, please correct the spelling of maximal to maximum.

Page 19:

- 9th line of first full paragraph, I would recommend changing “...but middle Apennines appear to be.....” to “.....but the middle Apennines appear to be.....”

Page 20:

- The last sentence of the second full paragraph of the Conclusion and final remarks I would recommend rewording. This sentence sounds awkward to me.
- I would recommend changing the last sentence of Page 20 from “This type of cyclones usually traverses to northern Adriatic....” to “This type of cyclone usually traverses to the northern Adriatic through northern Italy.....”

Page 21

- In the first full sentence of page 21 I don't like the wording of “...the cyclone tracks diffluence...”. I would recommend changing this to “.....the cyclones tracks diverge...”. In addition in the above sentence and in the following sentence there are two instances where you refer to “a part of the cyclones”. I think this sounds awkward and I would recommend changing this wording to “a subset of cyclones”.
- I would recommend changing the third sentence of the first full paragraph from “Type B-I cyclone typically initiates in the northern Adriatic and slides the basin to the southeast.” to “Type B-I cyclones typically initiate in the northern Adriatic and move southeast through the Adriatic basin.”
- The 1st line of the last paragraph on page 21, I would recommend changing “Another type of cyclones initiated....” to “Another type of cyclone initiated.....”.

Page 22

- 1st line of page 22, I would recommend changing “...while Adriatic twin occasionally.....” to “.....while an Adriatic twin occasionally.....”.
- 5th line of the first full paragraph of page 22, please capitalize Genoa Bay.
- The sentence that begins on the 6th line of the first full paragraph sounds awkward to me. I would recommend rewording this.