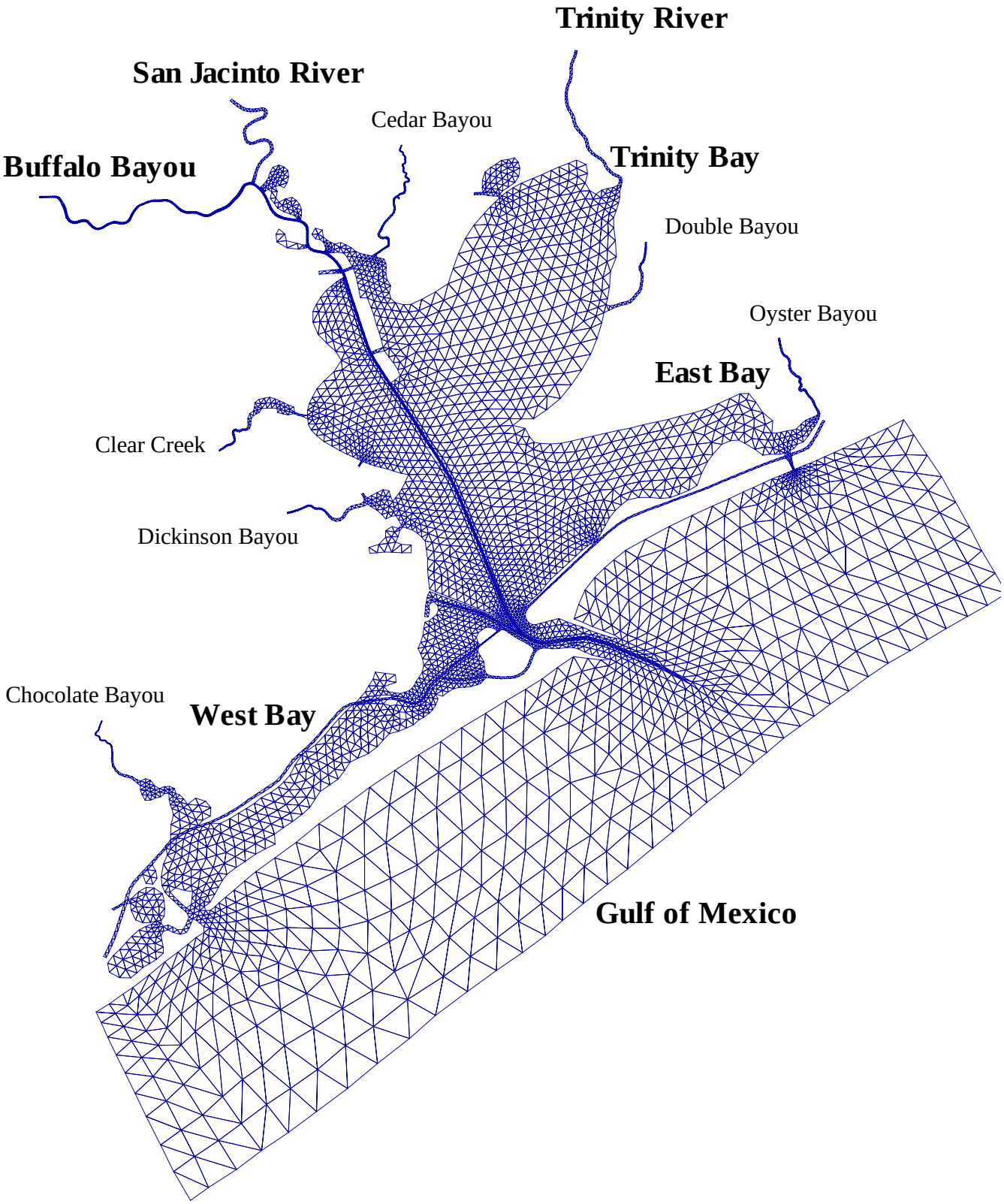
TxBLEND Galveston Bay Model

Calibration and Validation


Trinity River
San Jacinto River
Cedar Bayou
Buffalo Bayou
Trinity Bay
Double Bayou
Oyster Bayou
East Bay
Clear Creek
Dickinson Bayou
Chocolate Bayou
West Bay
Gulf of Mexico

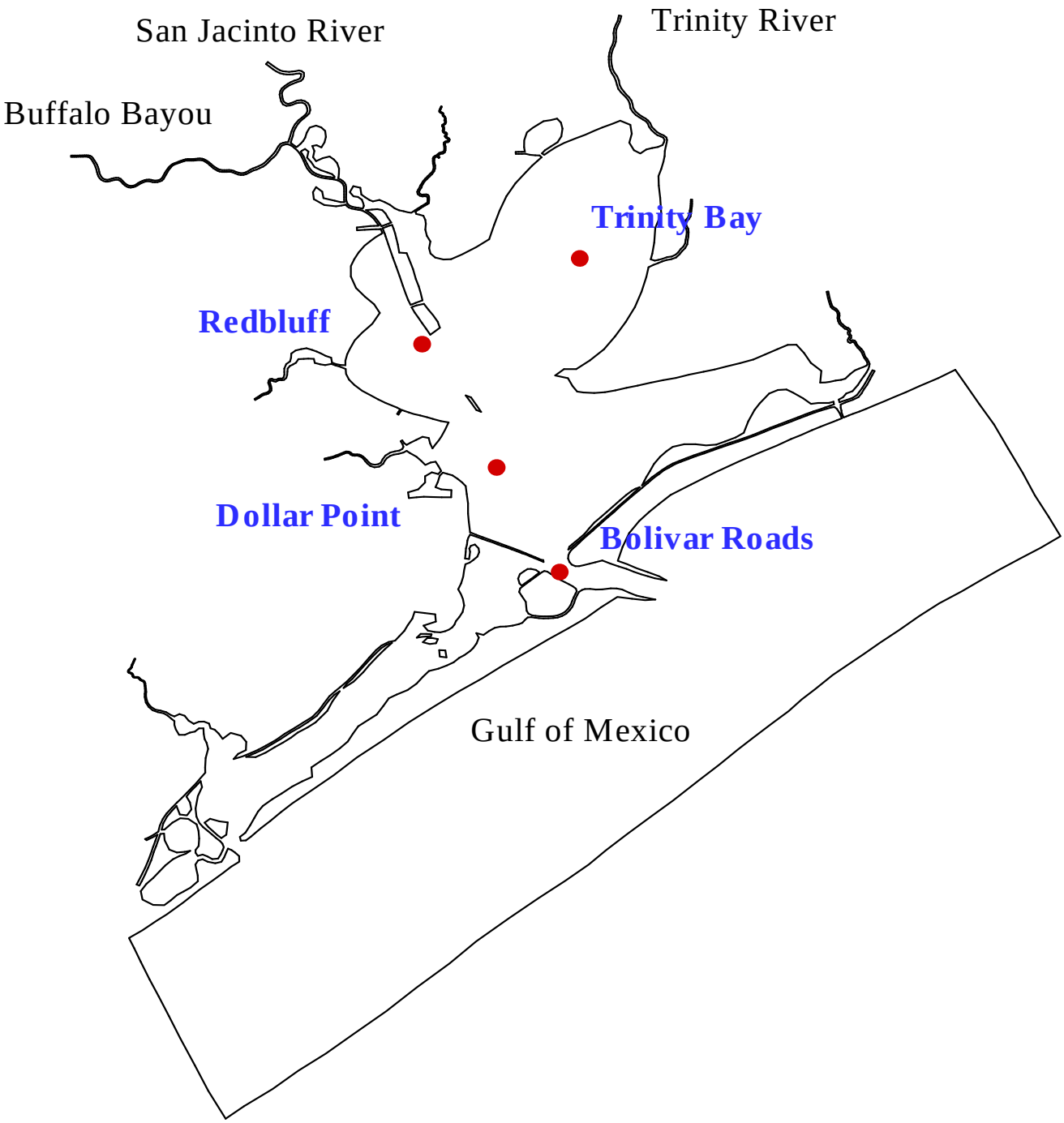
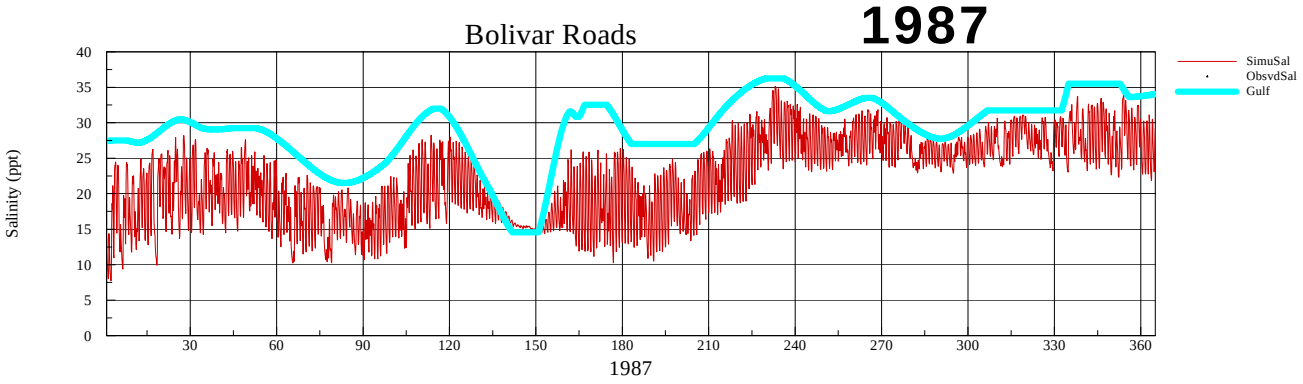
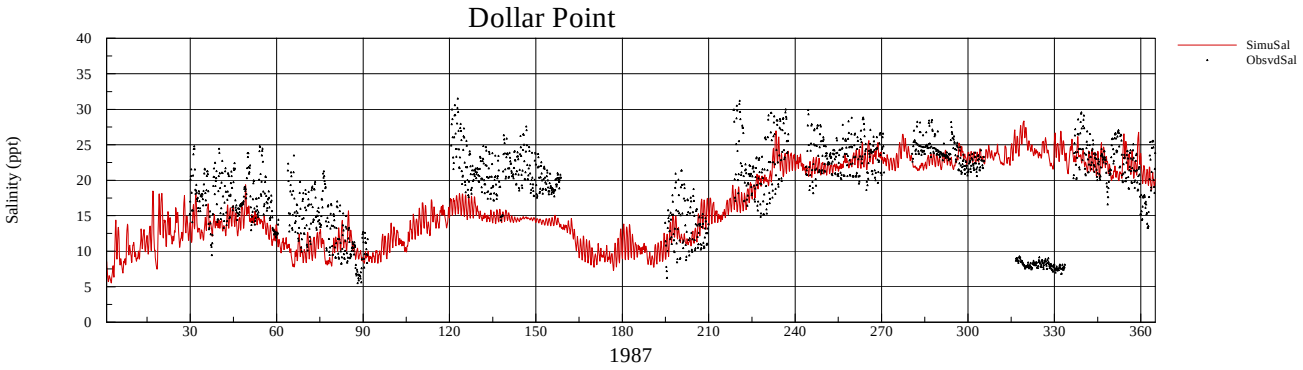
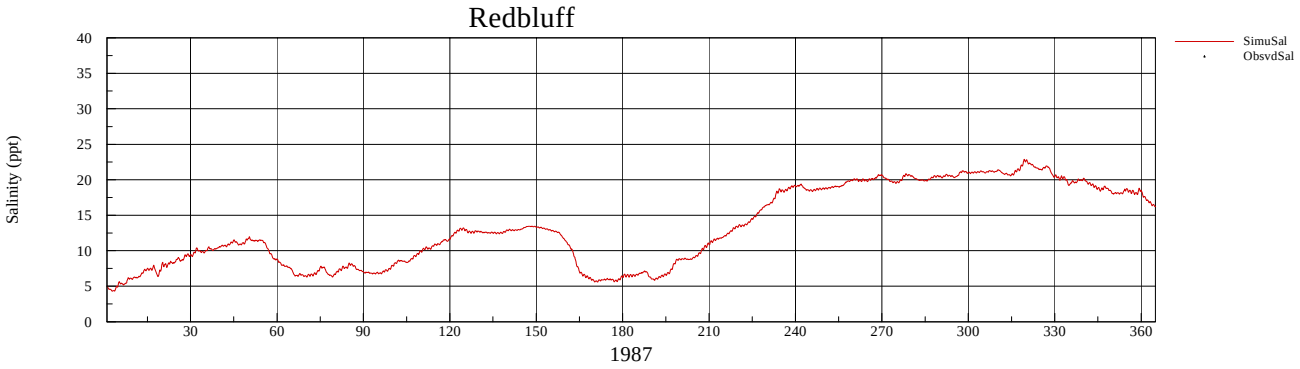


Figure X. Datasonde sites (long-term water quality data collection sites) in Galveston Bay

1987


Bolivar Roads
Salinity (ppt)
1987
SimuSal
ObsvdSal
Gulf


Dollar Point
Salinity (ppt)
1987
SimuSal
ObsvdSal


Redbluff
Salinity (ppt)
1987
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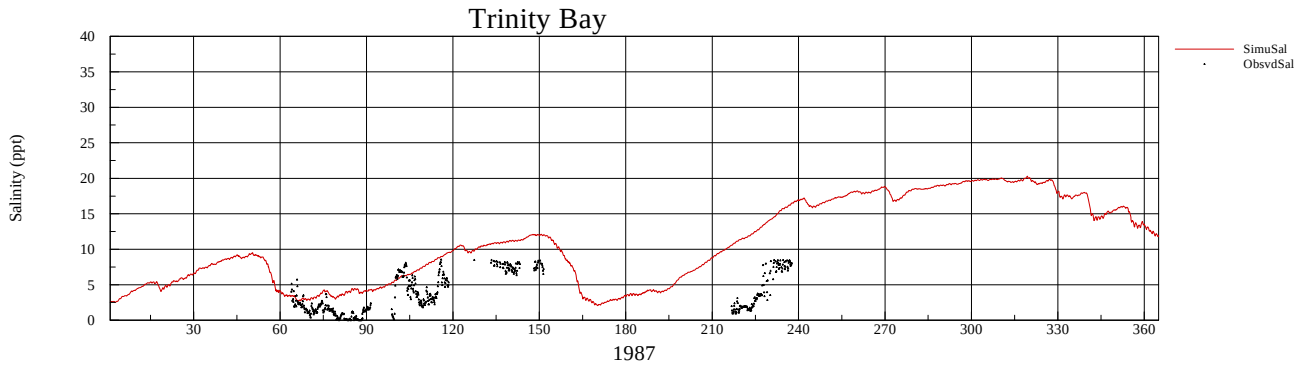
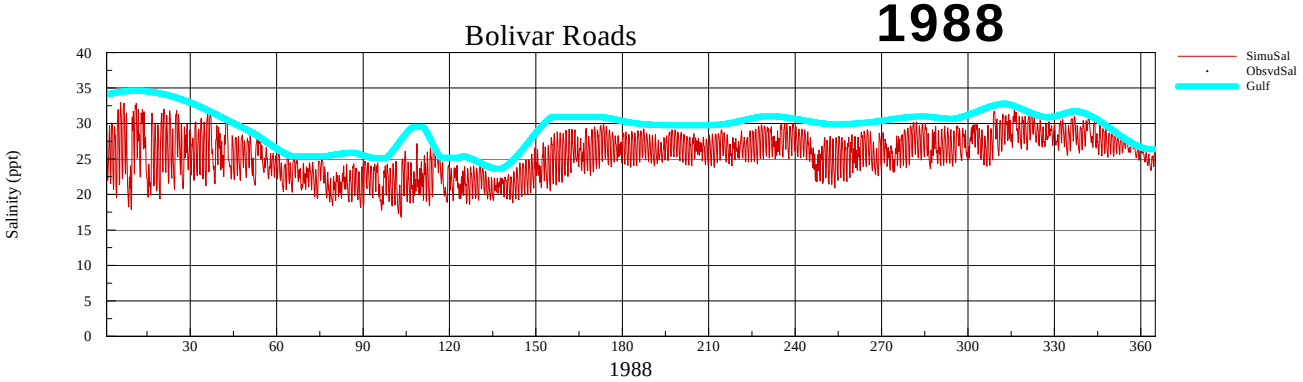
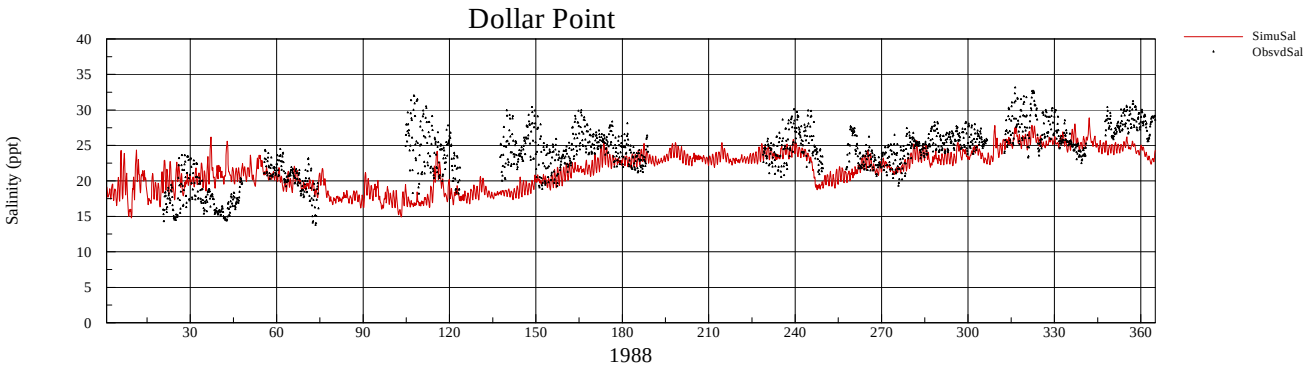
ObsvdSal


