

Review for GMD manuscript egusphere-2023-491 titled
“Implementation of a Simple Actuator Disc for Large Eddy Simulation
(SADLES-V1.0) in the Weather Research and Forecasting Model (V4.3.1)
for Wind Turbine Wake Simulation” by Hai Bui et al.

Summary:

This manuscript presents a new wind turbine parameterization model called SADLES for WRF model, which strikes a balance between the accuracy of the GAD model and the computational efficiency of the WFP models. SADLES only requires power and thrust curves, which are already available in WRF. They validate the effectiveness of SADLES with PALM and also demonstrate a more realistic application by downscaling reanalysis data to investigate turbine-to-turbine and farm-to-farm interactions.

Comments:

The authors used SADLES and WRF-SADLES interchangeably in the manuscript. They should settle on using only one of the two names.

It is not clear on which option should users choose for the direct / inferred evaluation estimations of axial induction factor (a). Option 1 is used for the realistic application in the manuscript. Option 2, however, is more appropriate where the resolution is at a few hundred meters. It'll be great to have some recommendations to use each Options.

Figure 2 caption: “Power, thrust coefficient ...” should read “Thrust coefficient ...”

There are 2 red stars, one is FINO1, the other is not defined on Figure 8a.