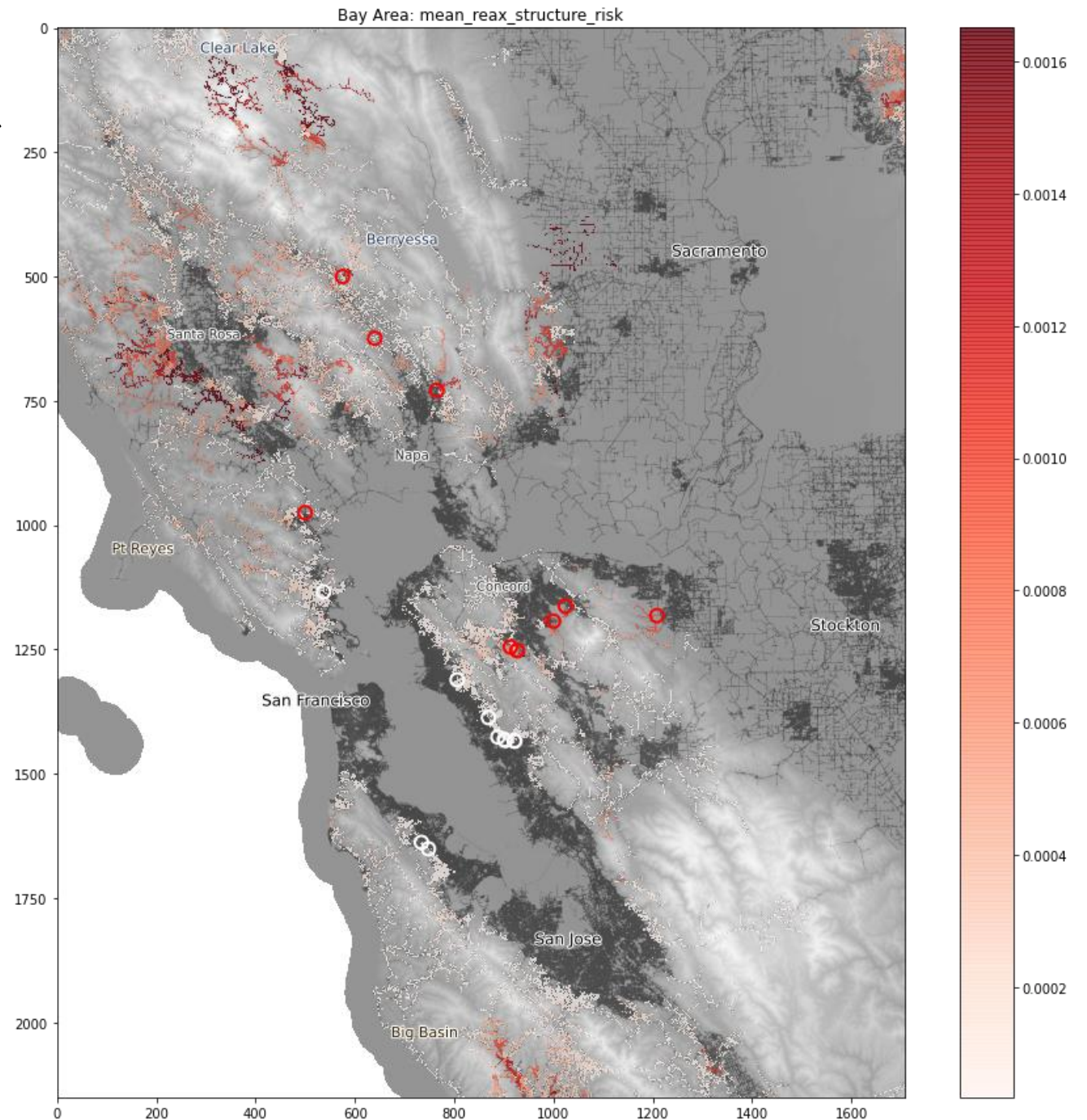


# Top and Bottom Risk CPZs

- Ranked by Reax risk
- CPZs visualized pass these criteria:
  - 10 or more trees from the 2019 VMD found within the CPZ
  - For 36 CPZs that have a presence in 2 regions due either to tree region/location errors or ambiguous spatial CPZ assignment, the group with much smaller tree counts assignment has been dropped

# Top and Bottom Risk CPZs – Bay Area

- Red dots = highest-risk CPZs
- White dots = lowest-risk CPZs
- Red to White scale = CPZs with highest to lowest risk
- Grey lines = Dx network that is outside of HFTD Tier 2 and 3



# Top Risk CPZs – Bay Area

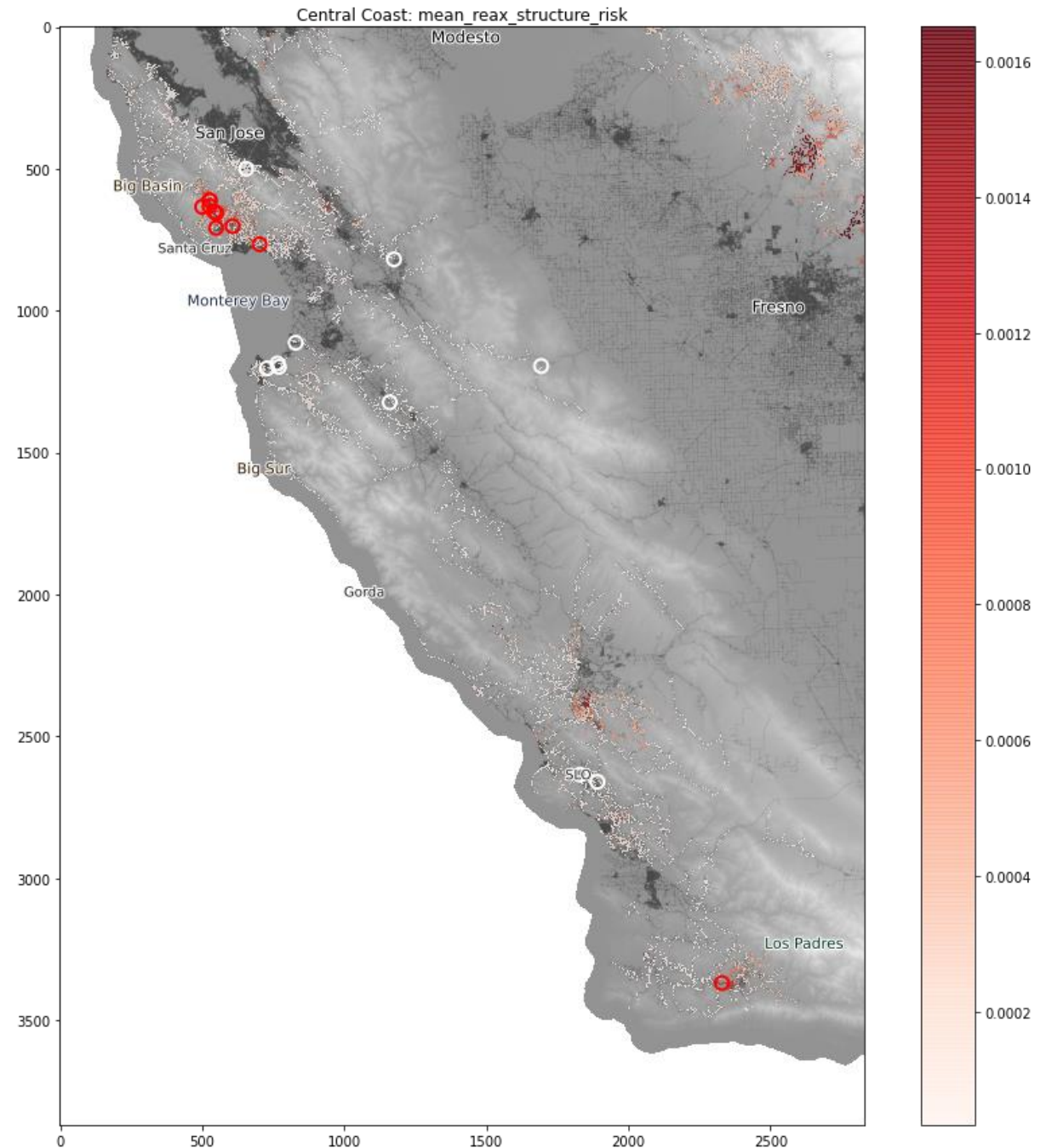
CPZ ID	Region	Reax risk rank	Mean Reax structure risk	Mean ignition probability	Mean Reax structure impact	Primary conductor length in HFTD 2/3 (miles)	Tree count	Fraction of trees priority
NOVATO 110455398	Bay Area	197	0.00183	0.007%	66	3.0	254	76%
ROSSMOOR 1102circuit_breaker	Bay Area	201	0.00181	0.007%	66	0.2	69	52%
SILVERADO 2104722	Bay Area	274	0.00138	0.012%	19	7.4	618	40%
PUEBLO 11042802	Bay Area	335	0.00115	0.005%	47	9.3	810	32%
CLAYTON 2215circuit_breaker	Bay Area	389	0.00103	0.002%	58	2.1	20	55%
LONE TREE 210521210	Bay Area	434	0.00094	0.004%	38	10.6	218	44%
CLAYTON 2215W531R	Bay Area	531	0.00078	0.003%	51	6.5	421	24%
ROSSMOOR 110639424	Bay Area	535	0.00077	0.006%	140	0.8	64	56%
PUEBLO 2102792	Bay Area	543	0.00076	0.011%	12	18.9	2640	54%
ROSSMOOR 1106circuit_breaker	Bay Area	561	0.00074	0.011%	14	1.4	135	36%

