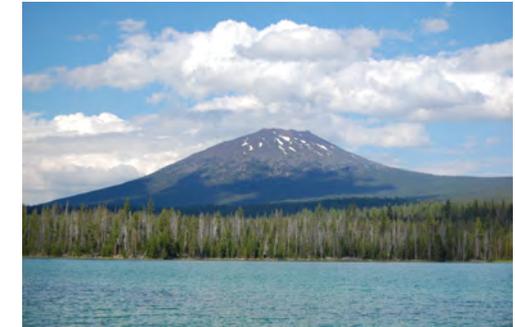
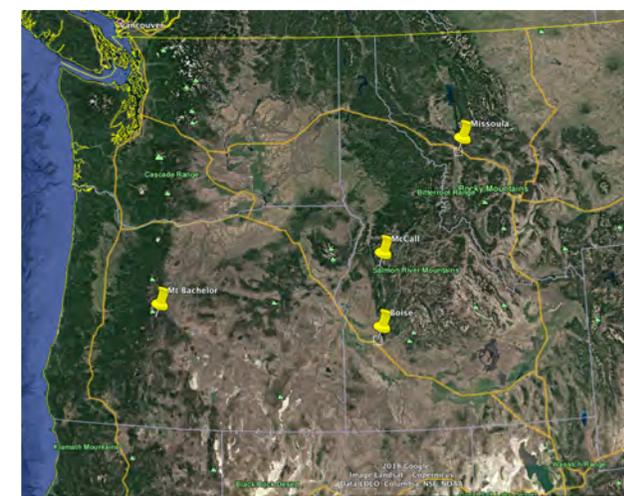




2019 FIREX-AQ Twin Otter, Mobile Labs & Ground Sites Teleconference

June 4, 2019



1. Deployment schedule for different platforms and sites
2. Fire Outlook for Western U.S. and implications for sampling strategy
3. Chem (N48) & Met (N46) Twin Otter schedules and operations update
4. Ground Based Mobile Lidar
5. Aerodyne Mobile Lab
6. Boise Ground Site
7. Mt Bachelor Observatory
8. Other updates

FIREX-AQ Twin Otters, Mobile Labs & Ground Sites Organization Sheet

From the FIREX-AQ Web Site

<https://www.esrl.noaa.gov/csd/projects/firex-aq/>

Navigate to Platforms -> NOAA Chem Twin Otter -> Logistics -> Coordination (bottom of logistics page)

Click on “Twin Otter & Mobile Labs Coordination and Planning Google Sheet”

<https://docs.google.com/spreadsheets/d/1UsNUt1p01yPSqkqvTFKMWMBGM4sFbagnt5WP8EsZUUs/edit#gid=0>

- You will need to request access to this link if you have not opened it previously
- Sheet is intended as a reference for who will be in the field at what times and where. Entry of information is voluntary, not required
- To add a new platform or site, create a new tab at the bottom of the sheet

Notes on Use of this List (“FIREX-TOMLG”)

- FIREX-TOMLG@noaa.gov: Distribution list for the group that was notified for this call
- Intended to be inclusive of the twin otters, mobile labs and ground sites that will operate exclusively in the northwest during FIREX-AQ
- Please help me to keep it updated with names and / or ground sites that should be included
- I will use this list to distribute information about flight plans for the chem twin otter during the campaign
- Others should feel free to use this (sparingly, of course) for updates on relevant operations at all of the sites

Is there a better way to distribute this information? Suggestions welcome

Platform Overlap Schedule for Idaho / Northwest Deployment

- DC 8
- Met Otter
- Chem Otter
- Langley Mobile Lab
- Aerodyne Mobile Lab
- McCall Ground Site

2019 JULY						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Platform Overlap Schedule for Idaho / Northwest Deployment

