

# Review of “Large eddy simulations of surface roughness parameter sensitivity to canopy-structure characteristics” by Maurer et al.

## I. General Comments

The manuscript was revised extensively and improved significantly. I have some minor concerns for the authors to address before the manuscript is published.

## II. Specific Comments and Technical Corrections

1. Page 13, line 29: Please explain why  $h = 22$  m was used for the classical case.
2. Page 14, line 1: For the realistic LES case,  $z_0 = 0.094h$  was given on page 14 (line 1). It is inconsistent with  $z_0/h = 0.05$  and  $z_0 = 0.9$  m given in Table 1 and  $z_0 = 0.94$  m given in Table 3.
3. Table 1, case (e): The values  $d/h = 0.67$  and  $d = 14.2$  m give  $h = 21.2$  m; whereas the values  $z_0/h = 0.05$  and  $z_0 = 0.9$  m give  $h = 18$  m. These values of canopy height are inconsistent with each other. Nor are they consistent with  $h = 27$  m given in Table 1.
4. Table 1, case (e): Please explain why the result of  $h_a$  for this case is significantly lower than the canopy height, whereas the results of  $h_a$  for all the other cases in Table 1 are very close to the canopy height. Putting case (e) into Figure 2(c) will change the conclusion on page 17 (line 16) that a linear relationship exists for  $h_a$  and gap fraction.
5. Table 1, from cases (d) and (e):

Experiment	LAI	LAD	Height (m)	Gap Fraction	d (m)	$z_0$	$h_a$
(d)	4.2	Natural	27	0%	20.1	2.9	27.1
(d)	4.2	Natural	27	10%	20.4	2.7	27.0
(e)	4.2	Natural	27	5%	14.2	0.9	16.7

It looks that the setup of these simulations are only different in the gap fraction. Please explain why the results of  $d$ ,  $z_0$  and  $h_a$  for the case of a gap fraction of 5% are so different from the other two cases, whereas the results of  $d$ ,  $z_0$  and  $h_a$  for cases of gap fractions 0% and 10% are very similar to each other.