Based on the reviews of both reviewers and the author's responses, the quality of this manuscript has been significantly improved. However, further improvements are needed in the physical explanations, experimental rigor, and language expression. As a scientific paper on AI applications in meteorology, the "good results" need to be clearly explained, including the reasons why they are good, potential issues, and future development directions. The structure of the paper also needs to be very clear and well-organized. It is recommended that the author address the following issues to further improve the manuscript, especially strengthening the discussion on the physical validity of the model and the comprehensiveness of experimental comparisons to enhance the academic persuasiveness of the manuscript. I recommend that this manuscript undergo moderate to major revisions.

1. Model Explainability and Physical Reasoning

Issue: Although the author has verified the model's performance through experiments, the physical mechanism explaining how the model improves precipitation forecasts via the GAN strategy is insufficient. The reviewers pointed out that the impact of terrain and meteorological features on precipitation needs more in-depth discussion, particularly on how the model captures these physical relationships.

Suggestion: Add an analysis of the physical validity of the model, such as visualizing feature importance or incorporating meteorological theories to explain the correlation between model outputs and terrain or meteorological conditions.

2. Comprehensiveness of Experimental Design

Issue: While the author has conducted ablation experiments to verify the role of key components (such as the SE module and weighted loss function), comparisons with other simple models (such as Random Forest or SVM) are lacking, making it difficult to fully prove whether the complexity of the GAN is necessary.

Suggestion: Supplement with comparisons to simple models, illustrating the irreplaceability of the GAN in improving forecasting accuracy and structural details, or discuss its cost-effectiveness.

3. Data Size and Generalization Ability

Issue: Using only 4 years of data may limit the model's generalization ability, and

the model's performance in other regions or over longer time series has not been verified. The reviewers suggested expanding the dataset or conducting cross-regional validation.

Suggestion: Clearly state the limitations of the data in the discussion and plan future work to validate the model in other regions or over longer time periods, or use cross-validation to enhance the credibility of the results.

4. Consistency Analysis of Results

Issue: Some results are contradictory (e.g., GFRNet has a lower TS than FRNet at the 40mm threshold), and the author attributes this to the conservativeness of the GAN but lacks statistical significance analysis.

Suggestion: Add statistical tests (e.g., t-tests) or error analysis to indicate whether the differences are significant, and discuss the pros and cons of the conservative strategy for practical applications.

5. Transparency of Technical Details

Issue: The selection of hyperparameters (e.g., gradient penalty coefficient γ, loss weights a/b) lacks a description of the systematic optimization process, with only grid search mentioned but no results provided.

Suggestion: Include detailed experimental data on hyperparameter selection in the Appendix or methods section to enhance reproducibility.

6. Language and Expression Standardization

Issue: Reviewers pointed out that some language expressions are not professional enough, and there is inconsistency in terminology and citation format, while the readability of charts and tables could be improved.

Suggestion: Thoroughly review the language throughout the manuscript to ensure consistency and standardization, including captions and table headings.

7. Specificity of Future Work

Issue: The discussion mentions directions like "integration of physical constraints" and "higher resolution," but lacks specific implementation plans.

Suggestion: Elaborate on future plans, such as how to incorporate physical equations into the model or specific data augmentation strategies.