



BAY AREA MODELING

Status of District's Modeling Work

Modeling Advisory Committee Meeting September 15, 2004

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Overview (8-hour ozone)

- Episodes
 - July 28 – August 3, 2000 (Fr – Th)
 - July 8 – 13, 1999 (Th – Tu)
- Modeling
 - Comparison between 1-hr and 8-hr ozone
 - Time-series plots



Considerations for 8-hour ozone

- Episode length
- Representativeness
- Areas with ozone exceedances
- Model evaluation
- Model performance
- Presenting model results
- Use of Relative Reduction Factors (RRF)
- Transport



8-Hour Observed Ozone at Sites that Exceeded the Standard (ppb)

July 28, 2000

Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Liv-Old1	29	34	33	33	33	30	26	21	14	9	Auburn	67	74	79	81	82	81	78	70	66	62
Liv-Rinc	28	32	34	35	34	31	26	19	12	8	ColfaxCityHall	59	65	69	72	72	69	66	60	57	54
Arvin	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	Cool	74	81	87	93	94	91	86	81	76	71
BakerCal	71	82	90	94	95	94	89	81	69	55	DavisUCD	54	65	75	82	82	77	66	54	42	31
Baker-GS	61	71	81	87	89	88	83	78	69	58	Folsom-Natom	46	53	59	64	67	67	63	58	53	47
Clovis	72	81	85	87	86	82	77	72	66	60	NorthHighlands	64	77	78	79	80	78	74	65	55	46
Edison	81	90	96	101	99	94	86	79	74	68	Placerville	67	75	82	87	89	90	91	92	90	88
Fresno1st	73	81	86	87	85	78	72	67	61	55	PleasantGv	57	66	73	78	79	75	68	58	47	37
Fresno-D	68	75	80	82	80	75	69	65	60	55	RocklinRRoad	61	68	74	78	79	72	65	59	53	46
FresnoSky2	81	88	92	93	93	89	85	81	75	69	Roseville	59	66	73	78	80	72	66	59	52	46
Hanford	71	78	84	89	90	87	82	77	72	66	SactoAirpRd	45	55	62	70	76	72	65	55	45	34
Maricopa	72	77	81	85	89	89	90	92	92	90	Sacto-DP	50	61	71	79	82	82	77	68	57	47
Merced	61	67	73	77	81	83	82	80	77	73	Sloughhouse	55	67	78	88	87	89	85	77	68	58
Modesto14	40	47	55	62	68	71	68	62	55	48	FiveMile	63	66	70	72	73	76	77	78	80	80
Oildale	62	73	82	87	89	88	85	82	77	71	GrassVal	69	73	74	75	75	76	76	76	76	76
Parlier	67	77	87	94	95	92	86	77	62	51	JacksonC	58	65	70	75	80	81	79	76	72	67
Seq-King	88	96	103	105	107	108	107	104	98	91	Jerseydale	56	59	61	63	66	67	69	71	71	70
SeqNP-L	76	81	87	91	95	96	94	90	85	79	SanAndreas	60	66	71	75	78	80	80	77	74	71
Shafter	70	79	84	87	86	82	73	62	50	39	Sonora-B	59	63	65	68	70	69	67	65	61	56
ShaverLk	51	58	64	70	71	70	68	65	61	56	WCMount	63	65	67	69	70	71	71	71	71	70
Tracy2	42	51	59	63	65	64	61	56	51	44	Yosem-TD	53	55	57	59	62	65	67	68	69	68
Turlock	43	52	59	66	72	73	72	66	59	52											
Visalia	55	65	74	81	84	83	79	73	66	57											



8-Hour Observed Ozone at Sites that Exceeded the Standard (ppb)

July 29, 2000

Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Liv-Old1	48	58	62	65	65	60	51	40	28	18	Auburn	75	80	84	85	85	86	86	84	80	78
Liv-Rinc	50	58	63	66	65	60	50	39	27	18	ColfaxCityHall	56	62	66	69	70	68	67	66	65	62
Arvin	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	Cool	79	84	89	94	94	88	85	83	81	78
BakerCal	73	84	92	96	96	93	87	79	70	58	DavisUCD	56	65	73	77	76	68	58	47	35	25
Baker-GS	78	87	94	97	97	94	92	84	71	58	Folsom-Natom	51	59	65	69	70	67	63	58	53	47
Clovis	82	91	96	98	96	92	86	80	75	70	NorthHighlands	69	79	86	88	88	84	78	69	60	51
Edison	94	101	103	105	101	94	86	76	67	60	Placerville	76	83	89	94	97	97	96	95	94	93
Fresno1st	83	91	96	97	95	90	85	81	78	72	PleasantGv	59	68	74	77	74	71	64	57	48	39
Fresno-D	77	84	89	90	90	86	81	77	73	69	RocklinRRoad	64	72	78	82	84	83	80	76	72	67
FresnoSky2	90	97	101	103	102	99	96	92	88	81	Roseville	65	76	84	89	90	87	82	76	69	62
Hanford	71	79	85	89	91	91	87	81	75	70	SactoAirpRd	55	65	73	79	80	76	69	59	49	39
Maricopa	90	93	94	94	95	93	89	87	85	82	Sacto-DP	70	81	88	92	92	87	80	70	59	49
Merced	69	80	87	93	97	99	99	96	92	87	Sloughhouse	76	86	92	95	95	92	85	75	64	56
Modesto14	53	63	72	79	87	90	88	81	72	63	FiveMile	63	66	69	73	76	78	81	83	86	87
Oildale	77	84	90	92	91	88	85	82	78	73	GrassVal	68	71	74	75	76	77	78	78	79	79
Parlier	84	94	103	107	106	100	91	79	67	55	JacksonC	67	74	79	84	86	85	81	77	72	66
Seq-King	86	92	99	103	104	105	104	102	100	96	Jerseydale	67	71	74	76	78	81	82	83	81	79
SeqNP-L	78	86	92	97	100	100	98	94	89		SanAndreas	72	76	80	83	85	85	83	79	75	71
Shafter	68	76	81	84	85	82	76	69	61	51	Sonora-B	61	65	69	72	74	75	74	72	70	66
ShaverLk	55	63	70	76	79	79	78	74	69	62	WCMount	57	59	62	65	67	69	71	73	74	75
Tracy2	55	65	75	82	82	77	70	63	55	47	Yosem-TD	56	61	66	70	73	75	78	80	80	78
Turlock	57	69	79	85	88	91	90	86	77	68											
Visalia	66	76	85	92	94	92	87	81	74	69											



8-Hour Observed Ozone at Sites that Exceeded the Standard (ppb)

July 30, 2000

Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Liv-Old1	45	50	55	56	54	50	43	34	27	20	Auburn	75	78	79	80	80	79	75	71	67	64
Liv-Rinc	43	48	52	53	51	46	38	29	22	16	ColfaxCityHall	64	66	69	72	73	71	70	67	64	61
Arvin											Cool	77	81	85	87	86	82	78	74	69	64
BakerCal	75	83	86	86	84	79	72	64	54	44	DavisUCD	59	69	76	79	78	70	59	48	37	26
Baker-GS	78	85	89	91	89	84	75	66	56	46	Folsom-Natom	55	59	62	65	65	63	57	52	47	43
Clovis	83	90	94	95	94	90	82	75	70	65	NorthHighlands	68	75	79	80	80	77	71	63	53	44
Edison	93	97	98	98	94	87	78	67	60	54	Placerville	66	71	76	80	82	84	85	85	85	82
Fresno1st	87	94	98	99	96	88	80	75	69	63	PleasantGv	55	62	68	72	73	69	63	55	47	38
Fresno-D	81	88	92	93	90	84	77	72	66	60	RocklinRRoad	72	76	78	79	77	71	63	57	51	46
FresnoSky2	85	93	97	99	98	94	89	83	77	70	Roseville	76	81	84	84	80	72	63	55	49	44
Hanford	73	80	85	88	89	87	84	81	77	72	SactoAirpRd	56	63	72	75	73	66	58	49	39	30
Maricopa	85	87	89	90	90	88	86	85	83	81	Sacto-DP	69	79	88	93	91	85	77	68	57	47
Merced	67	75	80	84	85	86	86	83	78	72	Sloughhouse	59	72	81	87	91	89	84	75	63	51
Modesto14	46	54	61	67	71	71	68	63	56	49	FiveMile	71	72	73	74	74	76	77	78	78	79
Oildale	74	80	84	85	83	79	76	74	72	68	GrassVal	75	75	76	76	76	77	77	77	77	78
Parlier	90	99	105	106	103	97	89	78	66	56	JacksonC	69	72	76	79	81	80	77	72	67	62
Seq-King	86	92	97	100	102	102	101	97	92	88	Jerseydale	70	70	71	72	72	72	73	73	73	72
SeqNP-L	85	90	93	95	96	95	93	90	85	80	SanAndreas	67	71	75	78	80	81	79	76	72	67
Shafter	65	72	76	77	74	67	58	51	42	32	Sonora-B	67	69	71	72	73	73	72	71	67	64
ShaverLk	65	74	80	85	86	84	82	78	73	66	WCMount	69	70	72	72	73	73	73	71	71	71
Tracy2	46	54	62	65	65	63	58	53	47	42	Yosem-TD	67	70	70	70	70	70	71	71	69	67
Turlock	53	60	65	70	73	72	68	63	58	52											
Visalia	74	83	91	94	93	89	83	76	68	59											



8-Hour Observed Ozone at Sites that Exceeded the Standard (ppb)

July 31, 2000

Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Liv-Old1	48	63	78	85	87	85	81	75	62	47	Auburn	68	75	78	79	80	81	75	70	65	59
Liv-Rinc	50	65	80	86	89	87	83	75	60	45	ColfaxCityHall	54	57	60	61	60	59	57	52	48	45
Arvin		14	27	40	50	60	92	87	84	78	Cool	77	82	87	89	87	82	78	73	68	62
BakerCal	71	79	82	83	81	78	72	66	57	48	DavisUCD	61	72	82	89	87	81	71	62	54	42
Baker-GS	66	72	75	77	75	74	70	66	58	49	Folsom-Natoma										
Clovis	76	89	97	102	100	97	88	77	65	53	NorthHighlands	39	49	77	76	73	68	62	56	47	38
Edison	90	94	95	95	89	79	70	63	57	53	Placerville	63	69	74	78	80	80	78	77	76	73
Fresno1st	76	86	92	96	96	90	79	66	55	43	PleasantGv	55	63	70	73	71	66	62	56	50	40
Fresno-D	63	72	78	83	85	81	70	60	53	44	RocklinRRoad	59	67	71	72	70	61	54	49	43	37
FresnoSky2	81	91	97	101	103	101	93	83	74	65	Roseville	57	64	69	70	67	58	48	42	38	34
Hanford	69	76	82	85	86	80	71	62	53	43	SactoAirpRd	54	62	70	76	75	66	56	45	36	28
Maricopa	81	84	85	86	86	84	83	81	79	77	Sacto-DP	54	63	70	74	74	71	65	56	48	40
Merced	73	81	88	93	97	95	87	80	68	56	Sloughhouse	38	45	50	54	82	82	80	73	67	61
Modesto14	48	58	66	74	78	76	72	67	60	51	FiveMile	69	71	75	79	82	83	85	87	89	90
Oildale	71	76	79	80	80	79	77	75	72	65	GrassVal	65	67	69	71	72	72	73	72	71	70
Parlier	74	82	87	87	84	79	71	64	54	43	JacksonC	74	81	87	90	91	87	83	74	68	62
Seq-King	86	92	96	98	97	96	94	90	85	80	Jerseydale	61	64	67	71	74	77	81	83	86	87
SeqNP-L	81	87	92	96	97	97	95	91	87	82	SanAndreas	65	76	83	89	94	95	95	91	87	81
Shafter	63	71	75	78	78	73	65	55	45	35	Sonora-B	65	70	76	79	81	82	81	77	72	67
ShaverLk	58	68	77	84	86	86	85	82	78	71	WCMount	63	63	64	65	66	67	66	66	66	65
Tracy2	52	63	72	78	80	79	77	74	70	65	Yosem-TD	57	58	60	63	66	68	70	71	71	70
Turlock	50	61	70	79	83	84	80	73	63	52											
Visalia	58	67	73	79	82	80	74	65	55	45											



8-Hour Observed Ozone at Sites that Exceeded the Standard (ppb)

August 1, 2000

Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Liv-Old1	48	58	66	71	73	69	64	58	50	43	Auburn	76	84	89	93	95	95	92	86	77	71
Liv-Rinc	49	60	68	75	76	72	68	61	53	45	ColfaxCityHall	58	65	72	78	80	80	77	72	68	61
Arvin	88	97	103	104	103	101	97	90	81	72	Cool	75	85	91	95	98	99	96	93	88	80
BakerCal	76	86	91	92	93	90	85	79	72	65	DavisUCD	68	80	79	76	77	69	59	49	39	31
Baker-GS	78	87	91	93	92	88	84	81	79	73	Folsom-Natoma										
Clovis	79	86	89	90	91	91	89	86	80	74	NorthHighlands	78	82	90	97	100	98	91	81	69	61
Edison	93	97	101	102	100	96	88	80	74	65	Placerville	69	72	77	83	86	88	89	89	89	87
Fresno1st	83	89	93	94	95	93	89	82	75	70	PleasantGv	59	70	80	87	92	90	83	74	64	56
Fresno-D	65	72	77	79	83	82	79	74	67	62	RocklinRRoad	71	80	86	88	88	82	74	66	59	51
FresnoSky2	91	98	104	108	109	109	105	99	94	88	Roseville	72	83	90	92	92	86	77	67	57	48
Hanford	75	86	94	100	101	99	94	89	84	78	SactoAirpRd	59	71	82	89	88	82	74	66	56	47
Maricopa	80	90	90	90	90	90	90	80	80	70	Sacto-DP	68	81	91	98	100	97	90	80	70	61
Merced	82	91	97	101	102	99	93	89	83	79	Sloughhouse	86	91	100	107	108	108	104	95	84	74
Modesto14	65	74	82	86	86	82	77	72	66	60	FiveMile	78	79	77	76	77	78	80	80	79	79
Oildale	87	94	97	98	97	95	94	92	88	82	GrassVal	74	81	86	89	92	93	94	92	87	83
Parlier	77	85	88	88	86	81	73	64	54	43	JacksonC	71	80	88	94	97	96	95	94	89	84
Seq-King	53	49	46	67	65	63	56	49	47	49	Jerseydale	79	79	80	80	81	84	87	88	88	88
SeqNP-L											SanAndreas	78	85	91	99	103	104	105	104	100	95
Shafter	73	82	88	90	87	83	78	73	67	61	Sonora-B	79	81	83	84	85	85	84	83	81	77
ShaverLk	81	86	90	92	94	93	91	86	78	71	WCMount	59	60	61	60	59	59	58	57	56	55
Tracy2	63	70	76	81	82	82	80	75	71	68	Yosem-TD	71	71	73	75	76	77	76	75	74	72
Turlock	63	74	82	87	90	88	82	75	69	62											
Visalia	68	77	83	88	89	86	80	72	64	56											



8-Hour Observed Ozone at Sites that Exceeded the Standard (ppb)

