

## Deliverable report: D3.3

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*Work Package:* WP 3 – 'From siting parameters to atlas of turbine class – processing for commercial value'  
*Deliverable name:* D3.3 – 'Report for Task 3.3 and 3.4'  
***Milestone status:* Completed**

### Deliverable and task description

Task 3.3: To apply Task 3.2 to siting parameter data from WP2 to generate datasets of site fatigue loads (EMD)

Task 3.4: To generate a global atlas of recommended turbine class, with uncertainty estimation (EMD)

### Deliverables and outcomes

Task 3.3: Global datasets of fatigue and ultimate loads have been calculated in three heights of 50m, 100m, and 150m.

Task 3.4: The resulting load datasets have been converted into a global atlas of IEC design class recommendations. The uncertainty on of the recommendations will be inherited from the uncertainty on the siting parameters which will be provided by DTU during June 2021.

### Solutions

Task 3.3: The generic turbine load response models prepared in Task 3.2 [1] were used to calculate the fatigue loads on EMDs high performance cluster. Ultimate loads were assessed directly with reference to the 50-year extreme wind speed and its associated air density.

Task 3.4: IEC design class recommendations are divided into fatigue limit state (FLS) and ultimate limit state (ULS) recommendations. The recommendations are based on the design class which fulfills structural integrity for all considered components with the least load reserve. The uncertainty on the recommendations will be categorized as either "low uncertainty", "medium uncertainty", or "high uncertainty". For ULS the IEC class uncertainty will be inherited from the uncertainty on the GASP 50-year extreme wind speed, and for FLS the IEC class uncertainty will be inherited from the uncertainty on the GASP 90% quantile of turbulence intensity.

### References

[1] GASP\_Deliverable\_3.1.pdf