

APPENDIX A:

Alaska Class I Area Monitoring Data Summary Tables and Charts

Includes the following subsections:

Subsection	IMPROVE Monitor	Class I Area(s) Represented
A.1	DENA1	Denali NP
A.2	SIME1	Simeonof WA
A.3	TRCR1	Trapper Creek*
A.4	TUXE1	Tuxedni WA

*Not a Federal Class I Area

A.1. DENALI NP (DENA1)

The following tables and figures are presented in this section for Denali National Park represented by the DENA1 IMPROVE Monitor:

- **Table A.1-1: Annual Averages, 5-Year Period Averages, and Trends:** Table of averages and other metrics for the 20% least impaired days, the 20% most impaired days, and all sampled days is presented.
- **Figure A.1-1: Annual and 5-Year Period Averages for the 20% Most Impaired Visibility Days:** Line graphs depicting annual and period averages by component are presented.
- **Figure A.1-2: Annual and 5-Year Period Averages for the 20% Least Impaired Visibility Days:** Line graphs depicting annual and period averages by component are presented.
- **Figure A.1-3: 20% Most Impaired Visibility Days:** Pie charts depicting period averages and stacked bar charts depicting annual averages by component for the 20% most impaired days are presented.
- **Figure A.1-4: 20% Least Impaired Visibility Days:** Pie charts depicting period averages and stacked bar charts depicting annual averages by component are presented.
- **Figure A.1-5: 2000-2004 Monthly Average Aerosol Extinction, All Monitored Days:** Line graphs depicting monthly averages by year and component for the baseline period are presented.
- **Figure A.1-6: 2005-2009 Monthly Average Aerosol Extinction, All Monitored Days:** Line graphs depicting monthly averages by year and component for the progress period are presented.
- **Figure A.1-7: 2000-2004 Progress Period Extinction, All Sampled Days:** Stacked bar charts depicting daily averages by year and component for the baseline period are presented.
- **Figure A.1-8: 2000-2004 Progress Period Extinction, All Sampled Days:** Stacked bar charts depicting daily averages by year and component for the progress period are presented.

**Table A.1-1
Denali NP, AK (DENA1 Site)
Annual Averages, 5-Year Period Averages and Trends**

Group	Baseline Period					Progress Period					2010	2000-2009 Trend Statistics*		Period Averages**			
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009		Slope (change/yr.)	p-value	Baseline (B)	Progress (P)	Difference (P-B)	Percent Change
Deciview (dv)																	
Best 20% Days	2.7	2.5	2.3	2.2	2.4	2.1	2.5	2.5	2.5	2.5	2.4	0.0	0.5	2.4	2.4	0.0	0%
Worst 20% Days	10.6	9.1	10.2	9.9	9.4	10.4	9.8	8.8	9.3	14.7	8.5	0.0	0.4	9.9	10.6	0.7	7%
All Days	5.5	5.2	5.4	5.5	5.2	5.2	5.6	5.2	5.5	7.0	5.2	0.0	0.2	5.3	5.7	0.4	8%
Total Extinction (Mm-1)																	
Best 20% Days	13.1	12.9	12.6	12.4	12.8	12.3	12.9	12.9	12.8	12.9	12.8	0.0	0.5	12.8	12.8	0.0	0%
Worst 20% Days	44.0	27.1	29.7	27.3	27.0	32.3	27.4	24.4	26.2	59.5	23.8	-0.2	0.3	31.0	34.0	3.0	10%
All Days	21.2	17.7	18.3	18.0	17.6	18.4	18.3	17.2	18.1	25.5	17.2	0.0	0.5	18.6	19.5	0.9	5%
Ammonium Sulfate Extinction (Mm-1)																	
Best 20% Days	0.8	1.0	0.8	0.7	0.8	0.5	1.0	0.9	0.9	1.0	0.8	0.0	0.2	0.8	0.9	0.1	13%
Worst 20% Days	4.6	4.6	6.0	5.4	3.6	4.5	8.5	5.6	7.6	13.1	4.0	0.5	0.1	4.9	7.8	2.9	59%
All Days	2.4	2.5	2.8	2.7	2.1	2.5	3.8	2.7	3.5	5.1	2.4	0.1	0.0	2.5	3.5	1.0	40%
Ammonium Nitrate Extinction (Mm-1)																	
Best 20% Days	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0%
Worst 20% Days	0.7	0.6	0.4	0.5	0.8	0.6	0.7	0.9	0.8	0.7	0.9	0.0	0.1	0.6	0.7	0.1	17%
All Days	0.4	0.4	0.3	0.3	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.0	0.4	0.3	0.4	0.1	33%
Particulate Organic Mass Extinction (Mm-1)																	
Best 20% Days	0.5	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.0	0.4	0.3	0.3	0.0	0%
Worst 20% Days	23.5	7.1	8.7	7.0	7.9	12.5	3.6	3.9	3.3	30.4	5.0	-0.6	0.2	10.8	10.7	-0.1	-1%
All Days	5.7	2.1	2.6	2.3	2.5	3.1	1.5	1.7	1.6	6.9	1.7	-0.1	0.3	3.0	3.0	0.0	0%
Elemental Carbon Extinction (Mm-1)																	
Best 20% Days	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.1	-0.1	-50%
Worst 20% Days	2.3	1.3	1.4	1.6	1.3	1.7	0.9	1.1	0.8	2.1	1.1	-0.1	0.2	1.6	1.3	-0.3	-19%
All Days	0.8	0.6	0.7	0.7	0.5	0.6	0.5	0.5	0.4	0.7	0.5	0.0	0.1	0.6	0.5	-0.1	-17%
Soil Extinction (Mm-1)																	
Best 20% Days	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.5	0.0	0.0	0.0	0%
Worst 20% Days	0.2	0.5	0.5	0.2	0.2	0.2	0.4	0.2	0.3	0.4	0.2	0.0	0.4	0.3	0.3	0.0	0%
All Days	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.0	0.3	0.1	0.2	0.1	100%
Coarse Mass Extinction (Mm-1)																	
Best 20% Days	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.3	0.0	0.1	0.2	0.3	0.1	50%
Worst 20% Days	1.2	1.8	1.6	1.0	1.3	1.2	1.2	0.9	1.3	1.3	1.1	0.0	0.2	1.4	1.2	-0.2	-14%
All Days	0.7	0.8	0.7	0.6	0.6	0.6	0.7	0.6	0.7	0.8	0.8	0.0	0.4	0.7	0.7	0.0	0%
Sea Salt Extinction (Mm-1)																	
Best 20% Days	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.1	0.1	0.0	0%
Worst 20% Days	0.5	0.3	0.0	0.5	0.9	0.7	1.0	0.8	1.0	0.6	0.6	0.1	0.0	0.4	0.8	0.4	100%
All Days	0.2	0.2	0.1	0.3	0.4	0.3	0.3	0.3	0.4	0.4	0.3	0.0	0.0	0.2	0.3	0.1	50%

*Values highlighted in blue (red) indicate statistically significant decreasing (increasing) annual trend. Significance is measured at the 85% confidence level (p-value ≤0.15).

**Values highlighted in blue indicate a decrease in the 5-year average, values highlighted in red indicate an increase.

"--" Indicates a missing year that did not meet RHR data completeness criteria.

Figure A.1-1
Denali NP, AK (DENA1 Site)
Annual and 5-Year Period Averages
20% Most Impaired Visibility Days

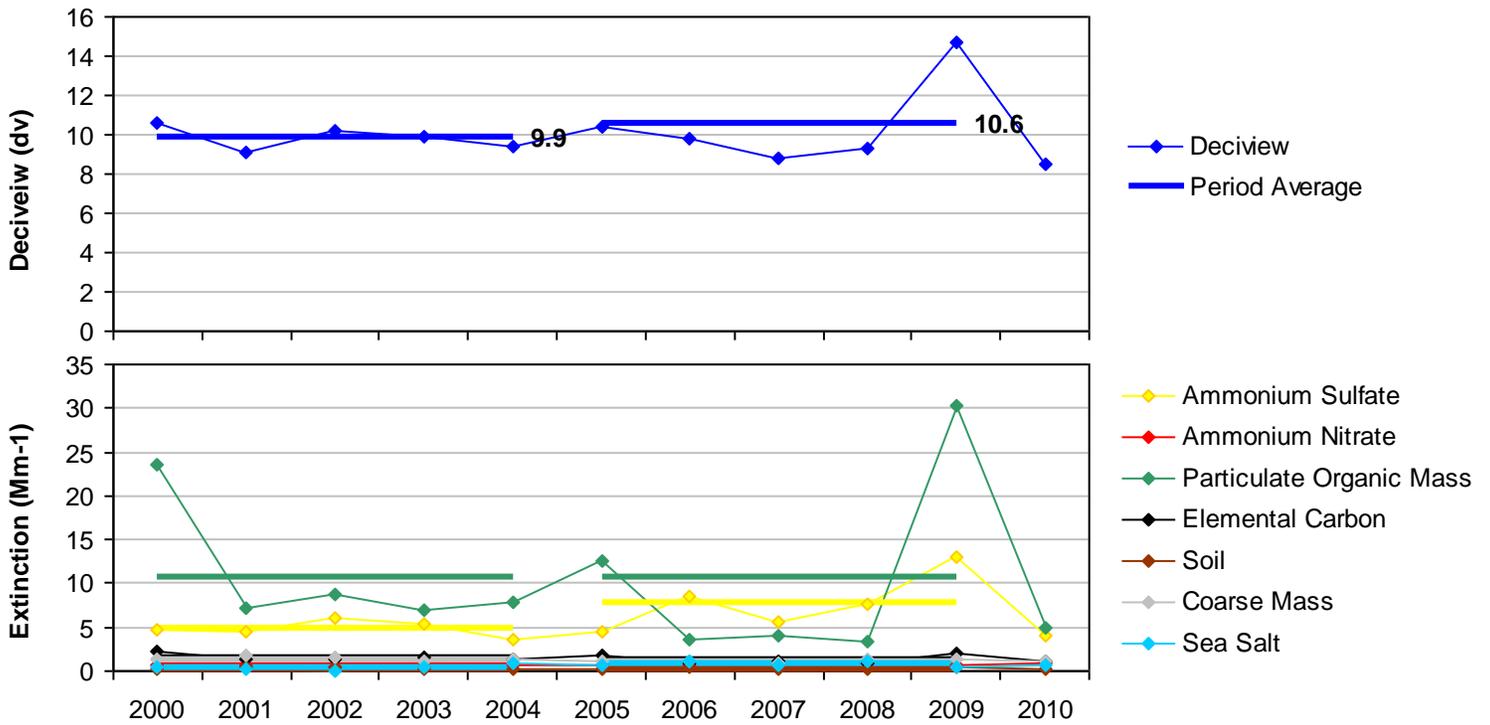


Figure A.1-2
Denali NP, AK (DENA1 Site)
Annual and 5-Year Period Averages
20% Least Impaired Visibility Days

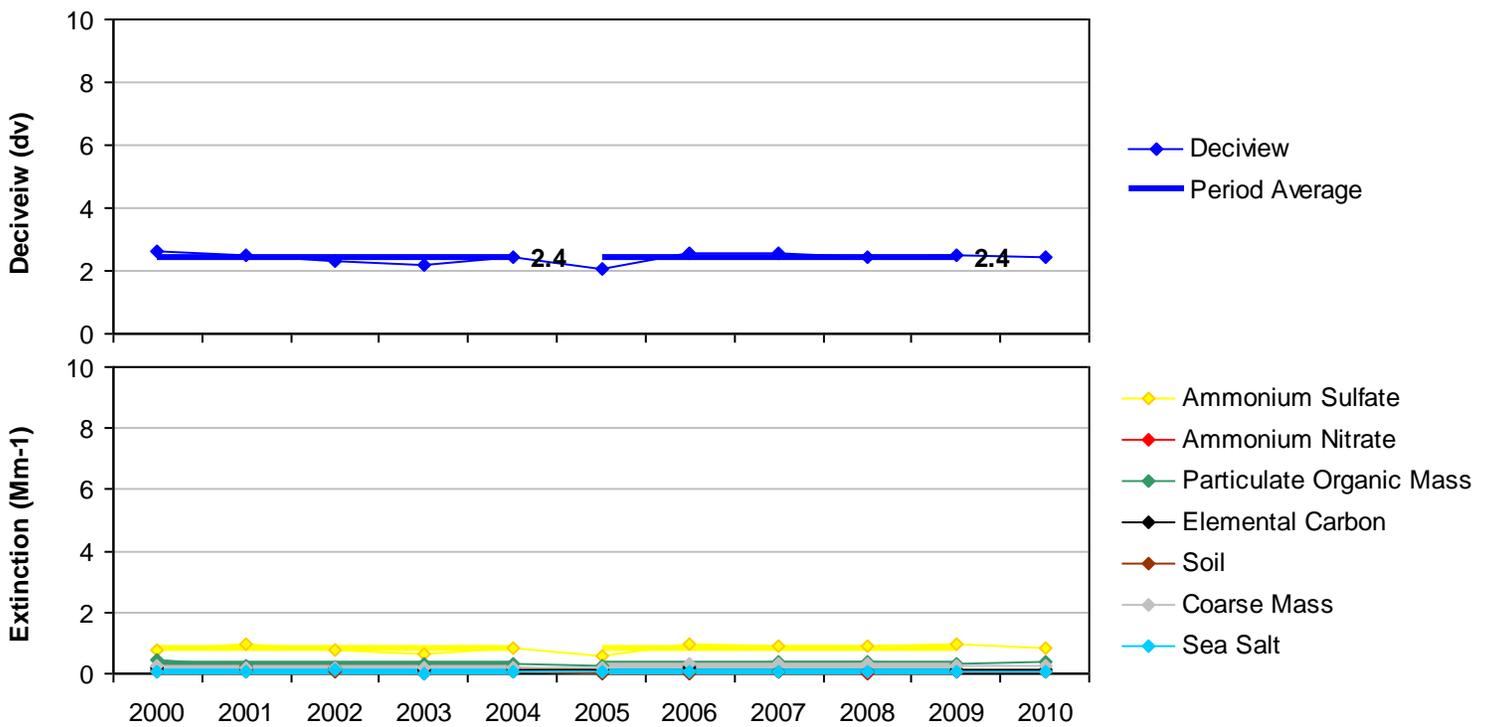
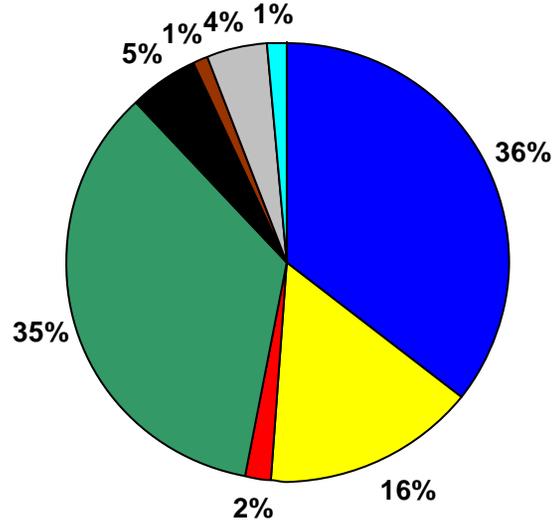
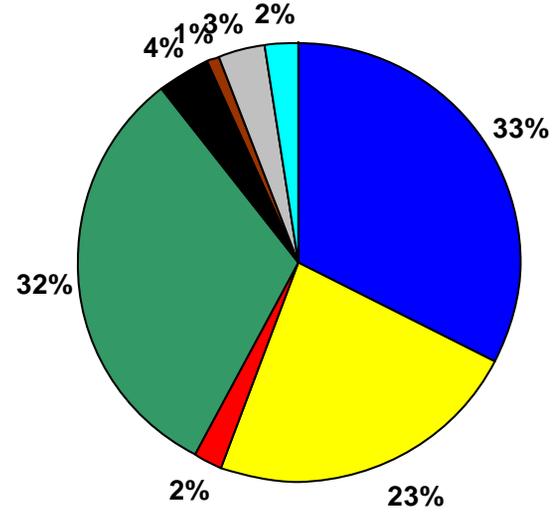


Figure A.1-3
Denali NP, AK (DENA1 Site)
20% Most Impaired Visibility Days

2000-2004 Baseline Average
 9.9 dv (9.1 - 10.6 dv)



2005-2009 Progress Period Average
 10.6 dv (8.8 - 14.7 dv)



- Sea Salt
- Coarse Mass
- Soil
- Elemental Carbon
- Particulate Organic Mass
- Ammonium Nitrate
- Ammonium Sulfate
- Rayleigh

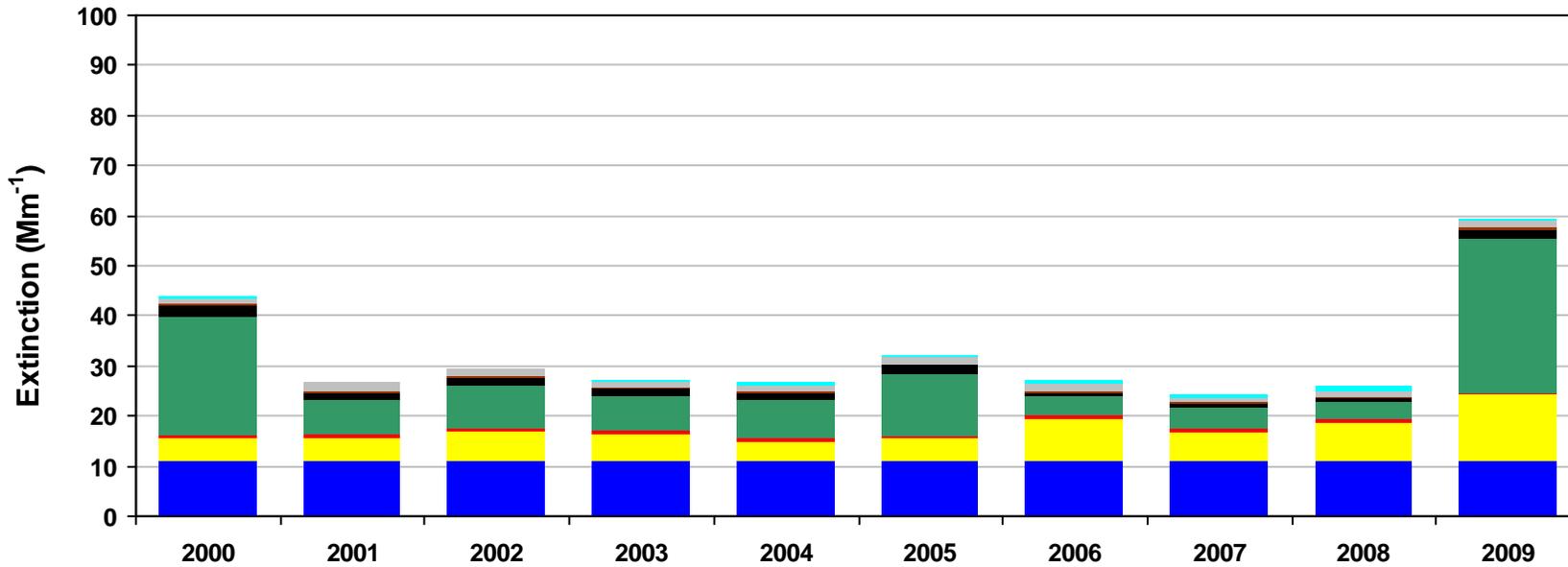
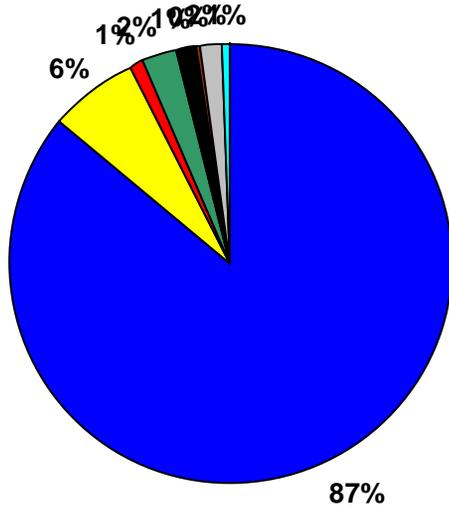