August 2, 2000

Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Liv-Old1	67	75	80	81	78	73	67	60	52	44	Auburn	85	95	102	106	107	106	100	96	90	83
Liv-Rinc	67	77	83	84	80	75	69	62	55	47	ColfaxCityHall	66	75	83	89	91	91	86	80	71	65
Arvin	88	97	98	95	90	84	78	69	60	50	Cool	74	82	89	96	102	103	101	97	94	89
BakerCal	87	99	106	105	104	98	91	82	73	65	DavisUCD	50	56	62	65	67	64	59	54	48	42
Baker-GS	83	93	100	99	94	85	77	70	63	57	Folsom-Natom	27	40	53	63	94	91	87	81	75	70
Clovis	73	83	91	97	99	98	95	95	91	83	NorthHighlands	75	83	87	86	85	81	76	69	62	57
Edison	99	110	112	109	102	93	80	63	52	42	Placerville	66	72	79	81	83	85	87	86	83	80
Fresno1st	66	78	87	95	97	96	93	91	86	80	PleasantGv	56	62	65	66	66	66	63	58	53	49
Fresno-D	56	67	78	87	91	91	88	85	83	78	RocklinRRoad	79	89	95	98	95	91	86	80	73	67
FresnoSky2	82	90	97	103	106	103	98	93	88	83	Roseville	81	90	95	96	92	88	82	75	68	63
Hanford	82	93	100	105	105	102	98	93	87	82	SactoAirpRd	55	63	67	72	74	73	69	63	56	51
Maricopa	90	90	100	90	90	90	80	70	70	60	Sacto-DP	67	74	76	77	79	78	74	68	62	58
Merced	77	88	98	104	109	112	110	105	98	90	Sloughhouse	76	83	89	90	91	89	84	78	73	67
Modesto14	69	80	91	99	101	100	95	90	84	76	FiveMile	77	83	88	90	93	97	98	98	98	98
Oildale	89	97	103	101	98	92	86	80	74	68	GrassVal	76	86	95	100	106	109	113	113	110	105
Parlier	61	71	80	87	88	86	81	73	65	57	JacksonC	71	81	89	96	102	102	98	92	85	78
Seq-King	77	76	74	69	62	55	47	43	43	43	Jerseydale	71	74	78	82	87	90	91	94	96	98
SeqNP-L											SanAndreas	76	86	92	97	101	102	100	97	92	86
Shafter			14	26	37	45	52	77	72	69	Sonora-B	74	81	86	90	93	93	90	86	80	75
ShaverLk	66	74	73	72	71	69	66	62	54	46	WCMount	64	70	77	83	89	94	100	105	108	106
Tracy2	62	74	85	91	93	92	90	84	74	63	Yosem-TD	65	68	71	75	80	85	89	93	96	97
Turlock	73	85	95	104	107	107	103	98	90	80											
Visalia	71	82	89	94	94	90	85	79	73	64											



8-Hour Observed Ozone at Sites that Exceeded the Standard (ppb)

August 3, 2000

Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Liv-Old1	40	47	50	50	49	46	41	34	27	20	Auburn	79	85	91	96	97	95	91	83	76	68
Liv-Rinc	28	35	54	49	48	44	39	31	29	21	ColfaxCityHall	66	74	81	87	93	95	95	92	87	80
Arvin	89	97	101	101	96	89	81	70	61	53	Cool	81	89	96	100	103	100	95	88	79	69
BakerCal	80	89	91	88	81	72	65	57	50	42	DavisUCD	30	34	36	57	54	50	44	38	34	30
Baker-GS	82	90	91	86	79	72	66	60	54	48	Folsom-Natom	71	78	82	83	84	80	73	65	56	48
Clovis	75	85	93	98	100	97	92	88	84	78	NorthHighlands	65	69	70	71	71	67	61	53	45	40
Edison	89	95	98	96	90	82	74	69	64	57	Placerville	69	75	80	83	84	84	83	78	74	67
Fresno1st	70	80	88	93	94	93	89	84	79	73	PleasantGv	55	56	56	55	54	50	45	40	36	33
Fresno-D	66	74	81	85	87	85	82	78	74	68	RocklinRRoad	67	73	78	80	79	77	72	65	58	50
FresnoSky2	77	87	98	104	107	105	100	93	87	79	Roseville	64	70	73	74	74	70	65	59	52	44
Hanford	71	78	83	85	85	81	75	70	65	59	SactoAirpRd	60	63	63	63	60	55	48	42	36	33
Maricopa	77	83	88	87	83	78	72	66	57	50	Sacto-DP	30	35	37	45	69	64	59	52	44	39
Merced	84	90	96	102	105	106	104	100	94	87	Sloughhouse	66	74	79	82	82	78	72	64	56	46
Modesto14	59	69	78	85	90	88	82	76	69	59	FiveMile	81	82	83	83	82	83	84	85	87	88
Oildale	90	92	92	87	82	76	70	65	59	53	GrassVal	72	79	84	87	90	93	95	95	94	93
Parlier	70	77	83	87	86	80	72	63	54	45	JacksonC	74	79	83	86	88	87	83	79	73	66
Seq-King	88	95	100	101	100	97	91	85	78	72	Jerseydale	79	86	91	97	99	100	98	95	90	85
SeqNP-L	-99	-99	-99	-99	-99	-99	-99	-99	-99	-99	SanAndreas	76	83	88	90	92	93	91	87	81	74
Shafter	12	20	27	33	38	57	54	52	45	38	Sonora-B	71	77	79	80	80	79	76	72	68	63
ShaverLk	70	78	85	87	88	86	83	78	72	66	WCMount	83	85	88	92	94	98	101	105	107	107
Tracy2	34	40	45	47	47	44	40	36	29	23	Yosem-TD	76	82	89	94	98	99	99	99	99	96
Turlock	63	71	81	89	93	92	88	82	74	66											
Visalia	60	65	70	71	69	64	59	54	49	44											



8-Hour Observed Ozone at Sites that Exceeded the Standard (ppb)

July 8, 1999

Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Bethells	41	47	53	57	58	57	54	50	47	44	Auburn	72	80	87	92	96	95	93	90	84	80
Concord	41	47	52	56	58	57	55	51	46	41	ColfaxCityHall	55	62	70	77	83	87	86	85	83	79
Fairfield	41	47	51	53	53	51	47	41	36	31	Cool	70	77	83	89	93	94	94	93	90	85
Fremont	26	32	37	41	43	40	34	29	23	17	DavisUCD	51	58	64	65	67	66	62	55	47	37
Hayward	26	27	30	30	31	30	30	28	27	27	ElkGrove	50	59	66	70	72	69	66	62	56	50
Liv-Old1	48	57	64	66	65	61	53	47	40	32	Folsom-Natom	71	79	85	89	91	90	85	79	73	66
LosGatos	37	45	51	57	62	65	66	61	53	45	Placerville	66	69	72	74	75	76	77	77	76	74
Napa	35	39	40	41	40	37	33	28	25	23	RocklinRRoad	70	78	81	83	81	80	76	70	63	56
Pittsburg	33	37	41	46	49	49	47	45	44	42	Roseville	70	76	79	80	79	76	70	63	56	50
SanMartin	52	59	64	68	70	69	64	58	53	47	Sacto-DP	50	58	66	71	74	72	68	62	55	48
Vallejo	27	31	34	36	37	35	32	30	27	24	SactoTSt	37	44	52	58	60	57	52	48	43	38
Arvin	84	93	100	104	105	106	106	104	95	87	Sloughhouse	61	67	72	76	77	75	72	67	61	56
BakerCal	76	87	93	98	100	99	94	87	79	69	Vacavl-E	50	57	61	63	64	62	60	58	53	49
Clovis	60	96	95	93	96	93	86	79	74	69	WoodlGRd	42	49	56	61	62	61	57	54	48	42
Edison	83	89	93	95	96	92	86	79	73	66	FiveMile	69	71	74	76	76	78	78	79	80	81
Fresno1st	85	93	99	101	100	94	86	82	75	70	GrassVal	64	70	75	81	85	87	89	90	89	88
Fresno-D	67	76	84	89	92	90	84	78	74	69	JacksonC	66	71	74	77	78	78	76	72	67	61
FresnoSky2	70	77	82	84	83	78	73	67	62	56	Jerseydale	65	66	67	68	68	68	68	68	68	68
Hanford	69	77	86	91	94	92	88	85	80	74	SanAndreas	66	70	74	76	78	80	80	77	74	70
Madera29	59	67	70	74	75	73	69	65	62	58	Sonora-B	68	71	73	74	74	72	71	71	69	65
Merced	68	76	83	87	91	93	91	86	82	76	WCMount	66	70	74	78	82	87	92	97	100	102
Modesto14	45	53	61	69	75	77	76	73	70	65	Yosem-TD	68	71	73	74	75	77	77	78	78	76
Oildale	74	82	87	92	93	93	92	86	80	73											
Parlier	71	87	99	106	109	107	102	94	85	73											
Seq-King	95	102	107	109	110	108	107	106	103	98											
SeqNP-K	71	78	85	91	94	95	95	96	96	93											
SeqNP-L	95	100	103	105	107	108	106	107	106	102											
Shafter	70	79	86	91	93	91	83	76	67	58											
ShaverLk	63	72	78	82	84	82	79	74	68	62											
Stockton-EMar	40	48	56	62	66	66	64	61	57	50											
StocktonH	36	43	50	54	58	58	56	52	47	41											
Tracy2	56	61	67	70	72	71	69	64	60	56											
Turlock	40	48	55	62	67	70	70	67	64	60											
Visalia	59	68	79	89	97	97	92	85	78	72											



8-Hour Observed Ozone at Sites that Exceeded the Standard (ppb)

July 9, 1999

Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Bethells	40	48	54	59	63	63	59	55	48	40	Auburn	79	86	93	98	101	103	104	101	97	93
Concord	42	48	54	58	60	59	56	54	48	43	ColfaxCityHall	65	70	76	82	86	89	88	86	84	81
Fairfield	35	39	43	46	46	45	43	40	36	33	Cool	91	100	109	114	116	113	110	106	100	94
Fremont	30	34	36	37	35	32	27	21	14	9	DavisUCD	45	54	63	69	70	69	63	54	45	35
Hayward	29	32	34	34	33	29	29	28	27	22	ElkGrove	51	59	67	72	74	74	71	65	58	49
Liv-Old1	41	48	52	56	56	52	46	39	33	27	Folsom-Natom	72	84	93	102	109	109	105	98	89	80
LosGatos	35	42	47	49	49	45	41	36	31	23	Placerville	80	86	93	100	107	110	110	109	108	106
Napa	30	34	37	38	38	38	36	34	31	28	RocklinRRoad	70	78	84	89	92	93	88	82	76	69
Pittsburg	24	27	31	37	40	41	41	42	42	39	Roseville	63	72	78	83	86	86	82	77	70	64
SanMartin	52	61	66	69	67	61	53	44	36	27	Sacto-DP	45	54	63	71	76	77	76	72	64	56
Vallejo	27	29	30	32	32	32	30	28	26	26	SactoTSt	34	43	52	61	65	67	64	59	51	41
Arvin	79	87	93	98	101	101	100	98	95	88	Sloughhouse	57	65	73	80	84	86	85	81	74	66
BakerCal	77	87	91	93	94	93	89	84	75	67	Vacavl-E	46	54	60	65	68	69	67	62	56	48
Clovis	81	88	92	94	92	86	82	79	77	73	WoodlGRd	43	53	62	70	75	75	71	64	55	46
Edison	76	83	89	93	95	94	87	79	70	60	FiveMile	76	78	80	81	82	84	85	87	89	91
Fresno1st	77	85	91	93	94	90	84	81	78	73	GrassVal	81	82	84	87	89	92	92	92	92	92
Fresno-D	63	70	75	80	83	83	80	76	72	69	JacksonC	71	78	82	85	88	89	86	81	75	69
FresnoSky2	61	68	73	75	76	74	70	66	61	57	Jerseydale	65	66	67	68	69	69	69	70	70	70
Hanford	69	76	83	87	90	89	87	83	78	73	SanAndreas	71	76	81	85	88	90	90	88	85	81
Madera29	56	62	68	72	74	72	69	65	62	57	Sonora-B	75	79	81	83	84	85	84	83	81	77
Merced	75	81	87	91	94	96	96	96	93	89	WCMount	74	76	78	80	82	83	84	84	84	85
Modesto14	45	52	60	68	76	82	82	80	77	71	Yosem-TD	73	75	76	77	78	79	80	80	81	80
Oildale	76	84	87	89	91	92	90	88	84	80											
Parlier	80	89	97	101	102	99	94	86	76	67											
Seq-King	91	94	96	98	97	93	88	87	81	75											
SeqNP-K	78	80	83	84	85	84	82	82	82	77											
SeqNP-L	92	94	96	96	95	92	89	88	86	79											
Shafter	80	87	91	93	94	91	86	79	73	67											
ShaverLk	74	82	87	88	86	83	78	73	67	61											
Stockton-EMar	47	55	63	70	74	74	71	65	57	50											
StocktonH	41	50	59	66	69	69	67	61	54	44											
Tracy2	48	57	64	69	71	72	70	66	61	57											
Turlock	44	51	56	61	66	71	73	71	68	64											
Visalia	63	72	81	89	93	92	89	85	79	72											



8-Hour Observed Ozone at Sites that Exceeded the Standard (ppb)

July 10, 1999

Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Bethells	46	53	61	67	70	70	68	64	58	52	Auburn	85	91	95	98	100	102	102	98	92	89
Concord	44	54	62	69	72	74	75	70	65	55	ColfaxCityHall	67	73	78	82	85	85	83	80	78	75
Fairfield	47	53	58	63	64	64	63	59	53	48	Cool	97	103	109	111	113	113	111	108	104	100
Fremont	35	41	46	48	48	45	40	33	25	17	DavisUCD	64	74	82	86	87	84	76	67	58	49
Hayward	34	38	41	43	44	47	48	49	48	45	ElkGrove	62	73	82	89	93	91	88	81	71	61
Liv-Old1	56	68	80	88	91	92	87	79	68	56	Folsom-Natom	99	112	123	129	128	123	115	106	98	88
LosGatos	39	46	54	59	62	62	57	52	45	38	Placerville	90	98	104	110	116	118	118	115	113	111
Napa	37	43	48	51	53	52	50	47	42	37	RocklinRRoad	85	93	99	104	106	104	97	91	84	78
Pittsburg	34	39	44	49	52	53	53	50	46	43	Roseville	81	92	100	105	106	103	97	90	83	77
SanMartin	56	67	73	76	76	73	67	58	47	36	Sacto-DP	84	95	104	109	110	105	96	83	71	60
Vallejo	34	38	42	45	45	44	42	40	37	32	SactoTSt	58	68	78	85	88	86	80	72	63	52
Arvin	85	94	103	108	108	106	104	99	94	86	Sloughhouse	76	87	96	103	107	106	102	94	86	79
BakerCal	86	91	95	97	96	93	87	79	70	59	Vacavl-E	60	68	75	80	82	81	77	70	63	55
Clovis	89	96	99	98	93	88	84	80	73	65	WoodlGRd	63	73	82	87	89	86	80	71	61	52
Edison	75	83	89	94	97	91	82	74	69	64	FiveMile	78	80	81	83	86	88	91	94	96	97
Fresno1st	88	95	98	98	95	92	88	81	75	68	GrassVal	80	82	84	86	88	89	89	89	89	89
Fresno-D	79	88	92	93	91	88	83	76	70	63	JacksonC	79	85	92	99	105	107	105	101	97	92
FresnoSky2	65	71	75	77	78	77	73	68	63	59	Jerseydale	61	62	64	67	68	69	71	73	74	74
Hanford	76	84	89	94	96	94	89	82	76	70	SanAndreas	77	83	89	94	98	101	102	101	97	93
Madera29	64	72	77	79	79	76	70	62	54	48	Sonora-B	77	81	85	89	91	91	90	88	85	80
Merced	77	85	92	97	102	105	104	100	95	85	WCMount	81	81	83	83	84	83	84	84	83	82
Modesto14	61	70	78	85	91	95	95	91	85	78	Yosem-TD	72	75	76	77	79	80	81	83	84	81
Oiledale	74	82	89	93	95	92	89	87	84	81											
Parlier	84	92	99	102	103	102	94	85	73	63											
Seq-King	91	99	105	109	111	109	107	107	101	94											
SeqNP-K	73	75	77	80	80	80	78	78	78	73											
SeqNP-L	87	93	97	102	104	106	104	105	105	97											
Shafter	79	87	93	93	91	84	77	66	57	46											
ShaverLk	73	78	80	81	80	78	75	71	66	58											
Stockton-EMar	54	65	75	82	87	88	85	78	68	59											
StocktonH	51	61	71	79	84	85	83	75	65	56											
Tracy2	58	69	79	88	93	94	93	92	91	86											
Turlock	55	63	70	74	77	79	78	76	72	66											
Visalia	79	87	93	97	99	97	91	84	76	65											



8-Hour Observed Ozone at Sites that Exceeded the Standard (ppb)