Trinity Bay
Salinity (ppt)
1987
SimuSal
ObsvdSal

1988


Bolivar Roads
Salinity (ppt)
1988
SimuSal
ObsvdSal
Gulf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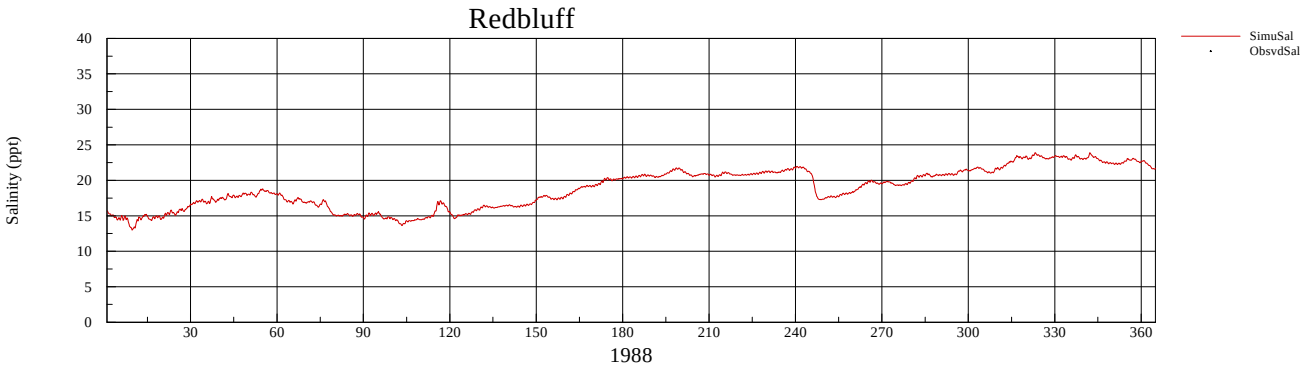
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Salinity (ppt)
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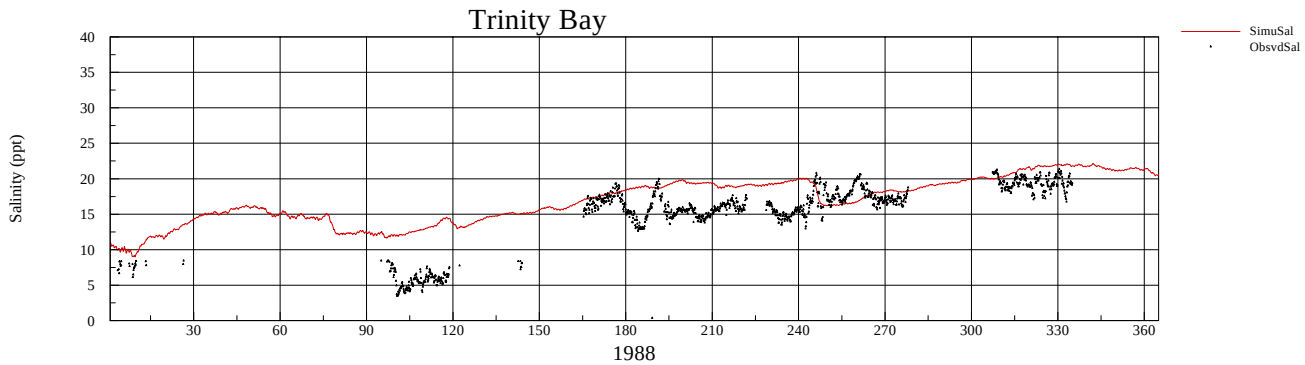
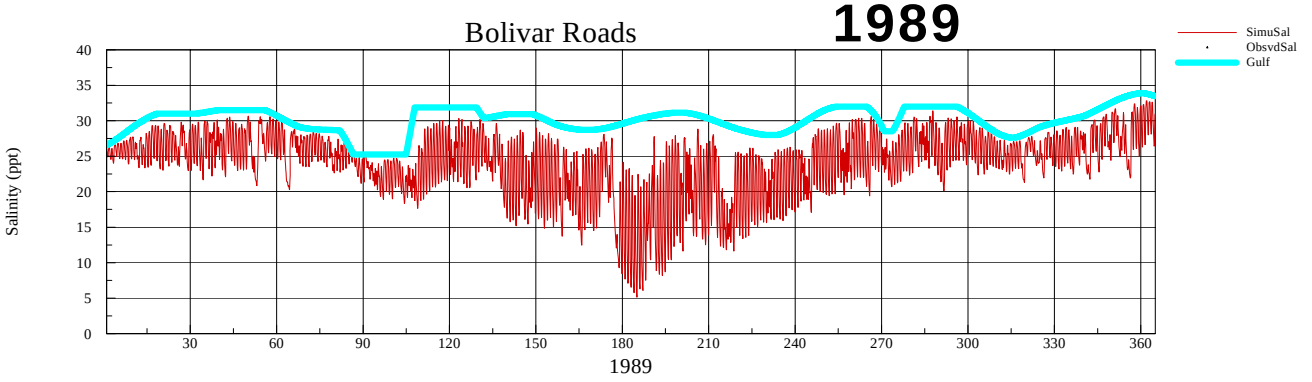

Trinity Bay
Salinity (ppt)
1988
SimuSal
ObsvdSal

1989


Bolivar Roads
SimuSal
ObsvdSal
Gulf
Salinity (ppt)
0
5
10
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25
30
35
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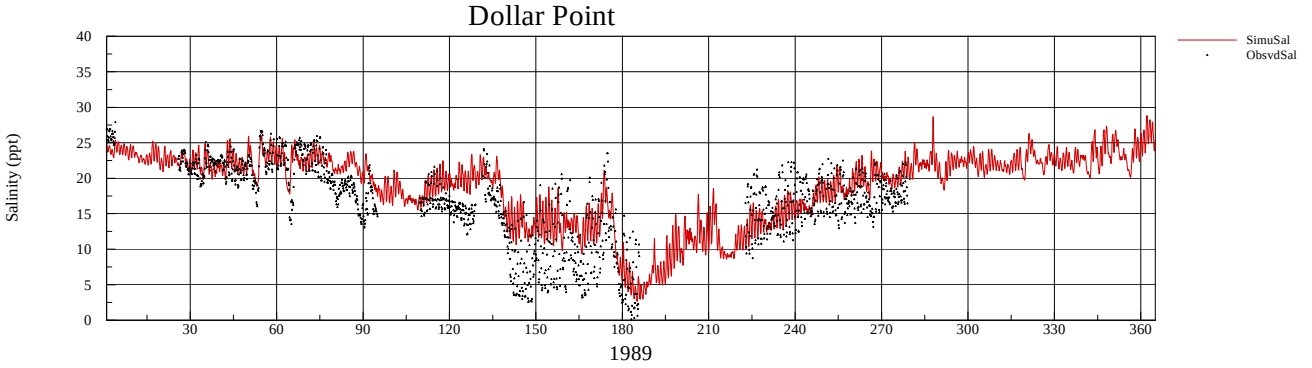
240
270
300
330
360
1989


Dollar Point
SimuSal
ObsvdSal
Salinity (ppt)
0
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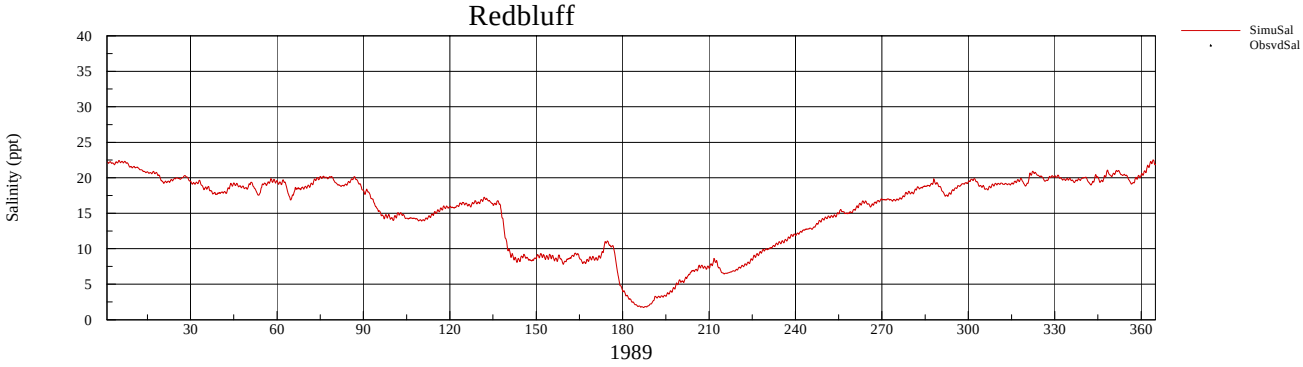
Redbluff
SimuSal
ObsvdSal
Salinity (ppt)
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240
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300
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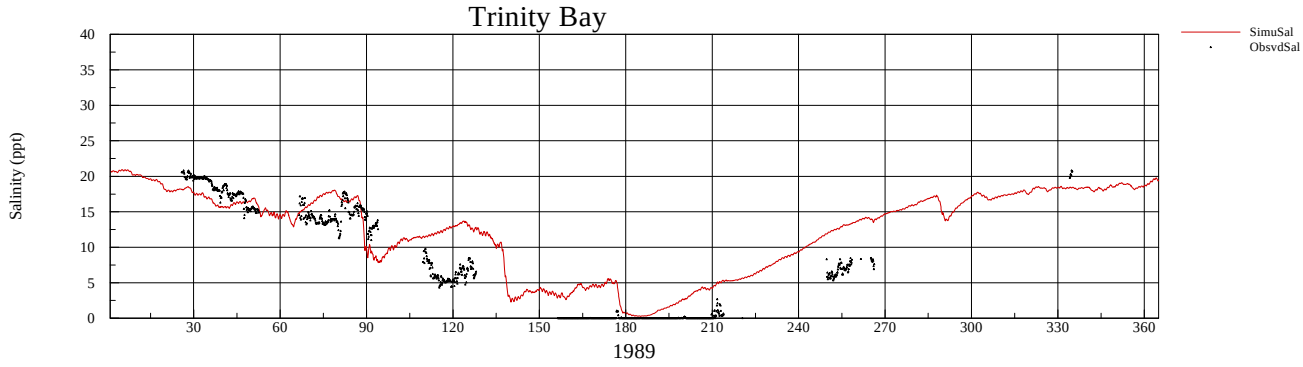
360
1989


Trinity Bay
SimuSal
ObsvdSal
Salinity (ppt)
0
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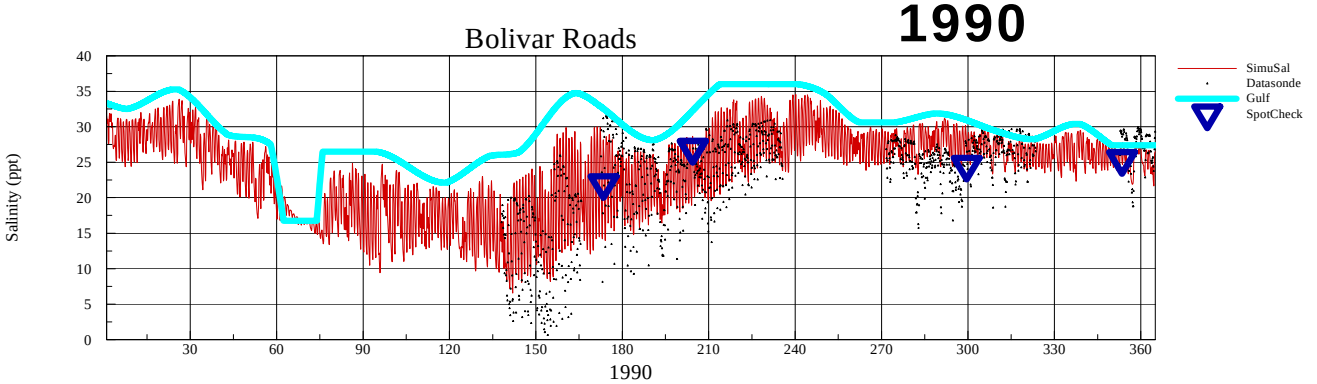
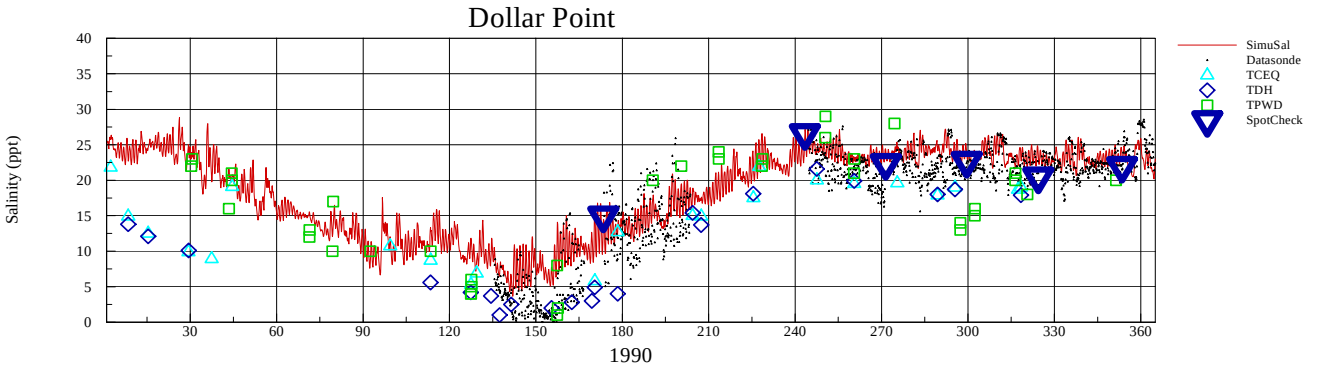
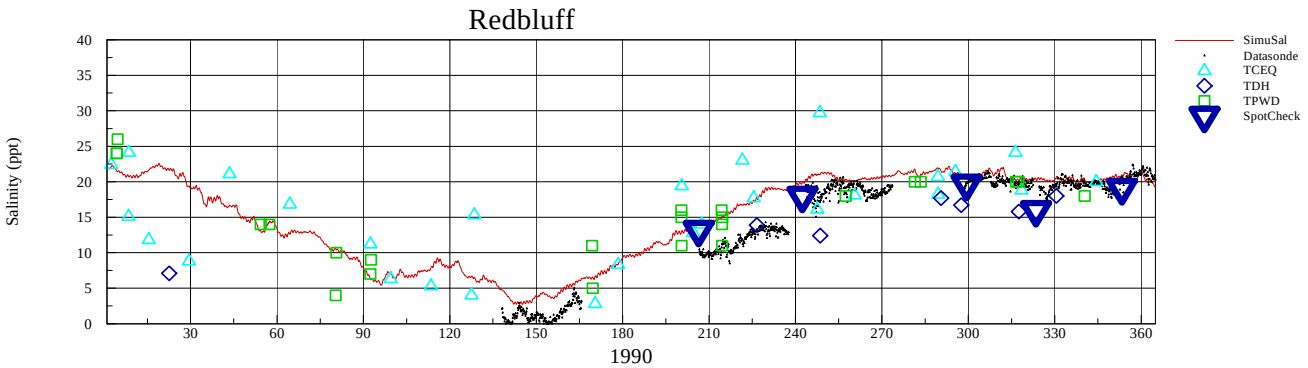
330
360
1989

1990


Bolivar Roads
Salinity (ppt)
1990
SimuSal
Datasonde
Gulf
SpotCheck


Dollar Point
Salinity (ppt)
1990
SimuSal
Datasonde
TCEQ
TDH
TPWD
SpotCheck


Redbluff
Salinity (ppt)
1990
SimuSal
Datasonde
TCEQ
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TPWD
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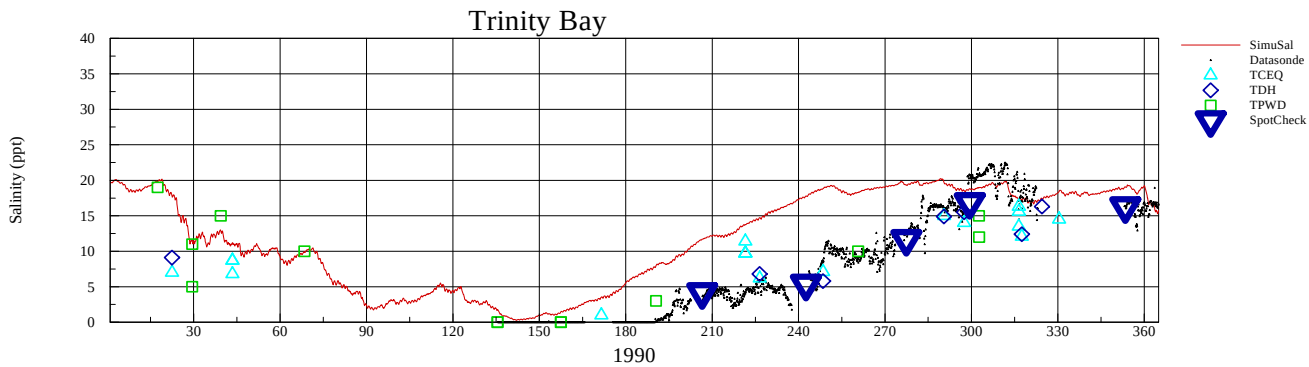
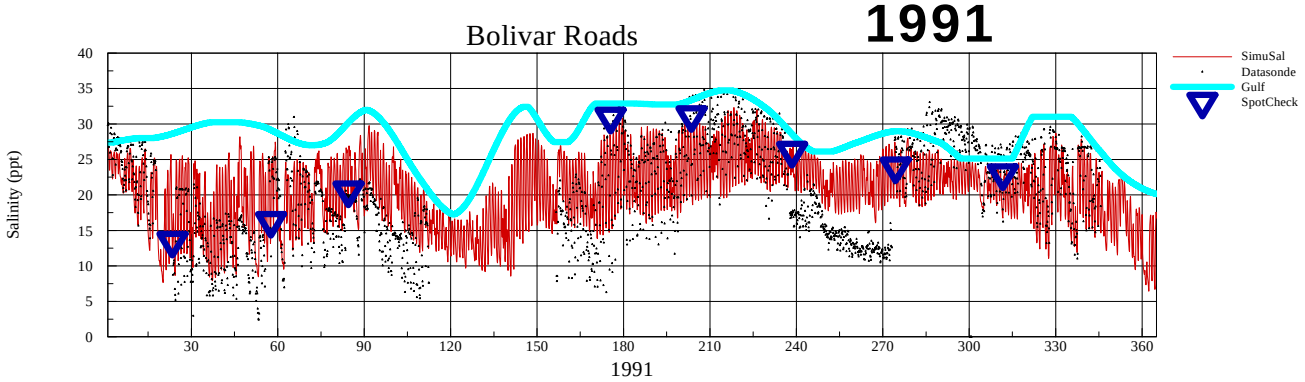
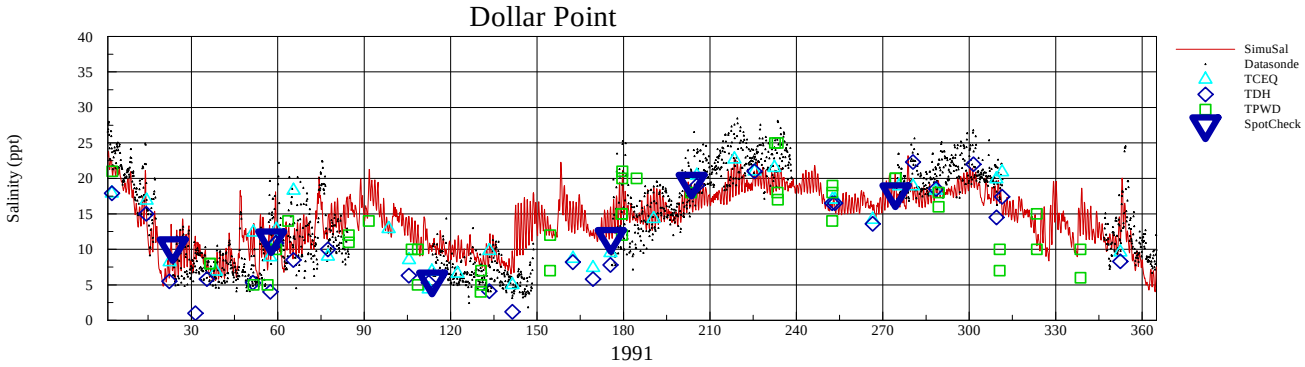
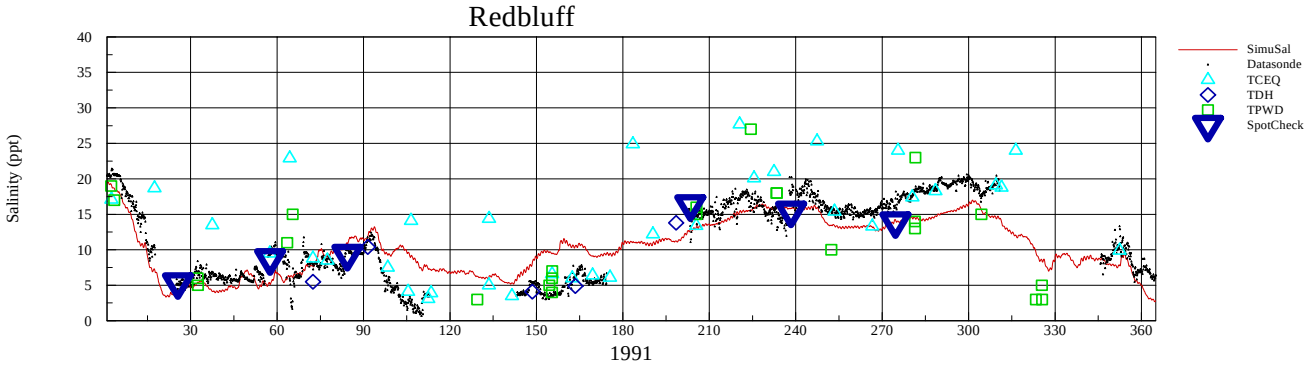
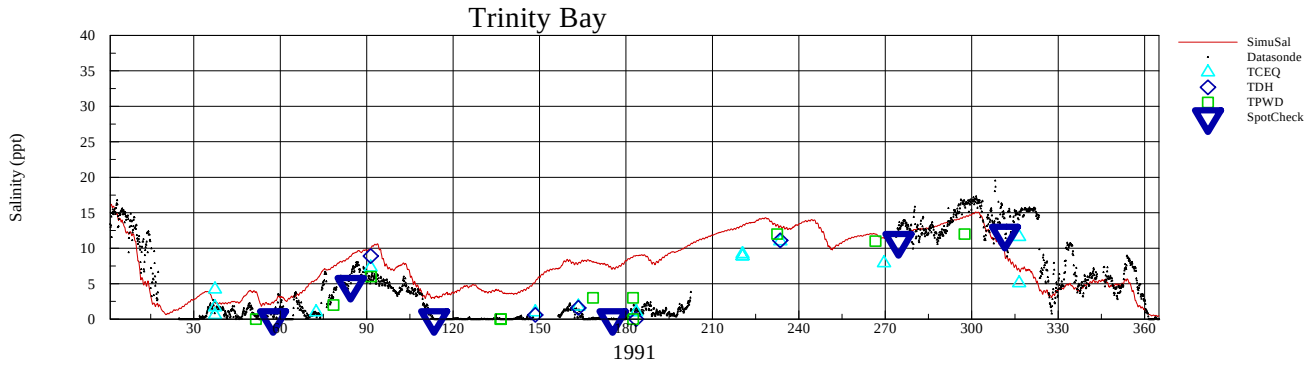