# Bottom Risk CPZs – Bay Area

CPZ ID	Region	Reax risk rank	Mean Reax structure risk	Mean ignition probability	Mean Reax structure impact	Primary conductor length in HFTD 2/3 (miles)	Tree count	Fraction of trees priority
HOLLYWOOD 0401circuit_breaker	Bay Area	2828	0.00001	0.002%	0.0	2.8	109	15%
CASTRO VALLEY 1104MR236	Bay Area	2832	0.00001	0.001%	0.9	1.2	35	6%
SAN LEANDRO U 1114MR545	Bay Area	2836	0.00001	0.001%	0.3	2.2	69	22%
SAN LEANDRO U 1114MR544	Bay Area	2839	0.00001	0.001%	-	0.7	26	42%
SAN LEANDRO U 1109CR284	Bay Area	2848	0.00000	0.001%	-	0.7	86	6%
BELMONT 11038956	Bay Area	2860	0.00000	0.001%	-	0.1	10	40%
CASTRO VALLEY 1104MR201	Bay Area	2863	0.00000	0.002%	0.0	1.2	31	35%
SAN LEANDRO U 11149838	Bay Area	2871	0.00000	0.001%	-	0.7	14	7%
SAN RAFAEL 110648752	Bay Area	2892	0.00000	0.008%	-	0.0	12	0%
BELMONT 11109090	Bay Area	2899	0.00000	0.003%	-	-	23	39%

# Top and Bottom Risk CPZs – Central Coast

- Red dots = highest-risk CPZs
- White dots = lowest-risk CPZs
- Red to White scale = CPZs with highest to lowest risk
- Grey lines = Dx network that is outside of HFTD Tier 2 and 3



# Top Risk CPZs – Central Coast

CPZ ID	Region	Reax risk rank	Mean Reax structure risk	Mean ignition probability	Mean Reax structure impact	Primary conductor length in HFTD 2/3 (miles)	Tree count	Fraction of trees priority
BIG BASIN 11015479	Central Coast	80	0.00349	0.019%	18	0.2	98	22%
CAMP EVERS 210616000	Central Coast	259	0.00146	0.017%	16	2.0	606	13%
BIG BASIN 11019773	Central Coast	285	0.00133	0.019%	14	0.5	164	12%
CAMP EVERS 210574170	Central Coast	302	0.00128	0.023%	11	3.6	1076	1%
BEN LOMOND 110196738	Central Coast	308	0.00125	0.019%	12	6.8	2319	24%
BIG BASIN 110110720	Central Coast	317	0.00121	0.016%	16	4.7	1232	21%
CAMP EVERS 21061625	Central Coast	327	0.00117	0.018%	12	0.9	286	1%
BEN LOMOND 1101BL 1101	Central Coast	330	0.00116	0.019%	12	8.5	2453	12%
BUELLTON 1102Y50	Central Coast	338	0.00114	0.004%	63	10.7	1032	58%
SEACLIFF 040112946	Central Coast	352	0.00110	0.006%	29	2.3	494	52%

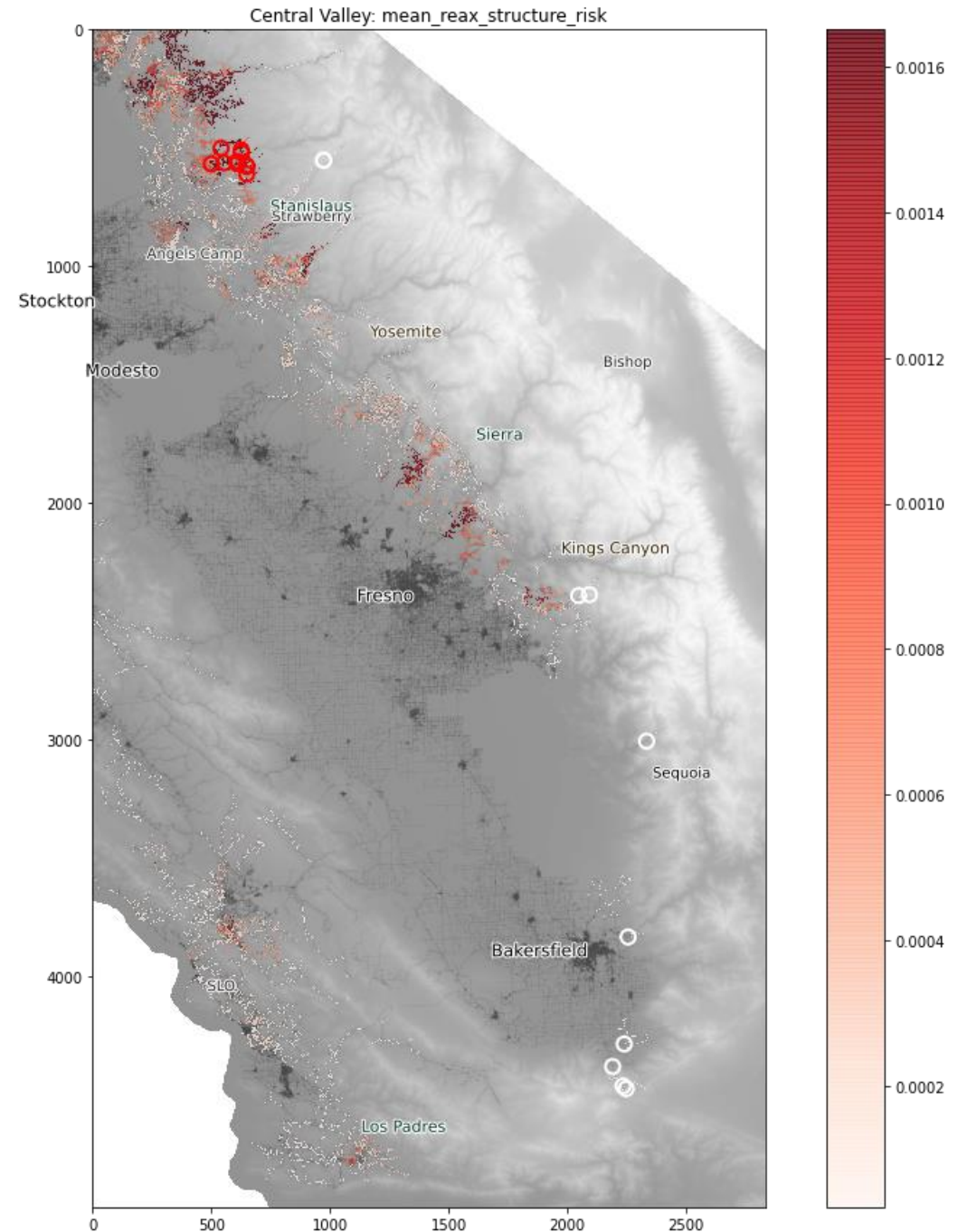
# Bottom Risk CPZs – Central Coast

CPZ ID	Region	Reax risk rank	Mean Reax structure risk	Mean ignition probability	Mean Reax structure impact	Primary conductor length in HFTD 2/3 (miles)	Tree count	Fraction of trees priority
MONTEREY 04012642	Central Coast	2804	0.00001	0.002%	-	0.2	16	56%
LOS GATOS 110160136	Central Coast	2809	0.00001	0.002%	0.0	0.3	61	10%
HOLLISTER 210491424	Central Coast	2810	0.00001	0.003%	0.0	0.3	23	17%
DEL MONTE 21029060	Central Coast	2812	0.00001	0.001%		0.6	12	100%
FOOTHILL 1102V06	Central Coast	2834	0.00001	0.002%	0.0	1.1	16	63%
SAN LUIS OBISPO 1107circuit_breaker	Central Coast	2840	0.00001	0.001%	0.0	1.0	34	53%
FORT ORD 210736596	Central Coast	2846	0.00000	0.001%	0.1	3.9	21	57%
PANOCHE 11034036	Central Coast	2847	0.00000	0.001%	0.0	8.3	26	27%
CAMPORA 110177978	Central Coast	2854	0.00000	0.001%	0.1	2.1	17	47%
DEL MONTE 21042032	Central Coast	2867	0.00000	0.001%	-	0.2	13	54%



# Top and Bottom Risk CPZs – Central Valley

- Red dots = highest-risk CPZs
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- Red to White scale = CPZs with highest to lowest risk
- Grey lines = Dx network that is outside of HFTD Tier 2 and 3