- DC 8
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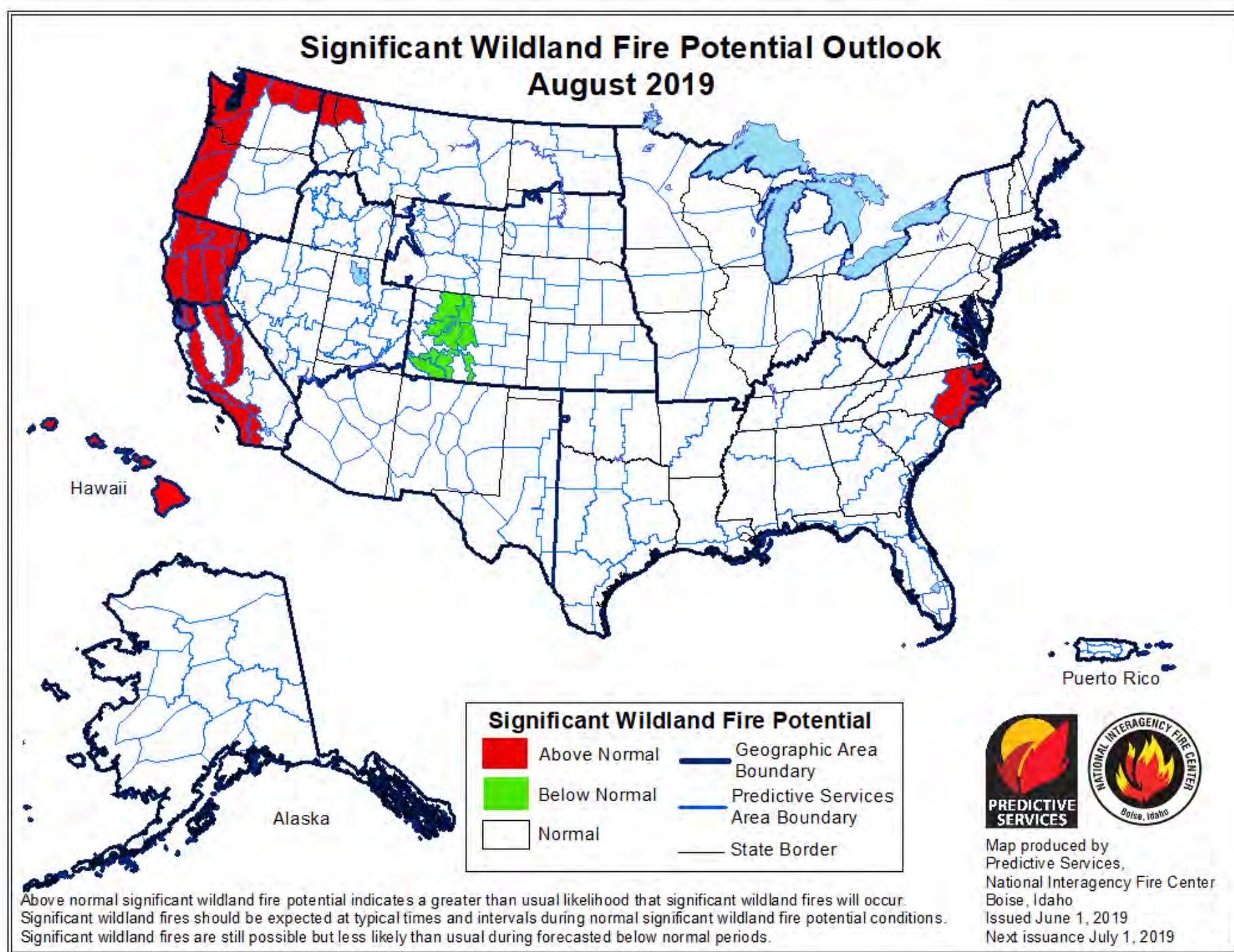
2019 AUGUST						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

**Please send me info for
other sites to update this
calendar**

United States Wildland Fire Outlook For August 2019

Released June 1, 2019

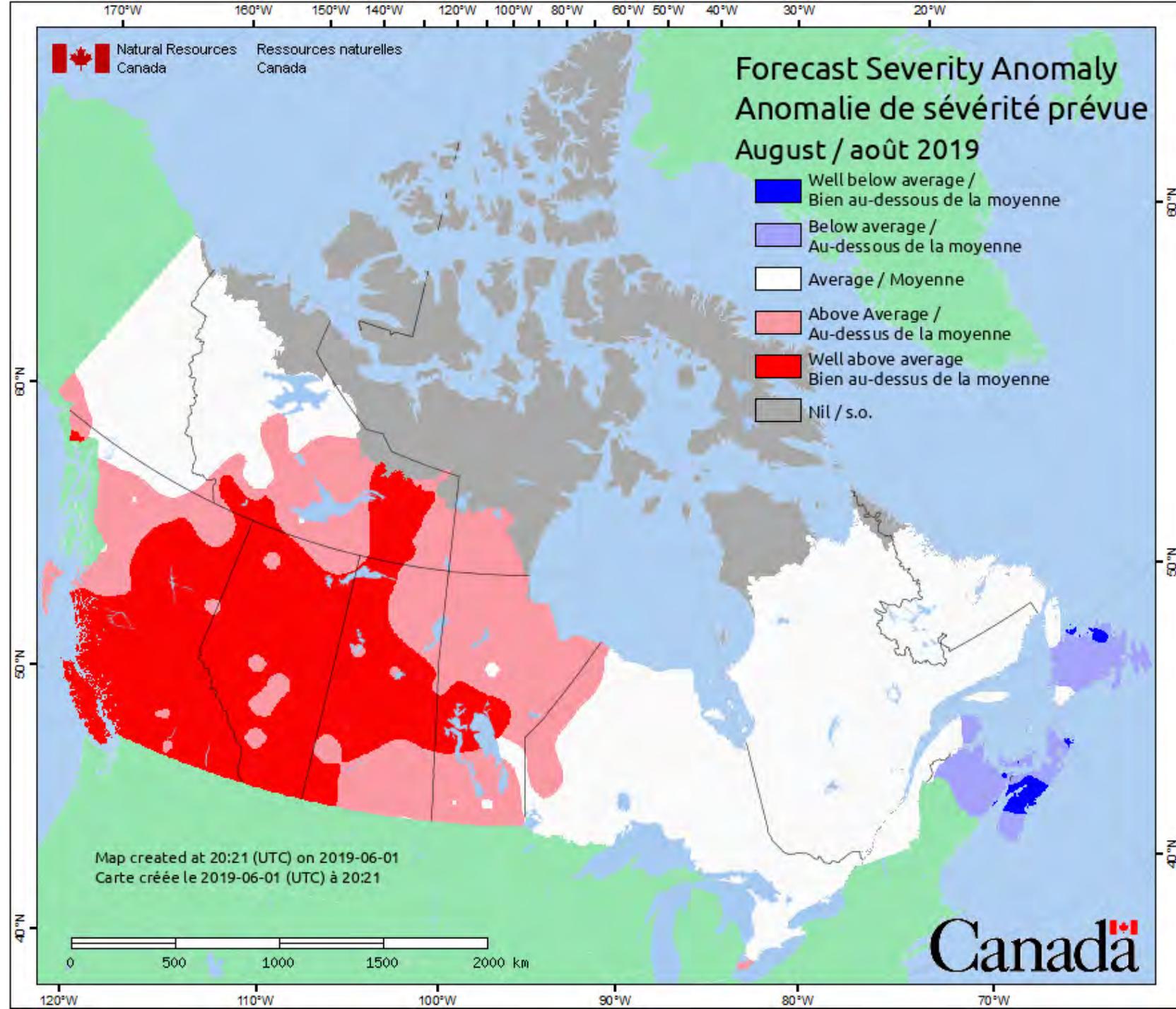
https://www.predictiveservices.nifc.gov/outlooks/monthly_seasonal_outlook.pdf