Trinity Bay
Salinity (ppt)
1990
SimuSal
Datasonde
TCEQ
TDH
TPWD
SpotCheck

1991

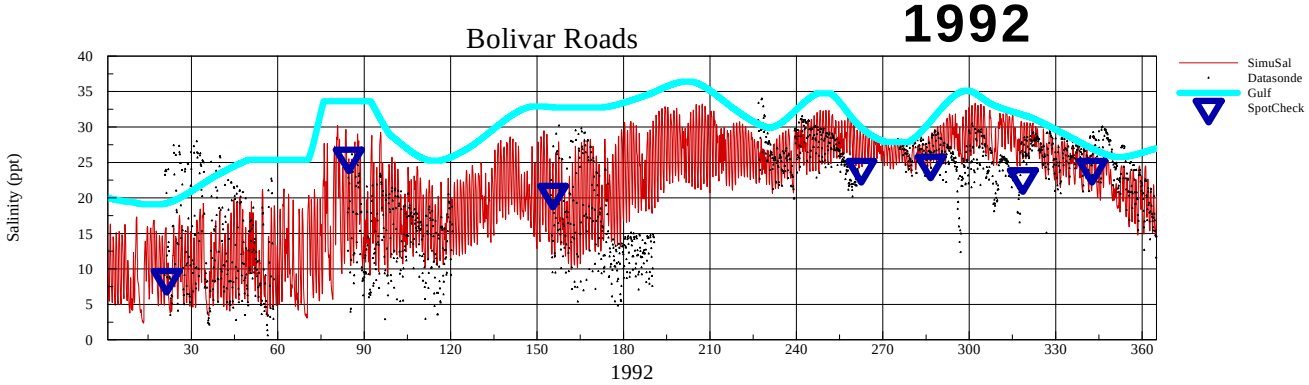

Bolivar Roads
Salinity (ppt)
1991
SimuSal
Datasonde
Gulf
SpotCheck

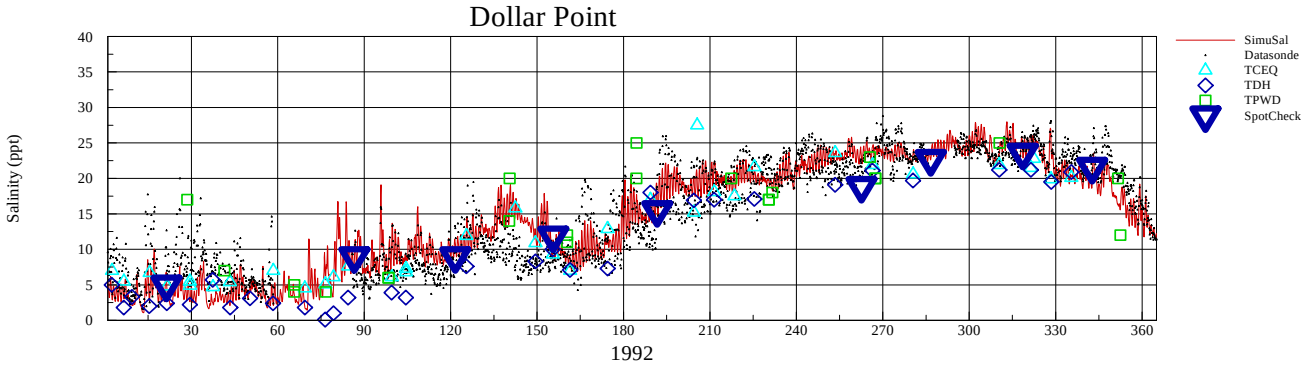

Dollar Point
Salinity (ppt)
1991
SimuSal
Datasonde
TCEQ
TDH
TPWD
SpotCheck

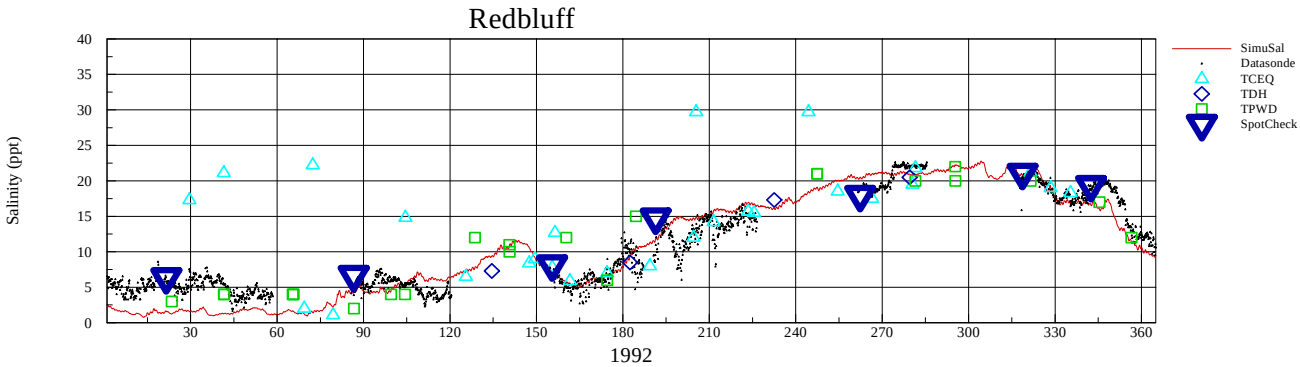

Redbluff
Salinity (ppt)
1991
SimuSal
Datasonde
TCEQ
TDH
TPWD
SpotCheck


Trinity Bay
Salinity (ppt)
1991
SimuSal
Datasonde
TCEQ
TDH
TPWD
SpotCheck

1992


Bolivar Roads
Salinity (ppt)
1992
SimuSal
Datasonde
Gulf
SpotCheck


Dollar Point
Salinity (ppt)
1992
SimuSal
Datasonde
TCEQ
TDH
TPWD
SpotCheck


Redbluff
Salinity (ppt)
1992
SimuSal
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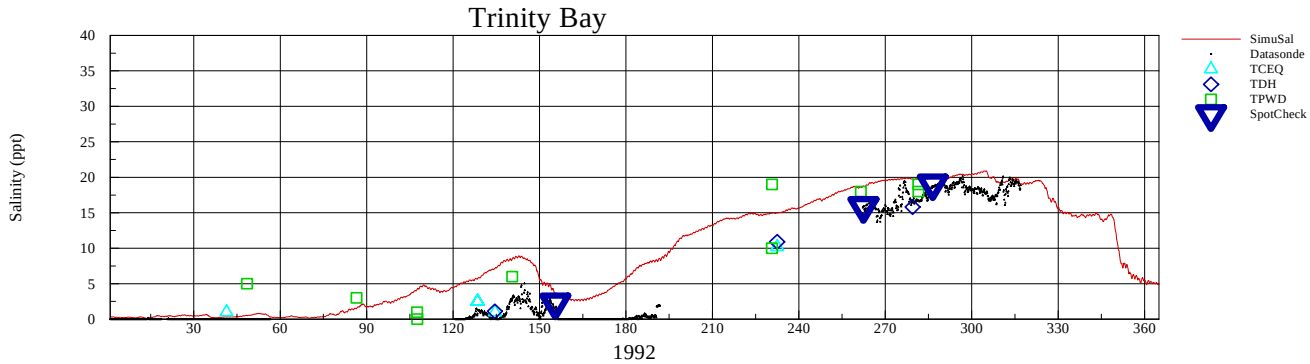
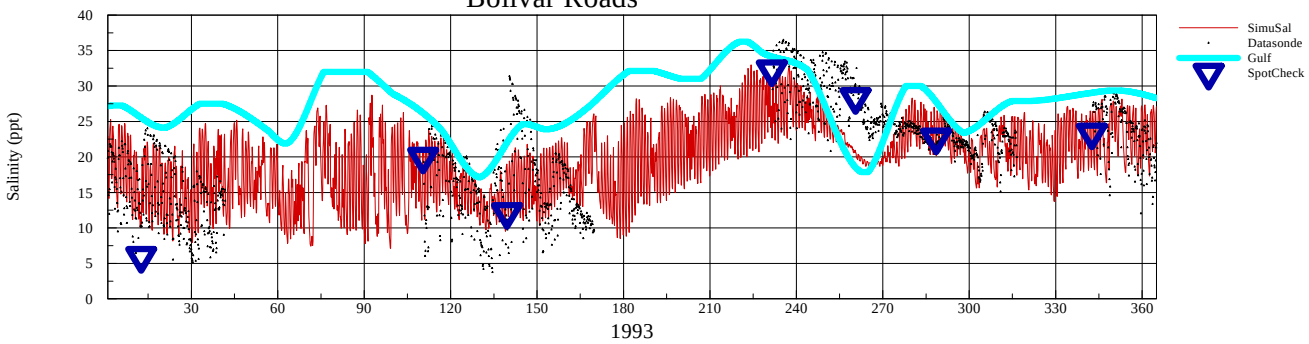
SpotCheck

