Challenges in using scanning lidars to estimate wind resources in complex terrain - DTU Orbit (17/08/2019)

Challenges in using scanning lidars to estimate wind resources in complex terrain
Pairs of synchronously scanning Doppler lidars measure the average wind speed of flows crossing the parallel ridges at Perdigão, Portugal, with the ultimate purpose of wind resource estimation. The availability of the data from the lidars when they are running is quite low (50–70%). Furthermore, the instruments did only run less than half the time of the experimental period. These figures have to be improved in order for scanning lidars to be a viable option for wind resource estimation. The variations along the ridges are compared to neutral LES calculations making a good match at the upstream ridge but a significantly worse prediction at the downstream ridge. One reason could be an insufficient representation of the terrain. Another unknown is the influence of the atmospheric stability on the flow which is clearly seen by the scanning lidars.

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