Ammonia in the Bay-Delta Estuary

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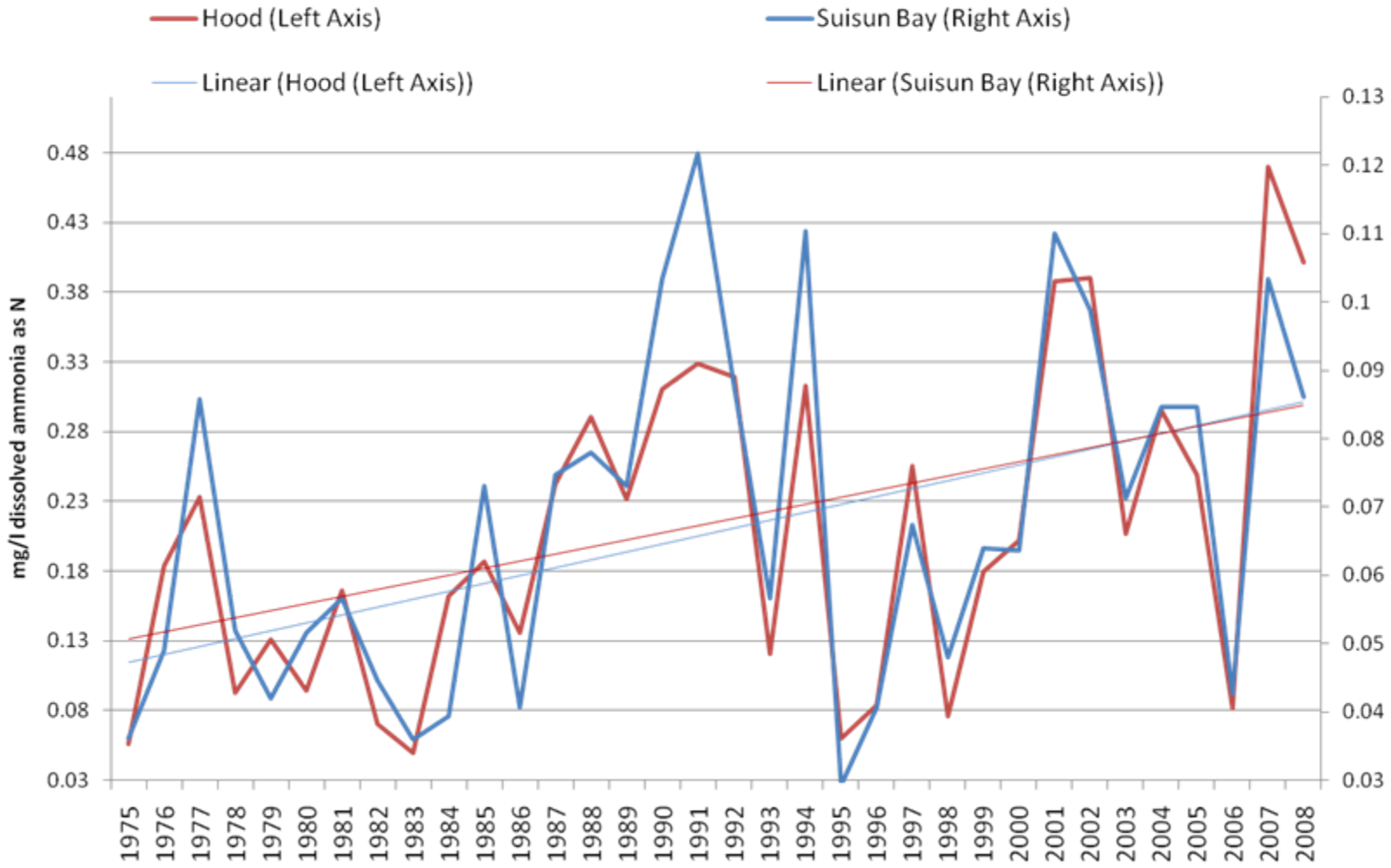
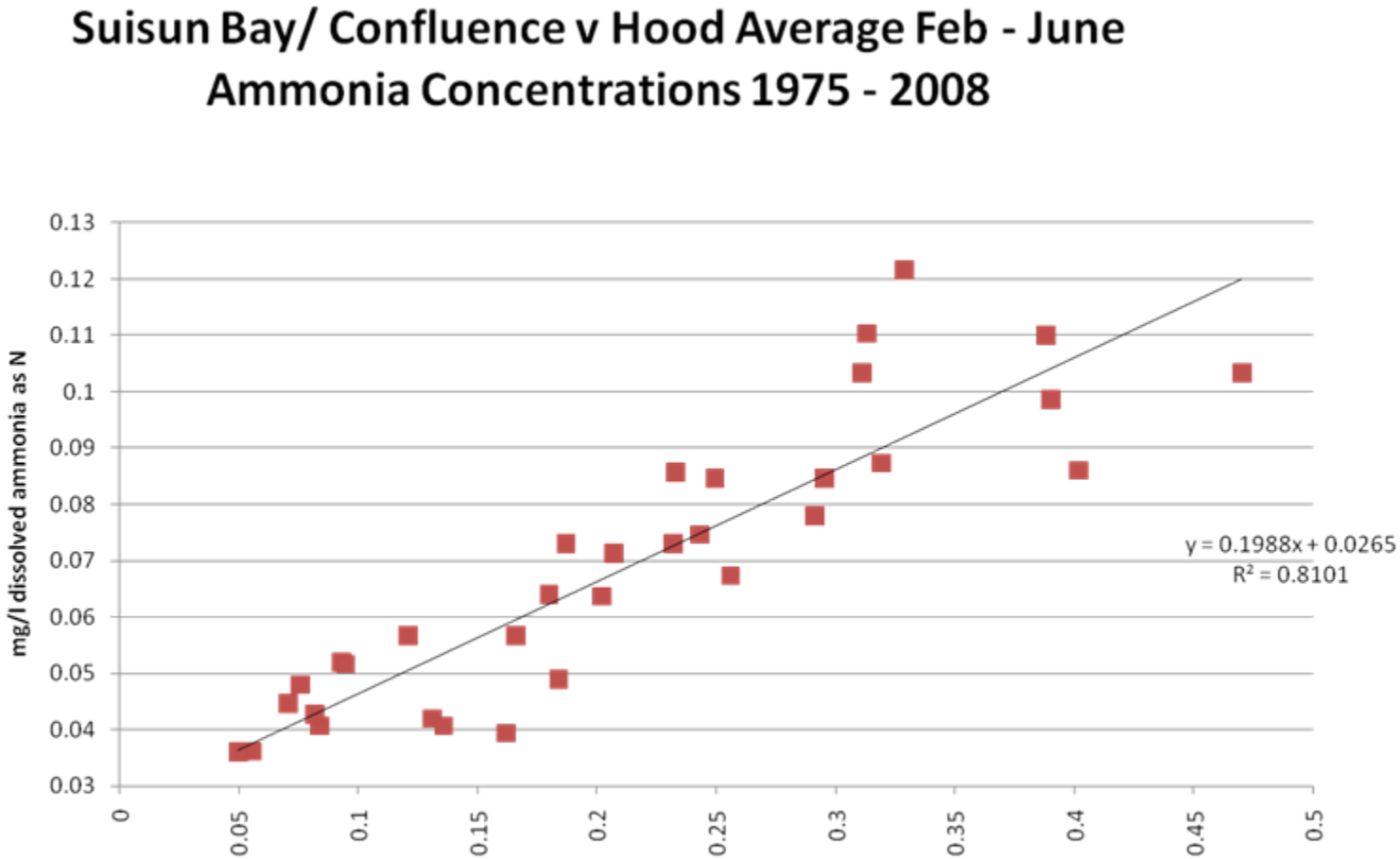
March 11, 2009