# Top Risk CPZs – Central Valley

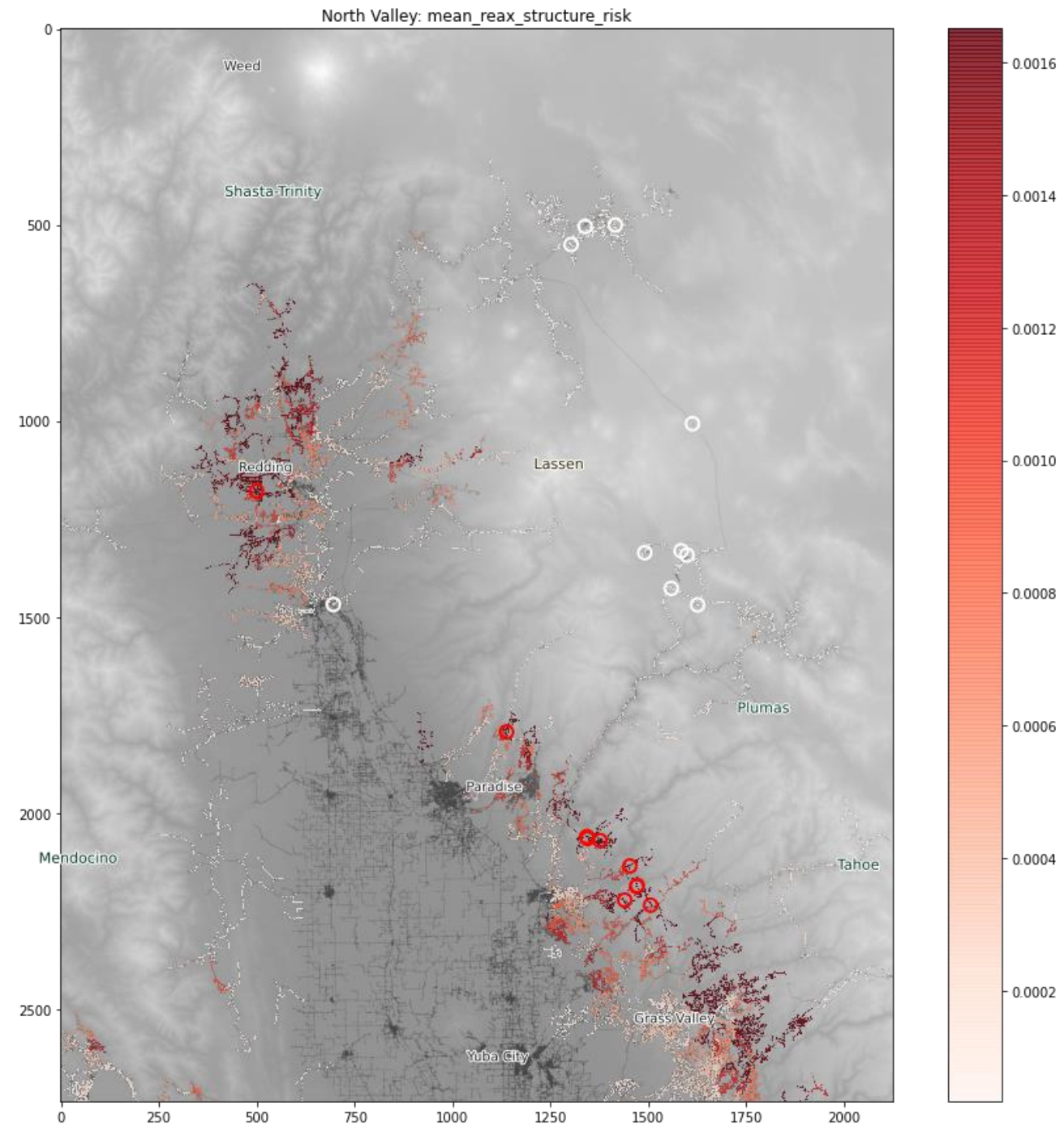
CPZ ID	Region	Reax risk rank	Mean Reax structure risk	Mean ignition probability	Mean Reax structure impact	Primary conductor length in HFTD 2/3 (miles)	Tree count	Fraction of trees priority
WEST POINT 110236676	Central Valley	6	0.01036	0.011%	214	17.0	2152	39%
PINE GROVE 110235576	Central Valley	7	0.01009	0.013%	165	7.9	1041	10%
PINE GROVE 110213438	Central Valley	11	0.00935	0.014%	126	16.6	3728	8%
WEST POINT 11021305	Central Valley	15	0.00865	0.011%	186	11.4	395	43%
WEST POINT 11021303	Central Valley	16	0.00852	0.012%	131	15.8	342	36%
PINE GROVE 110245292	Central Valley	19	0.00770	0.016%	59	10.9	26	12%
WEST POINT 110272036	Central Valley	21	0.00753	0.009%	212	2.4	240	62%
WEST POINT 11014706	Central Valley	23	0.00715	0.016%	84	11.5	19	5%
PINE GROVE 11011021	Central Valley	26	0.00638	0.011%	118	4.2	925	16%
WEST POINT 1102circuit_breaker	Central Valley	30	0.00560	0.012%	90	17.8	2175	37%

# Bottom Risk CPZs – Central Valley

CPZ ID	Region	Reax risk rank	Mean Reax structure risk	Mean ignition probability	Mean Reax structure impact	Primary conductor length in HFTD 2/3 (miles)	Tree count	Fraction of trees priority
SALT SPRINGS 21011232	Central Valley	2844	0.00000	0.001%	0.8	6.6	883	0%
DUNLAP 11037170	Central Valley	2855	0.00000	0.000%	1.5	5.4	237	3%
TEJON 11032280	Central Valley	2856	0.00000	0.000%		1.6	35	3%
TULE POWER HOUSE 1101circuit_breaker	Central Valley	2862	0.00000	0.001%	0.2	4.0	232	10%
SALT SPRINGS 21013116	Central Valley	2870	0.00000	0.001%	0.1	0.8	169	0%
TEJON 11023751	Central Valley	2876	0.00000	0.000%	3.9	20.3	1141	32%
CAL WATER 1102920714	Central Valley	2877	0.00000	0.000%	0.3	4.0	23	30%
TEJON 11022455	Central Valley	2878	0.00000	0.000%	-	6.5	387	43%
DUNLAP 11027290	Central Valley	2880	0.00000	0.000%	0.2	0.7	95	2%
TEJON 11023760	Central Valley	2881	0.00000	0.000%	0.2	6.6	177	22%

# Top and Bottom Risk CPZs – North Valley

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# Top Risk CPZs – North Valley

