

1 **Supplemental Information**

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3 **Table S1 – Site Information and arranged by region and distance from Rim Fire Origin**

Station Name	Site Dates	Agency	Method	Distance from Rim Fire (KM)	Pearson Coefficient ^a
<i>Central Sierra</i>					
Rim Fire Camp (RFC)	Aug 31 – Sept 19	USDA FS	EBAM	7	0.83
Groveland (GL)	Aug 22 – Oct 31	USDA FS	EBAM	11	0.61
Tuolumne City (TC)	Aug 23 – Sep 22	CARB OER	EBAM	18	0.57
Jamestown (JT)	Sep 14 – Sep 23	CARB OER	EBAM	31	0.55
La Grange (LG)	Aug 24 – Sep 12	CARB OER	EBAM	31	0.23
Yosemite Valley (YV)	Sept 6 – Oct 17	CARB OER	EBAM	46	0.70
Bootjack (BO)	Aug 2 – Oct 17	CARB OER	EBAM	50	-0.09
Tuolumne Meadows (TM)	Aug 1 – Sept 20	CARB OER	EBAM	64	0.23
<i>San Joaquin Valley</i>					
Merced (MC)	Permanent Site	CARB	BAM	71	-0.17
Clovis (CV)	Permanent Site	CARB	BAM	120	0.20
Fresno (FR)	Permanent Site	CARB	BAM	122	0.31
Tranquility (TQ)	Permanent Site	CARB	BAM	138	-0.23
<i>Eastern Sierra</i>					
Devils Postpile (DP)	Aug 17 – Sept 7	USDA FS	EBAM	92	0.06
<i>Northern Sierra</i>					
Pollock Pines (PP)	Aug 22 – Sept 17	CARB OER	EBAM	110	0.51
South Lake Tahoe (SLT)	Aug 28 – Sept 18	CARB OER	EBAM	117	0.72
Wentworth (WW)	Aug 17 – Sep 9/8	CARB OER	EBAM	134	0.32
Cool (CO)	Aug 17 – 10/17	CARB OER	EBAM	140	0.63
<i>Nevada</i>					
Gardnerville (GV)	Permanent Site	NBAQP	BAM	120	0.51
Carson City (CC)	Permanent Site	NBAQP	BAM	146	0.45
Reno (RO)	Permanent Site	WAQMD	BAM	187	0.48
Reno Galletti (RG)	Permanent Site	WAQMD	BAM	188	0.48
Sparks (SP)	Permanent Site	WAQMD	BAM	189	0.60

4 a. Pearson coefficients between BlueSky concentration estimates and measured PM_{2.5}

5 concentrations

6

7 **Table S2. Major Fuel Characteristic Classification System (FCCS) fuel types in the Rim**
8 **Fire perimeter, area estimated to burn, % of total area, fuel loading and PM2.5 emissions**
9 **per hectare.**

FCCS Fuel Type	Area (ha)	% Area	Fuel Loading (tonnes/ha)	PM2.5 emitted (tonnes/ha)
Douglas-fir - Sugar pine - Tanoak forest	35,975	33.5	155	1.27
Black oak woodland	9,496	8.09	64	0.24
Jeffrey pine - Red fir - White fir / Greenleaf manzanita - Snowbrush forest	17,055	15.9	203	2.70
Jeffrey pine - Ponderosa pine - Douglas-fir - Black oak forest	23,234	21.7	74	0.45
Red fir forest	13,549	12.6	207	2.60
Live oak - Blue oak woodland	6,912	0.20	45	0.19

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Figure S1 – Map of study area, fire locations and monitoring locations

