

Geosci. Model Dev. Discuss., referee comment RC2
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Comment on gmd-2021-405

Anonymous Referee #2

Referee comment on "Rad-cGAN v1.0: Radar-based precipitation nowcasting model with conditional generative adversarial networks for multiple dam domains" by Suyeon Choi and Yeonjoo Kim, Geosci. Model Dev. Discuss.,
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Review of Rad-cGAN v1.0: Radar-based precipitation nowcasting model with conditional Generative Adversarial Networks for multiple domains by Choi and Kim

This work adapts several classical CNN-based deep learning (DL) models for precip nowcasting. Specifically, the authors used Rad-cGAN, an adversarial learning network, to perform short-term prediction using radar data. The authors also demonstrated transfer learning, which is interesting. I think the work is publishable after some moderate revision.

- L100, "For image translation tasks ..." Here the objective of G should be minimizing the whole L_{cGAN} , not just the second part of it.
- Lookback period was fixed to 3 steps (i.e, t-30, t-20, and t-10). We know recurrent neural networks can be sensitive to length of lookbacks. Have you tried longer lookback?
- Model domain is fixed to 128x128. To me, this is really inconvenient. What if you need to deal with large model domains? Can you apply the 128x128 model to other nearby areas?
- Resolution of all figures need to be improved. The fonts are all blurry. Suggest regenerate the figure using $\text{DPI} \geq 300$.
- Figure 3. I don't see a significant advantage of Rad-cGAN over Unet and Conv-LSTM. All the deep learning models underestimated the high magnitude rainfall events, which leads to my next comment.
- Here the authors only considered autoregression using radar reflectivity. Do you think incorporating other features (e.g., DEM, Wind, temp) can improve prediction skill?