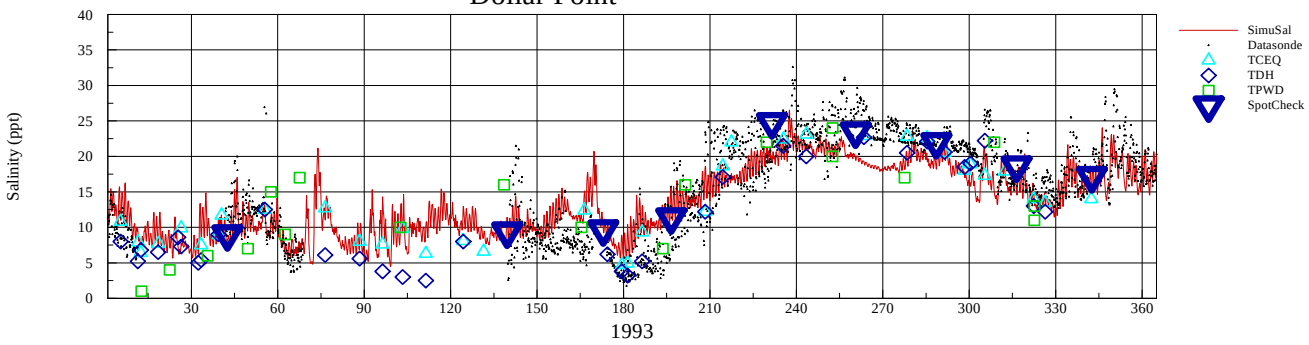

Trinity Bay
Salinity (ppt)
1992
SimuSal
Datasonde
TCEQ
TDH
TPWD
SpotCheck

1993

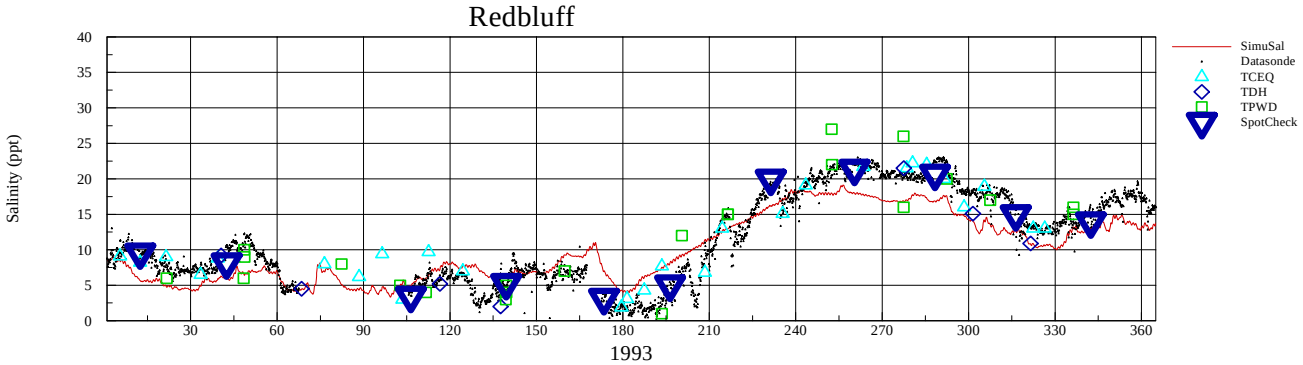
Bolivar Roads



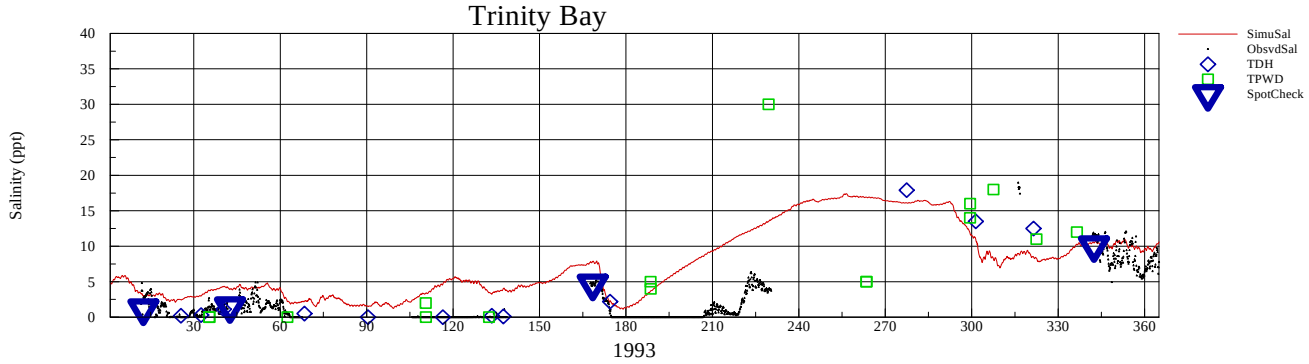
Dollar Point



Redbluff

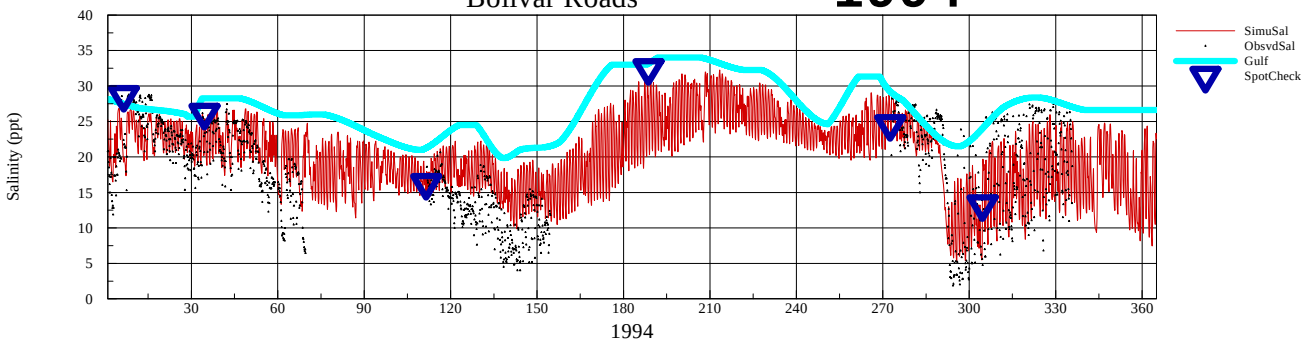


Trinity Bay



1994

Bolivar Roads



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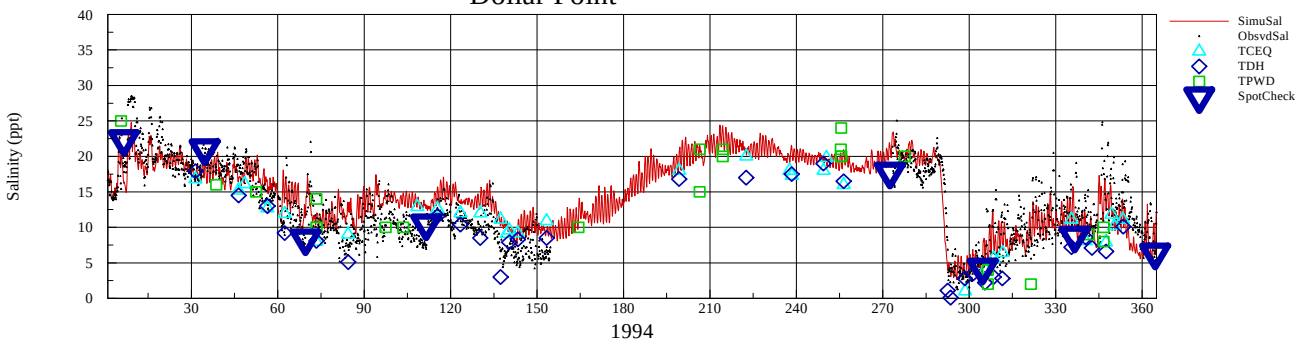
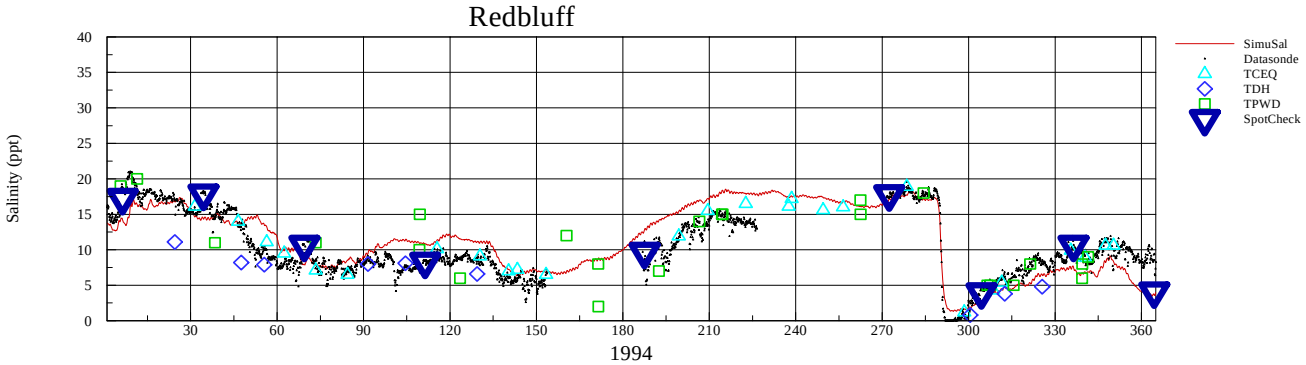
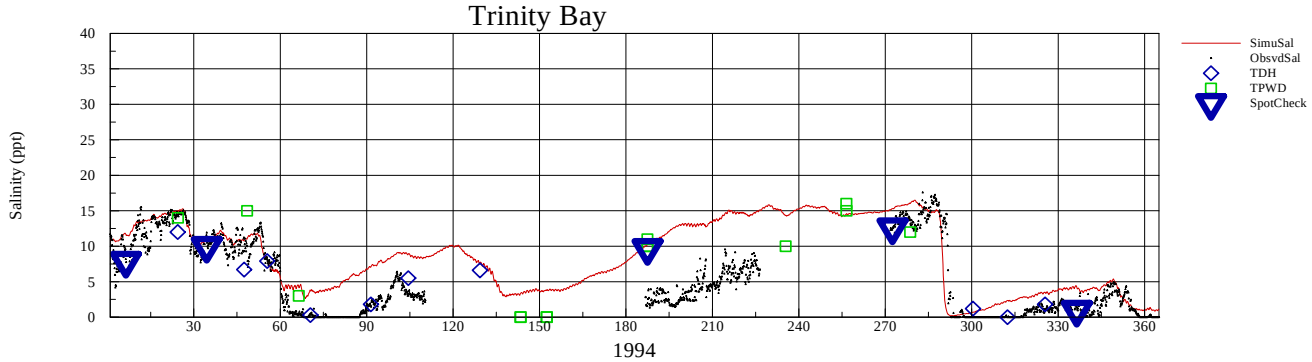


Redbluff



Trinity Bay



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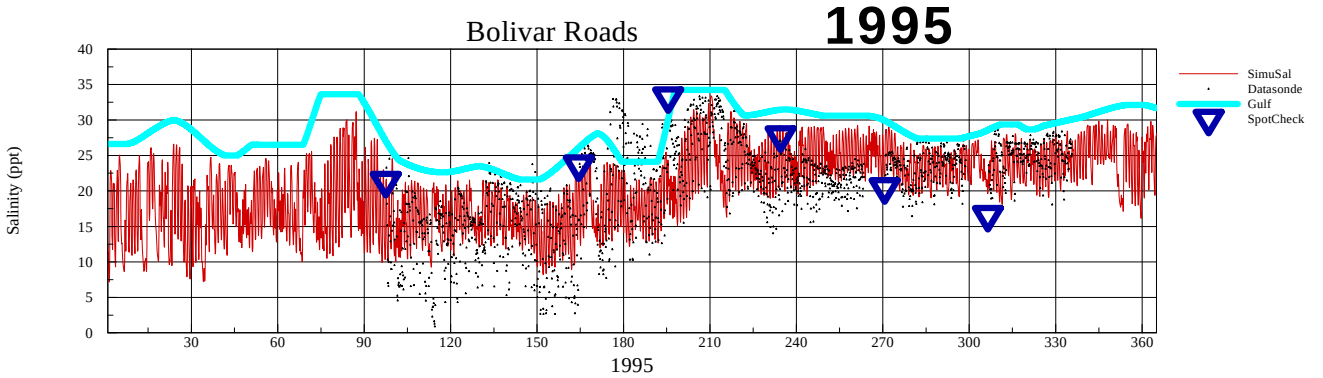
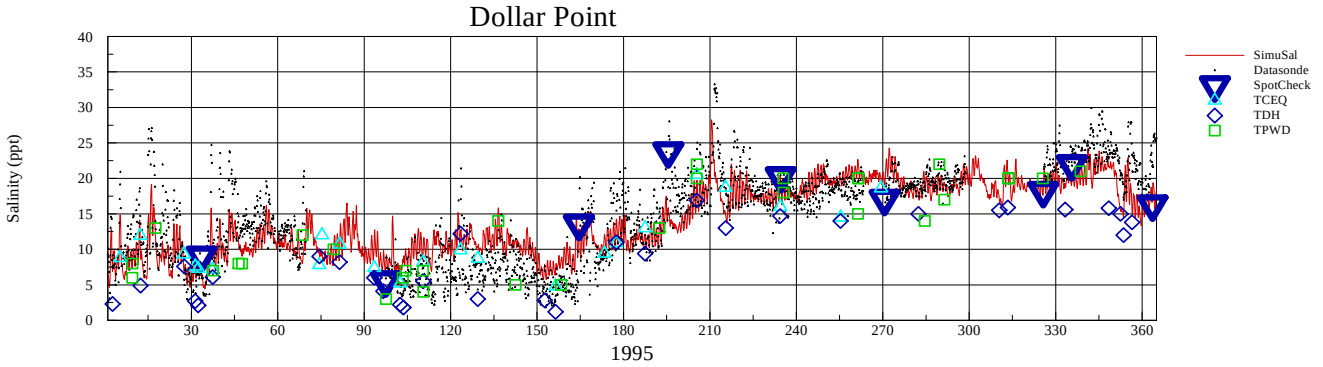
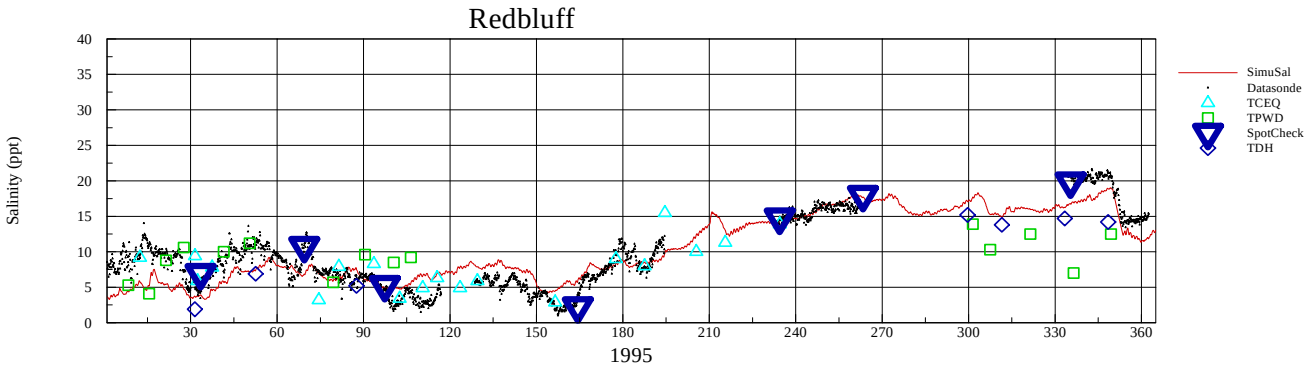
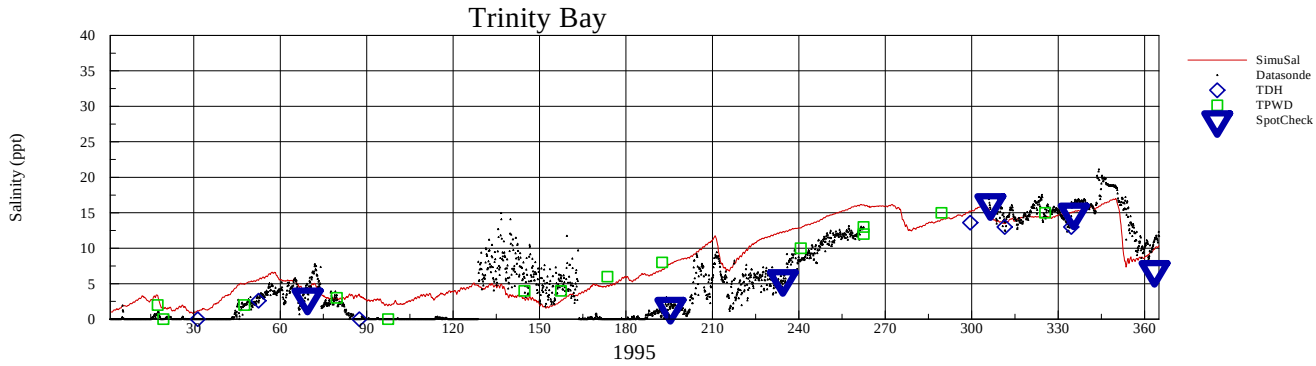

Bolivar Roads
Salinity (ppt)
1995
SimuSal
Datasonde
Gulf
SpotCheck

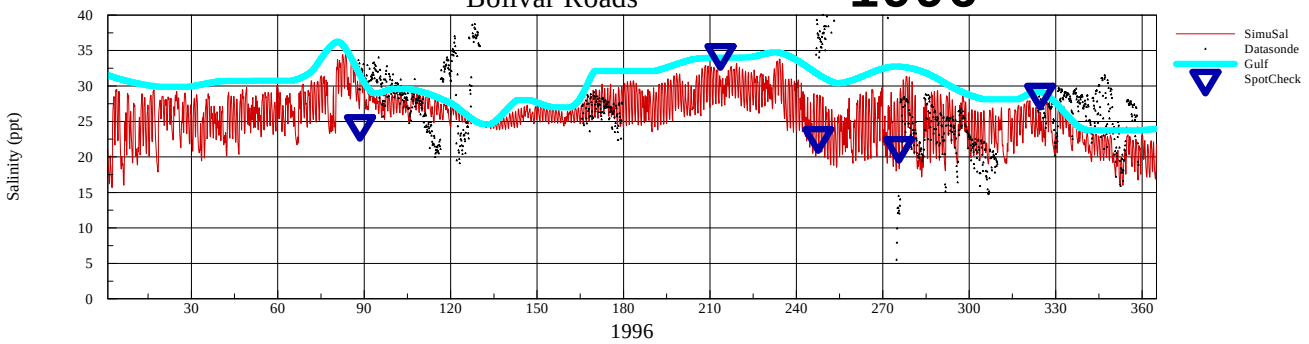

Dollar Point
Salinity (ppt)
1995
SimuSal
Datasonde
SpotCheck
TCEQ
TDH
TPWD


Redbluff
Salinity (ppt)
1995
SimuSal
Datasonde
TCEQ
TPWD
SpotCheck
TDH

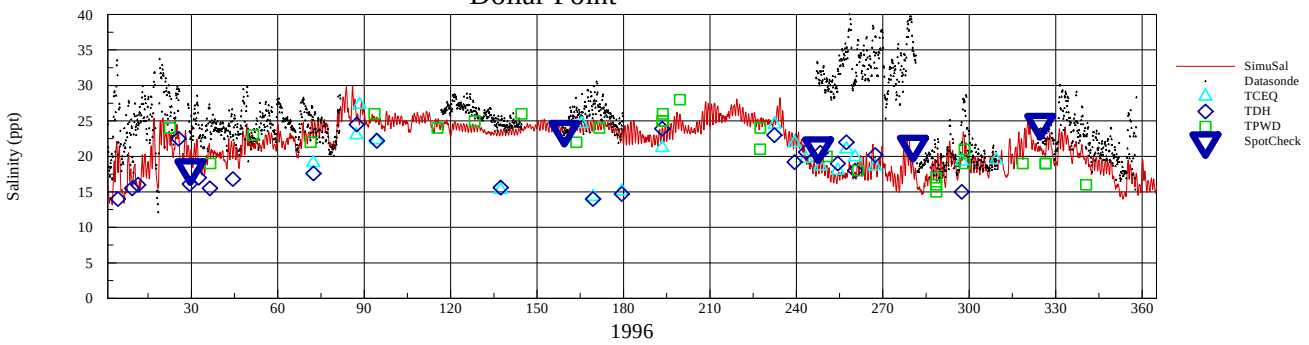

Trinity Bay
Salinity (ppt)
1995
SimuSal
Datasonde
TDH
TPWD
SpotCheck

1996

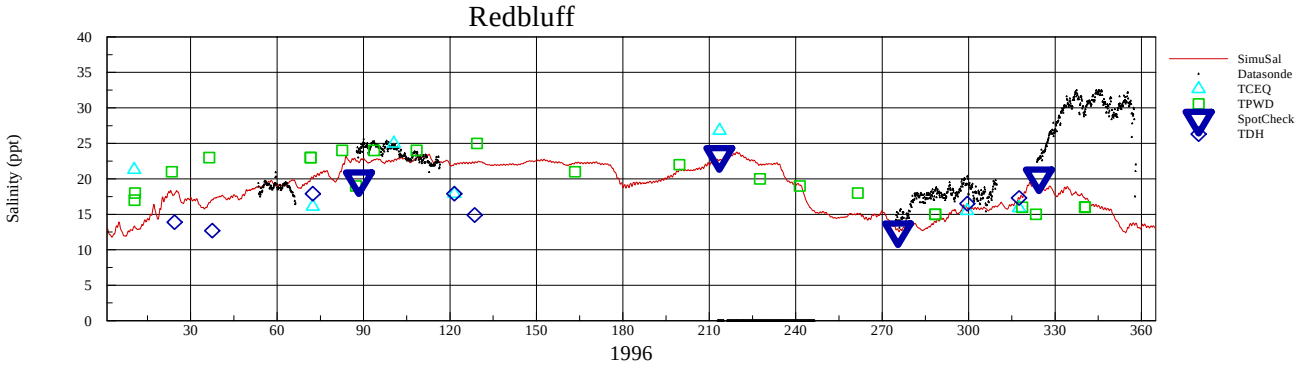
Bolivar Roads



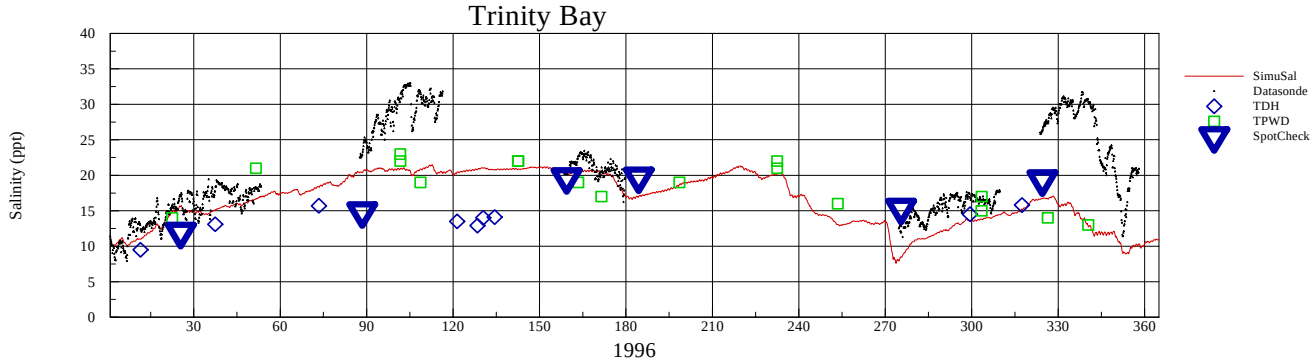
Dollar Point

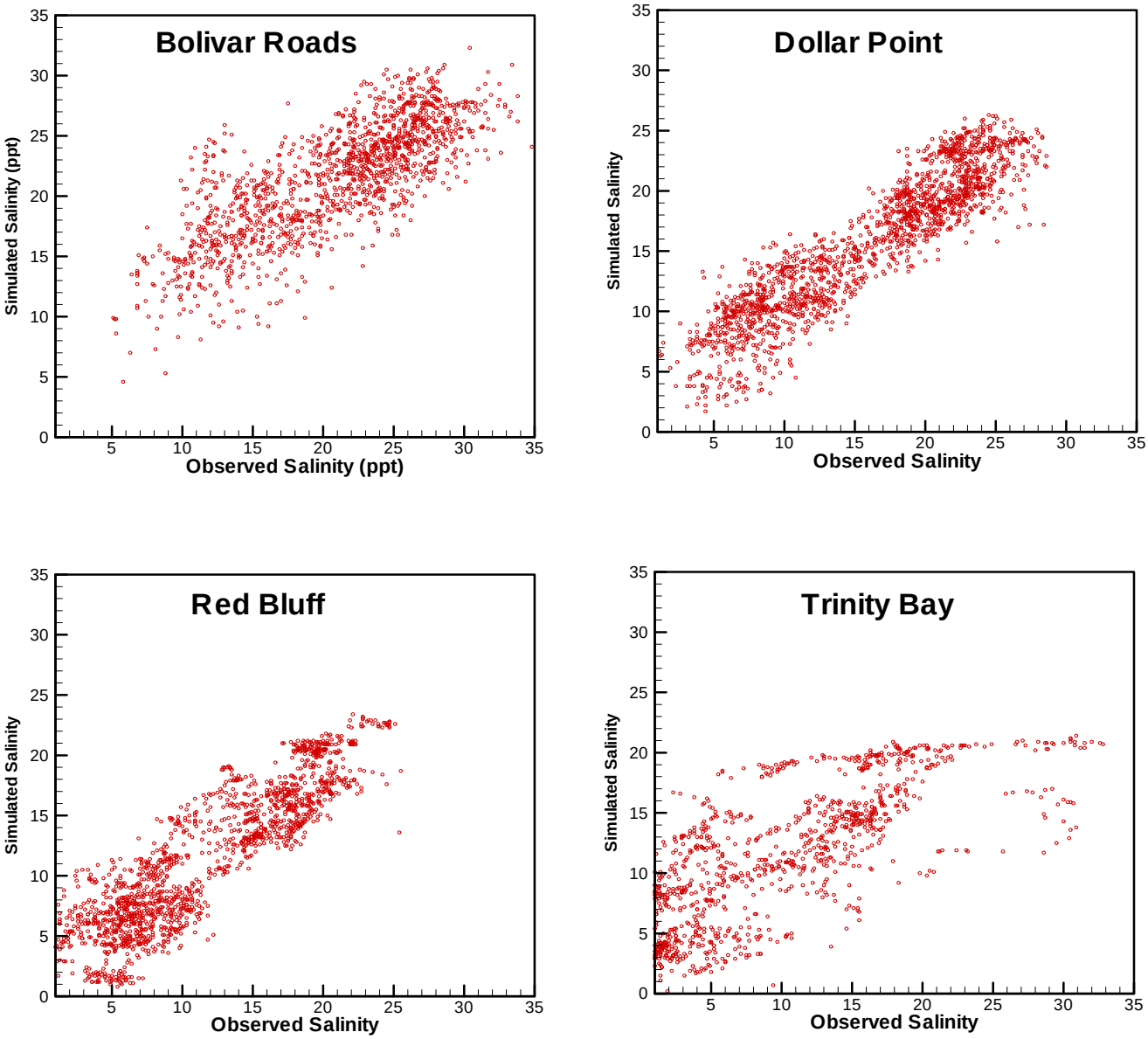


Redbluff



Trinity Bay





Observed vs simulated salinity 1987-1996

Comparison statistics

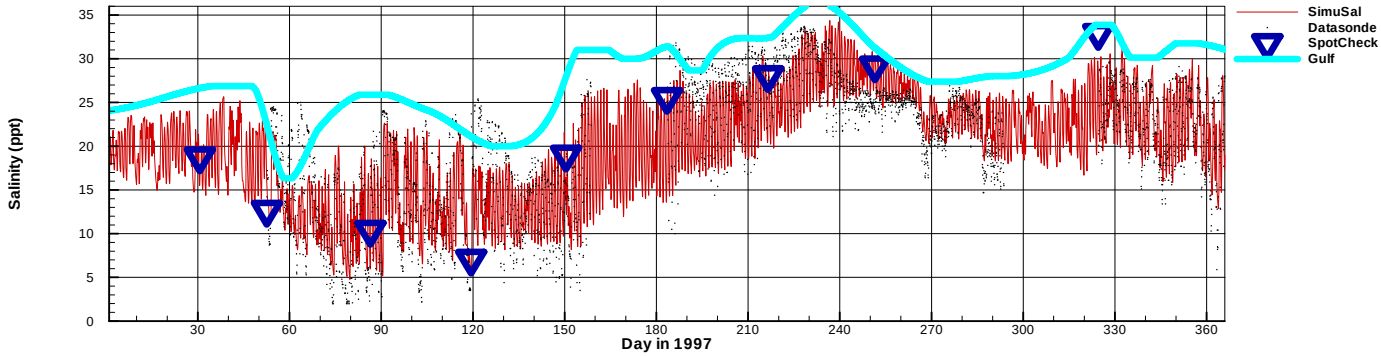
for Calibration 1987-1996

Site	N_data	R-square	RMS(ppt)
Bolivar Roads	1438	0.62	3.9
Dollar Point	1767	0.84	2.8
Red Bluff	1604	0.80	2.8
Trinity Bay	1573	0.68	4.8