July 11, 1999

Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Bethells	64	73	82	88	89	88	83	77	70	61	Auburn	80	85	91	98	101	104	106	104	102	101
Concord	81	93	105	110	113	110	101	90	79	68	ColfaxCityHall	61	66	72	76	82	86	85	84	83	81
Fairfield	78	90	98	101	99	94	87	76	62	51	Cool	92	100	107	113	117	116	113	110	105	100
Fremont	56	70	80	85	86	83	73	59	42	28	DavisUCD	79	86	91	91	89	84	76	67	56	47
Hayward	65	75	85	90	92	94	93	87	81	76	ElkGrove	81	90	95	96	94	86	80	74	66	58
Liv-Old1	71	85	98	108	114	116	114	110	107	98	Folsom-Natom	104	113	120	123	122	118	112	103	95	87
LosGatos	59	71	81	90	96	96	91	82	74	66	Placerville	78	86	93	99	102	103	104	103	101	98
Napa	68	79	86	90	88	84	75	66	55	44	RocklinRRoad	93	102	108	110	111	111	107	98	85	77
Pittsburg	59	67	73	74	74	72	66	60	56	50	Roseville	94	104	110	112	113	111	104	95	87	80
SanMartin	80	94	102	102	99	92	82	70	56	41	Sacto-DP	92	101	105	107	105	101	92	81	70	60
Vallejo	64	74	82	85	85	82	74	64	52	41	SactoTSt	73	80	86	88	86	80	74	67	59	50
Arvin	89	91	90	86	81	74	67	58	51	45	Sloughhouse	98	106	111	113	112	109	103	95	88	82
BakerCal	91	97	94	88	81	73	62	50	39	30	Vacav-E	83	93	99	102	101	96	88	78	67	55
Clovis	107	115	119	121	118	110	99	84	68	55	WoodlGRd	75	81	86	87	86	83	77	70	62	54
Edison	89	96	93	89	83	78	70	60	52	45	FiveMile	73	76	79	79	80	81	81	81	81	81
Fresno1st	102	112	119	122	123	115	103	89	74	59	GrassVal	70	73	77	80	84	88	92	95	97	98
Fresno-D	87	96	102	106	106	100	90	79	67	56	JacksonC	88	94	98	101	99	94	85	75	64	53
FresnoSky2	80	87	92	94	94	91	87	78	68	60	Jerseydale	60	63	66	69	72	74	77	80	82	83
Hanford	87	95	100	103	104	103	97	90	82	72	SanAndreas	87	92	95	97	99	97	92	85	77	69
Madera29	74	83	88	91	91	86	82	74	65	54	Sonora-B	77	81	85	87	87	85	81	76	71	65
Merced	97	106	109	112	112	111	102	93	81	67	WCMount	55	57	60	63	66	70	76	79	83	85
Modesto14	77	85	92	95	95	90	80	69	60	52	Yosem-TD	60	61	61	61	65	69	72	74	77	75
Oildale	85	87	87	83	77	71	64	57	53	47											
Parlier	85	94	102	105	102	95	87	78	68	58											
Seq-King	58	56	53	48	43	39	35	35	35	36											
SeqNP-K	42	40	38	36	32	30	29	29	29	32											
SeqNP-L	49	45	39	33	28	24	22	22	21	23											
Shafter	79	89	95	93	87	79	70	62	54	44											
ShaverLk	51	56	54	52	48	44	41	38	35	32											
Stockton-EMar	68	76	83	87	88	88	82	73	64	57											
StocktonH	71	84	95	104	108	106	100	91	79	66											
Tracy2	69	78	84	89	91	93	97	100	102	103											
Turlock	71	79	85	89	90	88	81	71	60	50											
Visalia	88	96	103	106	104	95	86	78	68	58											



8-Hour Observed Ozone at Sites that Exceeded the Standard (ppb)

July 12, 1999

Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Bethells	71	81	90	94	94	93	88	82	77	70	Auburn	77	82	87	90	90	88	87	86	84	82
Concord	95	110	118	121	122	119	111	98	86	75	ColfaxCityHall	60	64	68	72	74	74	71	68	64	59
Fairfield	80	91	98	98	94	87	77	67	58	50	Cool	85	90	96	98	96	96	97	96	95	93
Fremont	46	56	66	73	78	79	69	57	46	36	DavisUCD	74	83	91	91	87	81	74	65	56	46
Hayward	43	50	60	68	73	73	71	70	69	67	ElkGrove	78	87	95	95	92	89	84	78	70	63
Liv-Old1	91	104	113	116	115	110	103	91	81	70	Folsom-Natom	97	100	101	100	100	96	90	84	80	77
LosGatos	51	58	41	38	36	25	15		11	20	Placerville	73	80	86	91	93	96	96	96	94	92
Napa	67	76	82	84	83	77	68	58	48	40	RocklinRRoad	85	89	89	88	90	89	83	79	76	73
Pittsburg	66	75	81	86	87	83	79	74	70	66	Roseville	78	84	85	85	88	85	80	75	71	69
SanMartin	78	85	87	86	81	72	61	52	42	34	Sacto-DP	84	88	91	95	95	91	86	80	74	69
Vallejo	53	61	67	71	72	67	59	51	44	38	SactoTSt	72	78	82	86	86	82	76	71	64	57
Arvin	52	54	54	52	49	45	44	44	42	38	Sloughhouse	95	100	103	103	102	98	93	87	80	74
BakerCal	49	51	50	46	41	35	29	24	21	16	Vacavl-E	96	103	106	105	102	97	90	79	66	56
Clovis	88	96	101	104	104	99	92	83	75	69	WoodlGRd	64	72	79	86	86	83	76	69	61	54
Edison	38	37	36	32	29	23	20	20	19	18	FiveMile	62	67	72	76	82	87	90	94	95	97
Fresno1st	85	93	97	100	98	92	82	71	61	53	GrassVal	68	71	74	75	77	78	79	79	78	77
Fresno-D	72	82	88	91	92	89	82	73	65	58	JacksonC	80	90	99	103	104	105	102	97	90	83
FresnoSky2	49	54	55	55	55	53	49	45	40	36	Jerseydale	60	67	72	76	77	79	81	84	85	84
Hanford	73	84	90	93	91	86	78	70	61	51	SanAndreas	79	89	98	103	104	106	106	103	98	93
Madera29	67	79	86	88	86	83	78	70	64	54	Sonora-B	70	78	86	94	99	102	103	102	101	97
Merced	92	102	110	114	116	115	107	96	86	76	WCMount	62	63	65	66	68	69	72	75	78	80
Modesto14	74	84	94	99	103	104	103	99	95	90	Yosem-TD	58	64	70	74	78	82	85	87	89	87
Oildale	53	56	58	57	55	52	48	46	45	42											
Parlier	66	74	78	80	81	77	69	60	51	45											
Seq-King	71	81	88	89	87	81	75	75	74	69											
SeqNP-K	48	52	54	57	60	60	59	60	60	57											
SeqNP-L	55	61	65	67	68	67	65	65	64	59											
Shafter	58	61	62	59	54	48	43	36	30	27											
ShaverLk	49	55	58	58	58	57	55	53	51	47											
Stockton-EMar	67	77	83	86	90	90	86	79	71	67											
StocktonH	62	71	79	87	93	92	87	82	75	71											
Tracy2	84	93	102	110	113	113	110	108	105	101											
Turlock	72	83	91	97	99	99	96	91	86	79											
Visalia	67	77	84	85	87	82	77	70	61	53											



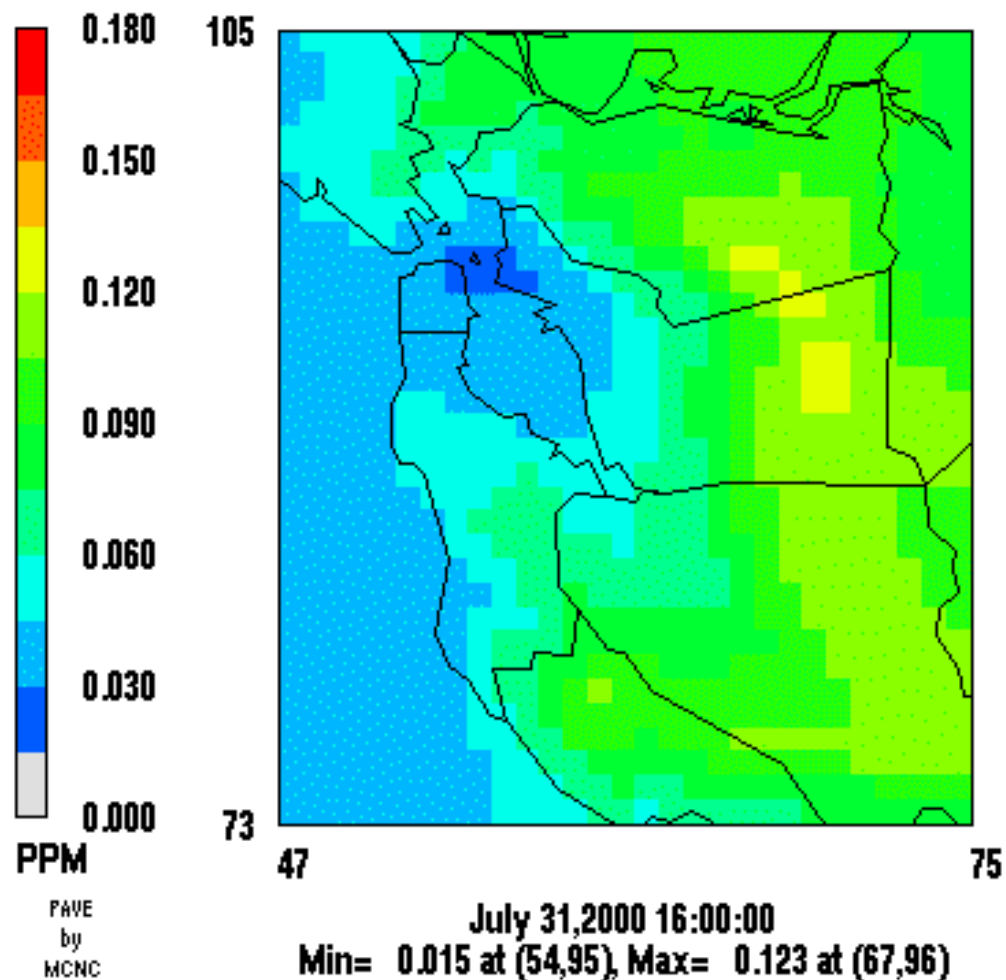
8-Hour Observed Ozone at Sites that Exceeded the Standard (ppb)

July 13, 1999

Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	Site	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	
Bethells	49	54	58	59	59	57	53	48	43	37	Auburn	77	81	85	89	91	91	90	89	87	83	
Concord	53	58	58	56	55	53	48	44	40	35	ColfaxCityHall	62	66	68	68	68	66	63	59	54	48	
Fairfield	39	42	44	44	42	40	36	32	28	24	Cool	49	52	53	53	53	83	83	82	80	78	
Fremont	28	32	35	35	33	28	22	14	9	6	DavisUCD	46	54	58	61	61	56	49	42	35	29	
Hayward	30	31	33	33	29	24	20	17	16	16	ElkGrove	69	73	76	77	75	71	65	59	52	46	
Liv-Old1	52	58	59	58	54	50	44	35	28	22	Folsom-Natom	77	81	83	84	85	84	79	73	67	61	
LosGatos	38	40	38	34	33	29	23	18	15	13	Placerville	78	80	81	80	79	76	74	73	72	70	
Napa	32	36	38	38	38	35	32	28	24	21	RocklinRRoad	79	84	87	88	89	88	85	77	70	63	
Pittsburg	41	45	49	51	50	49	45	41	37	32	Roseville	75	80	83	85	86	84	78	70	63	57	
SanMartin	51	56	59	59	56	52	46	40	35	29	Sacto-DP	57	64	71	76	77	73	68	62	54	47	
Vallejo	22	24	25	25	24	24	23	23	21	20	SactoTSt	45	52	57	61	62	59	55	49	42	37	
Arvin	64	68	69	67	64	60	56	49	44	41	Sloughhouse	71	75	77	80	81	78	73	67	61	54	
BakerCal	69	72	71	68	65	63	59	54	50	45	Vacavl-E	45	52	57	59	58	56	53	50	46	42	
Clovis	80	91	97	97	95	92	85	75	67	59	WoodlGRd	51	59	66	70	69	65	59	51	42	33	
Edison	68	70	70	69	65	61	57	53	50	50	FiveMile	79	79	80	79	78	76	75	74	73	73	
Fresno1st	81	93	101	101	99	94	86	78	71	61	GrassVal	72	75	77	77	77	75	72	70	67	64	
Fresno-D	75	83	90	91	89	84	76	70	63	57	JacksonC	82	86	87	86	84	80	75	70	63	58	
FresnoSky2	41	49	56	58	57	54	50	46	42	36	Jerseydale	71	71	70	67	65	64	62	59	56	56	
Hanford	74	84	92	96	94	90	84	76	68	61	SanAndreas	76	81	84	85	86	85	82	78	74	69	
Madera29	85	94	95	94	90	83	77	73	67	59	Sonora-B	77	85	85	85	83	81	77	73	68	62	
Merced	92	104	112	116	117	115	109	97	86	76	WCMount	74	72	73	71	69	67	65	62	61	59	
Modesto14	23	31	37	49	58	87	82	78	69	58	Yosem-TD	79	79	75	73	70	68	66	64	63	62	
Oildale	73	77	75	72	69	66	62	59	58	56												
Parlier	67	76	83	84	81	75	68	66	63	57												
Seq-King																						
SeqNP-K	57	56	56	55	53	50	47	46	47	49												
SeqNP-L	65	67	65	61	59	56	52	51	49	46												
Shafter	68	75	78	79	76	73	70	67	63	61												
ShaverLk	68	73	74	72	66	59	51	43	36	33												
Stockton-EMar	55	65	71	76	76	72	65	58	49	41												
StocktonH	53	61	68	71	72	68	60	52	44	35												
Tracy2	63	72	74	72	70	66	60	52	42	33												
Turlock	68	76	81	83	83	80	76	71	62	53												
Visalia	72	78	83	86	83	78	72	66	58	52												

