



MEETING NOTES

# CONCEPTUAL MODEL FOR FIRE DATA PROJECT - CORE SCIENCE TEAM MEETING #5

DATE: April 8, 2021

TIME: 9:30-11:30pm MST

LOCATION: [Microsoft Team Meeting](#)

ATTENDEES: Matt Mavko, Tom Moore, Dave Randall, Klaus Scott, Farren Herron-Thorpe, Mark Fitch, Sara Strachan, Andrew Kirsch, Mary Uhl, Lyndsey Boyle

AGENDA ITEMS	PRESENTER	TIME ALLOTTED
1 Welcome, agenda overview	Tom Moore	5 Minutes
2 Review Conceptual Model Proposal document	Matt Mavko and Tom Moore	30 Minutes
3 Discuss proposal and other possible CM inputs	Matt Mavko (facilitator)	15 Minutes
4 Endorse strategy to partner with MTRI to incorporate Wildland Fire Emissions Inventory System and North American Wildland Fuels Database	Tom Moore (all)	10 Minutes
5 Discussion - endorse CM	Tom Moore	15 Minutes
6 Next Steps and Workshop Planning	Tom Moore	10 Minutes

NEW ACTION ITEMS	RESPONSIBLE	DUE DATE
1 CST review previous meeting notes and provide edits as needed	CST	April 28th
2 List of jurisdictions and states currently reporting to IRWIN	Andrew Kirsch	April 28th
3 Talk to Nancy about NASA ROSES grant; need to submit a letter of intent	Tom Moore and Matt Mavko	ASAP
4 Add appendices mentioned to implementation proposal	Matt Mavko	April 28th

UPCOMING MEETINGS	DATE AND TIME
1 Core Science Team Meeting #6	Wed, April 28, 2021, 3:00-5:00 PM MST
2 Workshops	TBD

FIRE DATABASES & RESOURCES DISCUSSED	LINK
1 SPECIATE	<a href="https://www.epa.gov/air-emissions-modeling/speciate">https://www.epa.gov/air-emissions-modeling/speciate</a>

2	IRWIN	<a href="https://www.forestsandrangelands.gov/WFIT/applications/IRWIN/index.shtml">https://www.forestsandrangelands.gov/WFIT/applications/IRWIN/index.shtml</a>
3	FFT (Fuel and Fire Tools) FCCS (Fuel Characteristics Classification System) CONSUME	<a href="https://www.fs.usda.gov/pnw/tools/fuel-and-fire-tools-fft">https://www.fs.usda.gov/pnw/tools/fuel-and-fire-tools-fft</a> [includes FCCS and CONSUME now]
4	LF (LandFire)	<a href="https://www.landfire.gov/fccs.php">https://www.landfire.gov/fccs.php</a>
5	FINN (Fire INventory from NCAR)	<a href="https://www2.acom.ucar.edu/modeling/finn-fire-inventory-ncar">https://www2.acom.ucar.edu/modeling/finn-fire-inventory-ncar</a>
6	CALFIRE	<a href="https://www.fire.ca.gov/">https://www.fire.ca.gov/</a>
7	InForm	<a href="https://in-form-nifc.hub.arcgis.com/">https://in-form-nifc.hub.arcgis.com/</a>
8	GEOMAC [no longer supported]	<a href="https://www.geomac.gov/">https://www.geomac.gov/</a>
9	BlueSky Pipeline	<a href="https://tools.airfire.org/websky/v2/#status">https://tools.airfire.org/websky/v2/#status</a> <a href="https://github.com/pnwairfire/bluesky">https://github.com/pnwairfire/bluesky</a>
10	MODIS	<a href="https://fsapps.nwcg.gov/afm/activefiremaps.php">https://fsapps.nwcg.gov/afm/activefiremaps.php</a>
11	FOFEM (First Order Fire Effects Model)	<a href="https://www.firelab.org/project/fofem-fire-effects-model">https://www.firelab.org/project/fofem-fire-effects-model</a>
12	NEI (National Emissions Inventory)	<a href="https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei">https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei</a>
13	USFS AirFire	<a href="https://www.fs.fed.us/pnw/airfire/">https://www.fs.fed.us/pnw/airfire/</a>
14	SMARTFIREv2	<a href="https://github.com/pnwairfire/SmartFire2">https://github.com/pnwairfire/SmartFire2</a>
15	NIFC (National Interagency Fire Center) Open Data	<a href="https://data-nifc.opendata.arcgis.com/">https://data-nifc.opendata.arcgis.com/</a>
16	NFDRS (National Fire Danger Rating System)	<a href="https://www.fs.usda.gov/detail/cibola/landmanagement/resourcemanagement/?cid=stelprdb5368839">https://www.fs.usda.gov/detail/cibola/landmanagement/resourcemanagement/?cid=stelprdb5368839</a>
17	WFEIS (Wildland Fire Emissions Inventory System)	<a href="https://wfeis.mtri.org/">https://wfeis.mtri.org/</a>
18	WFDSS (Wildland Fire Decision Support System)	<a href="https://wfdss.usgs.gov/wfdss/WFDSS_Home.shtml">https://wfdss.usgs.gov/wfdss/WFDSS_Home.shtml</a>
19	North American Wildland Fuels Database	<a href="https://fuels.mtri.org">https://fuels.mtri.org</a>
20	Pyregence consortium [wildfire forecasting]	<a href="https://pyregence.org/">https://pyregence.org/</a>
21	IR Flight Datasets	<a href="https://ftp.nifc.gov/public/incident_specific_data/">https://ftp.nifc.gov/public/incident_specific_data/</a>
22	BAER/BARC Imagery	<a href="https://fsapps.nwcg.gov/baer/baer-imagery-support-data-download">https://fsapps.nwcg.gov/baer/baer-imagery-support-data-download</a>