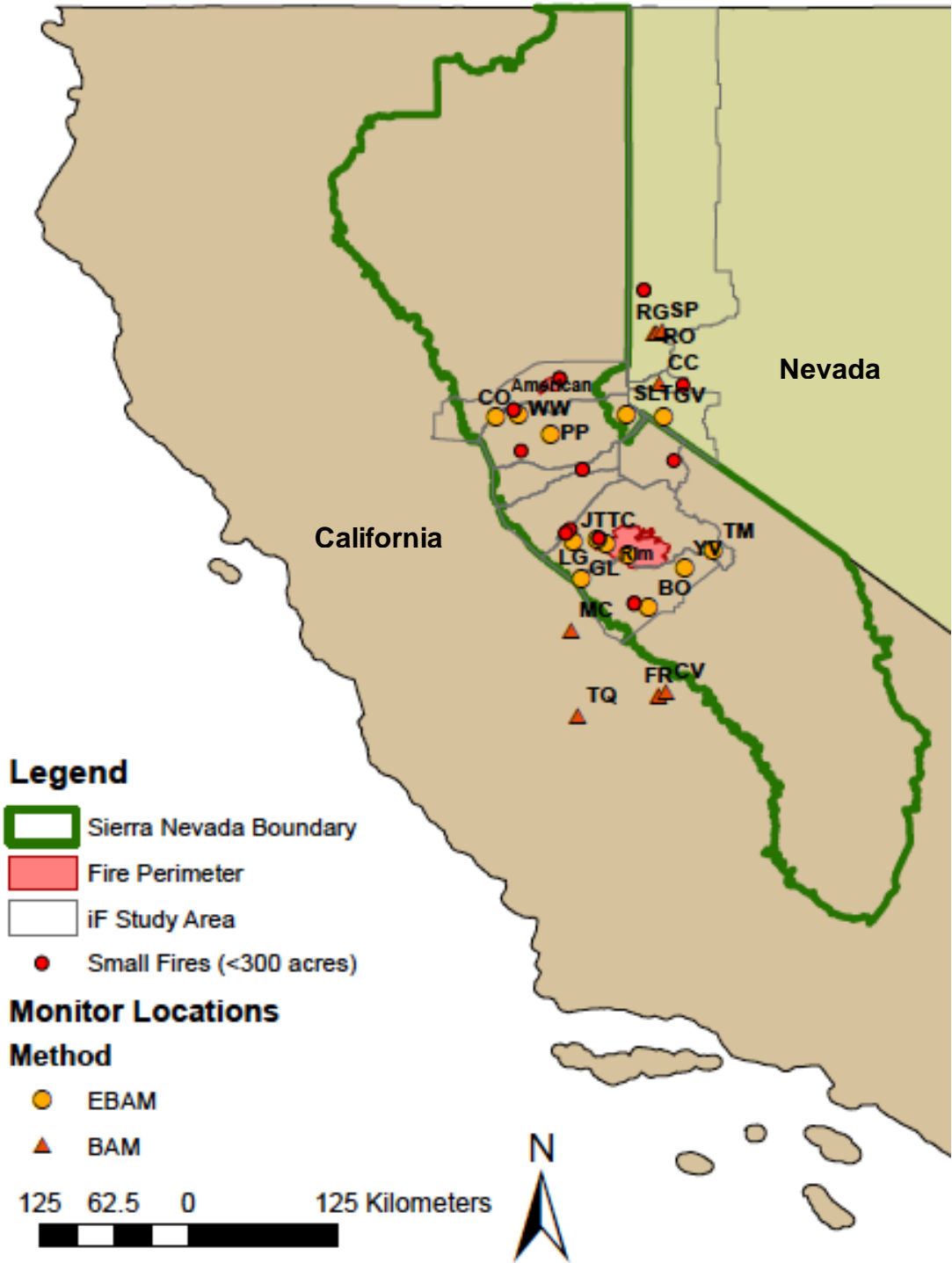


Figure S2: Actual and simulated cumulative area growth of the Rim fire from 8/17/2013 – 9/16/2013.