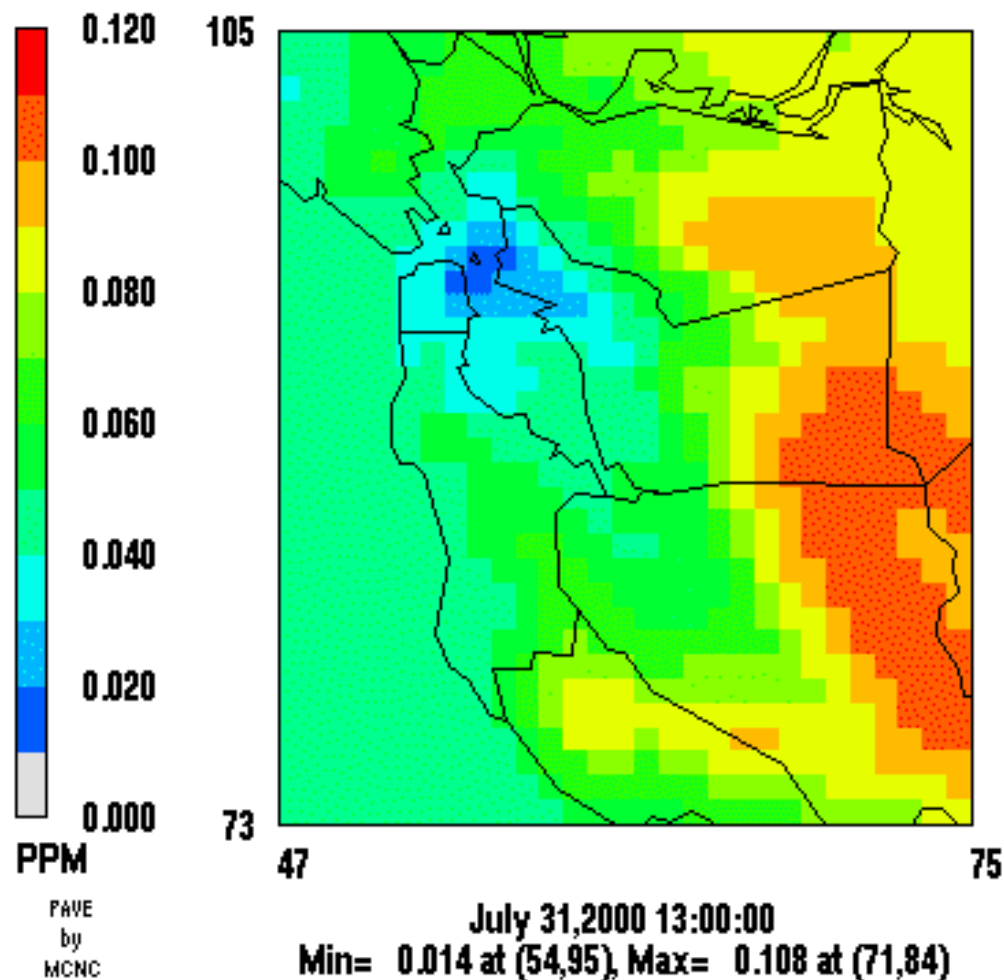


1-hr O3 SFB 2000



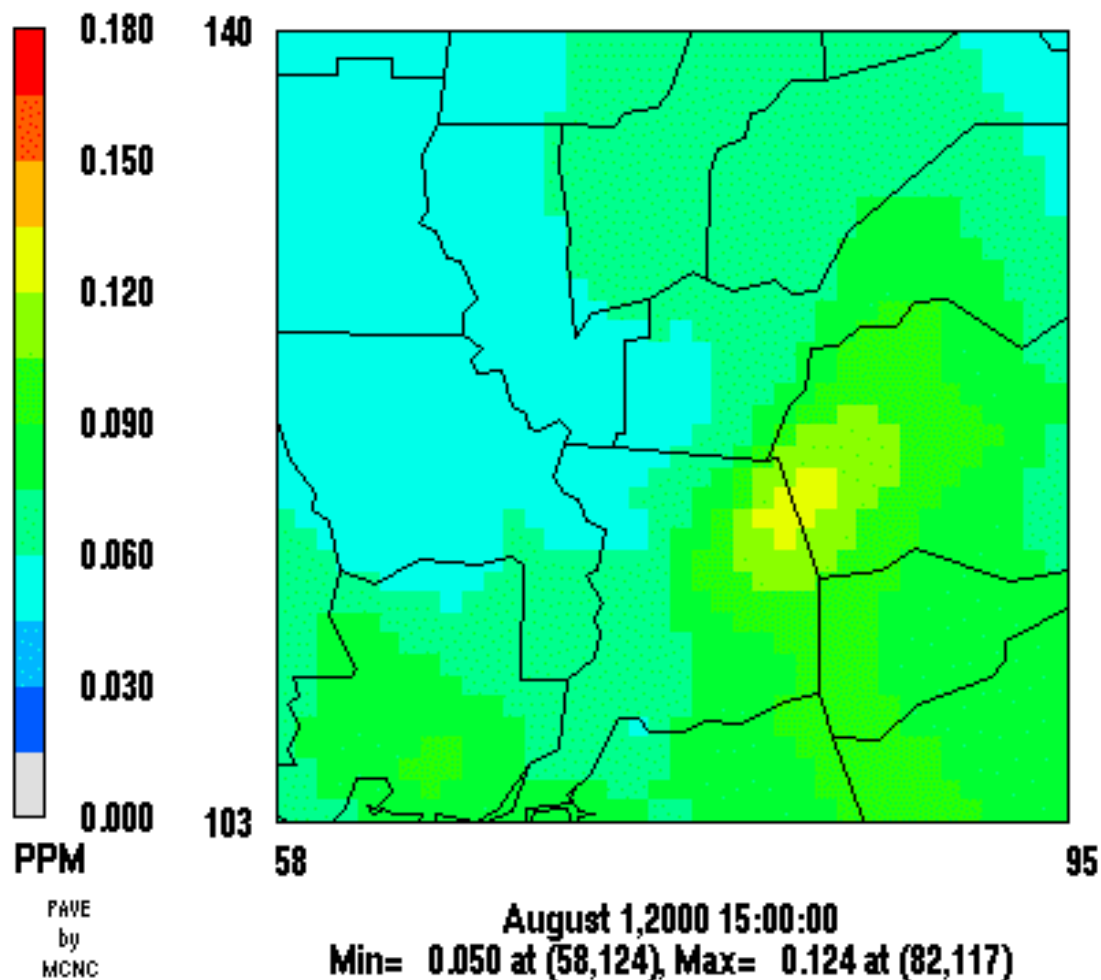


8-hr O3 SFB 2000



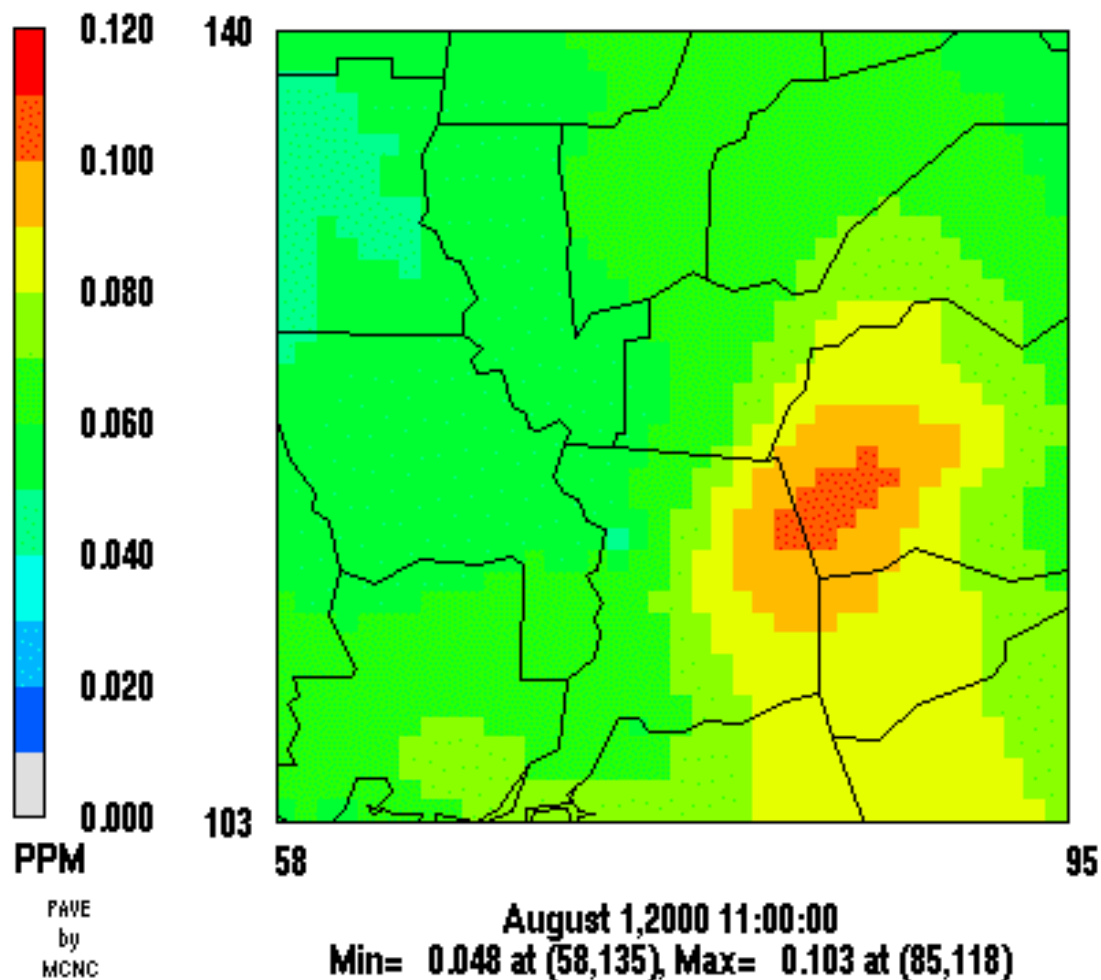


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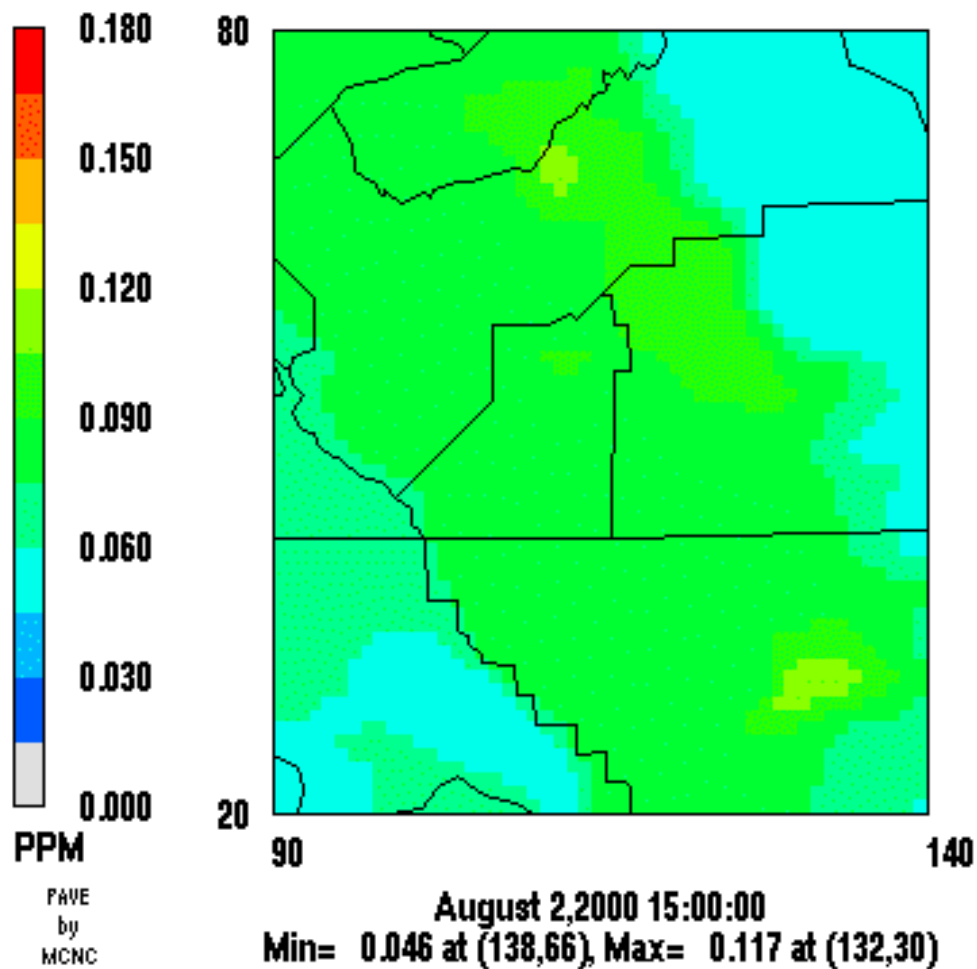


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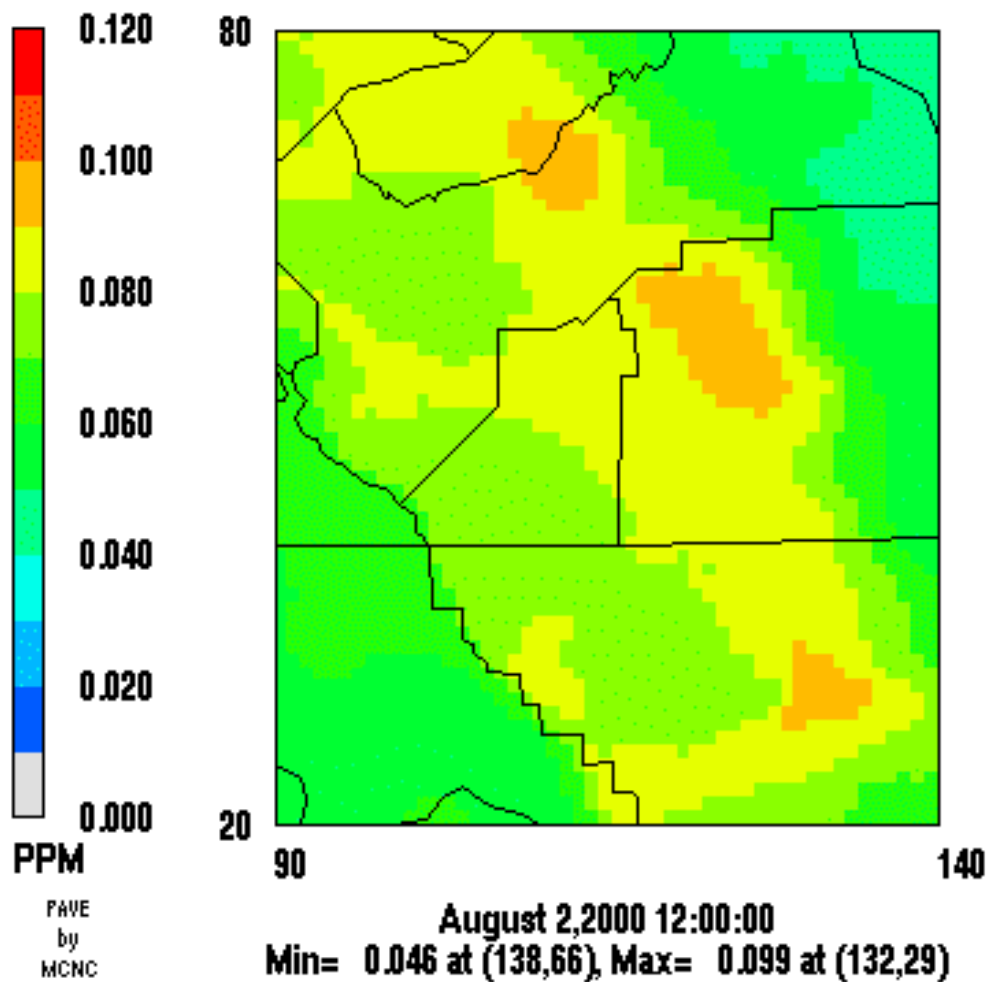


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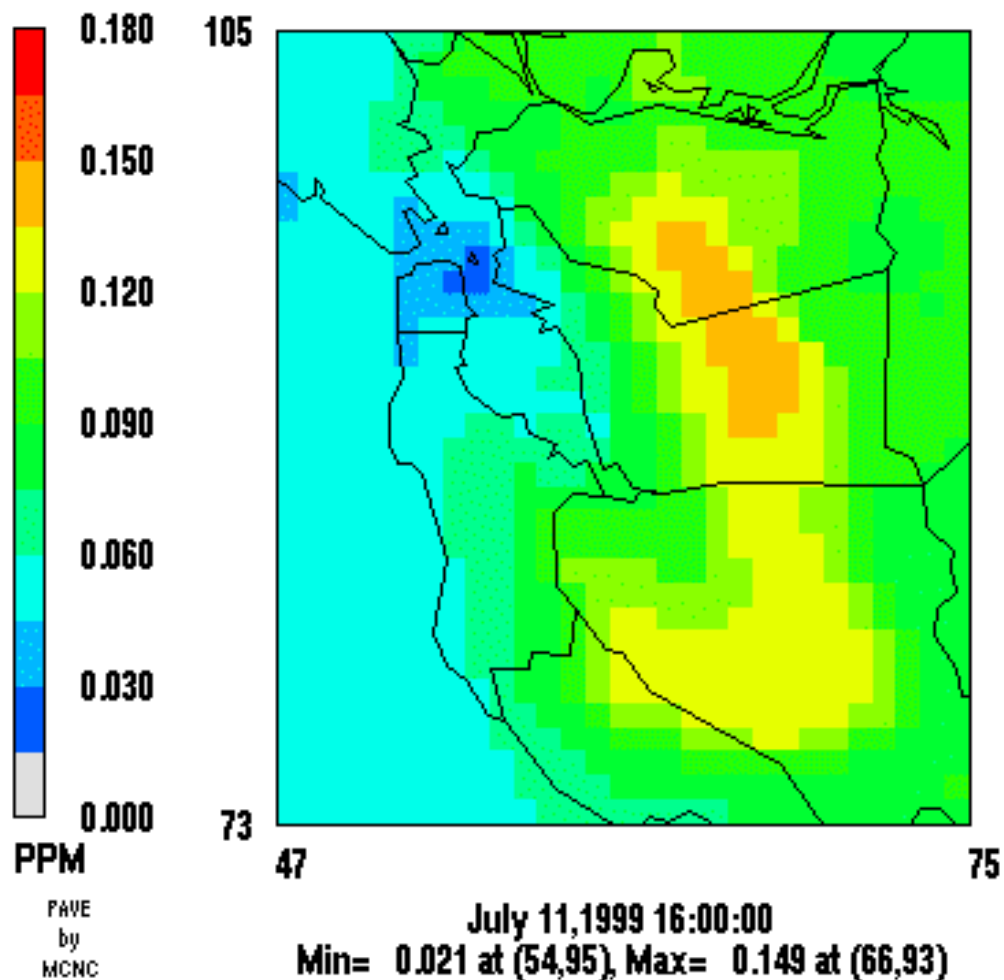


