



FIRESCOPE



FIRESCOPE Predictive Services Meeting 2015

Day 1- Wednesday May 20th

Attendees – In Person: Tom Rolinski (USFS, SOPS PS), Cathy Johnson (USFS, NOPS Intel), Larry Hood (USFS, R5 Fire Planner), Russ Gripp (USFS, NFDRS/RAWS), John Snook (USFS, NOPS PS), Steve Leach (BLM, NOPS PS), Dan Keeton (NWS Sacramento), Dan Curry (LA City), Jeff Shelton (OCFA), Ron Arbo (Calfire SOPS), Jana Luis (Calfire NOPS), James Gannon (BLM, SOPS), Mike Lozano (Firescope Task Force), Steve Vanderburg (SDGE), and Paul Bannister (BLM) via Dial-in : Ryan Walbrun and Kevin Baker (NWS MTRS), John Lovegrove (NWS MFR), Jay Lopez (LA County FD), Michele Mead (NWS STO), Mark Jackson (MTR OXR), Claudia Bell (NWS WRH), and Nick Nausler (CEFA/ DRI)

1. Fire Season Outlook-Tom R. for SOPS and John S. for NOPS. Some of the emphases were on: effects of the harsh long-term, ongoing CA drought, the lack of a winter snowpack for 2014-2015, presence of areas having very significant tree mortality in the central to southern Sierra foothills, and also some speculation as to what might happen in CA this fire season due to development of a possibly moderate to strong El Nino as 2015 progresses.

2. NWS updates – Dan Keeton NWS WR has a new Regional Director, a Grant Cooper, retired Navy. There is a now a new MIC at Eureka, Troy Nicolini (following retired Nancy Dean). There is a new MIC coming soon to Hanford also. Each forecast office has been trying to improve decision support activities... with one of the ways being 'partner emails'. The NWS is fully staffed for IMETs. They now have the capability to do upper air sound-ings at their IMET fires. New national Spot forecast page should be launched in June...has been a long time to this stage. It will have enhanced request and display capabilities. Regarding the Red Flag program (RFWs and FWWs), more emphasis on graphical displays rather than on the words alone.

3. Fire Agencies - had their first big May brush fire since 2007's Griffith Park fire. BLM- Paul Bannister (FAM Branch Chief in CA). CA BLM is still talking about SOPS vacancy situation. A real big item in their Agency (and in the news) this year is the protection of sage grouse habitat (this ground includes 60 million acres, centered on the Great Basin, of which 200,000 is in NE Calif). BLM will soon have a National Office employee located in Phoenix, to better run their overall RAWS program. Paul is the current CWCG chairman. OCFA (Jeff Shelton)- They rolled out the new fire weather zone in Feb– it still needs a representative RAWS station. Changed fuel sampling sites- one is coastal (Ortega Hwy) and other is Fremont Canyon. Each is done every other week. OCFA might want to host a WIMS class in SOPS (would be in conjunction with CNF. Russ G. suggested Jeff coordinate with Geri Hayes with that). OCFA will be updating Pocket Cards this year. Rick Bowman will pick up the responsibility of reporting fuels for the updates. Dry winter provided minimal issues with debris flow. LA City- (Dan Curry) They are still rebuilding their workforce since the Recession had led to a 15% reduction - a lot of attrition and retirement has occurred. Now 'they can't hire fast enough' in trying to get back on a good track. They have been bringing back the minimal current resources on OT for high hazard days. Recently Have four sub-regions now,

each with their own chief. CalFire (Jana Luis, North) - sent 4 folks to national NFDRS at NAFRI, (Ron Arbo, South)- now have reached peak staffing in SOPS. They have had a very large ECC personnel turnover this year. Two-thirds of the ECC chiefs have been in their positions < 2 months! Fire Activity: 885 fires/ 1500 ac are the averages YTD. So far this year, for SRA, LRA, and contract counties fires combined, YTD average is 1259 fires and they are at 1426 fires. Acreage so far is near 6000 ac, well above average. NOPS Intel (Cathy J) - IRWIN identifies an authoritative source. Once six key elements are met, IRWIN kicks in... among these elements are: NIMS 209, EPG, WFDSS, FireCode, WildCad 6.0, Alaska CAD, Texas CAD, e-iSuite LA County (Jay Lopez) They have an LA County interior zone now. FireScope Task Force FIRESCOPE is working to update their webpage and they now have a new app for the Field Operations Guide located here: <https://itunes.apple.com/us/app/2012-firescope-fog-ics-420-1/id975002613?mt=8>

