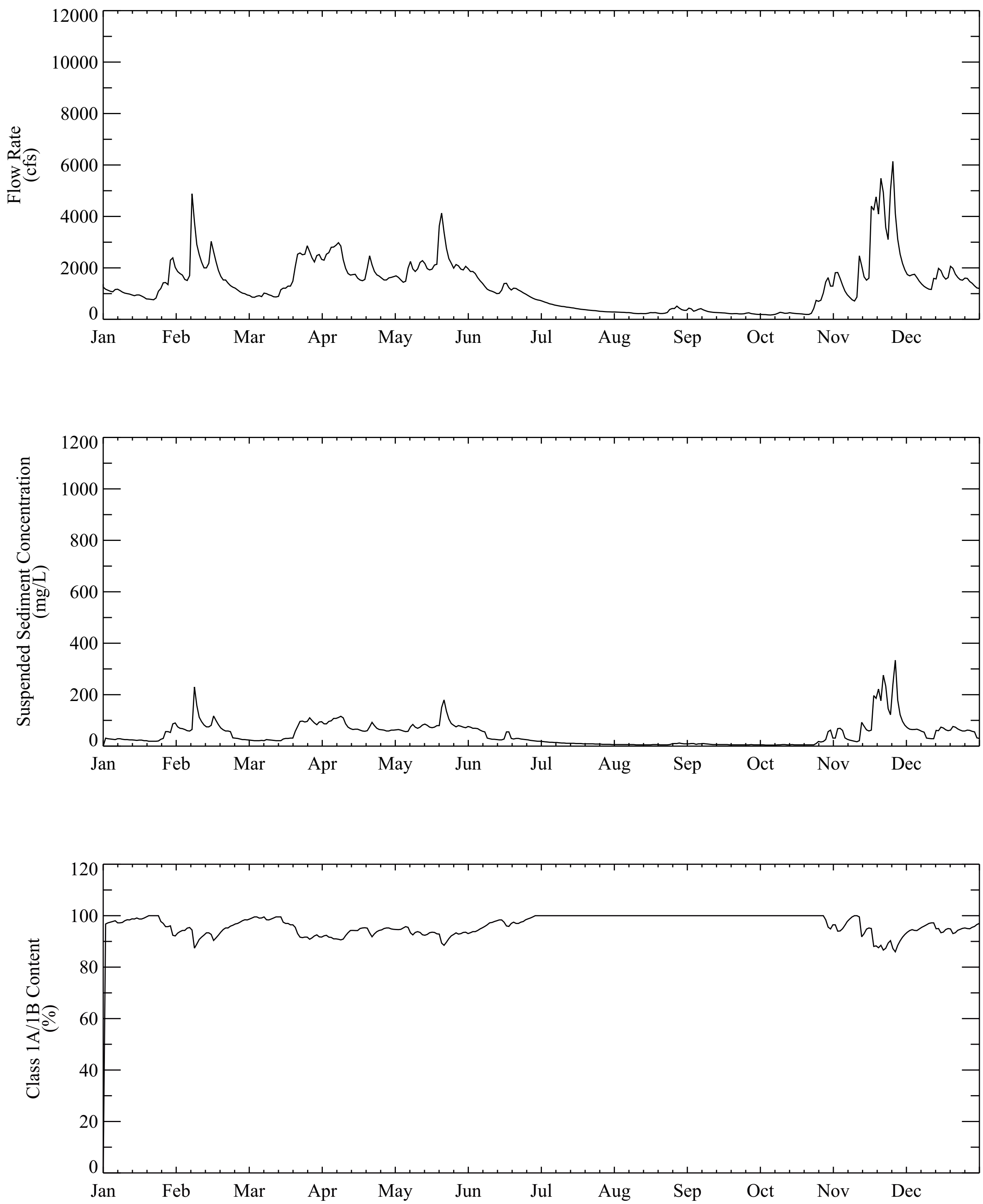


Figure D-1. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1960.

