Item #5c

Turbidity-Based Load Estimates for the Guadalupe River Hydrologic Year 2003

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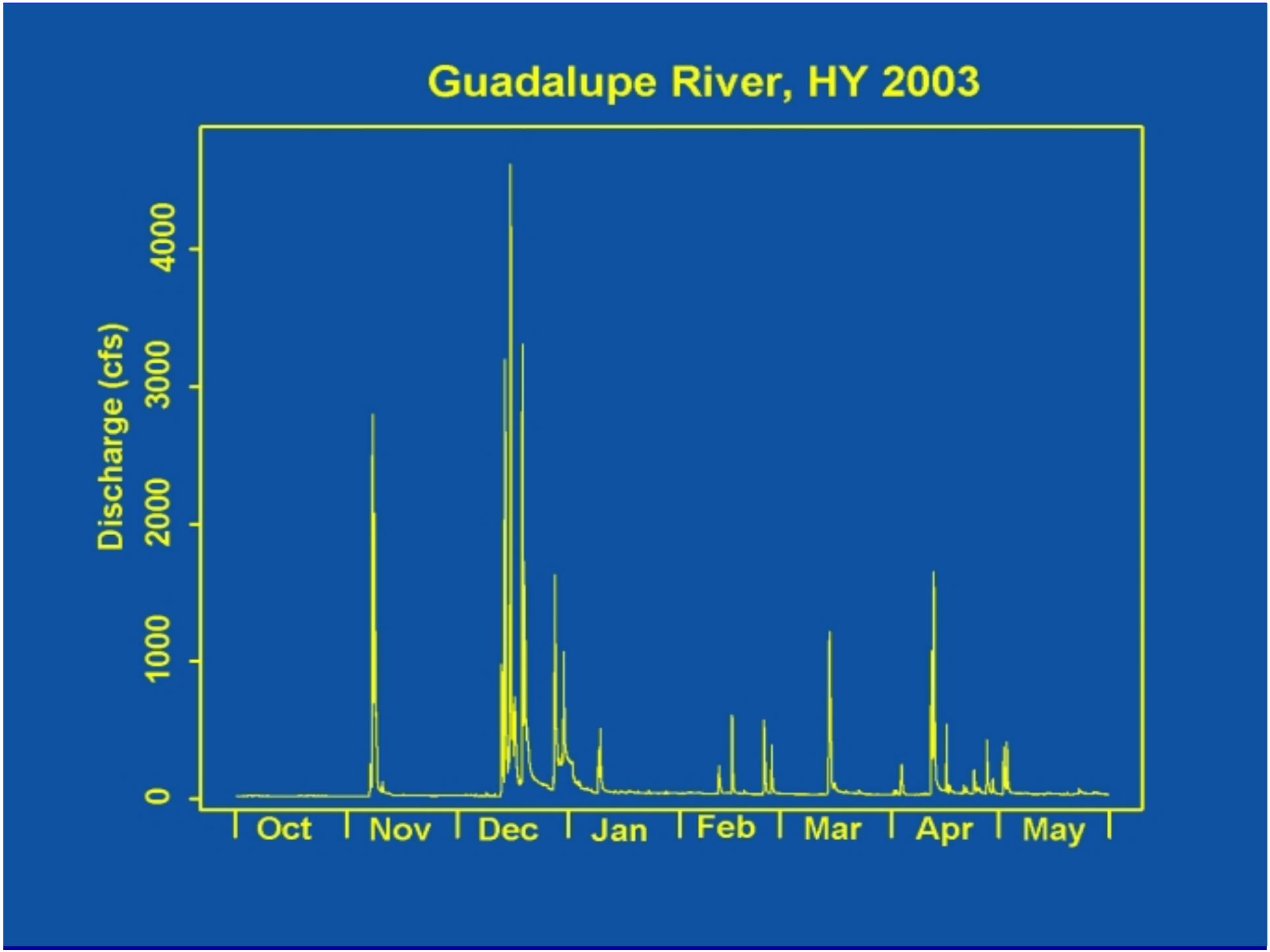