Figure A.1-4
Denali NP, AK (DENA1 Site)
20% Least Impaired Visibility Days

2000-2004 Baseline Average
 2.4 dv (2.2 - 2.7 dv)



2005-2009 Progress Period Average
 2.4 dv (2.1 - 2.5 dv)

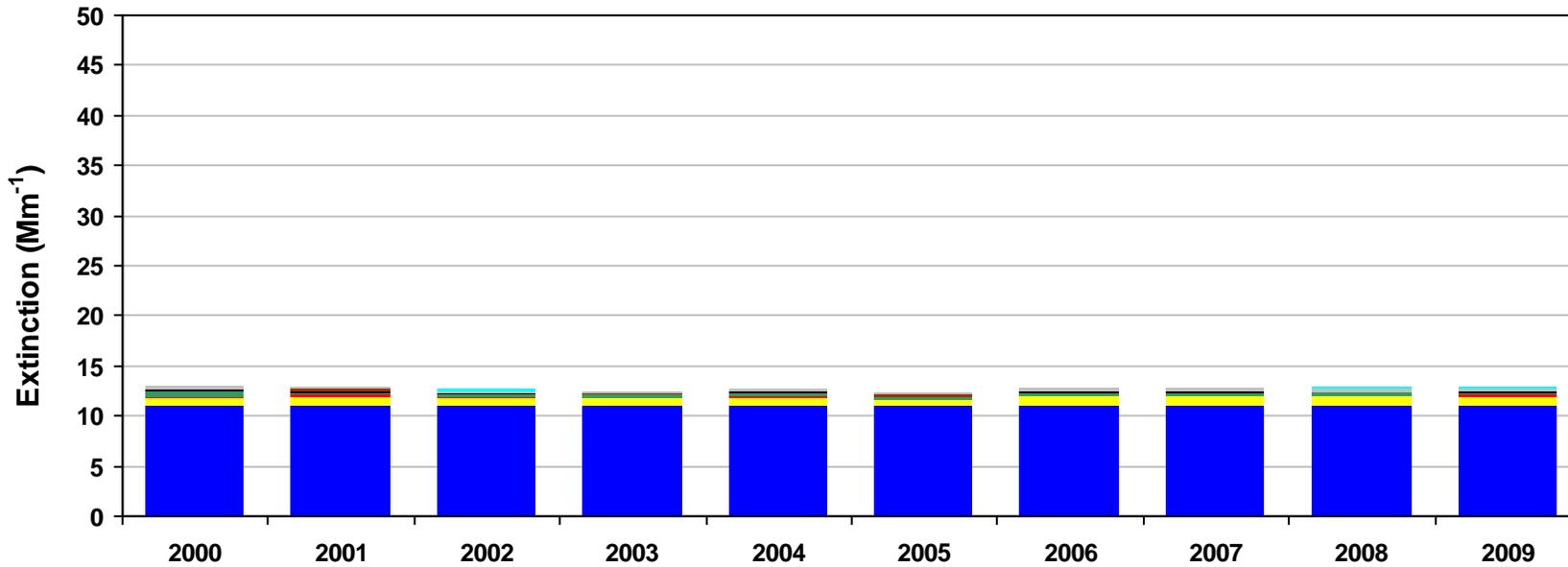
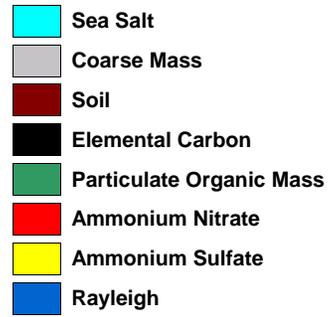
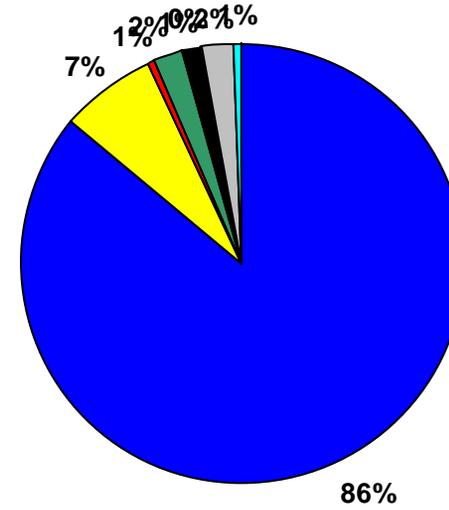


Figure A.1-5
Denali NP, AK (DENA1 Site)
2000-2004 Monthly Average Aerosol Extinction, All Monitored Days

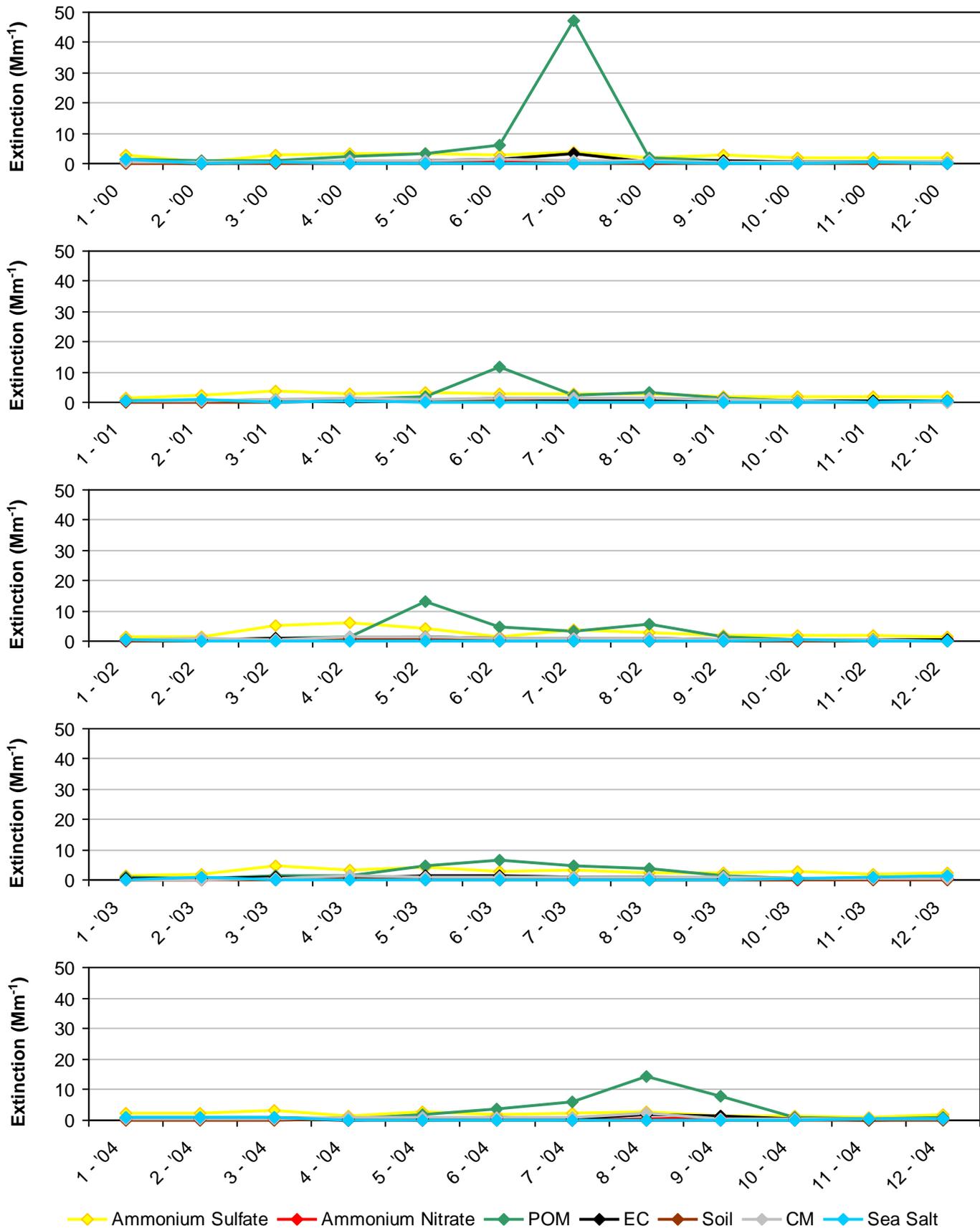


Figure A.1-6
Denali NP, AK (DENA1 Site)
2005-2009 Monthly Average Aerosol Extinction, All Monitored Days

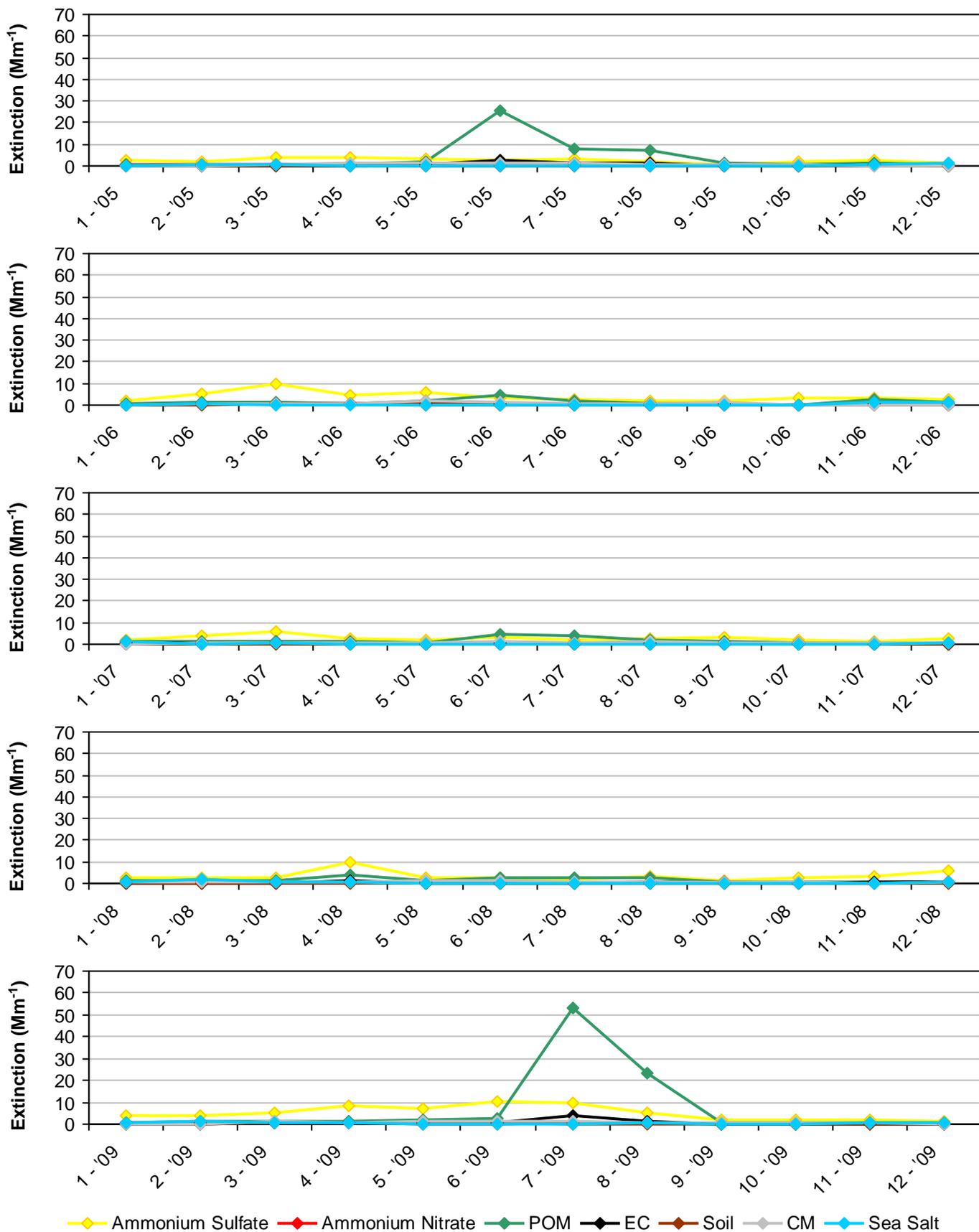


Figure A.1-7
Denali NP, AK (DENA1 Site)
2000-2004 Progress Period Extinction, All Sampled Days

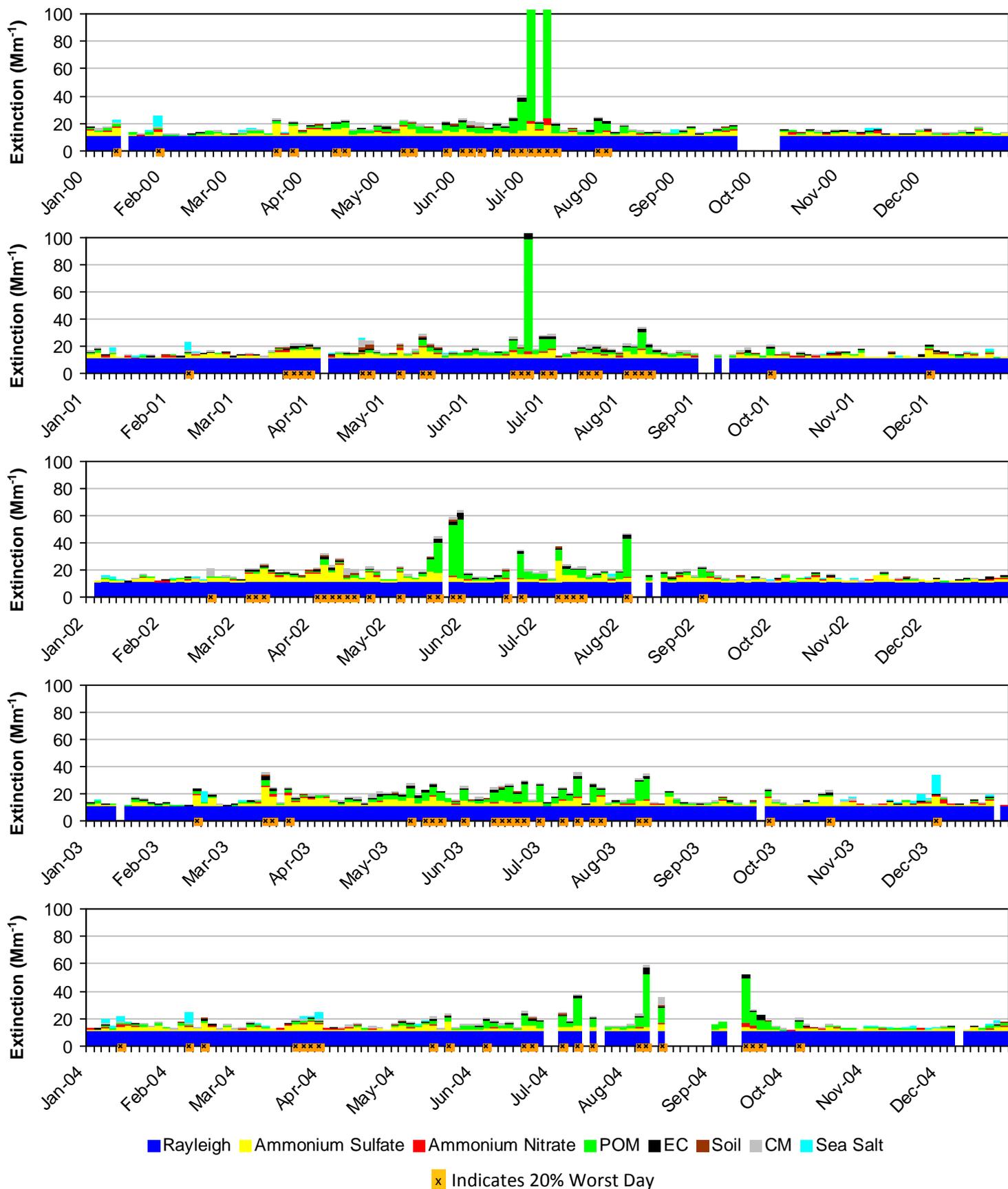
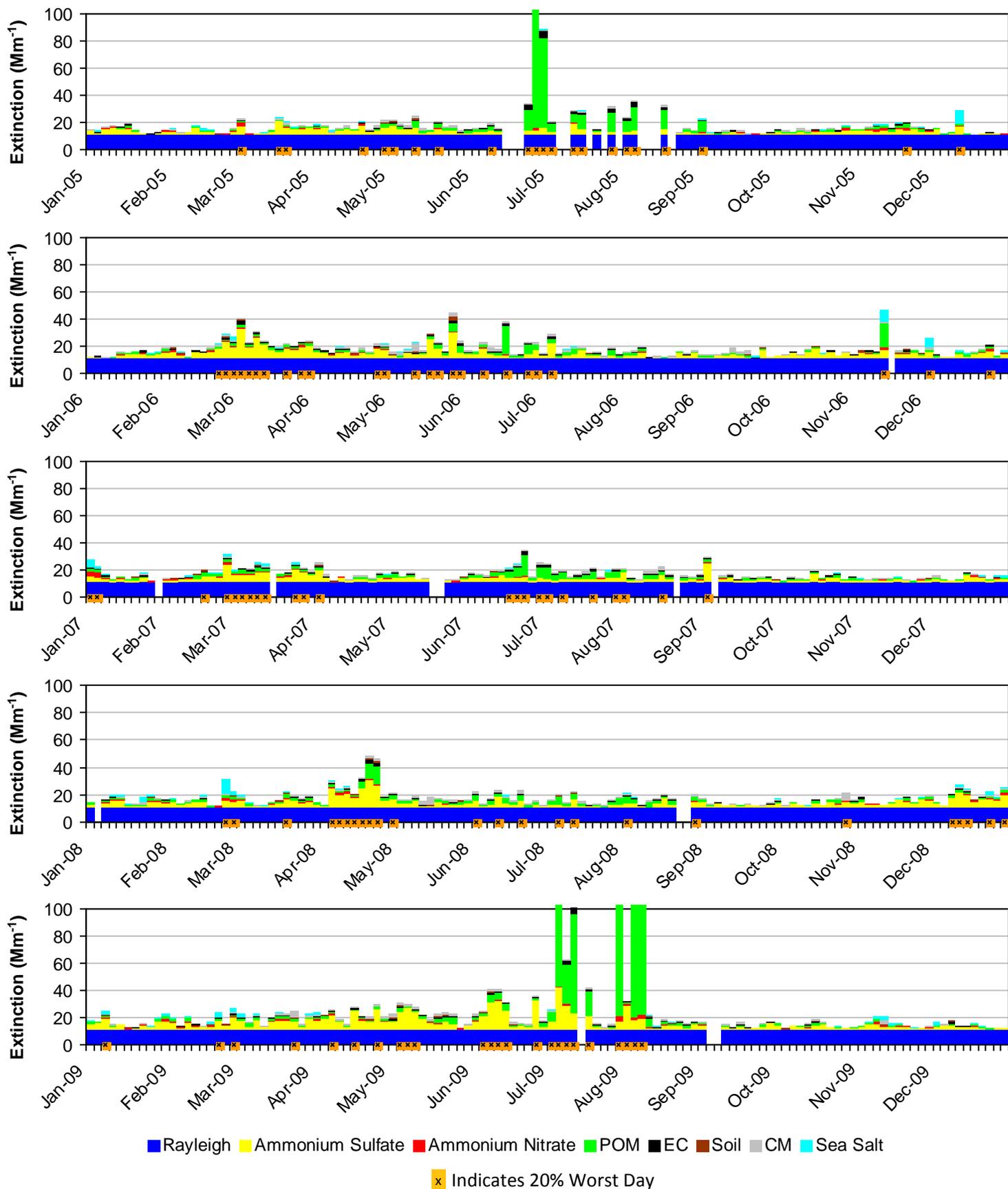


Figure A.1-8
Denali NP, AK (DENA1 Site)
2005-2009 Progress Period Extinction, All Sampled Days



A.2. SIMEONOF WA (SIME1)

The following tables and figures are presented in this section for the Simeonof Wilderness Area represented by the SIME1 IMPROVE Monitor:

- **Table A.2-1: Annual Averages, 5-Year Period Averages, and Trends:** Table of averages and other metrics for the 20% least impaired days, the 20% most impaired days, and all sampled days is presented.
- **Figure A.2-1: Annual and 5-Year Period Averages for the 20% Most Impaired Visibility Days:** Line graphs depicting annual and period averages by component are presented.
- **Figure A.2-2: Annual and 5-Year Period Averages for the 20% Least Impaired Visibility Days:** Line graphs depicting annual and period averages by component are presented.
- **Figure A.2-3: 20% Most Impaired Visibility Days:** Pie charts depicting period averages and stacked bar charts depicting annual averages by component for the 20% most impaired days are presented.
- **Figure A.2-4: 20% Least Impaired Visibility Days:** Pie charts depicting period averages and stacked bar charts depicting annual averages by component are presented.
- **Figure A.2-5: 2000-2004 Monthly Average Aerosol Extinction, All Monitored Days:** Line graphs depicting monthly averages by year and component for the baseline period are presented.
- **Figure A.2-6: 2005-2009 Monthly Average Aerosol Extinction, All Monitored Days:** Line graphs depicting monthly averages by year and component for the progress period are presented.
- **Figure A.2-7: 2000-2004 Progress Period Extinction, All Sampled Days:** Stacked bar charts depicting daily averages by year and component for the baseline period are presented.
- **Figure A.2-8: 2000-2004 Progress Period Extinction, All Sampled Days:** Stacked bar charts depicting daily averages by year and component for the progress period are presented.