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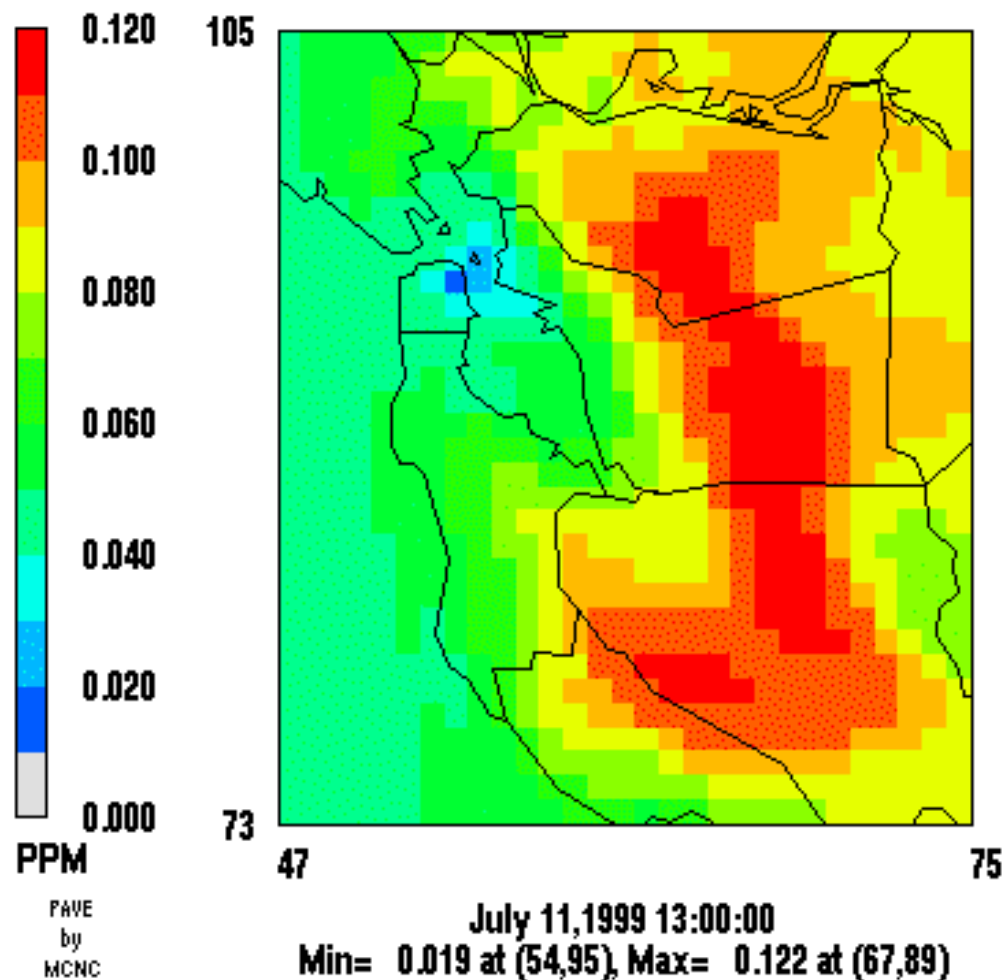


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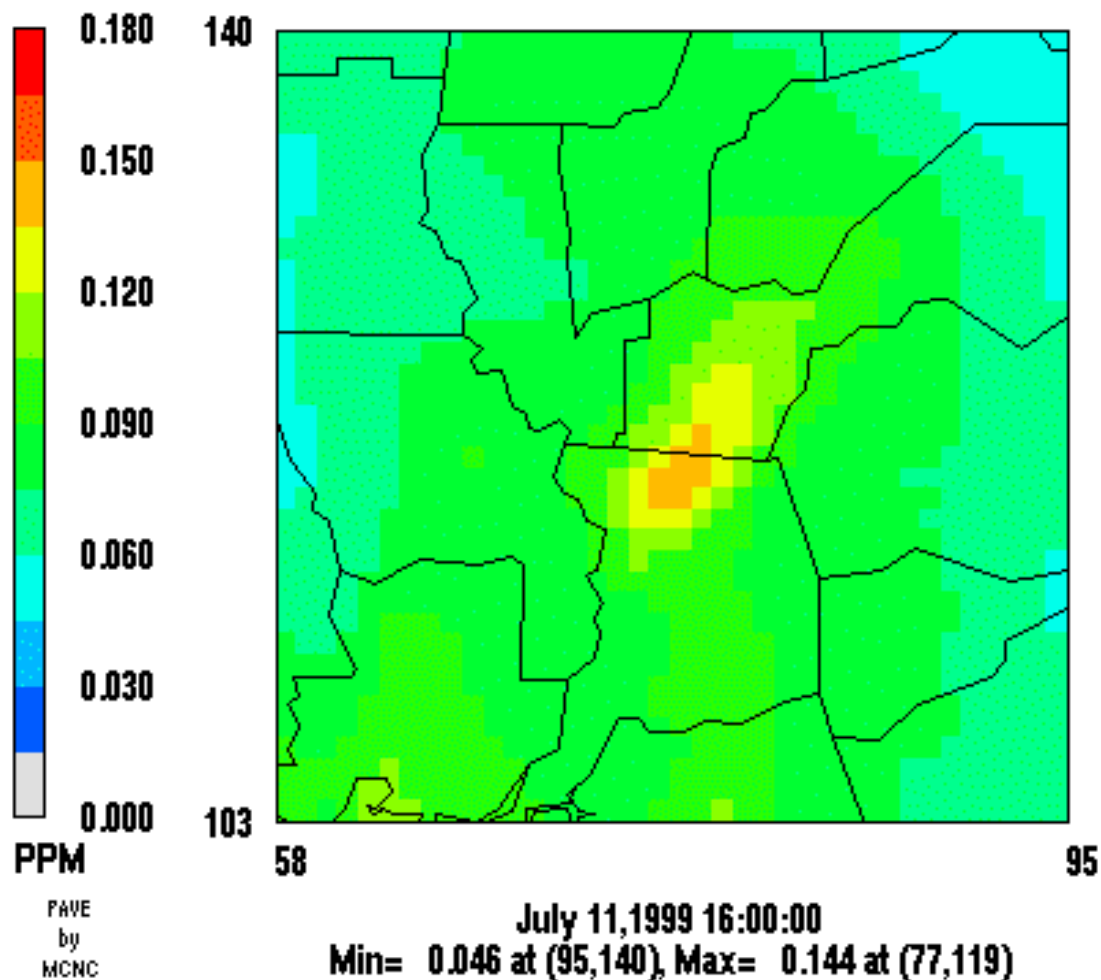


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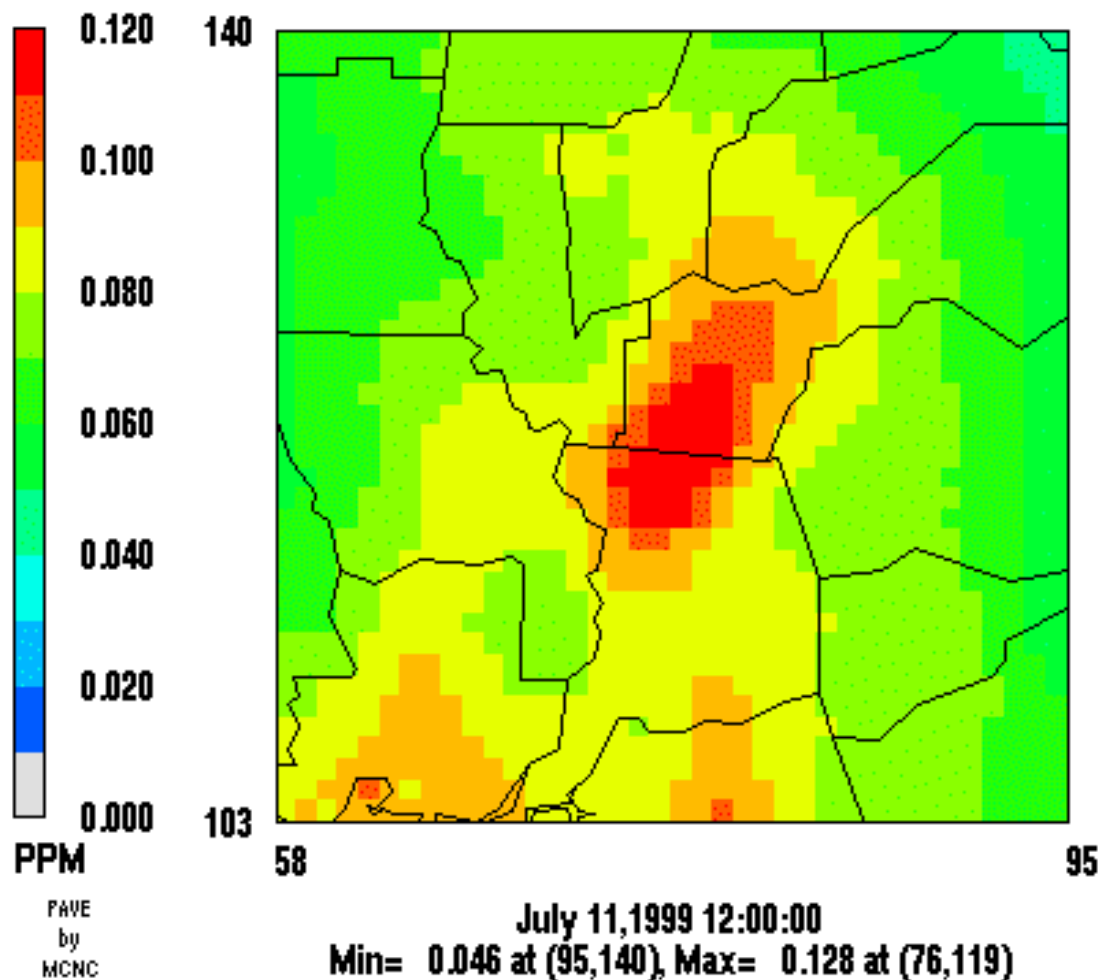


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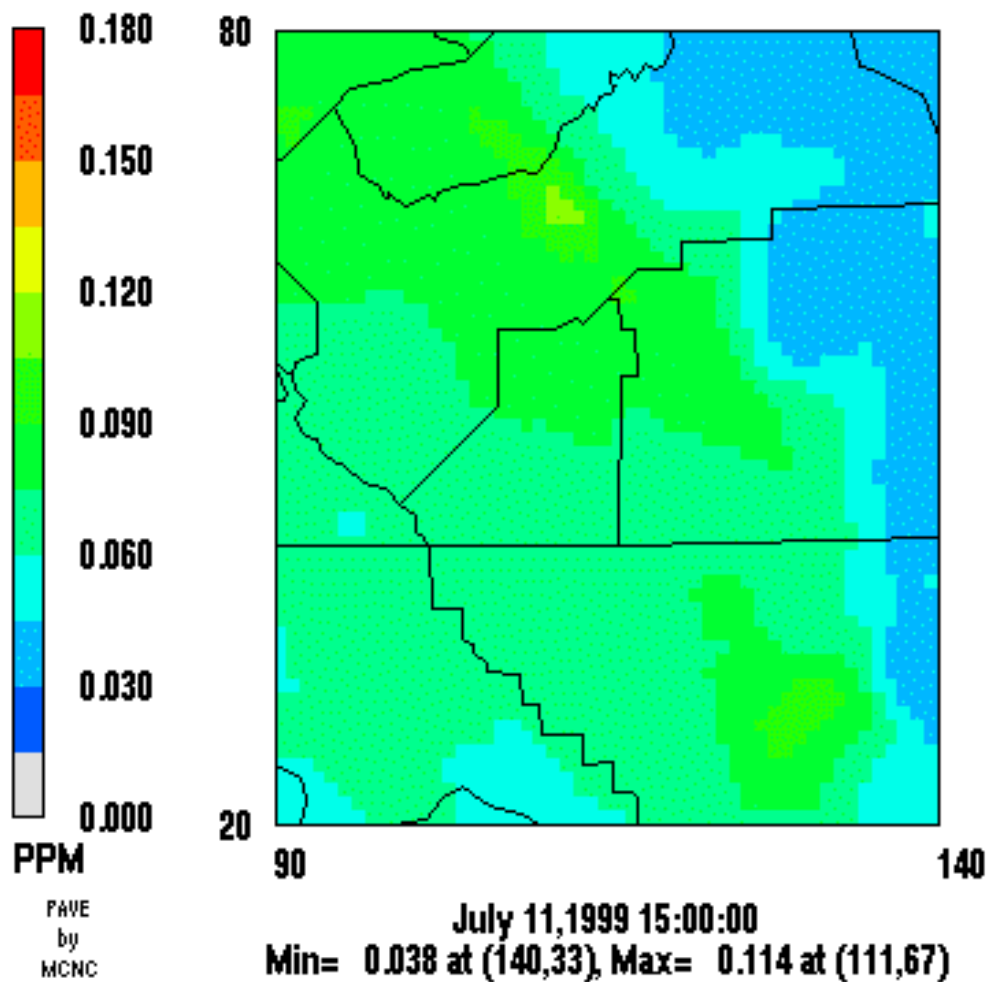


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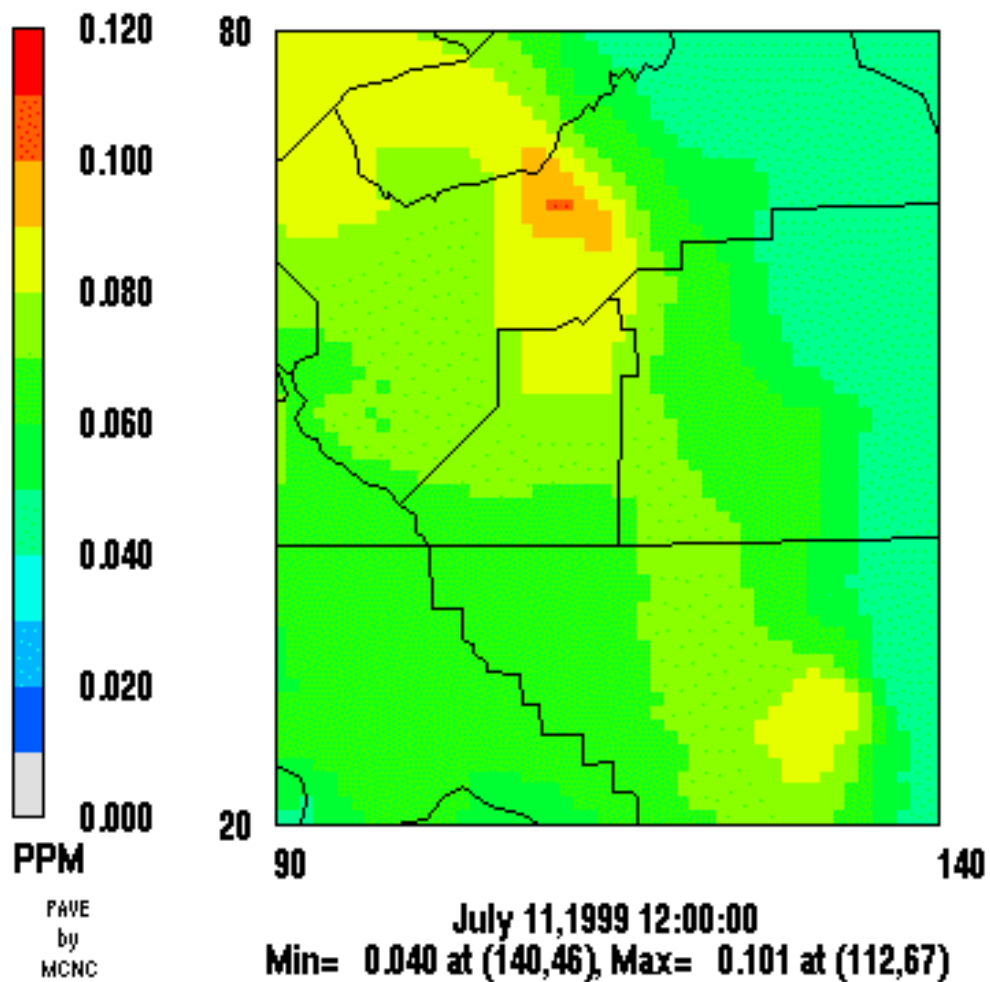