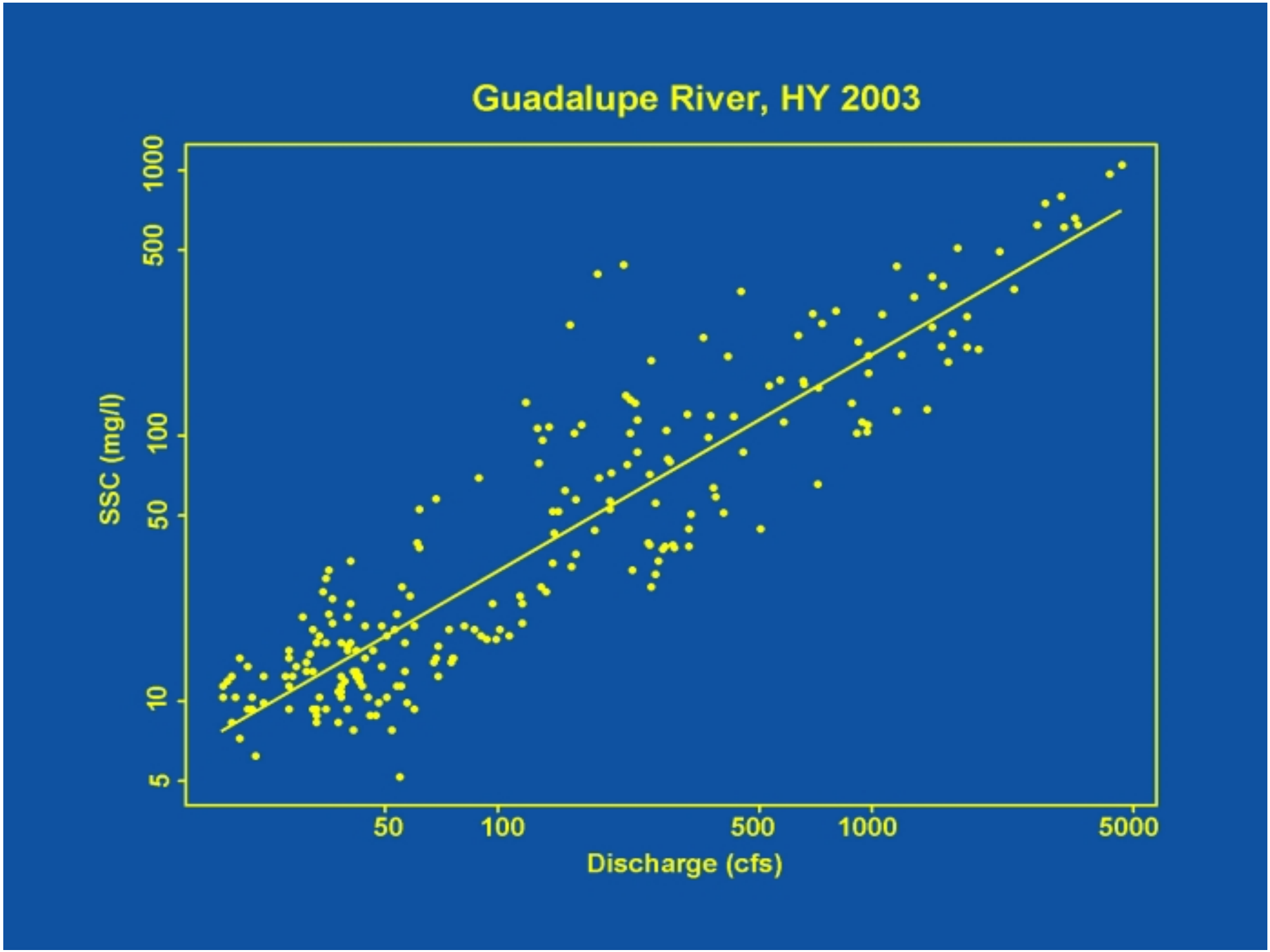
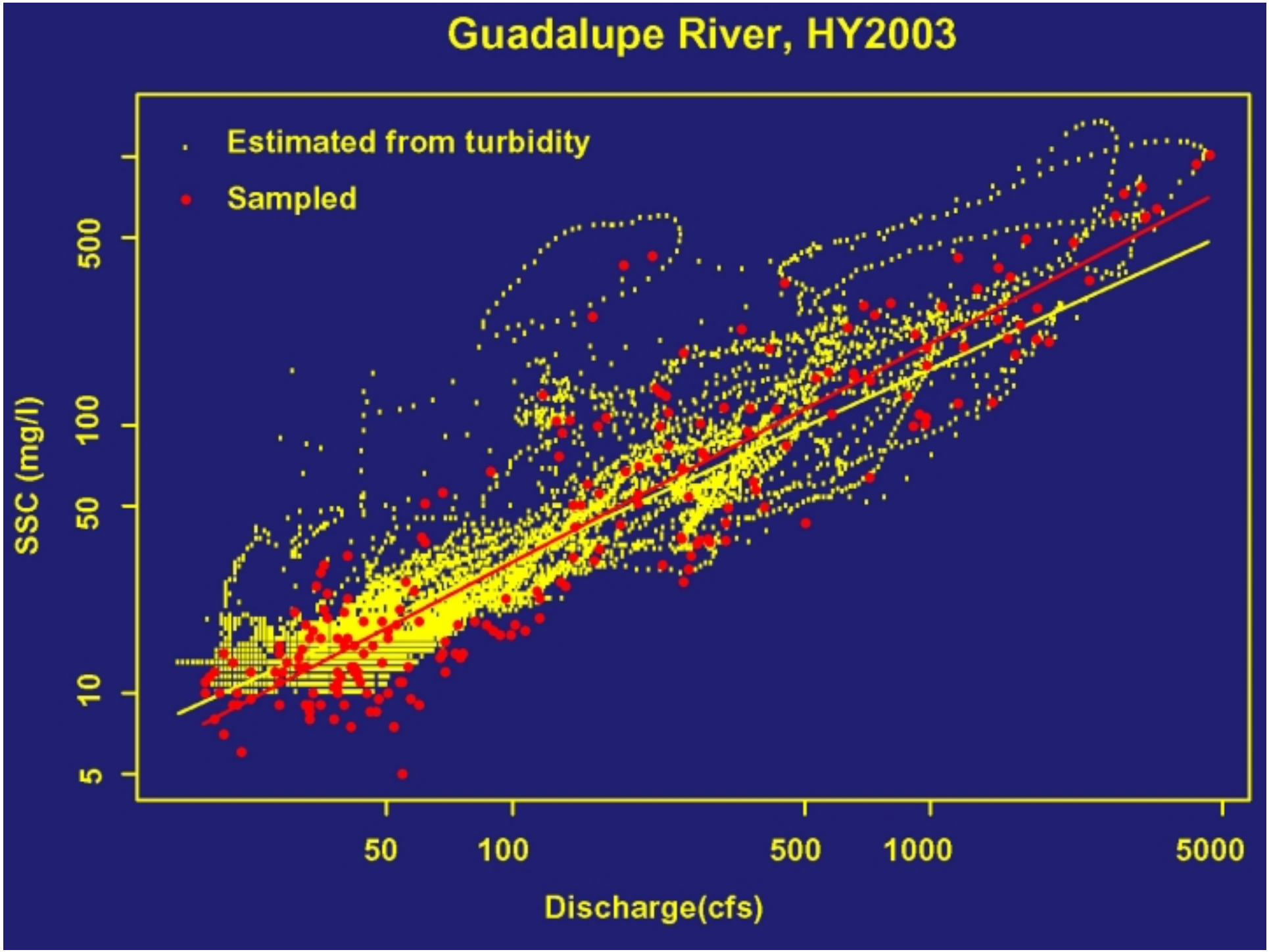
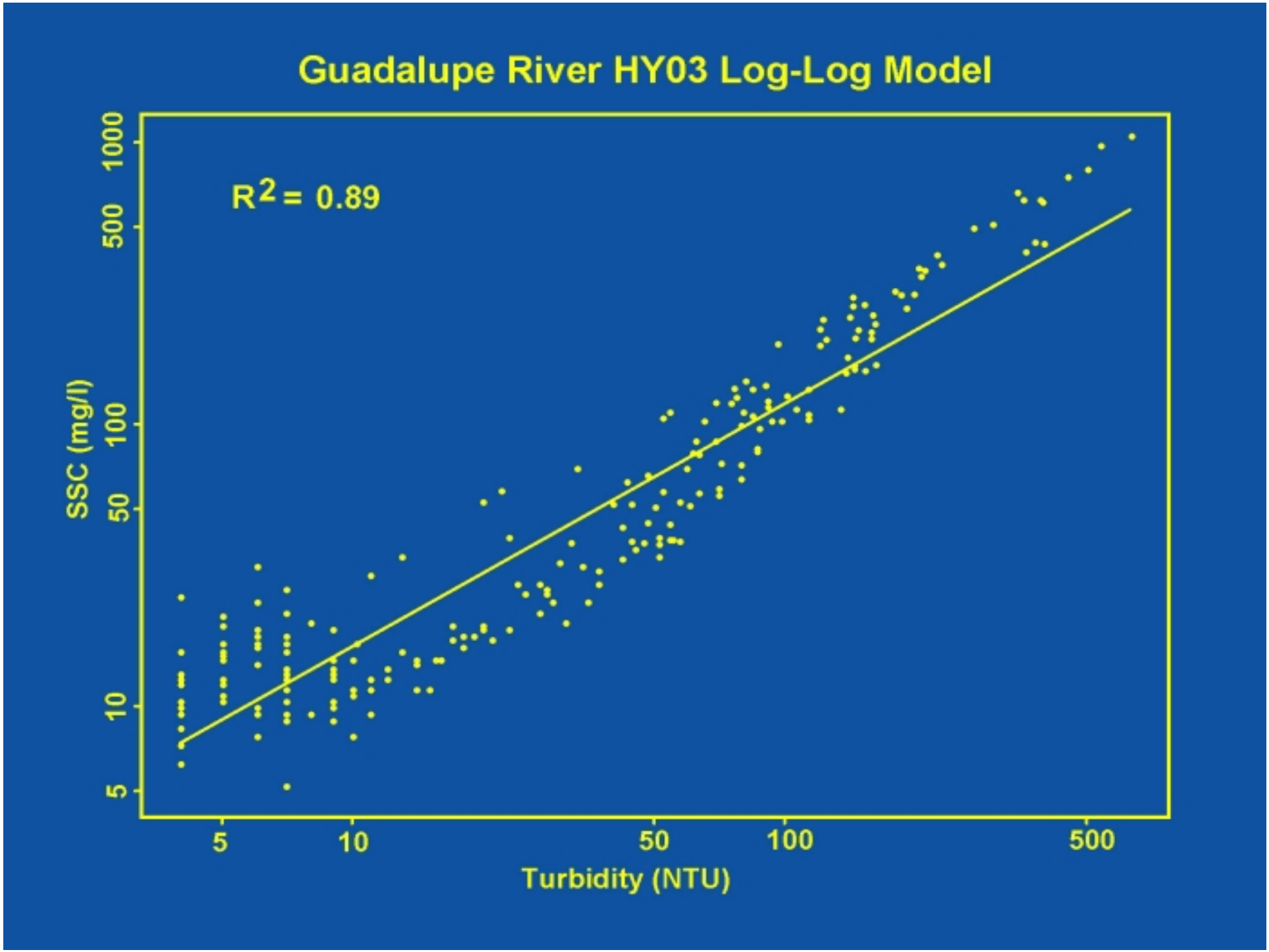
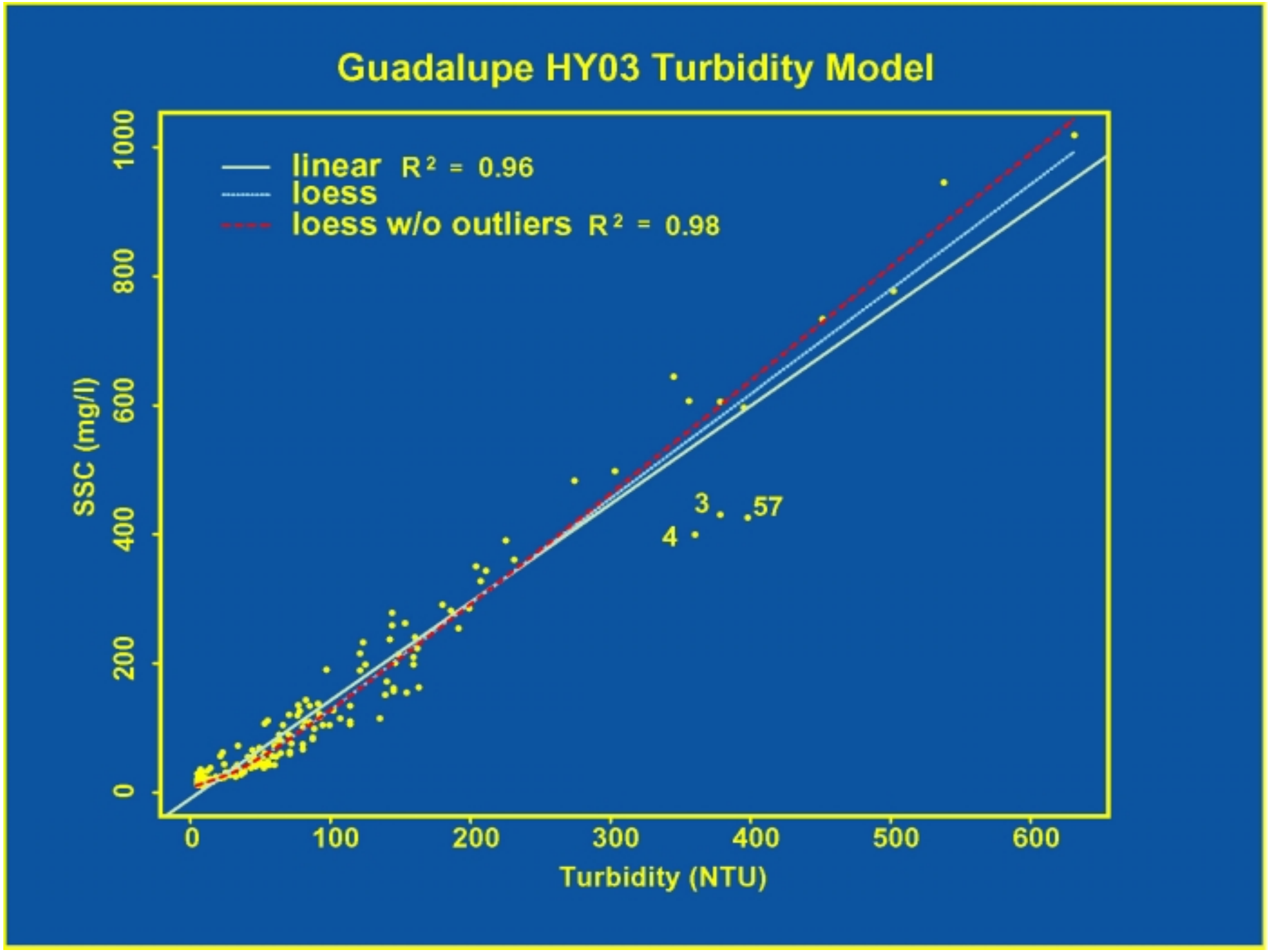
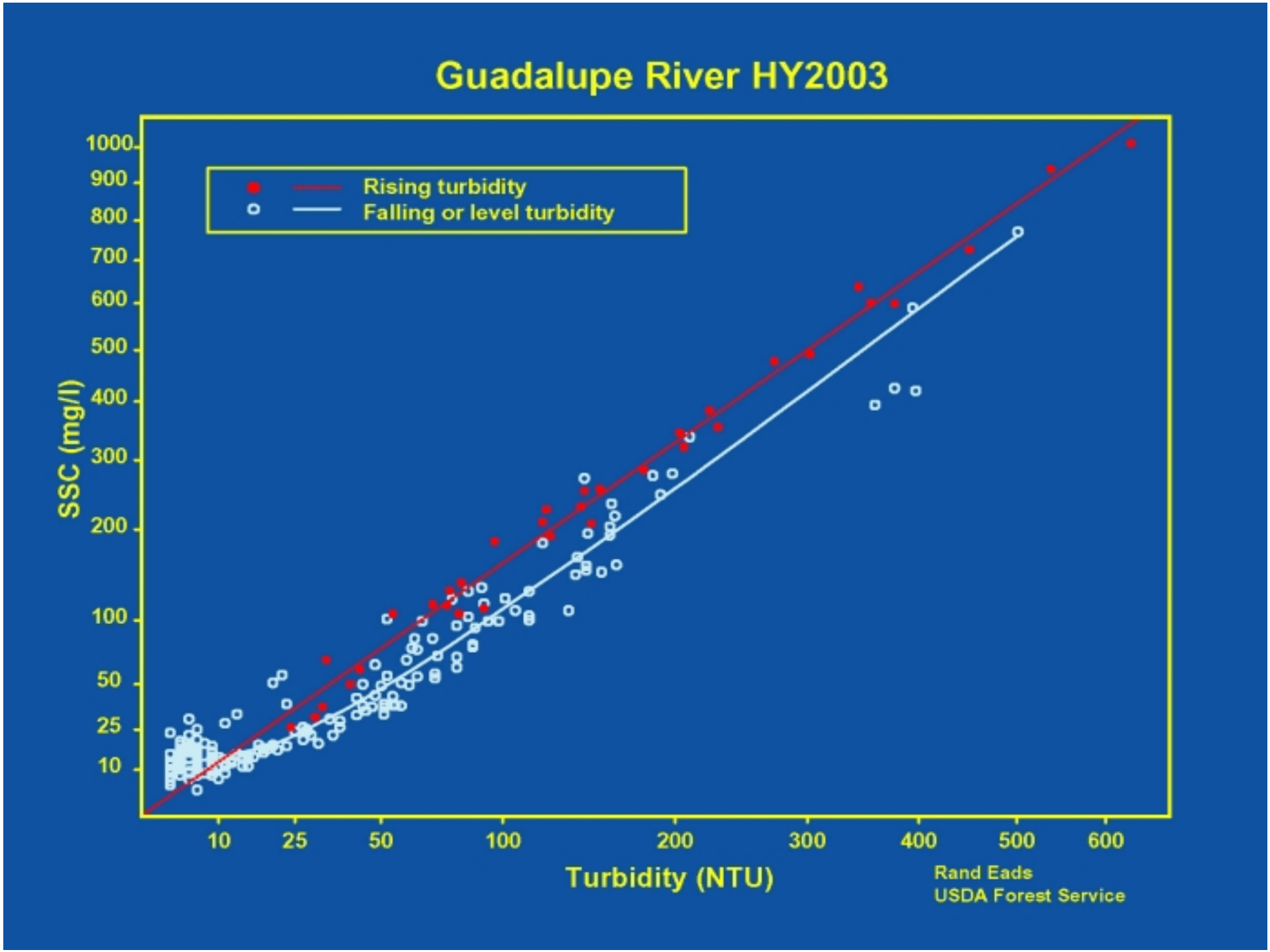