Ammonium Concentrations at Hood and Suisun Bay 1975 - 2008 February to June

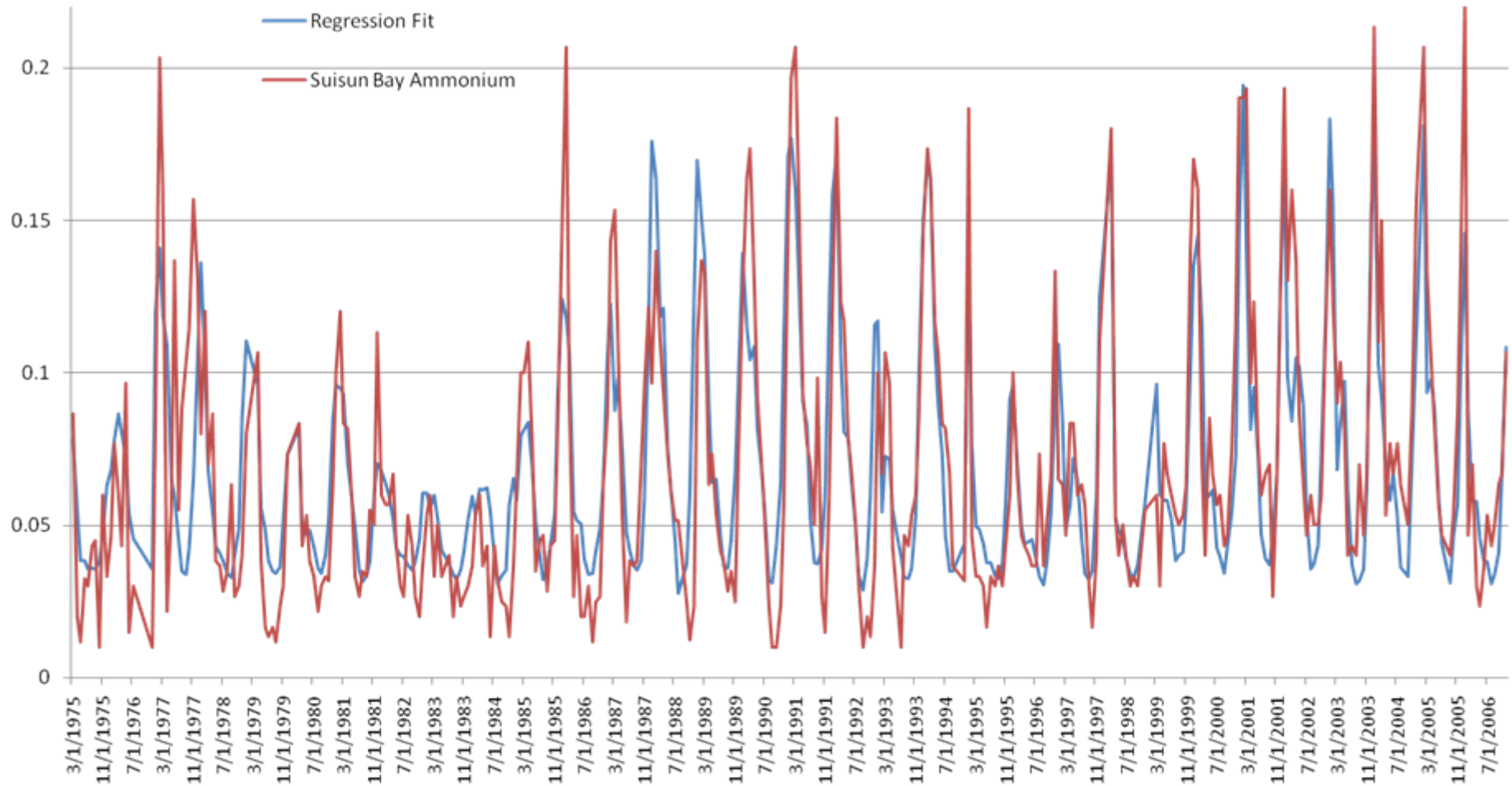


EMP Data

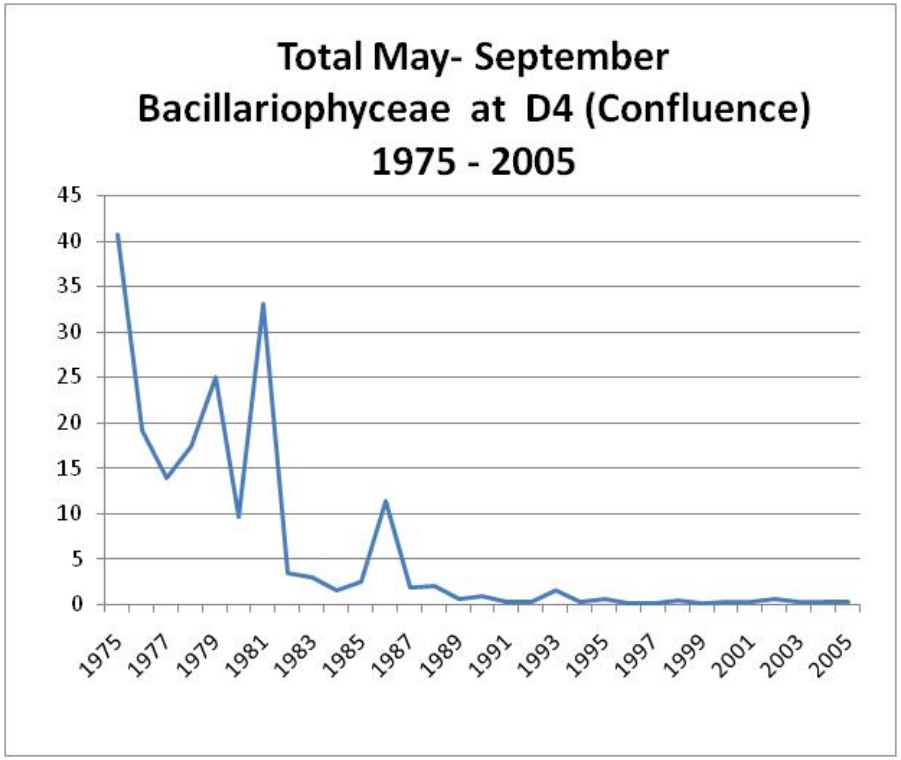
Hood is Tightly Correlated to Locations Downstream