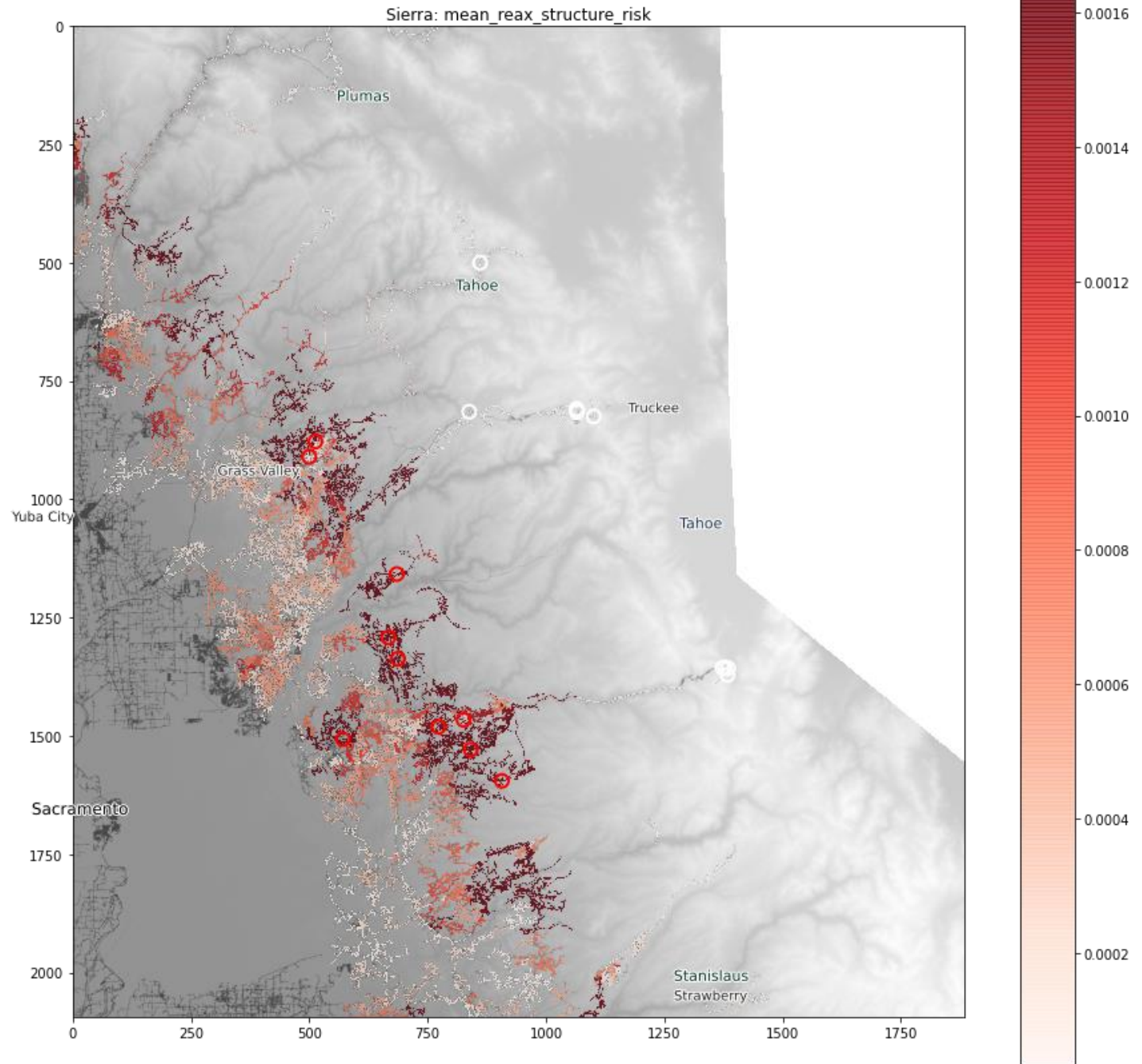
CPZ ID	Region	Reax risk rank	Mean Reax structure risk	Mean ignition probability	Mean Reax structure impact	Primary conductor length in HFTD 2/3 (miles)	Tree count	Fraction of trees priority
KANAKA 110183288	North Valley	3	0.01279	0.012%	235	17.4	2333	21%
KANAKA 110175744	North Valley	4	0.01253	0.014%	172	10.6	1827	25%
ORO FINO 110239154	North Valley	8	0.00991	0.010%	138	0.9	91	38%
WYANDOTTE 11031974	North Valley	10	0.00974	0.014%	167	22.8	5456	27%
WYANDOTTE 11031976	North Valley	13	0.00914	0.011%	203	24.0	3667	30%
BIG BEND 11021972	North Valley	28	0.00594	0.010%	146	21.1	3283	7%
KANAKA 110165606	North Valley	29	0.00568	0.010%	122	12.7	2240	12%
KANAKA 11011044	North Valley	33	0.00523	0.009%	125	6.1	563	8%
JESSUP 110276068	North Valley	39	0.00505	0.009%	119	16.7	1719	57%
CHALLENGE 11021902	North Valley	42	0.00477	0.011%	106	5.0	1024	11%

# Bottom Risk CPZs – North Valley

CPZ ID	Region	Reax risk rank	Mean Reax structure risk	Mean ignition probability	Mean Reax structure impact	Primary conductor length in HFTD 2/3 (miles)	Tree count	Fraction of trees priority
MC ARTHUR 11021324	North Valley	2811	0.00001	0.001%	0.6	1.9	12	33%
BIG MEADOWS 21012510	North Valley	2833	0.00001	0.001%	0.2	4.2	116	0%
BIG MEADOWS 21012476	North Valley	2835	0.00001	0.001%	0.3	8.0	556	0%
PIT NO 1 11019702	North Valley	2843	0.00000	0.002%	0.3	0.6	16	13%
MC ARTHUR 11011546	North Valley	2845	0.00000	0.001%	0.6	12.8	286	1%
HAMILTON BRANCH 110118205	North Valley	2853	0.00000	0.001%	-	2.3	63	0%
HAMILTON BRANCH 11012436	North Valley	2861	0.00000	0.001%	0.0	1.3	14	0%
RAWSON 110385334	North Valley	2866	0.00000	0.002%	-	2.3	10	100%
CHESTER 11022564	North Valley	2872	0.00000	0.000%	0.2	2.2	44	0%
BOGARD 1101circuit_breaker	North Valley	2874	0.00000	0.000%	0.0	0.5	61	0%

# Top and Bottom Risk CPZs – Sierra

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# Top Risk CPZs - Sierra

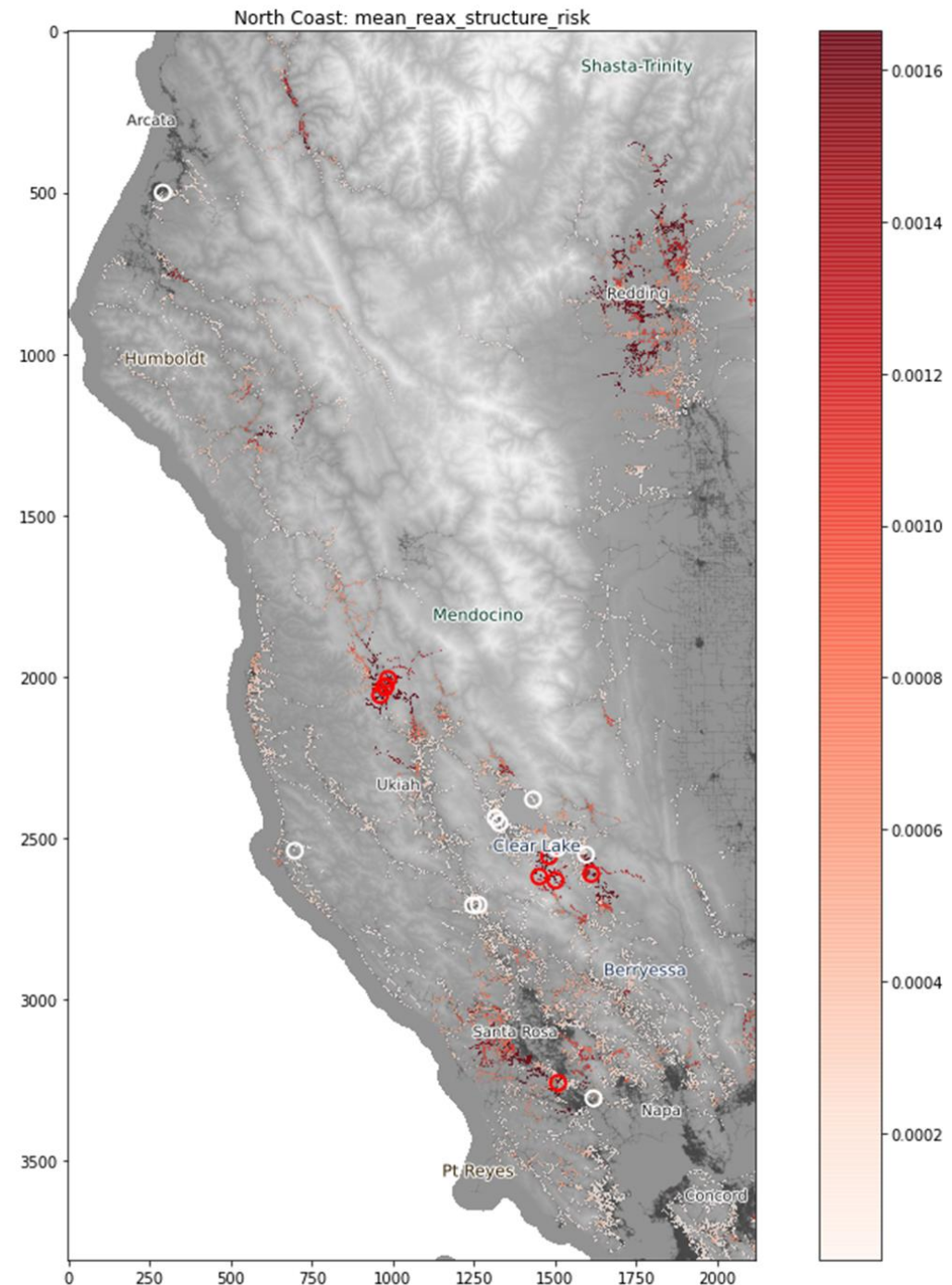
CPZ ID	Region	Reax risk rank	Mean Reax structure risk	Mean ignition probability	Mean Reax structure impact	Primary conductor length in HFTD 2/3 (miles)	Tree count	Fraction of trees priority
BRUNSWICK 110350070	Sierra	1	0.02074	0.011%	326	27.8	20	35%
APPLE HILL 2102circuit_breaker	Sierra	2	0.01375	0.013%	247	41.4	5429	45%
APPLE HILL 21027502	Sierra	5	0.01106	0.014%	185	23.0	4358	31%
FORESTHILL 1102circuit_breaker	Sierra	9	0.00989	0.008%	226	1.6	429	13%
APPLE HILL 11038412	Sierra	12	0.00934	0.012%	167	20.2	3147	45%
APPLE HILL 210297982	Sierra	17	0.00830	0.012%	146	9.8	1324	39%
BRUNSWICK 11041020	Sierra	18	0.00790	0.013%	119	28.7	4062	48%
SHINGLE SPRINGS 21092679	Sierra	20	0.00759	0.009%	172	7.1	573	58%
MOUNTAIN QUARRIES 21011184	Sierra	22	0.00729	0.016%	116	11.7	2929	20%
PLACERVILLE 210692012	Sierra	24	0.00710	0.015%	112	29.0	5372	26%

