Large eddy simulation of wind loads on solar panels

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Purpose   Wind loads is a major concern for roof-mounted solar panels and should be investigated for design.

Outline   Wind pressure distributions and flow field characteristics around solar panels are investigated by large eddy simulation using OpenFOAM.

Result   Both large-scale separated and reattached flow induced by roof edges and small-scale local vorticities near the solar panels determine the wind loads on solar panels.

Computing system: OCTUPOS CPU

node-hour   230 node-hour
memory used   30 GB
vector per   85 %
parallelize   1 node

UMean X
-5   0   5   10   15

z
0.4

Row 1   Row 2   Row 3   Row 4   Row 5   Row 6   Row 7

Solar arrays for $\theta=0°$