4. Arctic Ice Study - Basil N Started by comparing drought monitor charts over the past 7 years, and how recent depictions are much worse in comparison. Snowpack for Apr. 1st was 5% and 6% PON, from N to S, in Cascade/Sierra ranges. Next, he showed the Hadcrut temp anomaly data from 1850 to present. Then showed arctic late-summer ice cover comparison from 1980 to 2012... a large reduction has occurred, especially from N of Alaska westward toward N of Russia. He explained why the term 'Climate Change' is now preferred over "Global Warming". While most areas have warmed, small areas at the same time have become cooler. Basil talked about how the relatively milder air over the open water, relative to that over the ice areas, leads to buildup of high pressure west of central to northern NA. Correlation with CA fire seasons: For 2001-2007, all agencies combined had 172 K for average annual acres burned. But from 2008-2014, the average jumped to 361K. The summary slide had these bullets in succession: Global Warming accelerated in past 35 years, late summer arctic ice reduced 30-40% in past 35 years, research in 2002 linked reduced arctic ice to drought in CA, in 2007 the arctic ice minima hit a tipping point, from 2007 onward there has been drought in 7 of 9 years in CA, and northern CA average. annual fire acreage has roughly doubled.

5. CEFA/DRI Matt Fearon, shared with us (remotely) about a paper currently in review with Journal of Operational Meteorology. It is "Establishing a national standard methodology for Operational determination of mixing heights". The 'Miller-Holtzman method' (which has been around a long time) assumes a dry and static thermo-dynamic environment, causing its results to often be too high, or too low. The search is for a robust process that is more dynamic and thermodynamic. Matt checked out four methods compared to Lidar-estimated (considered to be 'actual') mixing height. Two were equilibrium (static) parcel type methods – Stull and M. Holzworth-, and two were dynamic. He showed us some of the data, he then gave a brief look at his recommendations and conclusions.

Nick Nausler - (a PhD candidate under T Brown)- talked to us about updates to the Hourly Fire Danger (HFD) arena. Beth Hall had recently given a presentation in Minneapolis on this. Comparing Nelson vs Fosburg in the HFD product. Nick will provide the link to recorded presentation.

Lightning data- will soon have a consistent data base back to the mid 90s. Combination from the two providers.

DRI/ CEFA is continuing work on Australian project

Doing work too, on how the North American monsoon impacts the SW US fire season.

6. We did a quick review of our FireScope PS group's Charter. Made some adjustments in the opening paragraph (i.e. the Mission Statement), in order to better tie our activities into 'decision support'.

7. Reviewed the Plan of Work.

Day 2- Thursday May 21st

1. CA Air Resources Board - CARB (Dar Mims) Lots of people are using PFIRS these days. Trying to connect other programs into PFIRS, such as BlueSky. Have interacted with Air Resource Advisors group quite a bit... Dar attended the recent meeting held in Truckee. IASC/ CARPA meeting was last week here in Sacramento. Many are interested in expanding prescribed burning in CA. Regarding CANSAC, Board is trying to gather funding for new hardware. Trying to do some Smoke Management training later this year since this has not been done in a while.

2. RAWS updates roundtable: BLM (James G) Still working on a review of all stations in CA Desert District (CDD). They are transitioning RAWS over to FTS, and determining which should be feeding into the NFDRS network. Stations that were moved were just those that had been used for research on Santa Ana winds. LA County- (Jay L.) they have reconsidered moving some stations. Instead, now want to add stations, one on Catalina Island and another on lower Palo Verdes peninsula. They will then have 22 stations around the LA County area. The plan is to replace stations with FTS as follows: 4 this year, 7 each of the next two years, and the remainder in 2018. OCFA- (Jeff) The two stations, Fremont Canyon and Bell Canyon, have bugs with SOW sensing. They may be working with SDGE collaboratively to add another station to represent the new coastal zone. SDGE-(Steve) SDG&E currently owns 5 RAWS (they are FTS), which are not currently NFDRS, though that may change soon. One has been temporarily taken out of service, and it will probably end up at Tecalote Canyon in SD City. LA City- (Dan) They were assisted by LA County in installing a 2nd RAWS inside City of LA, at Porter Ranch, in a historically active fire corridor. They have funding to soon convert this newer station to an FTS. The other station they have is Mt Washington, installed in 2009. LA County had been doing the maintenance for them, but now isn't. They will have a maintenance contract soon to cover both of these. Cheeseboro (owned by NPS) and Beverly Hills are two other in-area useful RAWS for LA City. And San Rafael, Little Tujunga, and Newhall Pass are other stations whose data is useful for them. Calfire (Ron) Beaumont station will get moved... it had a portable RAWS for about 6 months, and they gave Tim Chavez a thumbs up to move it... this hasn't occurred yet though. Also, they are planning to move Devore RAWS to a better-exposed site. USFS (Russ). The FS has a network of about 150 stations in R-5. The Forests have all leaned toward FTS in recent years, with only 43 stations remaining to be converted. 77 portable RAWS are scattered around the region, with 31 of those still to convert to FTS. Lassen NF is looking to convert a formerly manual site (Colby Mtn) to RAWS. Russ has been working with the San Bernardino NF in SOPS, to improve siting on a couple of stations.