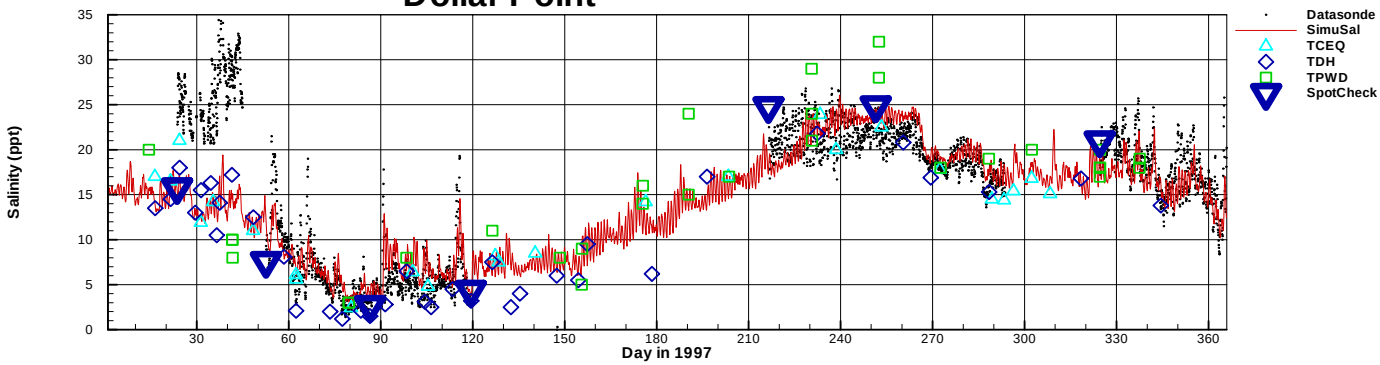
Site	N_data	Observed Mean	Simulated Mean	Difference (ppt)
Bolivar Roads	1438	20.8	21.4	-0.6
Dollar Point	1767	16.0	15.7	0.3
Red Bluff	1604	11.7	11.4	0.3
Trinity Bay	1573	6.9	8.9	-2.0

