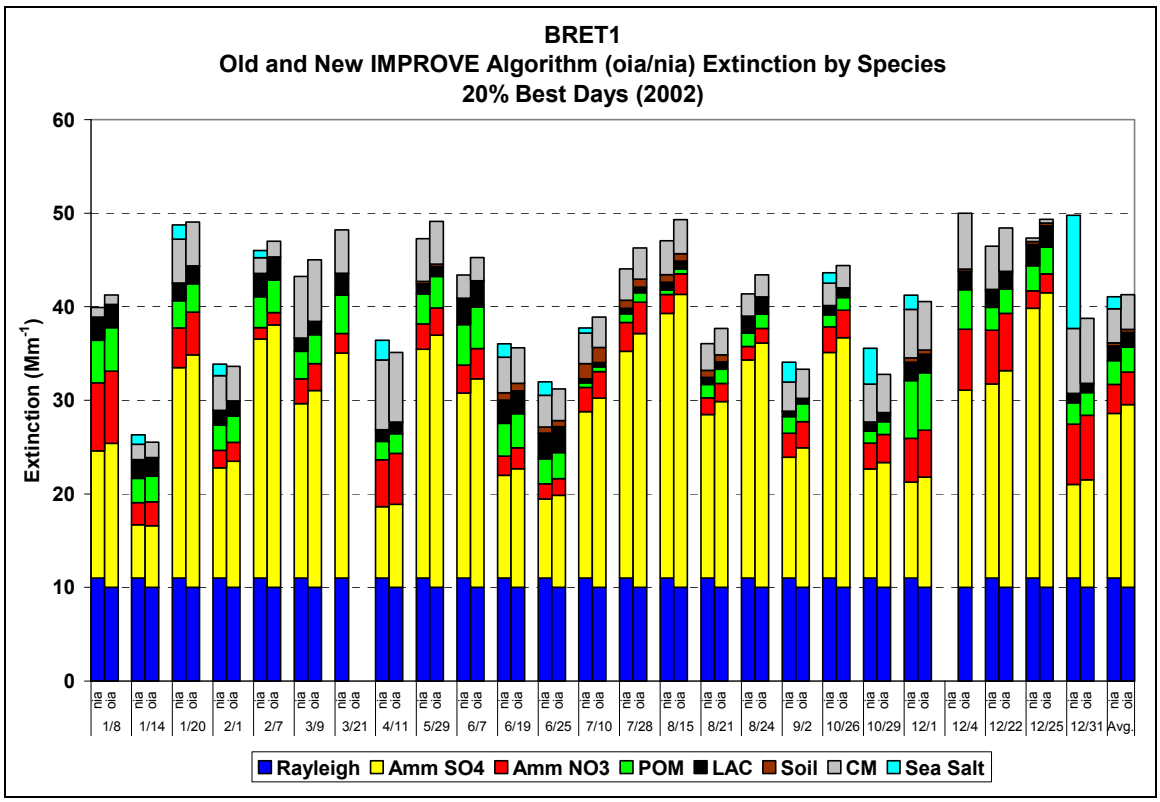
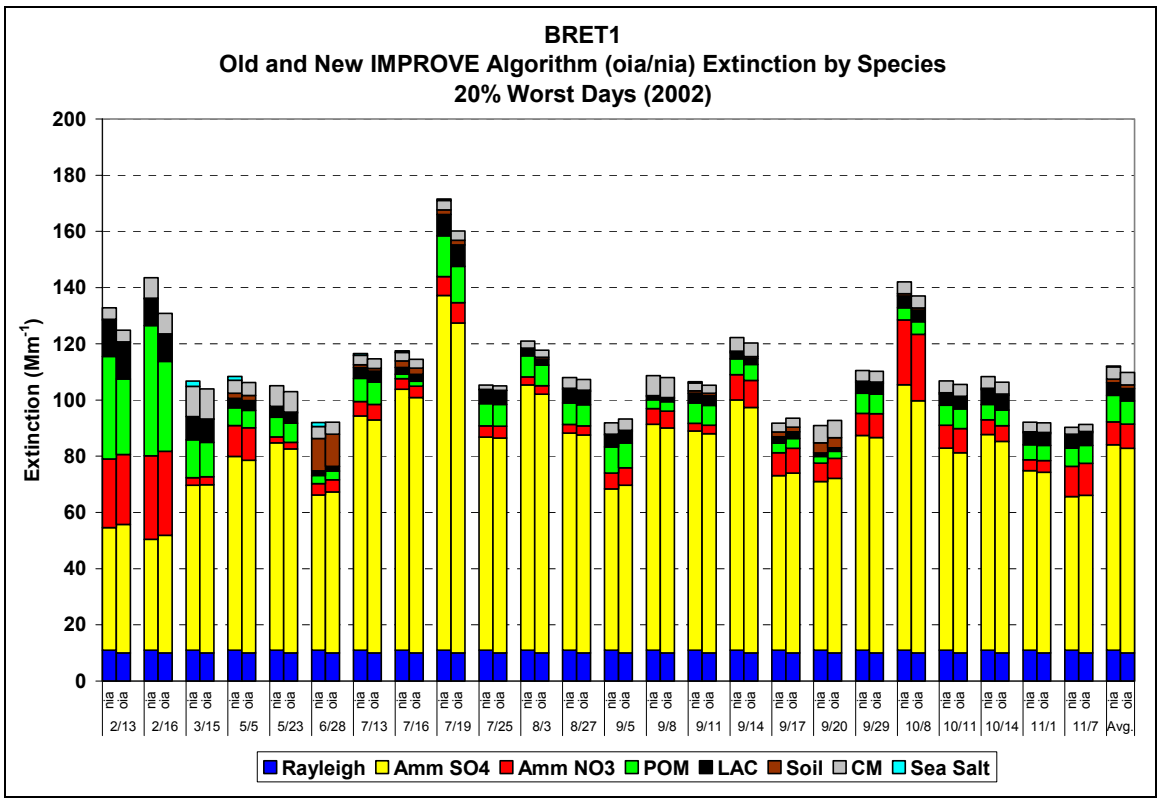
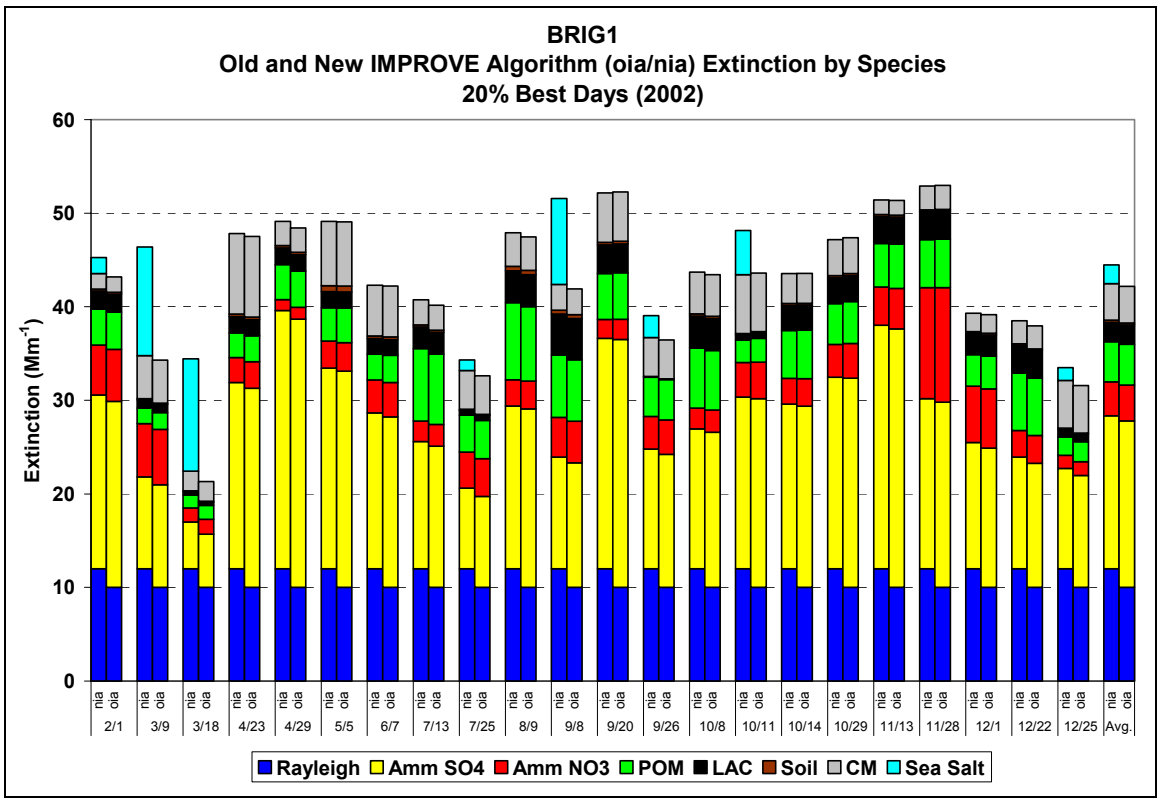
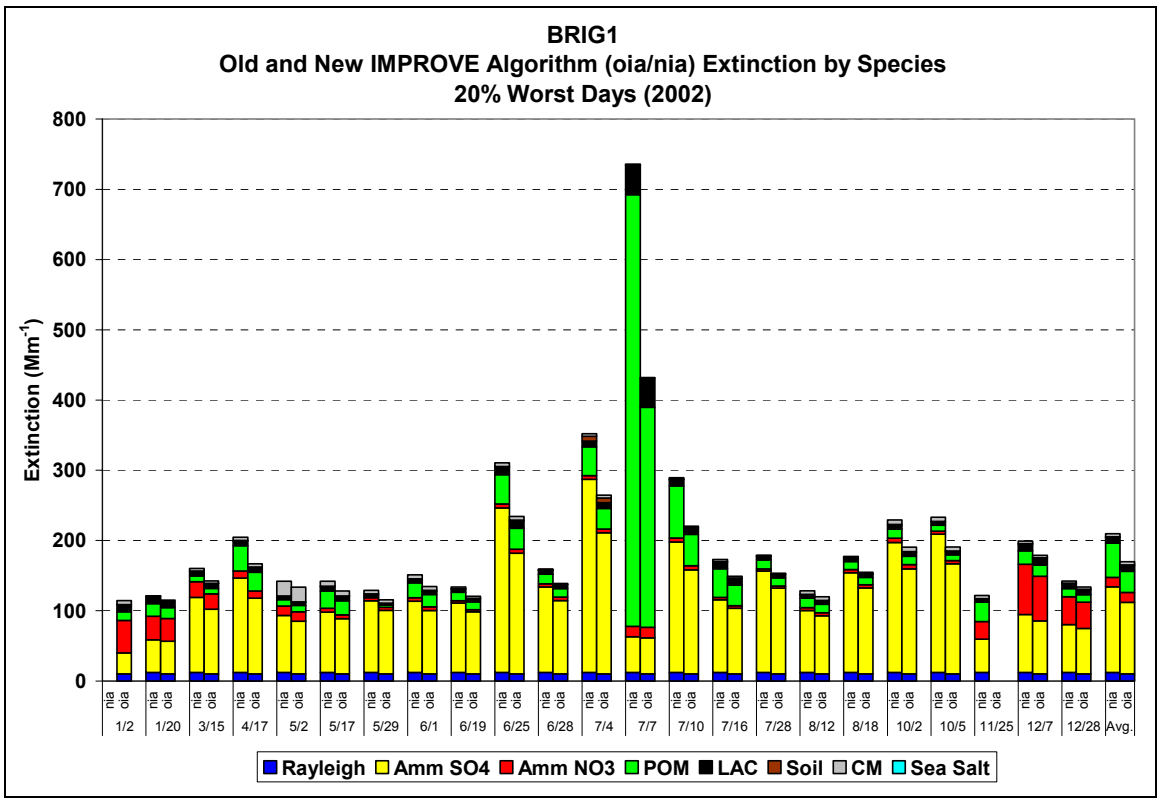
APPENDIX B

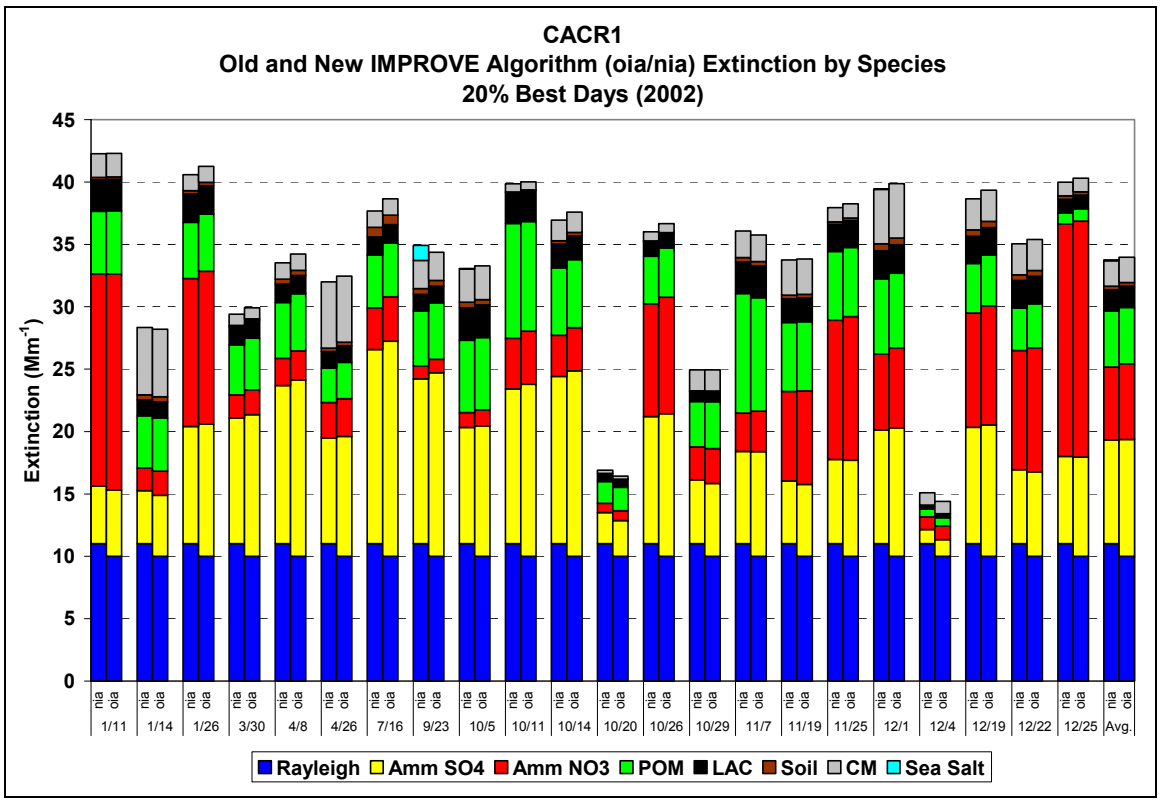
Original and Revised Algorithm Comparisons by Site

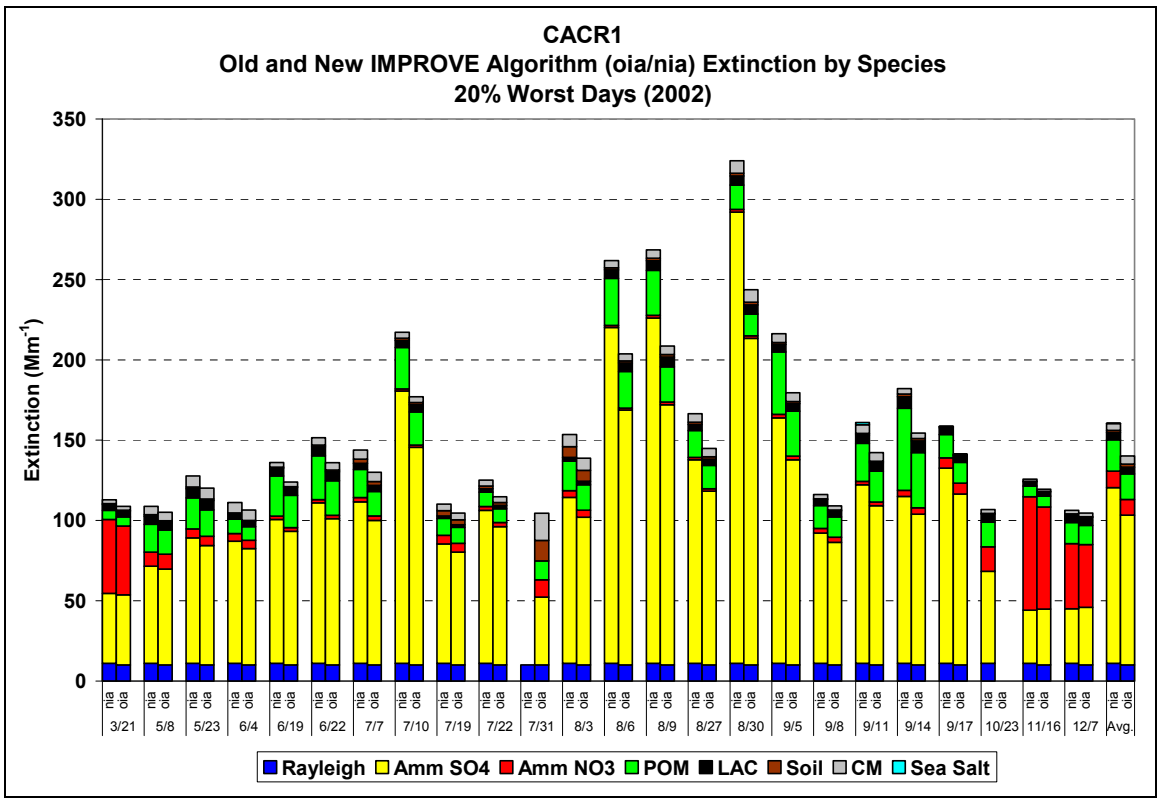

BRET1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
0
10
20
30
40
50
60
nia
oia
1/8
1/14
1/20
2/1
2/7
3/9
3/21
4/11
5/29
6/7
6/19
6/25
7/10
7/28
8/15
8/21
8/24
9/2
10/26
10/29
12/1
12/4
12/22
12/25
12/31
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

