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Dr. Joanna Staneva and Piero Lionello  
Editor and Executive Editor– Natural Hazards and Earth System Sciences

Dear Joanna Staneva,

Please find attached the revised version of the manuscript **NHESS-2022-58** entitled ***“Challenges assessing the effect of AMVs to improve the predictability of a medicane weather event using the EnKF. Storm-scale analysis and short-range forecast”***.

I really appreciate the comment of the reviewer to improve the quality of the manuscript. I have followed the comments that were suggesting making bigger the axes of many of the plots. I have enlarged all the figures of the manuscript and now they can be read without problems. I thank both of the reviewers for their comments and I believe the manuscript is now greatly improved both in terms of clarity and readability.

Dear Piero Lionello,

I really appreciate your comments to improve the manuscript. Please find attached my answers to your comments.

With best regards,

Diego Carrió Carrió

## **ANSWERS TO THE EXECUTIVE EDITOR**

Dear Dr. Carrió:

*Before accepting the manuscript (subject to technical correction) I have some suggestions to improve mainly title, abstract and other details.*

*- Please, make your article title more attractive by avoiding abbreviations. A tentative suggestion of mine is “The improvement of the predictability of the Qendresa medicane by the assimilation of in-situ observations and atmospheric motion vectors”. Feel fully free to reject or modify this suggestions for the title, but I insist that you at least avoid abbreviations.*

I really appreciate your suggestion and I agree with you that I could make the title more appealing. I have changed the title of the manuscript to the following:

*“Improving the predictability of the Qendresa medicane by the assimilation of Conventional and Atmospheric Motion Vector observations. Storm-scale analysis and short-range forecast.”*

*- Line 2 “invaluable amount” means “an amount valuable beyond estimation. I think this is not correct, as estimates are possible, though they are necessarily not exact. Please delete or choose a more appropriate qualification*

Thanks for noticing that. I have modified the sentence as follows:

*“Coastal population in the Western Mediterranean basin is frequently affected by high-impact weather events that produce huge economic and human losses.”*

*- Line 4 “to our community”: In this context it is not clear which community is. Please rewrite and specify*

I agree that this part of the sentence could be misleading. I have modified the sentence as follows:

*“The accurate prediction of this kind of events still remains a key challenge to the weather forecast community, mainly because of (i) the errors in the initial conditions, (ii) the lack of accuracy of modelling micro-scale physic processes and (iii) the chaotic behavior inherent to numerical weather prediction models.”*

*- Line 5 I think “of” is needed between modelling and microscale*

I modify the sentence as follows:

*“... the lack of accuracy **of** modelling micro-scale physic processes and ...”*

*- Line 4 -5 I think the use of definite articles in this sentence is not according to English style*

I have changed the sentence as follows:

*“... mainly because of (i) errors in the initial conditions, (ii) lack of accuracy of modelling micro-scale physic processes and (iii) chaotic behavior inherent to numerical weather prediction models...”*

- Line 6 *“in particular”* seems redundant to me

I have deleted *“in particular”* from the sentence and now it can be read as:

*“The 7th November 2014 Qendresa medicane, that took place over the Sicilian channel affecting the Islands of Lampedusa, Pantelleria and Malta was selected for this study because of its extremely low predictability behavior in terms of its track and intensity.”*

- Line 11 *“comma”* after *“thus”* is redundant

Agree. I have deleted the *“comma”* after *“thus”*.

- Maps in figures 15, 16 and 17 are very difficult to be read. Is it possible to reduce the number of contours?... beside increasing the size of labels as already commented by the handling editor

I believe that in the last version of the paper, these figures can be read without problems.

- Line 523 *“a rare type”* is ambiguous (are medicanes rare or this specific medicane has some rare characteristic?... I suggest to delete *“a rare type”*

This is an adjective that other authors have already used in their papers and it is accepted in the community. However, I will follow your suggestion and I will delete it from the sentence. Instead, the sentence is now written as follows:

*“A particular type of Mediterranean cyclone has drawn the attention of the meteorological scientific community.”*