Canadian Wildland Fire Outlook For August 2019

Released June 1, 2019

<http://cwfis.cfs.nrcan.gc.ca/maps/forecasts?type=fsa&month=08>



Chem Twin Otter Schedule

2019 JULY						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
14	15 Transit Florida to RAF Box Truck NOAA to RAF	16 Box Truck NCAR to RAF	17 Aircraft Prep	18 Sta. 1 & 2 NO _x Pump	19 Sta. 1 & 2 NO _x Pump	20 Sta. 3 AMS
21	22 Sta. 3 AMS	23 Sta. 4 BrC, NO _x O ₃ Shelf	24 Sta. 4 BrC, NO _x O ₃ Shelf	25 Instrument Tests & Cross Training	26 Test Flights & Packing	27 ??
28	29 Test Flights & Packing	30 Test Flights & Packing	31 Transit RAF to Boise		First Research Flight	

July 15-16: Transit from Lakeland, FL to Broomfield, CO (RAF)

July 17: Aircraft Prep, window plates, exhaust, inlets, etc.

July 18-19: Stations 1 & 2 (Picarro, VOC sampler, Met probe / GPS, I-CIMS), NO_x Pump

July 20,22: Station 3 (AMS)

July 23-24: Station 4 Integration (BrC PiLS) + NO_x/O₃ Rack + O₃ shelf

July 26-30: Test flights & packing

July 31: Transit from Broomfield, CO to Boise, ID

Aug 2: First research flight

Bottom line for this group: Expect us in Boise July 31

Initial Base for Met and Chem Twin Otters: Jackson Jet Center



NASA DC-8 and its operations will be at the National Guard Base at the Boise Airport

NOAA Aircraft Operations has expressed a preference to base out of Jackson Jet Center, on the other side of the airfield

Jackson Jet Center will give us hangar space that is not available at the guard base

Meeting / office space will be at the Guard base with the rest of the project until the DC-8 departs.