Table A.2-1
Simeonof WA, AK (SIME1 Site)
Annual Averages, 5-Year Period Averages and Trends

Group	Baseline Period					Progress Period					2010	2000-2009 Trend Statistics*		Period Averages**			
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009		Slope (change/yr.)	p-value	Baseline (B)	Progress (P)	Difference (P-B)	Percent Change
Deciview (dv)																	
Best 20% Days	---	---	7.8	6.8	8.3	7.8	8.3	8.1	7.5	8.3	7.6	0.1	0.2	7.6	8.0	0.4	5%
Worst 20% Days	---	---	18.8	18.2	18.6	17.4	18.7	20.0	17.7	19.2	16.6	0.1	0.4	18.6	18.6	0.0	0%
All Days	---	---	13.0	12.2	12.9	12.4	13.2	13.3	12.0	13.4	11.4	0.1	0.2	12.7	12.8	0.1	1%
Total Extinction (Mm-1)																	
Best 20% Days	---	---	21.9	19.9	23.0	21.9	23.1	22.5	21.2	23.1	21.5	0.2	0.1	21.6	22.4	0.8	4%
Worst 20% Days	---	---	67.2	63.2	65.9	58.8	68.2	76.6	60.2	71.6	53.6	0.9	0.3	65.4	67.1	1.7	3%
All Days	---	---	39.8	37.0	39.1	36.8	40.5	42.0	35.9	41.7	33.1	0.3	0.4	38.6	39.4	0.8	2%
Ammonium Sulfate Extinction (Mm-1)																	
Best 20% Days	---	---	4.3	2.6	4.3	3.6	4.8	4.0	3.8	4.6	4.1	0.1	0.3	3.7	4.2	0.5	14%
Worst 20% Days	---	---	15.2	16.0	14.7	17.5	22.5	23.5	19.0	27.4	19.2	1.7	0.0	15.3	22.0	6.7	44%
All Days	---	---	9.9	9.5	9.5	9.9	12.3	12.3	10.4	14.3	9.7	0.6	0.0	9.6	11.8	2.2	23%
Ammonium Nitrate Extinction (Mm-1)																	
Best 20% Days	---	---	0.5	0.4	0.7	0.5	0.6	0.5	0.4	0.5	0.4	0.0	0.4	0.5	0.5	0.0	0%
Worst 20% Days	---	---	1.8	2.1	1.9	1.8	2.2	1.8	1.9	2.0	1.5	0.0	0.3	1.9	1.9	0.0	0%
All Days	---	---	1.3	1.2	1.3	1.2	1.2	1.2	1.0	1.2	0.9	0.0	0.1	1.3	1.2	-0.1	-8%
Particulate Organic Mass Extinction (Mm-1)																	
Best 20% Days	---	---	0.7	0.4	0.7	0.3	0.2	0.2	0.5	0.3	0.5	-0.1	0.1	0.6	0.3	-0.3	-50%
Worst 20% Days	---	---	7.5	3.7	2.5	1.8	1.7	0.5	1.3	0.9	1.0	-0.6	0.0	4.6	1.2	-3.4	-74%
All Days	---	---	2.8	1.7	1.2	1.0	0.7	0.6	0.9	0.7	0.7	-0.2	0.0	1.9	0.8	-1.1	-58%
Elemental Carbon Extinction (Mm-1)																	
Best 20% Days	---	---	0.4	0.5	0.4	0.4	0.7	0.6	0.4	0.6	0.6	0.0	0.2	0.4	0.5	0.1	25%
Worst 20% Days	---	---	3.8	0.9	1.1	0.9	1.5	0.4	0.4	0.8	0.3	-0.2	0.0	1.9	0.8	-1.1	-58%
All Days	---	---	1.5	0.8	0.7	0.9	1.0	0.7	0.5	0.7	0.7	-0.1	0.1	1.0	0.8	-0.2	-20%
Soil Extinction (Mm-1)																	
Best 20% Days	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0%
Worst 20% Days	---	---	0.2	0.2	0.2	0.1	0.4	0.2	0.1	0.2	0.2	0.0	0.5	0.2	0.2	0.0	0%
All Days	---	---	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.3	0.1	0.1	0.0	0%
Coarse Mass Extinction (Mm-1)																	
Best 20% Days	---	---	1.1	1.1	1.1	1.1	1.3	1.2	1.1	1.1	1.0	0.0	0.4	1.1	1.2	0.1	9%
Worst 20% Days	---	---	4.4	4.3	4.5	4.5	6.2	6.4	4.4	4.4	3.3	0.0	0.5	4.4	5.2	0.8	18%
All Days	---	---	2.7	2.5	2.5	2.5	3.0	3.2	2.6	2.3	1.9	0.0	0.6	2.6	2.7	0.1	4%
Sea Salt Extinction (Mm-1)																	
Best 20% Days	---	---	2.9	2.9	3.8	4.1	3.5	4.0	2.9	4.1	3.0	0.1	0.1	3.2	3.7	0.5	16%
Worst 20% Days	---	---	22.3	24.1	29.0	20.3	21.8	31.6	21.1	23.9	16.0	0.1	0.6	25.2	23.7	-1.5	-6%
All Days	---	---	9.5	9.2	11.8	9.3	10.0	11.9	8.5	10.4	7.2	0.1	0.4	10.1	10.0	-0.1	-1%

*Values highlighted in blue (red) indicate statistically significant decreasing (increasing) annual trend. Significance is measured at the 85% confidence level (p-value ≤0.15).

**Values highlighted in blue indicate a decrease in the 5-year average, values highlighted in red indicate an increase.

---" Indicates a missing year that did not meet RHR data completeness criteria.

Figure A.2-1
Simeonof WA, AK (SIME1 Site)
Annual and 5-Year Period Averages
20% Most Impaired Visibility Days

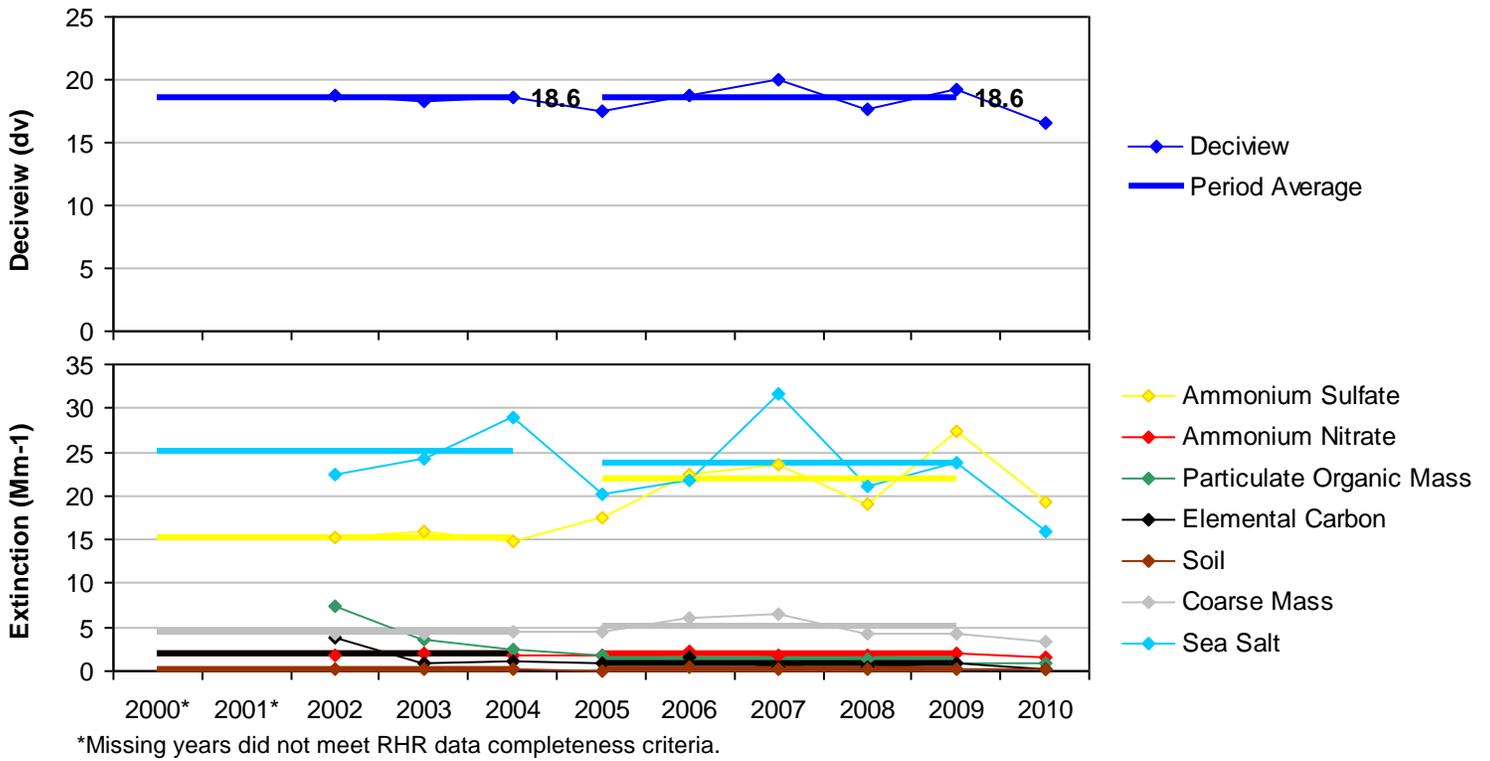


Figure A.2-2
Simeonof WA, AK (SIME1 Site)
Annual and 5-Year Period Averages
20% Least Impaired Visibility Days

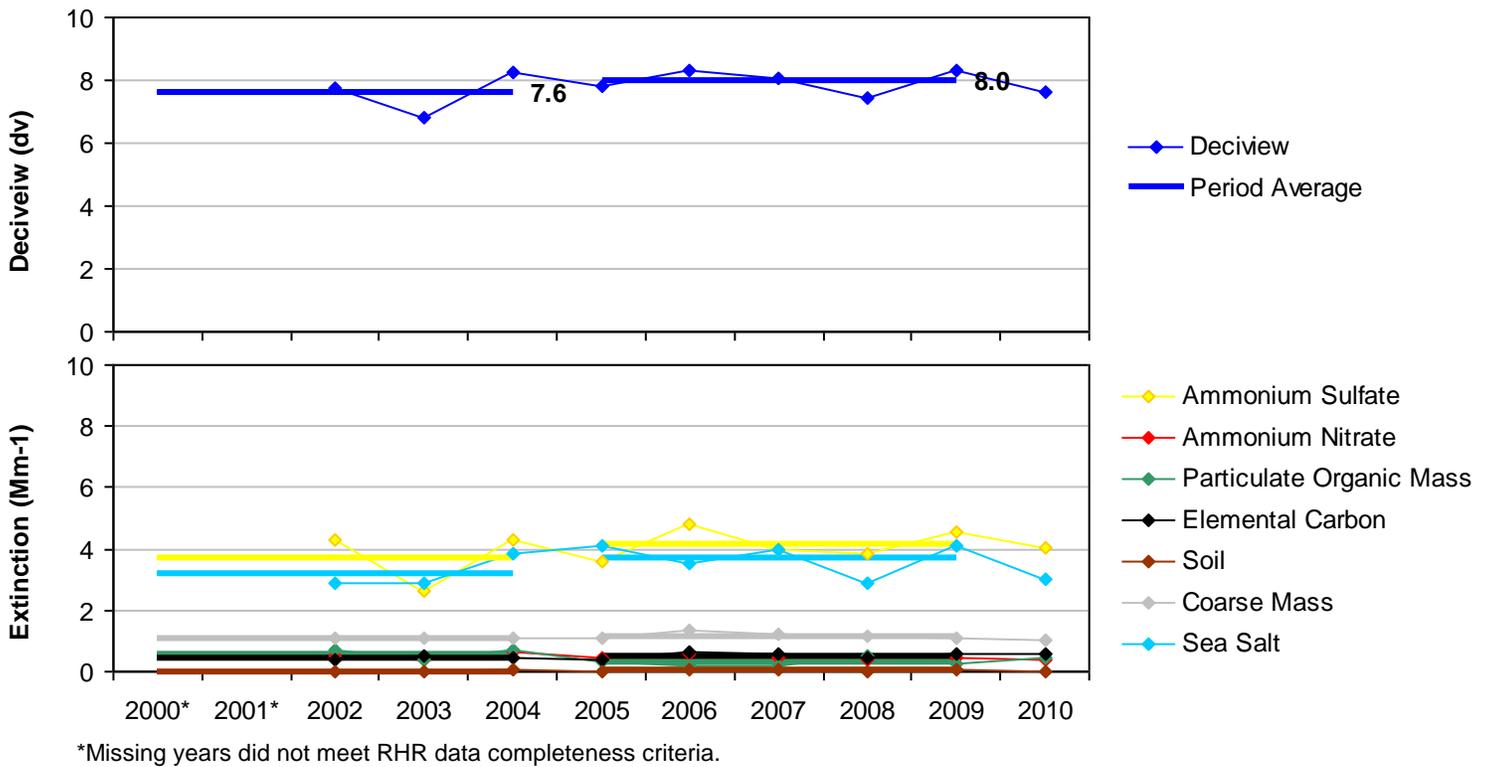
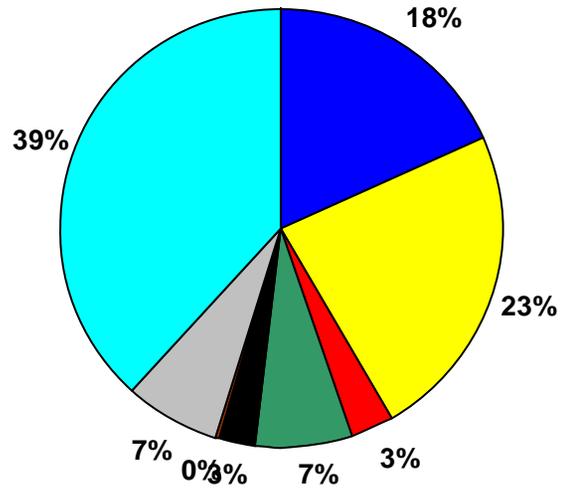
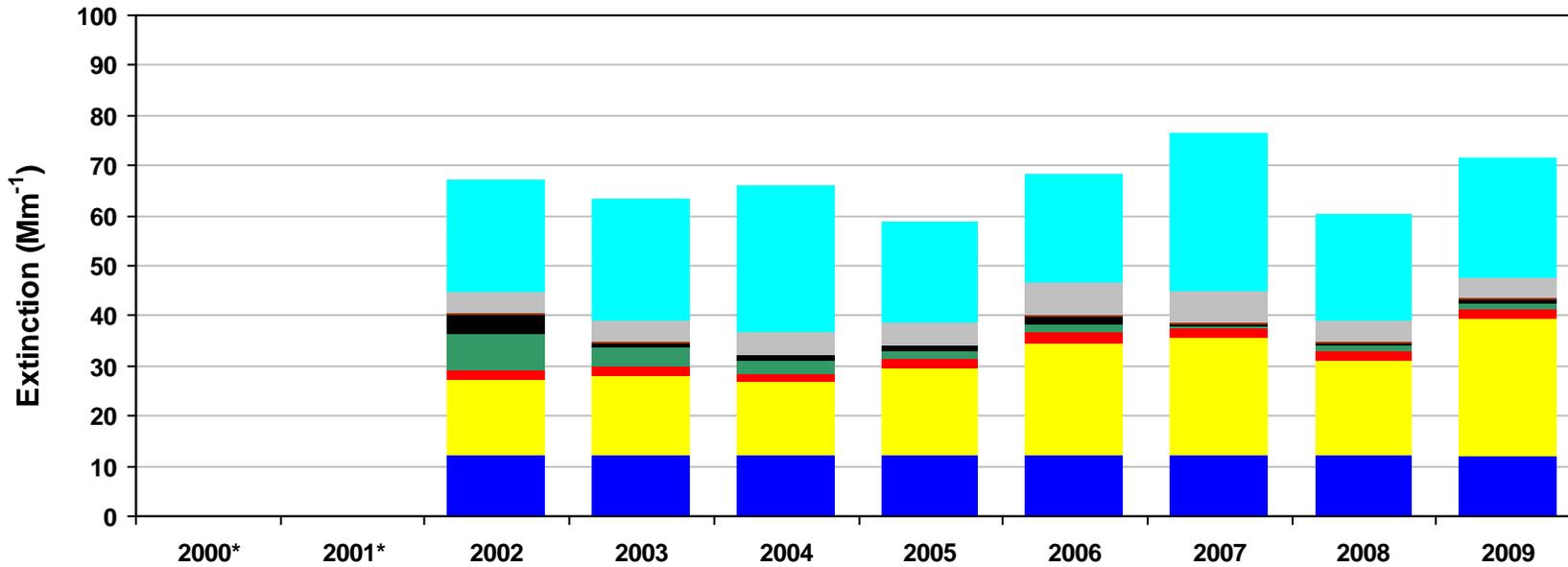
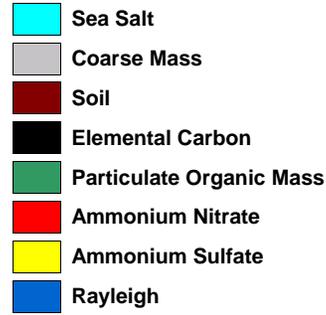
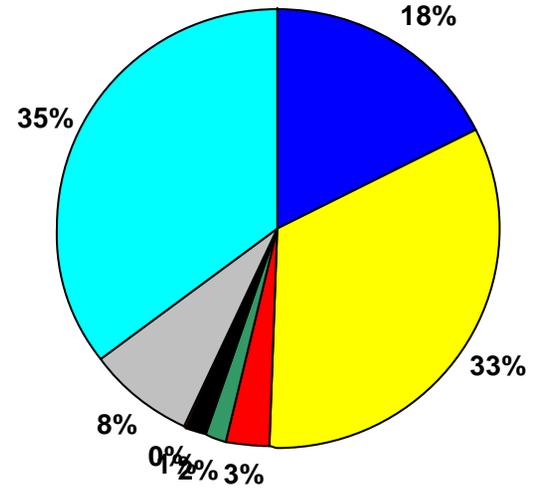