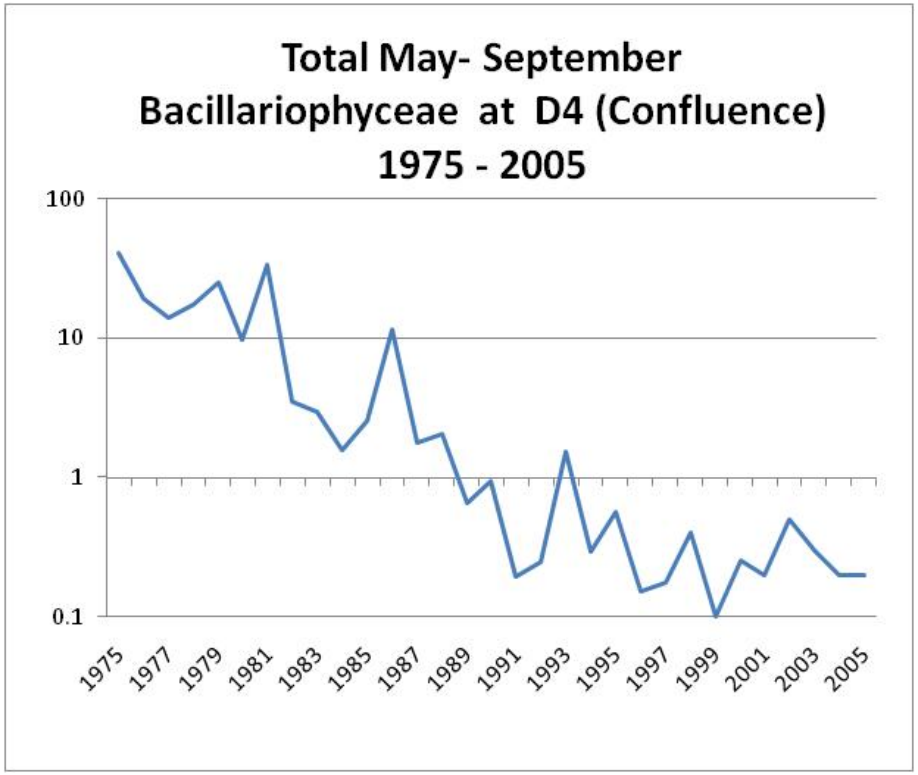


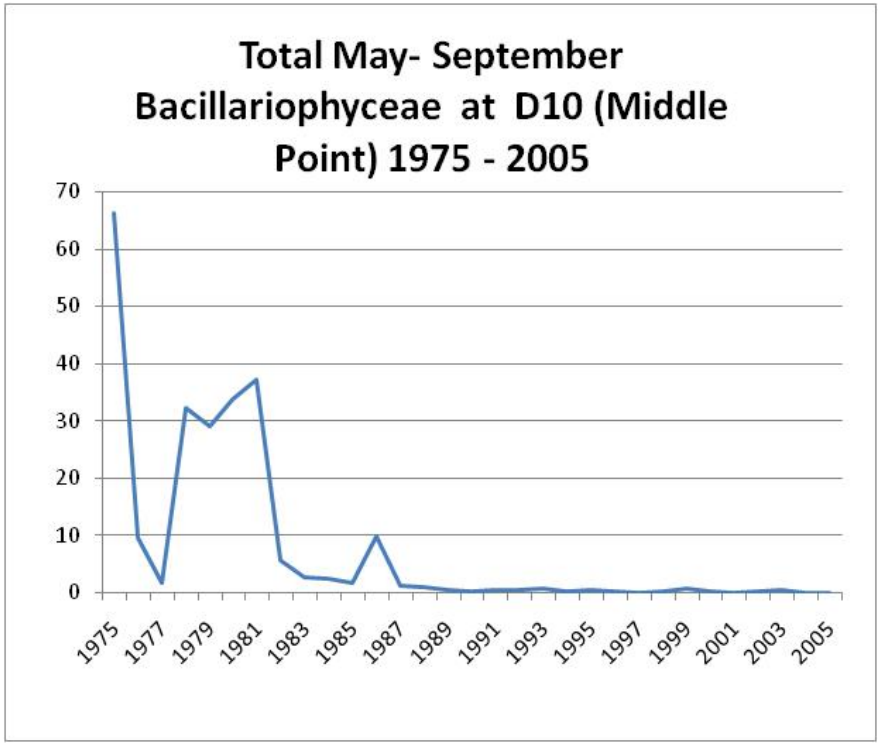
Suisun Bay Ammonium (mg/l) v Regression with Hood and Water Temperature