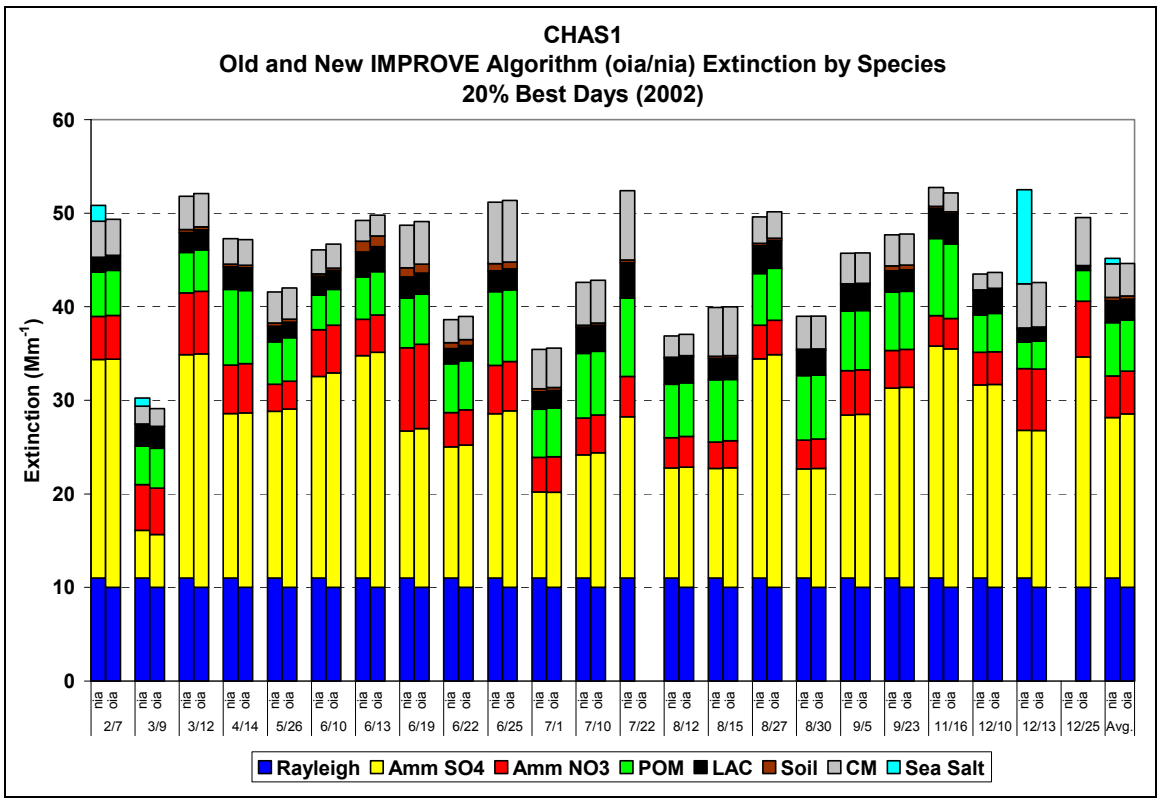

BRET1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
200
180
160
140
120
100
80
60
40
20
0
nia
oia
2/13
2/16
3/15
5/5
5/23
6/28
7/13
7/16
7/19
7/25
8/3
8/27
9/5
9/8
9/11
9/14
9/17
9/20
9/29
10/8
10/11
10/14
11/1
11/7
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

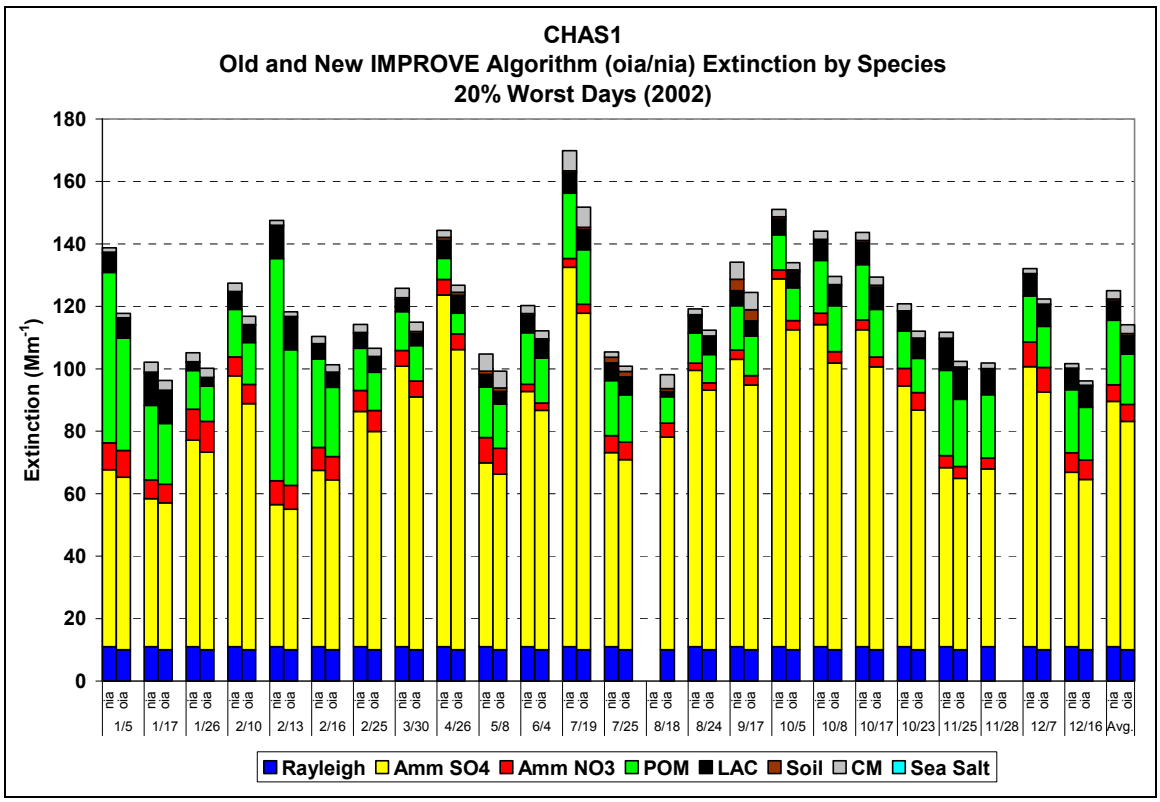

BRIG1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
0
10
20
30
40
50
60
nia
oia
2/1
3/9
3/18
4/23
4/29
5/5
6/7
7/13
7/25
8/9
9/8
9/20
9/26
10/8
10/11
10/14
10/29
11/13
11/28
12/1
12/22
12/25
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

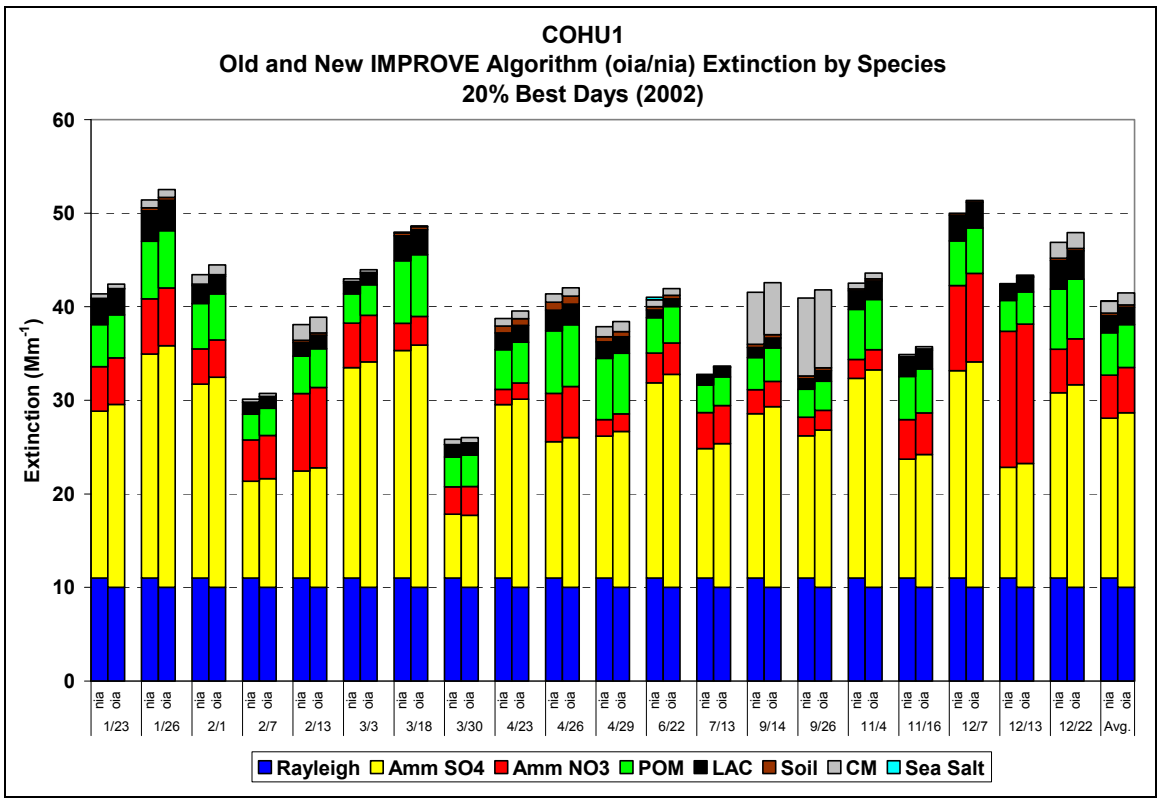

BRIG1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
800
700
600
500
400
300
200
100
0
nia
oia
1/2
1/20
3/15
4/17
5/2
5/17
5/29
6/1
6/19
6/25
6/28
7/4
7/7
7/10
7/16
7/28
8/12
8/18
10/2
10/5
11/25
12/7
12/28
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

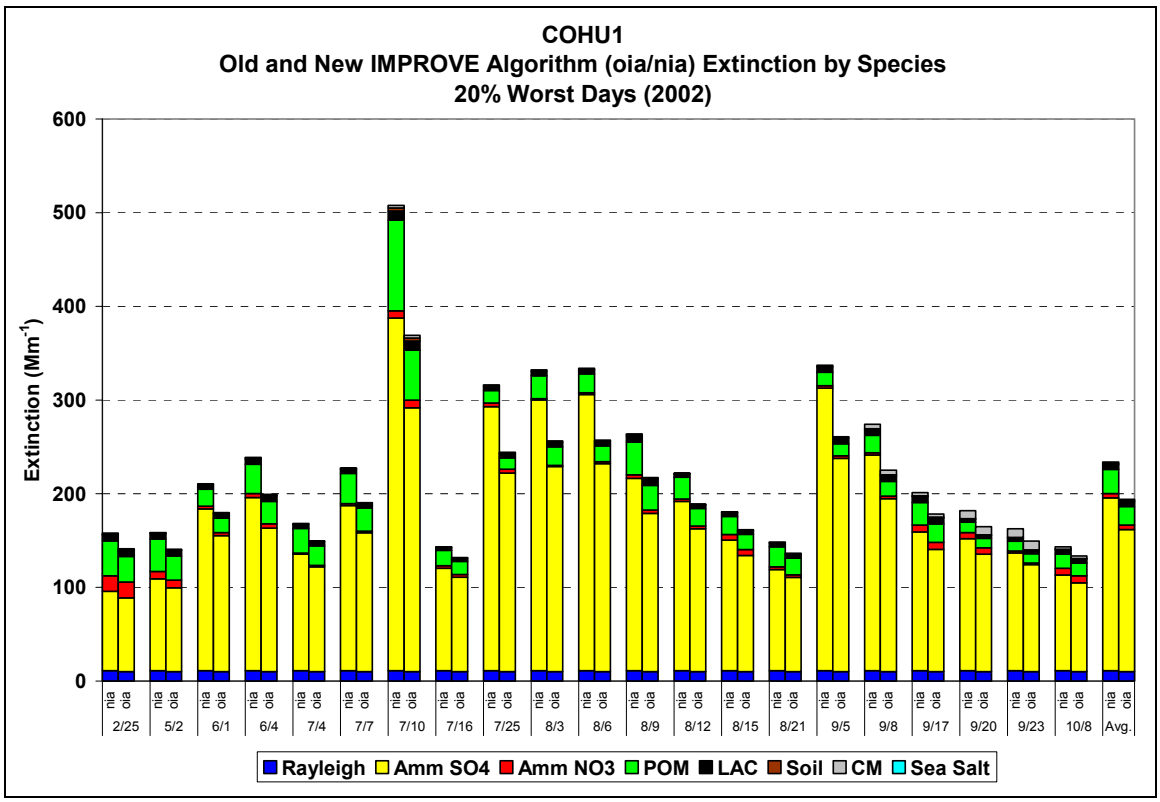

CACR1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
45
40
35
30
25
20
15
10
5
0
nia
oia
1/11
1/14
1/26
3/30
4/8
4/26
7/16
9/23
10/5
10/11
10/14
10/20
10/26
10/29
11/7
11/19
11/25
12/1
12/4
12/19
12/22
12/25
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

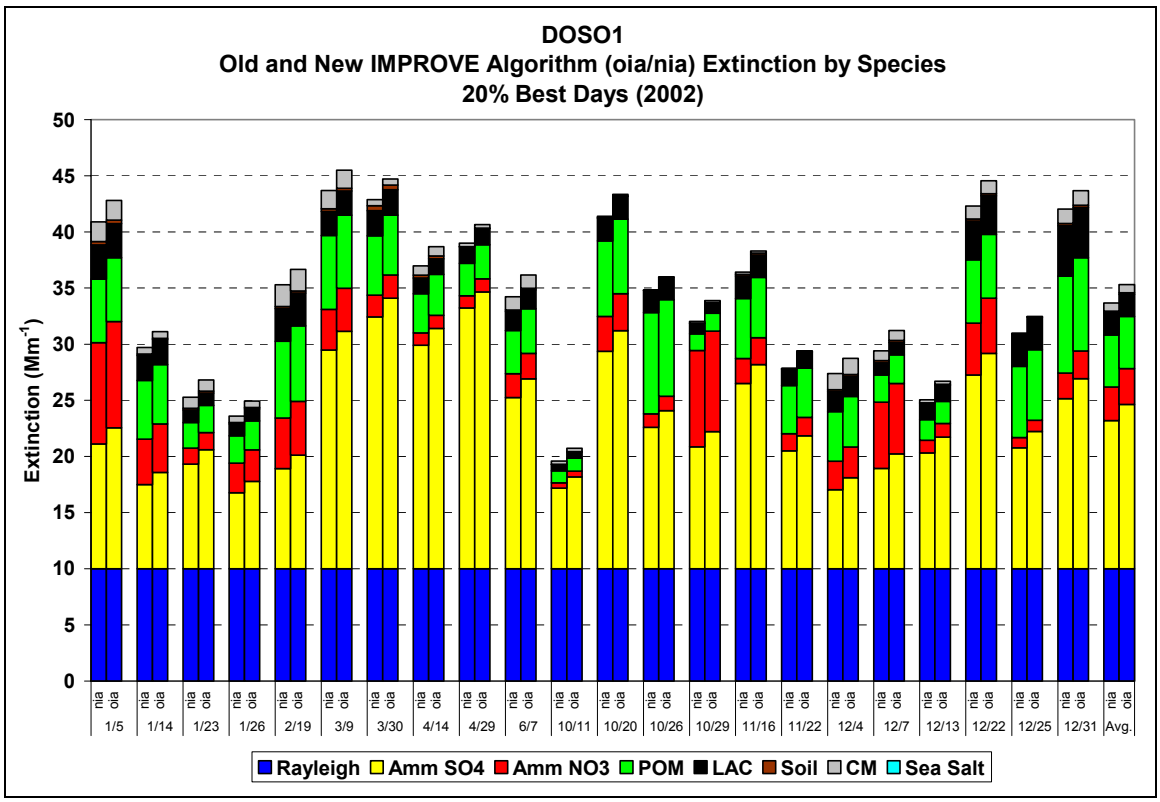

CACR1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
350
300
250
200
150
100
50
0
nia
oia
3/21
5/8
5/23
6/4
6/19
6/22
7/7
7/10
7/19
7/22
7/31
8/3
8/6
8/9
8/27
8/30
9/5
9/8
9/11
9/14
9/17
10/23
11/16
12/7
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