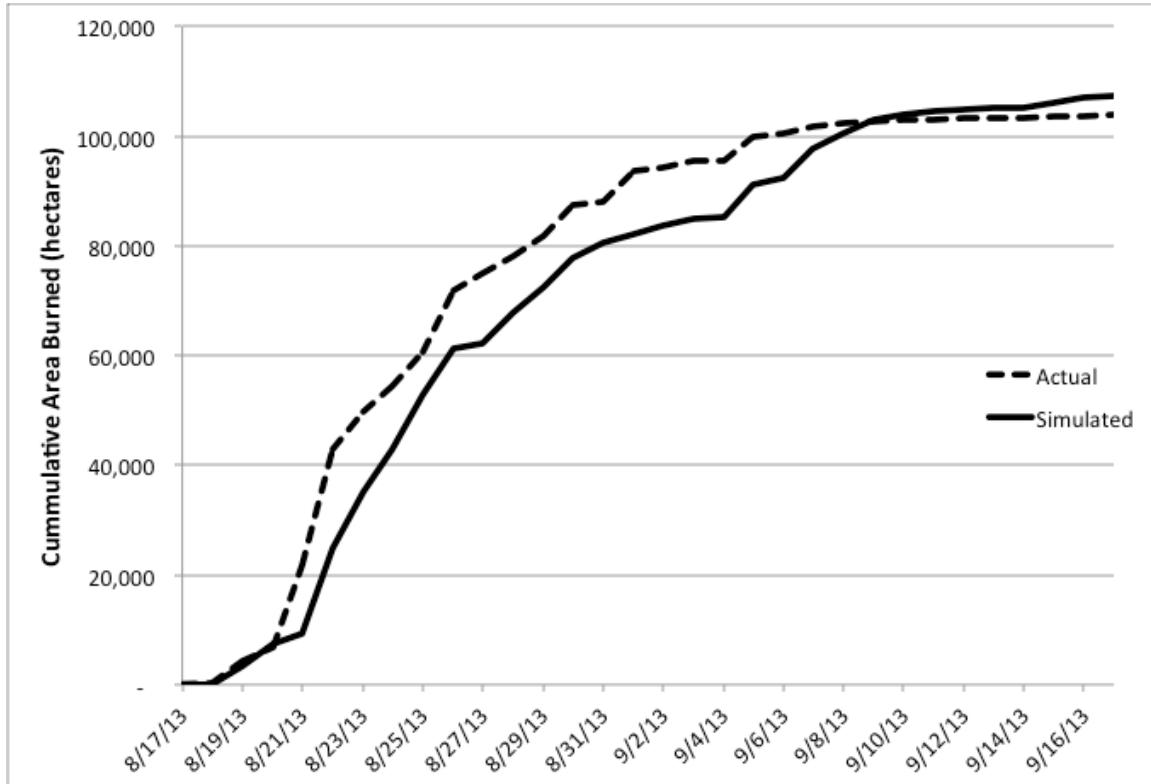


Figure S3: 24-Hour PM_{2.5} Concentrations with Air Quality Index (AQI) breakpoints for the most impacted monitoring site from each region

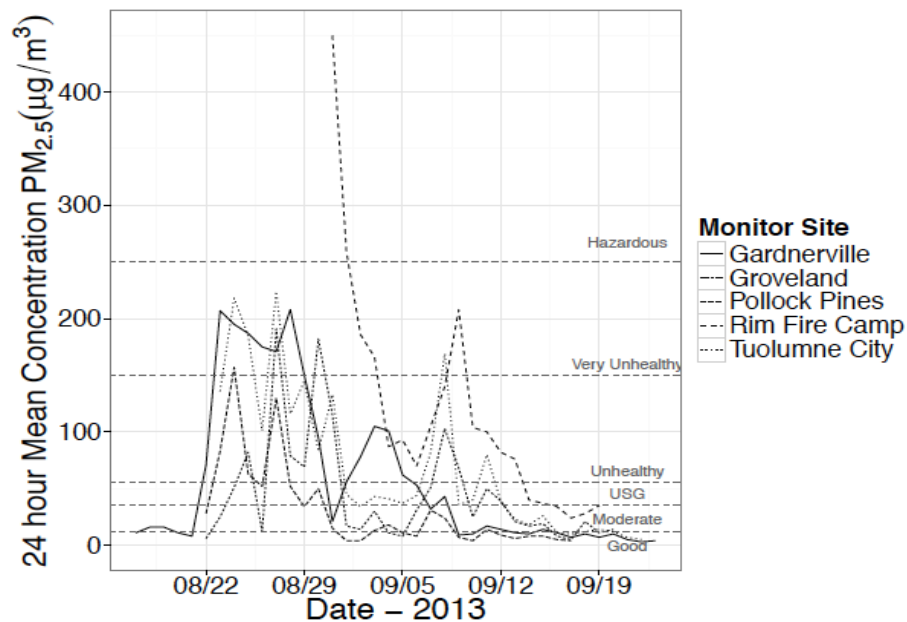


Figure S4: Daily 24hr Mean PM_{2.5} Concentrations measured by monitoring network compared to BlueSky estimates at 22 study monitor locations with Pearson Coefficients arranged by region and distance to Rim Fire.