# Bottom Risk CPZs - Sierra

CPZ ID	Region	Reax risk rank	Mean Reax structure risk	Mean ignition probability	Mean Reax structure impact	Primary conductor length in HFTD 2/3 (miles)	Tree count	Fraction of trees priority
ECHO SUMMIT 11018922	Sierra	2790	0.00001	0.001%	0.7	1.1	51	0%
ECHO SUMMIT 1101344250	Sierra	2792	0.00001	0.001%	0.7	0.8	61	0%
ECHO SUMMIT 1101741586	Sierra	2800	0.00001	0.001%	0.5	0.7	53	0%
SPAULDING 1101578852	Sierra	2813	0.00001	0.001%	0.6	20.6	1322	10%
ALLEGHANY 1101978	Sierra	2829	0.00001	0.001%	1.4	11.0	795	2%
ECHO SUMMIT 1101481660	Sierra	2838	0.00001	0.001%	0.1	0.5	10	10%
SUMMIT 1101742	Sierra	2849	0.00000	0.001%	0.0	1.3	53	0%
SUMMIT 11022302	Sierra	2852	0.00000	0.001%	0.2	1.5	126	0%
SUMMIT 110186658	Sierra	2865	0.00000	0.001%	0.3	0.6	21	0%
SUMMIT 110158642	Sierra	2875	0.00000	0.000%	0.0	1.9	38	0%

# Top and Bottom Risk CPZs – North Coast

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# Top Risk CPZs – North Coast

CPZ ID	Region	Reax risk rank	Mean Reax structure risk	Mean ignition probability	Mean Reax structure impact	Primary conductor length in HFTD 2/3 (miles)	Tree count	Fraction of trees priority
MIDDLETOWN 11011325	North Coast	31	0.00552	0.016%	62	8.6	1261	38%
HIGHLANDS 1103520	North Coast	44	0.00453	0.010%	83	47.1	1938	68%
KONOCI 1102circuit_breaker	North Coast	46	0.00449	0.014%	61	32.6	4584	39%
KONOCI 11024421	North Coast	53	0.00431	0.020%	42	0.4	219	42%
WILLITS 1103circuit_breaker	North Coast	56	0.00418	0.009%	84	2.6	324	54%
WILLITS 1103968	North Coast	57	0.00411	0.013%	62	26.1	4094	20%
WILLITS 110391948	North Coast	86	0.00339	0.010%	68	7.0	618	54%
COTATI 1102464	North Coast	91	0.00333	0.006%	70	1.8	58	52%
WILLITS 1104934	North Coast	99	0.00322	0.012%	59	30.7	4029	22%
WILLITS 1102circuit_breaker	North Coast	114	0.00285	0.015%	33	4.6	635	47%

# Bottom Risk CPZs – North Coast

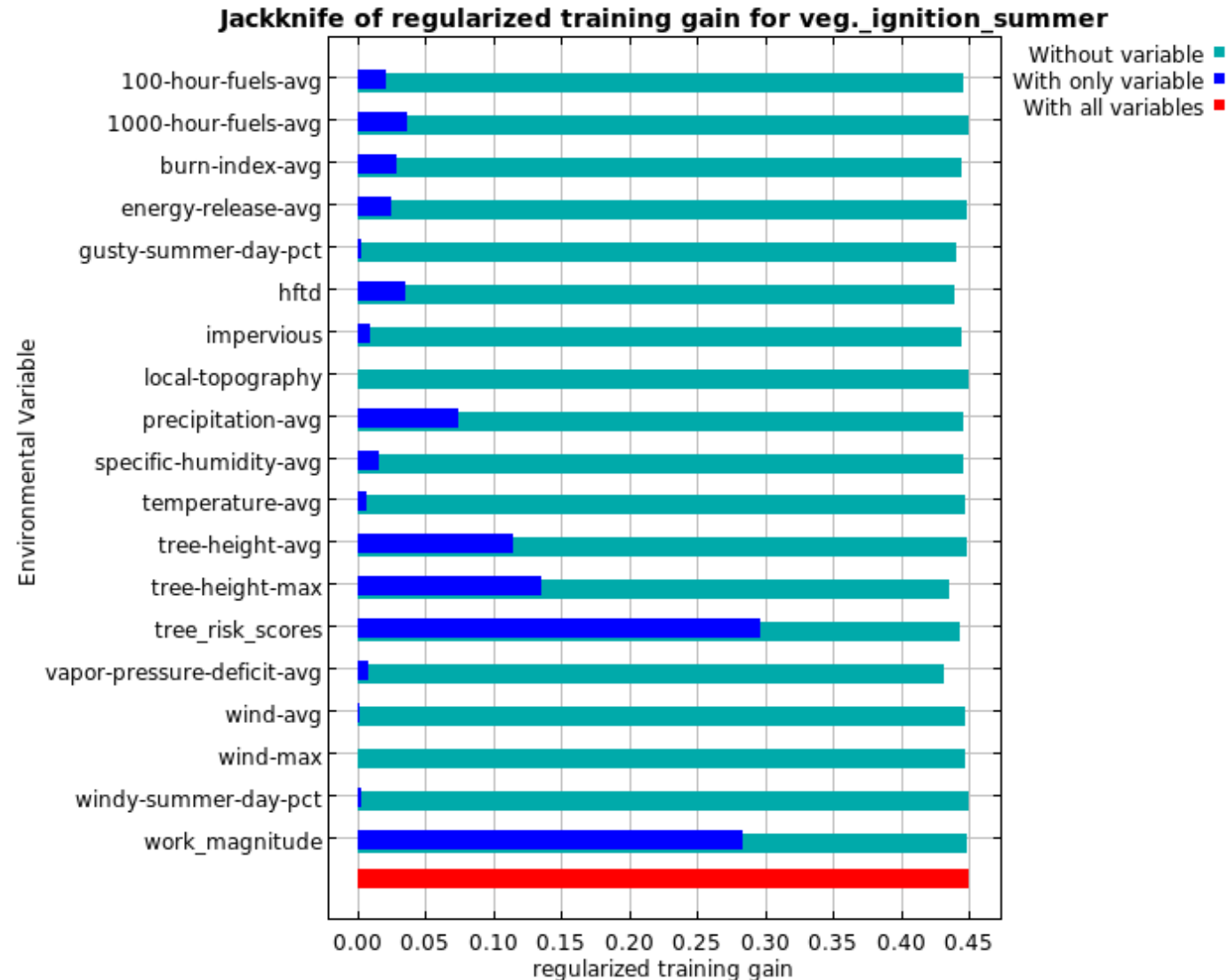
CPZ ID	Region	Reax risk rank	Mean Reax structure risk	Mean ignition probability	Mean Reax structure impact	Primary conductor length in HFTD 2/3 (miles)	Tree count	Fraction of trees priority
CLEAR LAKE 11024708	North Coast	2376	0.00004	0.007%	-	0.2	17	82%
CLOVERDALE 1102circuit_breaker	North Coast	2381	0.00004	0.006%	0.5	0.3	52	56%
POINT ARENA 11014923	North Coast	2425	0.00004	0.006%	0.3	2.9	174	5%
HIGHLANDS 1102circuit_breaker	North Coast	2429	0.00004	0.006%	0.0	7.4	301	91%
CLOVERDALE 1102262	North Coast	2457	0.00003	0.006%	0.2	0.6	64	64%
LUCERNE 110676850	North Coast	2466	0.00003	0.008%	0.2	1.9	168	38%
KONOCI 11084037	North Coast	2523	0.00003	0.004%	0.5	0.8	23	9%
HARTLEY 11014710	North Coast	2533	0.00003	0.006%	0.1	1.5	98	74%
LAKEVILLE 1102530	North Coast	2882	0.00000	0.006%	0.0	0.2	10	50%
HARRIS 11084674	North Coast	2902	0.00000	0.007%	-	0.3	27	4%