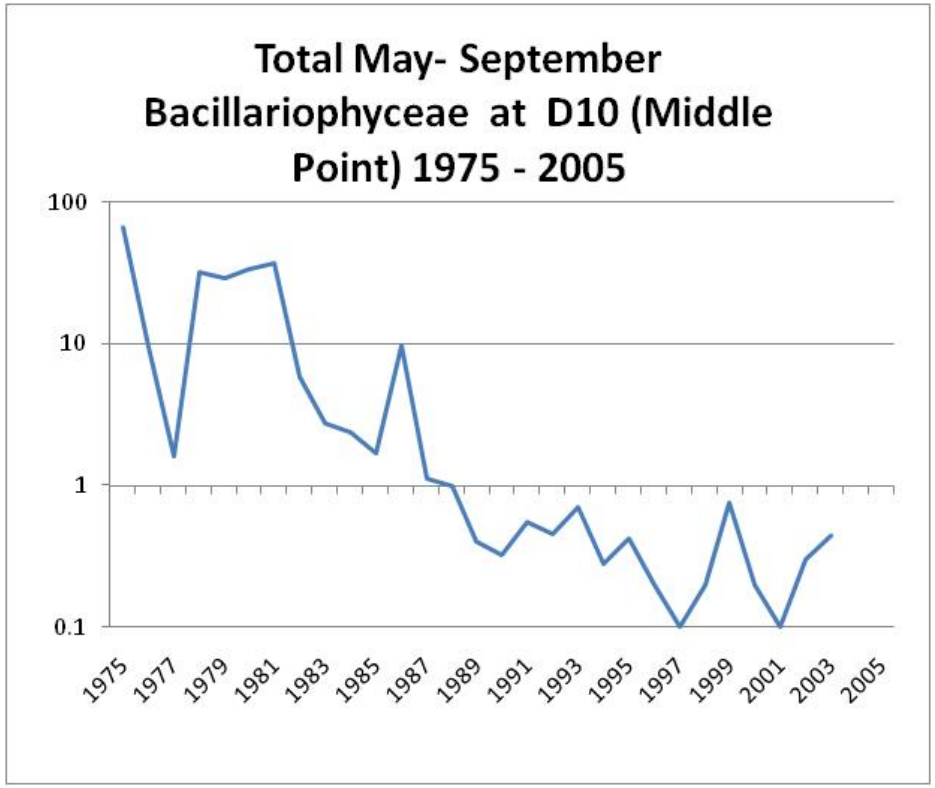


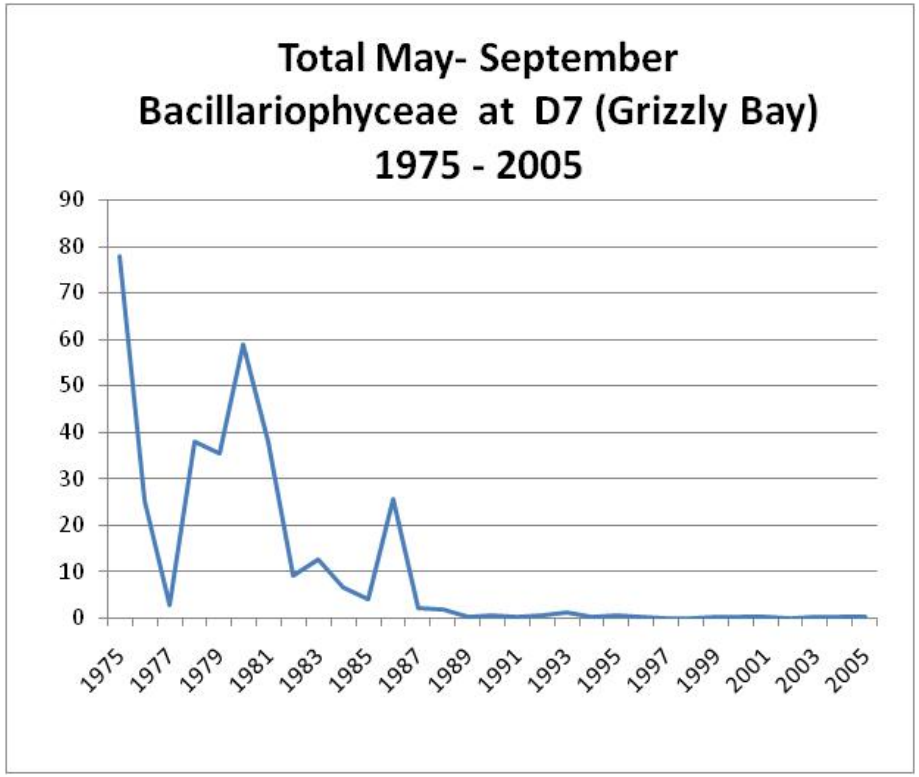
Suisun Bay Ammonium = .69*<Hood Ammonium current and last month> - .033*<Hood Ammonium current and last month> * Martinez Water Temperature this month (Centigrade)