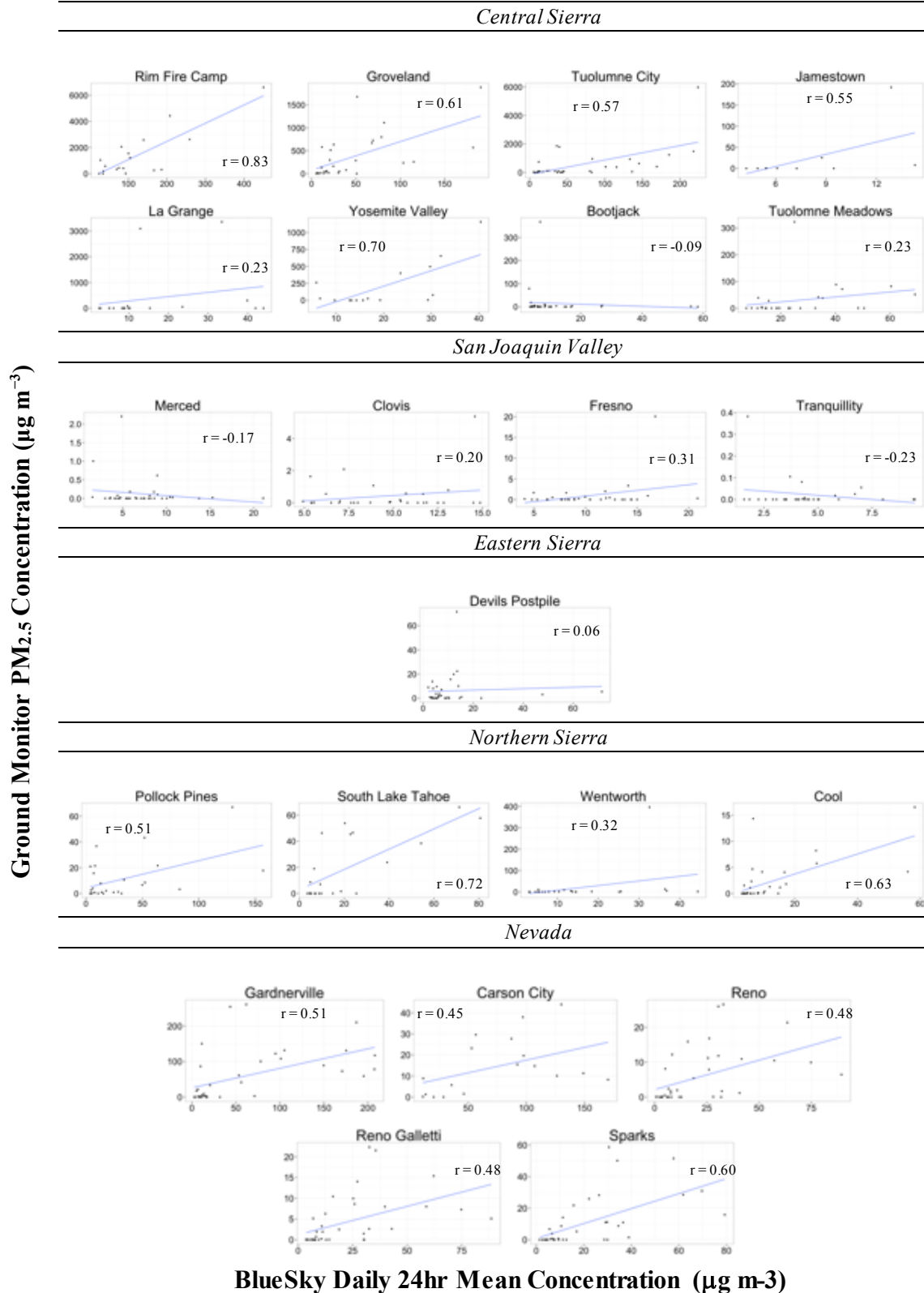