1997

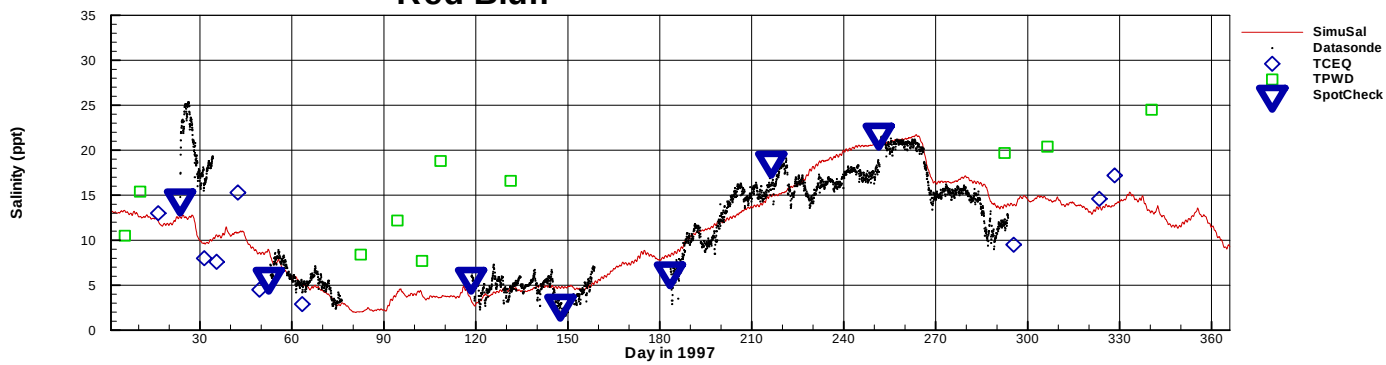
Bolivar Roads



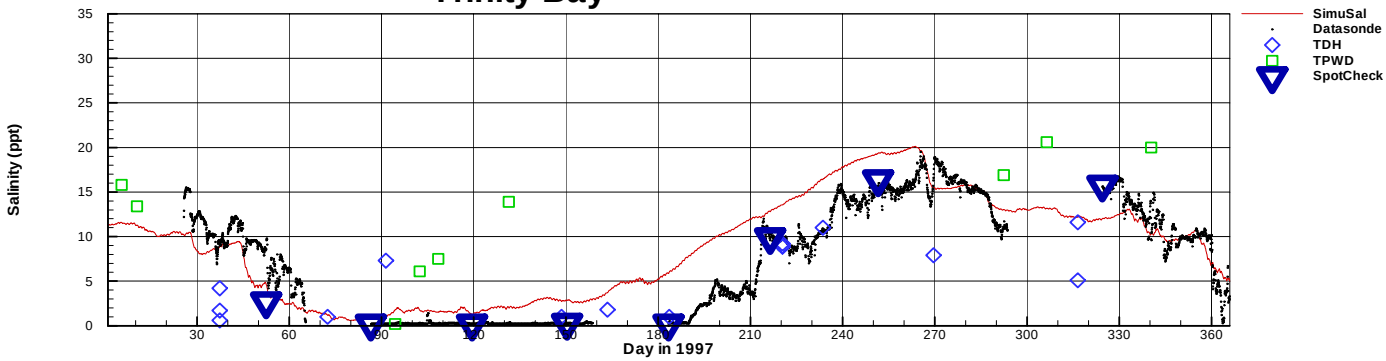
Dollar Point



Red Bluff

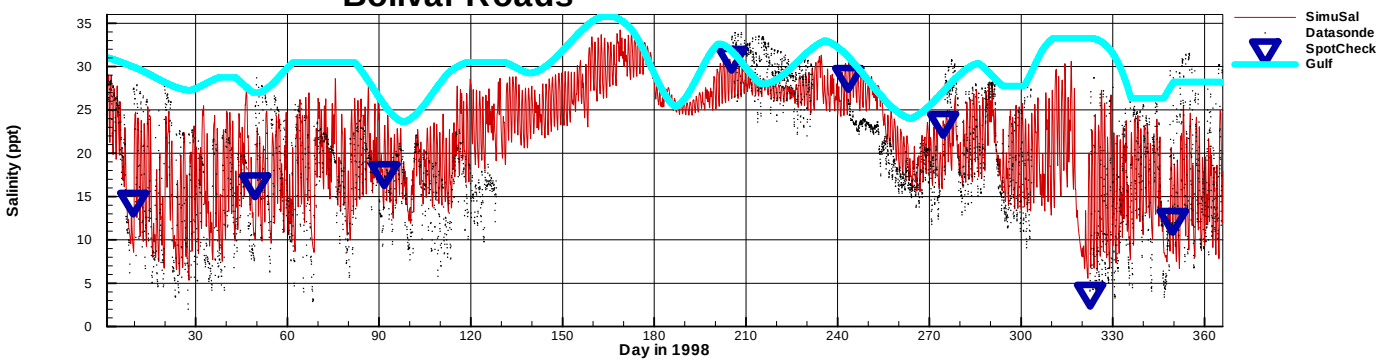


Trinity Bay

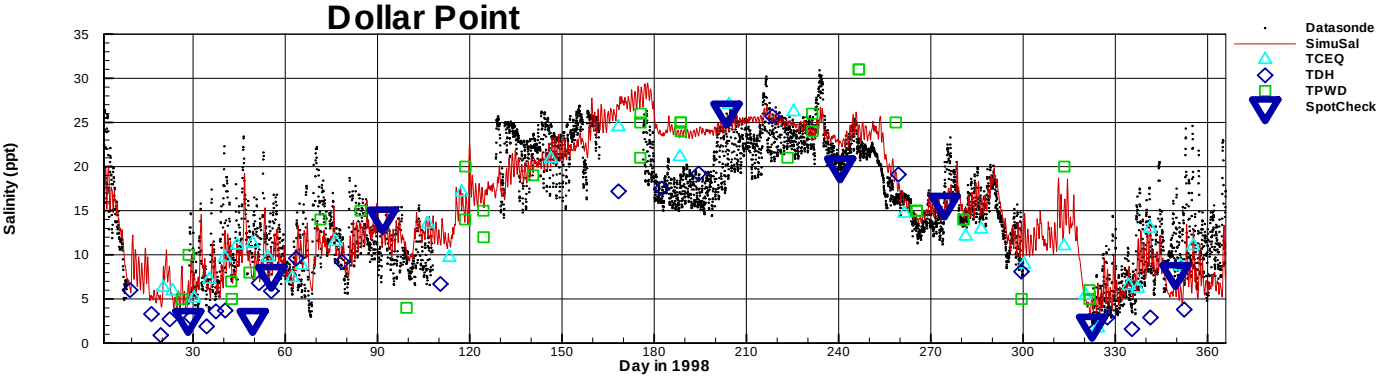


1998

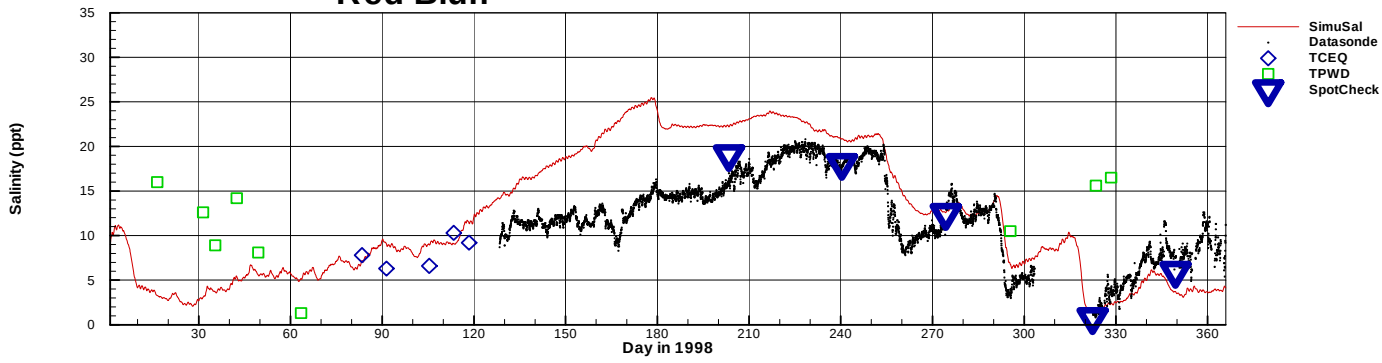
Bolivar Roads



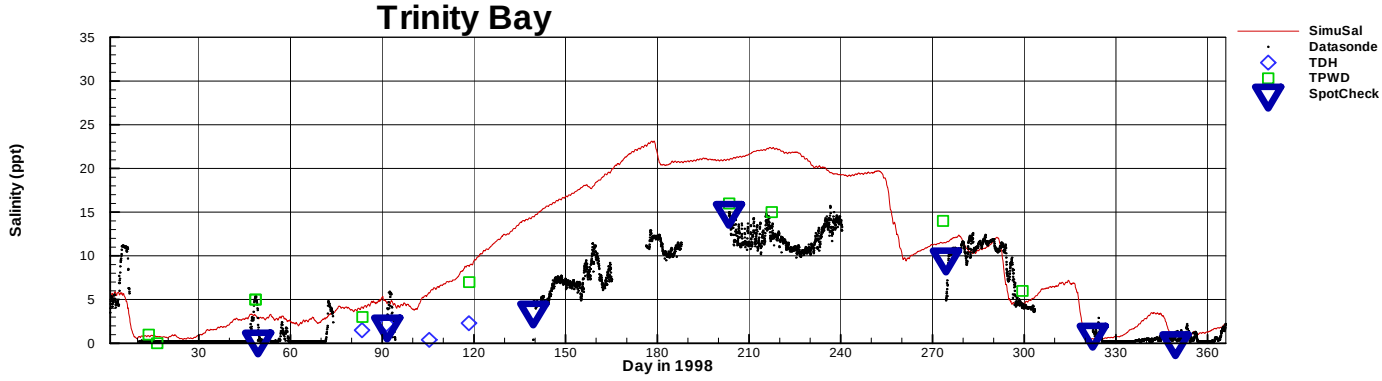
Dollar Point

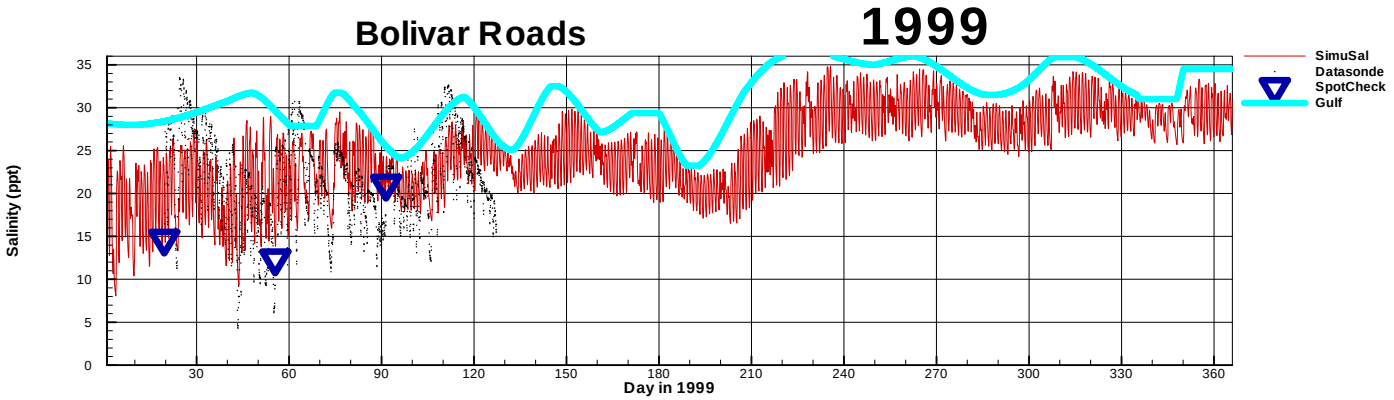


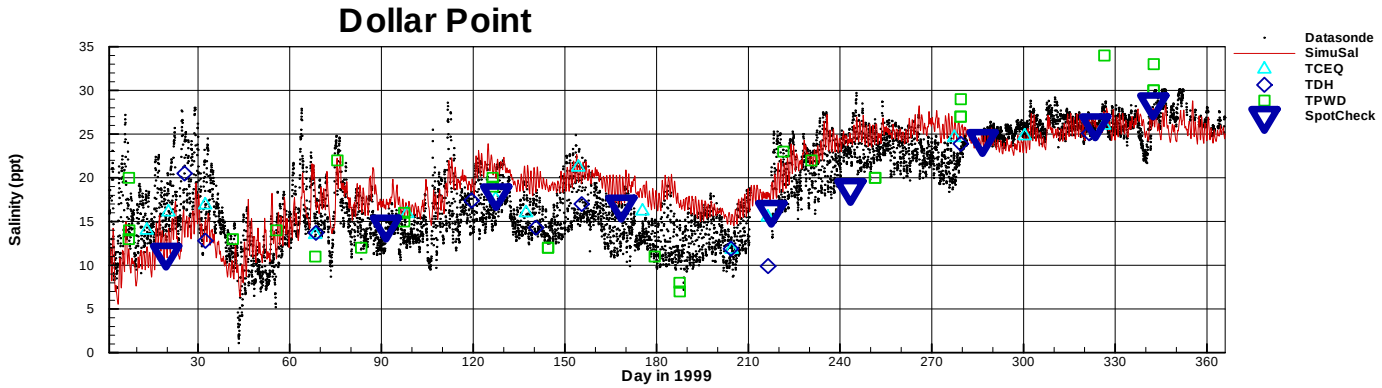
Red Bluff

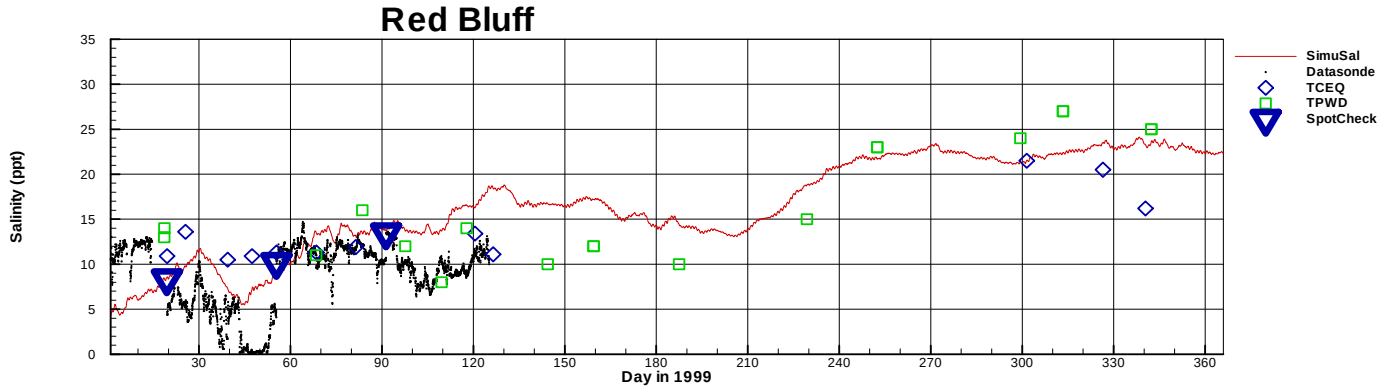


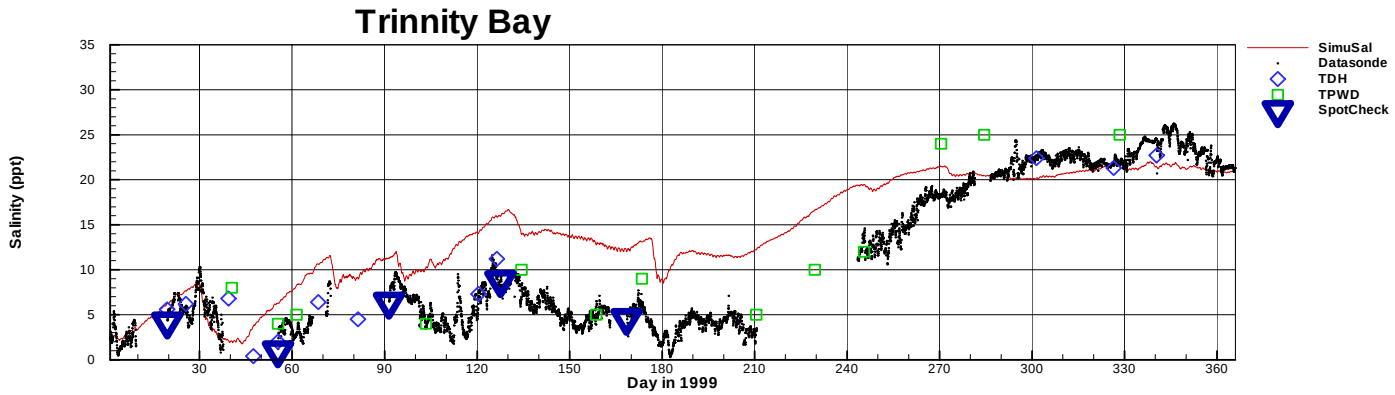
Trinity Bay




Bolivar Roads
1999
Salinity (ppt)
Day in 1999
SimuSal
Datasonde
SpotCheck
Gulf

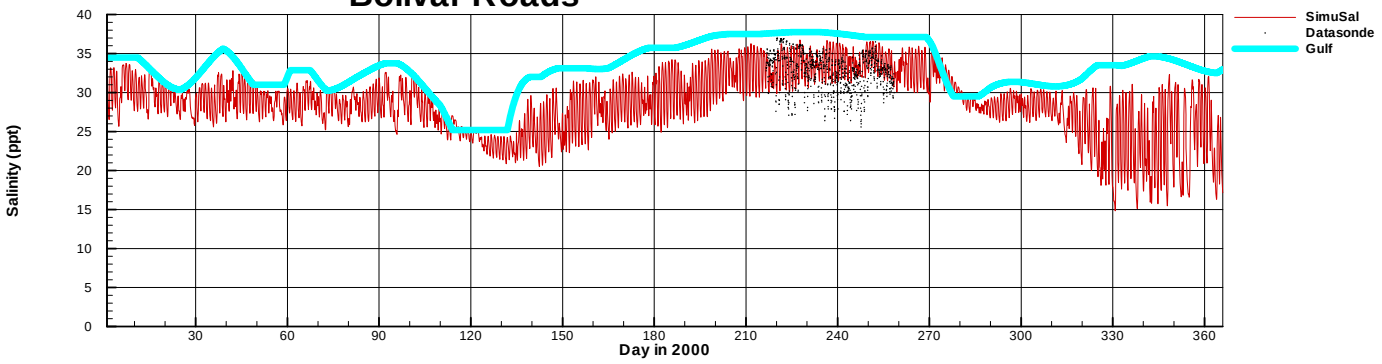

Dollar Point
Salinity (ppt)
Day in 1999
Datasonde
SimuSal
TCEQ
TDH
TPWD
SpotCheck


Red Bluff
Salinity (ppt)
Day in 1999
SimuSal
Datasonde
TCEQ
TPWD
SpotCheck

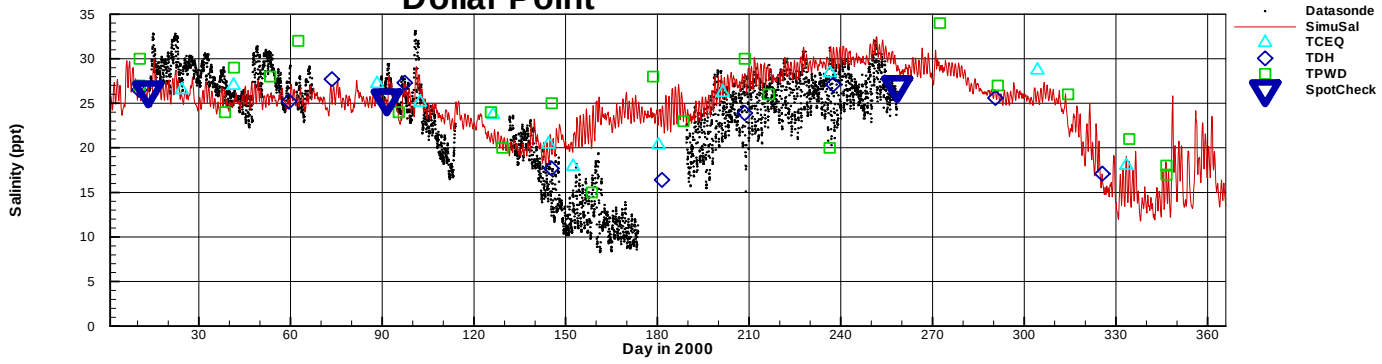

Trinnity Bay
Salinity (ppt)
Day in 1999
SimuSal
Datasonde
TDH
TPWD
SpotCheck

2000

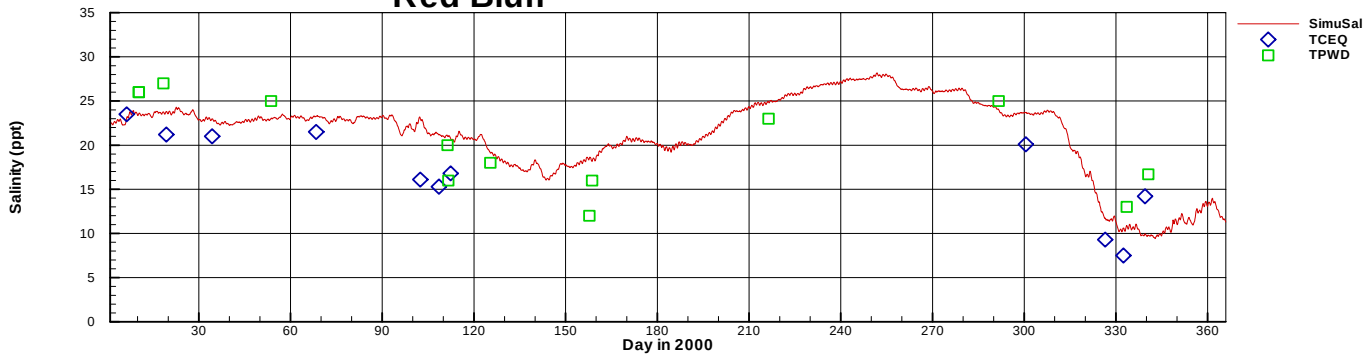
Bolivar Roads



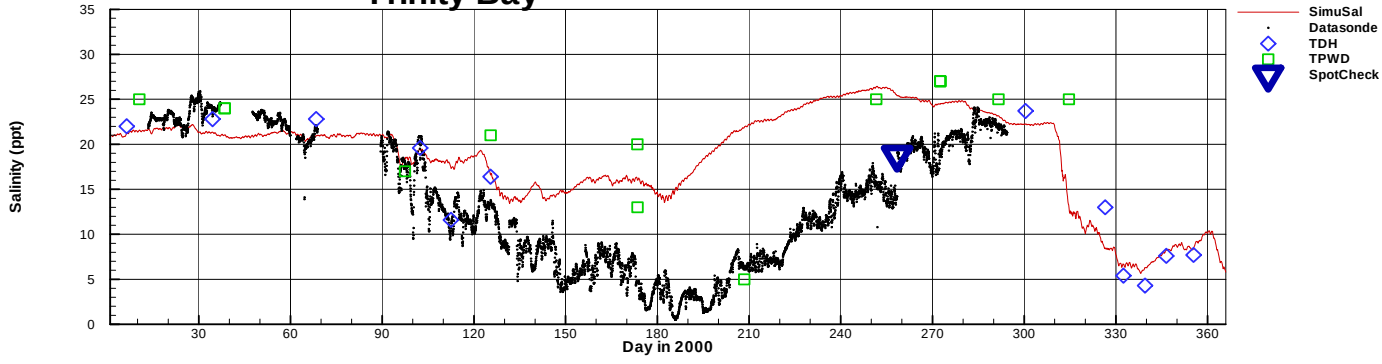
Dollar Point



Red Bluff

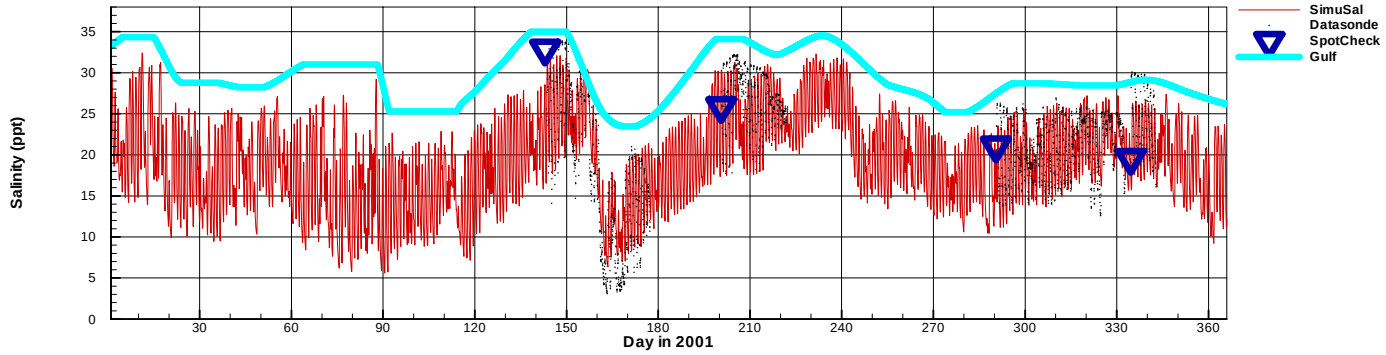


Trinity Bay

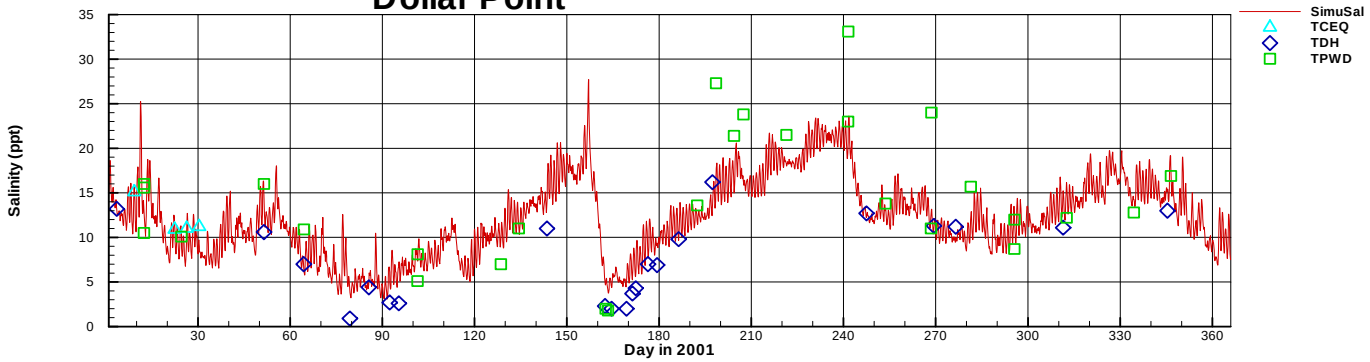


2001

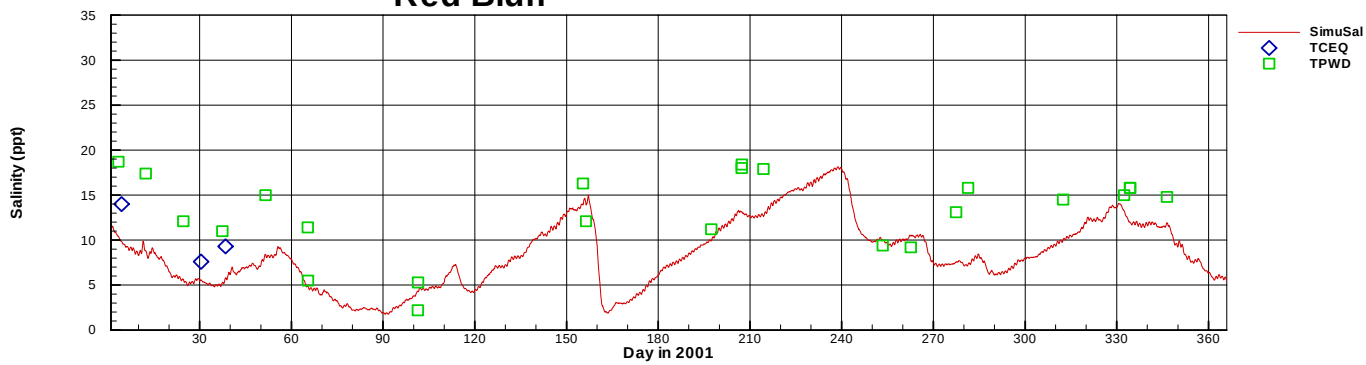
Bolivar Roads



Dollar Point



Red Bluff



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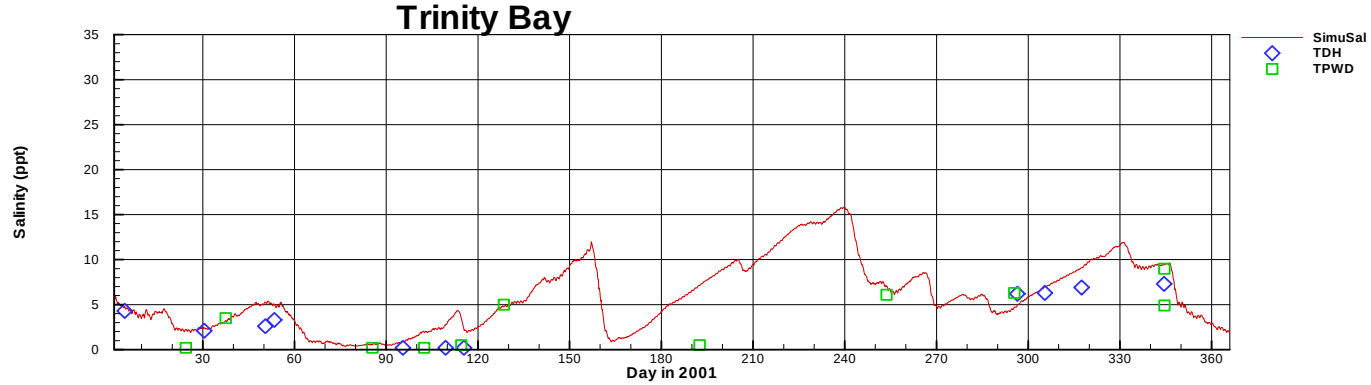
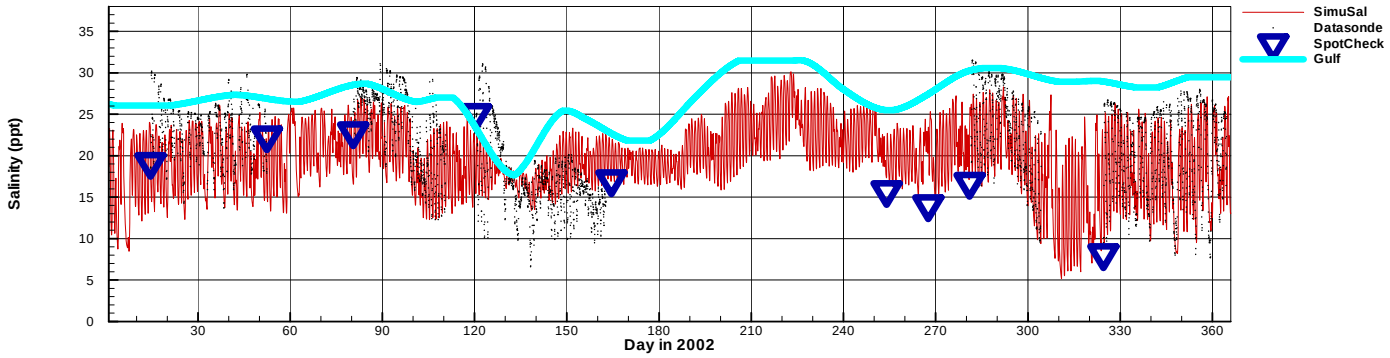
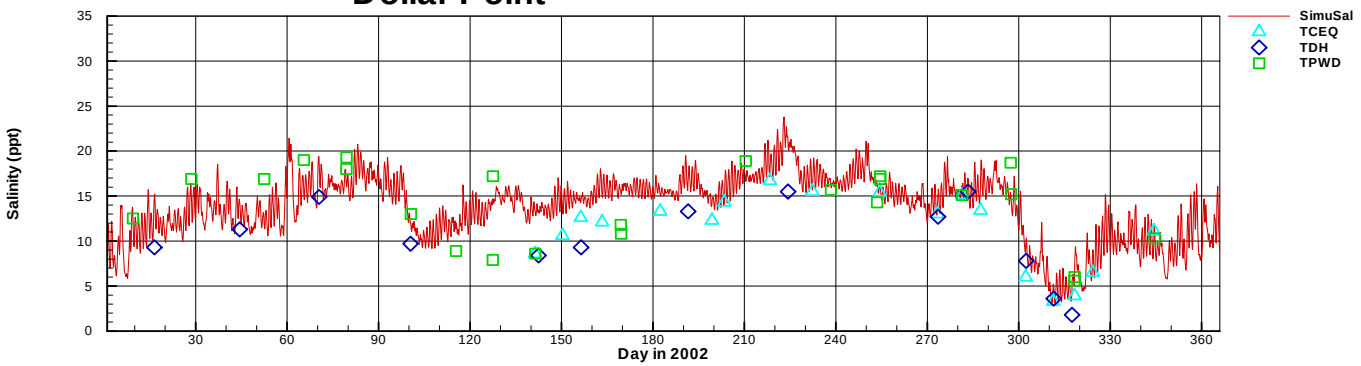