Guadalupe River, HY 2003
Discharge (cfs)
0
1000
2000
3000
4000
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May


Guadalupe River, HY 2003
SSC (mg/l)
1000
500
100
50
10
5
50
100
500
1000
5000
Discharge (cfs)


Guadalupe River, HY2003
Estimated from turbidity
Sampled
SSC (mg/l)
5
10
50
100
500
50
100
500
1000
5000
Discharge(cfs)


Guadalupe River HY03 Log-Log Model
$R^2 = 0.89$
SSC (mg/l)
1000
500
100
50
10
5
5
10
50
100
500
Turbidity (NTU)


Guadalupe HY03 Turbidity Model
linear R² = 0.96
loess
loess w/o outliers R² = 0.98
SSC (mg/l)
0
200
400
600
800
1000
Turbidity (NTU)
0
100
200
300
400
500
600
3
57
4


Guadalupe River HY2003
Rising turbidity
Falling or level turbidity
SSC (mg/l)
1000
900
800
700
600
500
400
300
200
100
50
25
10
10
25
50
100
200
300
400
500
600
Turbidity (NTU)
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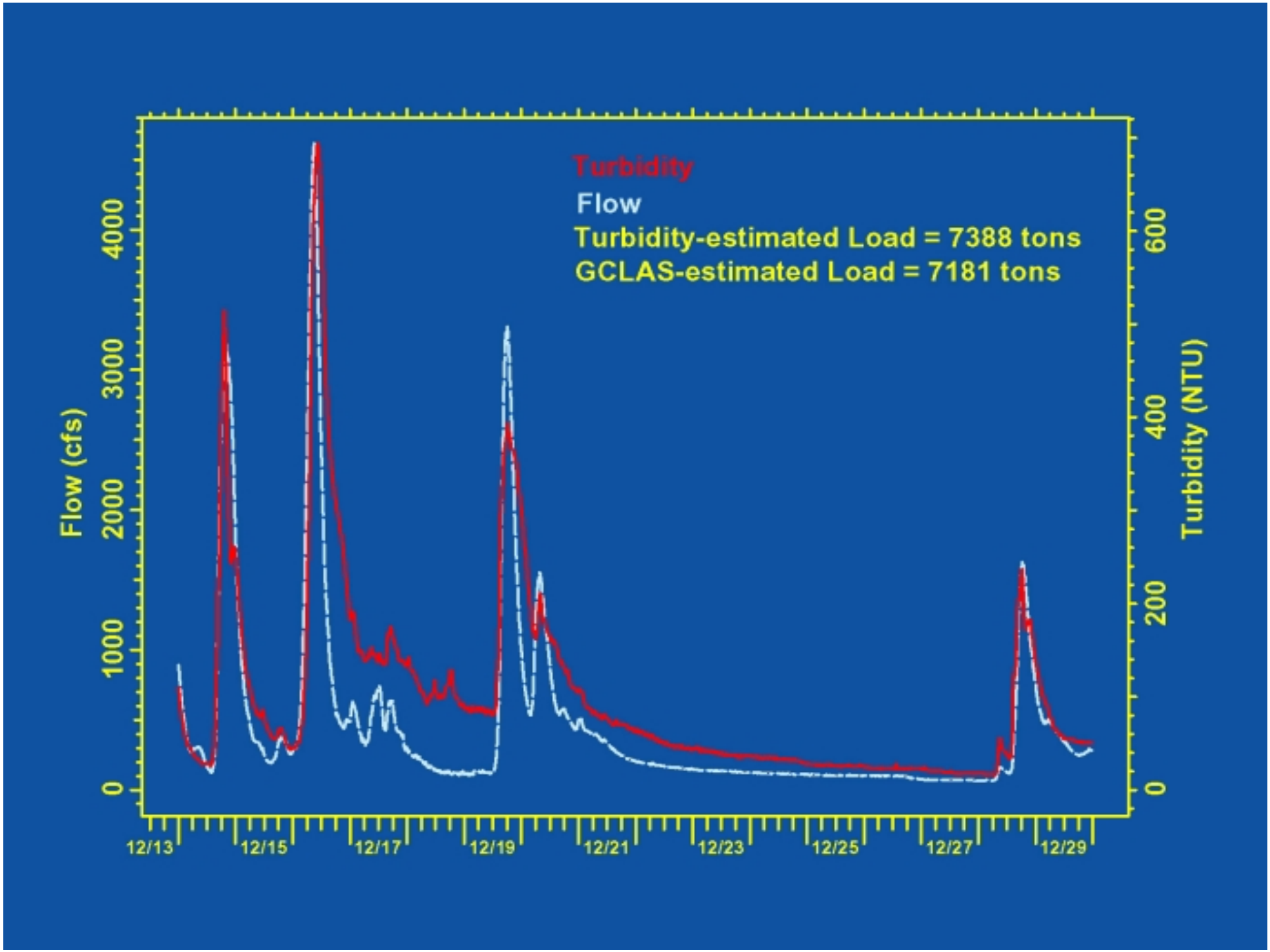
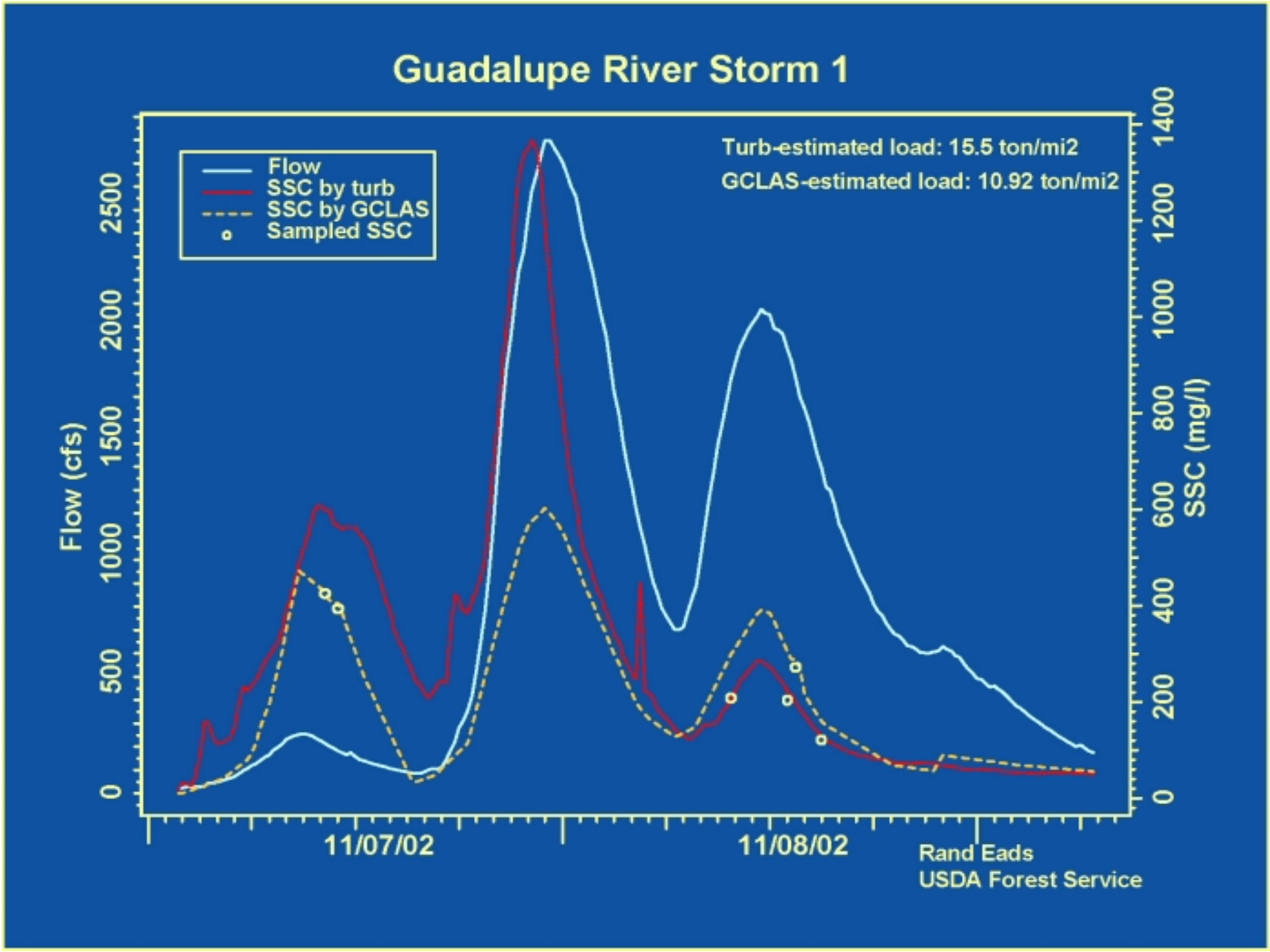