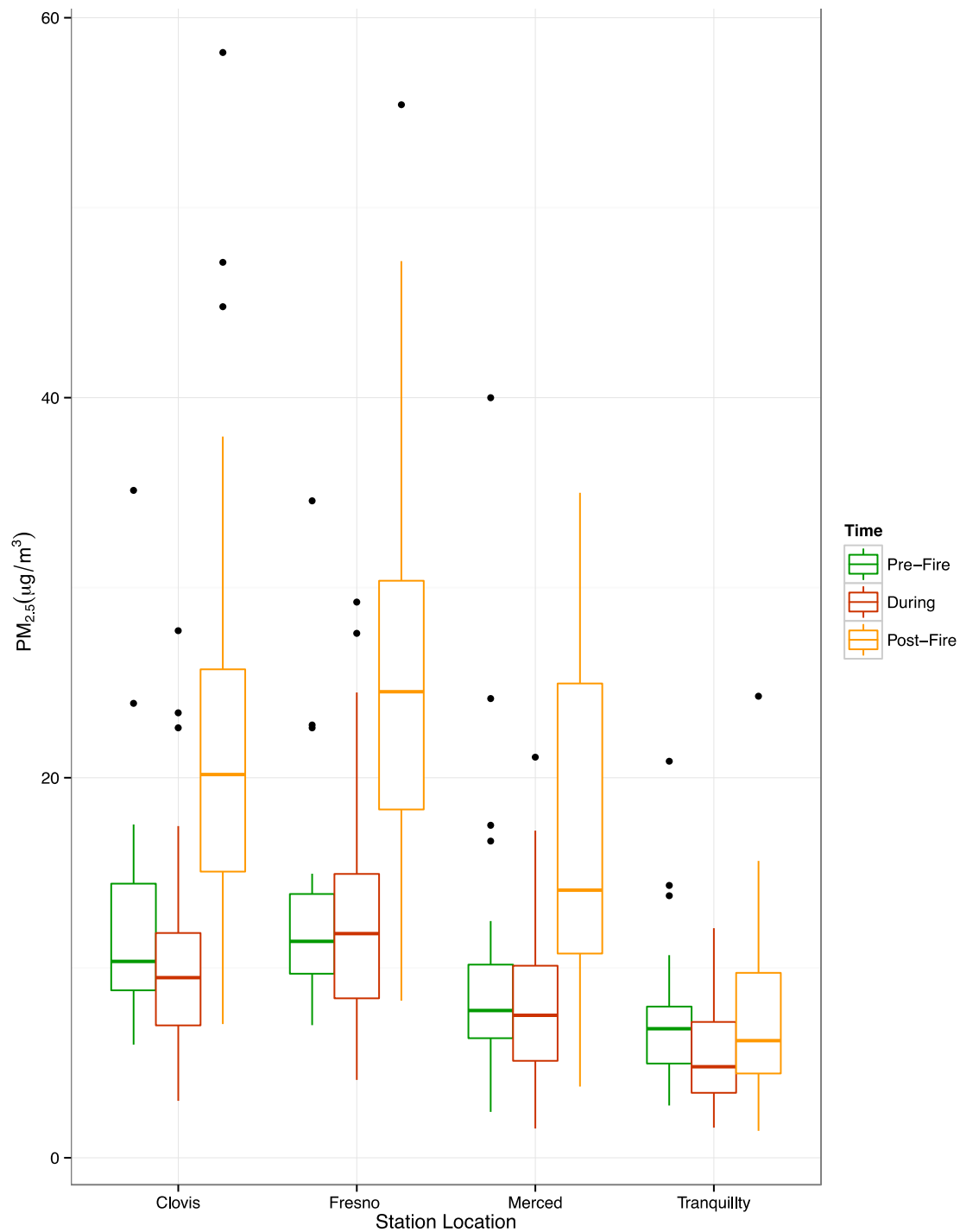


