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# A MODULAR V & V METHODOLOGY FOR ASSESSING THE CREDIBILITY OF EDDY-RESOLVING SIMULATIONS IN COMPUTATIONAL WIND ENGINEERING

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The widespread use of complex and light-weight structures imposes the need for numerical wind tunnel simulations to evaluate wind effects on structures. While having many developments for error and uncertainty quantification for general fluid flow, these methods are marginally used in CWE. The unsteady nature of the problem and use of eddy-resolving simulation techniques increase the restrictions on the credibility of established assessment approaches. This paper is part of a project aiming at defining an integrated verification and validation methodology to assess the predictive capabilities of wind load calculations using CWE and increase simulation's results reliability. The overall approach is split into three main work packages. The first work package, code verification, has been discussed in [1]. The second work package, solution verification, is addressed in this paper. The proposed approach for solution verification is defined by performing the analysis on several layers: compute statistical uncertainties, compute basic signal descriptive properties, perform turbulence resolution sensitivity study and finally numerical error and uncertainty estimation. The procedure proposed in [2] is adapted for the numerical error and uncertainty estimation. Finally, the open-source code KRATOSMultiphysics is used for the simulation and testing of this approach.

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