FC - \\fanghui\D_DRIVE\RETldw\Analysis\Model_input\BC_SED_CON\qaqc_retldw_model_sed_bc_inputfiles_4class.pro
Mon Jun 11 14:47:01 2007

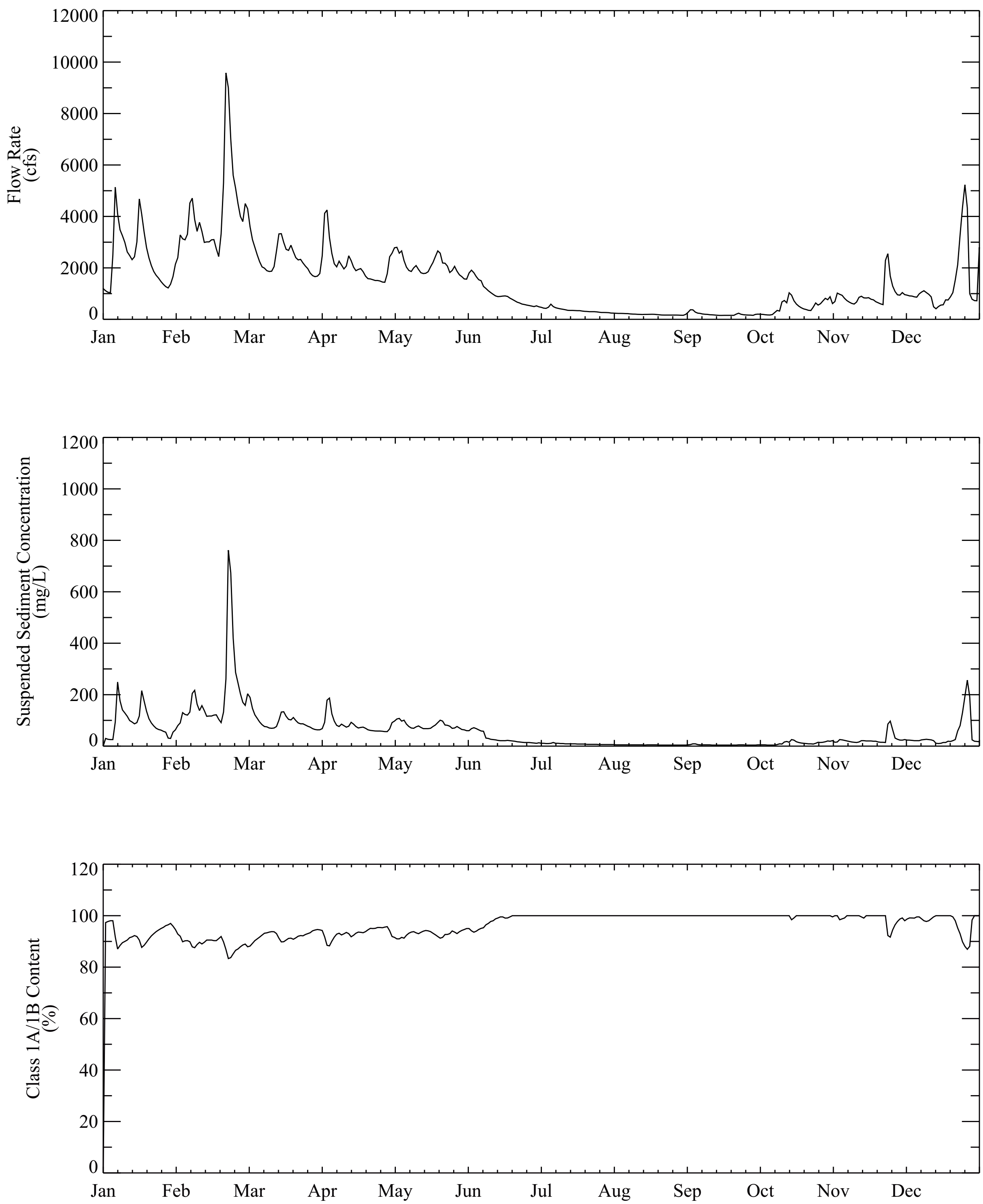


Figure D-2. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1961.