Figure S5: Daily 24hr Mean PM_{2.5} concentrations at San Joaquin Valley permanent PM_{2.5} monitoring sites Pre-Rim Fire (July 17 – August 17, 2013), During Rim Fire (August 18 – October 24, 2013) and Post-Rim Fire (October 25 – November 25, 2013).



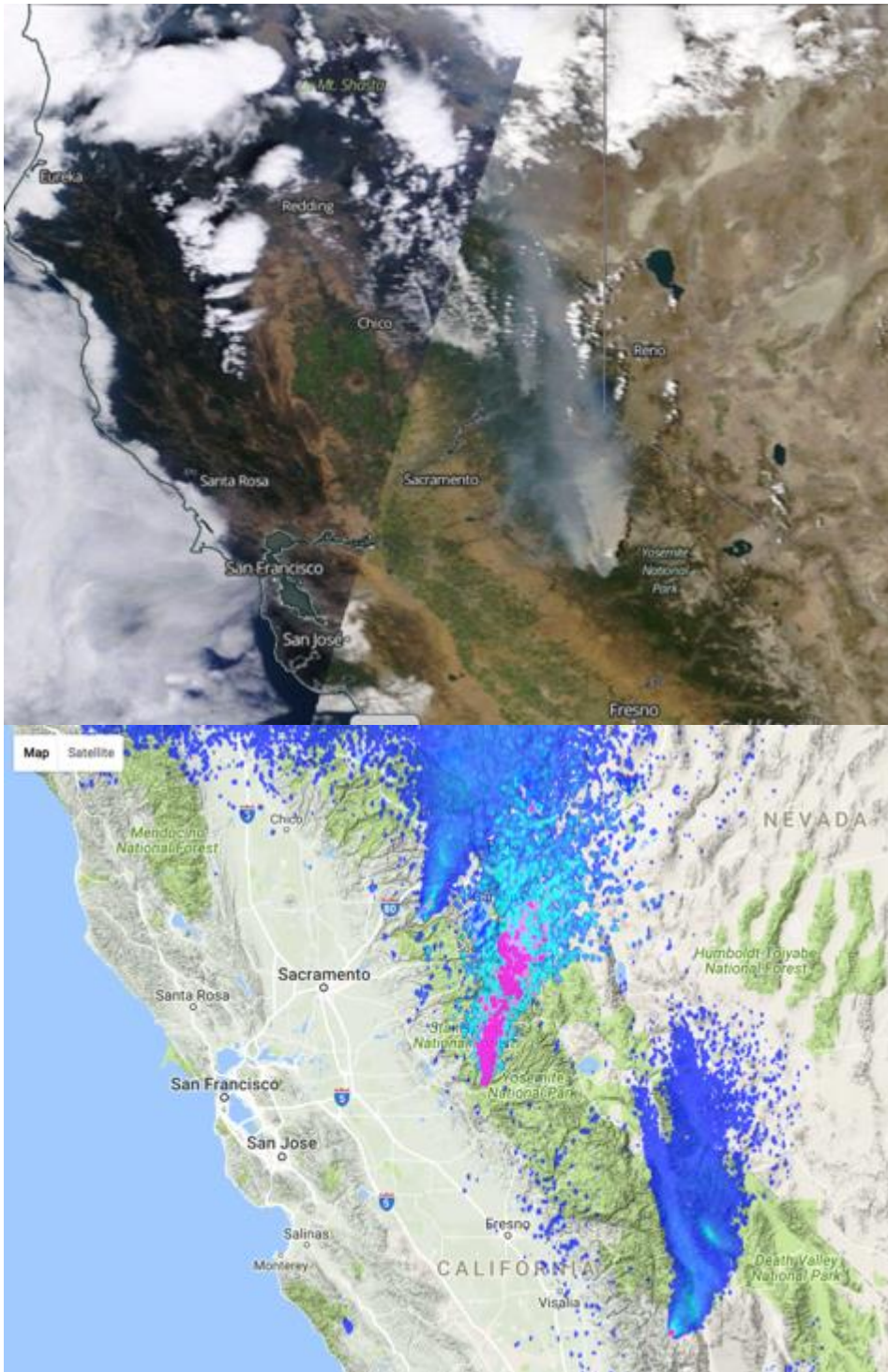


Figure S6. (a) NASA Worldview visible satellite image of the Rim and American wildfires on 8/22/2013 and (b) BlueSky smoke model simulation of near-surface PM_{2.5} concentrations from wildfires on 8/22/2013.

