

5.1 INTRODUCTIONS & MEETING GOALS AND OBJECTIVES

Brad Schmidt (CoE) opened the meeting by thanking everyone for attending and participating. Brad then discussed the topics and objectives of the meeting, which are captured in the agenda. The meeting was preceded by a morning meeting with staff from NOAA's National Weather Service (NWS), including several Incident Meteorologists; many participants from that meeting also participated in the CO-FPS Stakeholder meeting. The NWS meeting included a review of CoE activities by Brad Schmidt. Many participants in the NWS meeting expressed interest in the verification process and results for CO-FPS. It was suggested that the GOES-16 IR product (1 km, 15 min updates) may be very useful for identifying new fires.

5.2 PRESENTATION OF GENERAL UPDATE ON COE ACTIVITIES

Brad Schmidt and Bill Mahoney provided updates on COE and CO-FPS activities.

- Brad Schmidt presented a list of CoE efforts and recent activities
- Bill Mahoney introduced CO-FPS with a brief status regarding our goals for this period of performance

5.3 PRESENTATION AND DISCUSSION ON CO-FPS DEVELOPMENT ACTIVITIES

- Branko Kosovic provided some slides on what we are doing regarding verification of the CO-FPS predictions
- Jim Cowie presented an engineering update.
- Branko discussed the Rapid Simulation system and our plans for development

5.4 PRESENTATION ON POTENTIAL UTILIZATION OF CLOUD COMPUTING FOR FIRE BEHAVIOR MODELING

John Exby of NCAR presented initial results from NCAR's efforts to assess the feasibility of using a cloud-computing platform for CO-FPS simulations. The short discussion that followed indicated the stakeholders generally believe the costs are reasonable. Moreover, they appreciated the potential benefits of this approach in terms of broadening the capabilities of the CO-FPS system.

5.5 CASE STUDY REPORT ON CAWFE FIRE MODELLING OF THE FALL 2016 GATLINBURG TENNESSEE FIRE

Branko presented results from the Chimney Tops Fire case study (November 2016; Gatlinburg TN). A long discussion followed regarding how a spotting capability might be implemented in CAWFE. Some ideas suggested to accomplish this include (1) use an ensemble approach to provide spotting probabilities and (2) develop an external tool that will provide a measure of spotting risk that is fed into CAWFE. A suggestion was also made to include a 'spotting' option on the CO-WIMS display

with an ‘intensity’ slider to control how the spotting is computed internally in CAWFE. Most people were OK with the possibility of over-predicting the spotting potential. It was also pointed out that certain fuels are more likely to be associated with spotting. A suggestion was made to use machine learning to tune spotting risk, but the difficulty with that option is lack of observations to tune a machine learning algorithm.

With further discussion, the users seem to converge on the idea of having a CO-FPS that will:

- Allow users to enter actual spotting information as it occurs in which the system would predict the interactions between the spotted fire and the main fire;
- Develop a system that would predict spotting through fuzzy logic or stochastic approaches.

Users also want to be able to compare fire spread predictions with:

- No spotting;
- User entered spotting; and
- An automated algorithm for predicting spotting.

5.6 OPEN DISCUSSION

Rocco has run some fires recently and had a sense that the system did a good job and produced reasonable results. On the other hand, the Boulder IMET said that recently the HRRR model has not been correctly forecasting certain circulations along the Front Range. Thus, there might be some lack in confidence in CAWFE knowing the HRRR is used for background conditions.

A question was raised regarding whether it might be possible to adjust the HRRR using artificial intelligence techniques, or perhaps using an ensemble. Another option suggested for improving the forecast is the use of a time-lagged ensemble. Some participants suggested that the future version of the HRRR ensemble may provide an improved model background for CAWFE forcing.

Colorado NWS staff members are interested in being able to log into CO-WIMS and review and use the products. Brad will look into this possibility and help them sign up.

6. ACTION ITEMS

The following actions items resulted from the meeting.

- These minutes and presentation materials will be posted to the [CoE CO-FPS project website](#).
- NCAR will consider ideas for future efforts to predict spotting and use spotting information in the CO-FPS simulations.
- The next Stakeholder meeting will be held in May 2017 (location tbd). The meeting will focus on training since it will take place just prior to the main fire season.

Appendix A – Meeting Agenda



COLORADO
Center of Excellence for Advanced
Technology Aerial Firefighting
Department of Public Safety

Colorado Fire Prediction System March Meeting Agenda
March 23, 2017: 1 p.m. - 4 p.m.

National Center for Atmospheric Research (NCAR), Foothills Laboratory
3450 Mitchell Lane, Boulder, CO 80307
Building 2, Room 1001

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| 1:00 p.m. - 1:15 p.m. | Introductions & meeting goals and objectives |
| 1:15 p.m. - 1:30 p.m. | General update on CoE activities |
| 1:30 p.m. - 2:00 p.m. | CO-FPS development update from NCAR |
| 2:00 p.m. - 2:30 p.m. | Presentation on potential utilization of cloud computing for fire behavior modeling |
| 2:30 p.m. - 2:45 p.m. | Break |
| 2:45 p.m. - 3:30 p.m. | Case study report on CAWFE fire modelling of the fall 2016 Gatlinburg Tennessee Fire |
| 3:30 p.m. - 4:00 p.m. | Open discussion |
| 4:00 p.m. - 4:30 p.m. | “Bonus” presentation by Paul Kucera for interested parties on a 3D printed weather station |