2002

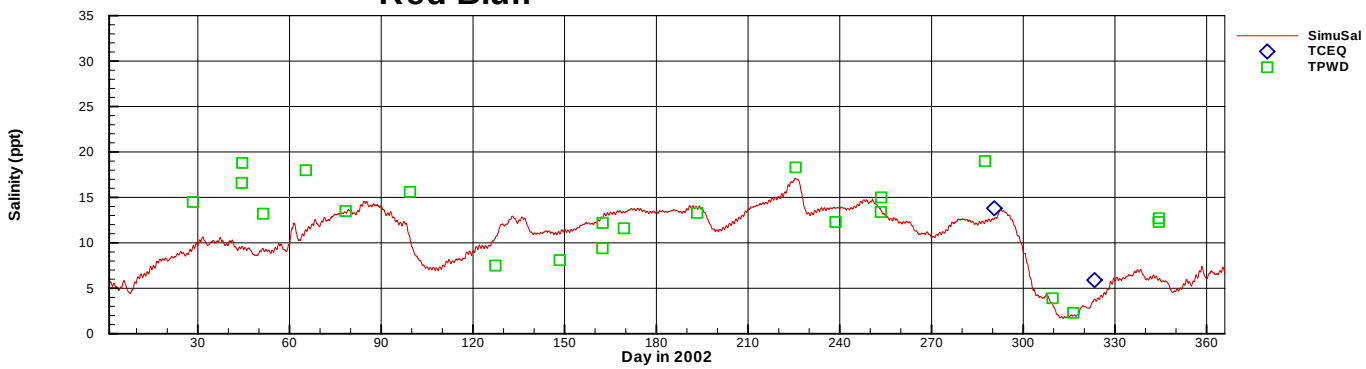
Bolivar Roads



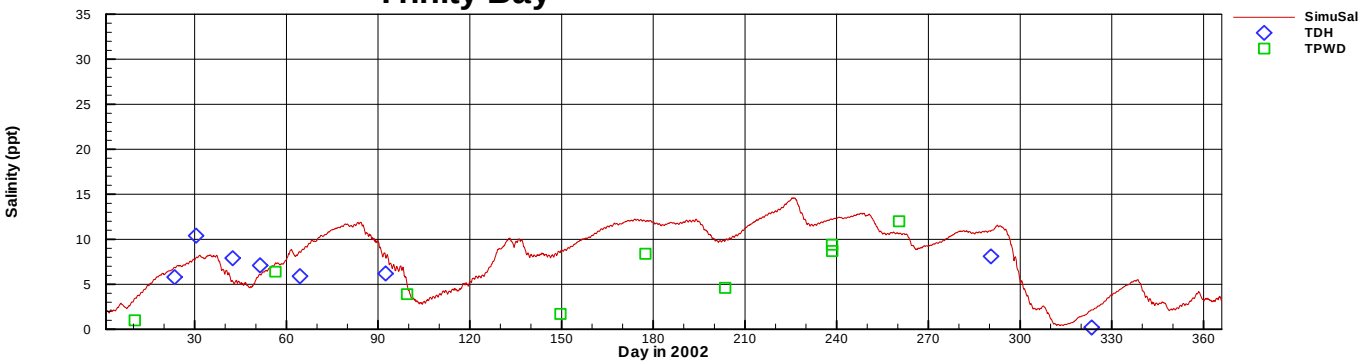
Dollar Point



Red Bluff

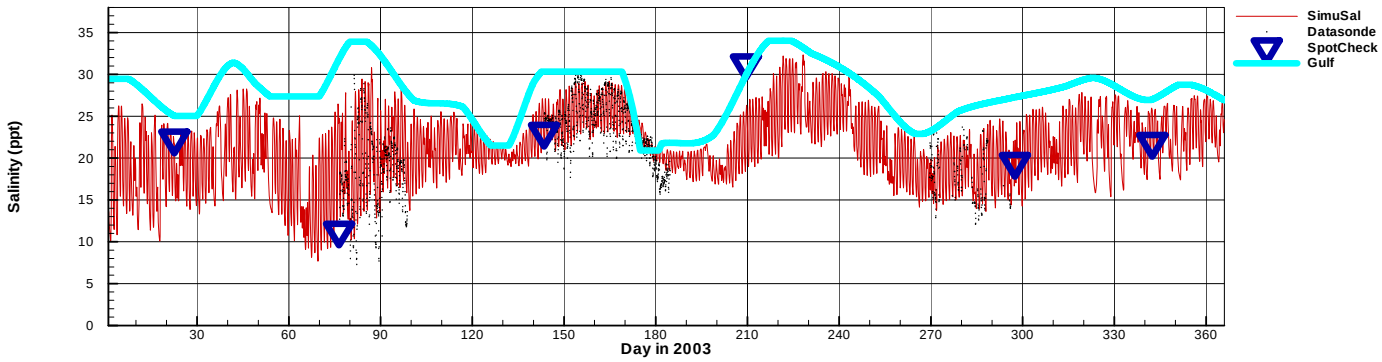


Trinity Bay

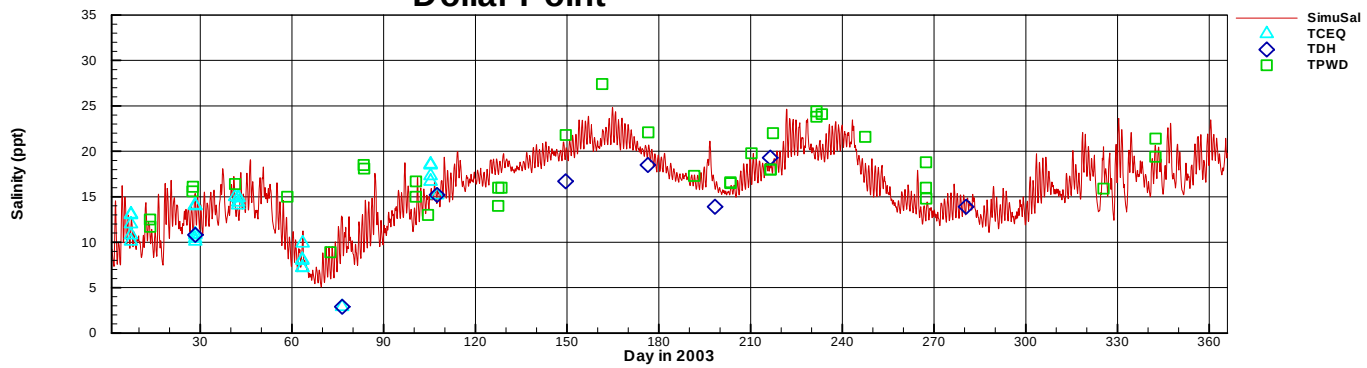


2003

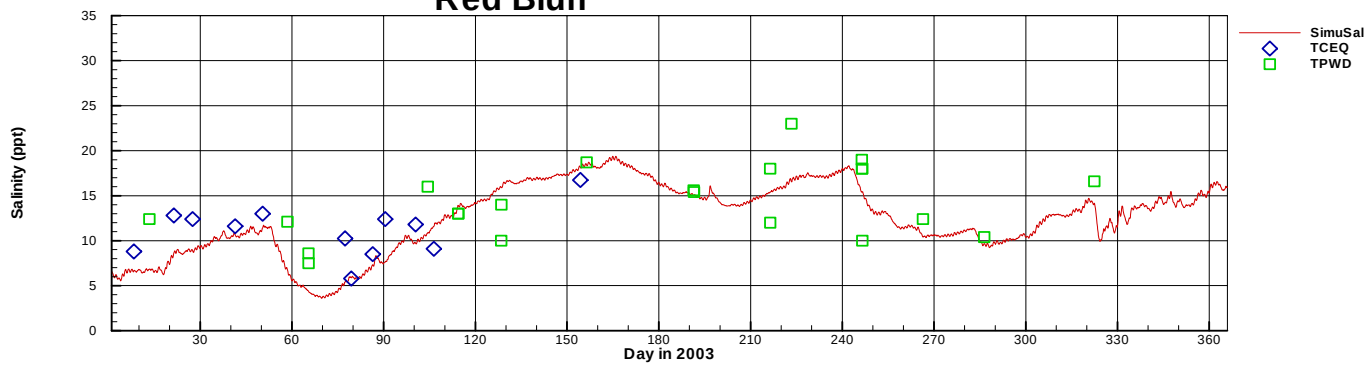
Bolivar Roads



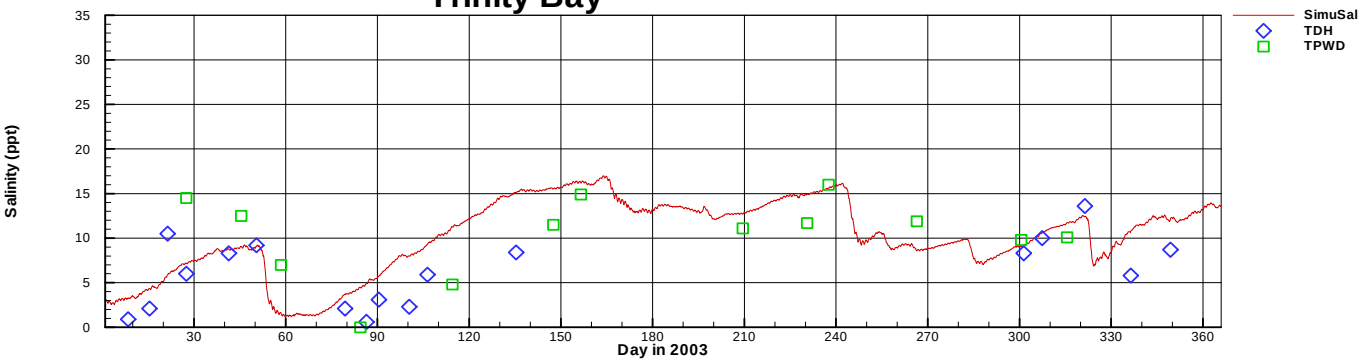
Dollar Point



Red Bluff

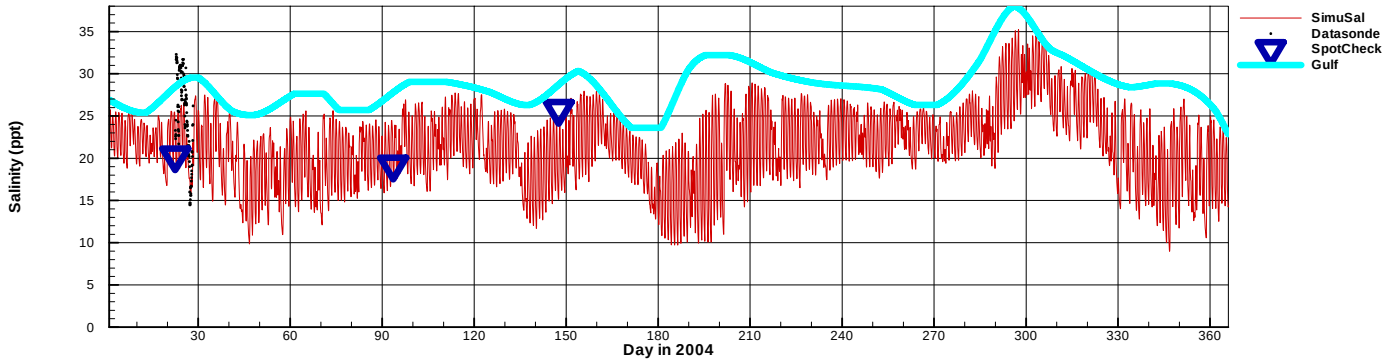


Trinity Bay

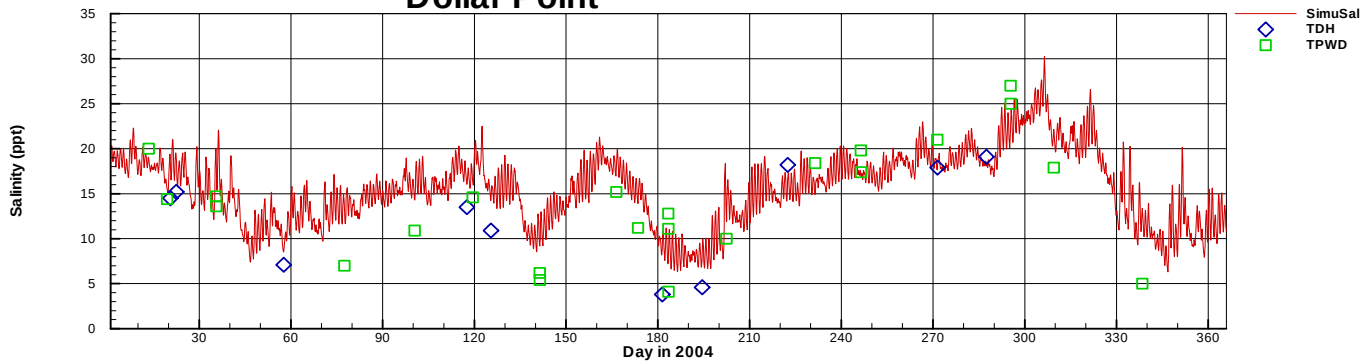


2004

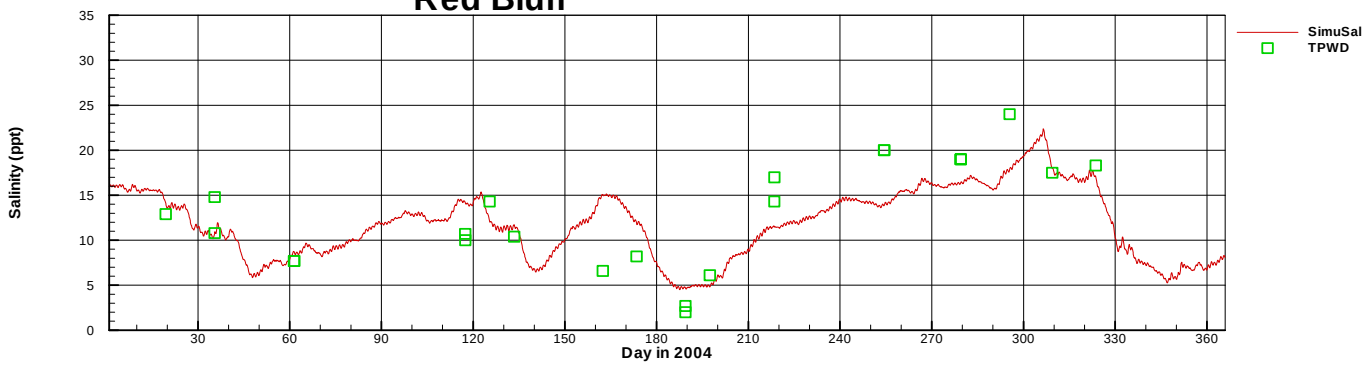
Bolivar Roads



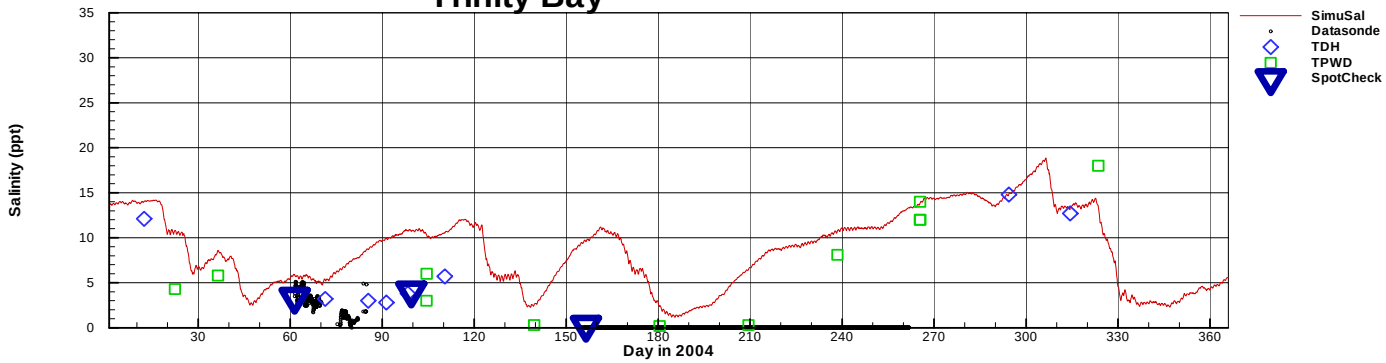
Dollar Point



Red Bluff

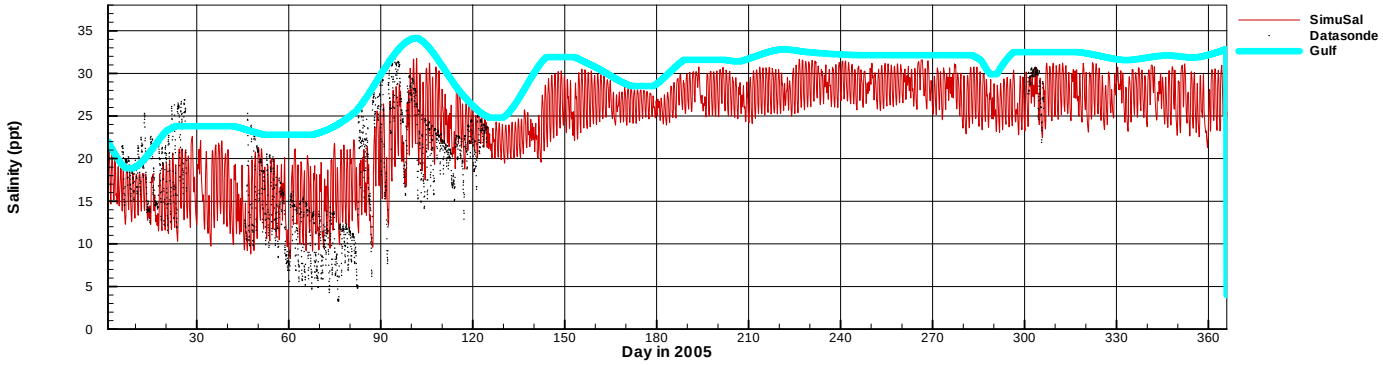


Trinity Bay

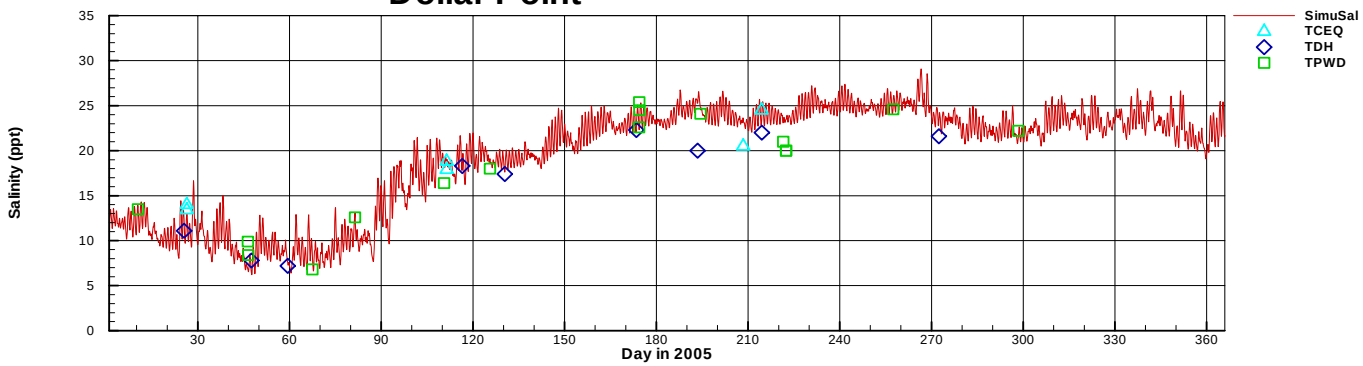


2005

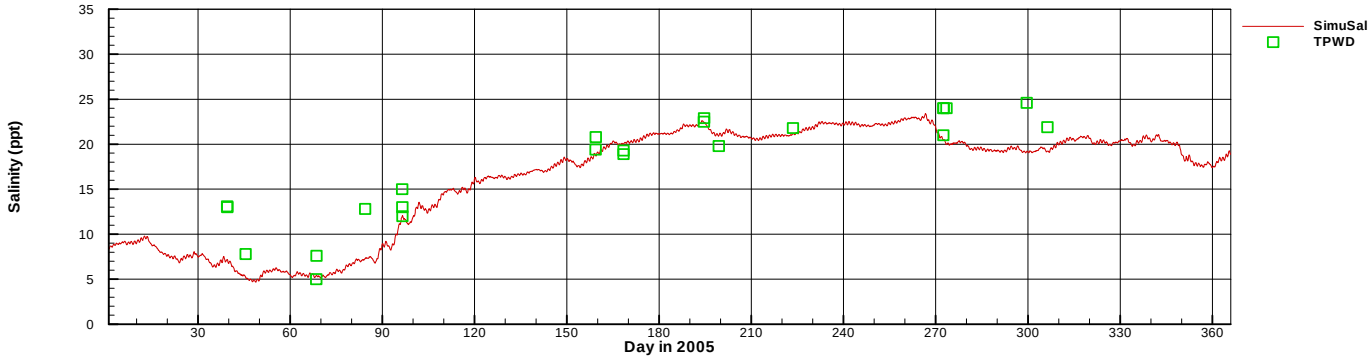
Bolivar Roads



Dollar Point



Red Bluff