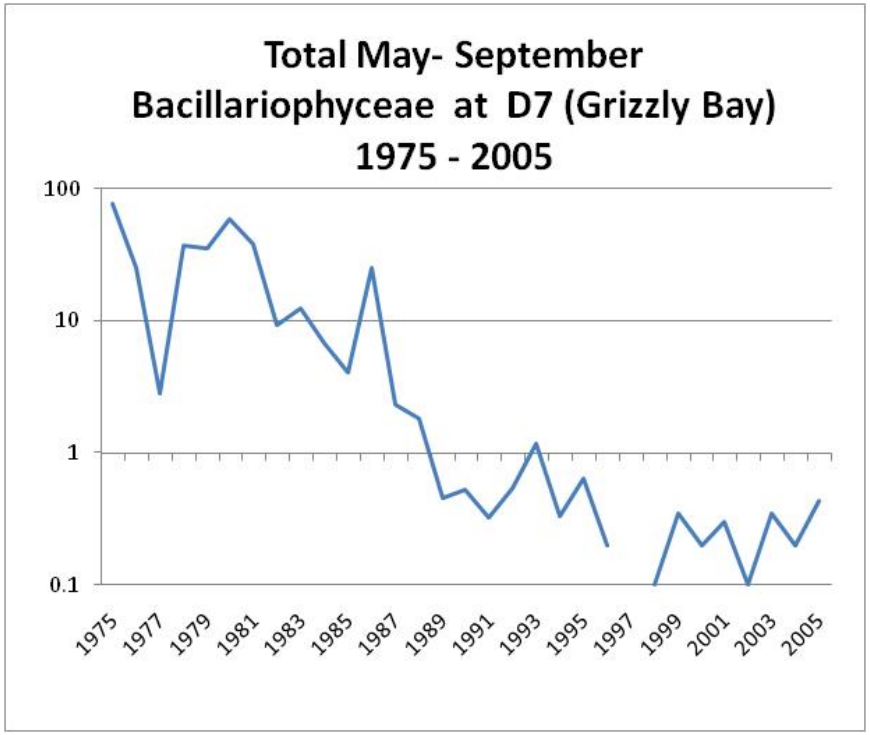

Total May- September
Bacillariophyceae at D4 (Confluence)
1975 - 2005
45
40
35
30
25
20
15
10
5
0
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005

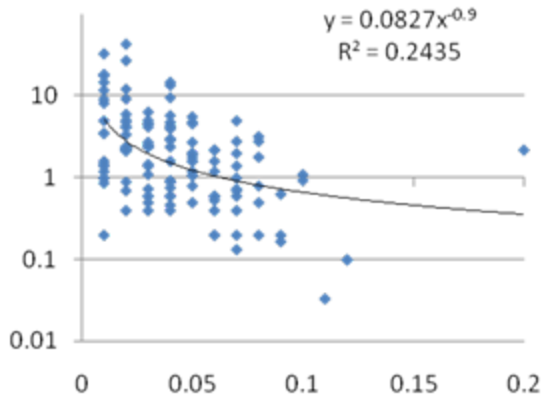

Total May- September
Bacillariophyceae at D4 (Confluence)
1975 - 2005
100
10
1
0.1
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005


Total May- September Bacillariophyceae at D10 (Middle Point) 1975 - 2005
70
60
50
40
30
20
10
0
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005

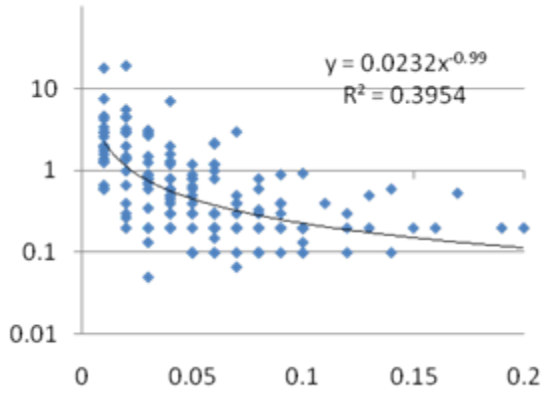

Total May- September Bacillariophyceae at D10 (Middle Point) 1975 - 2005
100
10
1
0.1
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005


Total May- September
Bacillariophyceae at D7 (Grizzly Bay)
1975 - 2005
90
80
70
60
50
40
30
20
10
0
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005

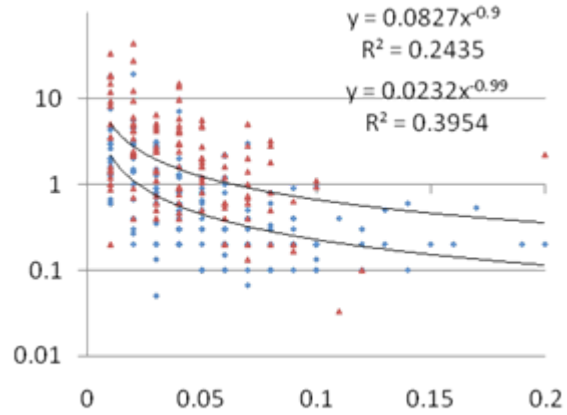

Total May- September
Bacillariophyceae at D7 (Grizzly Bay)
1975 - 2005
100
10
1
0.1
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005