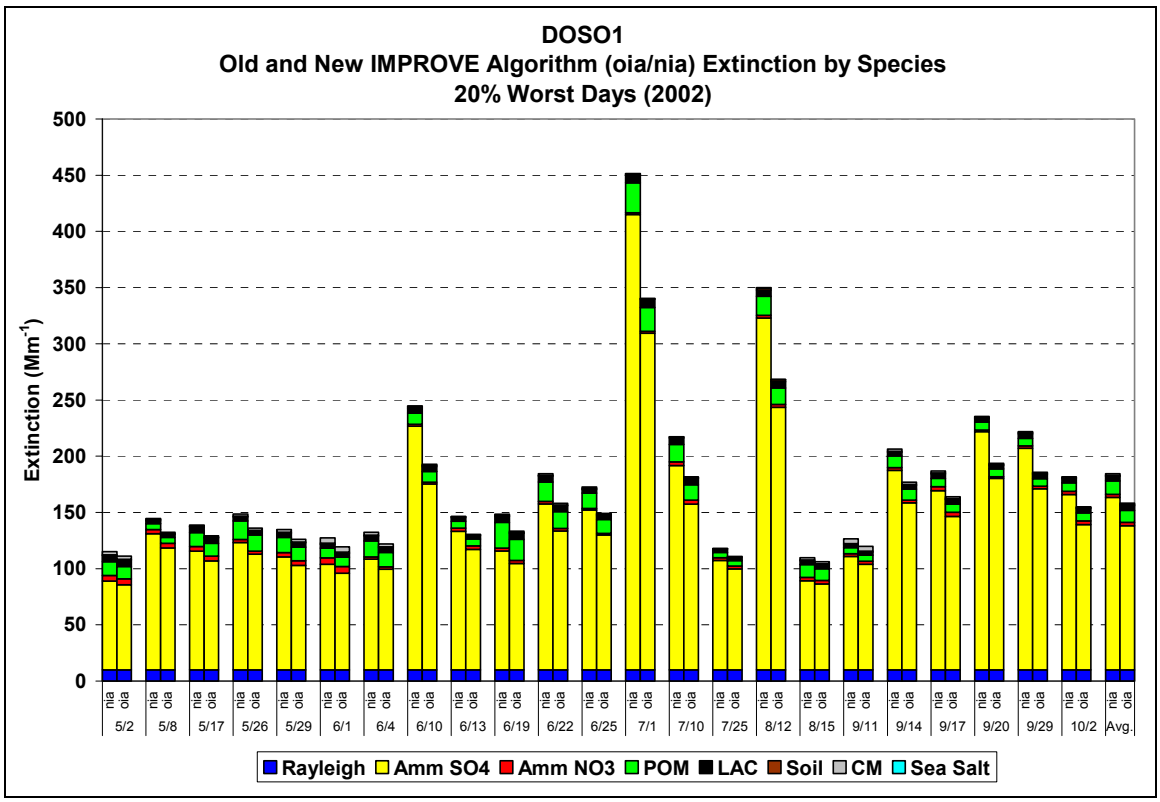

CHAS1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
60
50
40
30
20
10
0
nia
oia
2/7
3/9
3/12
4/14
5/26
6/10
6/13
6/19
6/22
6/25
7/1
7/10
7/22
8/12
8/15
8/27
8/30
9/5
9/23
11/16
12/10
12/13
12/25
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

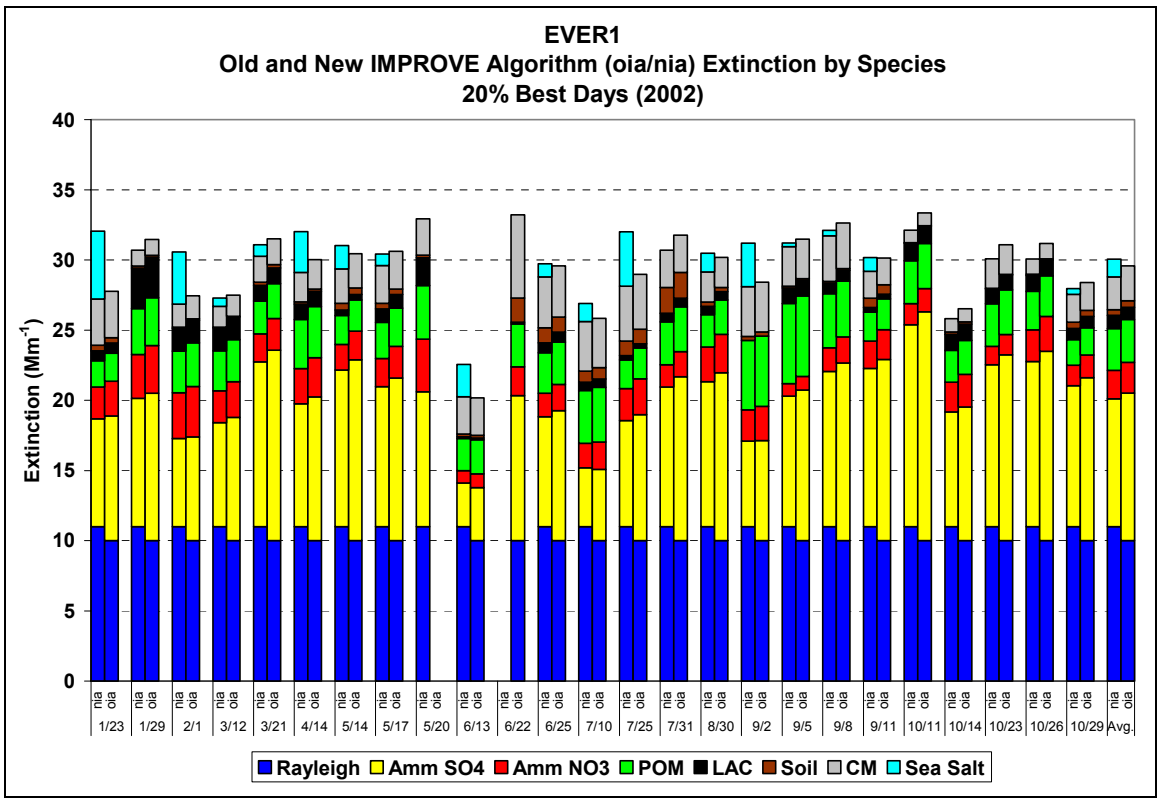

CHAS1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
180
160
140
120
100
80
60
40
20
0
nia
oia
1/5
1/17
1/26
2/10
2/13
2/16
2/25
3/30
4/26
5/8
6/4
7/19
7/25
8/18
8/24
9/17
10/5
10/8
10/17
10/23
11/25
11/28
12/7
12/16
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

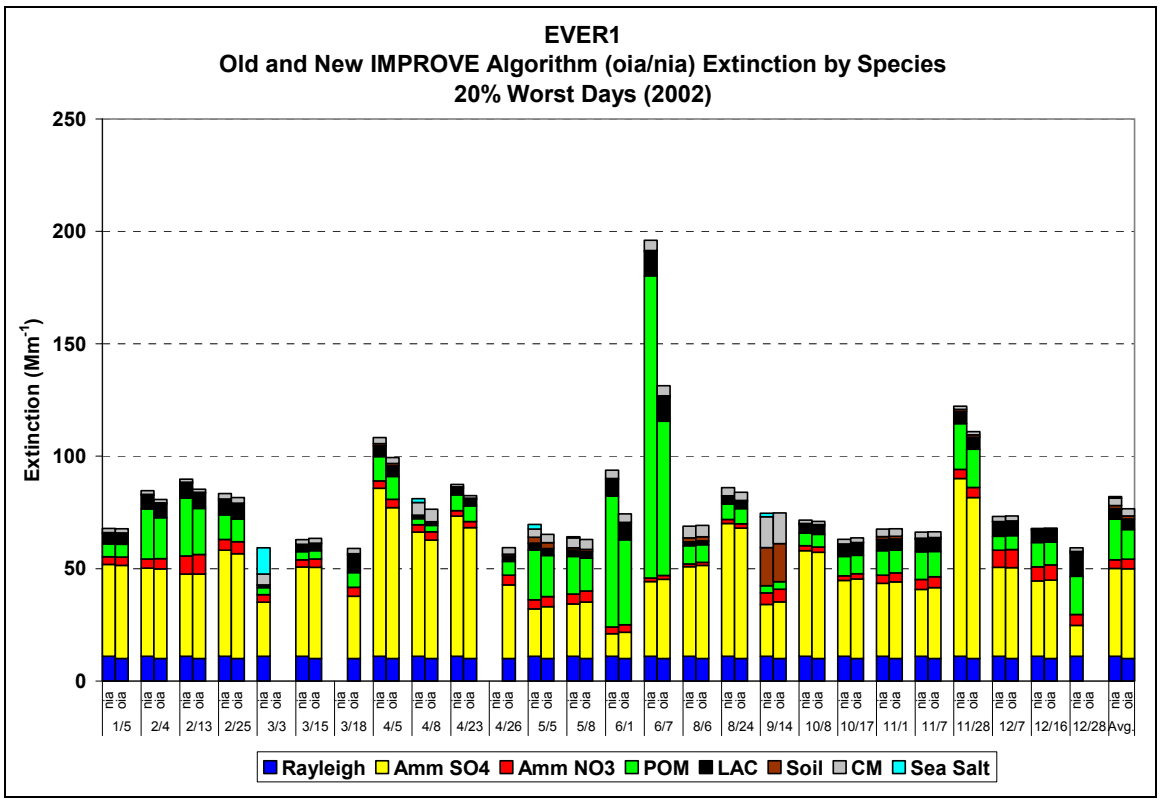

COHU1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
60
50
40
30
20
10
0
nia
oia
1/23
1/26
2/1
2/7
2/13
3/3
3/18
3/30
4/23
4/26
4/29
6/22
7/13
9/14
9/26
11/4
11/16
12/7
12/13
12/22
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

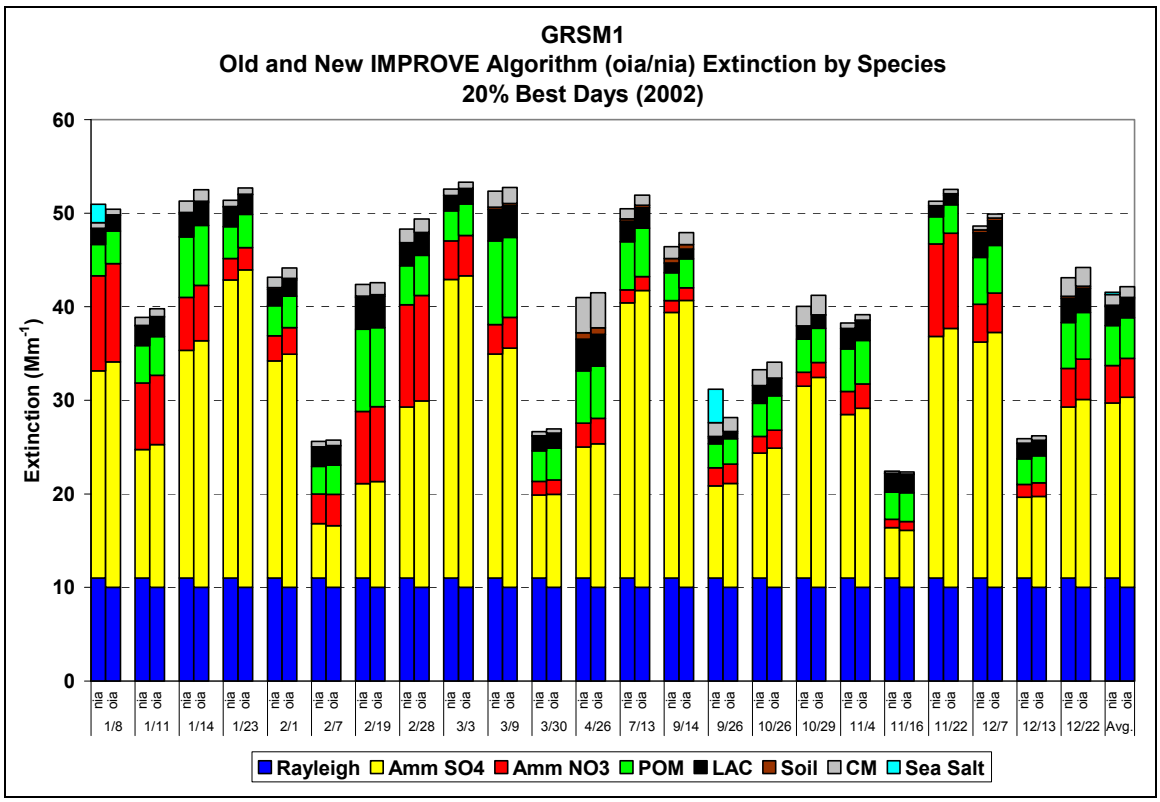

COHU1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
600
500
400
300
200
100
0
nia
oia
2/25
5/2
6/1
6/4
7/4
7/7
7/10
7/16
7/25
8/3
8/6
8/9
8/12
8/15
8/21
9/5
9/8
9/17
9/20
9/23
10/8
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

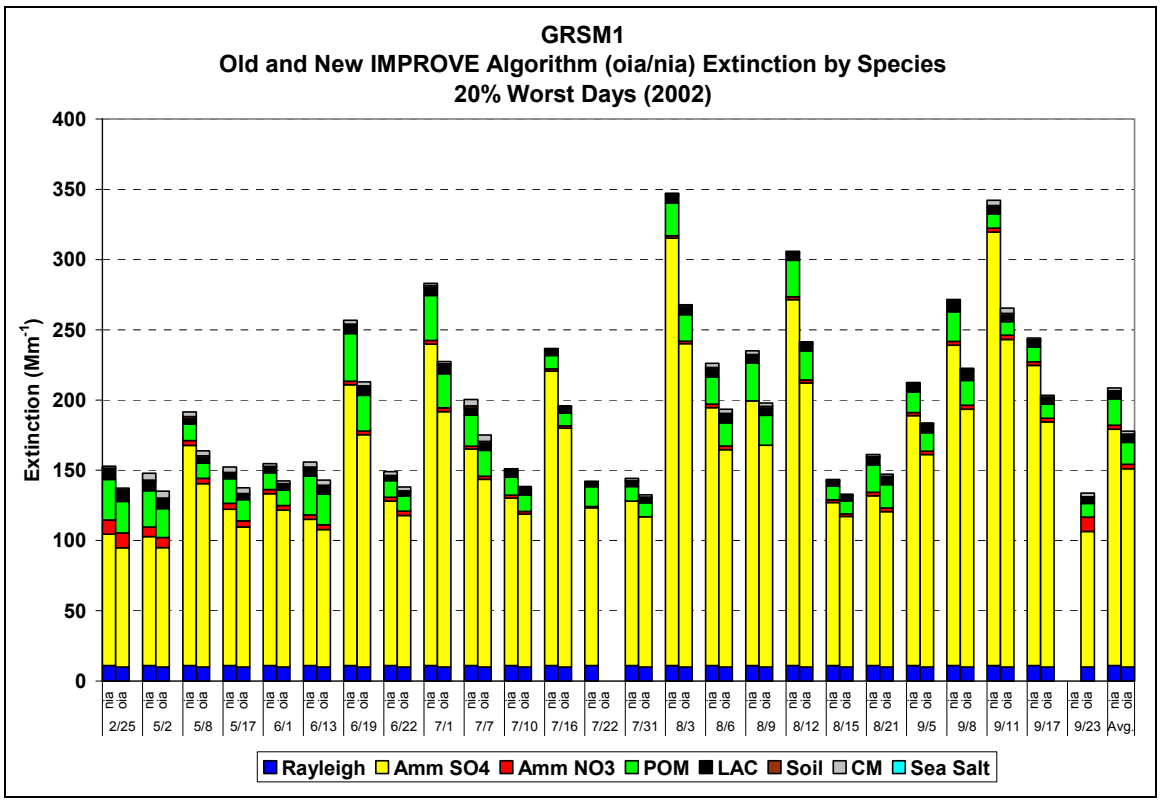

DOSO1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
0
5
10
15
20
25
30
35
40
45
50
nia
oia
1/5
1/14
1/23
1/26
2/19
3/9
3/30
4/14
4/29
6/7
10/11
10/20
10/26
10/29
11/16
11/22
12/4
12/7
12/13
12/22
12/25
12/31
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