Figure A.2-3
Simeonof WA, AK (SIME1 Site)
20% Most Impaired Visibility Days

2000-2004 Baseline Average
 18.6 dv (18.2 - 18.8 dv)



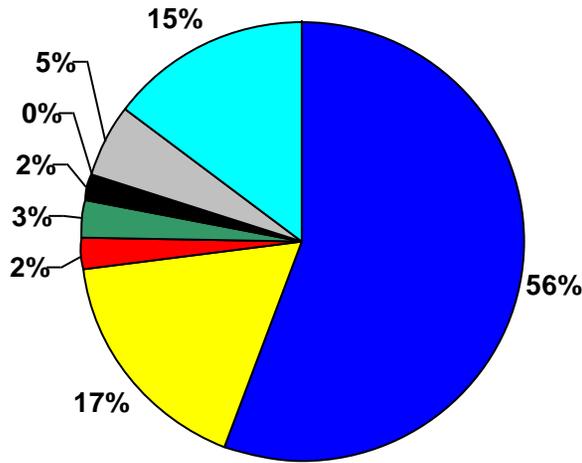
2005-2009 Progress Period Average
 18.6 dv (17.4 - 20 dv)



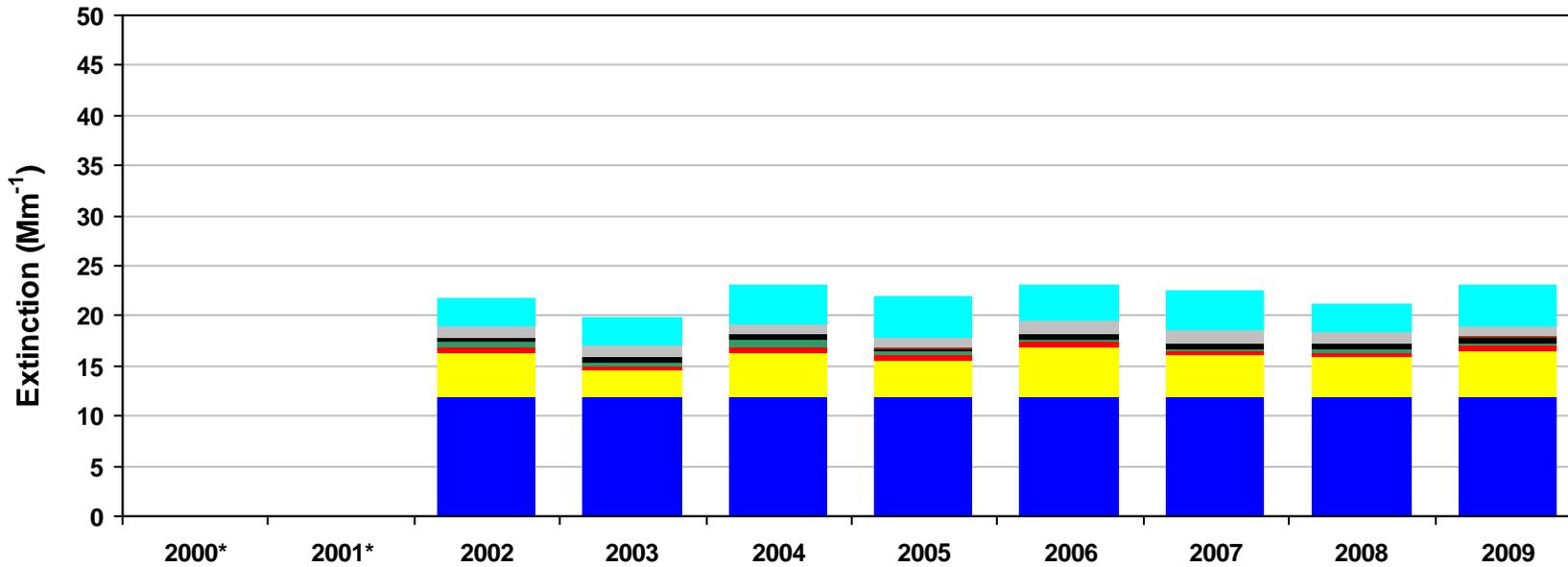
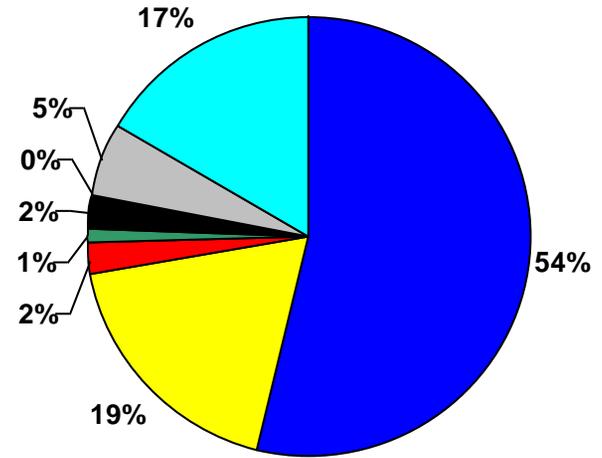
*Missing years did not meet RHR data completeness criteria. Only complete years are included in 5-year average pie charts.

Figure A.2-4
Simeonof WA, AK (SIME1 Site)
20% Least Impaired Visibility Days

2000-2004 Baseline Average
 7.6 dv (6.8 - 8.3 dv)

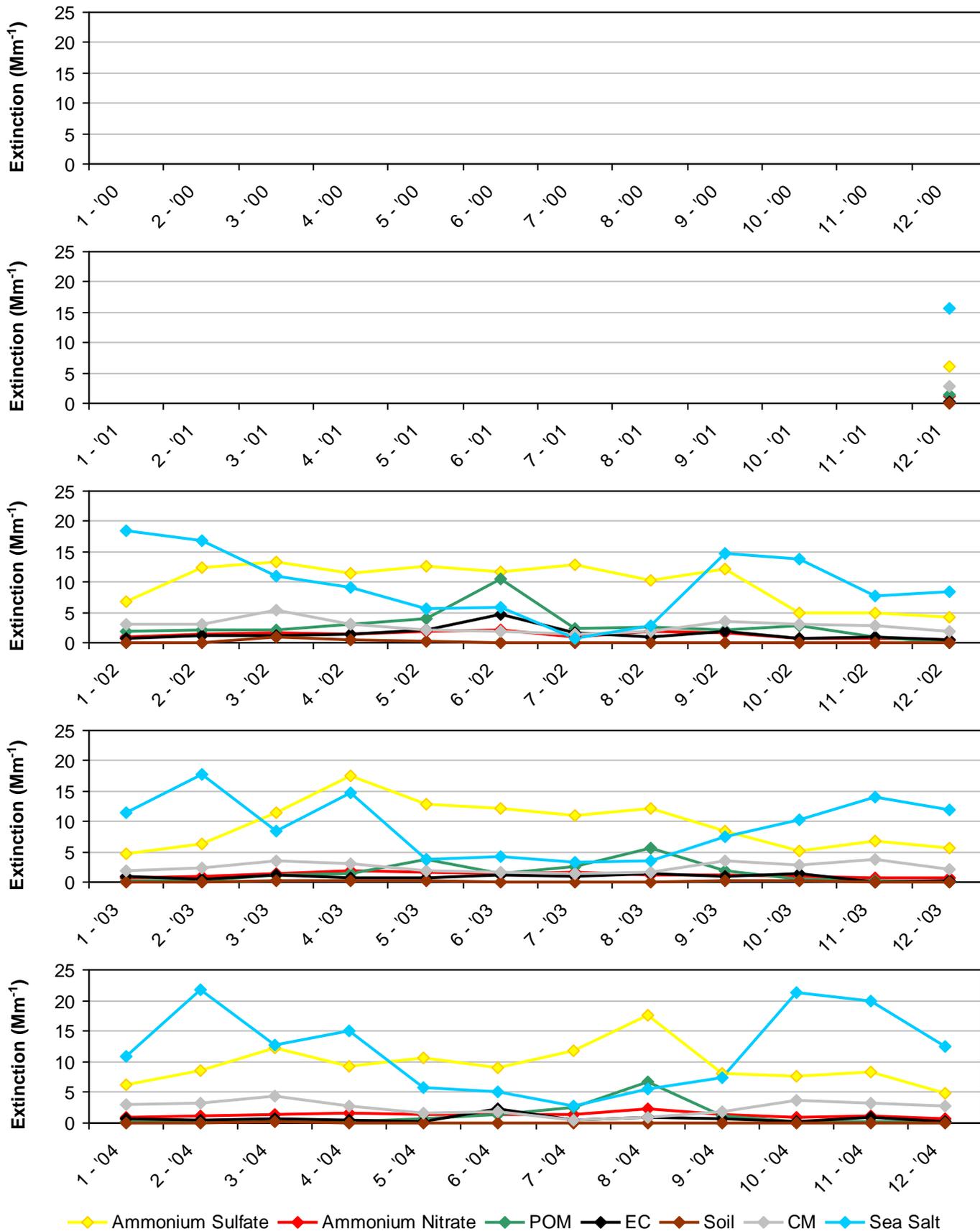


2005-2009 Progress Period Average
 8 dv (7.5 - 8.3 dv)



*Missing years did not meet RHR data completeness criteria. Only complete years are included in 5-year average pie charts.

Figure A.2-5
Simeonof WA, AK (SIME1 Site)
2000-2004 Monthly Average Aerosol Extinction, All Monitored Days



*Note that monthly averages for the years 2000 and 2001 are shown here, but these years did not meet RHR data completeness criteria.

Figure A.2-6
Simeonof WA, AK (SIME1 Site)
2005-2009 Monthly Average Aerosol Extinction, All Monitored Days

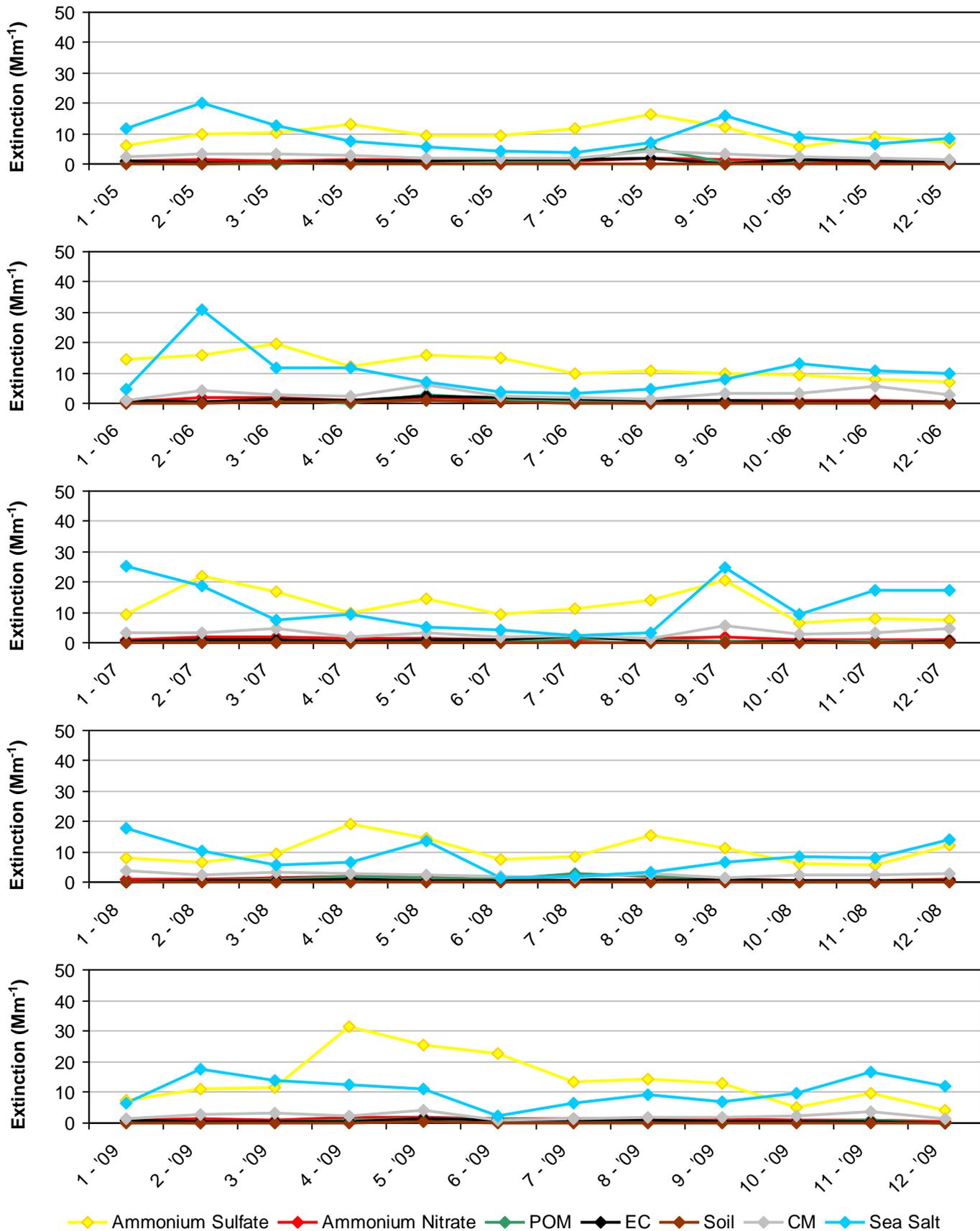
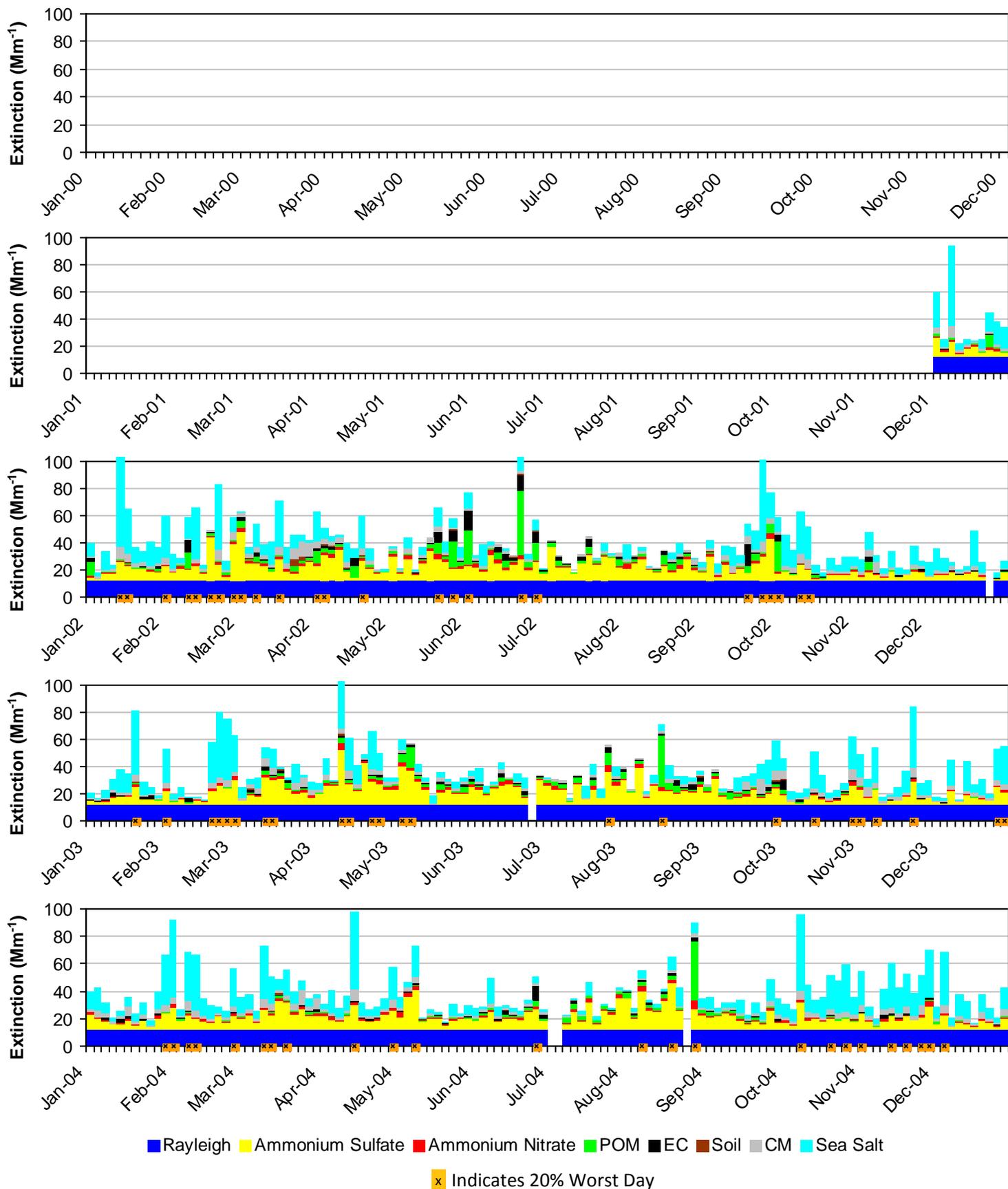
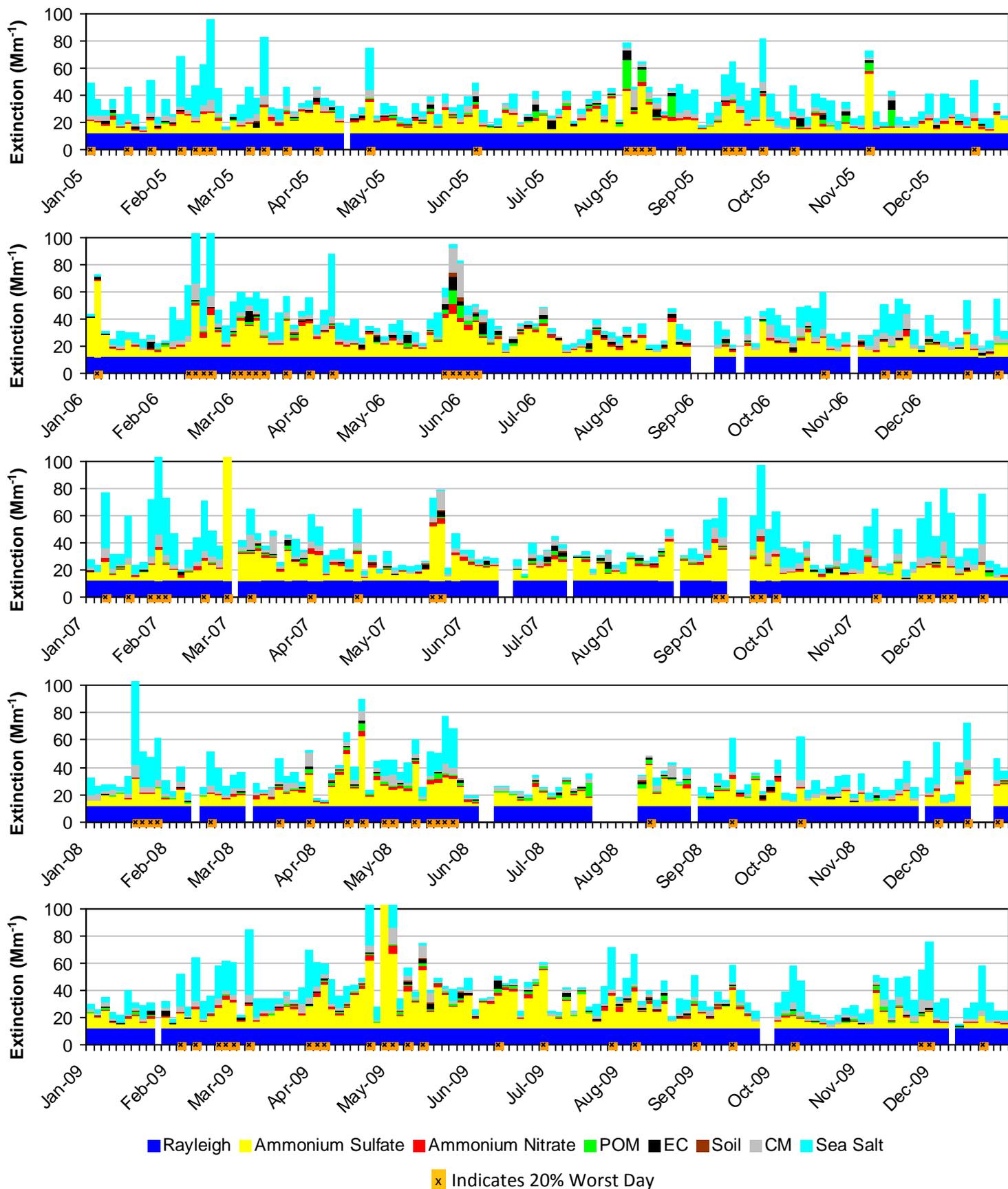


Figure A.2-7
Simeonof WA, AK (SIME1 Site)
2000-2004 Progress Period Extinction, All Sampled Days



*Note that daily averages for the years 2000 and 2001 are shown here, but these years did not meet RHR data completeness criteria.