# "Jackknifed" covariate contribution



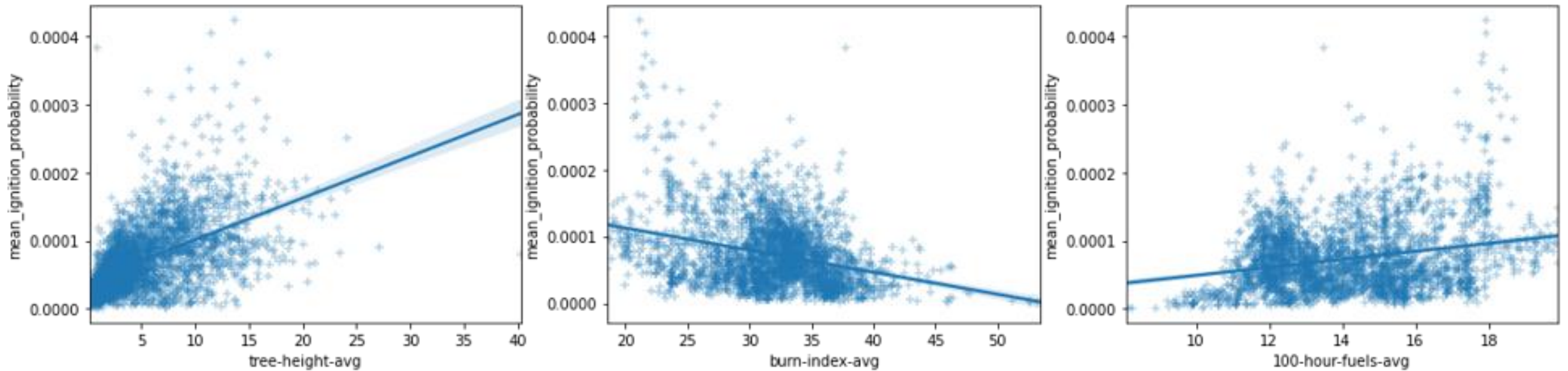


# Experimental run with tree scores and counts



# EVM CPZ p(Ignition) Correlations

- Note: Ignition Probability on vertical axis

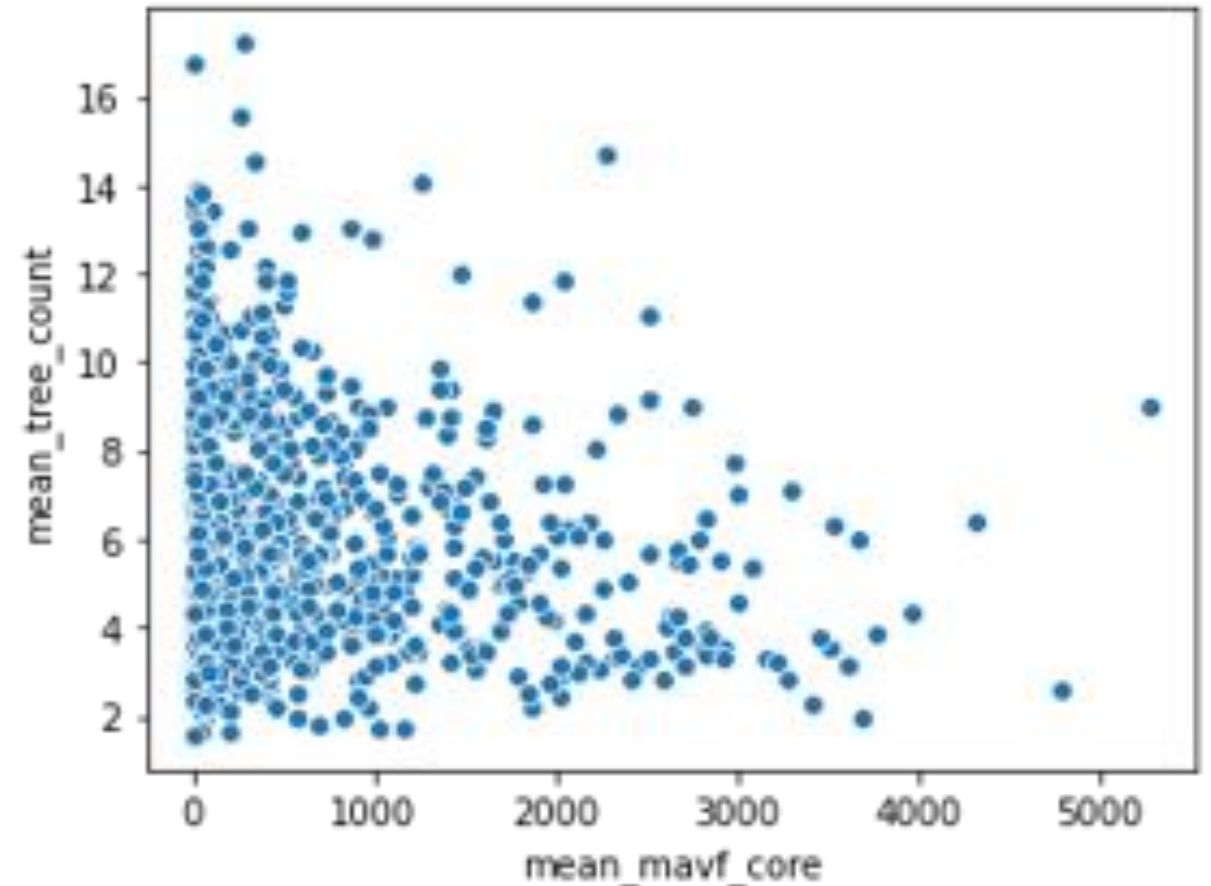
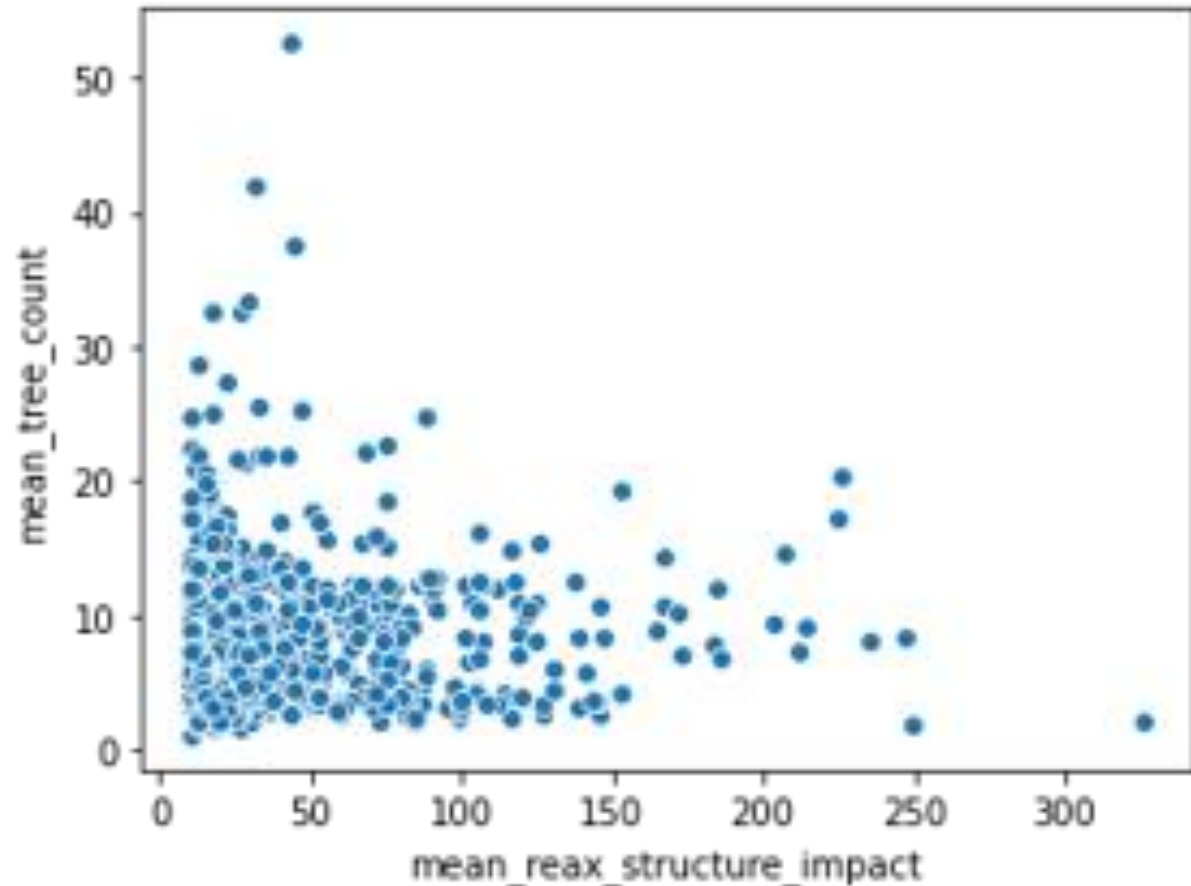


# EVM CPZ roll-up risk analysis

- There are fewer trees in areas of high consequence
- There is not as strong a relationship between P(ignition) and tree density
- There is little correlation between species-based outage scores and MAVF consequence
- Risk scores are dominated by consequence values
- Reax structure impacts and MAVF, based primarily on area burned, are not well correlated
- While reasonable people could disagree on which of those metrics better captures risks, it turns out that the choice is highly consequential - they point in different directions

