Firebrand flux

186 m

0 m

320 m

FBP X

FBP Y

FBP Z

FCS X

FCS Y

FCS Z

Fire line

Road

320 m

160 m

300 m

250 m

150 m

100 m

50 m

Case A: 2 m

Case B,C: 7m

1. Increasing the Fireline depth

The fireline depth was increased to 7 m and firebrand temperature was set to 1044 0C (time averaged local gas temperature) according to the IMFSE thesis. (see page 58). Despite having a good results for total firebrand flux at individual locations, the individual firebrand flux of size classes in X location varied against the experimental results. Below plot is about that.

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| Landing firebrand flux vs size comparison of the experiment and the simulation -  case C (fireline depth 7m and T=1044 0C) |

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To solve this, we assume the densities of firebrands change during the flight due to moisture evaporation and pyrolysis. The density variation in terms of % of initial density were taken again from IMFSE thesis (see page 66 Fig. 30) and our firebrands densities were adjusted according to that.

A few simulations were carried out after changing the density with 1.5 m coarse grid. From there, a two simulations with firebrand input combinations show some good results.

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| Coarse grid 1.5 m |
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| Coarse grid 1.5 m |
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Below results are related to the finer grid simulations of above two simulations.

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| Finer grid 0.75 m |
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| Finer grid 0.75 m |
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