Figure A.2-8
Simeonof WA, AK (SIME1 Site)
2005-2009 Progress Period Extinction, All Sampled Days



A.3. TRAPPER CREEK (TRCR1)

The following tables and figures are presented in this section for Trapper Creek represented by the TRCR1 IMPROVE Monitor:

- **Table A.3-1: Annual Averages, 5-Year Period Averages, and Trends:** Table of averages and other metrics for the 20% least impaired days, the 20% most impaired days, and all sampled days is presented.
- **Figure A.3-1: Annual and 5-Year Period Averages for the 20% Most Impaired Visibility Days:** Line graphs depicting annual and period averages by component are presented.
- **Figure A.3-2: Annual and 5-Year Period Averages for the 20% Least Impaired Visibility Days:** Line graphs depicting annual and period averages by component are presented.
- **Figure A.3-3: 20% Most Impaired Visibility Days:** Pie charts depicting period averages and stacked bar charts depicting annual averages by component for the 20% most impaired days are presented.
- **Figure A.3-4: 20% Least Impaired Visibility Days:** Pie charts depicting period averages and stacked bar charts depicting annual averages by component are presented.
- **Figure A.3-5: 2000-2004 Monthly Average Aerosol Extinction, All Monitored Days:** Line graphs depicting monthly averages by year and component for the baseline period are presented.
- **Figure A.3-6: 2005-2009 Monthly Average Aerosol Extinction, All Monitored Days:** Line graphs depicting monthly averages by year and component for the progress period are presented.
- **Figure A.3-7: 2000-2004 Progress Period Extinction, All Sampled Days:** Stacked bar charts depicting daily averages by year and component for the baseline period are presented.
- **Figure A.3-8: 2000-2004 Progress Period Extinction, All Sampled Days:** Stacked bar charts depicting daily averages by year and component for the progress period are presented.

Table A.3-1
Trapper Creek, AK (TRCR1 Site)
Annual Averages, 5-Year Period Averages and Trends

Group	Baseline Period					Progress Period					2010	2000-2009 Trend Statistics*		Period Averages**			
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009		Slope (change/yr.)	p-value	Baseline (B)	Progress (P)	Difference (P -B)	Percent Change
Deciview (dv)																	
Best 20% Days	---	---	3.4	3.2	3.7	3.2	4.0	4.0	4.2	4.1	3.6	0.1	0.0	3.5	3.9	0.4	11%
Worst 20% Days	---	---	11.6	11.1	12.2	13.0	11.6	9.9	11.1	13.8	9.9	0.1	0.5	11.6	11.9	0.3	3%
All Days	---	---	6.8	6.6	6.9	7.1	7.5	6.6	7.1	8.1	6.4	0.2	0.1	6.7	7.3	0.6	9%
Total Extinction (Mm-1)																	
Best 20% Days	---	---	14.1	13.8	14.5	13.8	14.9	15.0	15.2	15.2	14.4	0.2	0.0	14.1	14.8	0.7	5%
Worst 20% Days	---	---	33.0	30.7	36.4	44.7	32.3	27.2	31.2	42.7	27.8	0.0	0.6	33.4	35.6	2.2	7%
All Days	---	---	20.8	20.2	21.4	23.2	22.0	19.7	21.1	24.6	19.7	0.3	0.2	20.8	22.1	1.3	6%
Ammonium Sulfate Extinction (Mm-1)																	
Best 20% Days	---	---	1.0	0.8	1.0	0.9	1.5	1.4	1.4	1.7	1.2	0.1	0.0	0.9	1.4	0.5	56%
Worst 20% Days	---	---	8.0	7.9	6.6	8.2	12.0	7.9	9.9	14.3	6.7	0.7	0.1	7.5	10.4	2.9	39%
All Days	---	---	3.7	3.5	3.1	3.7	5.5	3.6	4.5	6.0	3.4	0.2	0.1	3.4	4.7	1.3	38%
Ammonium Nitrate Extinction (Mm-1)																	
Best 20% Days	---	---	0.1	0.1	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.0	0.1	0.2	0.2	0.0	0%
Worst 20% Days	---	---	1.1	0.9	1.2	1.2	1.0	0.9	1.0	1.0	0.7	0.0	0.3	1.1	1.0	-0.1	-9%
All Days	---	---	0.5	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.5	0.0	0%
Particulate Organic Mass Extinction (Mm-1)																	
Best 20% Days	---	---	0.4	0.3	0.4	0.2	0.5	0.5	0.6	0.5	0.4	0.0	0.0	0.4	0.5	0.1	25%
Worst 20% Days	---	---	8.3	6.9	12.0	18.3	2.6	3.4	4.3	9.4	4.8	-0.5	0.5	9.1	7.6	-1.5	-17%
All Days	---	---	2.6	2.4	3.5	4.7	1.5	1.7	2.0	3.0	1.9	-0.1	0.5	2.8	2.6	-0.2	-7%
Elemental Carbon Extinction (Mm-1)																	
Best 20% Days	---	---	0.2	0.3	0.4	0.1	0.2	0.2	0.2	0.2	0.2	0.0	0.5	0.3	0.2	-0.1	-33%
Worst 20% Days	---	---	1.3	1.3	1.4	2.1	0.9	0.9	1.0	1.2	1.1	0.0	0.4	1.3	1.2	-0.1	-8%
All Days	---	---	0.6	0.7	0.7	0.8	0.6	0.5	0.5	0.6	0.5	0.0	0.1	0.6	0.6	0.0	0%
Soil Extinction (Mm-1)																	
Best 20% Days	---	---	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0%
Worst 20% Days	---	---	0.4	0.2	0.3	0.1	0.6	0.2	0.3	0.4	0.3	0.0	0.4	0.3	0.3	0.0	0%
All Days	---	---	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.2	0.0	0.3	0.2	0.2	0.0	0%
Coarse Mass Extinction (Mm-1)																	
Best 20% Days	---	---	0.3	0.2	0.3	0.2	0.4	0.5	0.5	0.3	0.3	0.0	0.1	0.3	0.4	0.1	33%
Worst 20% Days	---	---	1.4	1.5	2.0	1.8	1.8	1.4	1.6	3.8	1.6	0.1	0.3	1.6	2.1	0.5	31%
All Days	---	---	0.9	0.9	0.9	1.0	1.1	0.9	1.0	1.8	1.0	0.0	0.0	0.9	1.2	0.3	33%
Sea Salt Extinction (Mm-1)																	
Best 20% Days	---	---	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.3	0.1	0.1	0.0	0%
Worst 20% Days	---	---	0.5	0.0	0.9	1.0	1.5	0.4	1.2	0.7	0.5	0.1	0.2	0.5	1.0	0.5	100%
All Days	---	---	0.2	0.2	0.5	0.4	0.5	0.3	0.5	0.4	0.3	0.0	0.2	0.3	0.4	0.1	33%

*Values highlighted in blue (red) indicate statistically significant decreasing (increasing) annual trend. Significance is measured at the 85% confidence level (p-value ≤0.15).

**Values highlighted in blue indicate a decrease in the 5-year average, values highlighted in red indicate an increase.

---" Indicates a missing year that did not meet RHR data completeness criteria.

Figure A.3-1
Trapper Creek, AK (TRCR1 Site)
Annual and 5-Year Period Averages
20% Most Impaired Visibility Days

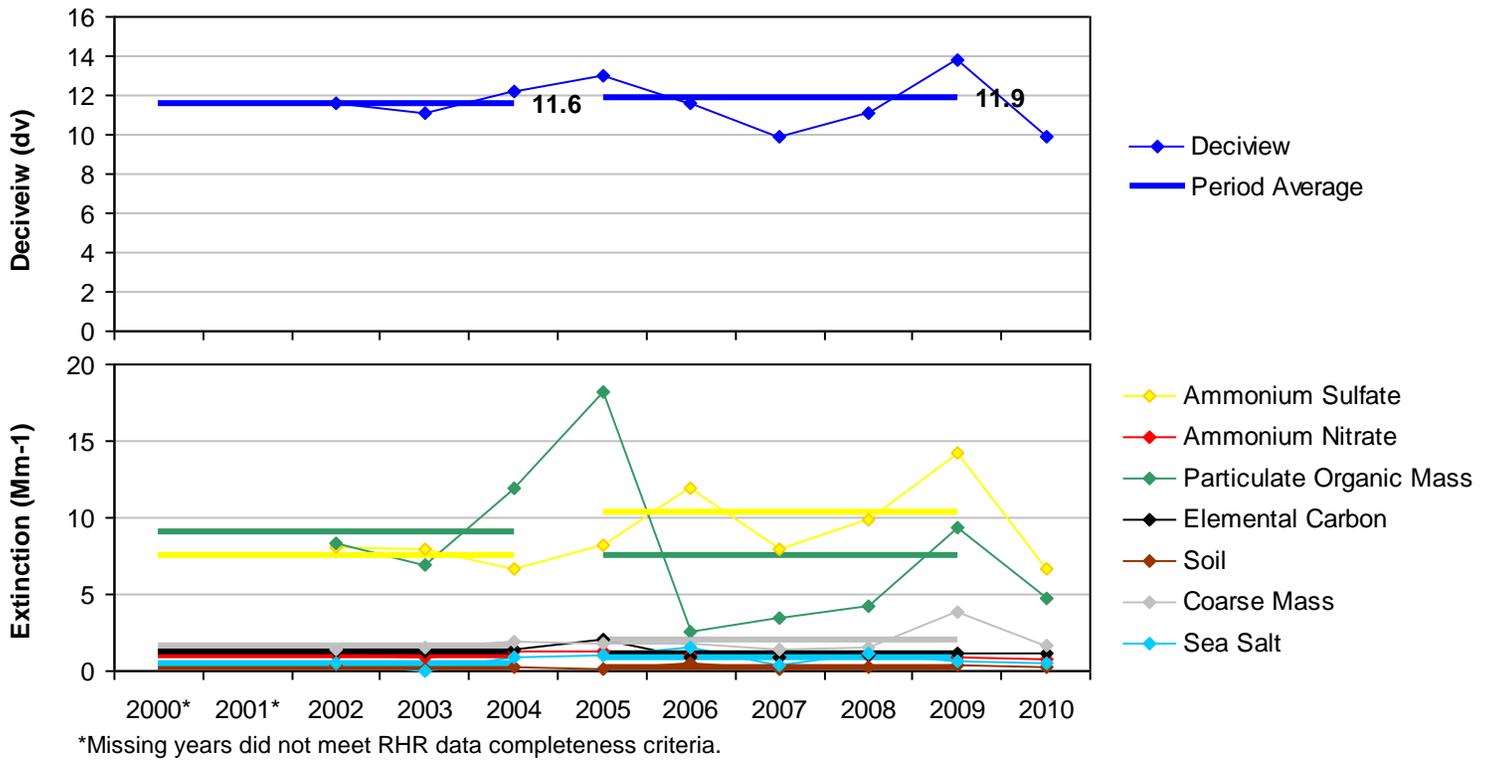


Figure A.3-2
Trapper Creek, AK (TRCR1 Site)
Annual and 5-Year Period Averages
20% Least Impaired Visibility Days

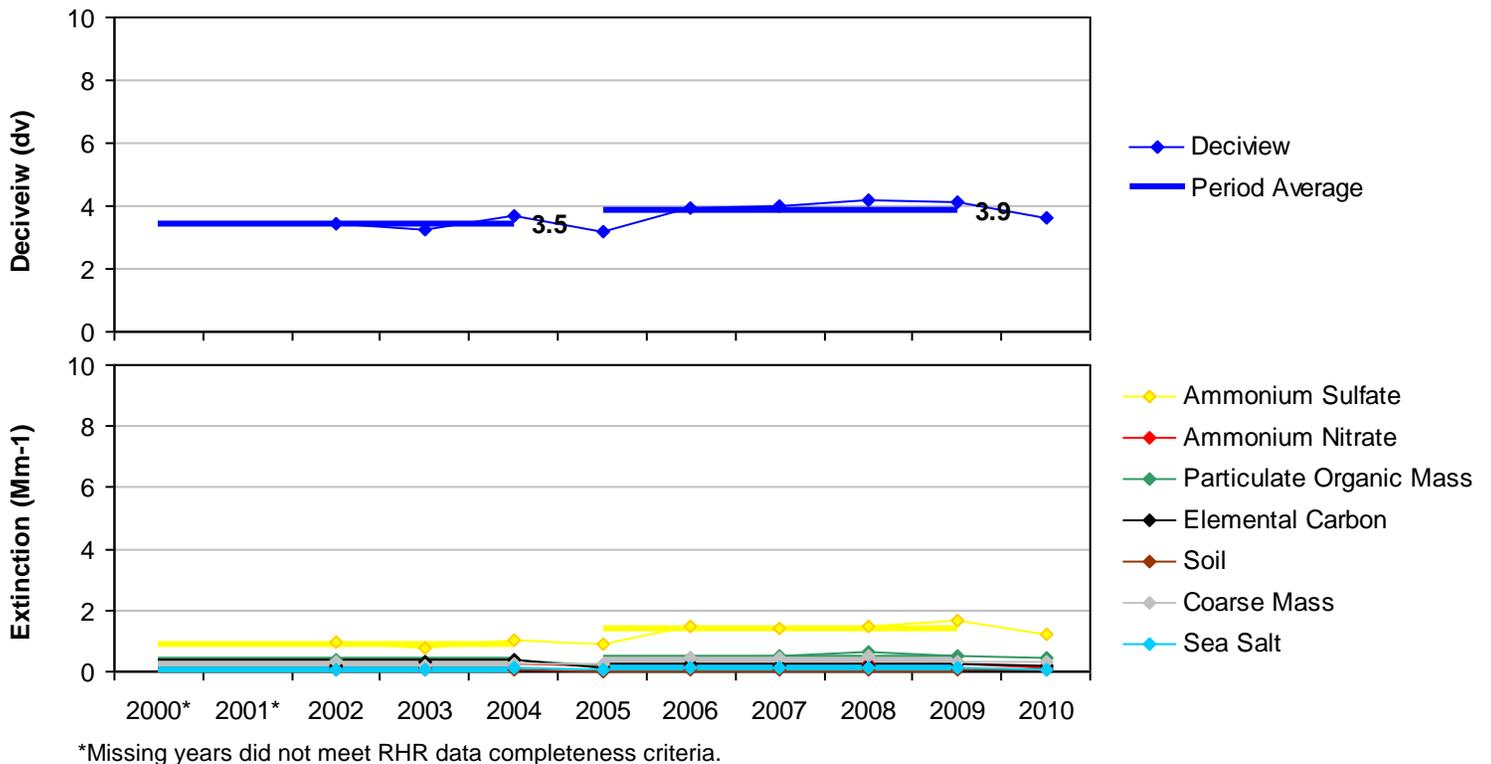
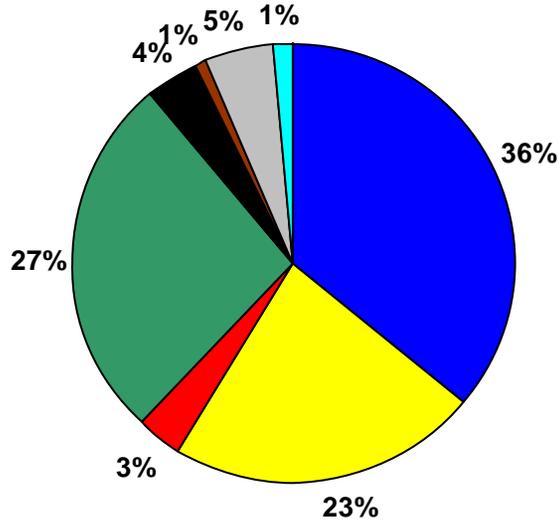
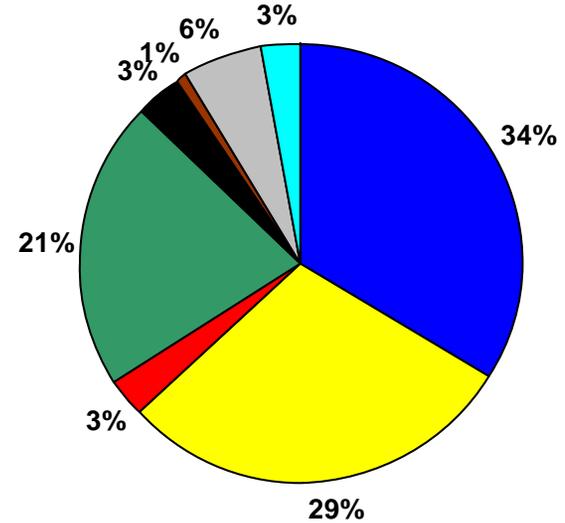


Figure A.3-3
Trapper Creek, AK (TRCR1 Site)
20% Most Impaired Visibility Days

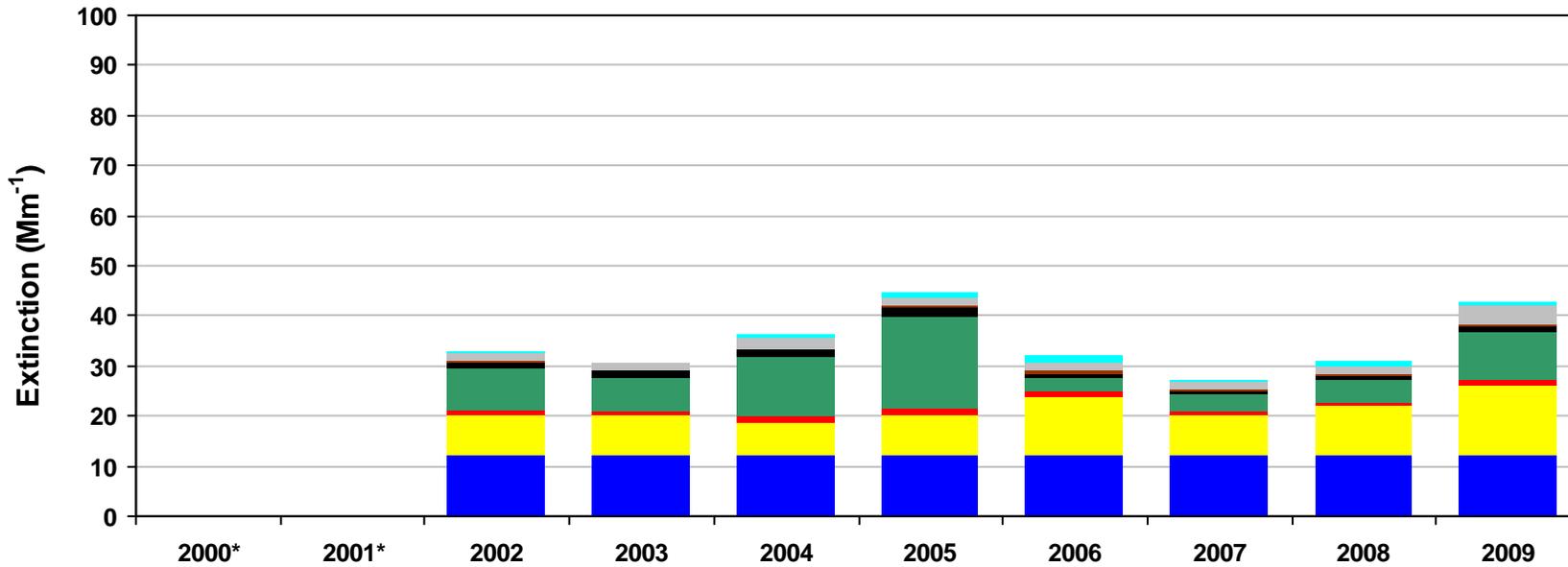
2000-2004 Baseline Average
 11.6 dv (11.1 - 12.2 dv)