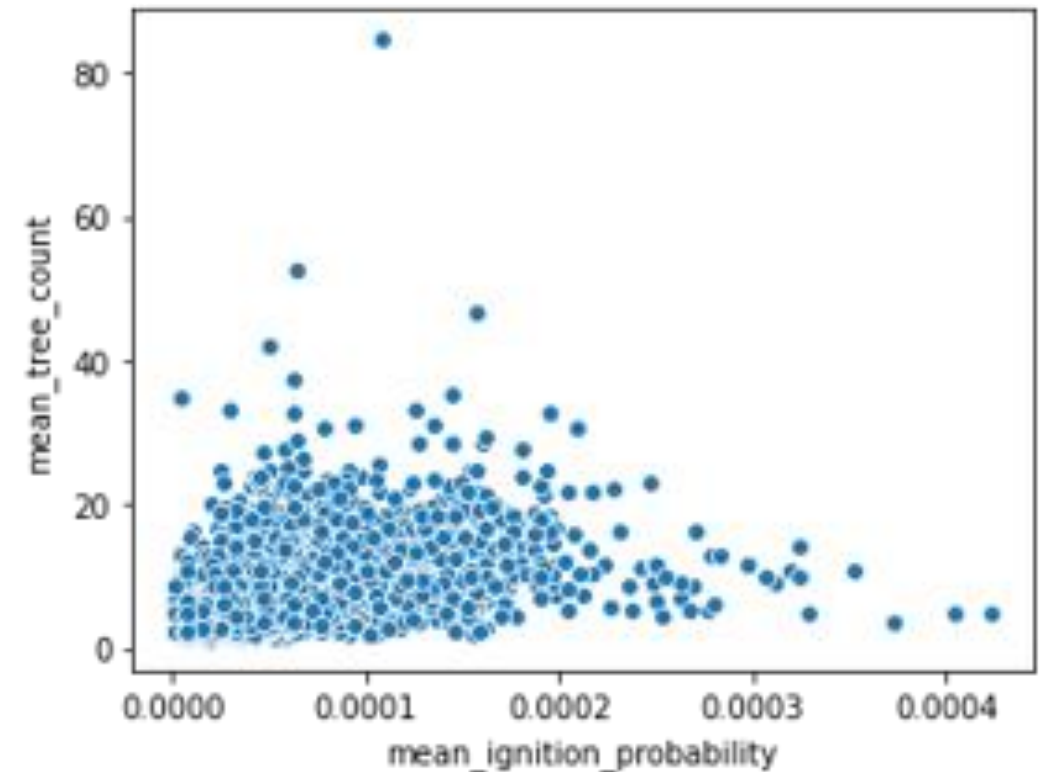
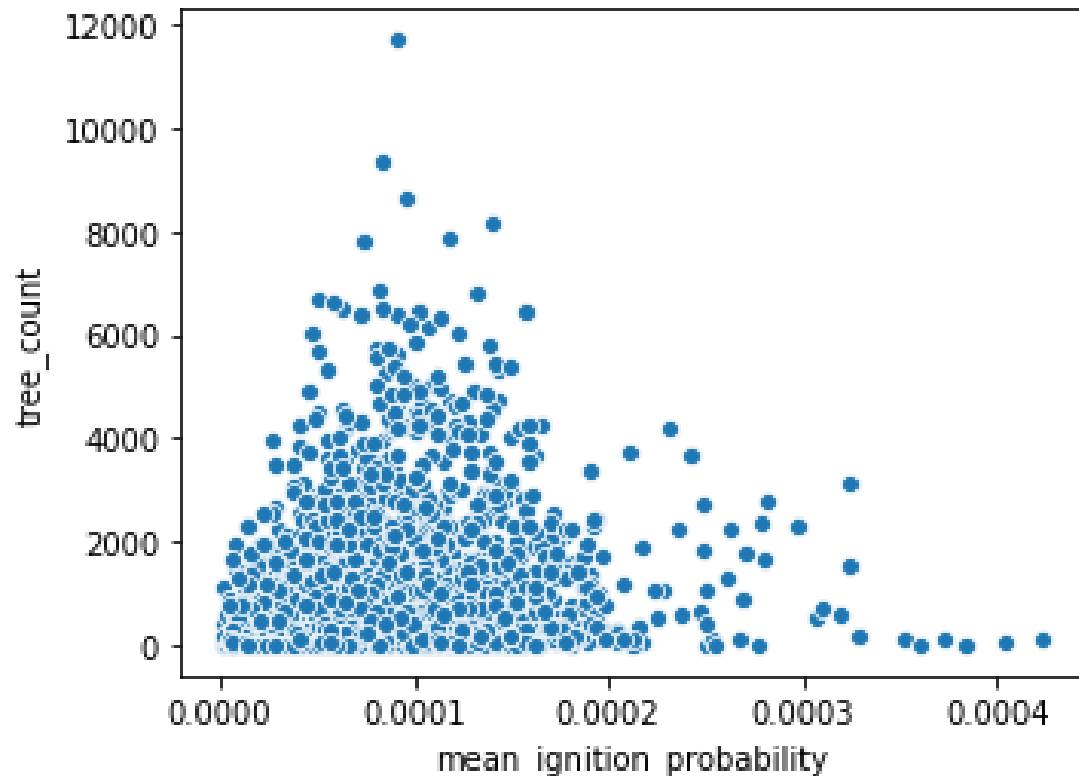
# EVM CPZ roll-up risk analysis

- There are fewer trees in areas of high consequence



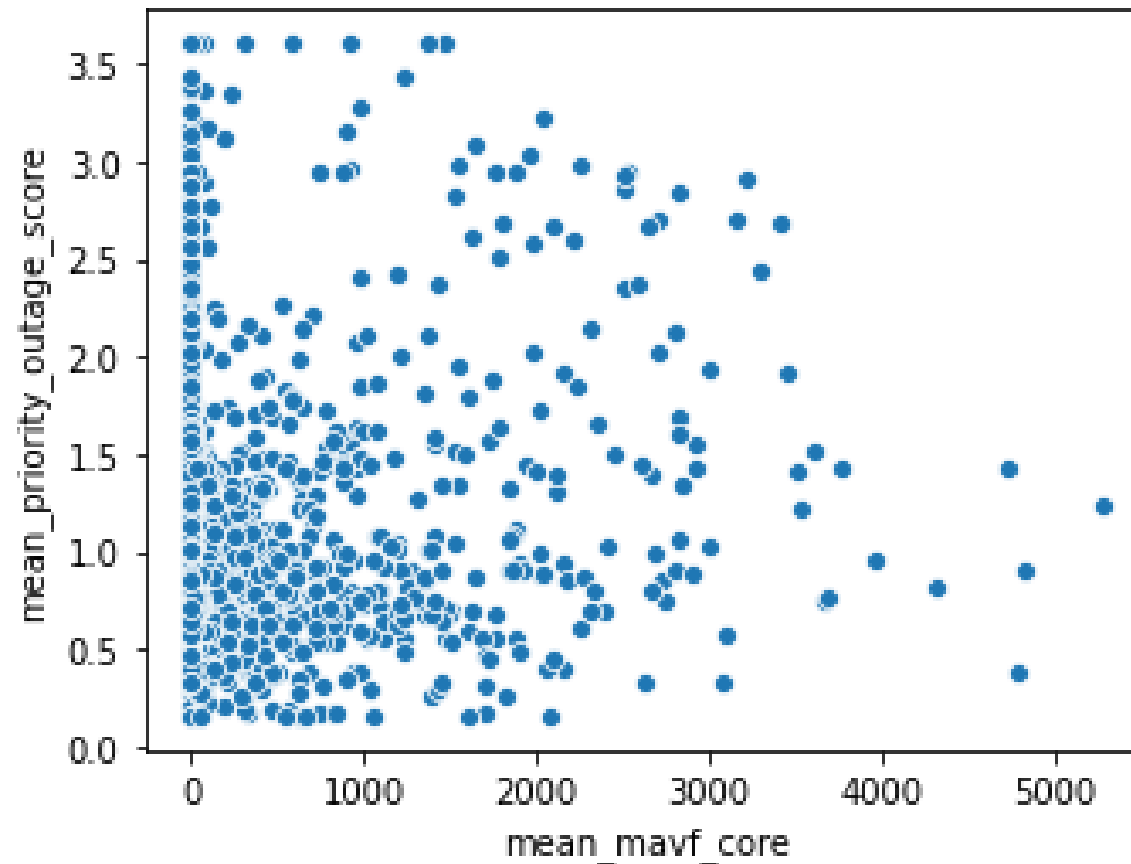
# EVM CPZ roll-up risk analysis

- There is not a strong relationship between  $P(\text{ignition})$  and tree count, except the very highest  $P(\text{ignition})$  values are at low tree count