Turbidity
Flow
Turbidity-estimated Load = 7388 tons
GCLAS-estimated Load = 7181 tons
Flow (cfs)
0
1000
2000
3000
4000
Turbidity (NTU)
0
200
400
600
12/13
12/15
12/17
12/19
12/21
12/23
12/25
12/27
12/29


Guadalupe River Storm 1
Flow
SSC by turb
SSC by GCLAS
Sampled SSC
Turb-estimated load: 15.5 ton/mi2
GCLAS-estimated load: 10.92 ton/mi2
Flow (cfs)
0
500
1000
1500
2000
2500
SSC (mg/l)
0
200
400
600
800
1000
1200
1400
11/07/02
11/08/02
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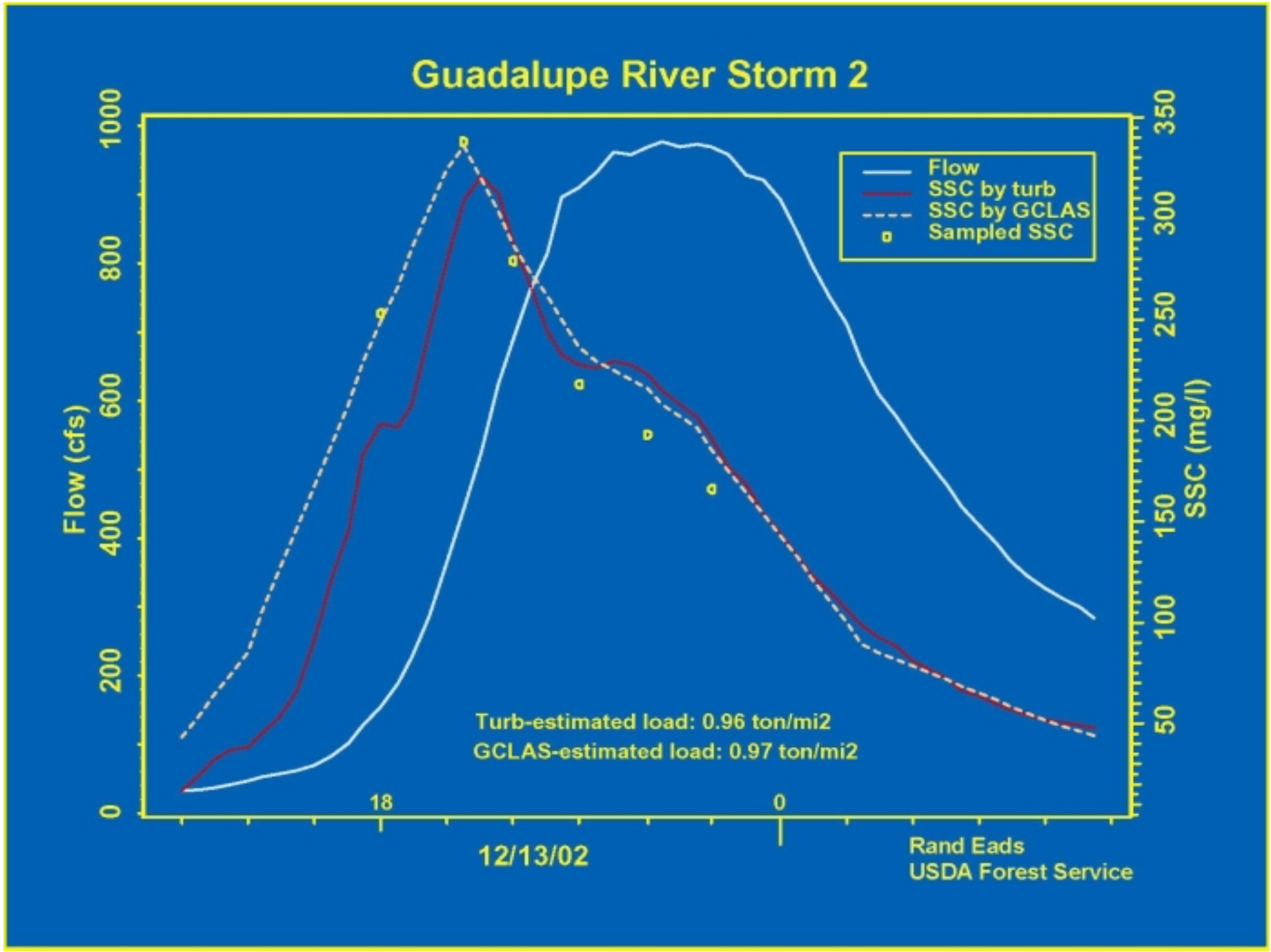
Guadalupe River Storm 2
Flow (cfs)
0
200
400
600
800
1000
SSC (mg/l)
50
100
150
200
250
300
350
Flow
SSC by turb
SSC by GCLAS
Sampled SSC
Turb-estimated load: 0.96 ton/mi2
GCLAS-estimated load: 0.97 ton/mi2
18
0
12/13/02
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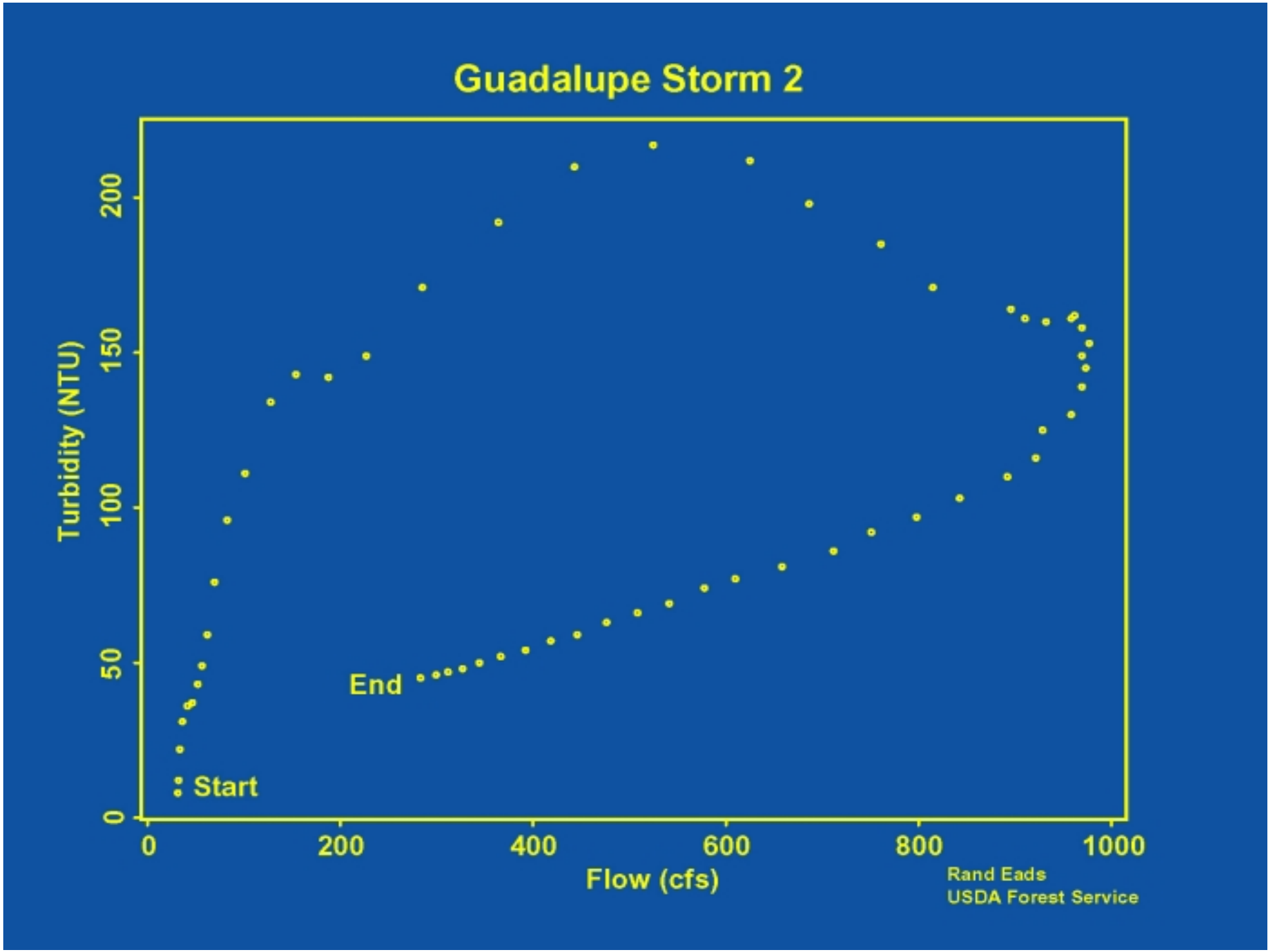
Guadalupe Storm 2
Turbidity (NTU)
0
50
100
150
200
0
200
400
600
800
1000
Flow (cfs)
Start
End
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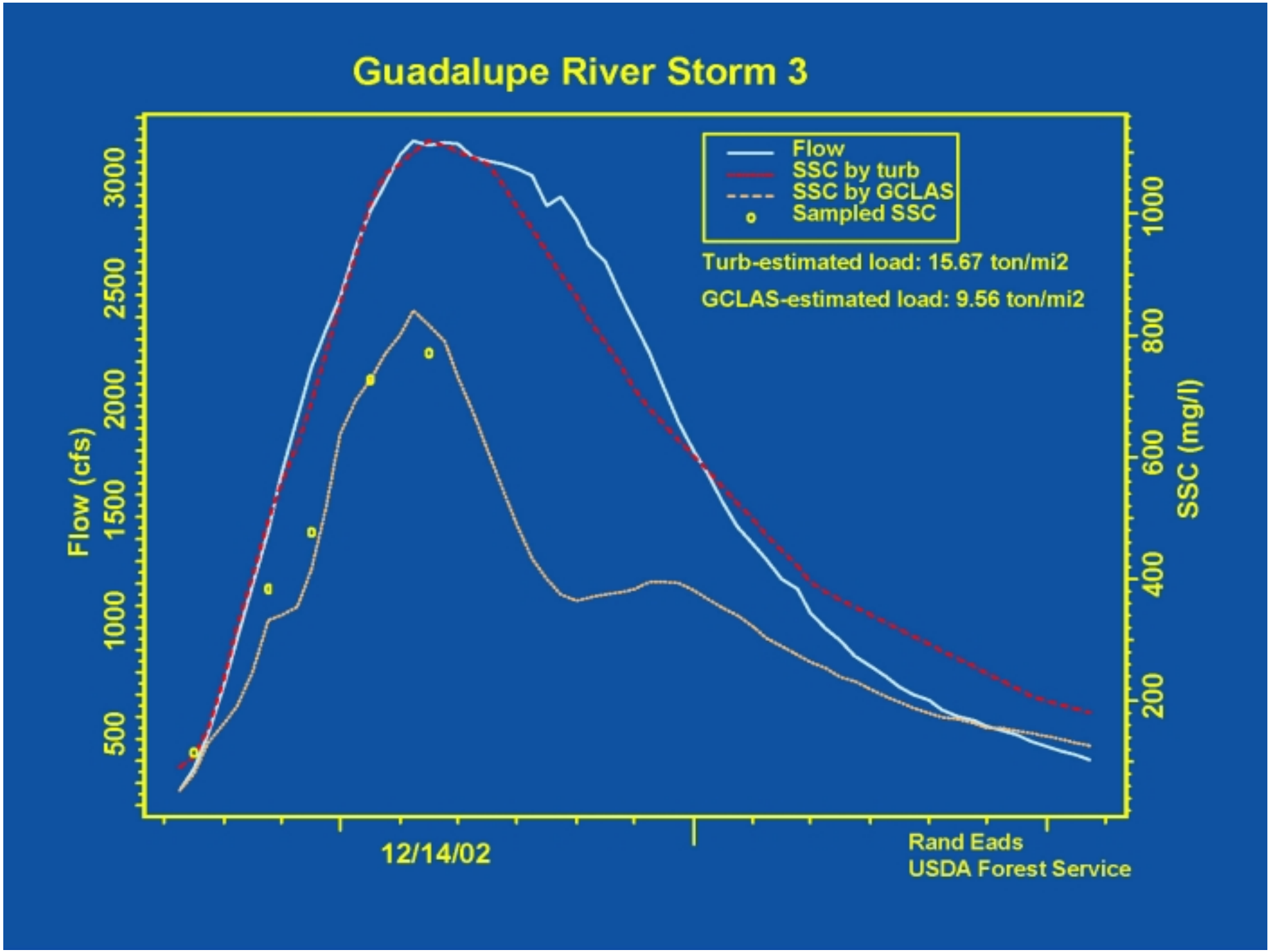
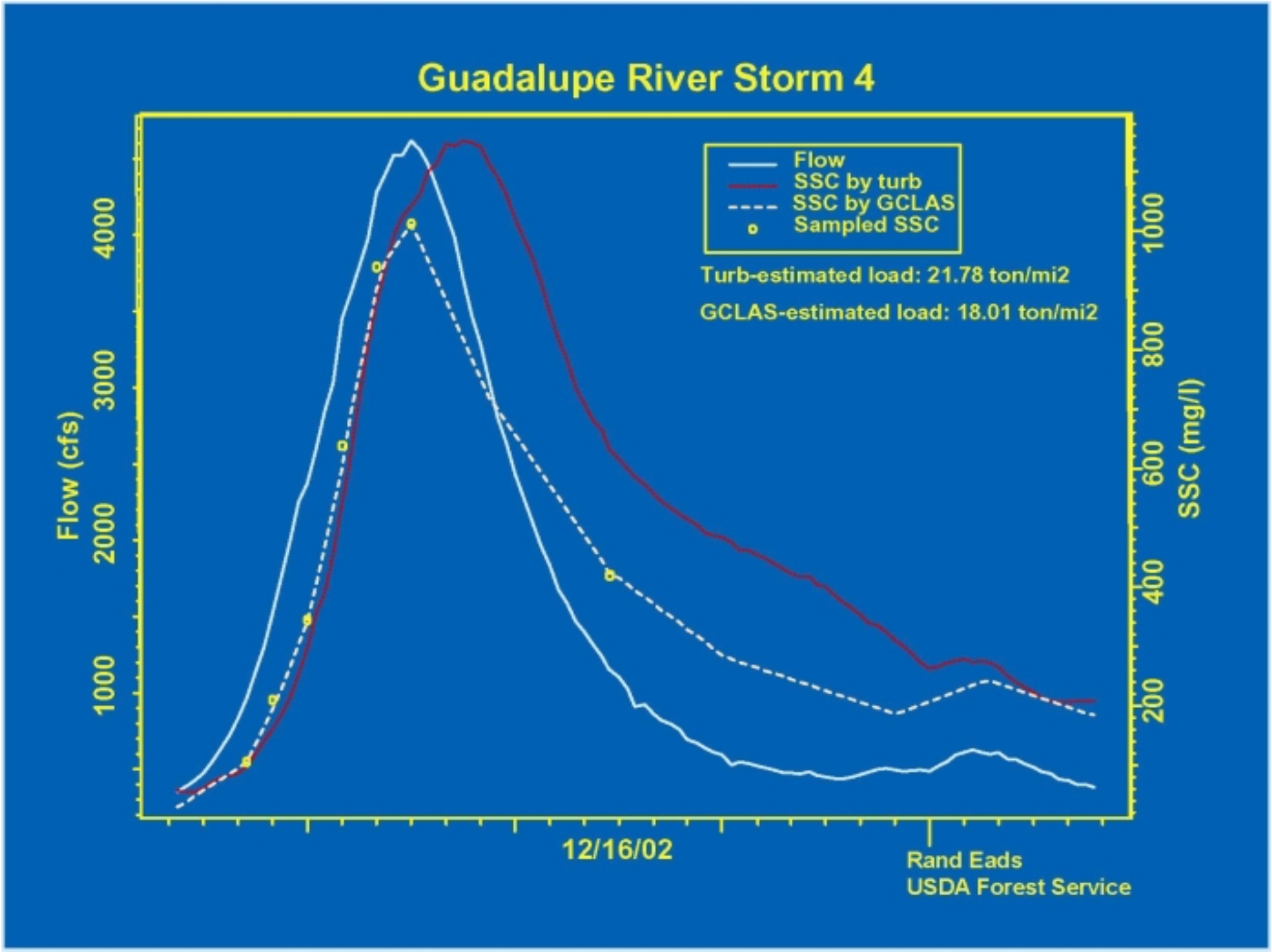