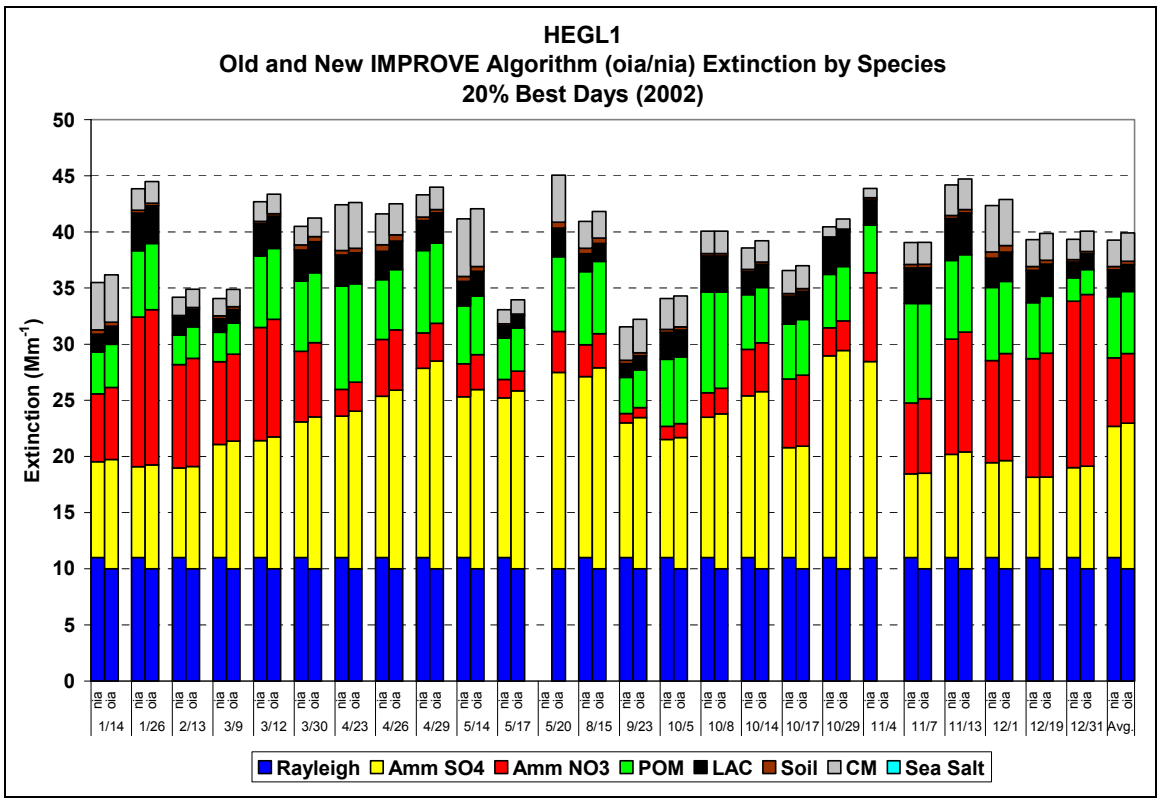

DOSO1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
500
450
400
350
300
250
200
150
100
50
0
nia
oia
5/2
5/8
5/17
5/26
5/29
6/1
6/4
6/10
6/13
6/19
6/22
6/25
7/1
7/10
7/25
8/12
8/15
9/11
9/14
9/17
9/20
9/29
10/2
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

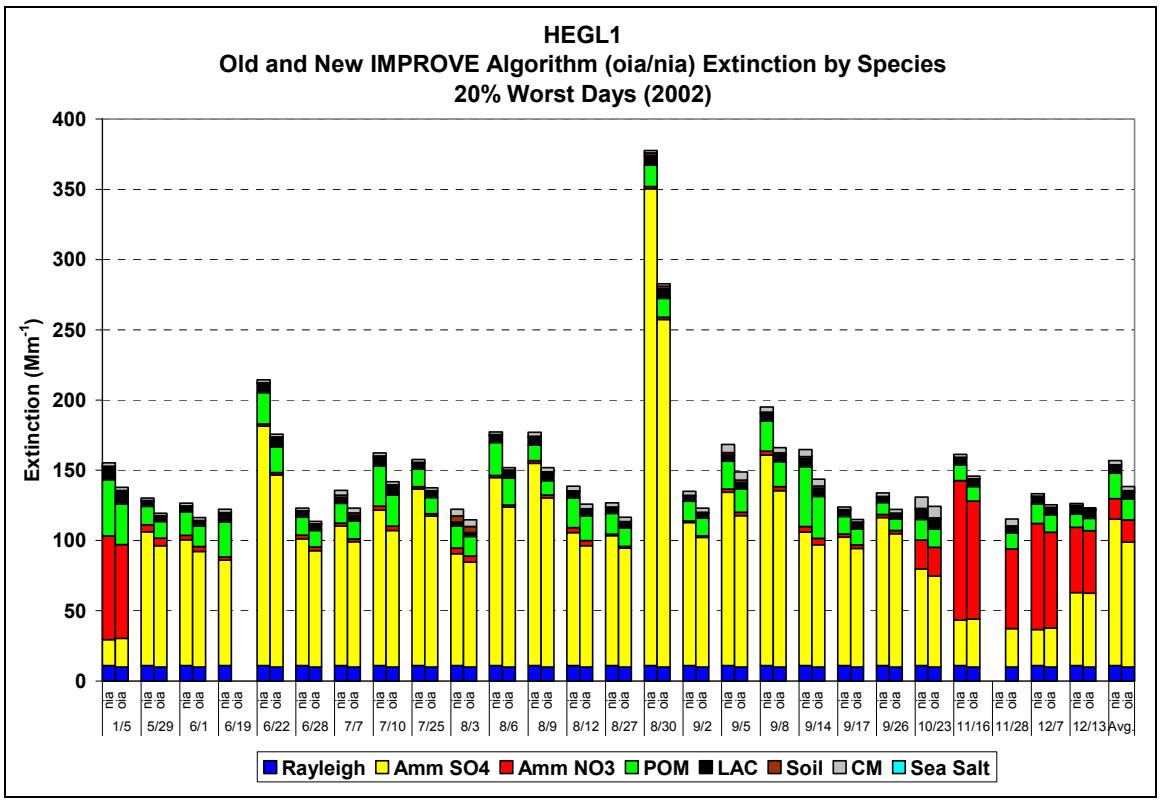

EVER1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
0
5
10
15
20
25
30
35
40
nia
oia
1/23
1/29
2/1
3/12
3/21
4/14
5/14
5/17
5/20
6/13
6/22
6/25
7/10
7/25
7/31
8/30
9/2
9/5
9/8
9/11
10/11
10/14
10/23
10/26
10/29
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

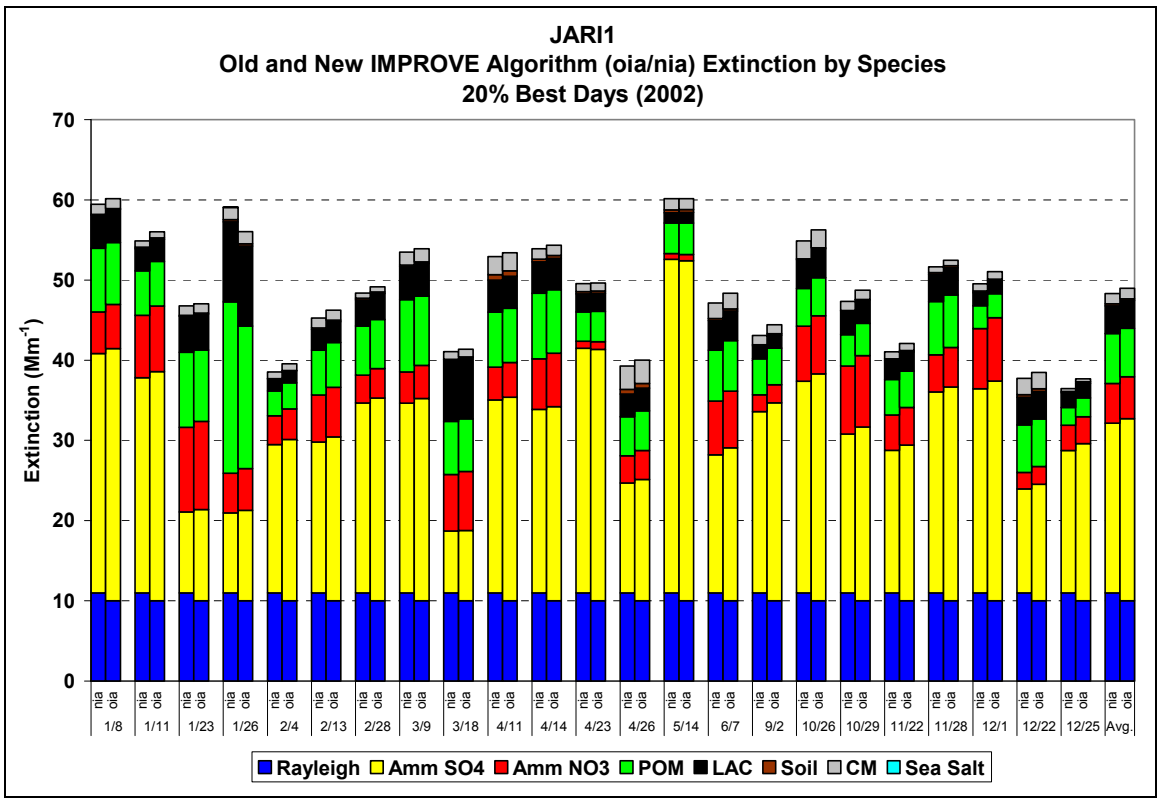

EVER1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
250
200
150
100
50
0
nia
oia
1/5
2/4
2/13
2/25
3/3
3/15
3/18
4/5
4/8
4/23
4/26
5/5
5/8
6/1
6/7
8/6
8/24
9/14
10/8
10/17
11/1
11/7
11/28
12/7
12/16
12/28
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

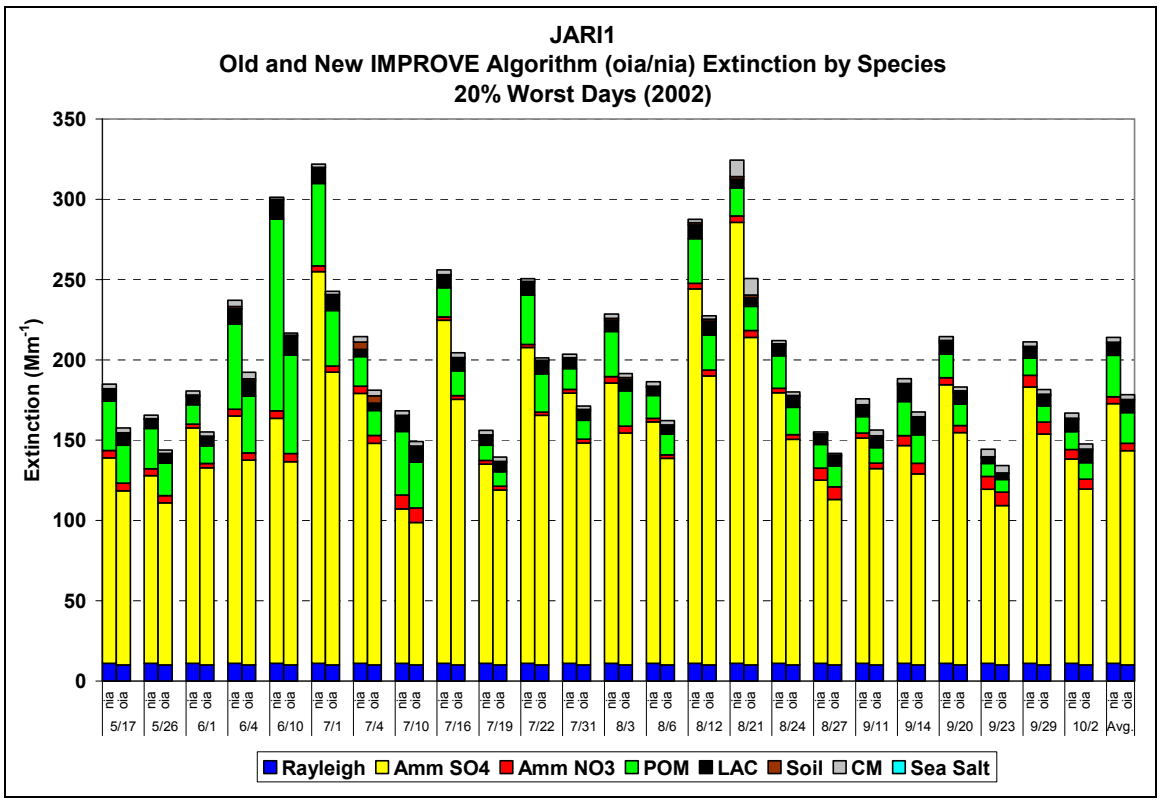

GRSM1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
60
50
40
30
20
10
0
nia
oia
1/8
1/11
1/14
1/23
2/1
2/7
2/19
2/28
3/3
3/9
3/30
4/26
7/13
9/14
9/26
10/26
10/29
11/4
11/16
11/22
12/7
12/13
12/22
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

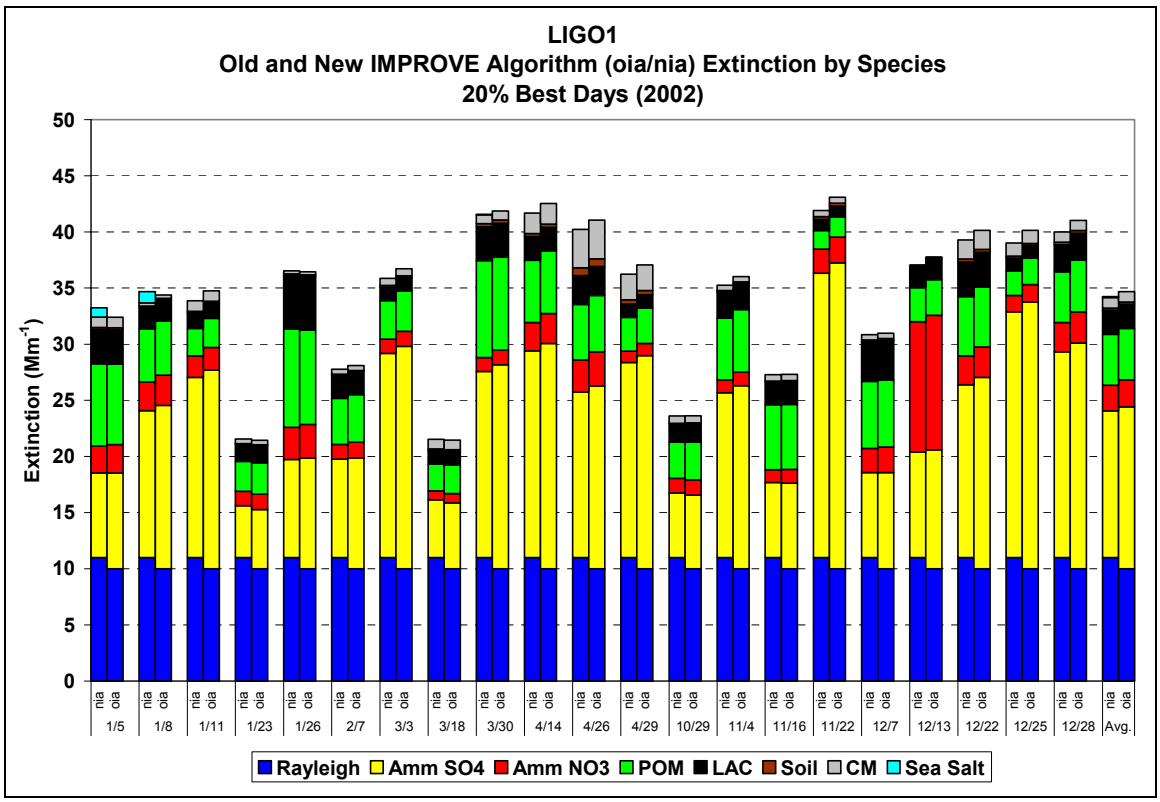

GRSM1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
400
350
300
250
200
150
100
50
0
nia
oia
2/25
5/2
5/8
5/17
6/1
6/13
6/19
6/22
7/1
7/7
7/10
7/16
7/22
7/31
8/3
8/6
8/9
8/12
8/15
8/21
9/5
9/8
9/11
9/17
9/23
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

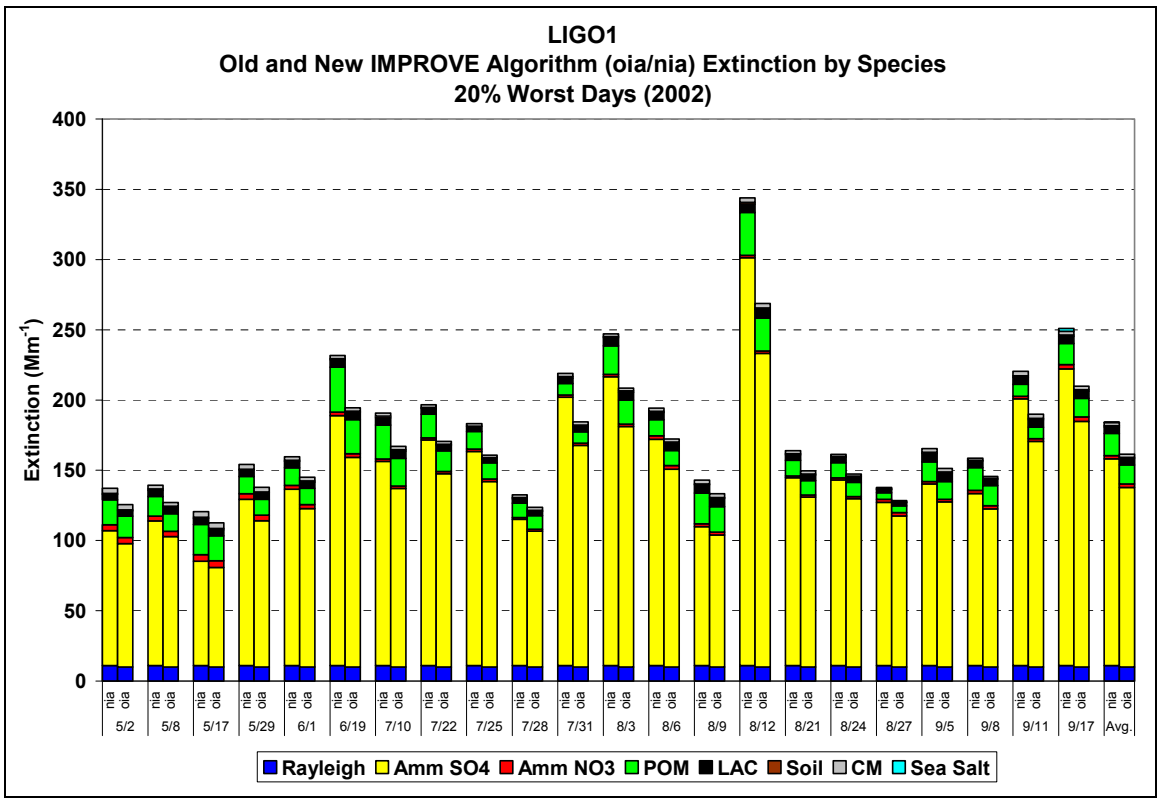

HEGL1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
0
5
10
15
20
25
30
35
40
45
50
nia
oia
1/14
1/26
2/13
3/9
3/12
3/30
4/23
4/26
4/29
5/14
5/17
5/20
8/15
9/23
10/5
10/8
10/14
10/17
10/29
11/4
11/7
11/13
12/1
12/19
12/31
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

