Geoscientific
Model Development

Supplement of

Simulating damage for wind storms in the land surface model ORCHIDEE-CAN (revision 4262)

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Outer area

Inner area

$$A_{inner} = \frac{1}{4} \cdot \left(\left(A_{gap}^{\frac{1}{2}} + 2 \cdot 9h \right)^2 - A_{gap} \right) \cdot \left(\frac{A_5}{A_{gap}} \right)$$

GAP
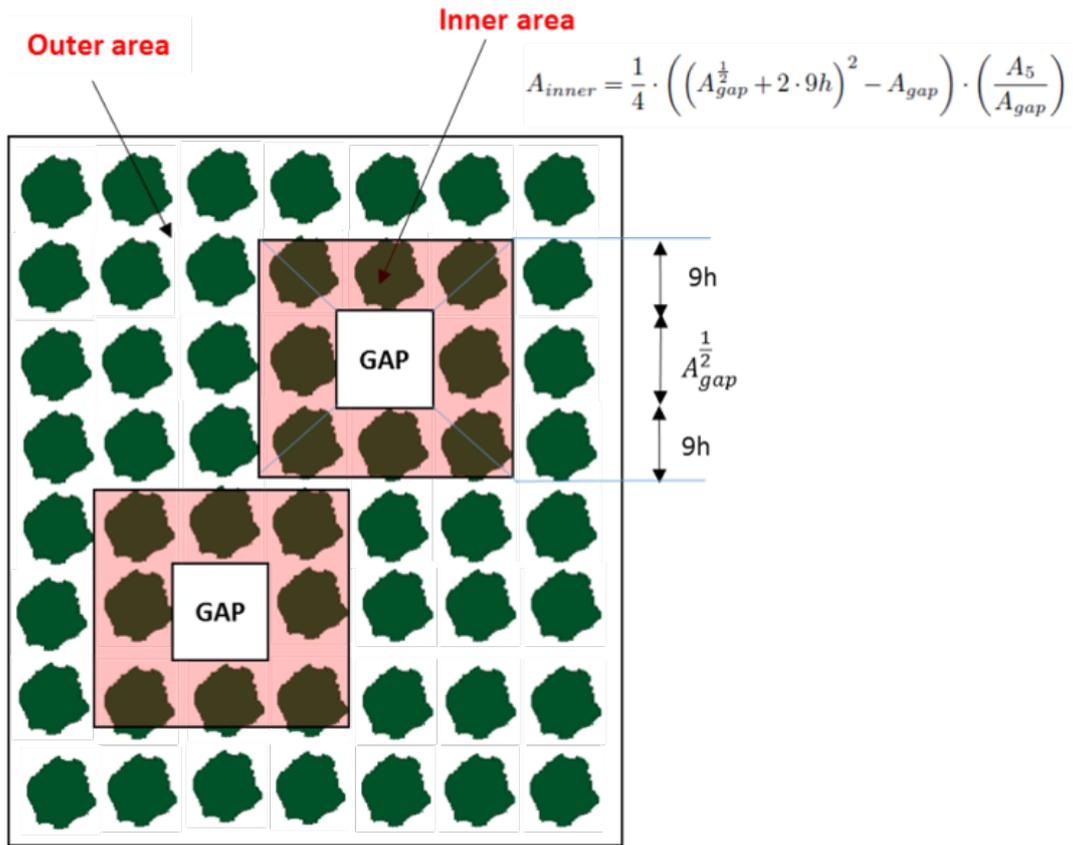
9h

$A_{gap}^{\frac{1}{2}}$

9h

GAP

Figure S1. Illustration of inner and outer area generated by gaps within a forest area.
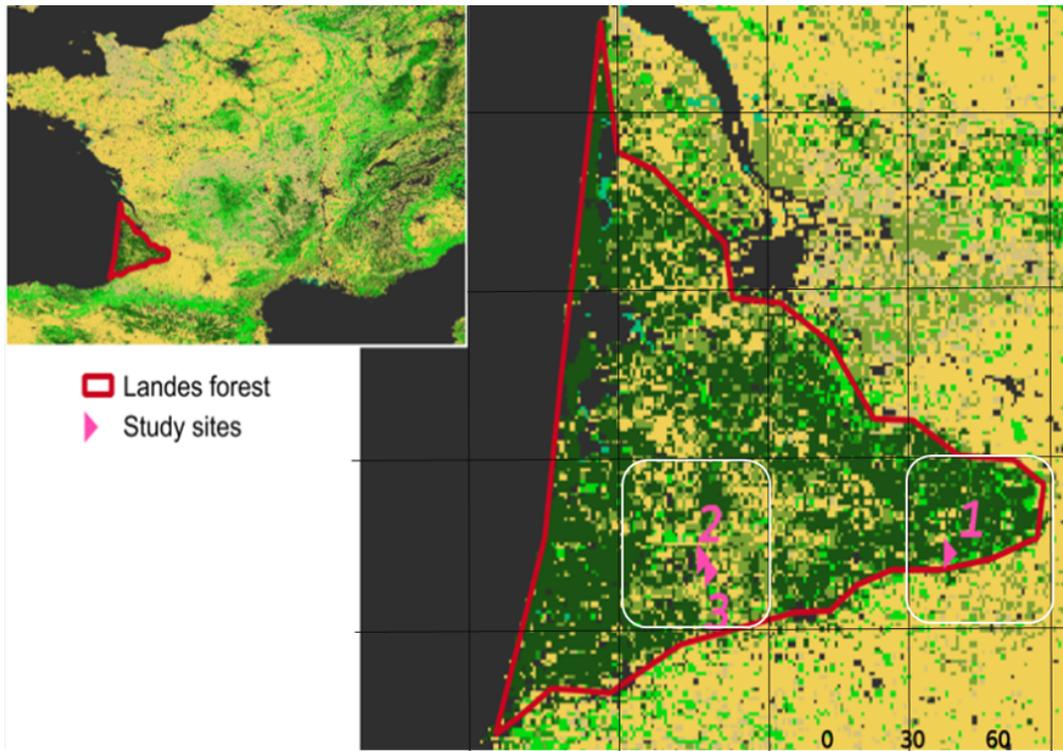
2