2005-2009 Progress Period Average
 11.9 dv (9.9 - 13.8 dv)



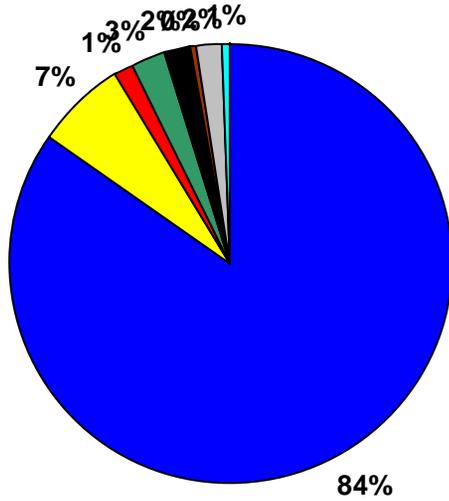
- Sea Salt
- Coarse Mass
- Soil
- Elemental Carbon
- Particulate Organic Mass
- Ammonium Nitrate
- Ammonium Sulfate
- Rayleigh



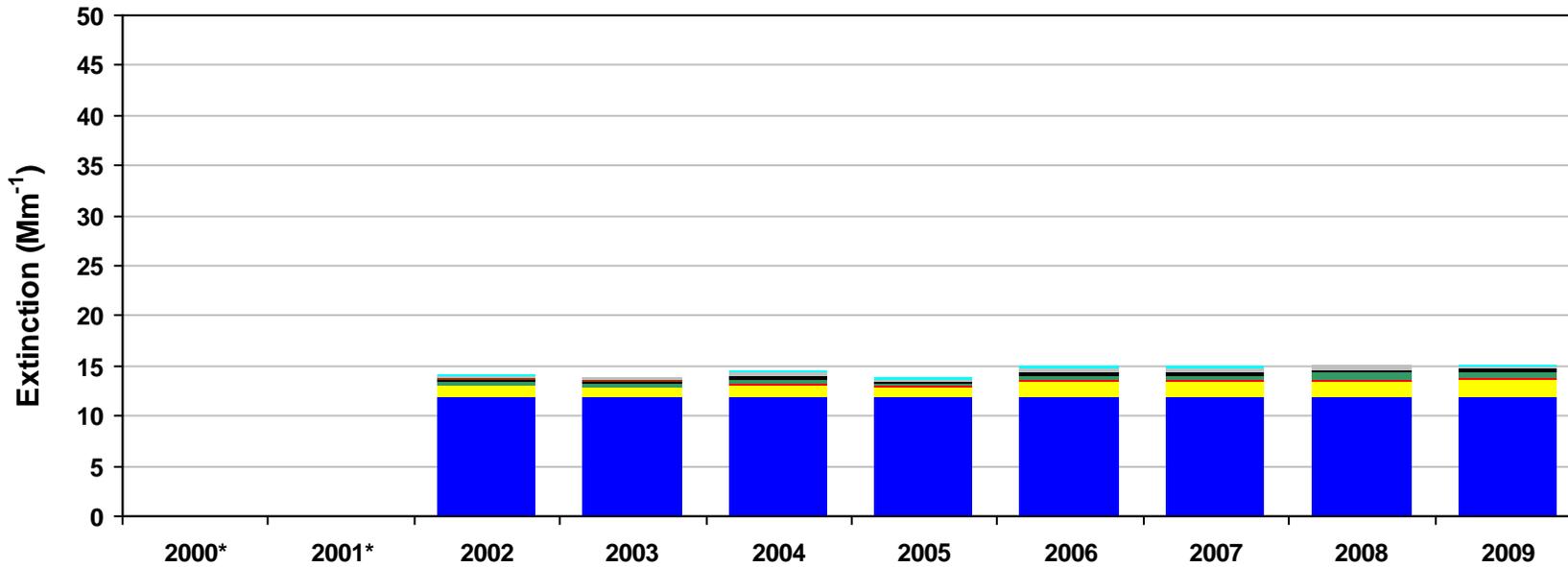
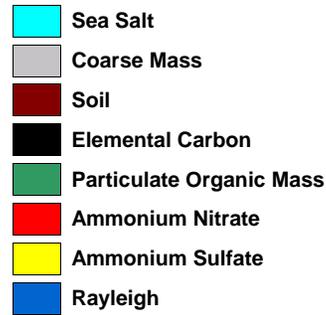
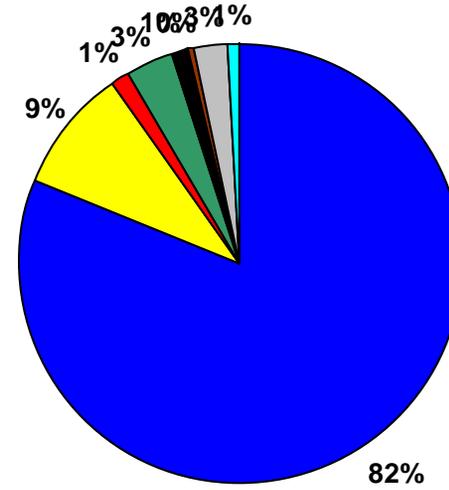
*Missing years did not meet RHR data completeness criteria. Only complete years are included in 5-year average pie charts.

Figure A.3-4
Trapper Creek, AK (TRCR1 Site)
20% Least Impaired Visibility Days

2000-2004 Baseline Average
 3.5 dv (3.2 - 3.7 dv)

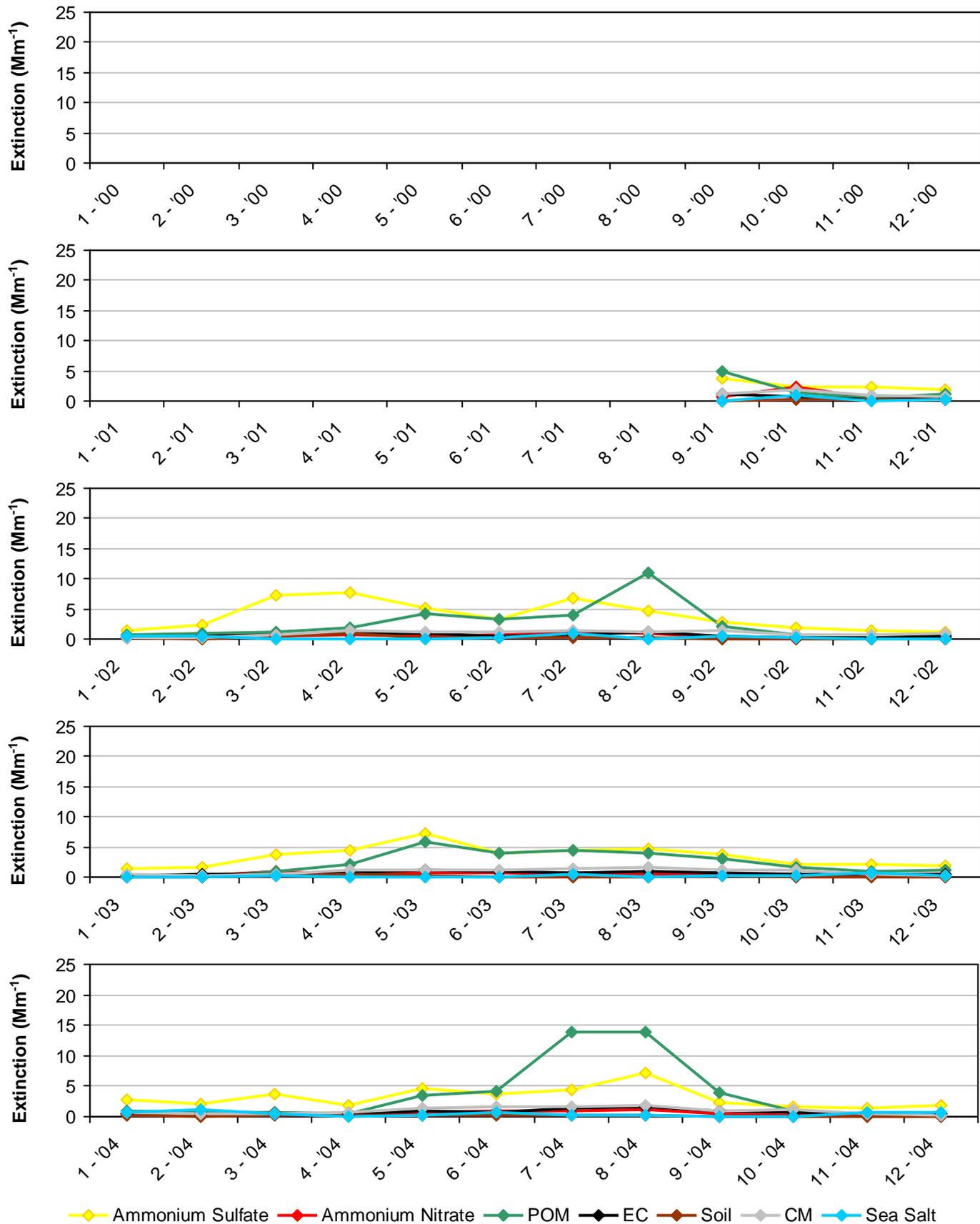


2005-2009 Progress Period Average
 3.9 dv (3.2 - 4.2 dv)



*Missing years did not meet RHR data completeness criteria. Only complete years are included in 5-year average pie charts.

Figure A.3-5
Trapper Creek, AK (TRCR1 Site)
2000-2004 Monthly Average Aerosol Extinction, All Monitored Days



*Note that monthly averages for the years 2000 and 2001 are shown here, but these years did not meet RHR data completeness criteria.

Figure A.3-6
Trapper Creek, AK (TRCR1 Site)
2005-2009 Monthly Average Aerosol Extinction, All Monitored Days

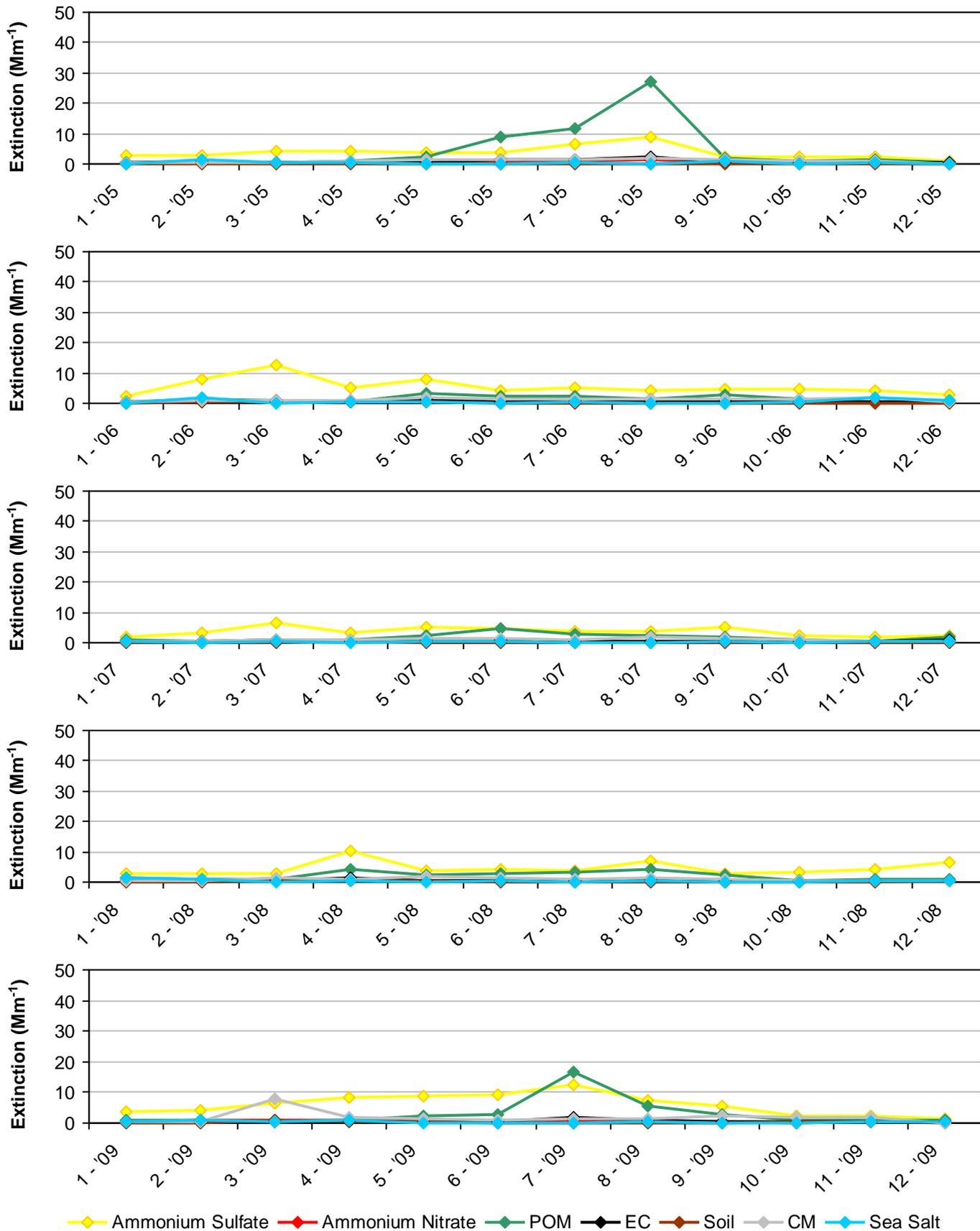
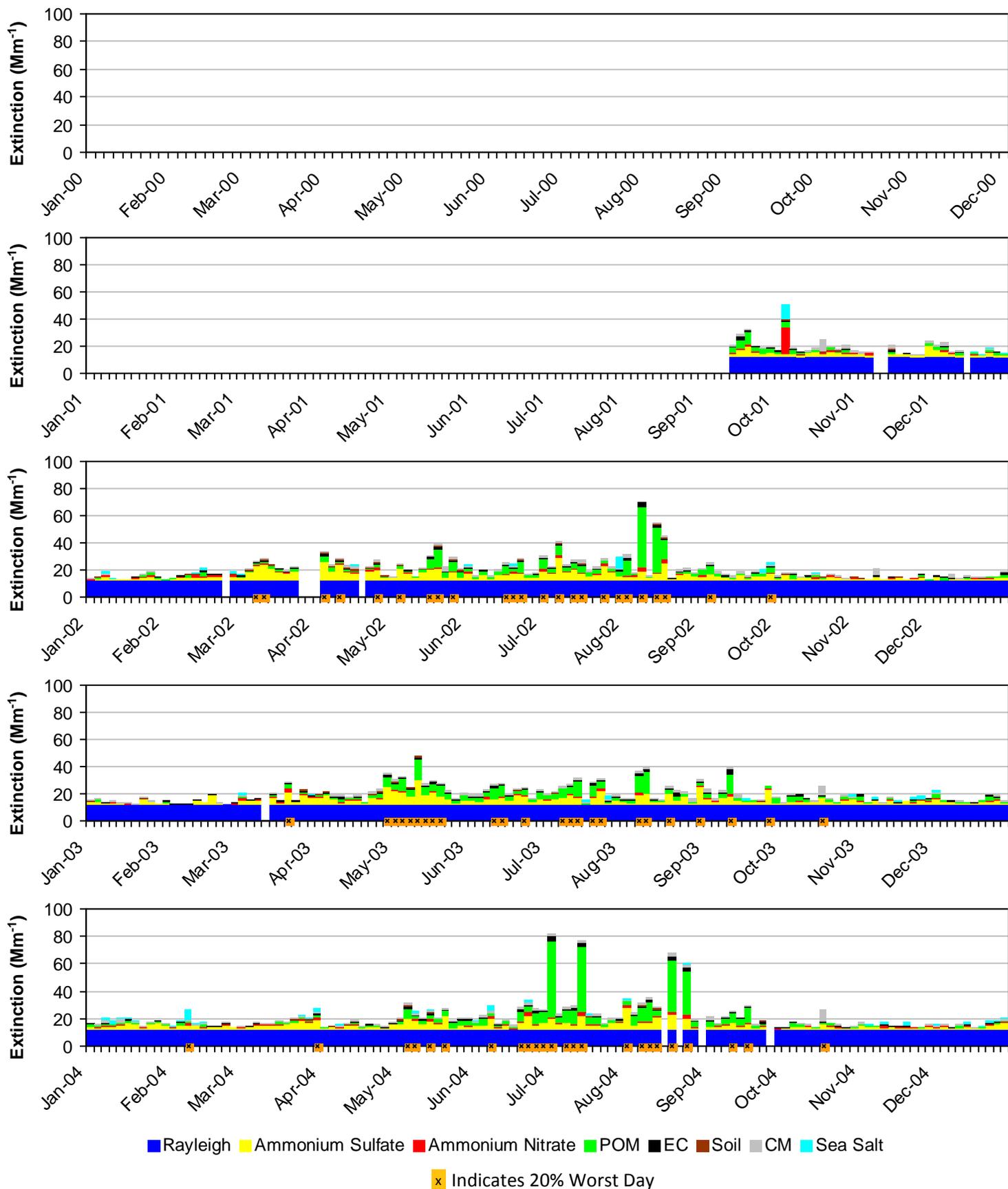
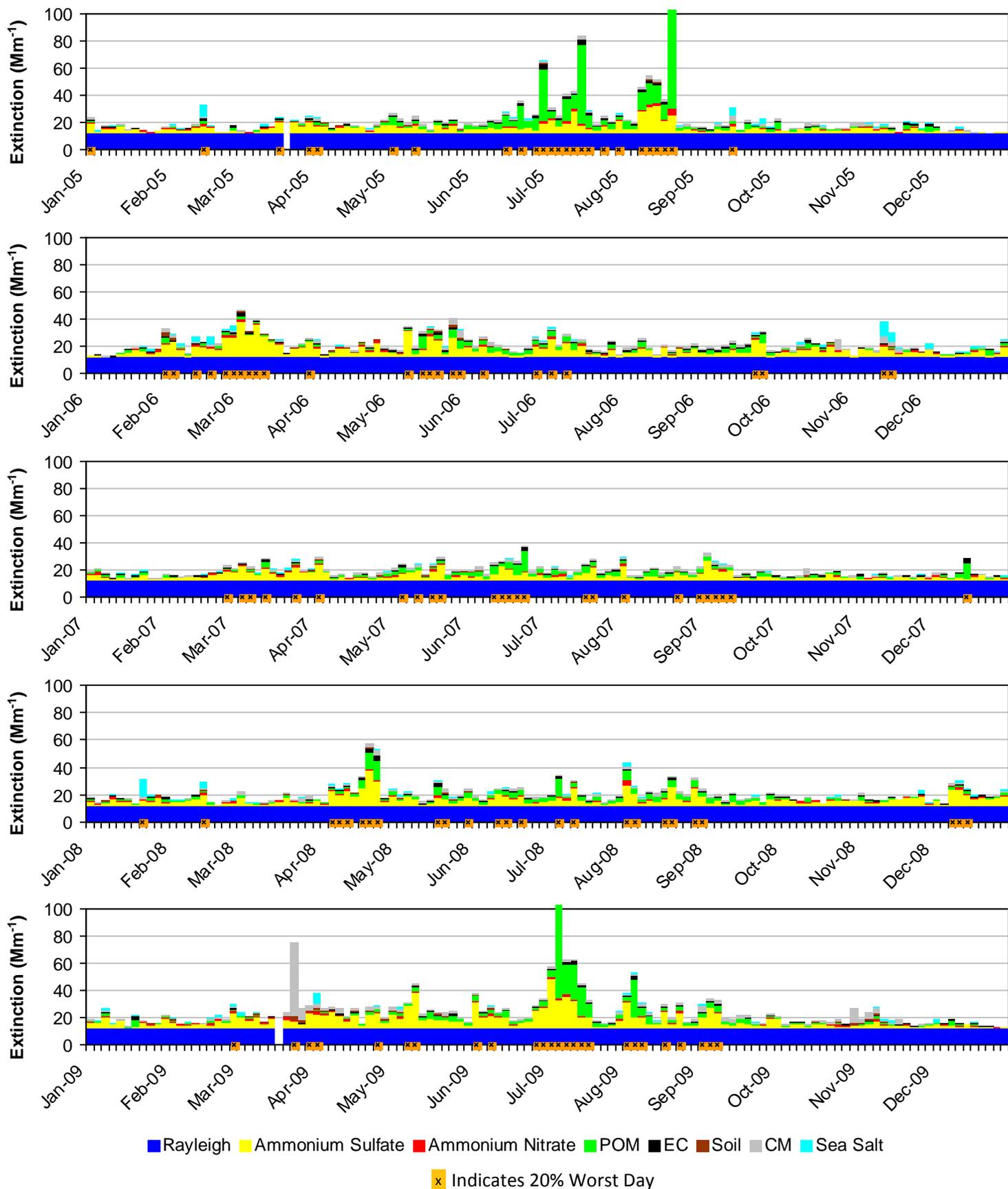


Figure A.3-7
Trapper Creek, AK (TRCR1 Site)
2000-2004 Progress Period Extinction, All Sampled Days



*Note that daily averages for the years 2000 and 2001 are shown here, but these years did not meet RHR data completeness criteria.