Guadalupe River Storm 3
Flow
SSC by turb
SSC by GCLAS
Sampled SSC
Turb-estimated load: 15.67 ton/mi2
GCLAS-estimated load: 9.56 ton/mi2
Flow (cfs)
500
1000
1500
2000
2500
3000
SSC (mg/l)
200
400
600
800
1000
12/14/02
Rand Eads
USDA Forest Service


Guadalupe River Storm 4
Flow
SSC by turb
SSC by GCLAS
Sampled SSC
Turb-estimated load: 21.78 ton/mi2
GCLAS-estimated load: 18.01 ton/mi2
Flow (cfs)
1000
2000
3000
4000
SSC (mg/l)
200
400
600
800
1000
12/16/02
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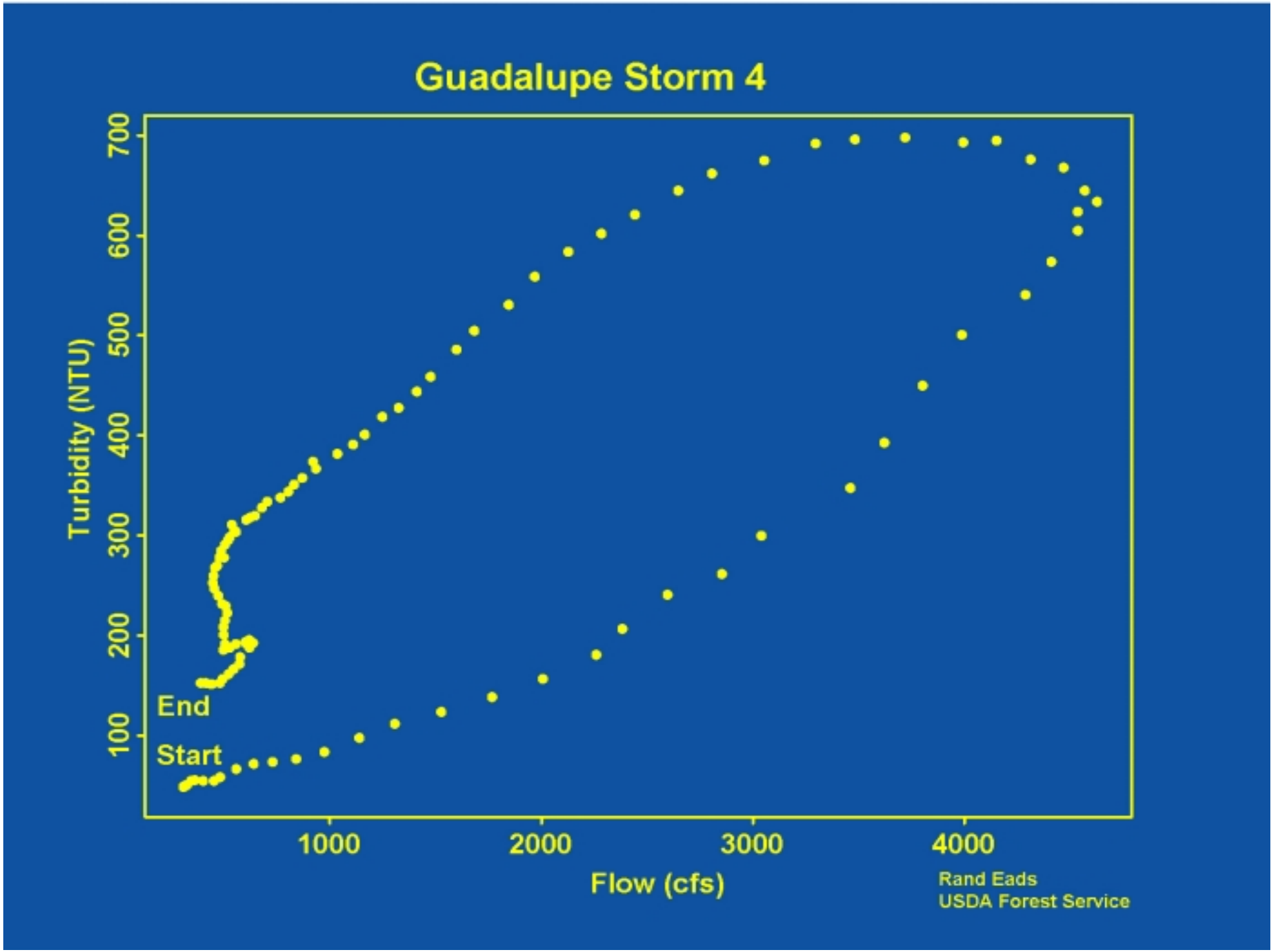
Guadalupe Storm 4
Turbidity (NTU)
700
600
500
400
300
200
100
End
Start
1000
2000
3000