## Meeting Notes

### *Review Conceptual Model Proposal, Matt Mavko and Tom Moore (facilitators)*

- [WRAP website page](#) for Conceptual Model project has meeting notes and resources linked from previous meetings
  - CST: Please review the notes and suggest edits as needed

- The hope is to partner with WFEIS for the emission calculation piece of the emission inventory
- We have included the Guiding Principles for the data warehouse
  - What we want it to look like, how data is presented, how methods are presents, and metadata to include
- Summary table (Table 1) is included for the primary input datasets we would use
  - The level 1 and level 2 datasets may not be available until after 12-18 months
  - Level 0 would be the base level inventory that we could generate relatively soon after year-end
  - As Level 1 and Level 2 input datasets are available, we could generate the Level 1 and Level 2 inventories
- Part of the metadata would include what version of all tools were used for the output dataset and what emission factors were used
- Data products & services list – it would be helpful to expand on the intention of what is meant by “QA/QC worksheets to accompany metadata” (Farren)
  - Essentially a checklist / report
- WFEIS – we would use it for fuel loading and fuel moisture grids
- The products in Table 1 would live in the data warehouse
- Differentiate between “reporting” inventories (plain tables by fire ID or aggregated by jurisdiction etc.) vs gridded inventories (Klaus)
- Add in an output column to Table 1 to better state the type of EI would be generated (Tom)
- Perhaps create more descriptive titles for each of these levels instead of Level 0, 1, and 2 (Farren)
  - E.g. Level 0 means fire activity dataset by dates and will have these data elements (add a definition to this base level)
- Perhaps create a rubric table of what types of data is available in each Level (levels across the top, data elements going down along the side) with X’s under each (Farren)
- Define “preset domains”: IWDW does not have the ability to dial into a specific geographic area; you would have to download the entire 12km dataset.
  - We may be able to section it out by state
  - We can still use WFEIS to select the geographic area of interest
- Can you download dataset for a specific fire name? Or at least download the data with a column that has fire name so that we can filter it out on the backend?
  - This would be helpful for exceptional events
- Once we have the complete activity dataset – that data would be available as a single complete dataset in the data warehouse and it will also be available on WFEIS to use directly on their site as a data source option

- So the only difference would be that the data warehouse would be more of a static dataset (does not change from year to year as updated versions of tools are released)
- Data warehouse
  - Would have the raw activity dataset
  - Would also have an output fire emission dataset after going through WFEIS, which includes metadata with the versions of products used and emission factor information
- WFEIS – would have the raw activity dataset available all the time and could do on-the-fly calculations, but the methods and versions of products may change over time, so emission calculations can vary
- Do we have the ability to distinguish fires that are close together? (Dave)
  - We need to ensure that we have a way to clean up inconsistent fire names on the back end. Raw datasets could have special characters or have slightly different fire names, which could result in double counting
- We plan to rely heavily on the perimeter dataset to account for double counting of fires
- We are going to try to use the best quality dataset we can for each fire group and then satellite data for everything else
  - Satellite data will absorb the data from the available dataset
- Fire reporting datasets: Point dataset vs perimeter dataset (Andy)
  - IRWIN points go into INFORM; those all have unique IDs and they check for duplicates. The dataset generates a unique ID and IWIN ID
    - NIFS (perimeter dataset): If there is an IRWIN point it will add the IRWIN ID. It will also have the “best of” perimeter for each IRWIN point on NIFC
    - It will also house the final fire perimeters
- More states are participating in IRWIN and NIFS; not just federal
- Can we get a list of states/jurisdictions that are currently submitting to IRWIN?
  - Yes, Andy will gather that
- Federal fire – any fires over 10 acres must report a perimeter
  - We often have perimeter data for fires less than 10 acres, but it is not a requirement
  - This requirement does not apply to state fires
- dave.passovoy@fire.ca.gov is the steward of the FRAP geodata (Klaus)
- There are issues with the August complex, where there are a lot of fires and they start merging (like in August 2020 there were ~40 fires that converged)

### *Discuss Proposal and CM Maintenance Needs, Tom Moore (facilitator)*

- We have a data host site: Intermountain West Data Warehouse
  - Spans the WRAP area
- About a month ago we met with the BLM, Forest Service, Park Service, FWS, and EPA to discuss the WESTAR data management
- Funding needs for this effort:
  - Full-time software engineer
  - Air Sciences Inc. support for design assistance, calculations, QA services
  - Significant effort in year 1 and maybe 2 but then could taper back once established
- We do not need to build a new data system; we can leverage what we already have. But we do need to build a website to interface with the database system
- Details to include in the next version of the proposal
  - Include a mockup an activity dataset in the appendix
  - Create a proposed timeline for when Level 0 would be completed, then Level 1, etc.
  - Add a row for Specialty Cases and one-off analysis needs (would not have a Level designation)
- There is an opportunity for funding with [NASA ROSES](#) grant block; proposals are due June 18<sup>th</sup>, Notice of Intent is due April 30<sup>th</sup>
  - ROSES funding is for novel applications to make end user datasets derived directly from observing products
  - WFEIS and IWDW have been funded by NASA ROSES previously
  - Explore joint grant proposal with MTRI, WESTAR, CIRA, and Air Sciences

### *Next Steps*

- Let's reconvene the Core Science Team to review the updated implementation proposal with the mentioned appendices and additional information
  - April 28<sup>th</sup>, 3:00-5:00 PM MST
- The next meeting we will ask the CST to endorse the Conceptual Model proposal
- Talk to Nancy in the interim to decide whether to submit a letter of intent for NASA ROSES
- Question to consider: Does LANDFIRE.GOV need to be part of whatever conversations? WFEIS uses their products. (Klaus)