Alternate Airfields

- Potential alternate locations

Missoula, MT

Spokane, WA

Yakima, WA

Klamath / Crater Lake, OR

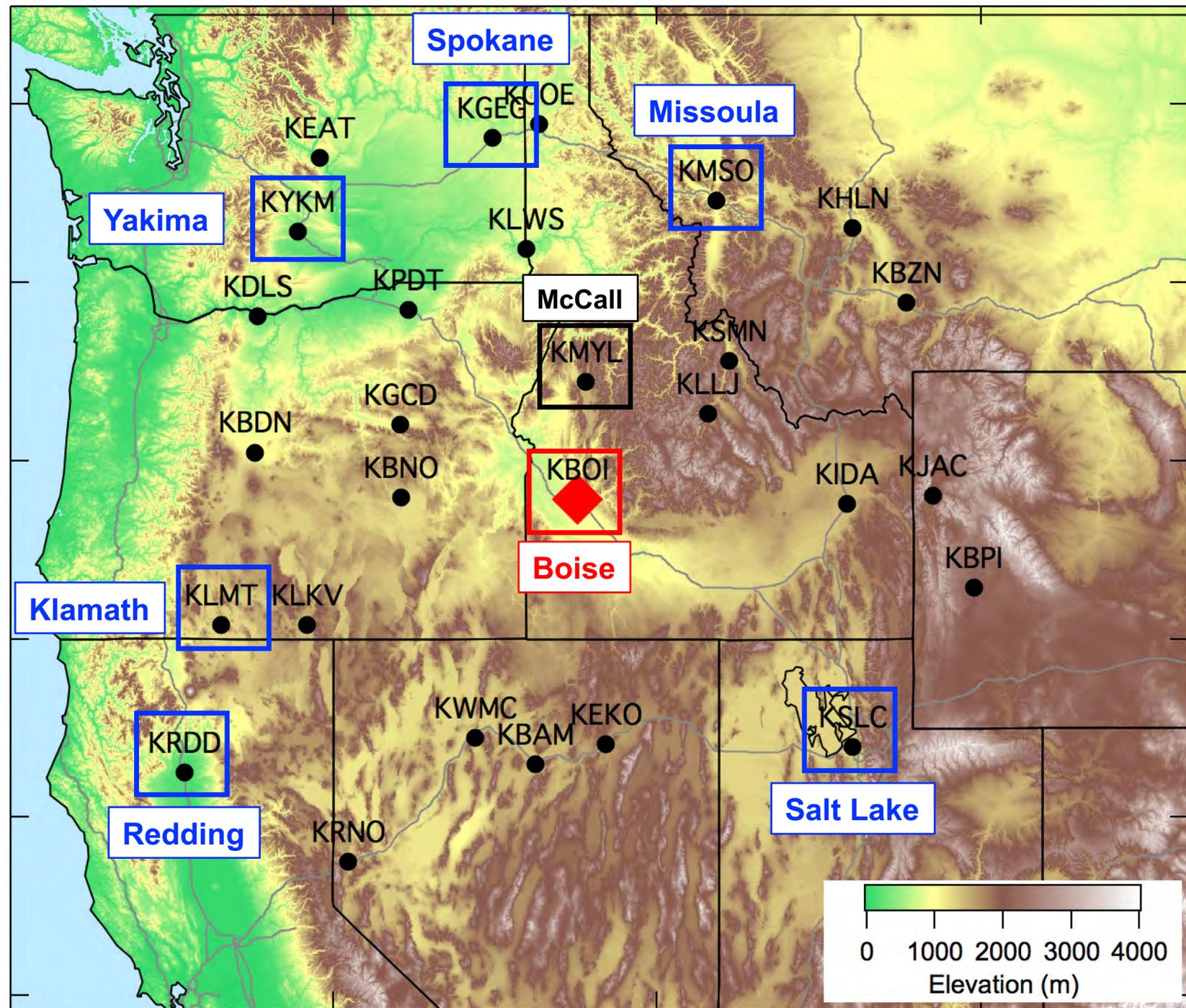
Redding, CA

Salt Lake City, UT

As of June 1, expect Cascade sites to be most likely

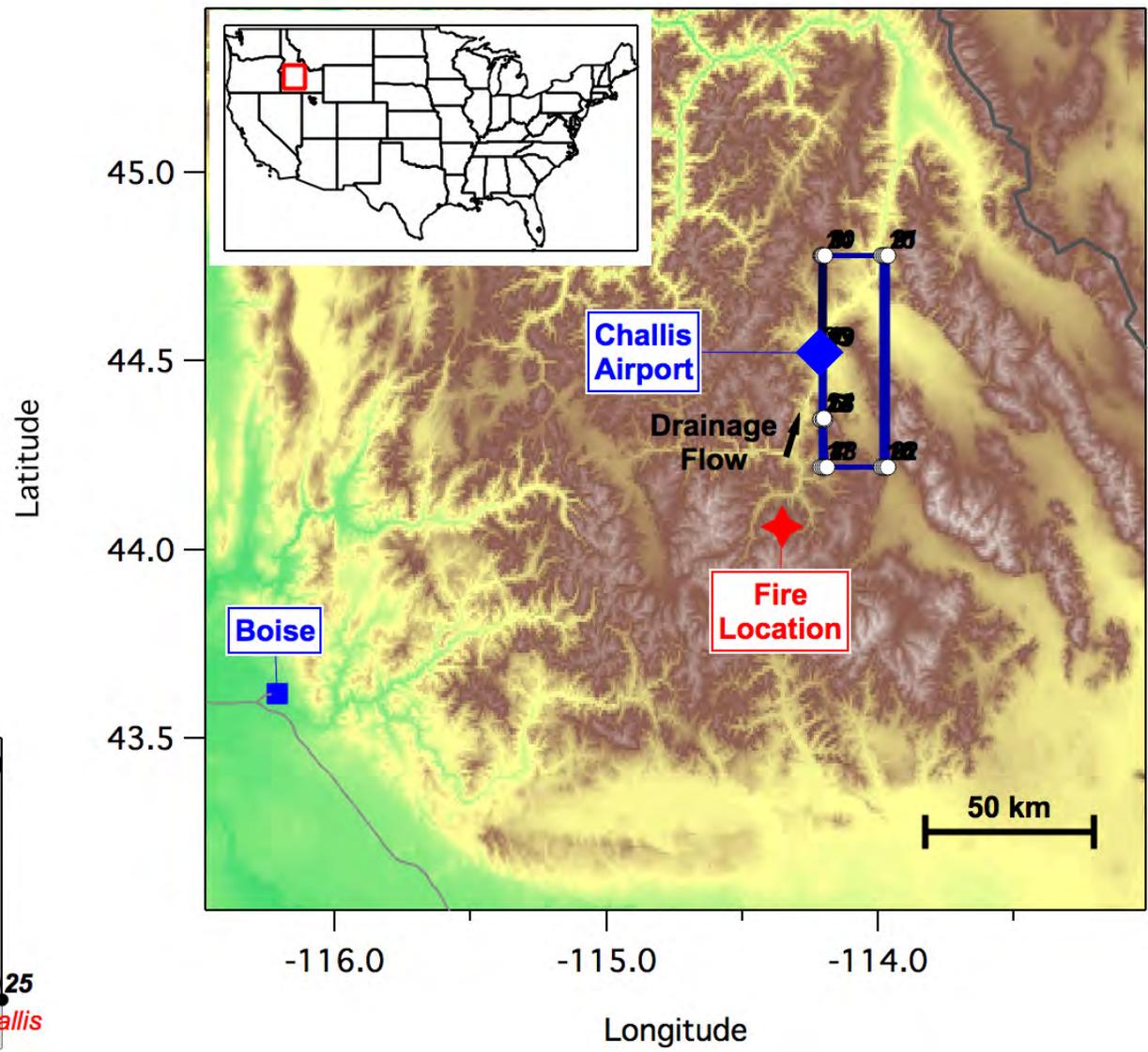
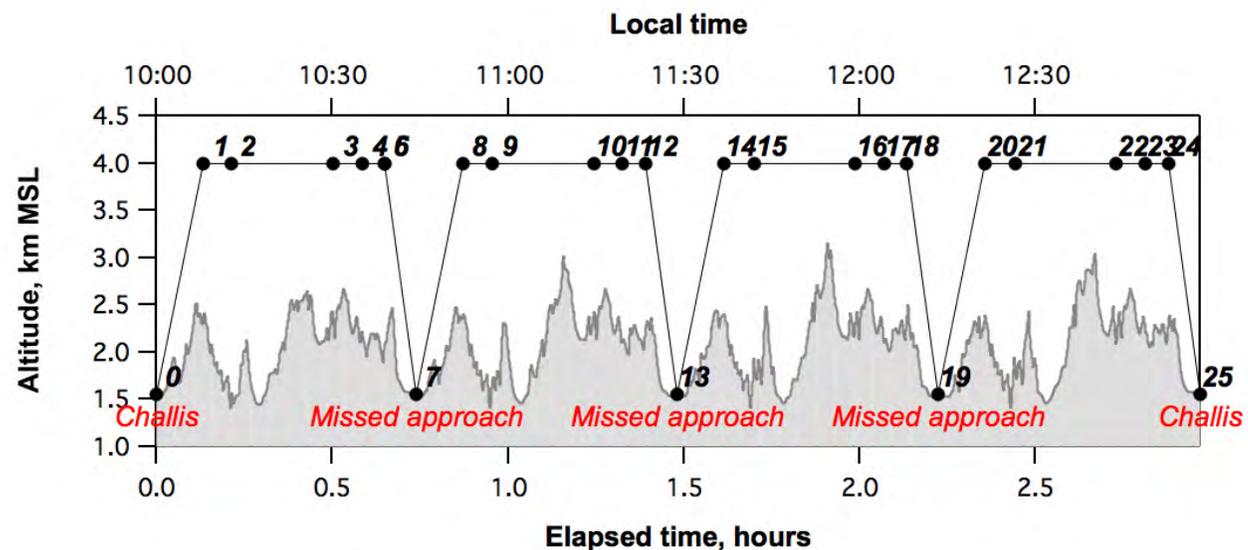
- FBO move will likely require ~2 days