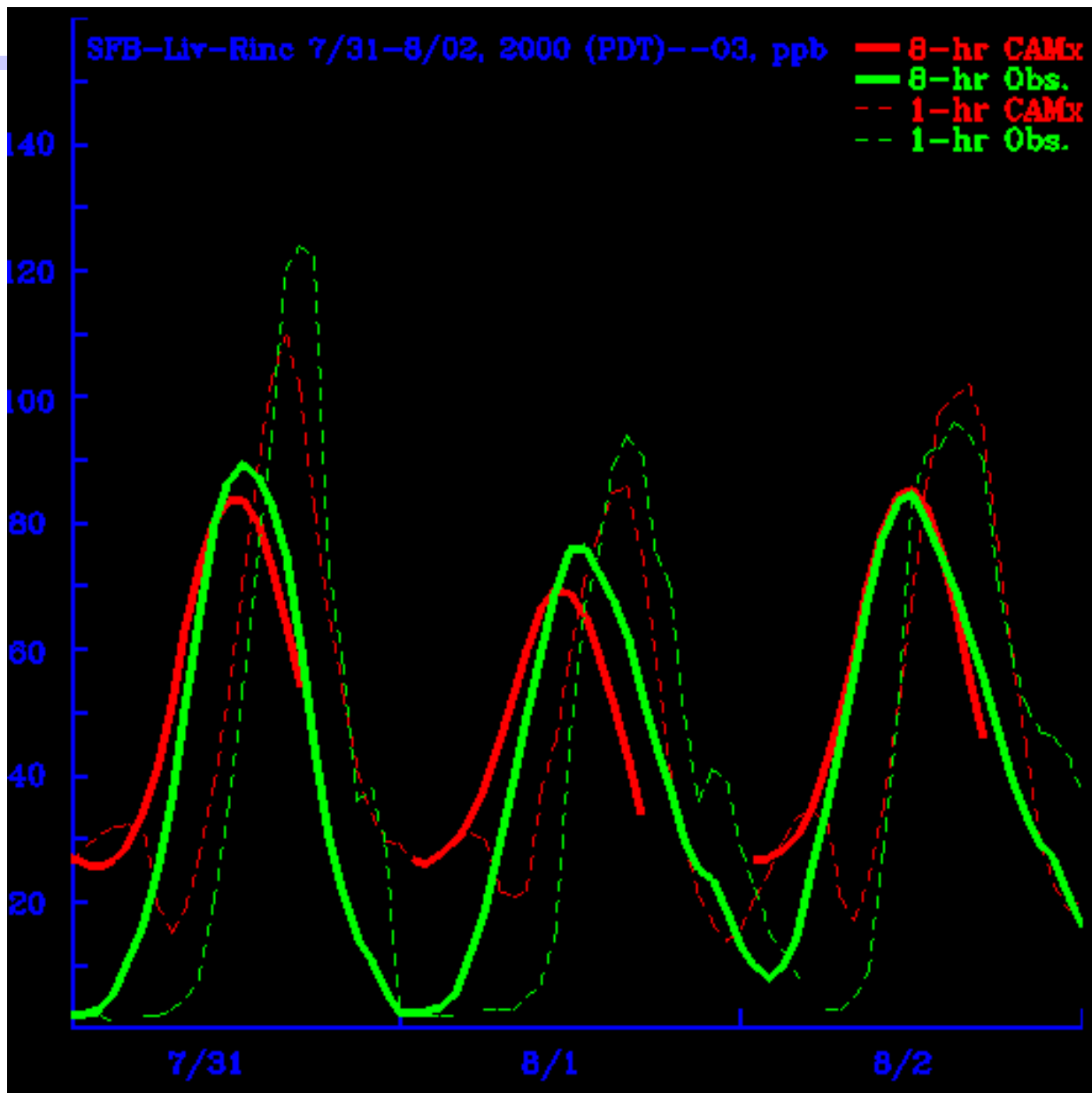
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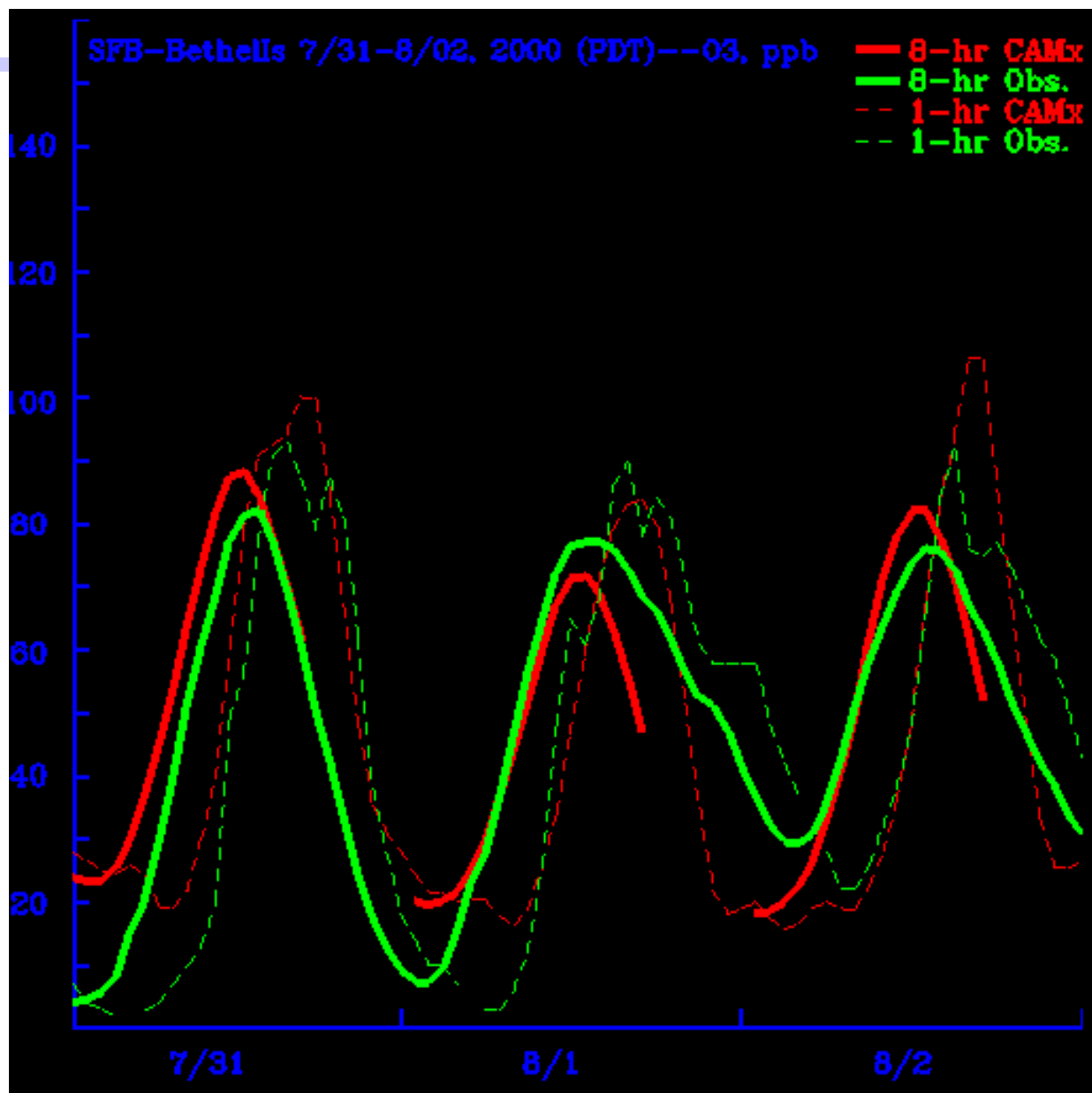


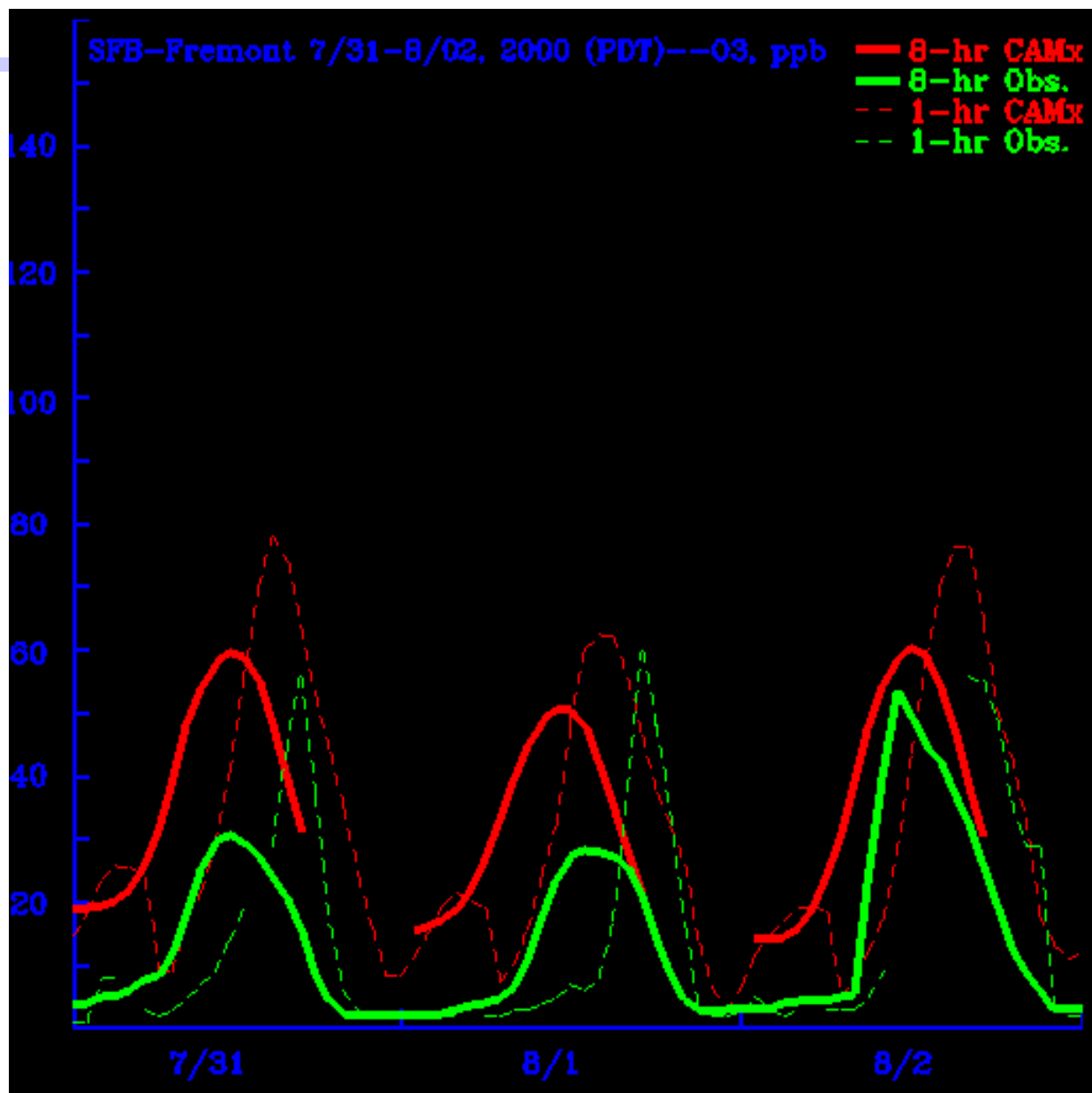


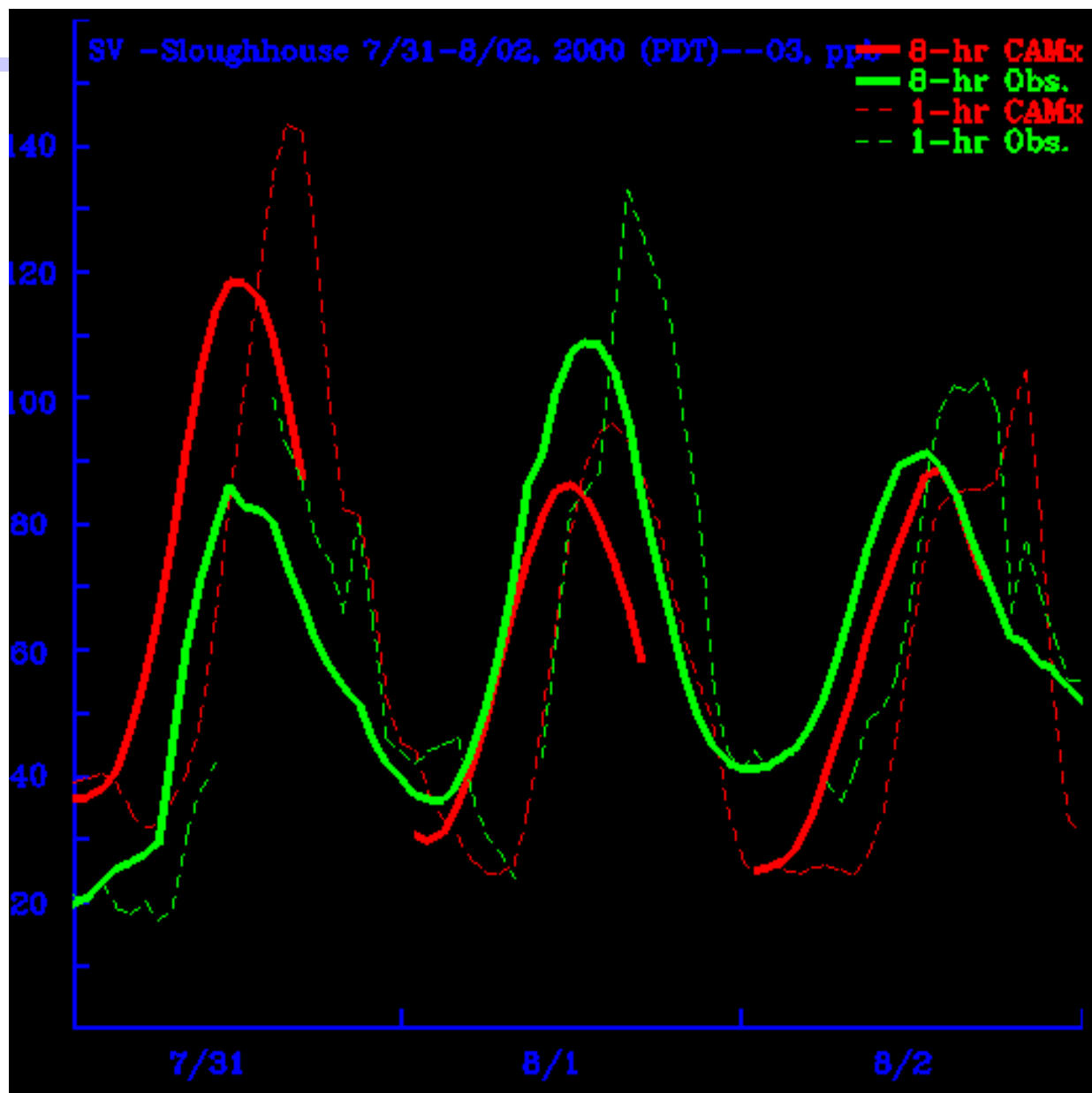
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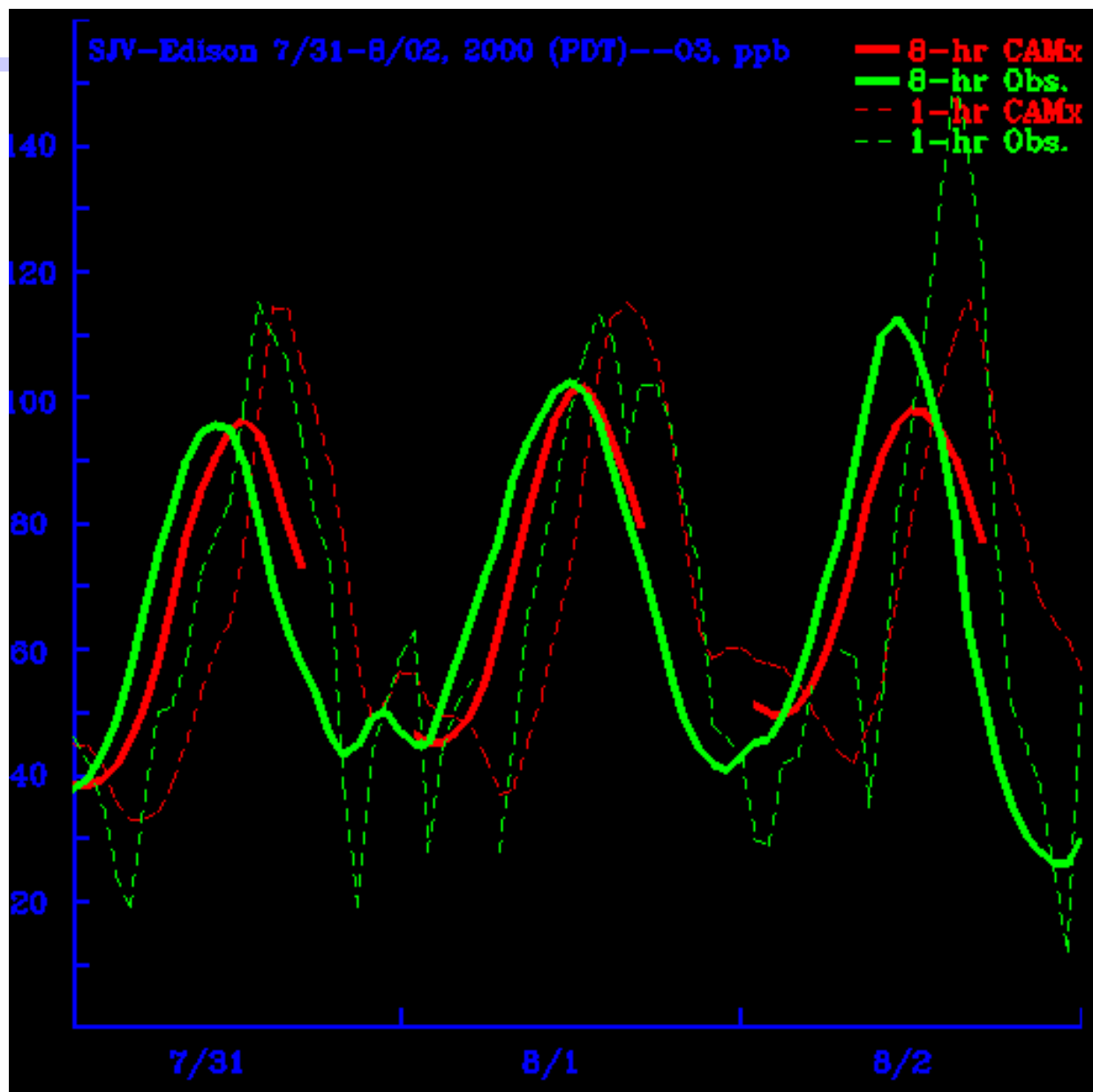


