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: 7m

1. Increasing the Fireline depth

Case A: 2 m (x=186 m to 188 m)

Case B: 7 m (x=183.5 m to 190.5 m)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Case | Wind velocity  (m/s) | Particle velocity  (U,V,W) m/s | Ember input rate pcs/s | Flux (pcs/m2/s) | | |
| FCS Z | FCS Y | FCS X |
| **A**:depth 2m | ≈2.2 | (8.3, 0.0, 2.1) | 11006 | 1.946 | 0.977 | 0.798 |
| **B**:depth 7 m | ≈2.27 | (8.3, 0.0, 2.1) | 13317 | 1.330 | 0.950 | 0.881 |
| Experiment | 1.4±0.6 | NA | NA | 1.361 | 0.902 | 0.824 |

Firebrand flux differences

|  |  |  |  |
| --- | --- | --- | --- |
|  | Difference (%) | | |
| FCS Z | FCS Y | FCS X |
| Case **A (2 m)** to Experiment | 30.0 | 7.6 | -3.3 |
| Case **B (7 m)** to Experiment | -2.3 | 5.1 | 6.4 |

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| Firebrand size composition comparison of the experiment and the simulation |

\*\*Another simulation is running with the initial particle temperature of 1044 0C.

Firebrand input rate = 13 317 pcs/s

Average HRR = 2687 MW

Firebrand generation rate =(13 317 pcs/s)/(2687 MW)

=4.956 pcs/MW/s

|  |
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| Firebrand accumulation (location)  Firebrand accumulation (shape) |

1. Job cost

Job cost = ncpus\_request x max[ 1, (ncpus\_per\_node/mem\_per\_node)x(mem\_request/ncpus\_request)] x walltime\_usage x queue\_charge\_rate

normal queue has its nodes with ncpus\_per\_node=48 and mem\_per\_node=192GB.

If ncpus\_request = 16,the maximum mem\_request= 64 GB

And a AS3959 simulation trials could be run with large number of particles without crashing.

1. Submitted ISILC abstract and the presentation (completed)
2. Post processing and corrections of the paper (ongoing)
3. Completed the parts of the review paper (completed)
4. Grass fire simulations (Communicating)