3. NF/ Monte Vista RU in SOPS plans to hold We then transitioned into other Russ Gripp topics for the Group: A RAWS Maintenance training was held there at MTC a couple of weeks back. Plans are in place for a next Regional course for May 2016. If an individual Forest wants FTS training, it can be arranged. Solar Rad issues have to do with calibration of sensors...problem is identified, but how will historical data be handled? There was a RAWS training question from Jay Lopez, in that they were turned down in trying to be in the recent McClellan class. Russ offered some options for training, both for their remaining Vaisala stations, or for the FTS stations. The Navy is getting a station for San Clemente Island. WIMS- had a 'full house' class at MTC in March, which went

well, but that doesn't meet the total need. The Cleveland a class in June this year. OCFA would like to hold a class too. For LA County and WIMS training, Russ suggested to Jay L. that they talk to Geri Hayes for possible involvement with that training effort. Moving along, Russ stated that 'NFDRS 2016' plans are currently about 5 months behind schedule. Intent of Fire Danger SubCommittee is to use the GACCs to help implement/ test new system. Other Regions are rebuilding infrastructure. Lassen NF's Dave Grossman 'invented' a solar-powered heated rain gage that is proving quite successful thus far.

4. SDG&E update- Their network now has 169 stations, 5 of which are RAWs. It's a great network, and no more need for expansion. They use 20-second gusts in their data. Sometimes, the moving of weather stations by as little as a quarter mile has changed peak wind speeds in big events by as much as 25 mph. (gave example of one going from 40 to 65 mph). Their 950Mhz profiler is working well. Have 6-minute data from it, and Steve invited NWS IMETS to get a username and PW if they want to use it. Other profiler is 'sitting collecting dust'. SDG&E runs their own WRF model in-house, which is configured for Santa Ana events. Want to set up other configurations too.

4. Research / Riverside Fire Lab (Jose Sanchez) – 'Relative Importance of weather and socio-cultural factors to fire managers' decisions'

SECP stands for Socio-Economic-Cultural-Physical factors

Determine if fire meteorologists discriminate the info they provide to fire managers

Determine relevance of meteorological data to fire manager's decision-making process

Reduce ecosystem services losses by the potential reduction in total area affected

The two groups of people involved are IMETs and T1, T2, T3 IMT personnel (their rules keep it restricted to Federal employees). Tom had asked why they weren't involving

Predictive Services products in examining how decisions are made.

Note- There are some 'holes' in the notes on these next 3 research topics. Individuals interested can pursue the topics more in depth, if need be, but contacting the presenters:

5. Steve Vanderburg 'A Method for Forecasting Elevated Convection in the West' i.e. referring to thunder-storms not tied into surface-based / boundary layer-based convection. Pattern recognition is a key.

For assessing the Elevated instability component:

-MUCAPE 700-500 mb In this field, anything that is above 100 J/kg should get your attention. (San Diego NWS added that you can't get enough CAPE, if you don't have enough moisture).

-Computed Lifted Index for 700 and 650 mb parcels... For this, anything near zero should get your attention.

-High Level Total Totals (Milne 2004) $HLTT=700T -700 Td - 2X500T$

Forcing- Dynamic Tropopause pressure on the 1.5 PVU surface, 250 mb wind speed

Conclusions - 200-400 J/kg for MUCAPE is a big number for the elevated convection

factor. -1 or -2 are big LI numbers. It's very common for the models, when 3-4 days out, to not handle the mid-level moisture adequately. This type of pattern tends to produce hail a lot more than rain.

6. Tom Rolinski - South Ops Lightning project - PW and LI and/or PW and HLTT figure into most of their regression equations. Tom's reasoning was that missed events were happening because of either: missing something in the model by it not being incorporated in the equations, OR, because the model is missing something that is actually going on in the atmosphere. They're optimistic that some progress can be made soon.

7. Rob Fovell (remote, from UCLA)- A Simple model for chamise LFM - trying to characterize the LFM of chamise, which is a very important fuels component in SOPS. Live FM = actual sample weight / dry weight

There have been numerous attempts over time, to forecast LFM, based on meteorological info. But THIS study will use soil moisture , obtained from gridded reanalysis

The soil moisture is used to predict departures from LFM climatology

LFM data is from the NFMD (National Fuel Moisture Data Base)

<http://www.wfas.net/index.php/national-fuel-moisture-database-moisture-drought-103>

Chamise has a complex root structure. The 40-100cm deep layer acts as a natural filter

Procedure for this model: First, Rob fit the annual cycle to LFM, and to Soil Moisture

(SM) separately. Then, used a Log transform on both to suppress the range. (notetaker then left behind – and missed final 2 of these 4 steps)

Recap:

- LFM model predicts LFM deviations from annual cycle using SM deviations from its annual cycle
- Once rainfall ceases, soil moisture is subjected to a decay function. (missing are the latter 3 of these 5)

Summary:

- This is a simple but skillful Live Fuel moisture model
- Soil Moisture from a gridded reanalysis is available in near real time
- Live FM lags root zone SM by about a month
- May be extended to locations (?)