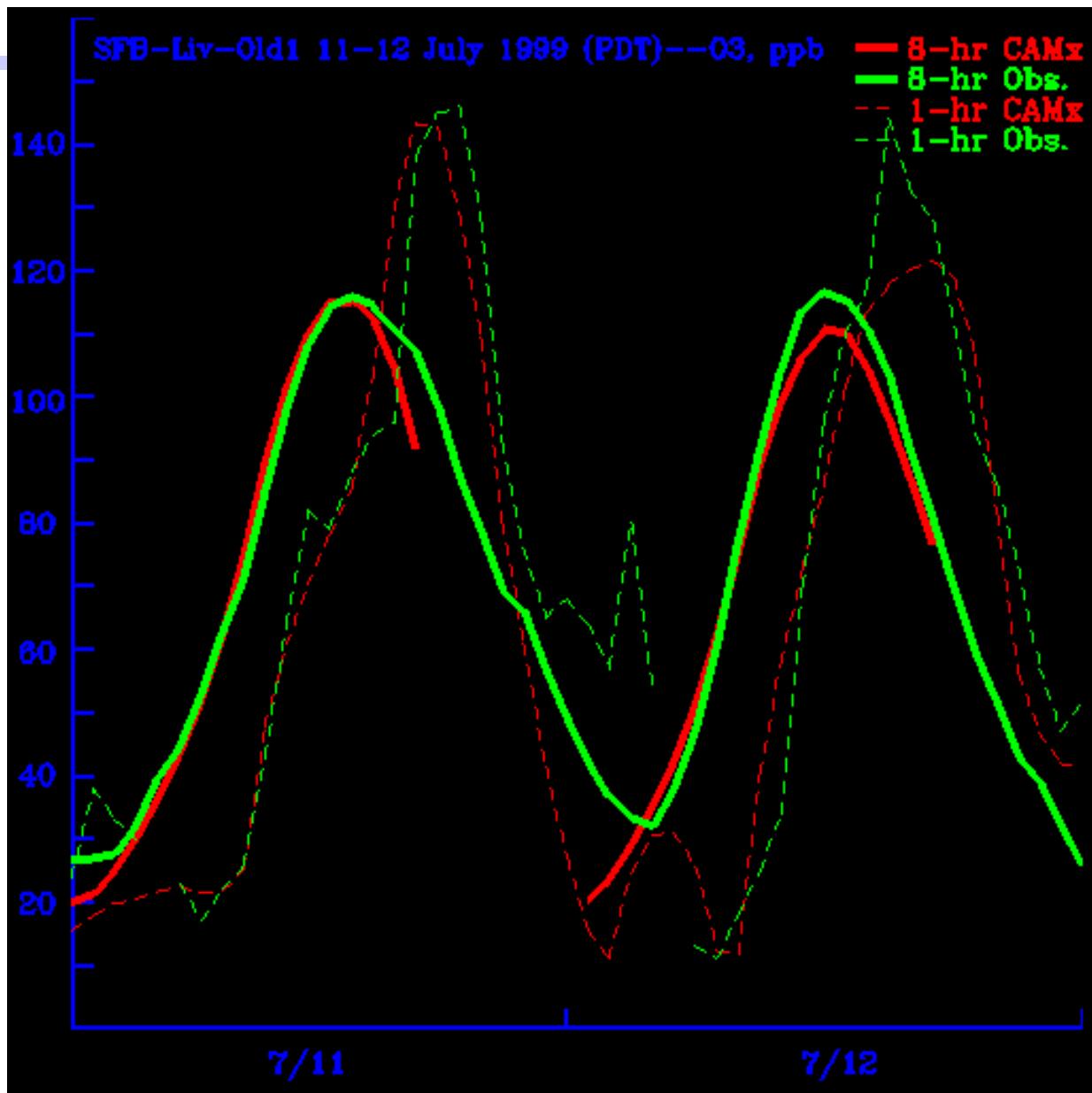


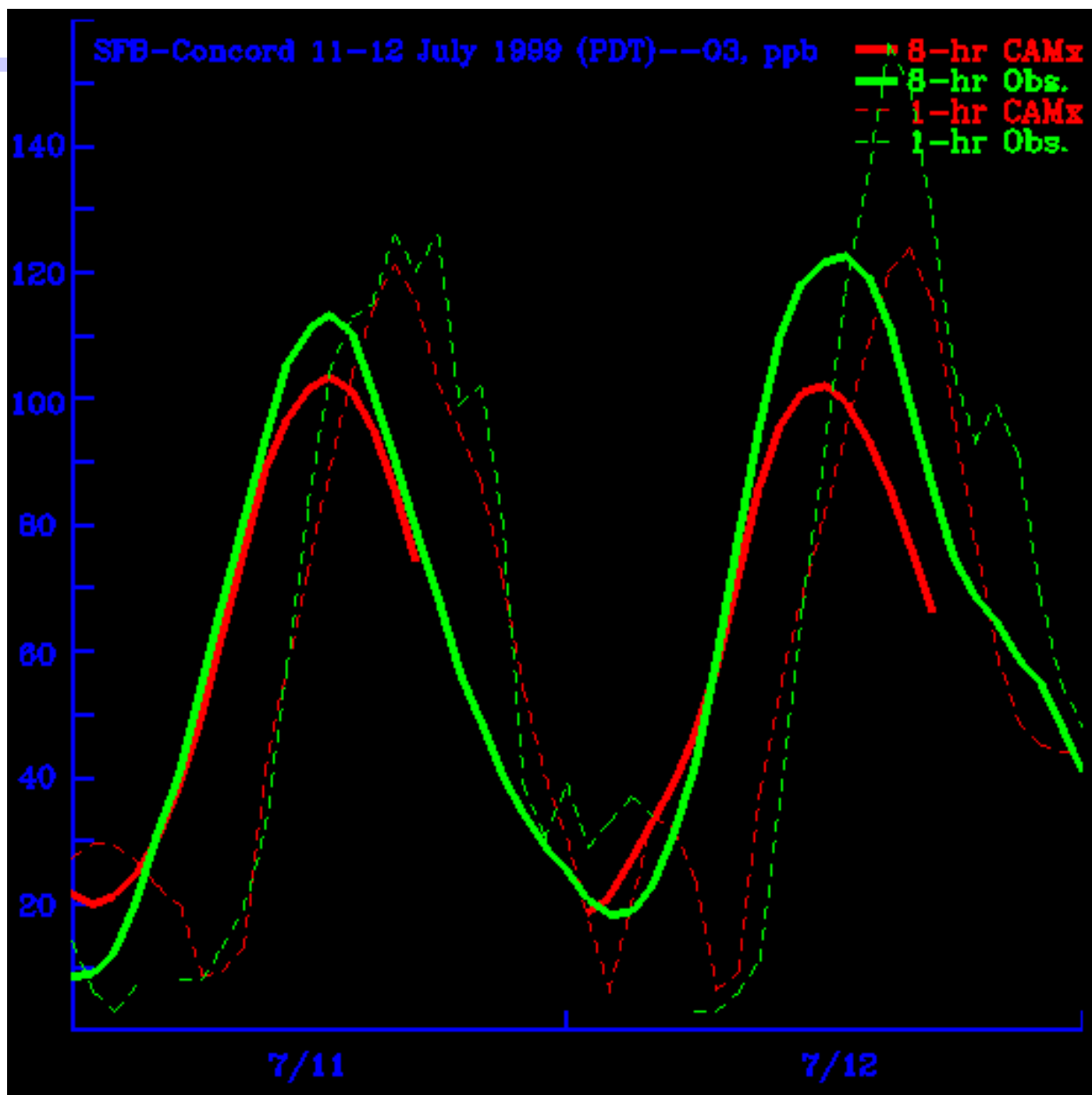


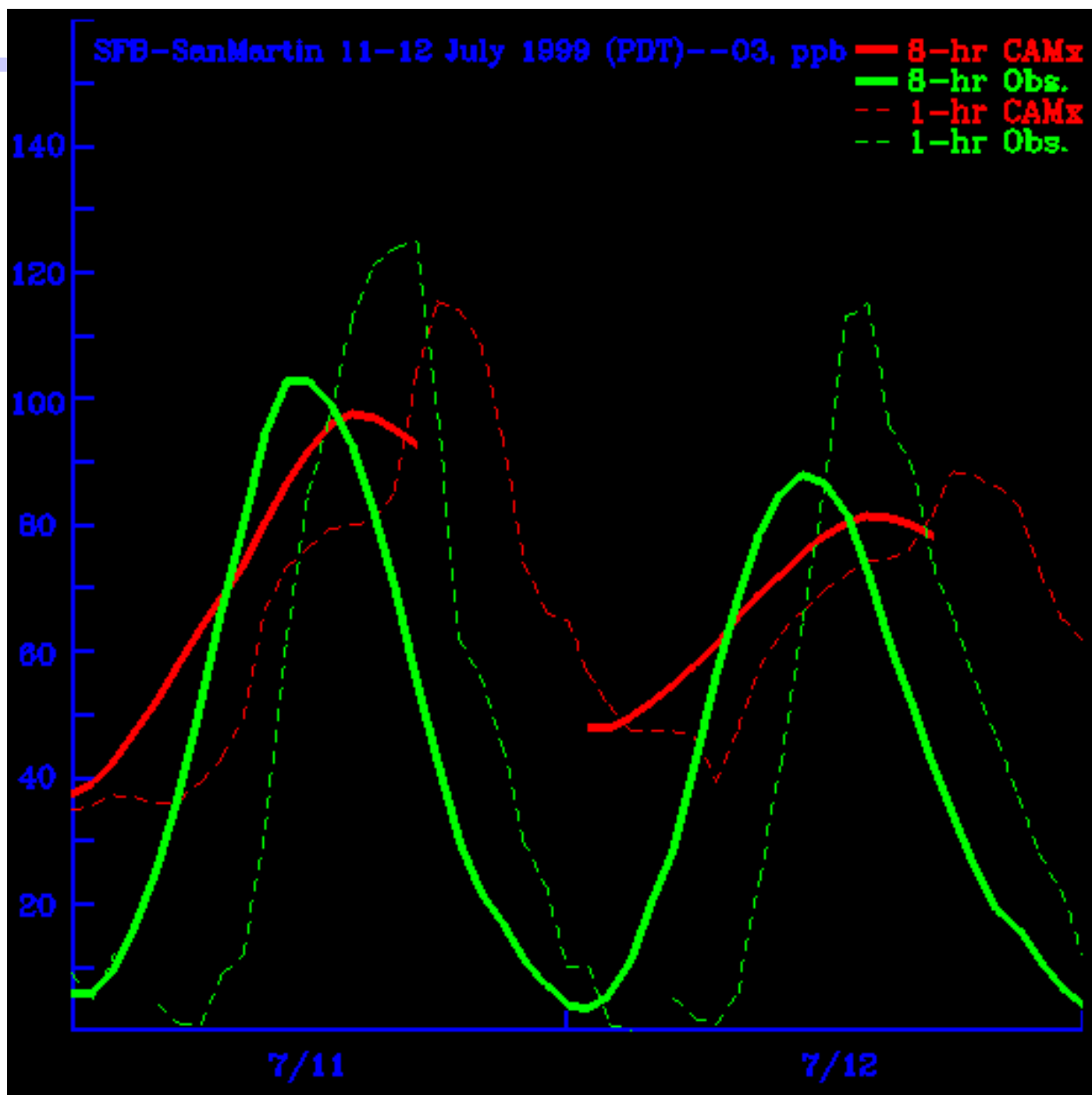


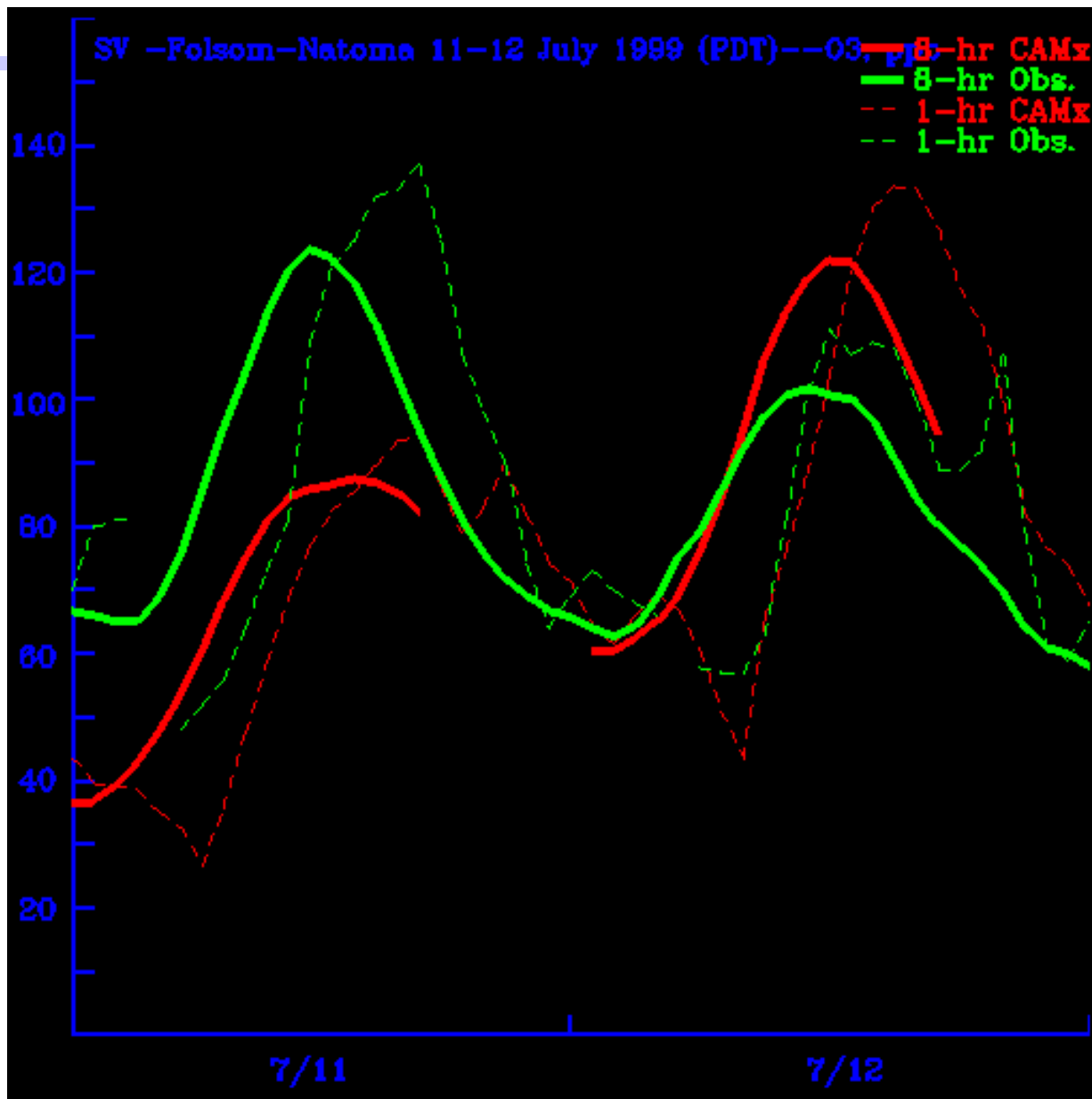


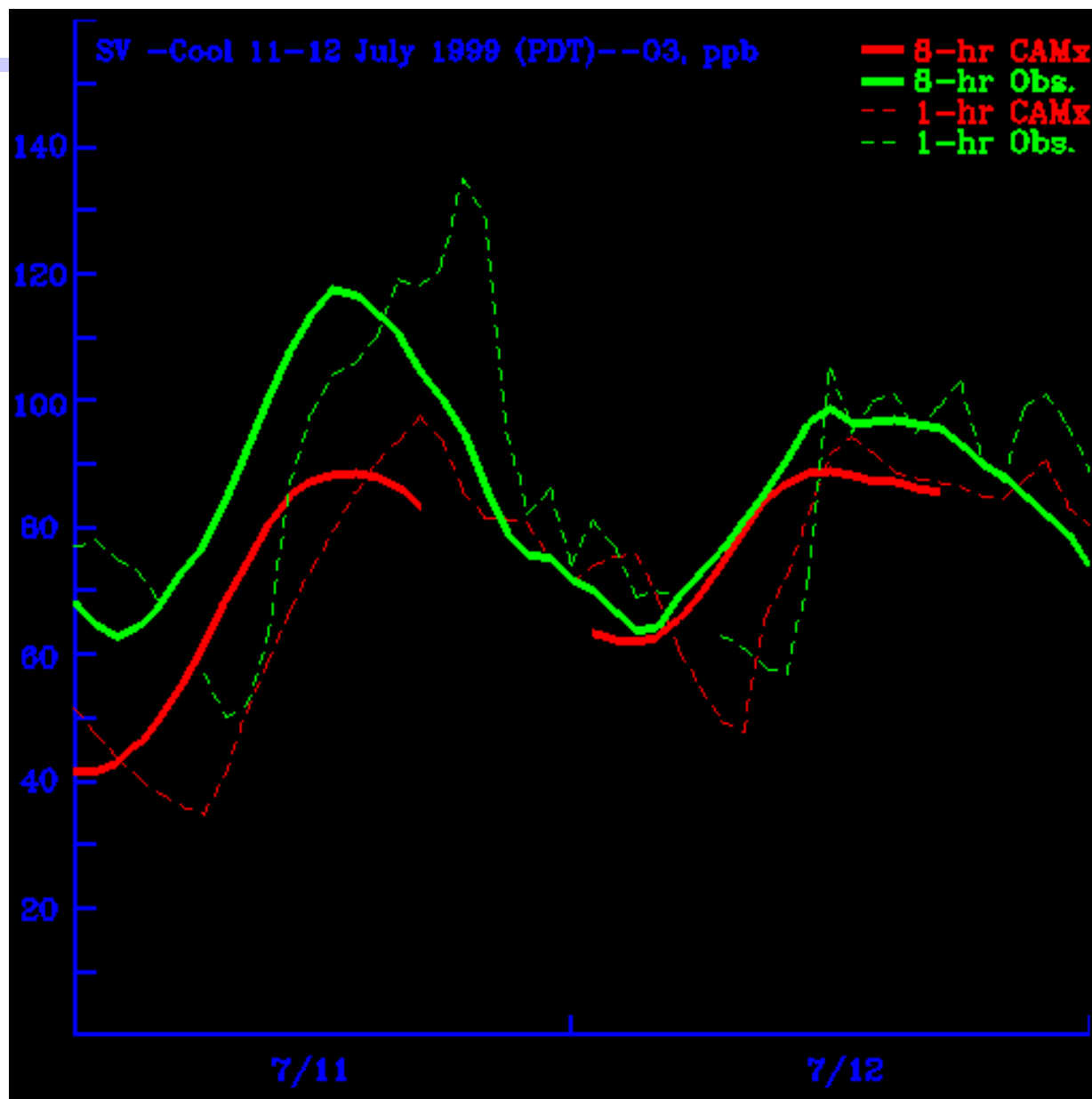


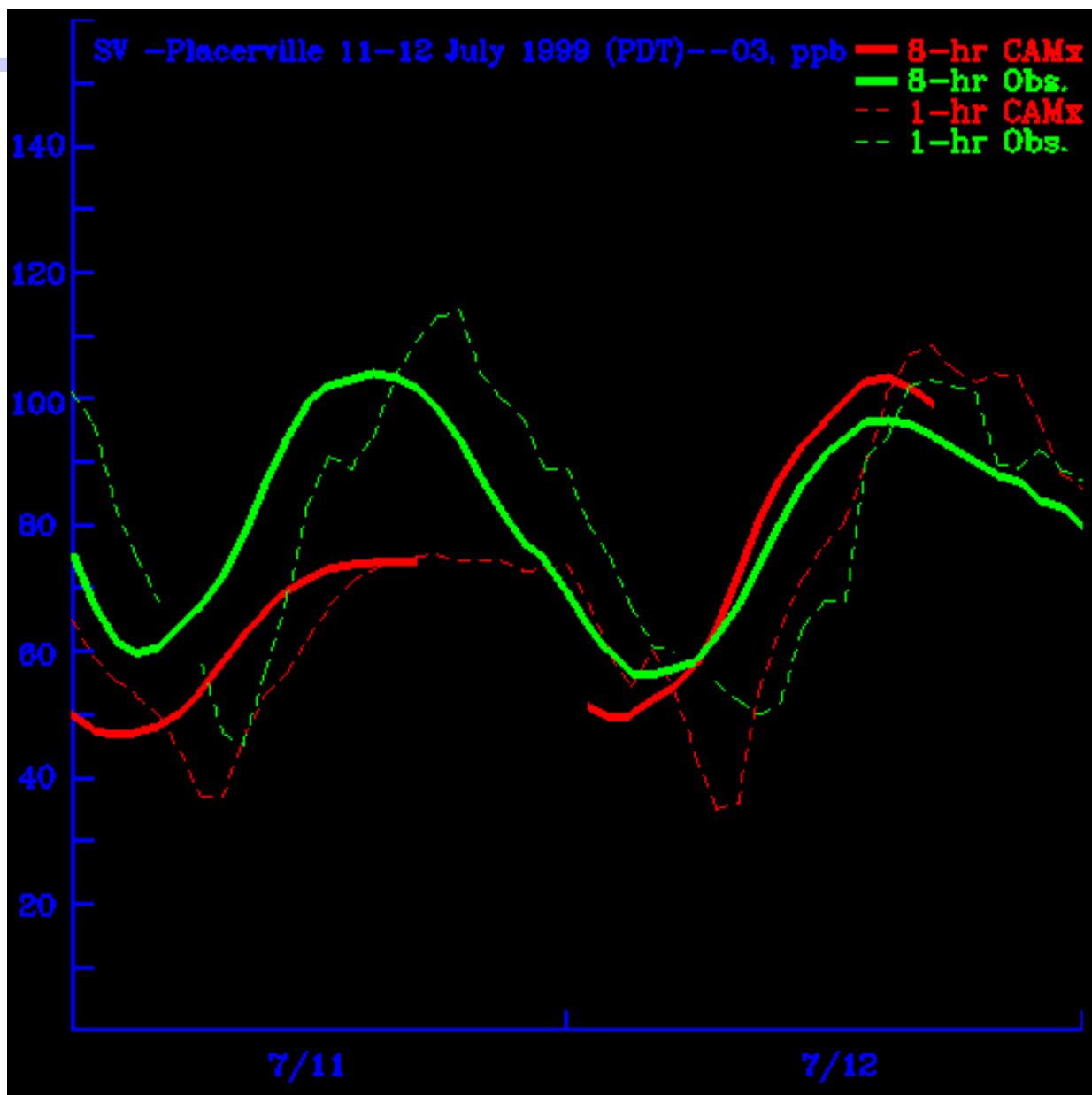


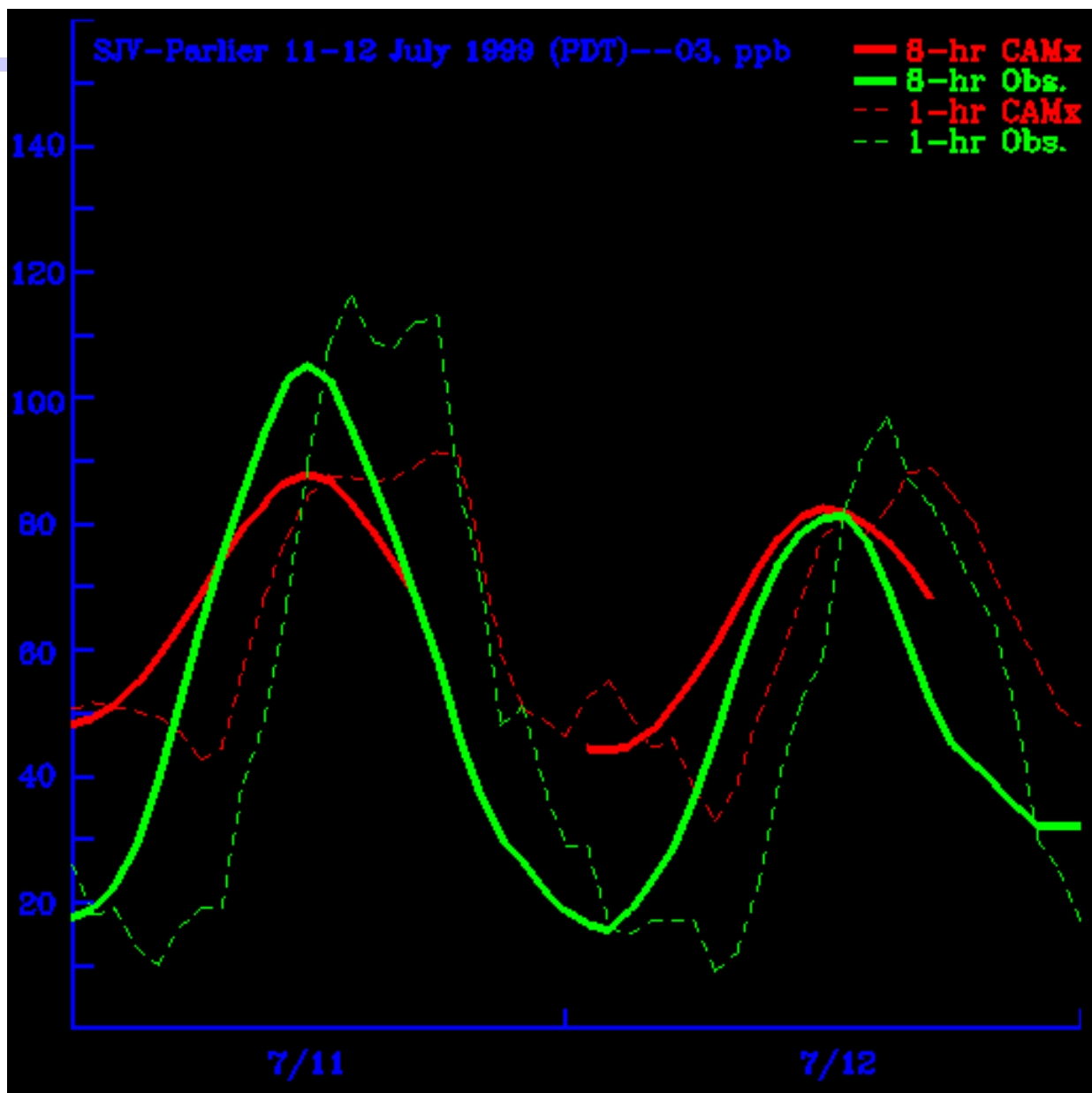