- The chem otter crew will *drive* from Boise to alternate location ... will give opportunity to coordinate with mobile labs if they also decide to move



Coordination between Twin Otters and Ground Measurements

- Vertical profiling in smoke filled valleys at different times of day, especially night or morning
- ~6-8 vertical profiles (takeoff, landing, 3 missed approaches) per 2.5-3 hour flight
- Flight plan could be repeated to characterize evolution of vertical distributions, night or day



Mobile Wildfire and Fire Weather Monitoring

Craig B. Clements

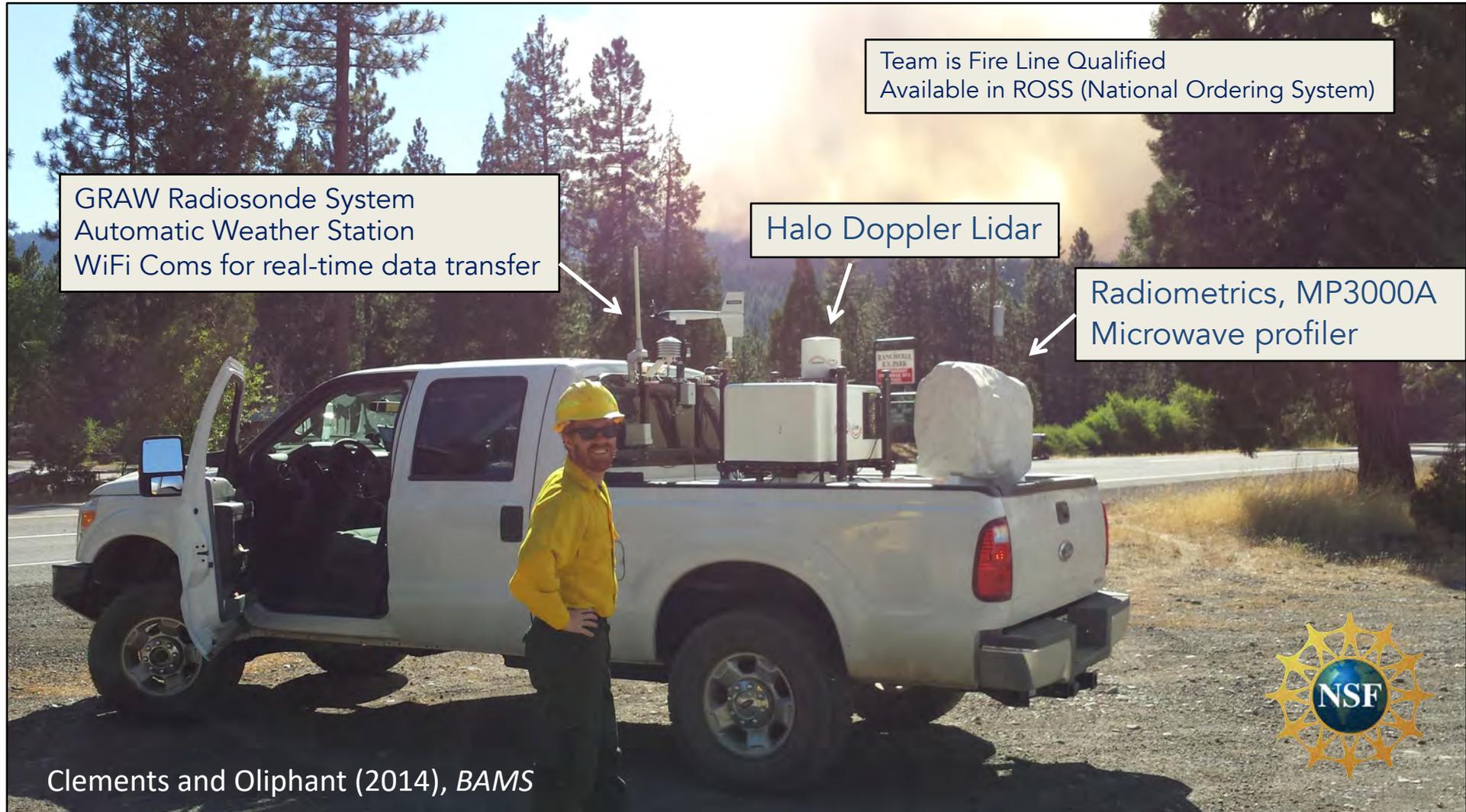
Fire Weather Research Laboratory
Department of Meteorology and Climate Science
San José State University
San José, CA