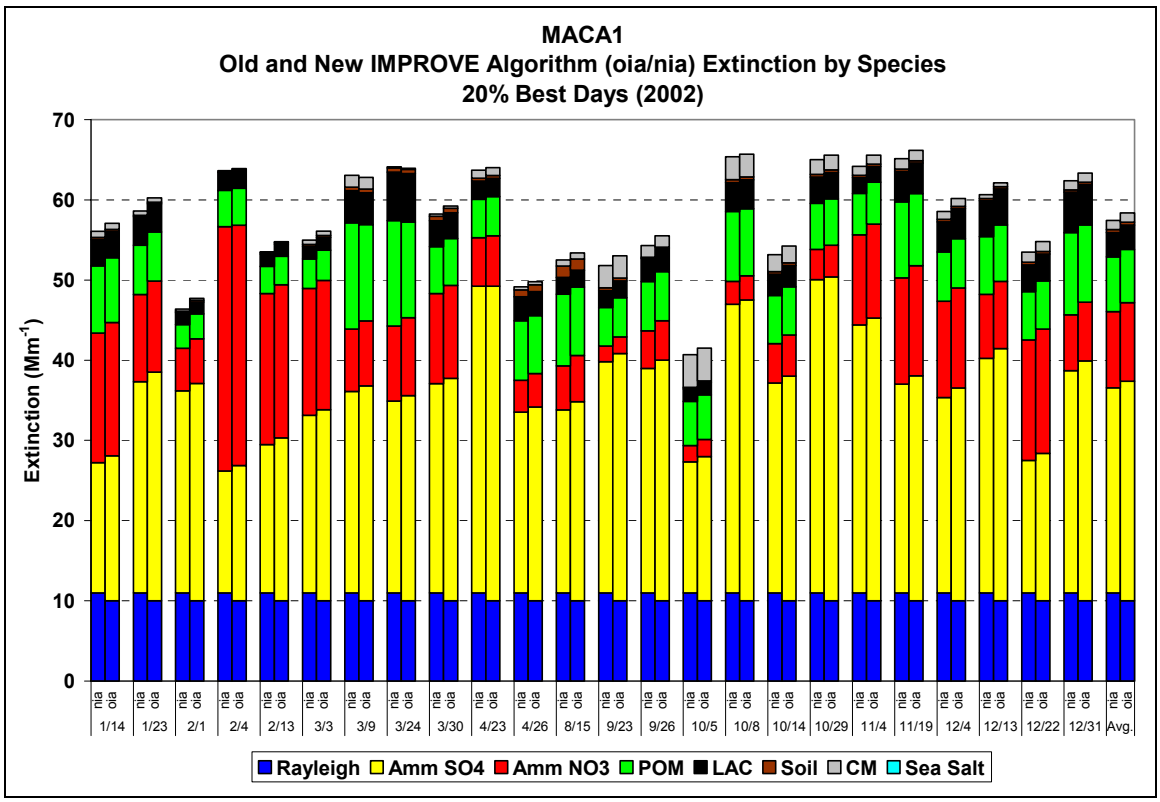

HEGL1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
400
350
300
250
200
150
100
50
0
nia
oia
1/5
5/29
6/1
6/19
6/22
6/28
7/7
7/10
7/25
8/3
8/6
8/9
8/12
8/27
8/30
9/2
9/5
9/8
9/14
9/17
9/26
10/23
11/16
11/28
12/7
12/13
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

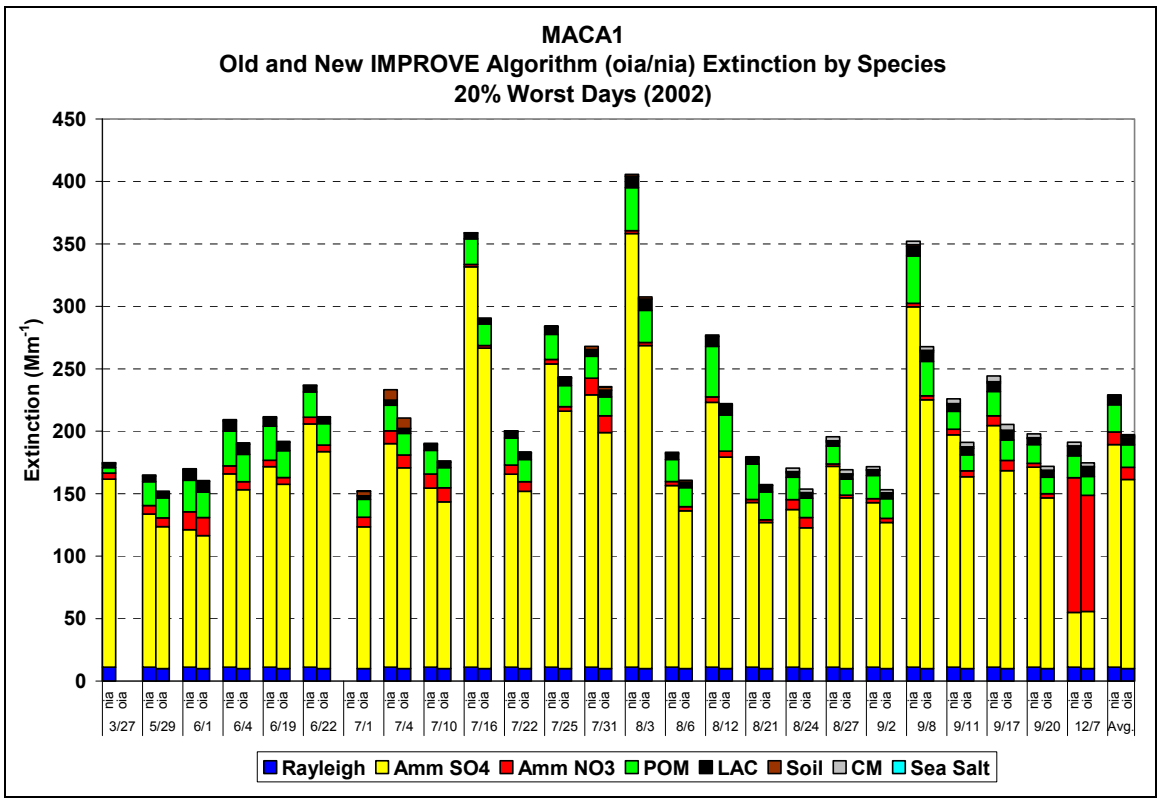

JARI1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
70
60
50
40
30
20
10
0
nia
oia
1/8
1/11
1/23
1/26
2/4
2/13
2/28
3/9
3/18
4/11
4/14
4/23
4/26
5/14
6/7
9/2
10/26
10/29
11/22
11/28
12/1
12/22
12/25
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

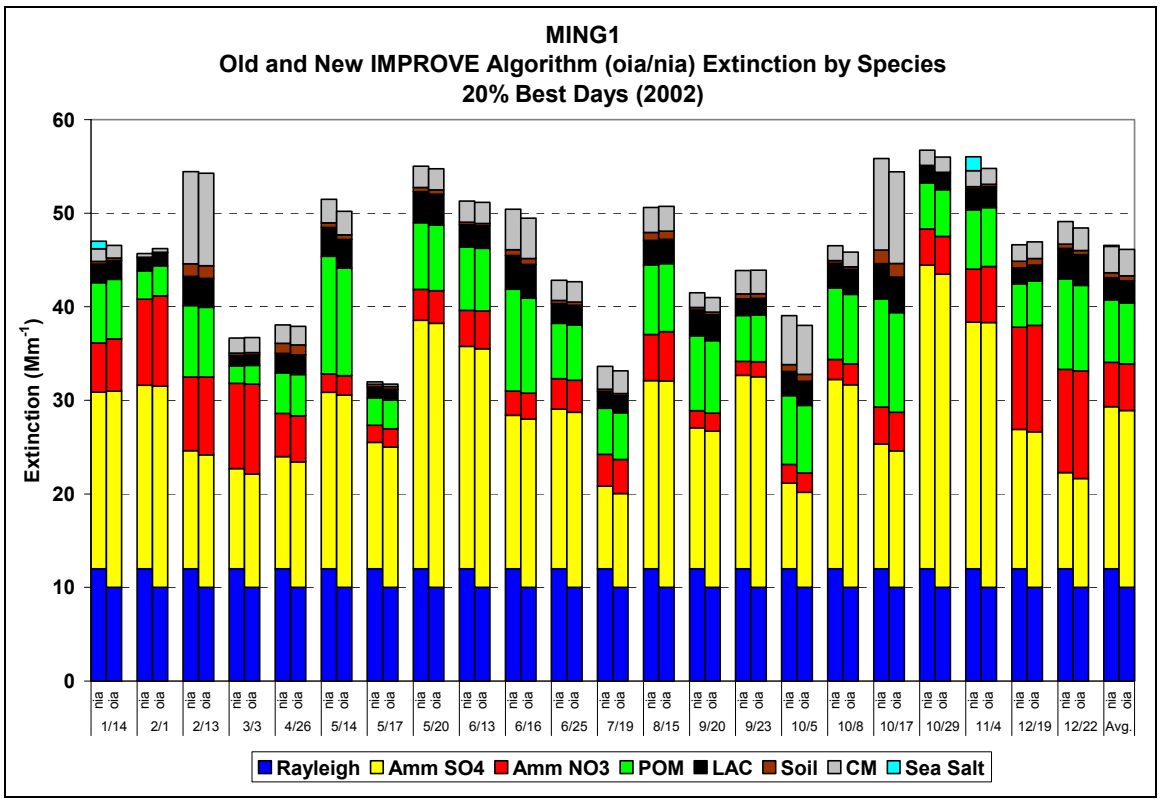

JARI1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
350
300
250
200
150
100
50
0
nia
oia
5/17
5/26
6/1
6/4
6/10
7/1
7/4
7/10
7/16
7/19
7/22
7/31
8/3
8/6
8/12
8/21
8/24
8/27
9/11
9/14
9/20
9/23
9/29
10/2
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

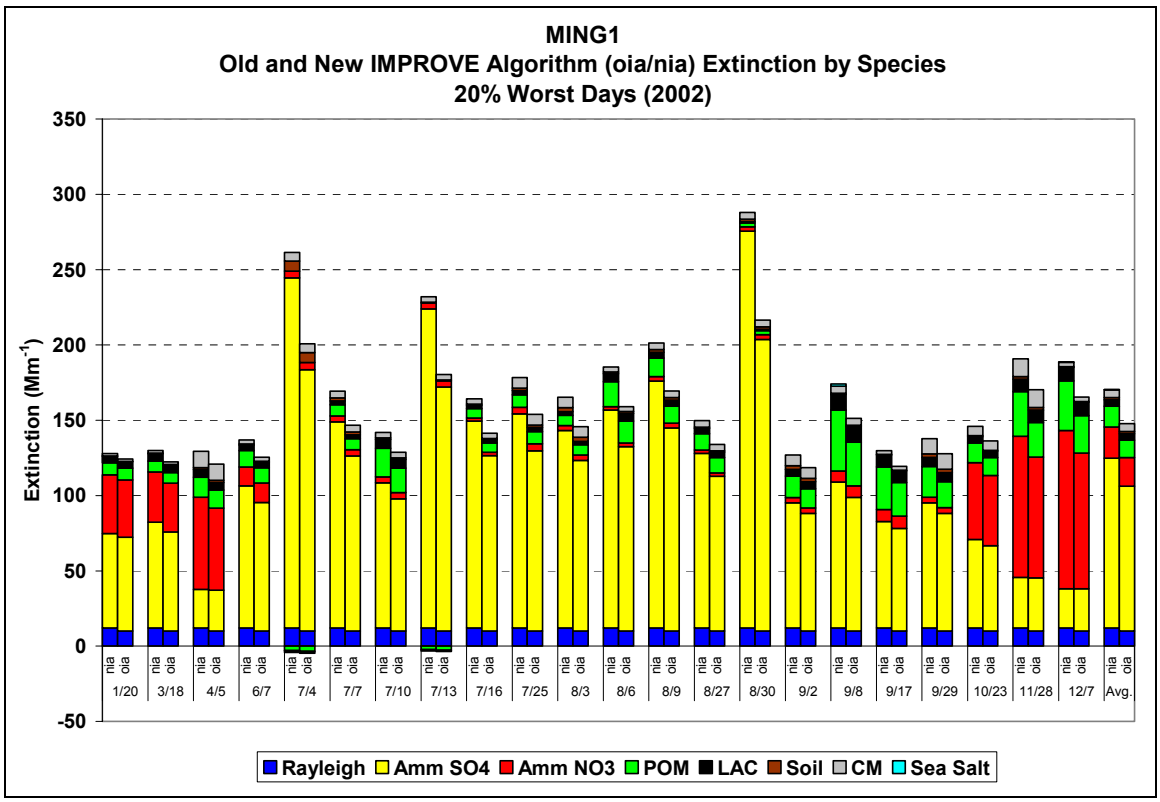

LIGO1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
0
5
10
15
20
25
30
35
40
45
50
nia
oia
1/5
1/8
1/11
1/23
1/26
2/7
3/3
3/18
3/30
4/14
4/26
4/29
10/29
11/4
11/16
11/22
12/7
12/13
12/22
12/25
12/28
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

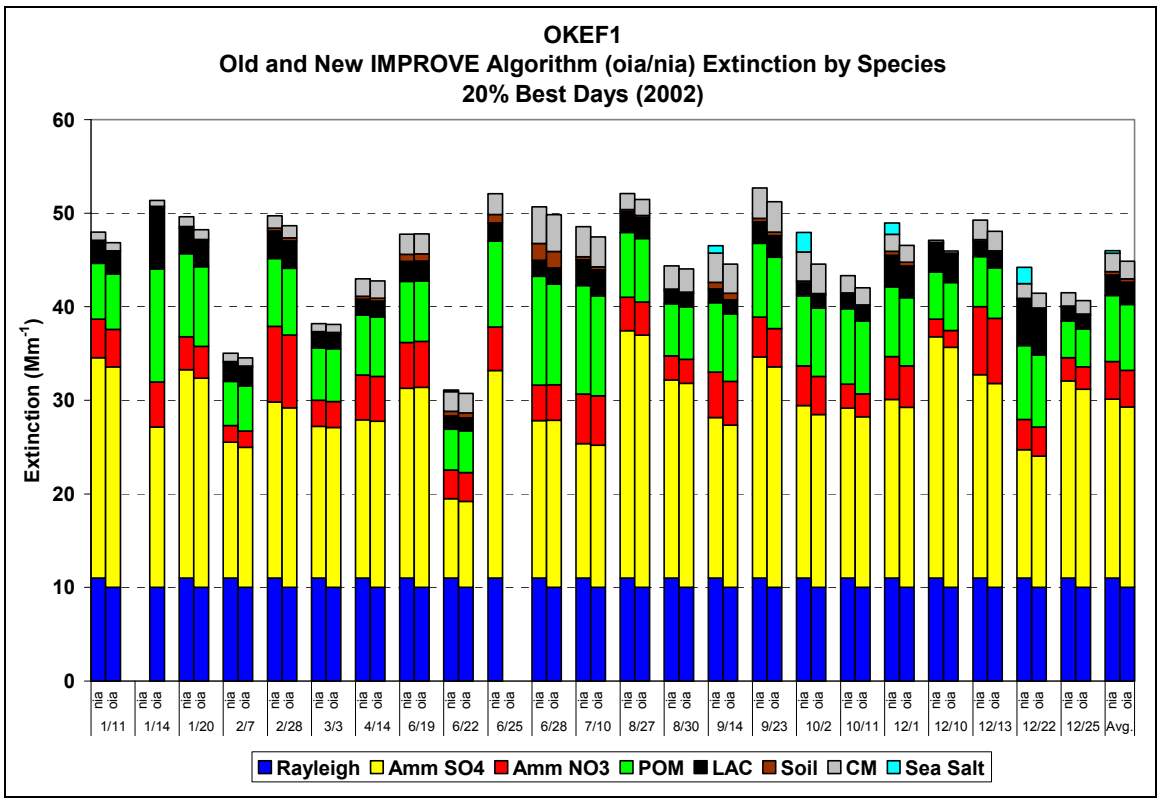

LIGO1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
400
350
300
250
200
150
100
50
0
nia
oia
5/2
5/8
5/17
5/29
6/1
6/19
7/10
7/22
7/25
7/28
7/31
8/3
8/6
8/9
8/12
8/21
8/24
8/27
9/5
9/8
9/11
9/17
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