4000
Flow (cfs)
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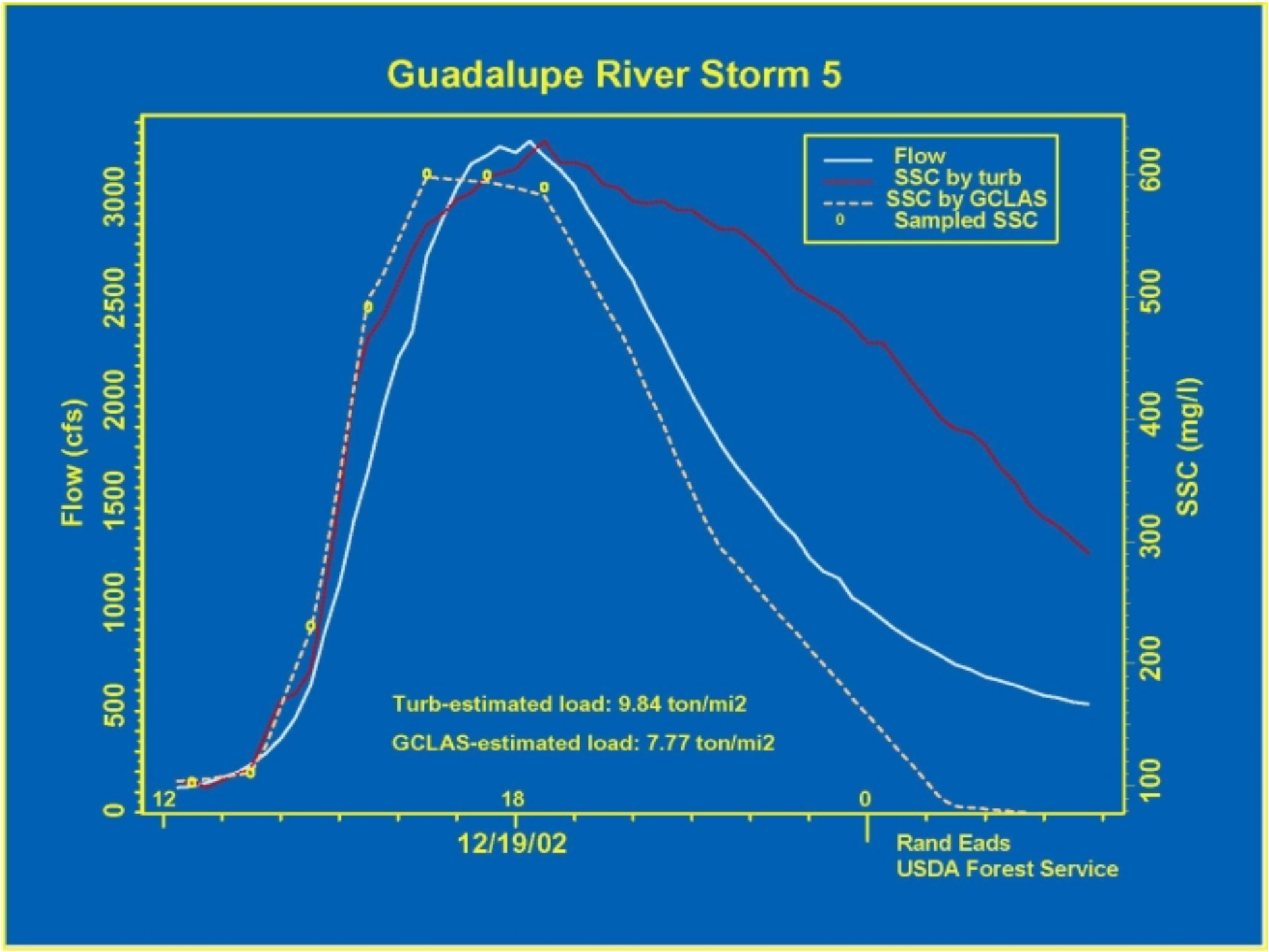
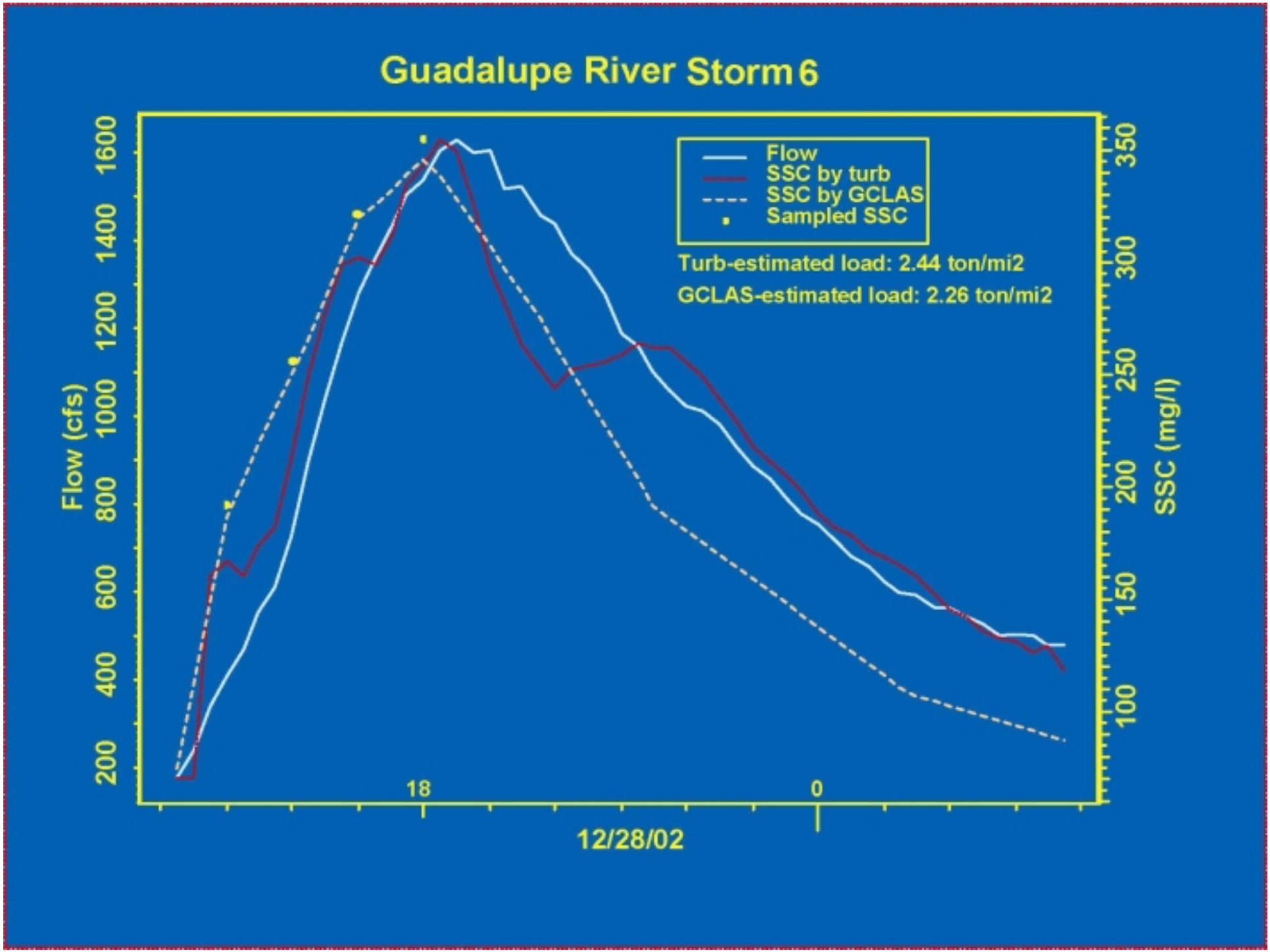
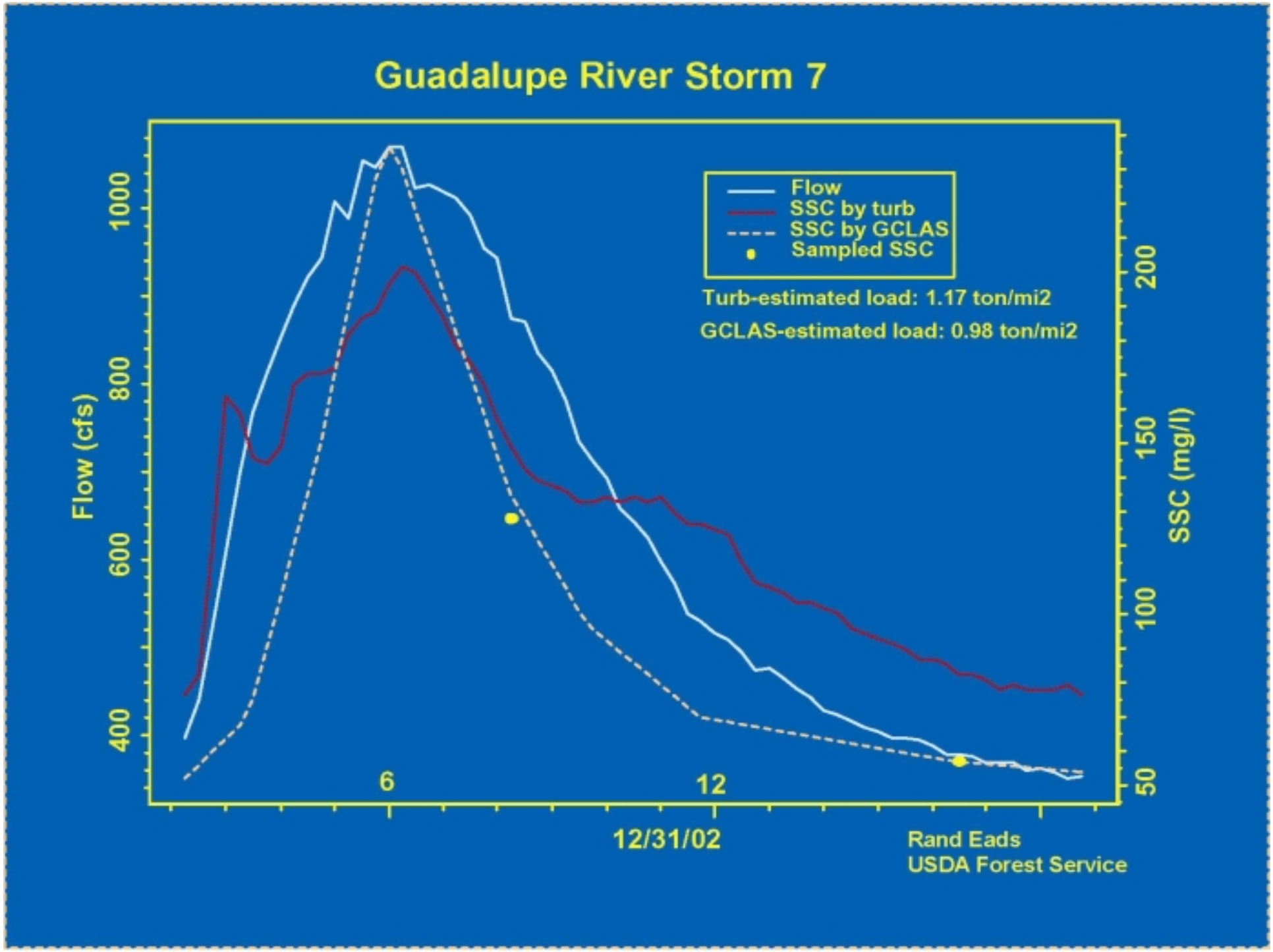
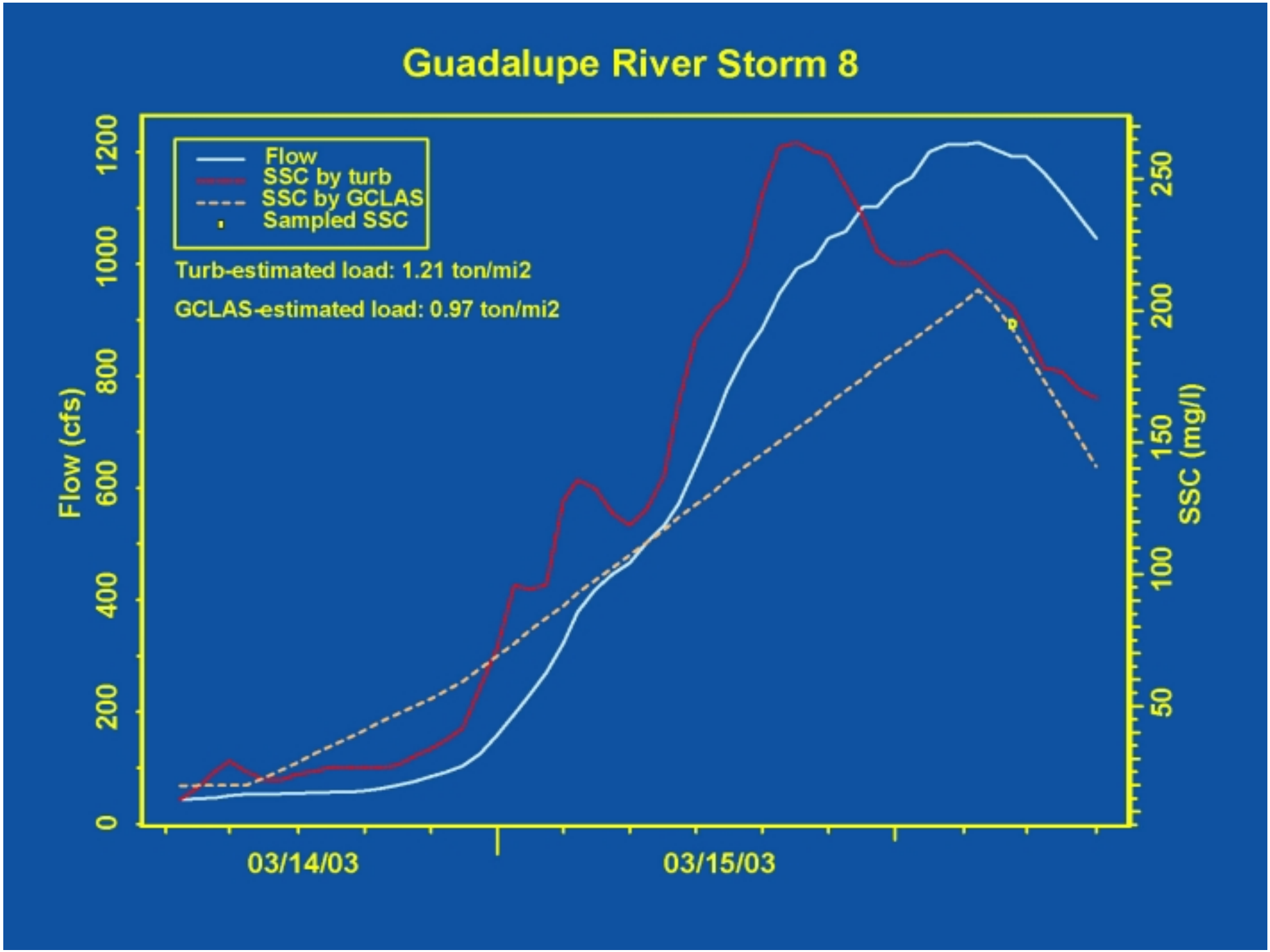
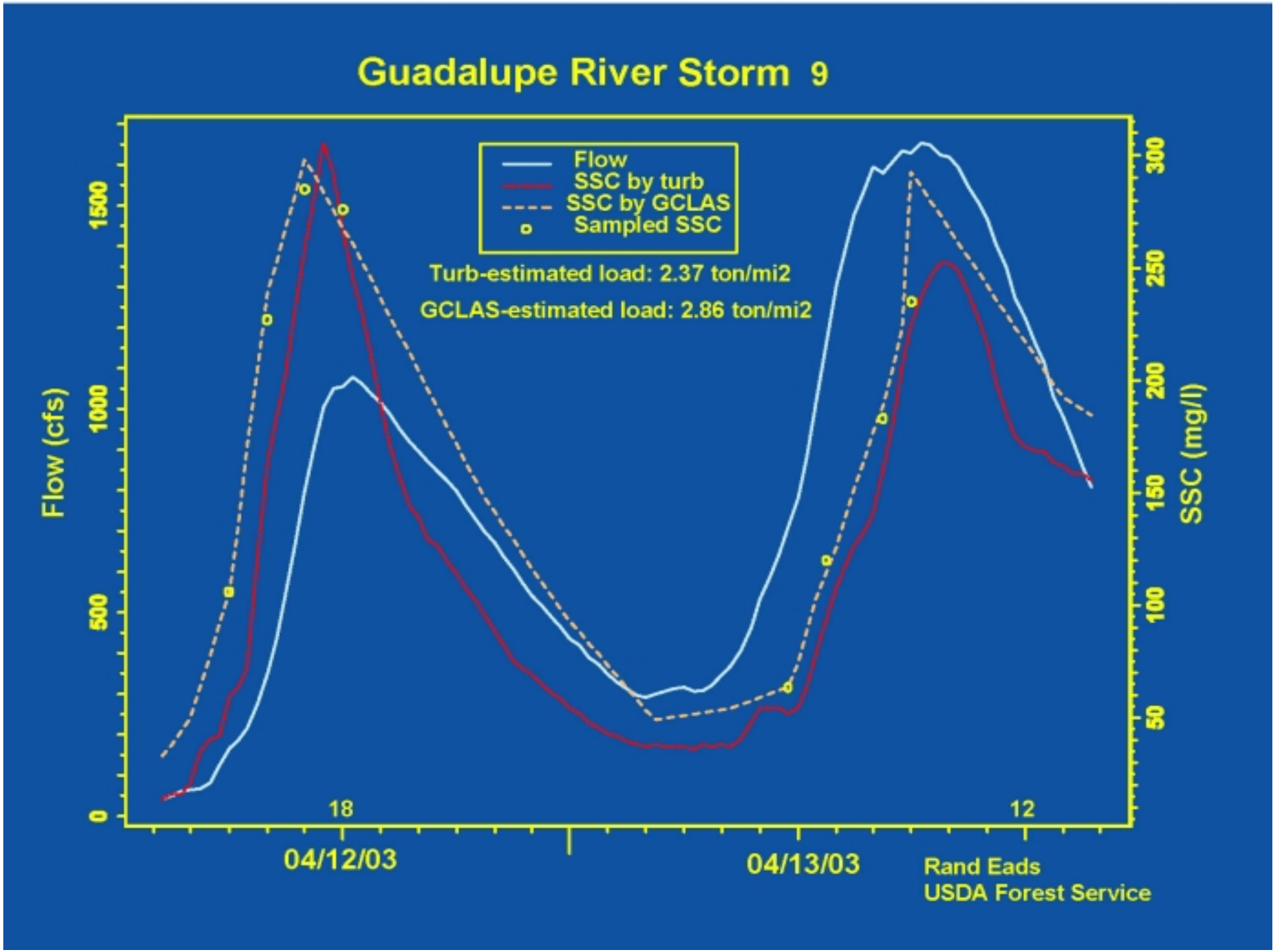
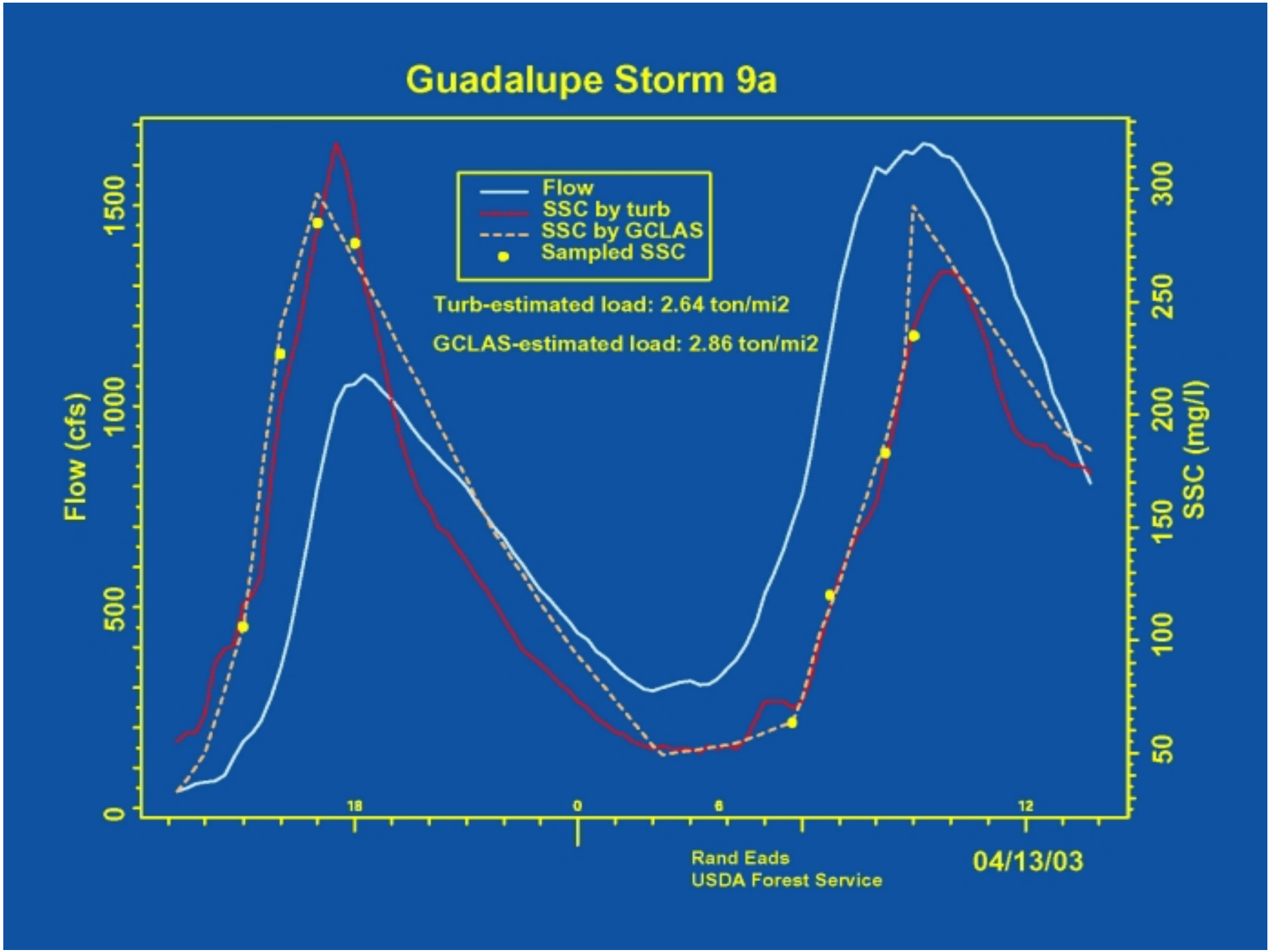