Contact:

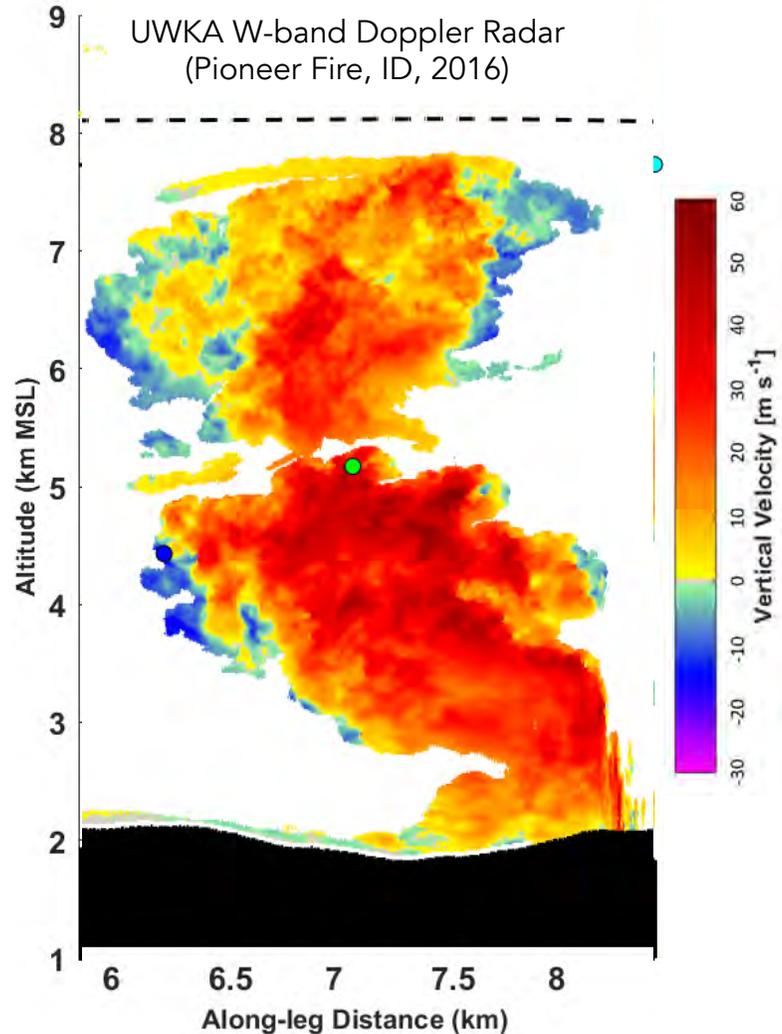
craig.clements@sjsu.edu

California State University-Mobile Atmospheric Profiling System (CSU-MAPS)

Platform optimized for rapid deployment and wildfire research.



SJSU Wildfire Observing Facility (Scanning Ka-band Polarimetric Doppler Radar)



Progress for FIREX-AQ Ground Groups:

Aerodyne, NASA, Brown U., U. New Hampshire., UC Berkeley, UC Riverside, Washington U-St Louis., Lewis-Clark State Col., Montana State U. , U. Maryland Baltimore County, Howard U.

Support from NOAA, NCAR & U. Montana



New Instruments!

SP-AMS; SP2; WU-StL Optical BrC

~~Portable Light Scattering~~ Activity Barn

cTAG Activity Barn; ACSM Activity Barn

SMPS & CPC ; ~~TWST~~

UC Berkeley/UCR Filter samples and sorbent tubes for offline analysis

LCSC tube samples, offline analysis, long term (in and out of fire season)



Same Dates

Met Twin Otter
Chem Twin Otter
NASA Aeronet Team

July – mid August
mid July – August
22nd July arrive Boise

- stay thru media day

NASA Large

22nd July arrive Boise

- stay thru media day

Aerodyne AML

Aug 7th – 29th



Communication

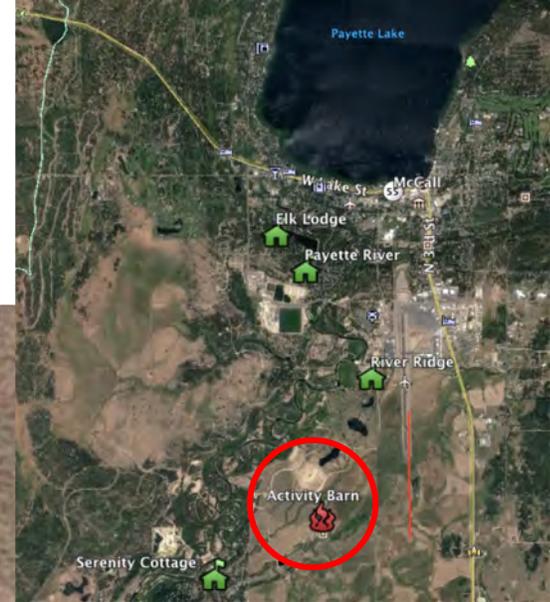
NASA has identified radio communication and satellite link for GPS