Figure A.3-8
Trapper Creek, AK (TRCR1 Site)
2005-2009 Progress Period Extinction, All Sampled Days



A.4. TUXEDNI WA (TUXE1)

The following tables and figures are presented in this section for the Tuxedni Wilderness Area represented by the TUXE1 IMPROVE Monitor:

- **Table A.4-1: Annual Averages, 5-Year Period Averages, and Trends:** Table of averages and other metrics for the 20% least impaired days, the 20% most impaired days, and all sampled days is presented.
- **Figure A.4-1: Annual and 5-Year Period Averages for the 20% Most Impaired Visibility Days:** Line graphs depicting annual and period averages by component are presented.
- **Figure A.4-2: Annual and 5-Year Period Averages for the 20% Least Impaired Visibility Days:** Line graphs depicting annual and period averages by component are presented.
- **Figure A.4-3: 20% Most Impaired Visibility Days:** Pie charts depicting period averages and stacked bar charts depicting annual averages by component for the 20% most impaired days are presented.
- **Figure A.4-4: 20% Least Impaired Visibility Days:** Pie charts depicting period averages and stacked bar charts depicting annual averages by component are presented.
- **Figure A.4-5: 2000-2004 Monthly Average Aerosol Extinction, All Monitored Days:** Line graphs depicting monthly averages by year and component for the baseline period are presented.
- **Figure A.4-6: 2005-2009 Monthly Average Aerosol Extinction, All Monitored Days:** Line graphs depicting monthly averages by year and component for the progress period are presented.
- **Figure A.4-7: 2000-2004 Progress Period Extinction, All Sampled Days:** Stacked bar charts depicting daily averages by year and component for the baseline period are presented.
- **Figure A.4-8: 2000-2004 Progress Period Extinction, All Sampled Days:** Stacked bar charts depicting daily averages by year and component for the progress period are presented.

**Table A.4-1
Tuxedni WA, AK (TUXE1 Site)
Annual Averages, 5-Year Period Averages and Trends**

Group	Baseline Period					Progress Period					2010	2000-2009 Trend Statistics*		Period Averages**			
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009		Slope (change/yr.)	p-value	Baseline (B)	Progress (P)	Difference (P-B)	Percent Change
Deciview (dv)																	
Best 20% Days	---	---	4.2	3.8	4.0	3.9	4.4	3.6	4.1	4.3	3.8	0.0	0.4	4.0	4.1	0.1	3%
Worst 20% Days	---	---	15.5	12.6	14.2	14.2	13.9	12.6	12.9	14.0	10.6	-0.2	0.1	14.1	13.5	-0.6	-4%
All Days	---	---	8.8	7.6	8.4	8.2	8.6	7.6	7.8	8.7	7.0	0.0	0.5	8.3	8.2	-0.1	-1%
Total Extinction (Mm-1)																	
Best 20% Days	---	---	15.3	14.6	14.9	14.8	15.6	14.4	15.1	15.5	14.6	0.1	0.4	14.9	15.1	0.2	1%
Worst 20% Days	---	---	51.3	36.2	42.9	43.5	42.1	37.0	38.1	41.5	29.1	-0.8	0.2	43.5	40.4	-3.1	-7%
All Days	---	---	27.0	22.7	25.0	24.7	25.4	22.8	23.2	25.6	20.8	-0.1	0.6	24.9	24.3	-0.6	-2%
Ammonium Sulfate Extinction (Mm-1)																	
Best 20% Days	---	---	1.1	1.0	1.1	1.2	1.4	1.1	1.4	1.7	1.4	0.1	0.0	1.1	1.4	0.3	27%
Worst 20% Days	---	---	8.7	9.8	7.7	10.7	16.2	10.3	12.0	15.9	7.4	1.0	0.0	8.7	13.0	4.3	49%
All Days	---	---	4.7	4.4	3.8	5.0	6.9	4.8	5.5	7.1	4.2	0.3	0.0	4.3	5.9	1.6	37%
Ammonium Nitrate Extinction (Mm-1)																	
Best 20% Days	---	---	0.3	0.4	0.4	0.3	0.3	0.2	0.2	0.3	0.2	0.0	0.0	0.4	0.3	-0.1	-25%
Worst 20% Days	---	---	2.7	1.3	1.3	1.4	1.3	1.3	1.3	1.1	0.8	0.0	0.0	1.8	1.3	-0.5	-28%
All Days	---	---	1.2	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.0	0.0	0.9	0.7	-0.2	-22%
Particulate Organic Mass Extinction (Mm-1)																	
Best 20% Days	---	---	0.5	0.3	0.3	0.3	0.4	0.2	0.3	0.1	0.1	0.0	0.0	0.4	0.3	-0.1	-25%
Worst 20% Days	---	---	12.3	5.5	8.8	6.5	2.9	4.9	3.3	2.6	3.0	-1.2	0.0	8.9	4.0	-4.9	-55%
All Days	---	---	3.8	2.2	3.2	2.2	1.2	1.5	1.2	1.1	1.1	-0.3	0.0	3.0	1.5	-1.5	-50%
Elemental Carbon Extinction (Mm-1)																	
Best 20% Days	---	---	0.1	0.2	0.3	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.2	0.1	-0.1	-50%
Worst 20% Days	---	---	1.1	1.0	1.4	1.4	1.0	0.9	0.6	0.5	0.4	-0.1	0.0	1.2	0.9	-0.3	-25%
All Days	---	---	0.7	0.5	0.8	0.6	0.5	0.3	0.3	0.3	0.2	-0.1	0.0	0.7	0.4	-0.3	-43%
Soil Extinction (Mm-1)																	
Best 20% Days	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.0	0.0	0.0	0%
Worst 20% Days	---	---	0.2	0.1	0.1	0.1	1.5	0.2	0.2	0.3	0.2	0.0	0.3	0.1	0.4	0.3	>100%
All Days	---	---	0.1	0.1	0.1	0.1	0.4	0.1	0.1	0.1	0.1	0.0	0.4	0.1	0.2	0.1	100%
Coarse Mass Extinction (Mm-1)																	
Best 20% Days	---	---	0.4	0.3	0.3	0.4	0.6	0.3	0.4	0.5	0.3	0.0	0.2	0.3	0.5	0.2	67%
Worst 20% Days	---	---	2.9	2.4	2.2	2.8	3.6	2.3	1.7	3.9	1.9	0.0	0.6	2.5	2.9	0.4	16%
All Days	---	---	1.3	1.3	1.1	1.3	1.6	1.1	0.9	1.9	0.9	0.0	0.5	1.2	1.4	0.2	17%
Sea Salt Extinction (Mm-1)																	
Best 20% Days	---	---	0.7	0.4	0.5	0.5	0.7	0.5	0.7	0.8	0.5	0.0	0.2	0.5	0.6	0.1	20%
Worst 20% Days	---	---	11.3	4.0	9.4	8.7	3.7	5.1	7.0	5.1	3.3	-0.7	0.2	8.2	5.9	-2.3	-28%
All Days	---	---	3.3	1.5	3.2	2.7	2.1	2.2	2.5	2.4	1.6	-0.1	0.3	2.7	2.4	-0.3	-11%

*Values highlighted in blue (red) indicate statistically significant decreasing (increasing) annual trend. Significance is measured at the 85% confidence level (p-value ≤0.15).

**Values highlighted in blue indicate a decrease in the 5-year average, values highlighted in red indicate an increase.

---" Indicates a missing year that did not meet RHR data completeness criteria.

Figure A.4-1
Tuxedni WA, AK (TUXE1 Site)
Annual and 5-Year Period Averages
20% Most Impaired Visibility Days

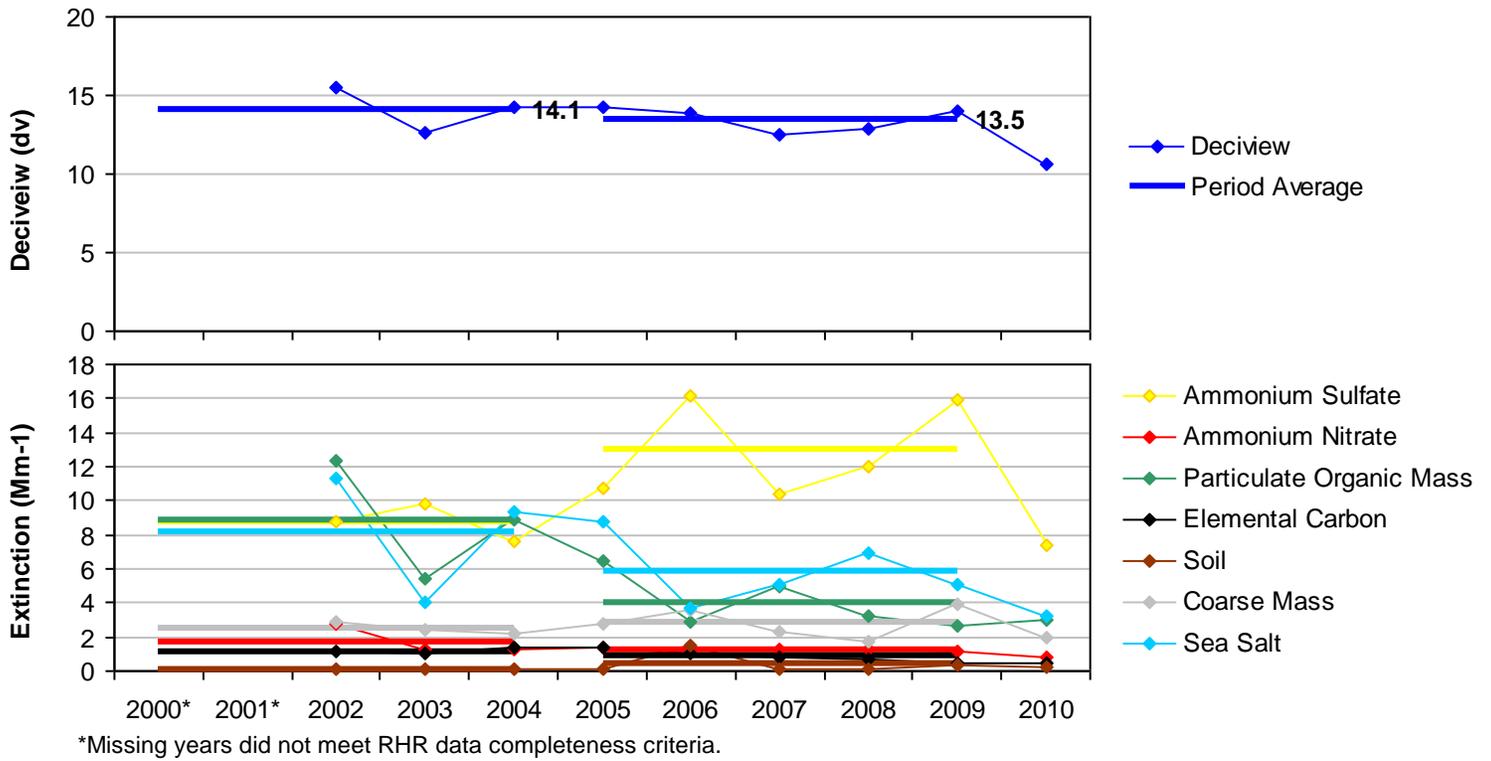


Figure A.4-2
Tuxedni WA, AK (TUXE1 Site)
Annual and 5-Year Period Averages
20% Least Impaired Visibility Days

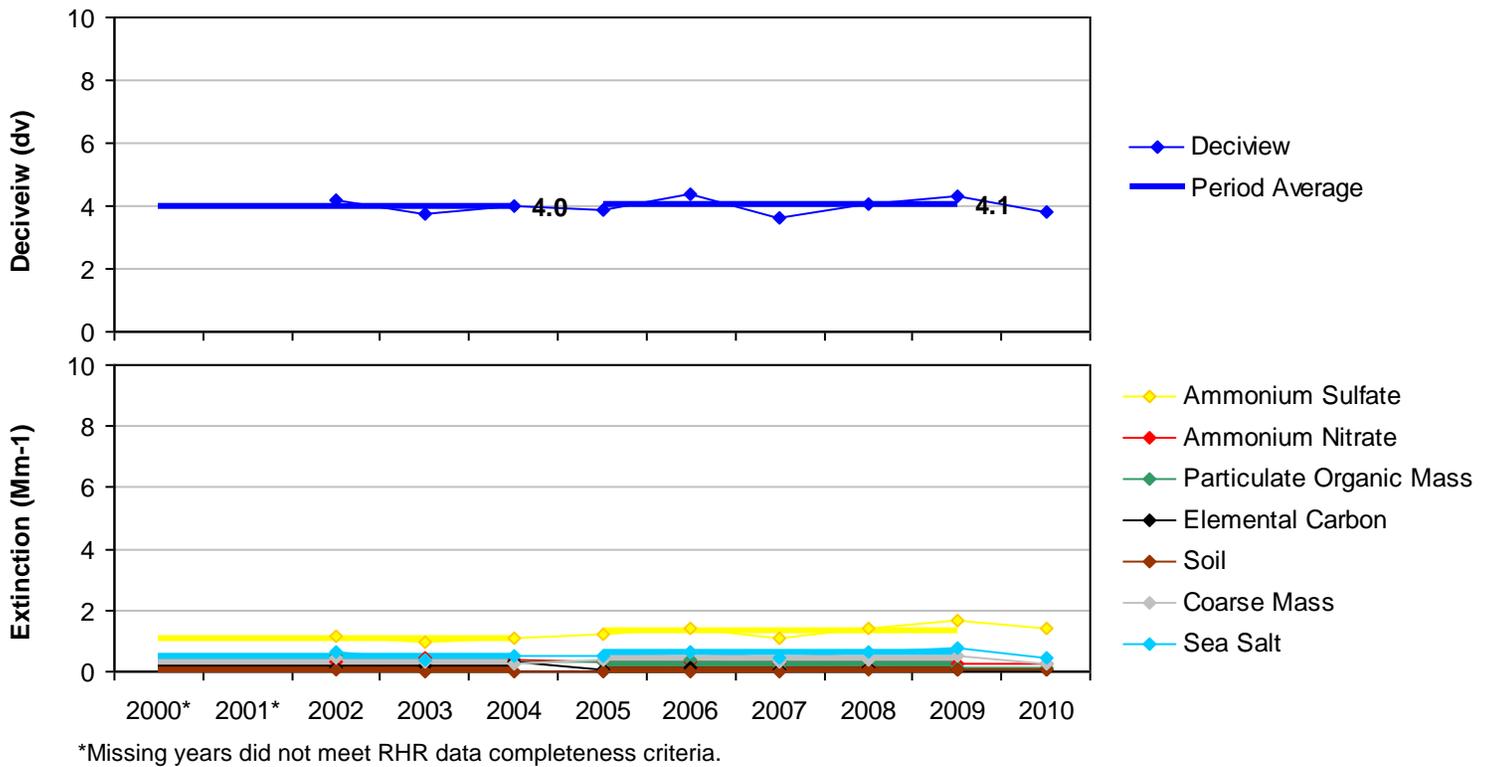
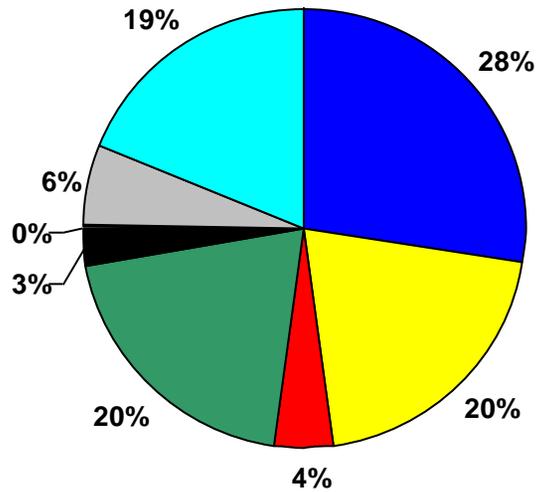
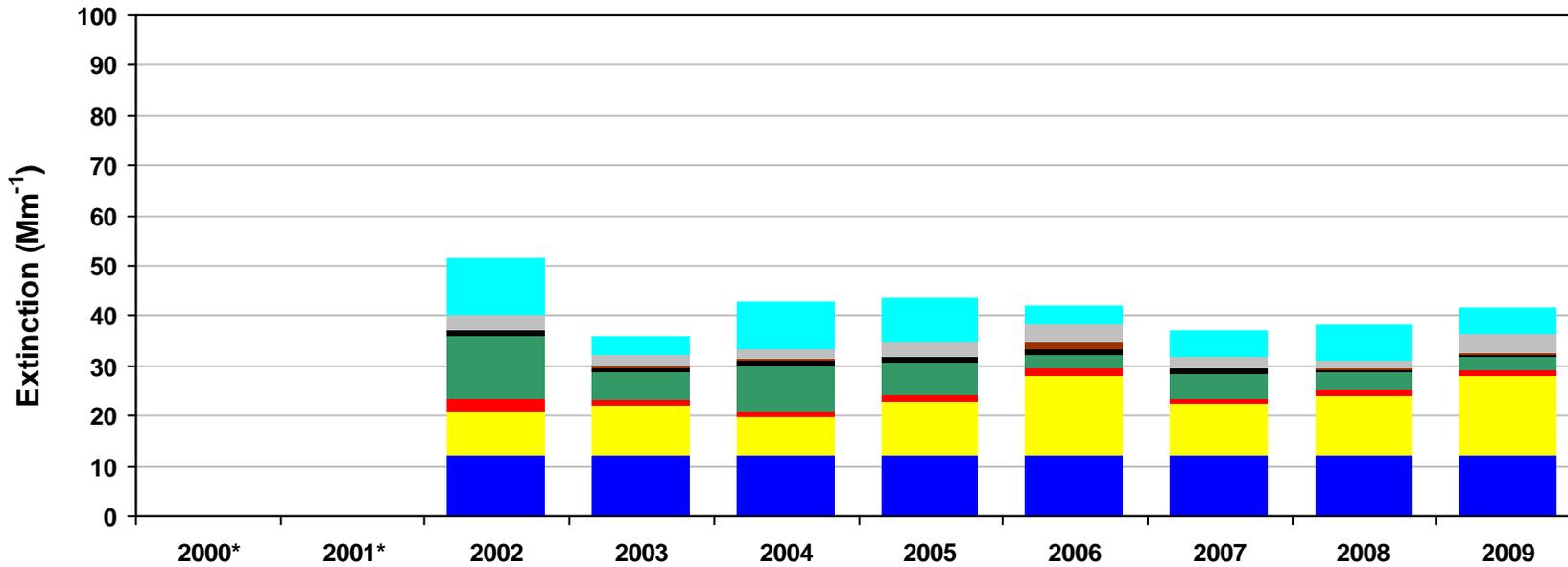
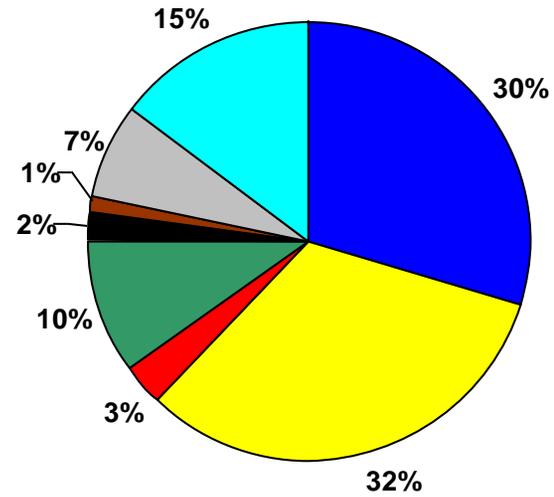