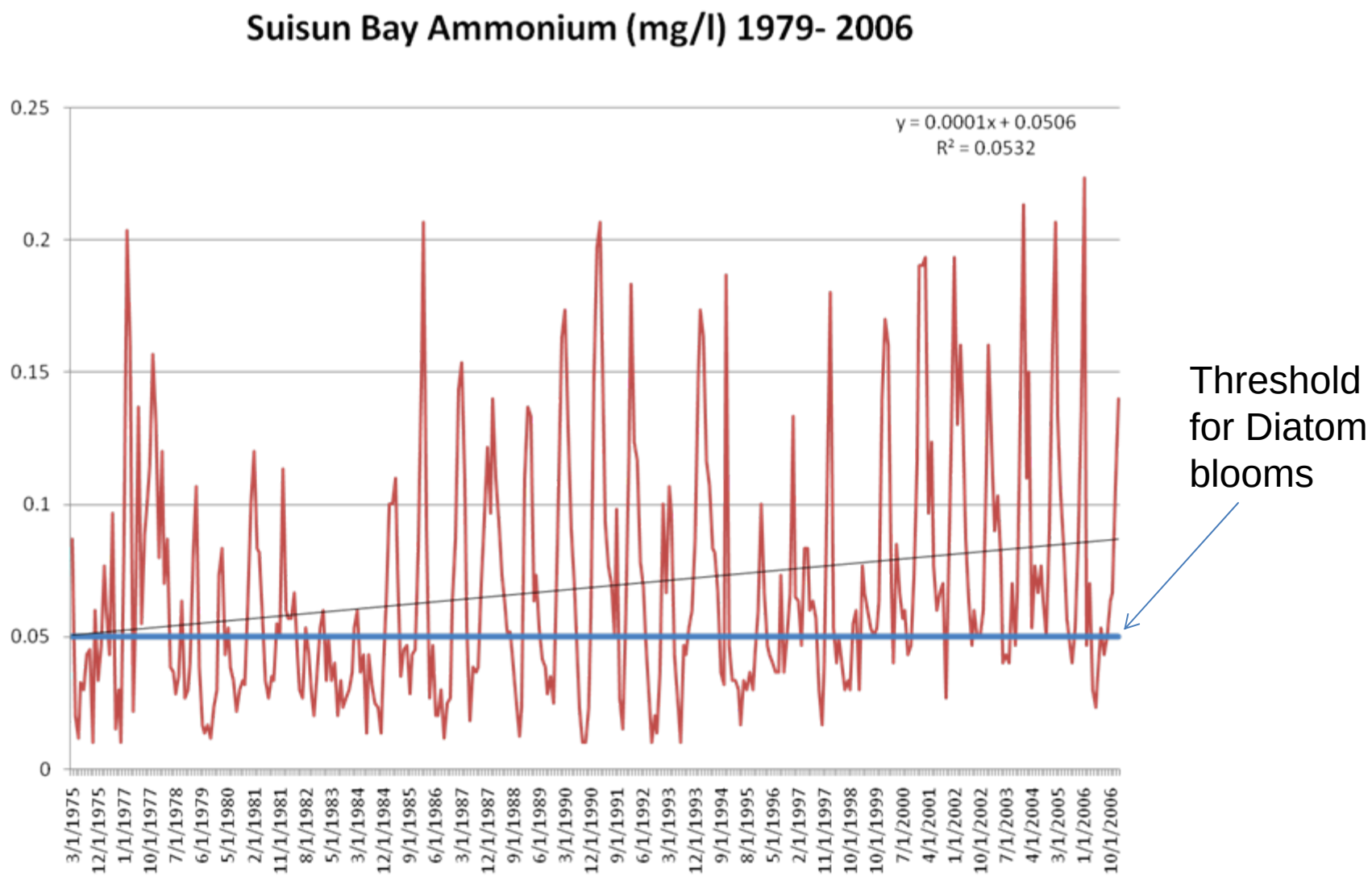
Diatom densities versus ammonium levels 1975 - 1986 in the confluence area