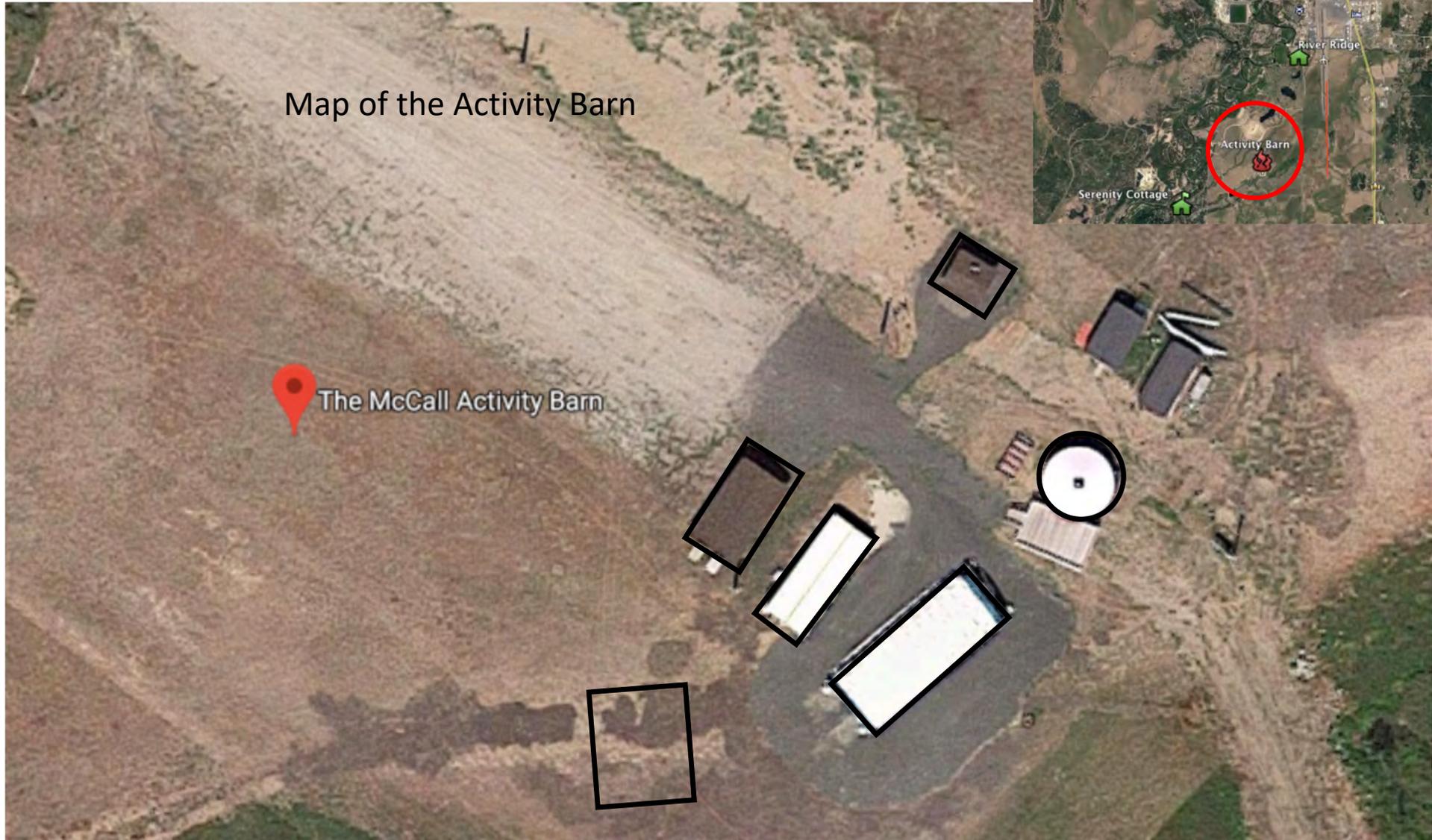
Site Power Plan

Pending electrician and Activity Barn ownership approval (and money)

