

The paper proposes Deep Wind, a physics-informed neural network to reconstruct 3-D wind fields from incomplete observations while embedding mass consistency and boundary conditions. The method is compared against some benchmarks on several synthetic cases and one real case based on a typhoon dataset. Below are my major comments:

1. The horizontal components are normalized by their local magnitude, i.e., $(u', v') = (u, v) / \sqrt{u^2 + v^2}$. This appears to remove speed information and retain only direction, How the original speed magnitudes are recovered for evaluation/visualization?
2. The typhoon dataset includes levels “from 10 m to 300 m,” but the extracted parameters are WD10M, WS10M, WSC, PS. As written, this is a little ambiguous. Does the model use the higher-level winds or whether vertical profiles are obtained via interpolation only?
3. The penalties parameters are set $\beta_1 = \beta_2 = 1$. Could you please justify this fixed choice? It would be better to include a sensitivity analysis (e.g., $\beta_1, \beta_2 \in \{0.1, 1, 10, 100\}$).
4. Please define all operators and symbols. While readers familiar with PINNs may infer them, others in data science, statistics, or general machine learning may not.
5. In Figs. 2–5, I would suggest using thinner arrows (and consistent color scales) to make small errors more visible.