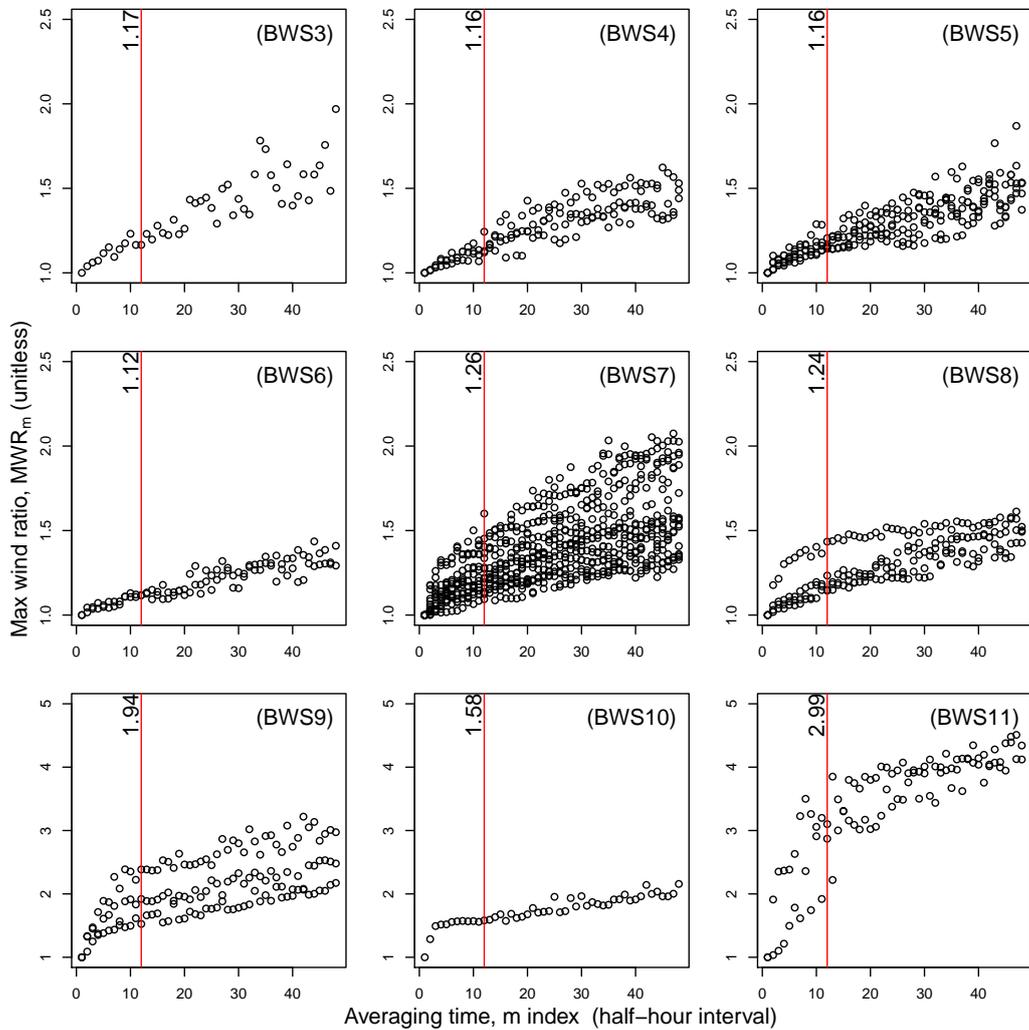**Figure S2.** Illustration of selected points in the les lands forest.

Figure S3. The effect of different temporal aggregation period, an increasing in m index for a 30 minutes extension, on the wind speed at selected Fluxnet forest sites. The red line in each sub-plot indicates of using a 6h aggregation period ($m = 12$, because $m = 1$ represents 30 minutes).