# EVM CPZ roll-up risk analysis

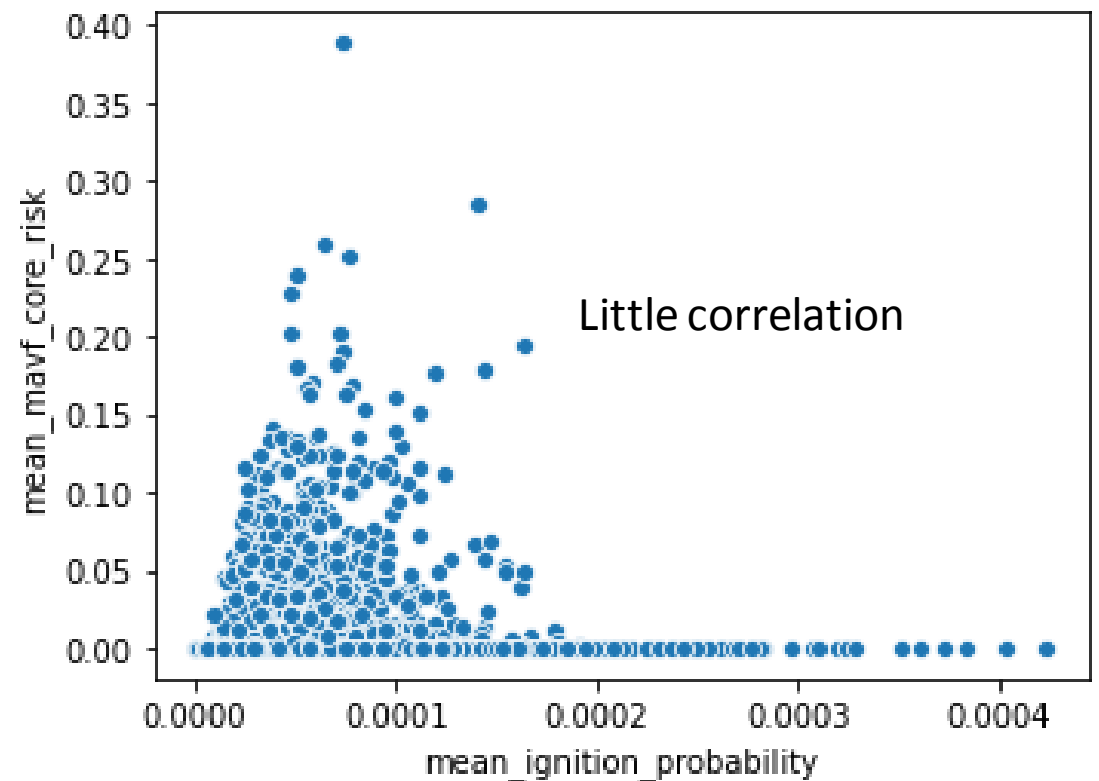
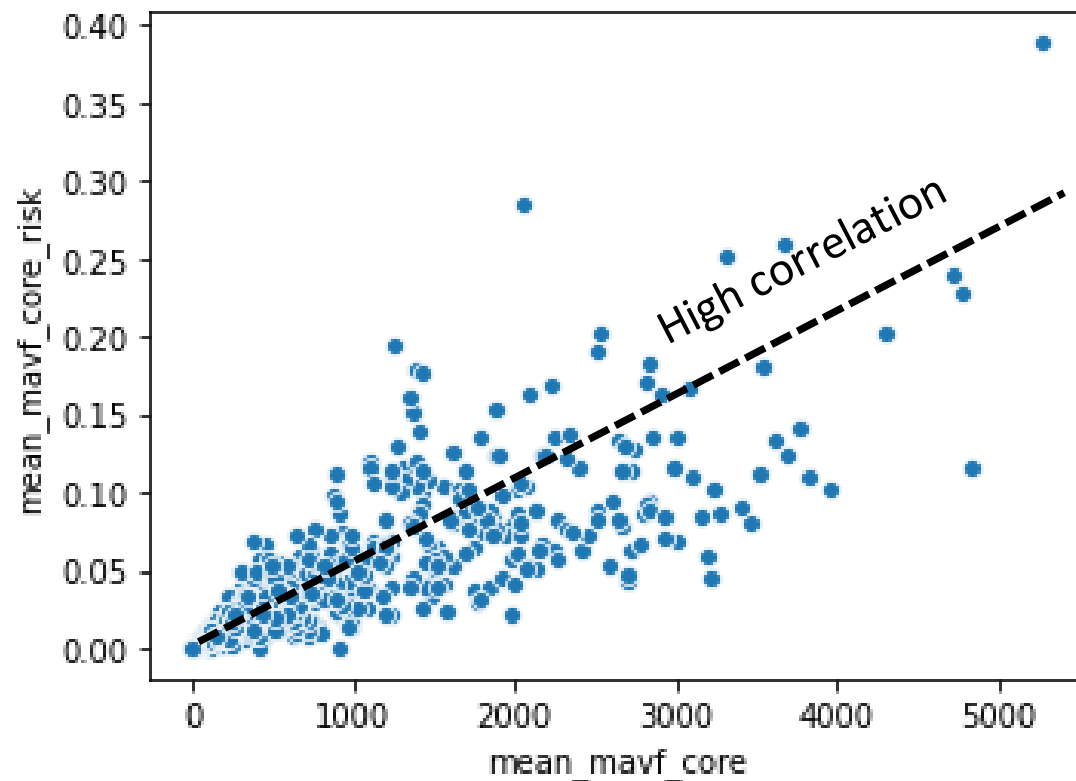
- There is little correlation between species-based outage scores and MAVF consequence





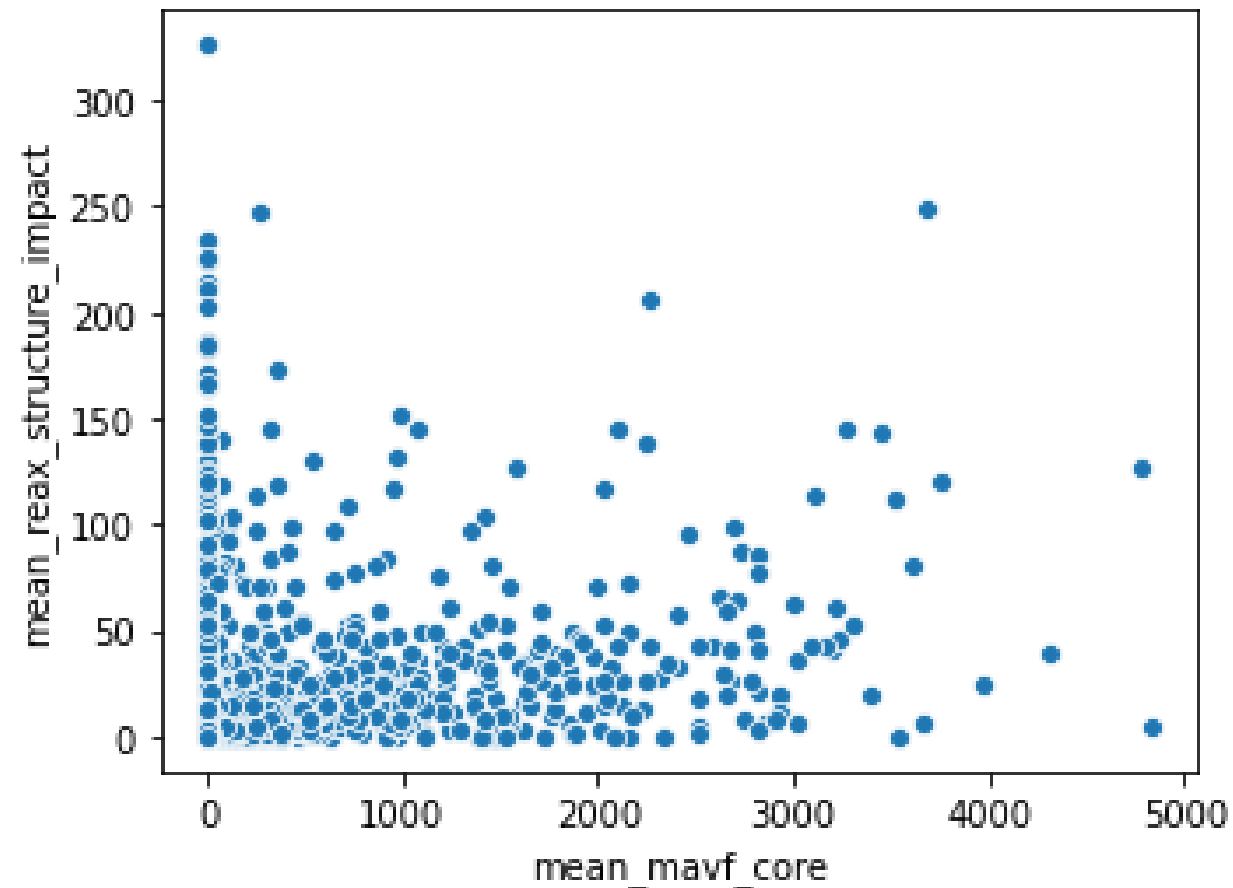
# EVM CPZ roll-up risk analysis

- Risk scores are dominated by consequence values



# EVM CPZ roll-up risk analysis

- Reax structure impacts and MAVF, based primarily on area burned, are not well correlated



# Choice of consequence metrics matters

- While reasonable people could disagree on which of those metrics better captures risks, it turns out that the choice is highly consequential - they point in different directions
  - Reax structures higher further east of the Central Valley; in denser trees
  - MAVF core higher along the edge of the Central Valley; in more grass, scrub, and chaparral