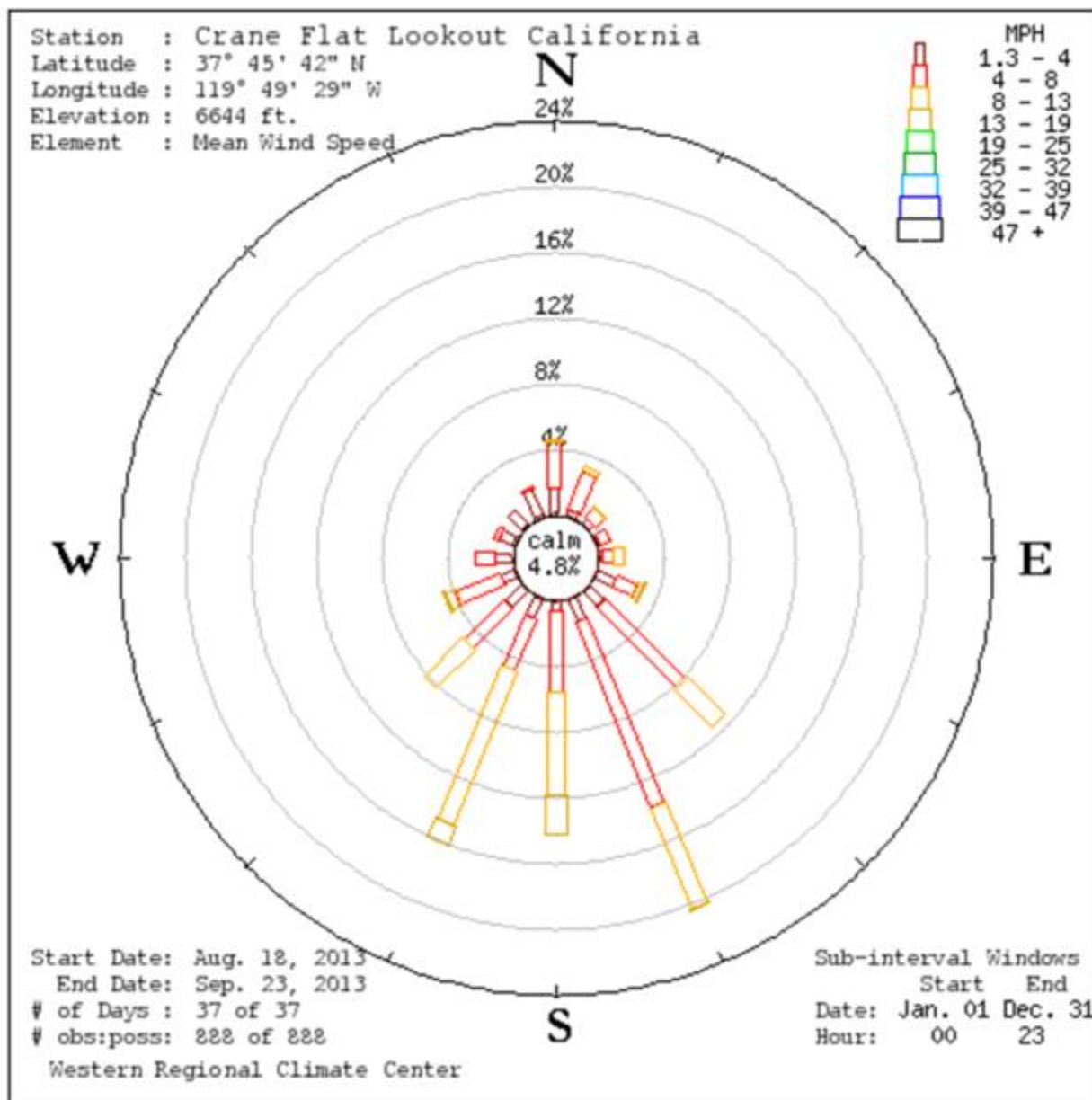


Figure S7. Wind rose of wind speed and direction for the Crane Flat Lookout remote automated weather station (RAWS) from August 18, 2013 to September 23, 2013. <http://www.raws.dri.edu/cgi-bin/rawMAIN.pl?caCCRA> (accessed 9/9/2016).