Figure A.4-3
Tuxedni WA, AK (TUXE1 Site)
20% Most Impaired Visibility Days

2000-2004 Baseline Average
 14.1 dv (12.6 - 15.5 dv)

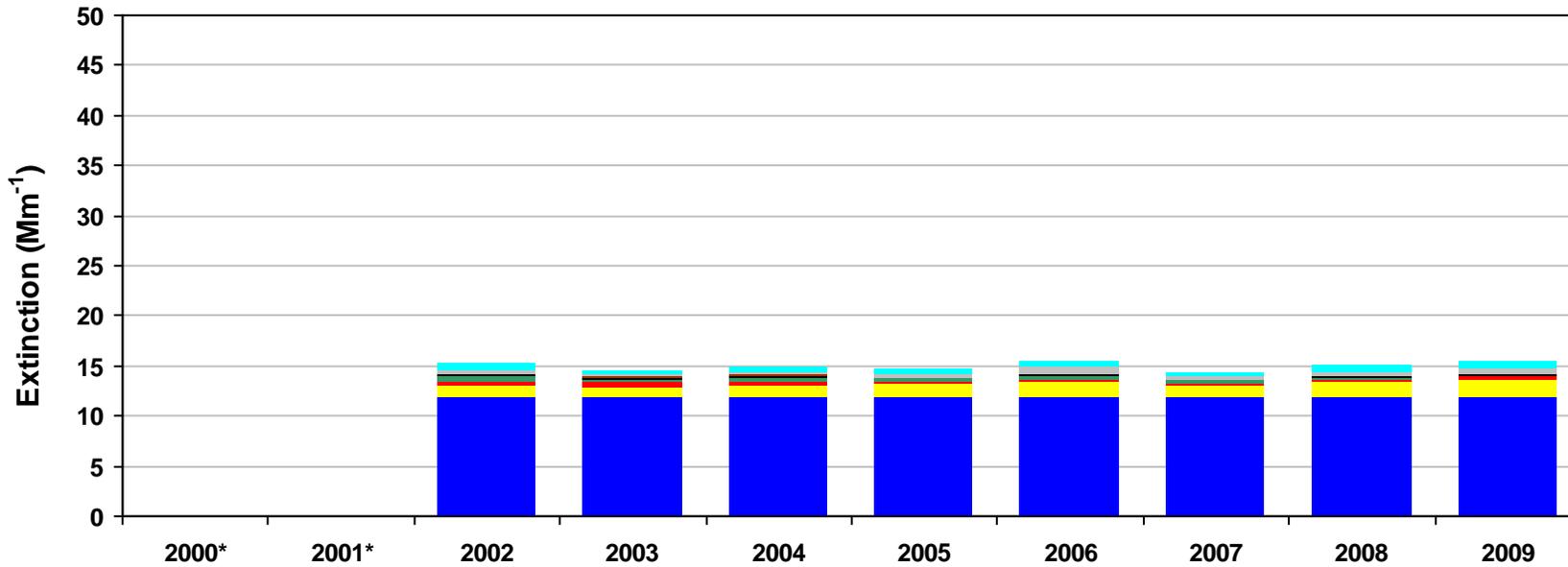
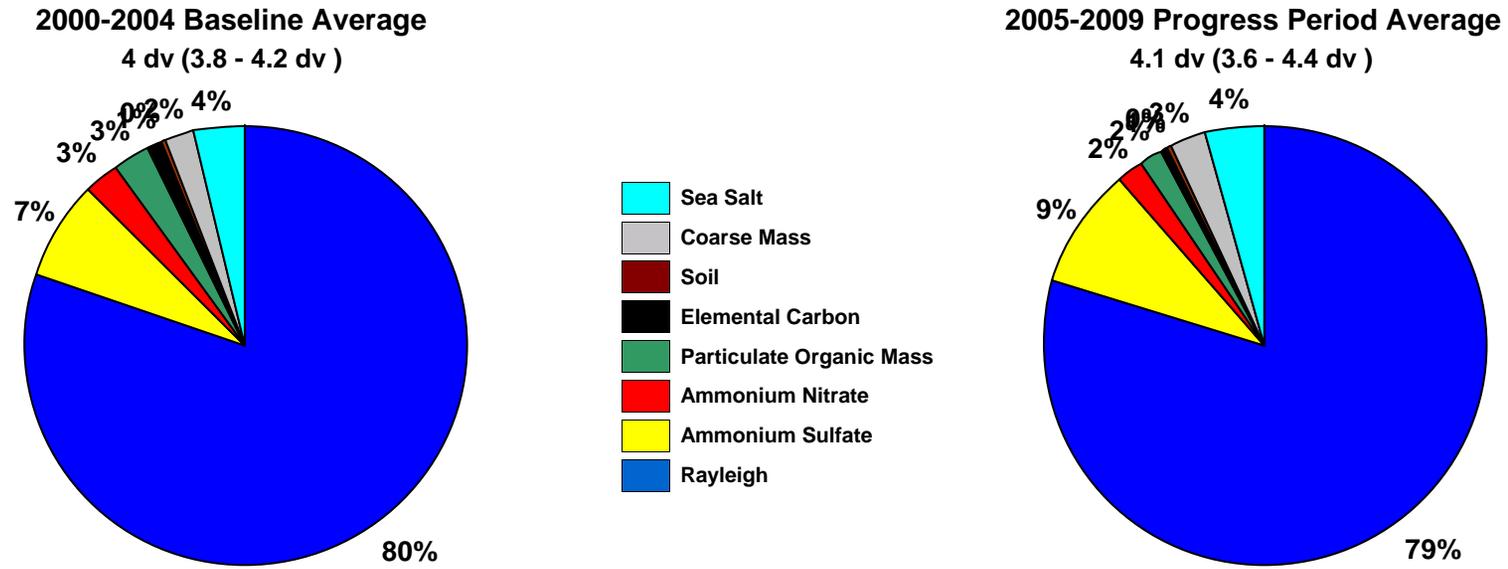


2005-2009 Progress Period Average
 13.5 dv (12.6 - 14.2 dv)



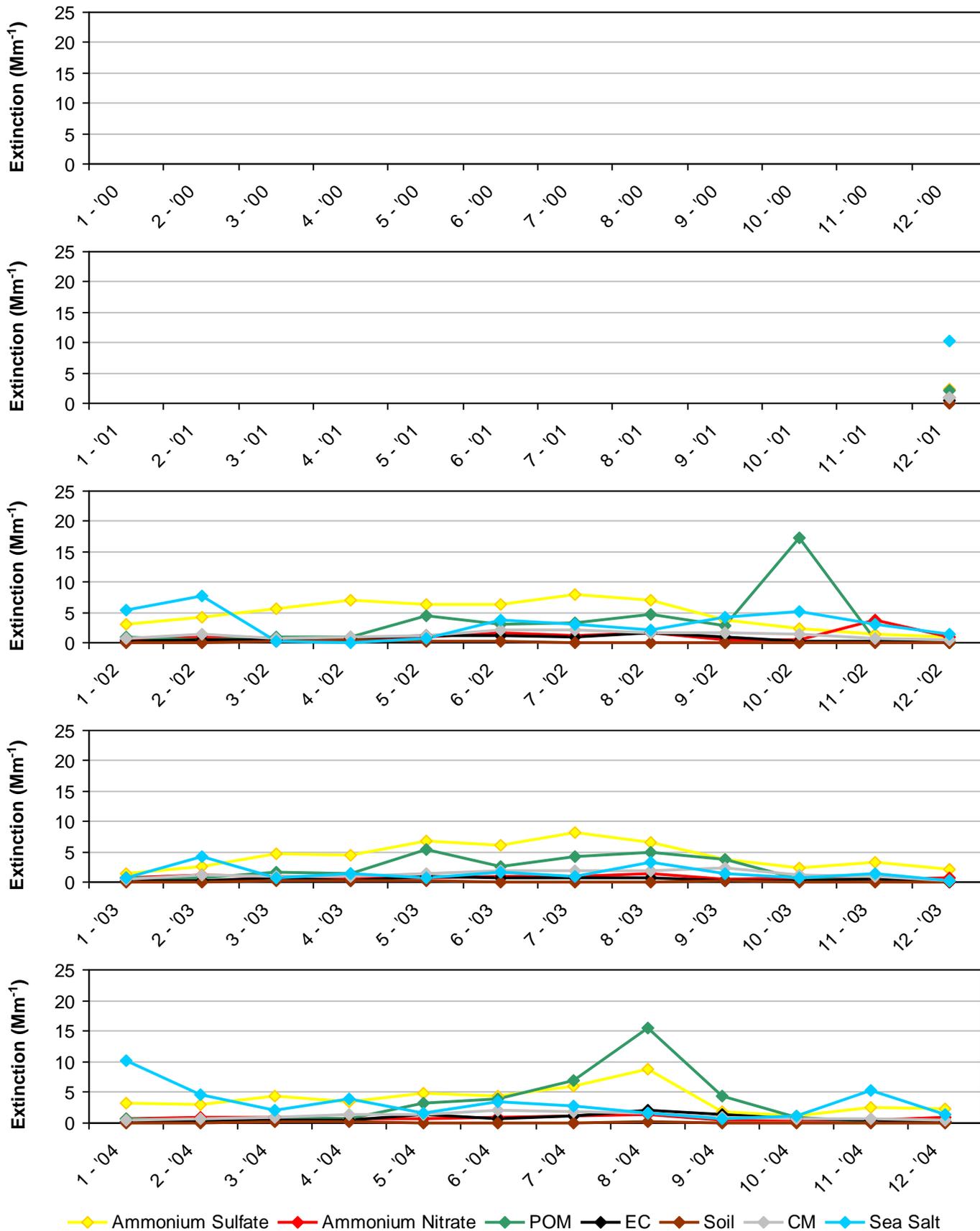
*Missing years did not meet RHR data completeness criteria. Only complete years are included in 5-year average pie charts.

Figure A.4-4
Tuxedni WA, AK (TUXE1 Site)
20% Least Impaired Visibility Days



*Missing years did not meet RHR data completeness criteria. Only complete years are included in 5-year average pie charts.

Figure A.4-5
Tuxedni WA, AK (TUXE1 Site)
2000-2004 Monthly Average Aerosol Extinction, All Monitored Days



*Note that monthly averages for the years 2000 and 2001 are shown here, but these years did not meet RHR data completeness criteria.

Figure A.4-6
Tuxedni WA, AK (TUXE1 Site)
2005-2009 Monthly Average Aerosol Extinction, All Monitored Days

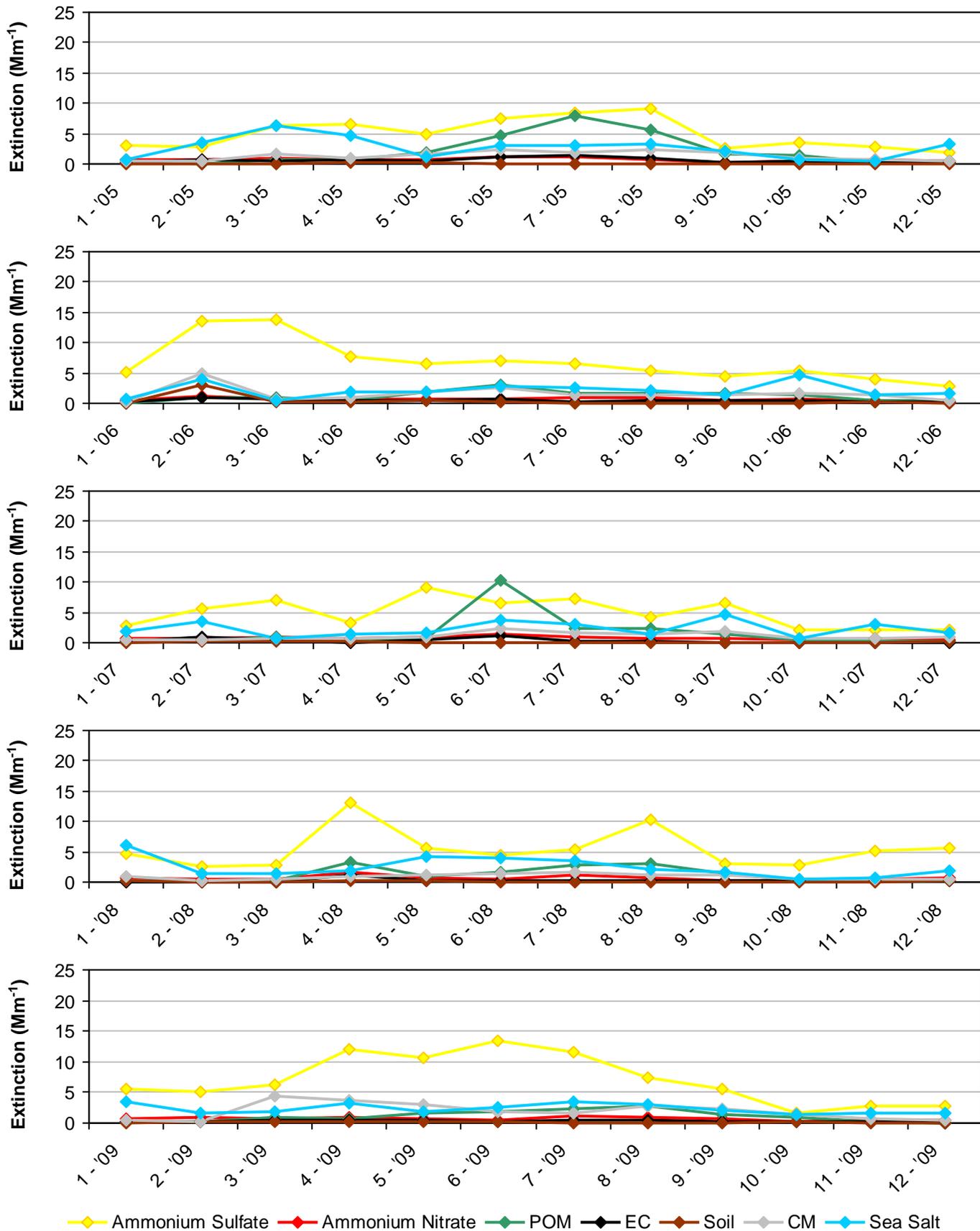
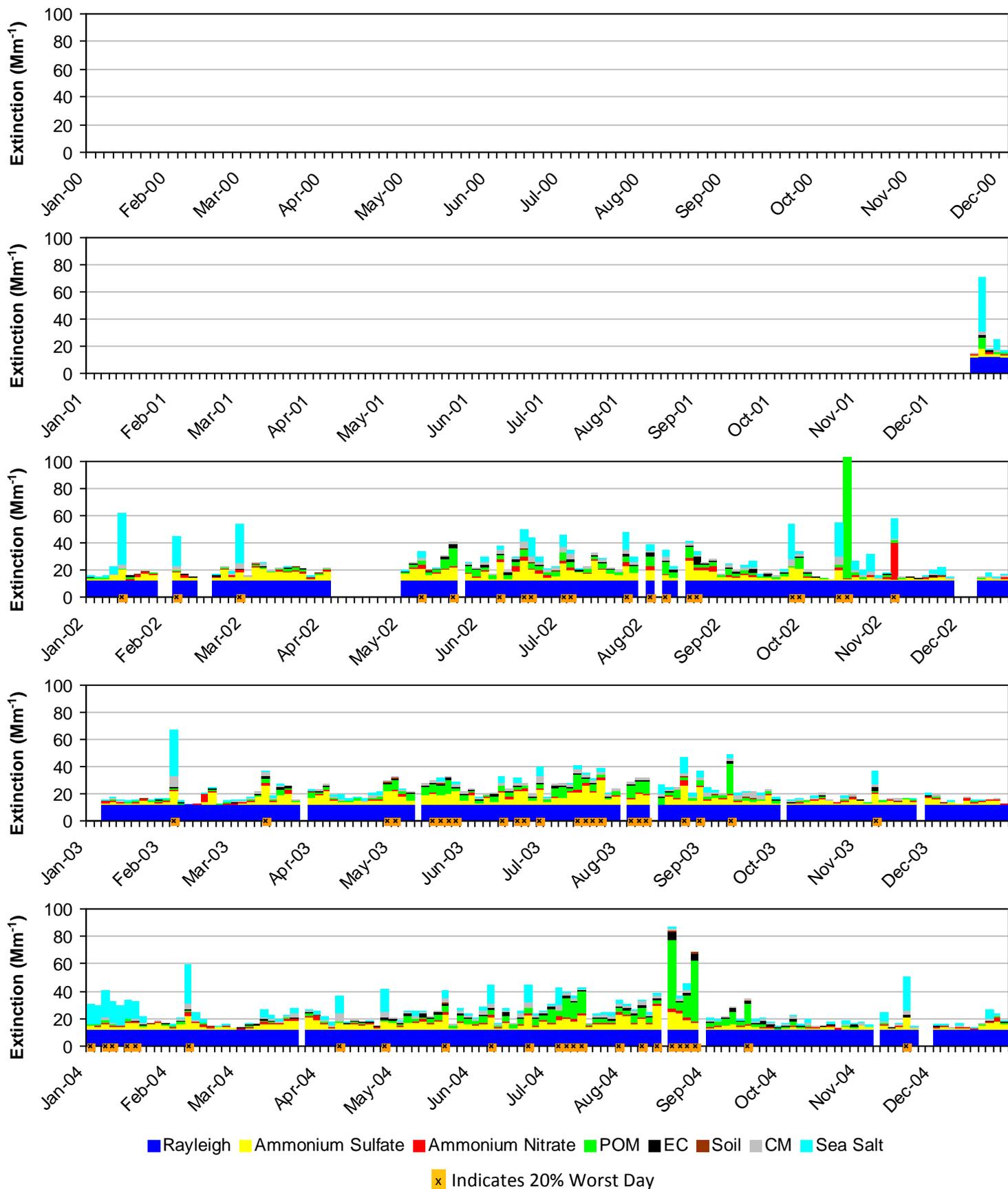


Figure A.4-7
Tuxedni WA, AK (TUXE1 Site)
2000-2004 Progress Period Extinction, All Sampled Days



*Note that daily averages for the years 2000 and 2001 are shown here, but these years did not meet RHR data completeness criteria.

Figure A.4-8
Tuxedni WA, AK (TUXE1 Site)
2005-2009 Progress Period Extinction, All Sampled Days