Guadalupe River Storm 5
Flow
SSC by turb
SSC by GCLAS
Sampled SSC
Flow (cfs)
SSC (mg/l)
0
500
1000
1500
2000
2500
3000
100
200
300
400
500
600
12
18
0
12/19/02
Turb-estimated load: 9.84 ton/mi2
GCLAS-estimated load: 7.77 ton/mi2
Rand Eads
USDA Forest Service

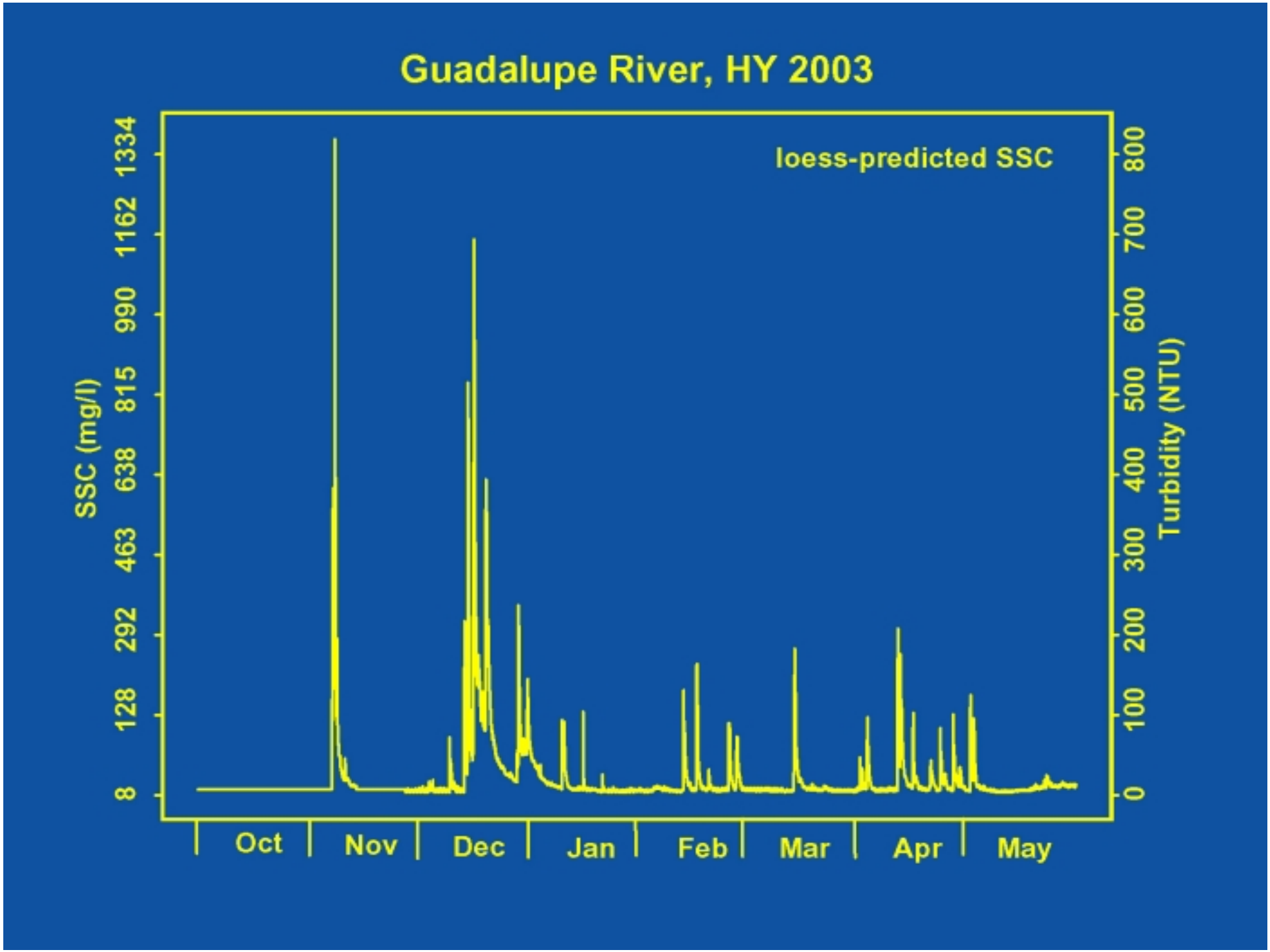

Guadalupe River Storm 6
Flow
SSC by turb
SSC by GCLAS
Sampled SSC
Turb-estimated load: 2.44 ton/mi2
GCLAS-estimated load: 2.26 ton/mi2
Flow (cfs)
200
400
600
800
1000
1200
1400
1600
SSC (mg/l)
100
150
200
250
300
350
18
0
12/28/02


Guadalupe River Storm 7
Flow
SSC by turb
SSC by GCLAS
Sampled SSC
Turb-estimated load: 1.17 ton/mi2
GCLAS-estimated load: 0.98 ton/mi2
Flow (cfs)
1000
800
600
400
SSC (mg/l)
200
150
100
50
6
12
12/31/02
Rand Eads
USDA Forest Service


Guadalupe River Storm 8
Flow
SSC by turb
SSC by GCLAS
Sampled SSC
Turb-estimated load: 1.21 ton/mi2
GCLAS-estimated load: 0.97 ton/mi2
Flow (cfs)
0
200
400
600
800
1000
1200
SSC (mg/l)
50
100
150
200
250
03/14/03
03/15/03


Guadalupe River Storm 9
Flow
SSC by turb
SSC by GCLAS
Sampled SSC
Turb-estimated load: 2.37 ton/mi2
GCLAS-estimated load: 2.86 ton/mi2
Flow (cfs)
0
500
1000
1500
SSC (mg/l)
50
100
150
200
250
300
18
12
04/12/03
04/13/03
Rand Eads
USDA Forest Service


Guadalupe Storm 9a
Flow
SSC by turb
SSC by GCLAS
Sampled SSC
Turb-estimated load: 2.64 ton/mi2
GCLAS-estimated load: 2.86 ton/mi2
Flow (cfs)
0
500
1000
1500
SSC (mg/l)
50
100
150
200
250
300
18
0
6
12
Rand Eads
USDA Forest Service
04/13/03


Guadalupe River, HY 2003
loess-predicted SSC
SSC (mg/l)
8
128
292
463
638
815
990
1162
1334
Turbidity (NTU)
0
100
200
300
400
500
600
700
800
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May