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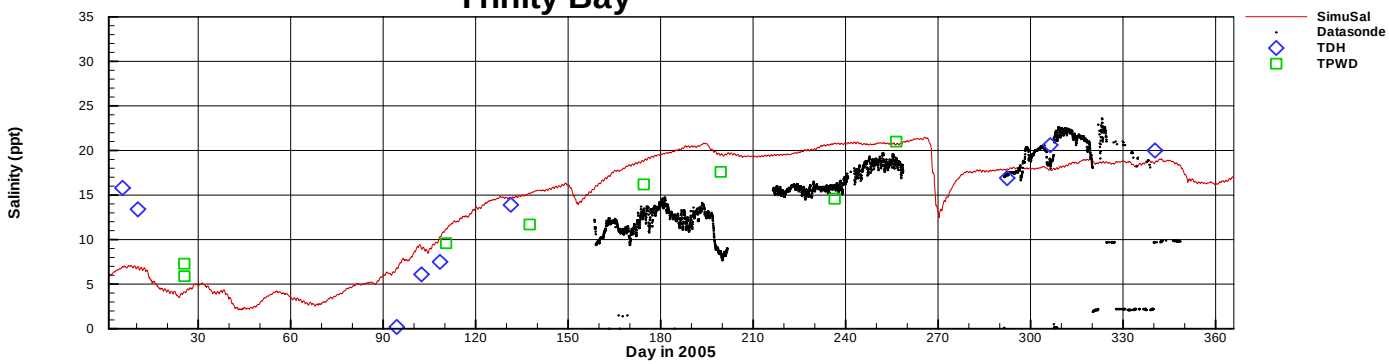
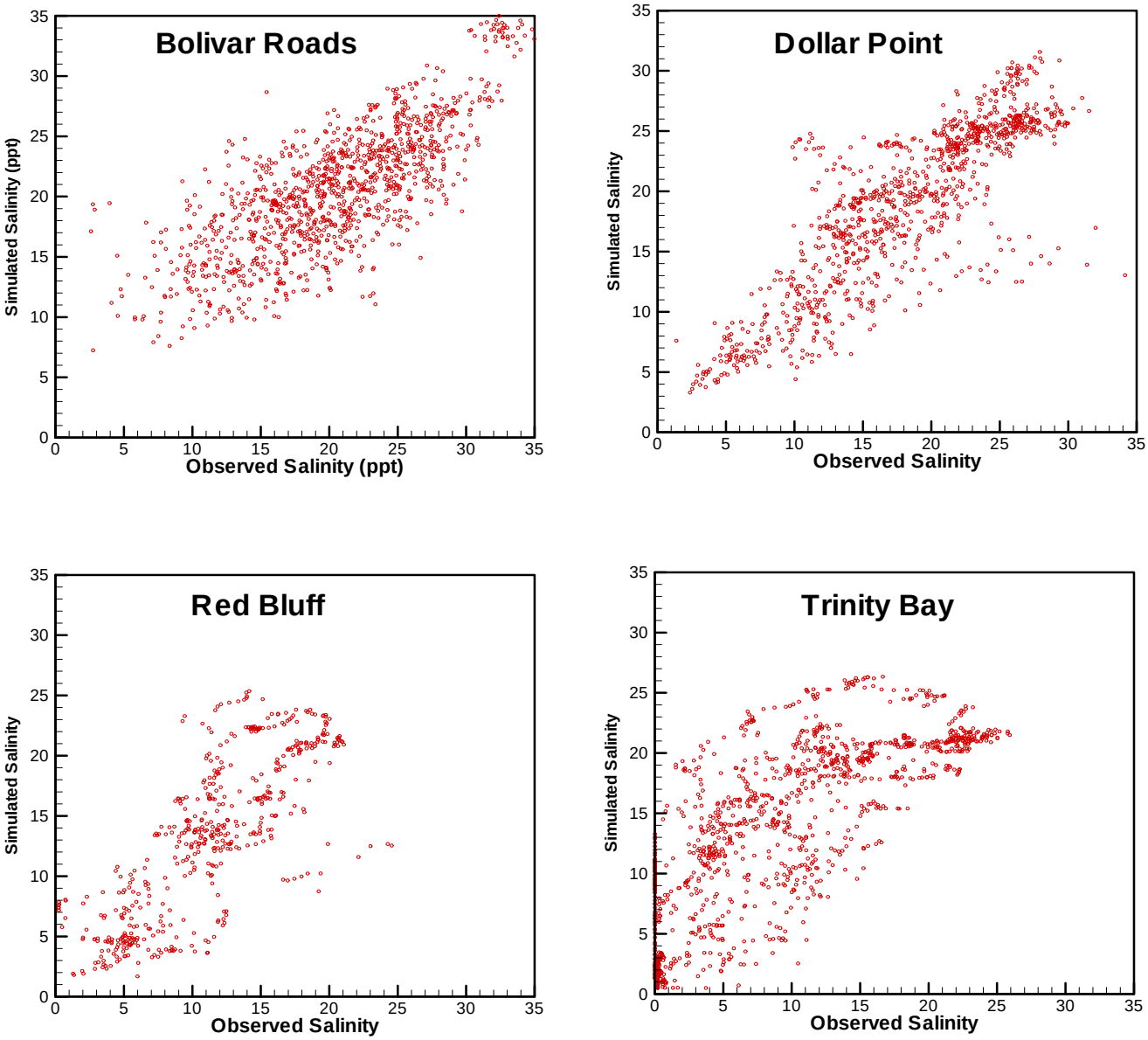




Observed vs simulated salinity 1997-2005

Comparison statistics

for Validation 1997-2005

Site	N_data	R-square	RMS(ppt)
Bolivar Roads	1149	0.59	4.0
Dollar Point	1043	71	3.8
Red Bluff	525	0.61	4.6
Trinity Bay	1285	0.61	6.6

Site	N_data	Observed Mean	Simulated Mean	Difference (ppt)
Bolivar Roads	1149	20.3	20.5	-0.2
Dollar Point	1043	18.2	18.9	-0.7
Red Bluff	525	11.3	13.4	-2.1
Trinity Bay	1285	9.2	13.5	-4.3

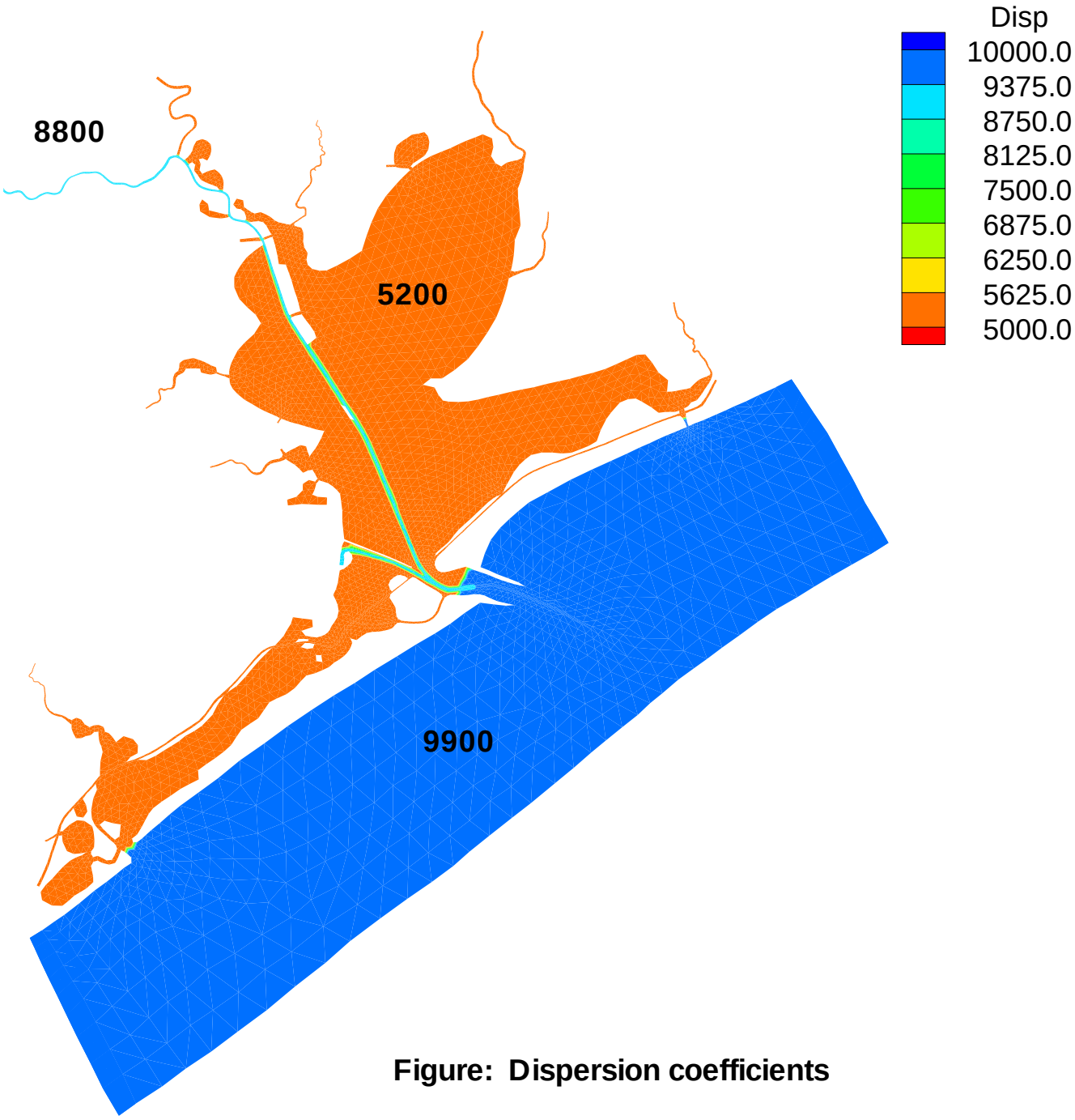


Figure: Dispersion coefficients

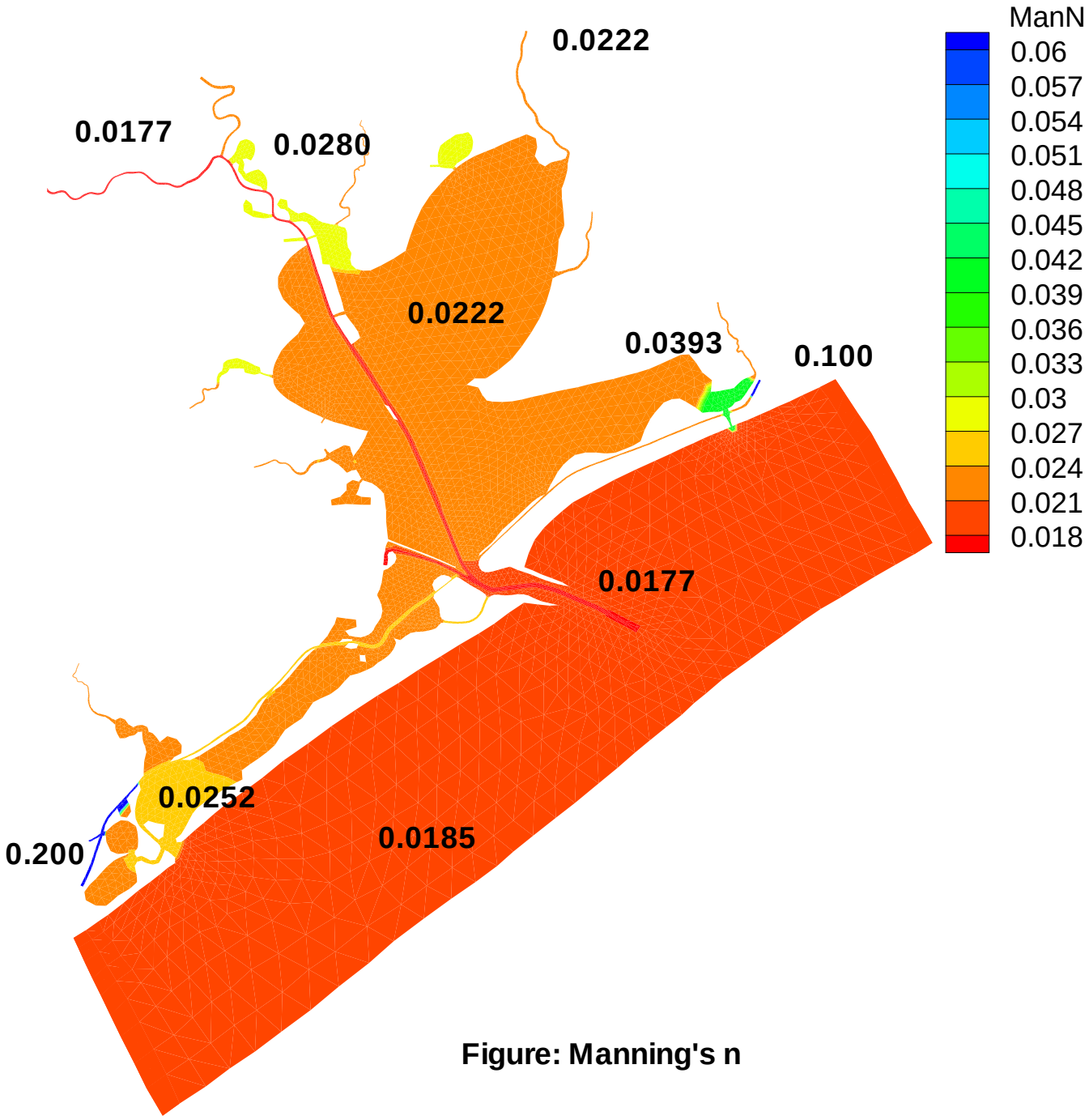
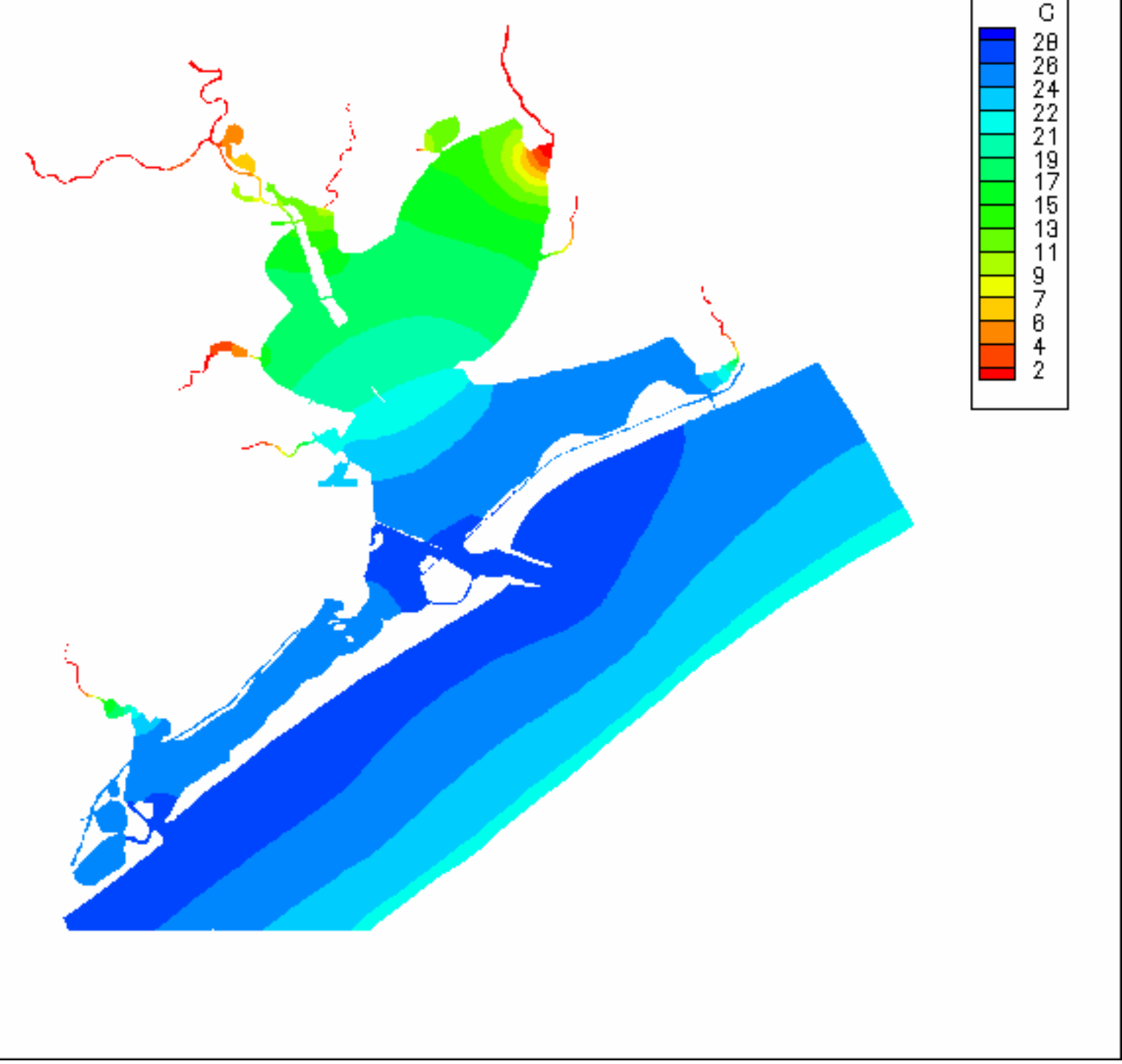


Figure: Manning's n



Flood-1994 Simulation: 244,000 cfs on October 18, 1994. 204 3 hourly frames, 8.5 days from October 17, 1994