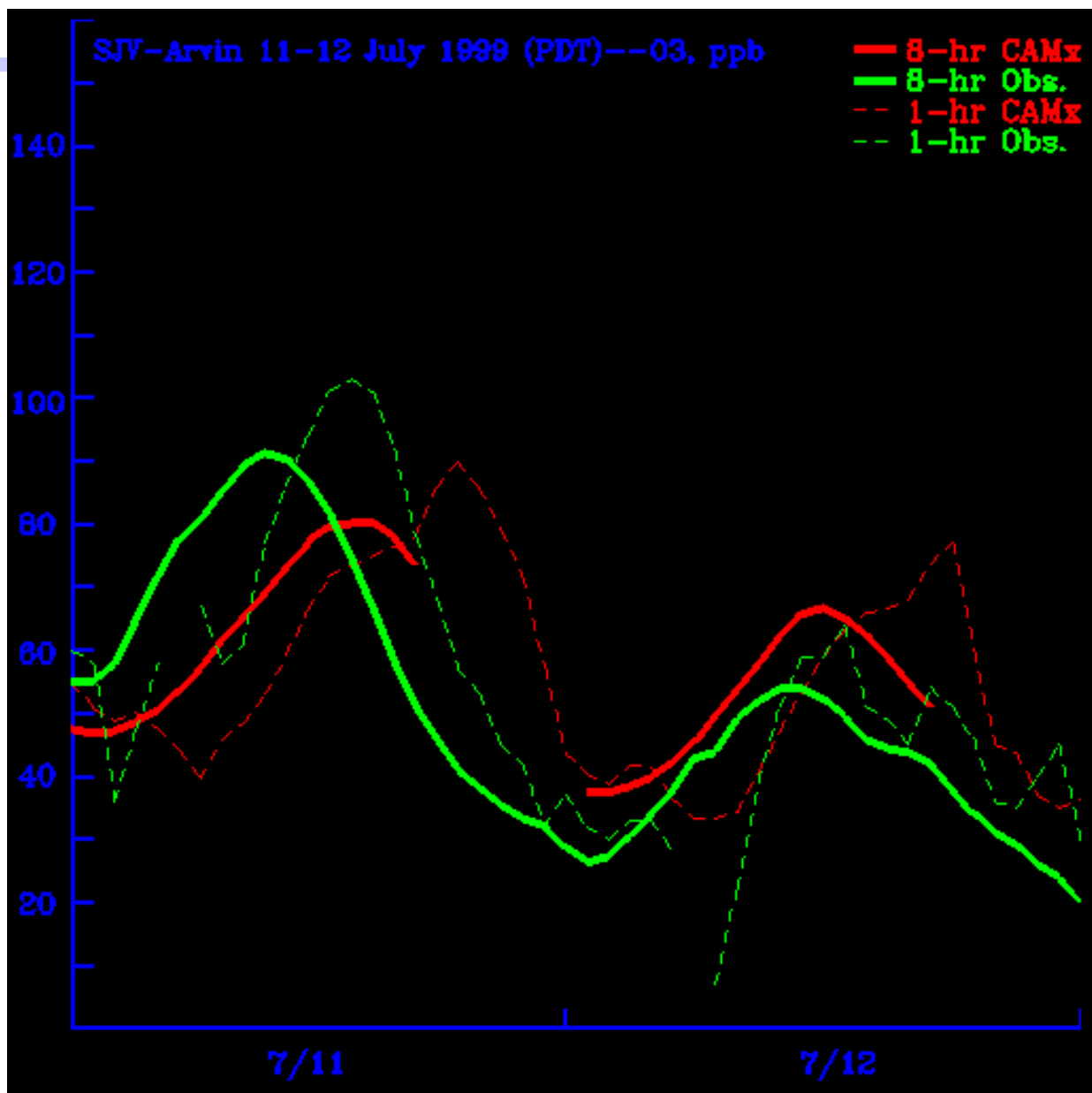














Next Steps

- Further evaluate model performance
 - Conduct statistical model evaluation
 - Identify areas that need improvements
- Extend simulation period
 - May need emissions inventory
 - Need MM5 simulation
- Complete representativeness study
- Conduct sensitivity simulations