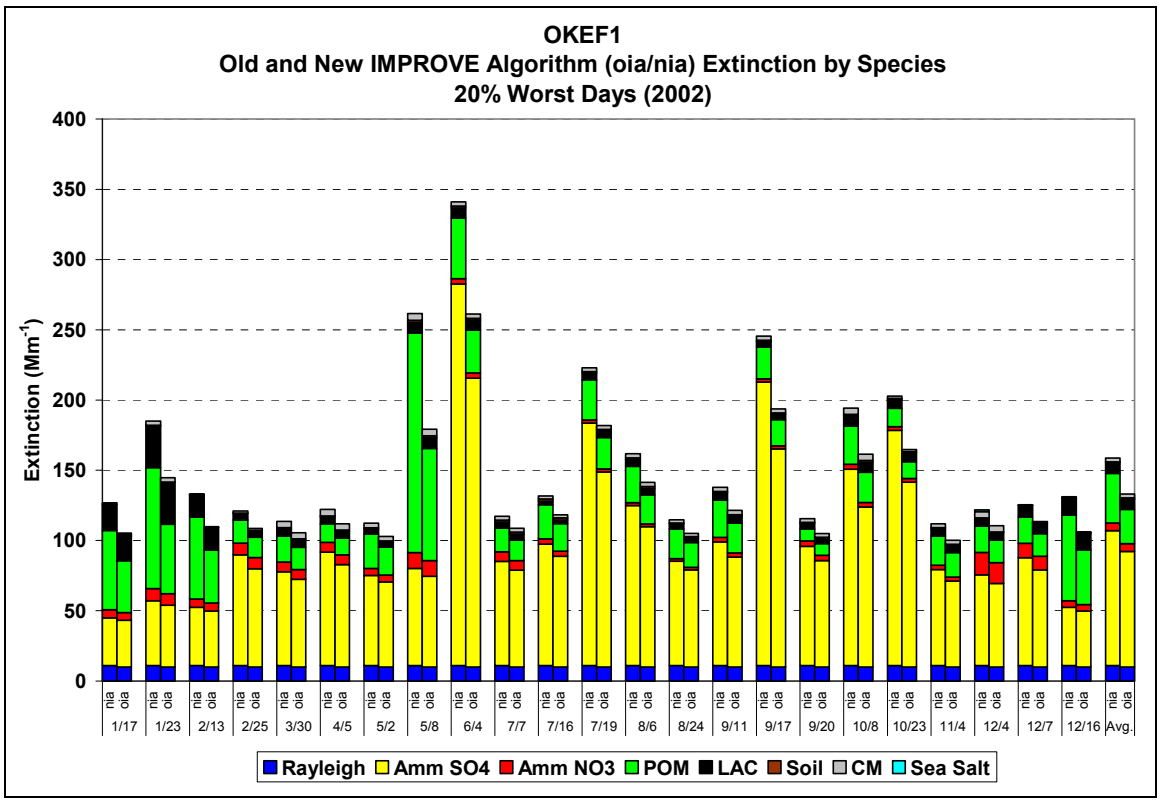

MACA1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
70
60
50
40
30
20
10
0
nia
oia
1/14
1/23
2/1
2/4
2/13
3/3
3/9
3/24
3/30
4/23
4/26
8/15
9/23
9/26
10/5
10/8
10/14
10/29
11/4
11/19
12/4
12/13
12/22
12/31
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

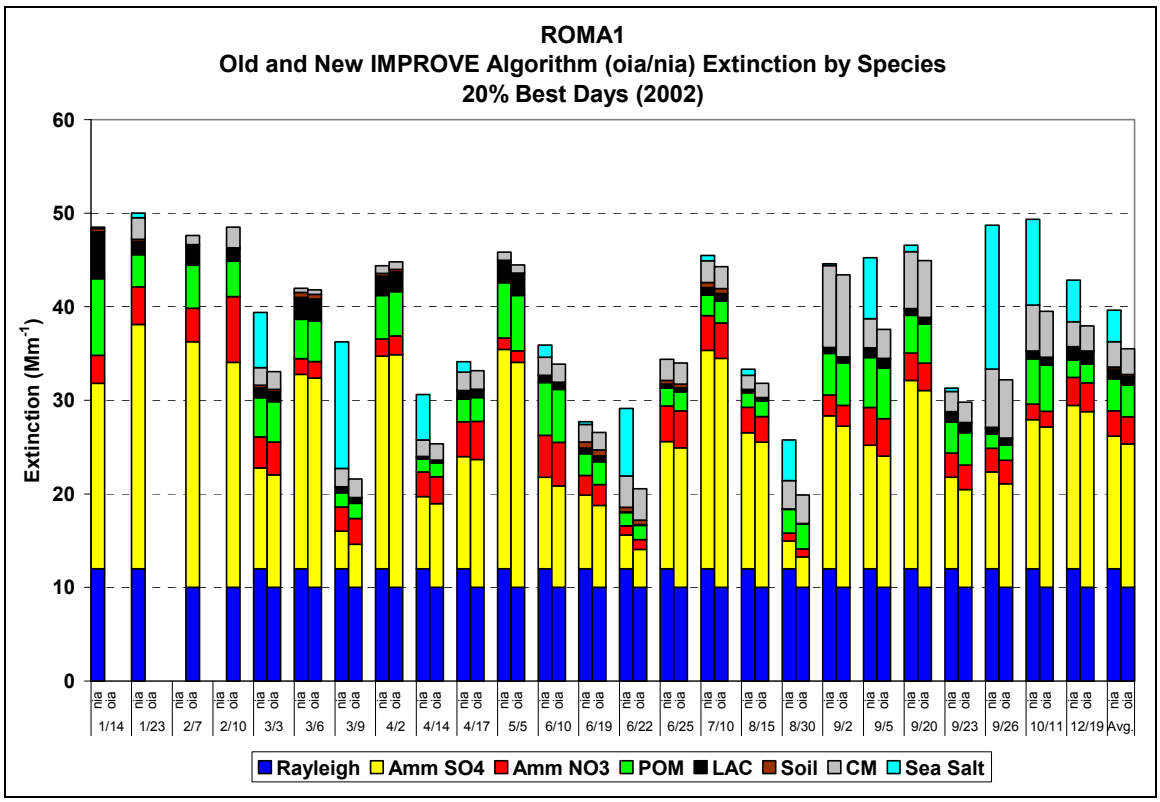

MACA1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
450
400
350
300
250
200
150
100
50
0
nia
oia
3/27
5/29
6/1
6/4
6/19
6/22
7/1
7/4
7/10
7/16
7/22
7/25
7/31
8/3
8/6
8/12
8/21
8/24
8/27
9/2
9/8
9/11
9/17
9/20
12/7
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

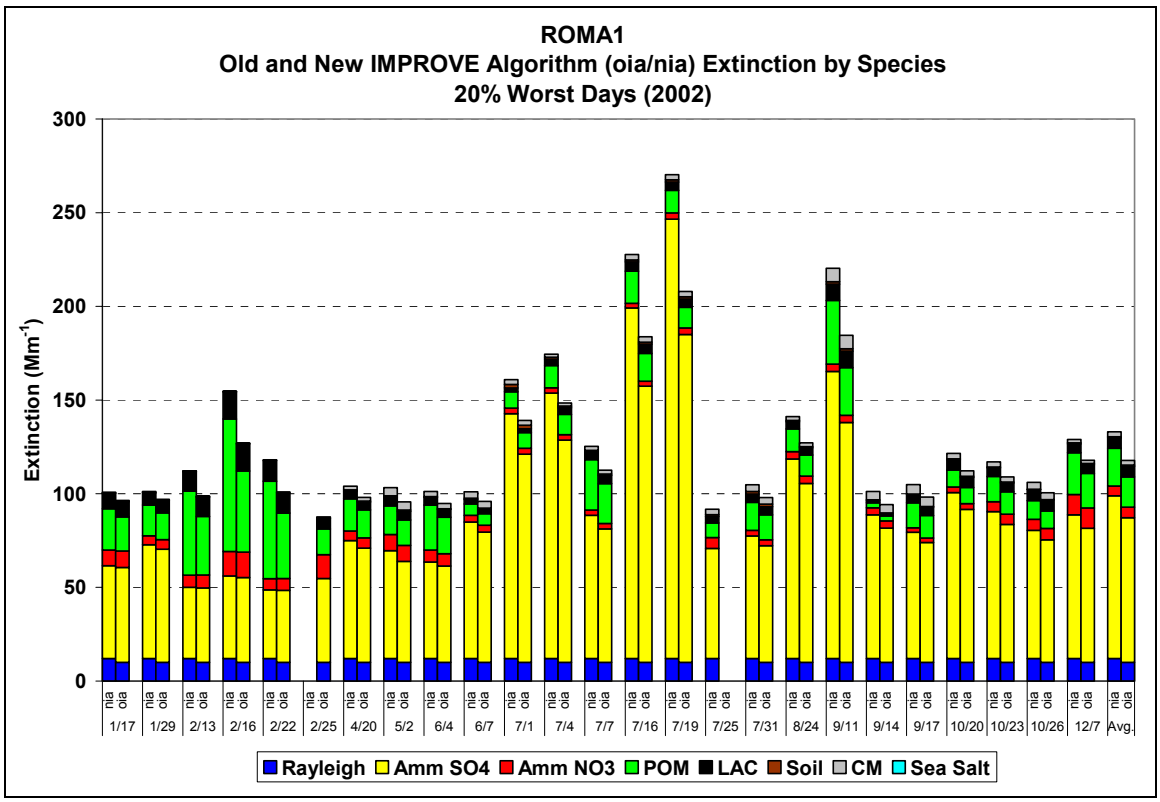

MING1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
0
10
20
30
40
50
60
nia
oia
1/14
2/1
2/13
3/3
4/26
5/14
5/17
5/20
6/13
6/16
6/25
7/19
8/15
9/20
9/23
10/5
10/8
10/17
10/29
11/4
12/19
12/22
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

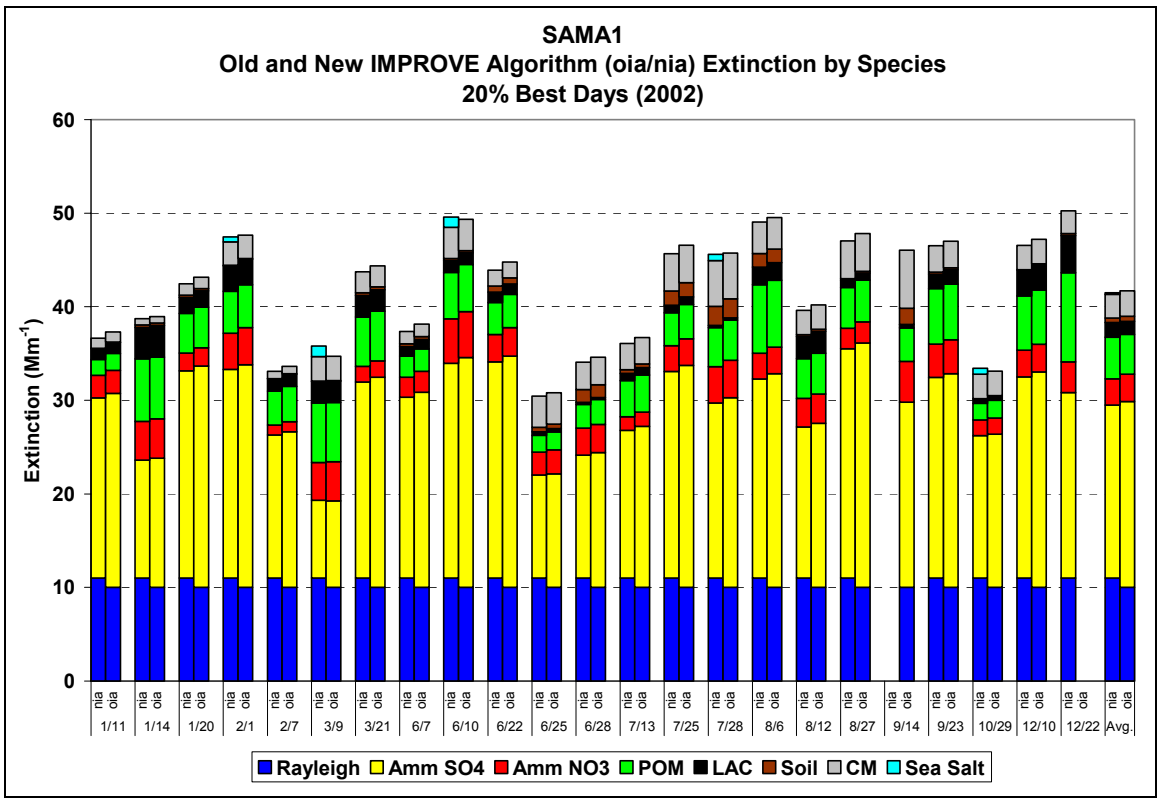

MING1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
350
300
250
200
150
100
50
0
-50
nia
oia
1/20
3/18
4/5
6/7
7/4
7/7
7/10
7/13
7/16
7/25
8/3
8/6
8/9
8/27
8/30
9/2
9/8
9/17
9/29
10/23
11/28
12/7
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

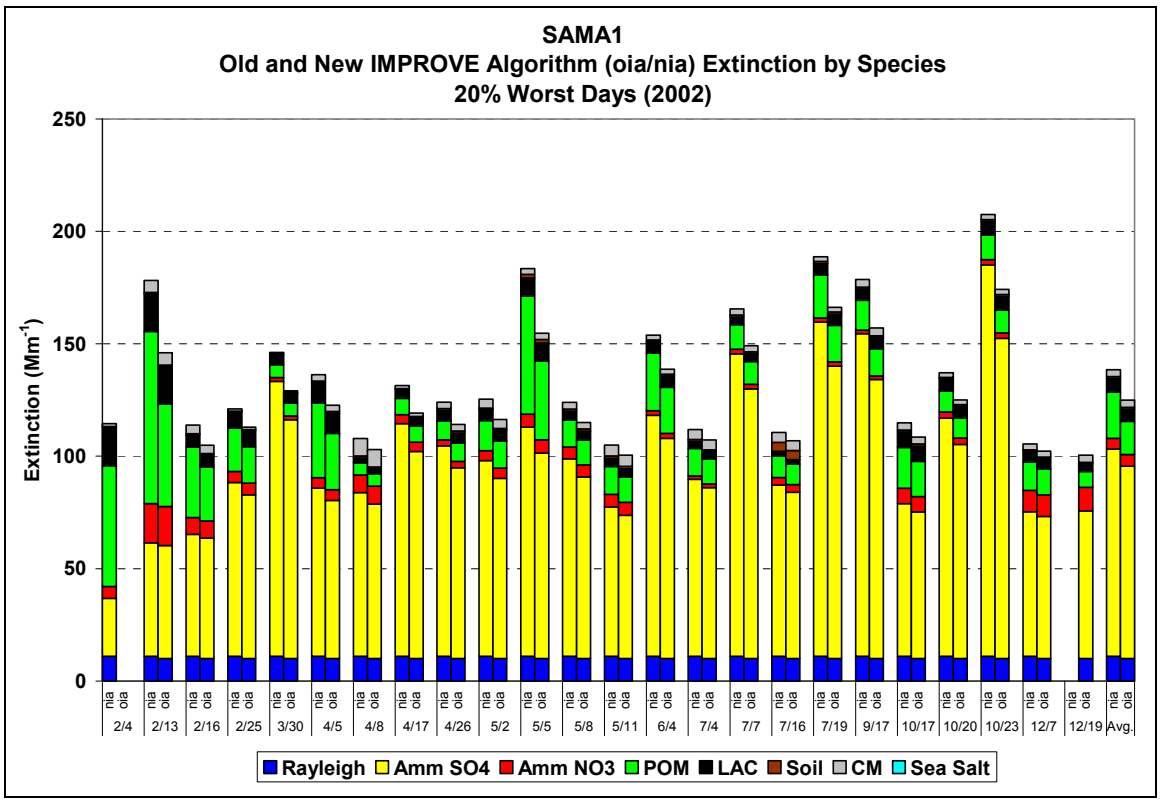

OKEF1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
60
50
40
30
20
10
0
nia
oia
1/11
1/14
1/20
2/7
2/28
3/3
4/14
6/19
6/22
6/25
6/28
7/10
8/27
8/30
9/14
9/23
10/2
10/11
12/1
12/10
12/13
12/22
12/25
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

