Zagreb, 8 February 2025

Editorial Team

Nonlinear Processes in Geophysics

Dear Editor,

Please find enclosed a revised version of the manuscript titled "*Statistical and neural network assessment of the climatology of fog and mist at Pula airport in Croatia*", revised according to additional suggestions from Reviewer #1.

We have provided two versions of the manuscript: one with tracked changes in Word, and the other with normal text, and additionally all the changes are also referenced in this document. Below, we present the reviewer's comments in regular text, while our responses are highlighted in yellow.

On behalf of myself and all co-authors,

Yours sincerely,

Marko Zoldoš

Comment 1. The conclusion is still not well written. The conclusion should summarize the authors' main findings in the paper, not providing too much new information. For example,

Reply: The conclusion was rewritten according to the reviewer's suggestions. Details are below:

Comment 2. Line 493-498: This paragraph explains the decreasing fog and mist trend and provides some references. It should be moved to the main text. In the conclusion, only use a few sentences to repeat what the authors found.

Reply: The paragraph was moved to Chapter 3.1 and replaced with a shorter summary.

Comment 3. Line 500 – 508: This is how global warming impacts the SST and then fog and mist. They should be moved to the main text, and a few sentences should be used here to summarize.

Reply: The paragraph was moved to Chapter 3.1 and replaced with a shorter summary.

Comment 4. The main findings from Figure 4-13 were not summarized in the conclusion. Please use a few sentences to summarize the main findings from Figure 4-13.

Reply: Several new sentences were added to the conclusion to summarize these findings.

Comment 5. Line 510-516: This is related to Figure 14 but too much content. They should be moved to the main text. The authors can use a few sentences here to summarize Figure 14.

Reply: The paragraph has been deleted because the majority of the content is already described in the main text (Figure 14). It was replaced with a shorter summary.

Comment 6. Line 168: From here, the authors started to describe the GNG method. It is better to start a new paragraph to improve readability.

Reply: A new paragraph was started.

Comment 7. Line 184: "whereas over land, the influence of topography and vegetation introduces noise, masking these processes." I don't understand 'masking these processes.' what processes? And why 'masking'? Maybe it is better to use another word.

Reply: The reviewer is correct; the phrasing was unclear. The text has been rephrased:

Over the sea, the winds are very homogeneous and are often directly related to large-scale synoptic systems such as cyclones or anticyclones. Over land, the influence of topography and vegetation introduces noise, making it more difficult to distinguish synoptic influences from local influences.

Comment 8. Line 207: “Airport, 2021-2020.” Should it be 2001-2020?

Reply: Yes, this was a typo which was corrected.

Comment 9. Line 302: “Fog rarely occurs in calm conditions, suggesting an optimal wind speed range for its formation and warranting further exploration, a “

Which figure justifies this sentence? Figure 6b shows dots when the wind speed is 0. It looks like fog can also occur in calm conditions.

Reply: While fog can form in calm conditions, Figure 4b shows that it is rare compared to other categories (when wind speeds are 1 ms^{-1} or lower). The color scale in Figure 4b has been improved to make this more visible, and the reference to the figure has been added to the text:

Fog rarely occurs in calm conditions (Figure 4b), suggesting an optimal wind speed range for its formation and warranting further exploration, as the role of wind speed on turbulence and surface heat fluxes, as highlighted by Gultepe et al. (2007), significantly influences fog.

Comment 10. Line 326, Figure 7: It is optional. The authors can consider adding a diagonal line to indicate where SST = SAT. So the reader can better visualize the parts where SST > SAT and SST < SAT.

Reply: The diagonal line was added to the figure, with an explanation in the captions. Furthermore, the figure has been slightly altered to better conform to rules regarding readers with color vision deficiencies.

Comment 11. Line 329, Figure 8 caption: ‘without fog or mist’

Please confirm if it is ‘Without fog or mist" or ‘‘without fog and mist’. ‘Without fog or mist" means at least one (or both) of these conditions is absent. "Without fog and mist" means the complete absence of both fog and mist. Since panels b and c are fog and mist. It looks like panel a means ‘without fog and mist’.

Reply: Yes, “without fog and mist” is the correct phrase, and the caption was corrected.

Comment 12. Line 420, “figure 13g, 13h”: I think it should be “figure 13e, 13f”. There are cyclones in Figures 13e and 13f.

Reply: Yes, “figure13e, 13f” are the correct figure titles. The text was corrected.

Comment 13. Line 506: “Warmer SSTs reduce the temperature gradient required for fog formation and increase evaporation rates, promoting fog advection when winds are favorable.”

I think warmer SST increases the temperature gradient between SST and air temperature above if SST > SAT. Please explain.

Reply: We considered only those specific cases where SST<SAT, but the sentence was indeed unclear. It was rephrased (and also moved from the conclusion to the main text):
Warmer SSTs influence fog formation in two ways. Generally, they increase evaporation rates, enhancing fog advection when winds are favorable. Additionally, in cases where fog forms with SST < SAT, they reduce the temperature gradient required for fog development.