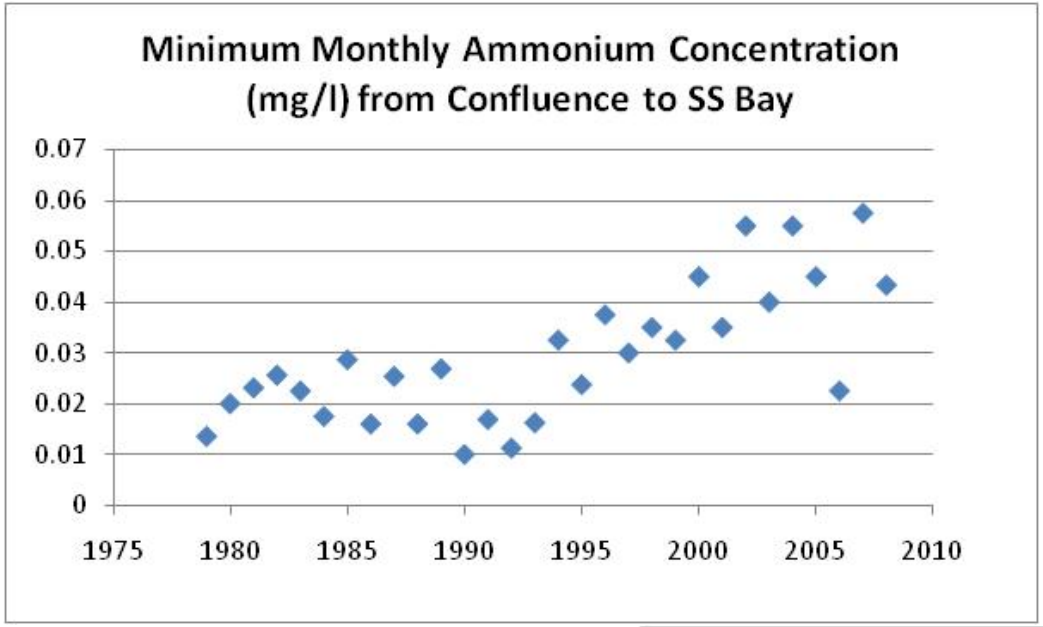


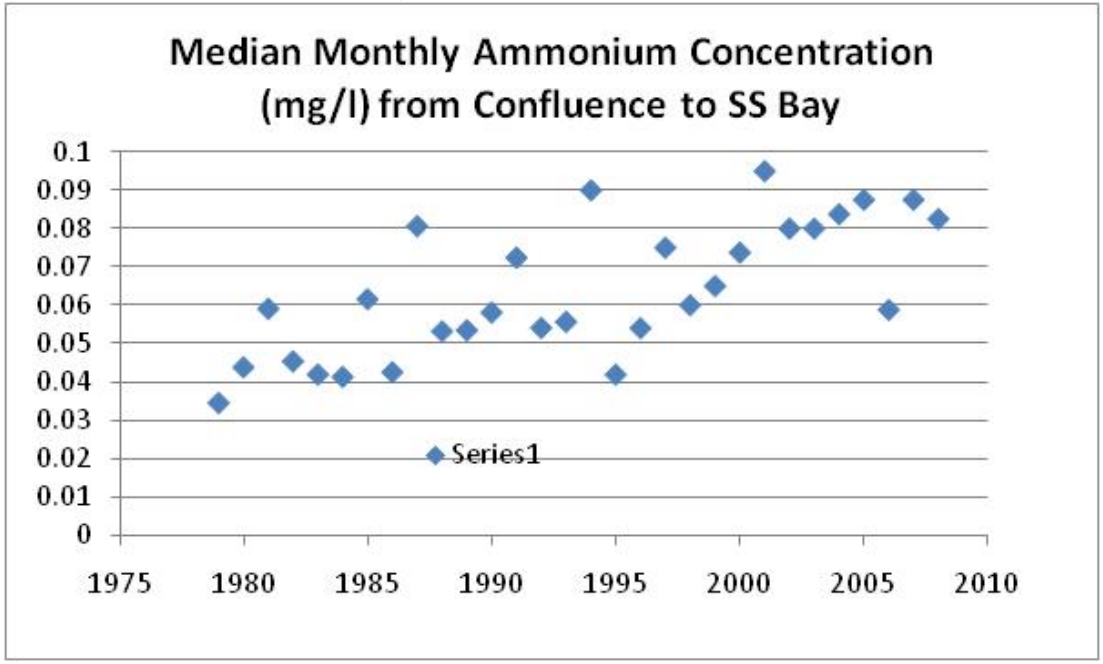
Diatom densities versus ammonium levels 1986 - 2006 in the confluence area



Pre and Post 1987. Diatom densities are down, but diatoms still correlated to low ammonium


Suisun Bay Ammonium (mg/l) 1979- 2006
y = 0.0001x + 0.0506
R² = 0.0532
0.25
0.2
0.15
0.1
0.05
0
3/1/1975
12/1/1975
1/1/1977
10/1/1977
7/1/1978
6/1/1979
5/1/1980
2/1/1981
11/1/1981
8/1/1982
5/1/1983
3/1/1984
12/1/1984
9/1/1985
6/1/1986
3/1/1987
12/1/1987
9/1/1988
6/1/1989
3/1/1990
12/1/1990
9/1/1991
6/1/1992
3/1/1993
12/1/1993
9/1/1994
8/1/1995
5/1/1996
2/1/1997
11/1/1997
10/1/1998
10/1/1999
7/1/2000
4/1/2001
1/1/2002
10/1/2002
7/1/2003
4/1/2004
3/1/2005
1/1/2006
10/1/2006
Threshold for Diatom blooms


Minimum Monthly Ammonium Concentration (mg/l) from Confluence to SS Bay
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1975
1980
1985
1990
1995
2000
2005
2010


Median Monthly Ammonium Concentration (mg/l) from Confluence to SS Bay
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Series1
1975
1980
1985
1990
1995
2000
2005
2010