This manuscript (egusphere-2026-977), titled ***Aerodynamic evaluation of wind speed sensor placement on UAVs for meteorological applications***, investigates how rotor-induced flow affects the placement of UAV-mounted wind-speed sensors for meteorological applications. The authors employ an in-house free-vortex wake model (FVM) to simulate an APC 12 x 6E propeller in isolated single-rotor, quad-rotor, and hexa-rotor configurations. The single-rotor analysis covers hover, axial descent, and forward descent, whereas the multi-rotor analysis is restricted to hover. Two disk-loading conditions, 100 and 300 N m^{-2}, are considered. Regions in which the time-averaged induced-velocity magnitude is no greater than 1% of the rotor-tip speed are identified as quiet zones for sensor placement. The FVM is compared with TriSonica Mini measurements along the axis of a single rotor in hover at a disk loading of 200 N m^{-2}, together with previously reported thrust and power comparisons. The authors conclude that the available quiet zones depend strongly on flight condition and that locations near the geometric center or between rotor axes may provide candidate mounting positions for multi-rotor UAVs.

The topic is relevant to Atmospheric Measurement Techniques, and an efficient mid-fidelity framework for screening rotor-induced disturbances could be useful for UAV-based atmospheric measurements. The manuscript is generally structured clearly and contains potentially valuable flow-field results. However, the current definition of a quiet zone is not tied to a meteorological measurement-error requirement, the model validation is not sufficient to establish the reported placement boundaries, and the numerical convergence and cross-scale generalization remain unresolved. These issues affect the central conclusions rather than presentation alone. Therefore, I recommend major revisions before the manuscript can be considered for publication in AMT.

General comments:

1. The quiet-zone criterion needs stronger measurement-based justification. For the radius and angular-speed range in Table 1, 0.01 V_{tip} equals approximately 0.79-1.37 m s^{-1}, which may be substantial for low-wind, vertical-wind, and turbulence measurements. Moreover, the classification is based on a time-averaged induced-velocity magnitude. Although Figs. 8 and 10 and Fig. A1 show 1-sigma bands for selected axial profiles, these do not characterize the individual velocity components or candidate multi-rotor locations, where cancellation may produce a small mean but large fluctuations. Please relate the threshold to the intended measurand, sensor

uncertainty, acceptable component and direction errors, and atmospheric wind range; report component-wise mean bias, RMS or standard deviation, relevant percentiles, and spectra at candidate locations; and clarify whether the metric is $|\langle V_{ind} \rangle|$ or $\langle |V_{ind}| \rangle$.

2. The validation is insufficient for quantitative placement boundaries. The new experiment covers one isolated rotor, one hover operating point, and axial locations only; it does not validate the two-dimensional contour, descent or oblique inflow, or multi-rotor interaction. The reported upstream difference of about 0.005 V_{tip} is already roughly half of the 0.01 V_{tip} threshold. Please provide validation statistics and an uncertainty budget covering sensor accuracy, position, RPM and thrust variation, repeatability, averaging duration, blockage, laboratory background flow, and confidence intervals, and add spatial or multi-rotor validation. Otherwise, present the results explicitly as qualitative screening.
3. The numerical setup may control the reported descent boundaries. Only six wake turns are retained, and lines 305-308 state that the apparent decay above $z/R = 4.35$ is partly caused by truncation. The grid is stated to end at $z/R = 6$, whereas Figs. 10 and 11 report results up to approximately $z/R = 10$ and 7.5. Please reconcile the domains and demonstrate convergence with wake age, grid, time step, blade discretization, vortex-segment length, and vortex-core treatment; numerical uncertainty should be well below the 1% classification threshold.
4. The cross-scale generalization based on disk loading in Appendix A is not established. For a fixed-pitch rotor under aerodynamic similarity, the thrust coefficient is approximately independent of rotational speed apart from Reynolds-number, Mach-number, and other non-similar effects. Equal disk loading alone does not ensure similarity when blade loading, solidity, blade number, geometry, Reynolds number, Mach number, advance ratio, and rotor spacing differ. Figure A1 compares only one axial hover profile. Please revise the theoretical argument and restrict generalization to the tested APC geometry unless a fuller similarity analysis is provided.
5. The multi-rotor conclusions are based on idealized zero-freestream hover and omit the airframe, arms, motors, fuselage, sensor body, and mounting boom. A UAV holding position in nonzero wind experiences oblique inflow, tilt, and unequal rotor loading, while the omitted structures can distort the proposed mounting locations. Please analyze representative winds and directions, attitudes, rotor-speed imbalance, spacing, rotation, phase sensitivity, and preferably a full-platform sensor

configuration. Otherwise, consistently describe the results as candidate regions of low rotor-induced mean velocity rather than validated optimal sensor locations.

6. Several central statements are internally inconsistent. The single-rotor hover boundary is reported as about 1.86R in Sect. 3.2 and Fig. 10 but as 1.75R in the conclusions. The quad-rotor geometric-center values are about 2.10R and 3.30R, and the high-loading hexa-rotor value is about 3.36R, whereas the conclusions summarize the range as 1.75R-3R. The abstract favors the geometric center over locations above individual rotor hubs, while Sects. 3.3.1 and 3.3.2 report lower minimum heights on the hub-intersecting planes. The statement that weak axial descent requires the greatest separation conflicts with Fig. 11, and hover is called the limiting condition although axial descent is more restrictive. Please reconcile all numbers and revise the abstract and conclusions to match the actual simulations.

Technical comments:

1. Pages 8 and 11-12: clarify whether the rotor disk or rotor axis is parallel to the ground, how upstream and downstream measurements were obtained, and which TriSonica components were used to calculate V_{ind}, particularly because the vertical component was excluded. Provide the sampling duration, repeated runs, filtering or detrending, room dimensions, wall and ground clearances, environmental conditions, sensor-position accuracy, and independent disk-loading measurement. At approximately 7143 RPM, the two-bladed blade-passing frequency is about 238 Hz, far above the 40 Hz sampling rate; discuss aliasing and state that rotor-frequency fluctuations cannot be validated.
2. Pages 12-18: convert μ_x and μ_z into dimensional velocities for the tested rotor and discuss whether values up to 0.20 are representative of meteorological UAV operations.
3. For the quad- and hexa-rotor cases, define whether disk loading is total thrust divided by total disk area or per-rotor thrust divided by one-rotor disk area and explain how it is imposed numerically. Also report the initial azimuth and relative phase of all rotors and whether phases remain locked.
4. The 100 x 100 grids span approximately 7R laterally and 9R axially, yet quiet-zone locations are reported to two decimal places. Please state the contour-interpolation procedure and avoid precision unsupported by the grid and convergence uncertainty.

5. Figure 6: provide the source and calculation method for every UAV and helicopter data point. Also clarify whether all listed values use consistent definitions of maximum take-off weight, rotor area, and disk loading.
6. Table 1 gives a collective pitch of 5.6168 degrees, whereas Appendix B describes the APC rotor using 5 degrees. Please reconcile these values and state whether the actual APC airfoil geometry or the surrogate NACA 0012 model is used in each calculation.
7. Please proofread and improve presentation. Examples include "meterological", "aysmmetric", "cancelation", "from from", "with a significantly well", "wake axial descent" (apparently "weak axial descent"), "analyzes" where "analyses" is intended, and the "1-XX" reference placeholder. Figures 9, 13, and 15 need clearer legends, color-blind-safe colormaps, more distinguishable binary shading or patterns, and explicit contour coordinates; cite the sources and permissions for Fig. 2 product images.