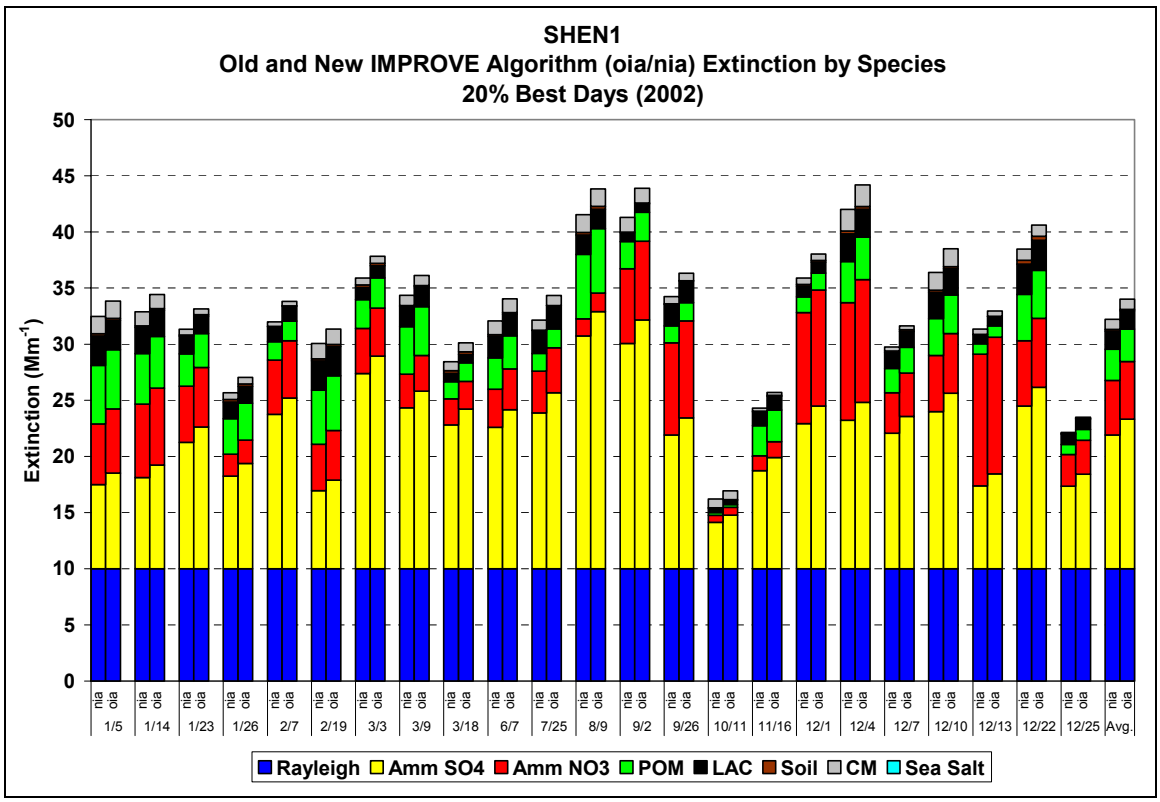

OKEF1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
400
350
300
250
200
150
100
50
0
nia
oia
1/17
1/23
2/13
2/25
3/30
4/5
5/2
5/8
6/4
7/7
7/16
7/19
8/6
8/24
9/11
9/17
9/20
10/8
10/23
11/4
12/4
12/7
12/16
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

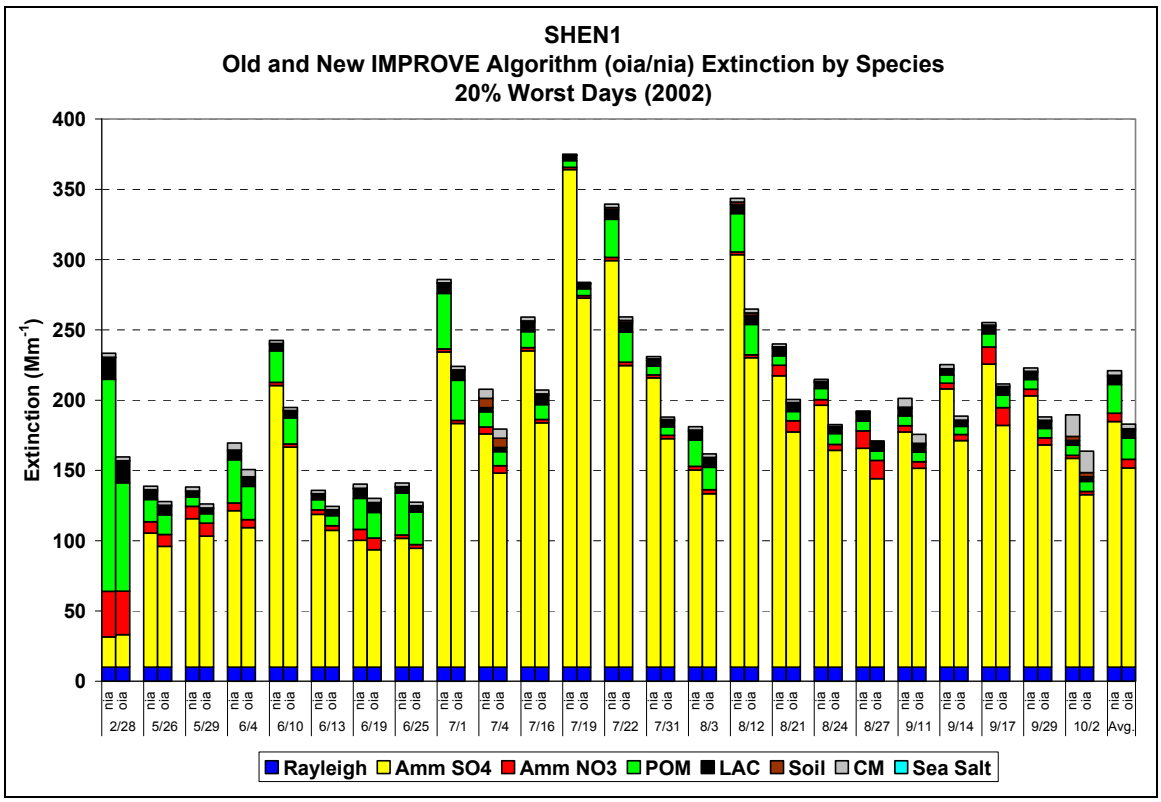

ROMA1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
60
50
40
30
20
10
0
nia
oia
1/14
1/23
2/7
2/10
3/3
3/6
3/9
4/2
4/14
4/17
5/5
6/10
6/19
6/22
6/25
7/10
8/15
8/30
9/2
9/5
9/20
9/23
9/26
10/11
12/19
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

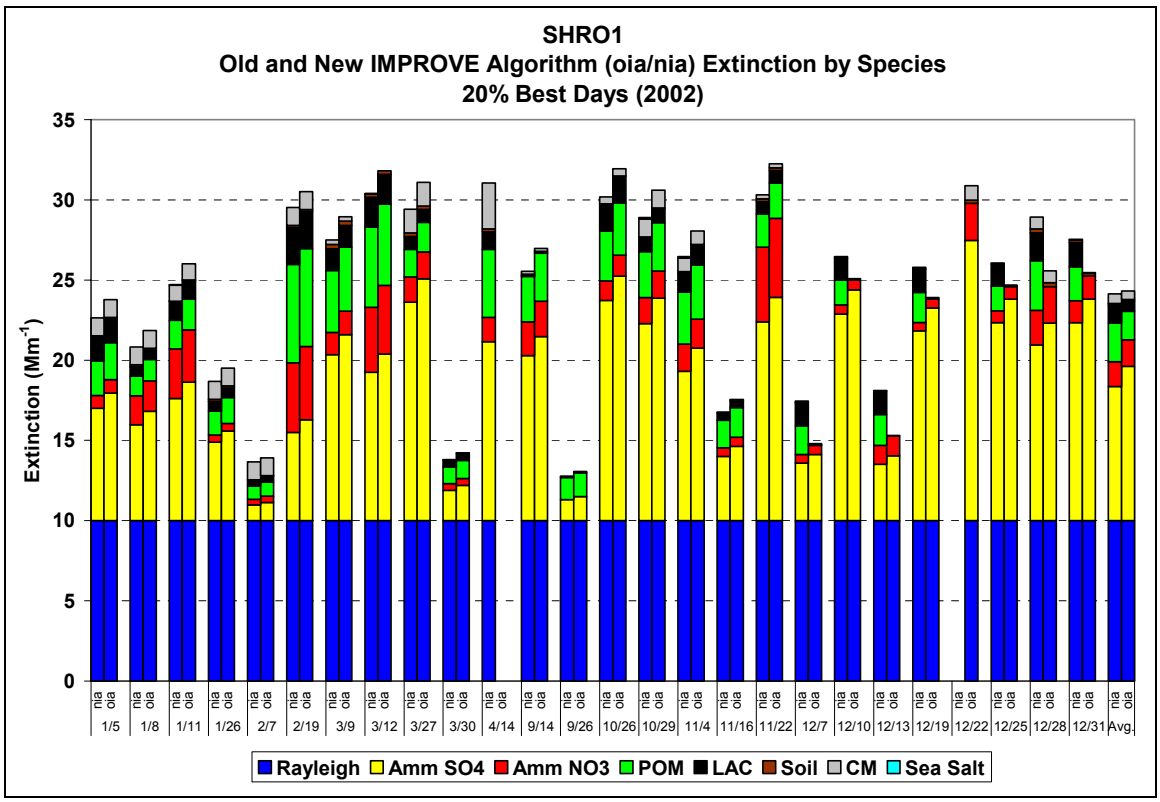

ROMA1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
300
250
200
150
100
50
0
nia
oia
1/17
1/29
2/13
2/16
2/22
2/25
4/20
5/2
6/4
6/7
7/1
7/4
7/7
7/16
7/19
7/25
7/31
8/24
9/11
9/14
9/17
10/20
10/23
10/26
12/7
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

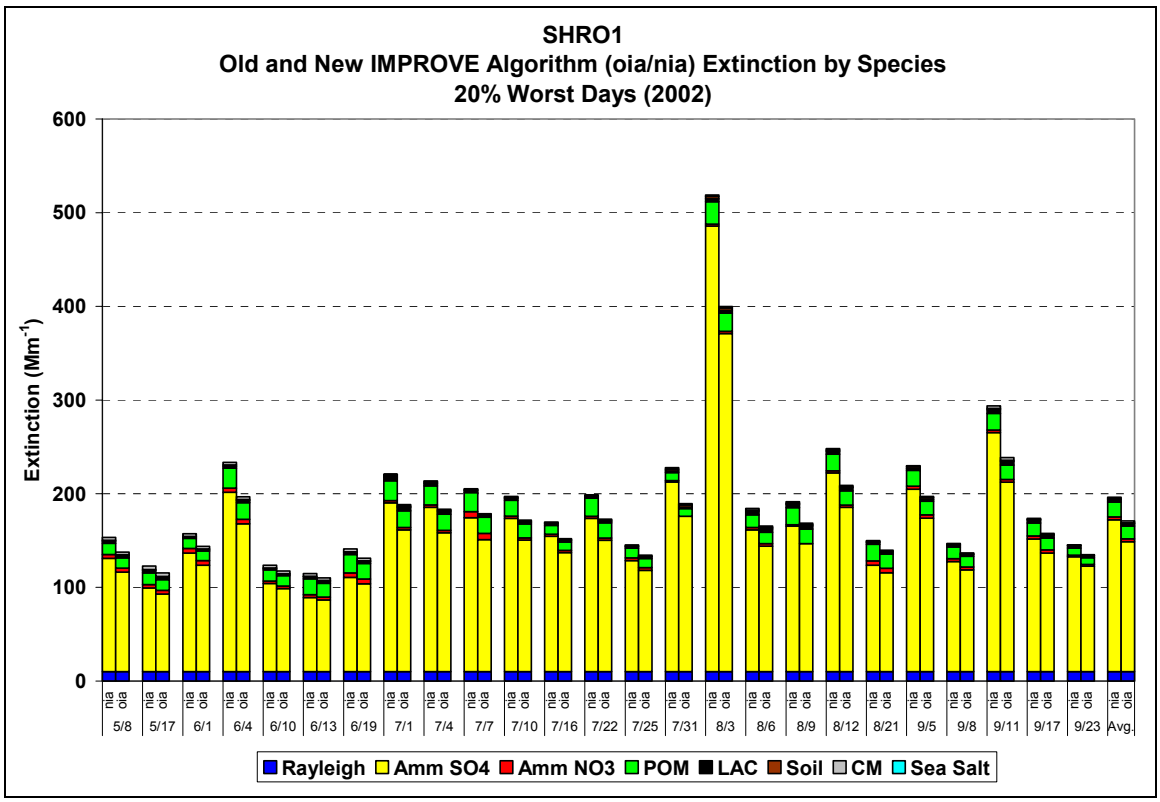

SAMA1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
0
10
20
30
40
50
60
nia
oia
1/11
1/14
1/20
2/1
2/7
3/9
3/21
6/7
6/10
6/22
6/25
6/28
7/13
7/25
7/28
8/6
8/12
8/27
9/14
9/23
10/29
12/10
12/22
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

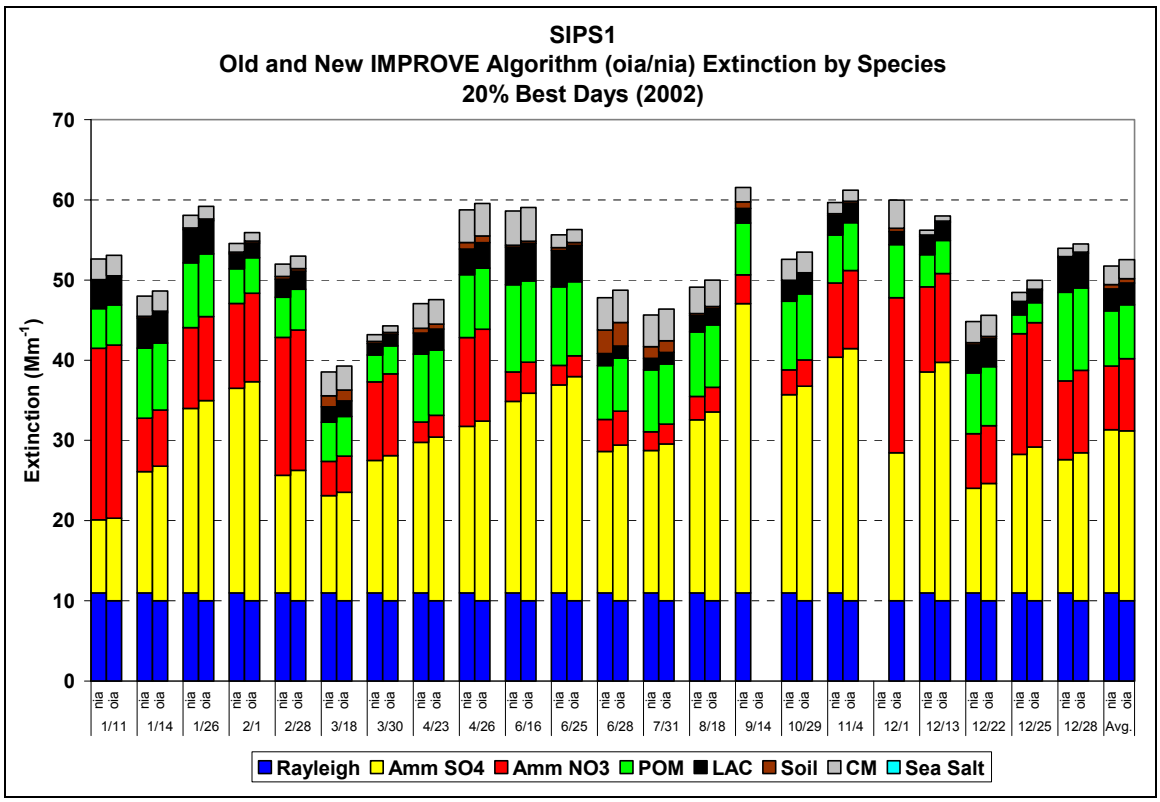

SAMA1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
250
200
150
100
50
0
nia
oia
2/4
2/13
2/16
2/25
3/30
4/5
4/8
4/17
4/26
5/2
5/5
5/8
5/11
6/4
7/4
7/7
7/16
7/19
9/17
10/17
10/20
10/23
12/7
12/19
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