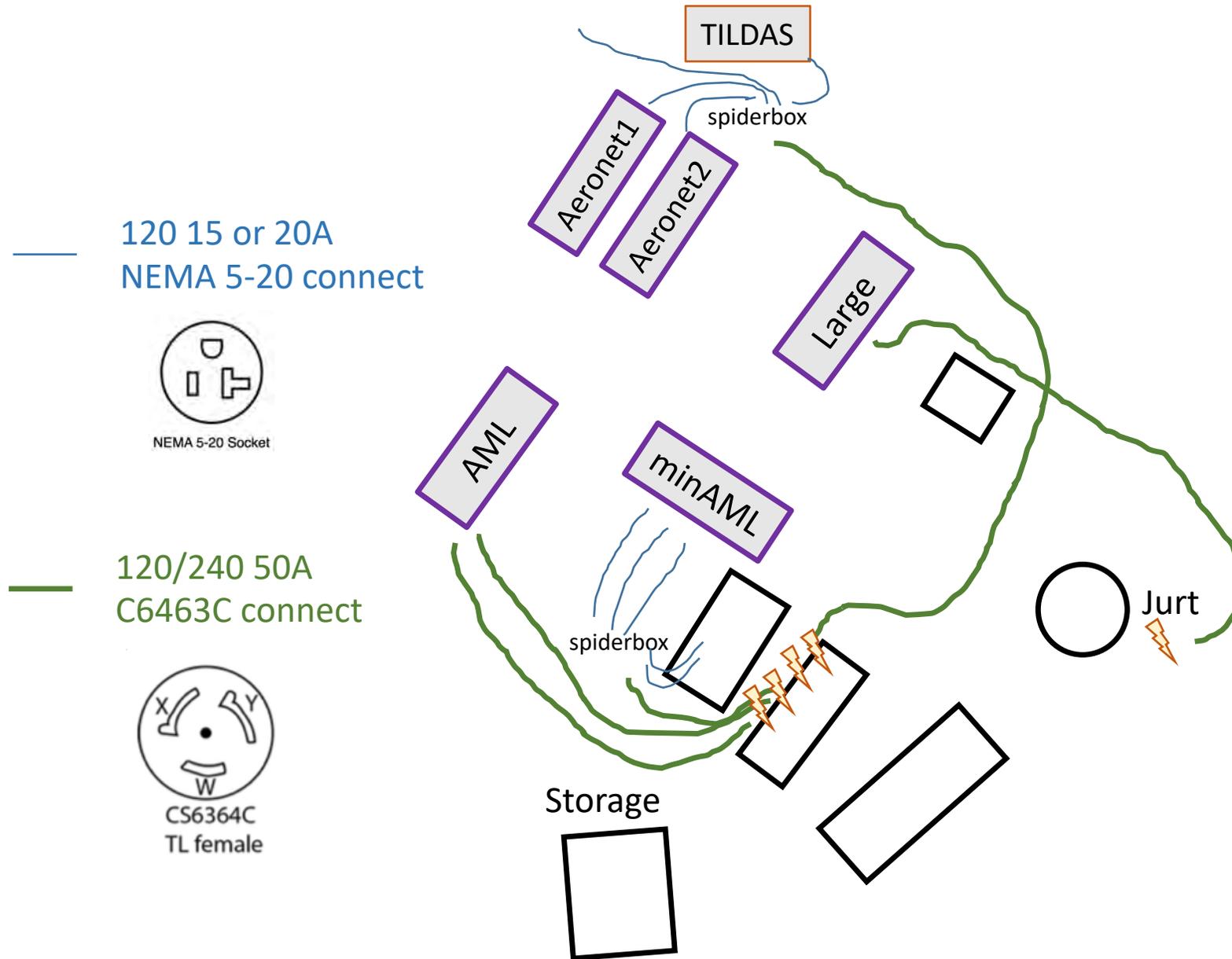
Power and Provisional Position Plan



Map of the Activity Barn



Map of the Activity Barn



Boise Ground Site

Dates: ~August 1 - 30

Participants:

ID Dept. of Env. Quality

EPA ORD

Drexel U.

U. Washington – Bothell



Meridian DEQ monitoring site

Main Science Goals:

- Characterize interaction of wildfire smoke with urban emissions (especially O₃ formation and concentrations, FRM/FEM measurement methodology)



Instrument	Measurement	Who
ECHAMP	RO ₂ + HO ₂	Drexel
I- CIMS	HONO, HCN, etc.	Drexel
CAPS	NO ₂	Drexel
Suitcase VOCs	8-hr speciated VOCs	UW (Jaffe)
spectro radiometer	photolysis rates	UW/UH
chemiluminescence	NO	UW
Thermo/Teledyne	NO/NO _y , CO, O ₃ , ...	EPA/DEQ
Magee Sci	BC, TC	EPA
API boxes	CO, CO ₂ , O ₃ , H ₂ S, NH ₃ , NO ₂	EPA
PANDORA	Total column O ₃ , NO ₂ , HCHO	EPA
T640	PM _{2.5} , PM ₁₀	EPA
Campbell	Ceilmeter	EPA

Measurement wish list (i.e., what we're lacking):

- speciated VOCs (1 hr or faster)
- PM chemical composition

Observations at Boise/St. Lukes site in 2019

D. Jaffe (UW), E. Wood (Drexel), R. Long/ M. Landis (EPA)

Jaffe group previously used this site to examine O₃ production in urban smoke (McClure and Jaffe 2018- Atm.Env.).

Goals:

1. Evaluate different methods to get O₃ production in smoke influenced airmasses (e.g. NO*HO_x, dO₃/dT).
2. Evaluate consistency of extended Leighton relationship with obs of NO_x and HO_x.
3. Examine NO_x and VOC sensitivity to O₃ production in urban influenced/smoke plumes.
4. Examine J values as a function of PM in smoke plumes.
5. Test new OVOC sampler (“suitcase sampler”) as a tool to identify presence of smoke at low concentrations in urban areas.



Observations

- a. Idaho DEQ (host): Standard NCORE obs. including CO, NO_y, O₃, PM_{2.5})
- b. Jaffe group, UW: “Suitcase VOC sampler”, spectrally resolved UV flux (w/Flynn and Hall), NO.
- c. Wood group, Drexel U: HO_x, NO₂
- d. Long/Landis, EPA-ORD: variety of instrumentation specific to their goals.

Mt. Bachelor, Oregon, (MBO) 2.8 km asl: (August 1st-Sept 10th, 2019)



Since 2004 we have detected more than 100 smoke plumes at MBO and have evaluated many different aspects of the plume chemistry. For 2019, we will focus on detailed aerosol chemistry and NO_x photochemistry.

Measurements:

- SP-AMS (Qi Zhang's group at UCD)
- CIMS (Joel Thornton, UWS)
- PTRMS (Lu Hu's group at UMt)
- J values (Lefer/Flynn/Hall)
- NO_x, PAN, O₃, CO, CO₂, σ_{scat} , σ_{abs} , size distributions, etc (Jaffe group)

Goals:

1. Evaluate the NO_x photostationary state and O₃ production.
2. Identify sources of HONO in plumes and p-NO₃⁻ recycling.
3. Relationship of aerosol chem to absorption.



Next Twin Otter, Mobile Labs, Ground Sites Telecon (?)

Does this group want to have one more meeting prior to the start of the campaign ?

“No” is an acceptable answer, but I (Steve) am willing to organize

If yes, proposed dates would be:

Tuesday, July 9, 1 PM MDT

Tuesday, July 16, 1 PM MDT (Less ideal, Twin Otter integration will be starting)

If yes, major agenda items would be:

1. Operational status updates for platforms
2. Better look at wildfire activity as of mid-summer for planning of coordination