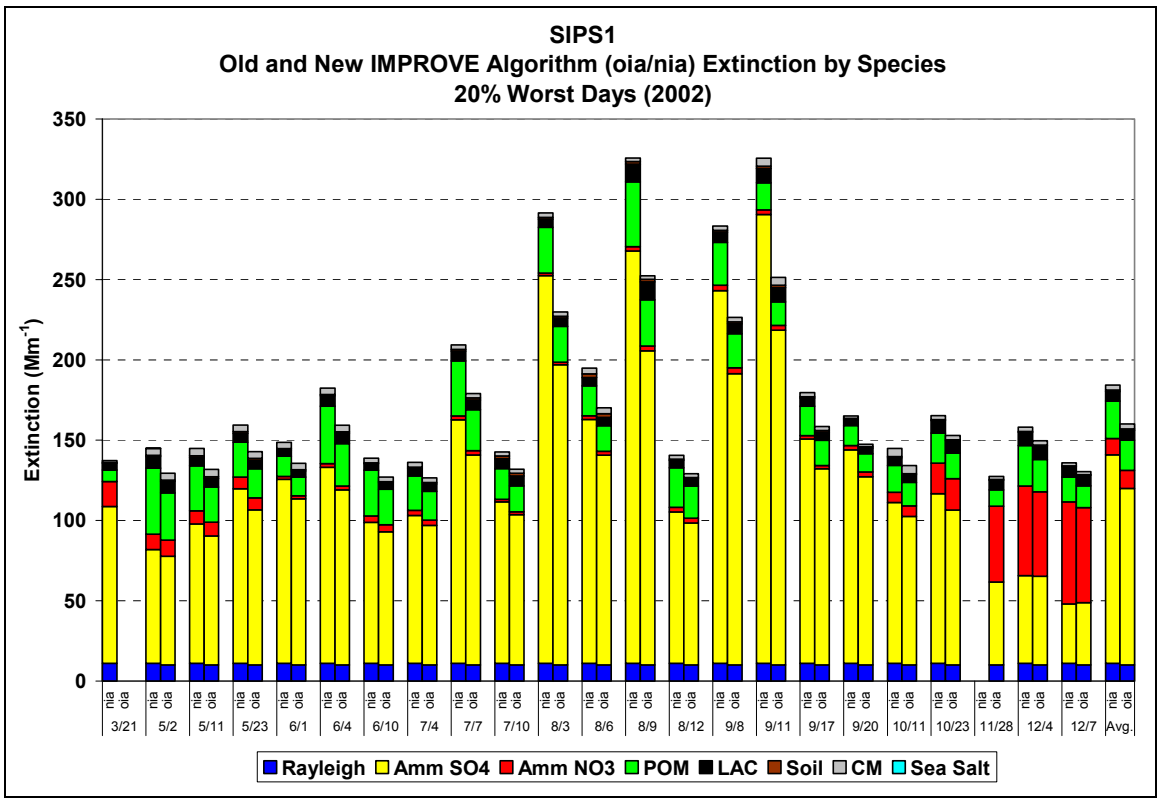

SHEN1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
50
45
40
35
30
25
20
15
10
5
0
nia
oia
1/5
1/14
1/23
1/26
2/7
2/19
3/3
3/9
3/18
6/7
7/25
8/9
9/2
9/26
10/11
11/16
12/1
12/4
12/7
12/10
12/13
12/22
12/25
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

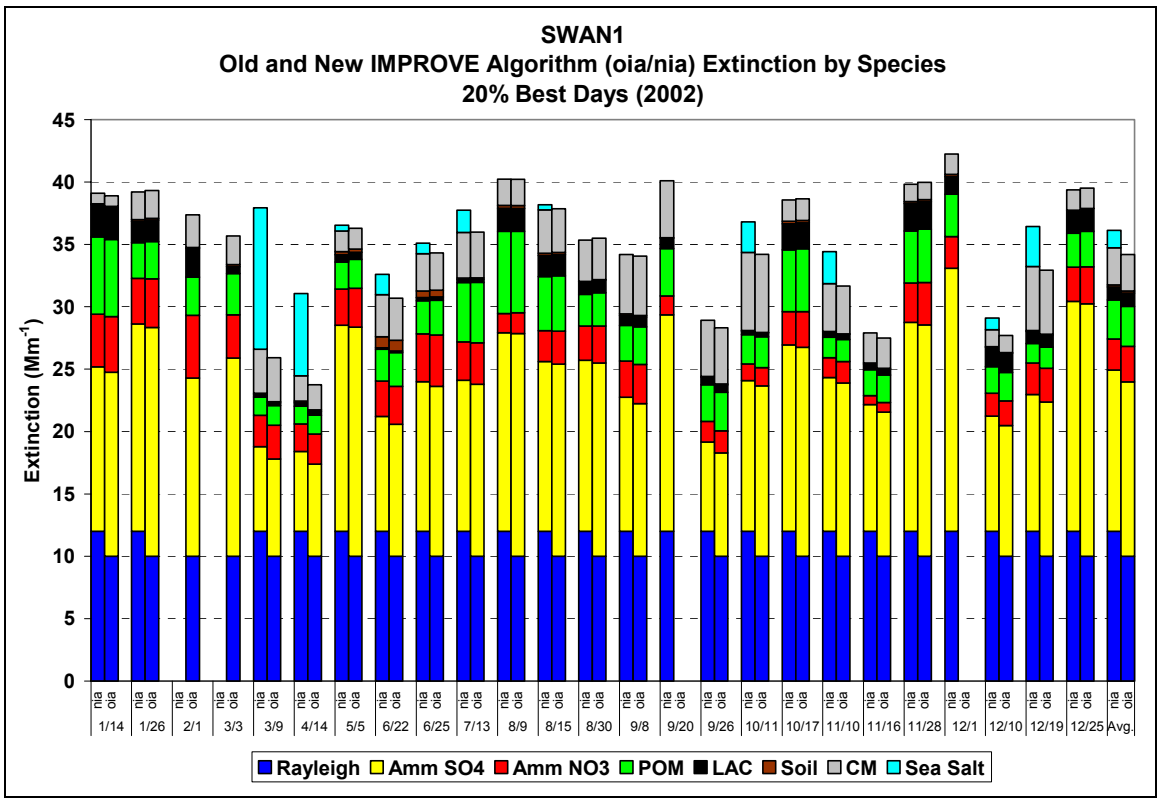

SHEN1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
400
350
300
250
200
150
100
50
0
nia
oia
2/28
5/26
5/29
6/4
6/10
6/13
6/19
6/25
7/1
7/4
7/16
7/19
7/22
7/31
8/3
8/12
8/21
8/24
8/27
9/11
9/14
9/17
9/29
10/2
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

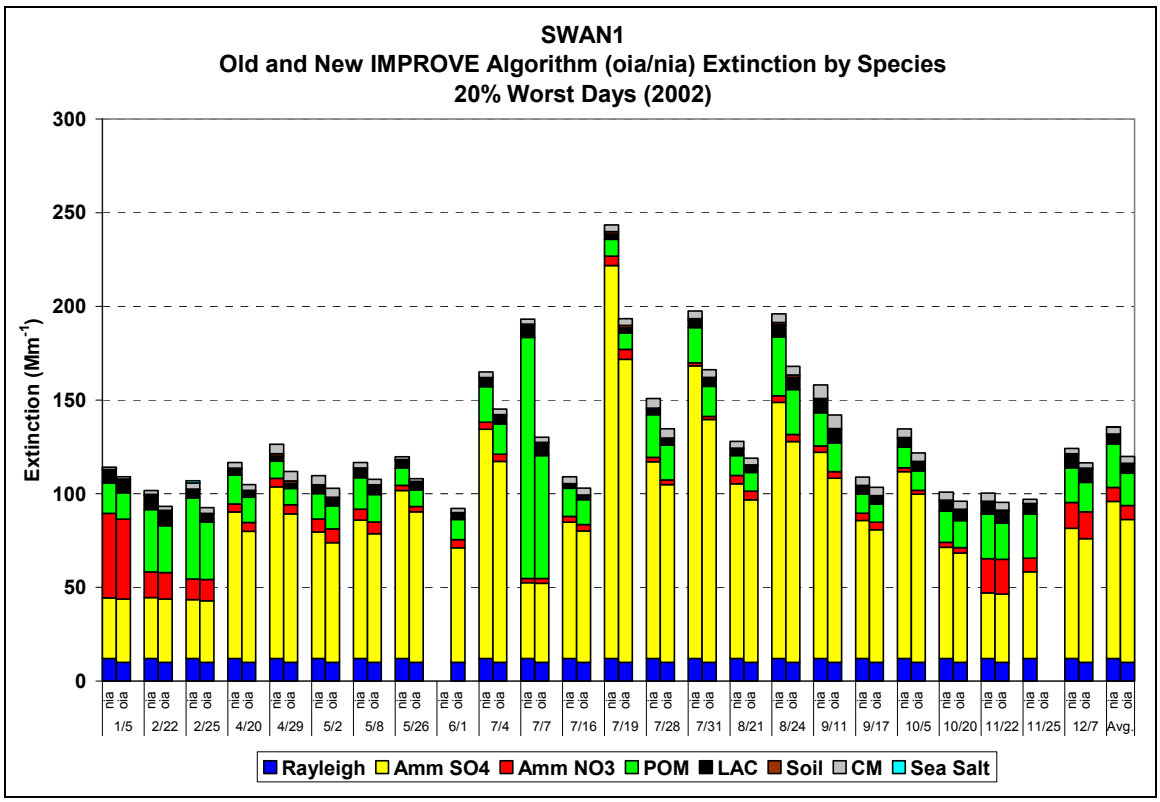

SHRO1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
35
30
25
20
15
10
5
0
nia
oia
1/5
1/8
1/11
1/26
2/7
2/19
3/9
3/12
3/27
3/30
4/14
9/14
9/26
10/26
10/29
11/4
11/16
11/22
12/7
12/10
12/13
12/19
12/22
12/25
12/28
12/31
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

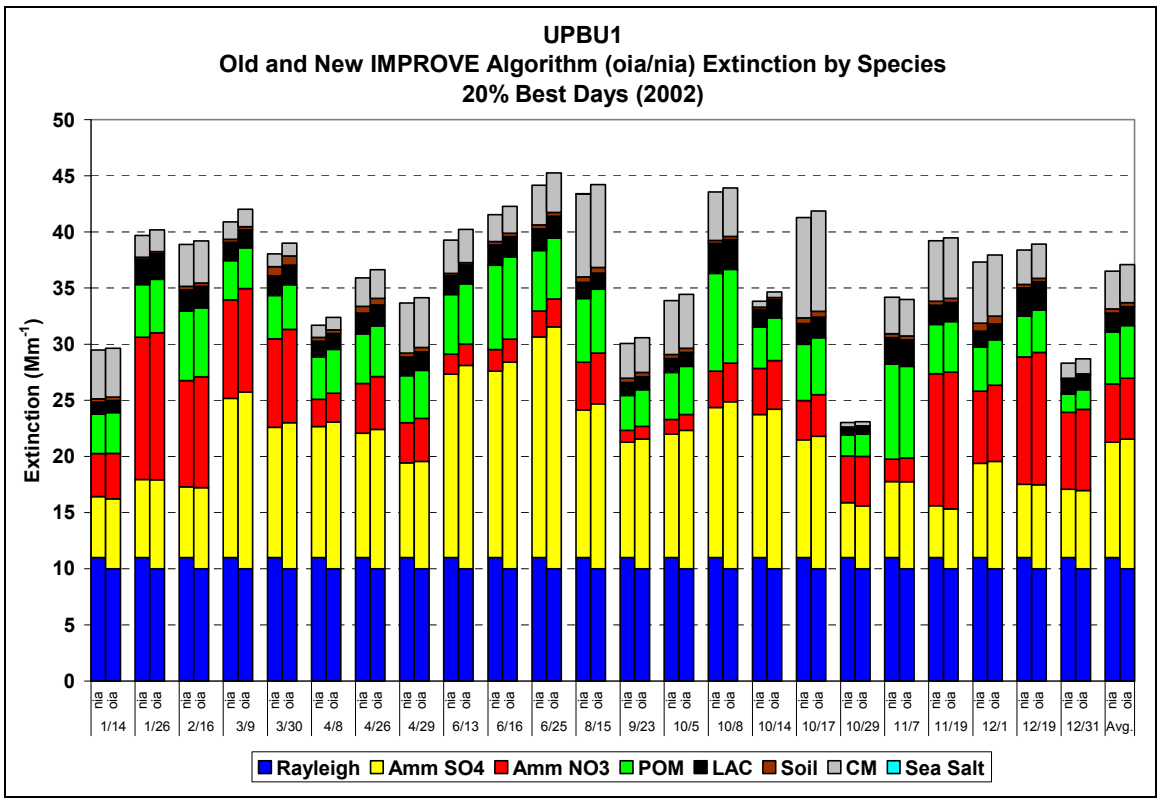

SHRO1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
600
500
400
300
200
100
0
nia
oia
5/8
5/17
6/1
6/4
6/10
6/13
6/19
7/1
7/4
7/7
7/10
7/16
7/22
7/25
7/31
8/3
8/6
8/9
8/12
8/21
9/5
9/8
9/11
9/17
9/23
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt

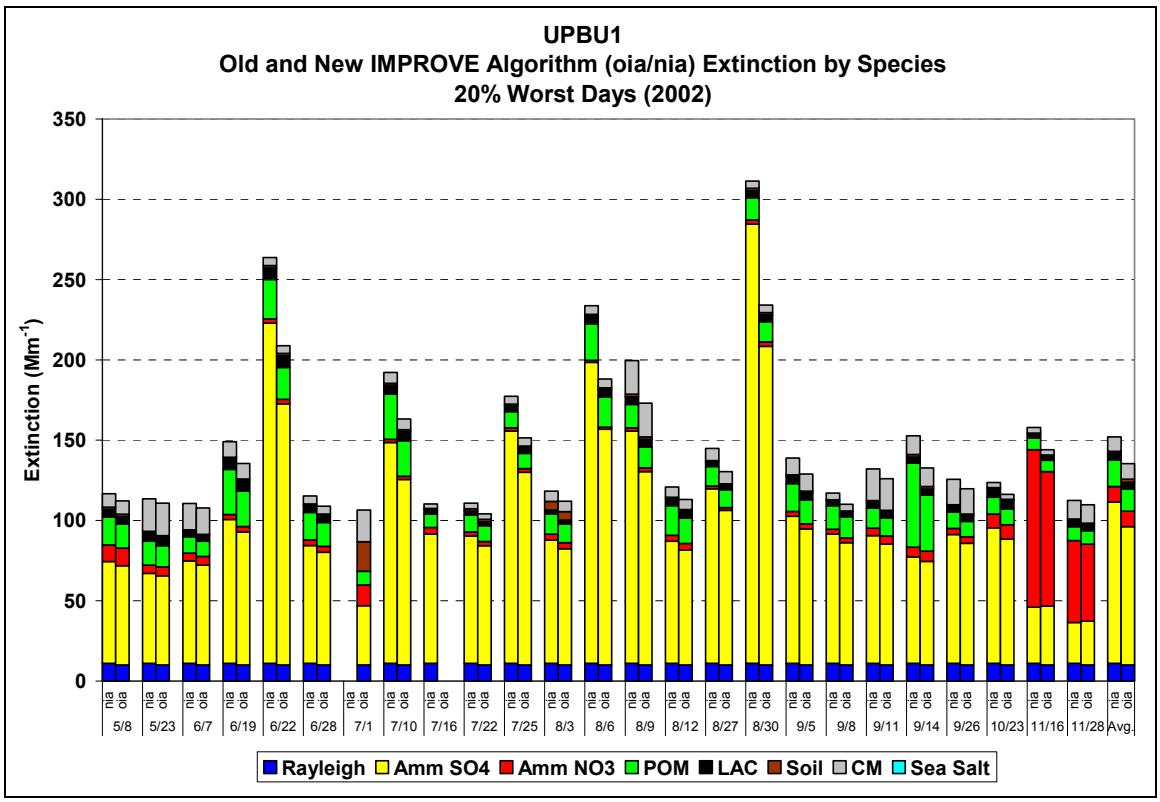

SIPS1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
70
60
50
40
30
20
10
0
nia
oia
1/11
1/14
1/26
2/1
2/28
3/18
3/30
4/23
4/26
6/16
6/25
6/28
7/31
8/18
9/14
10/29
11/4
12/1
12/13
12/22
12/25
12/28
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt


SIPS1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
350
300
250
200
150
100
50
0
nia
oia
3/21
5/2
5/11
5/23
6/1
6/4
6/10
7/4
7/7
7/10
8/3
8/6
8/9
8/12
9/8
9/11
9/17
9/20
10/11
10/23
11/28
12/4
12/7
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt


SWAN1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
0
5
10
15
20
25
30
35
40
45
nia
oia
1/14
1/26
2/1
3/3
3/9
4/14
5/5
6/22
6/25
7/13
8/9
8/15
8/30
9/8
9/20
9/26
10/11
10/17
11/10
11/16
11/28
12/1
12/10
12/19
12/25
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt


SWAN1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
300
250
200
150
100
50
0
nia
oia
1/5
2/22
2/25
4/20
4/29
5/2
5/8
5/26
6/1
7/4
7/7
7/16
7/19
7/28
7/31
8/21
8/24
9/11
9/17
10/5
10/20
11/22
11/25
12/7
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt


UPBU1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Best Days (2002)
Extinction (Mm-1)
0
5
10
15
20
25
30
35
40
45
50
nia
oia
1/14
1/26
2/16
3/9
3/30
4/8
4/26
4/29
6/13
6/16
6/25
8/15
9/23
10/5
10/8
10/14
10/17
10/29
11/7
11/19
12/1
12/19
12/31
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt


UPBU1
Old and New IMPROVE Algorithm (oia/nia) Extinction by Species
20% Worst Days (2002)
Extinction (Mm-1)
350
300
250
200
150
100
50
0
nia
oia
5/8
5/23
6/7
6/19
6/22
6/28
7/1
7/10
7/16
7/22
7/25
8/3
8/6
8/9
8/12
8/27
8/30
9/5
9/8
9/11
9/14
9/26
10/23
11/16
11/28
Avg.
Rayleigh
Amm SO4
Amm NO3
POM
LAC
Soil
CM
Sea Salt