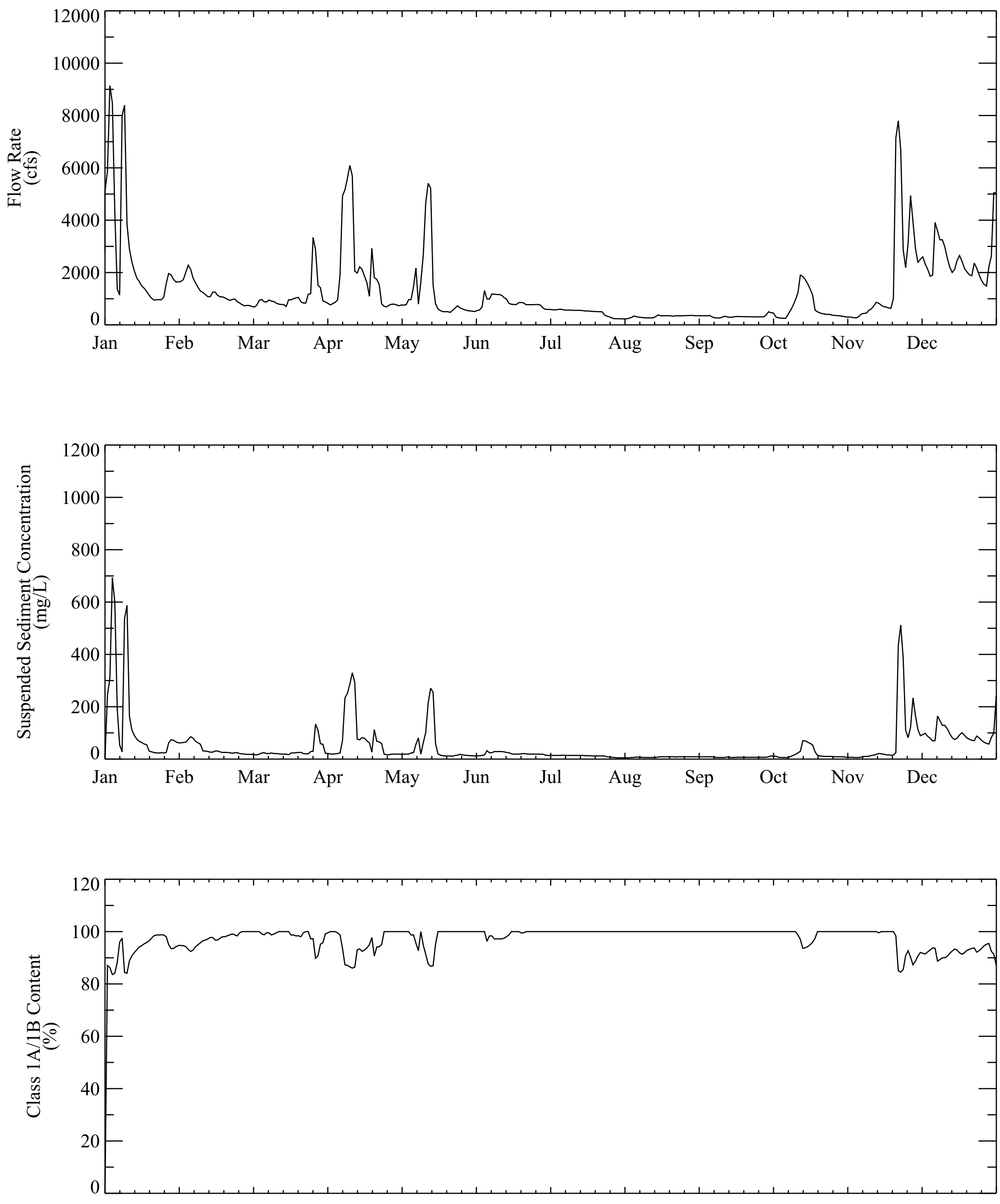


Figure D-3. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1962.

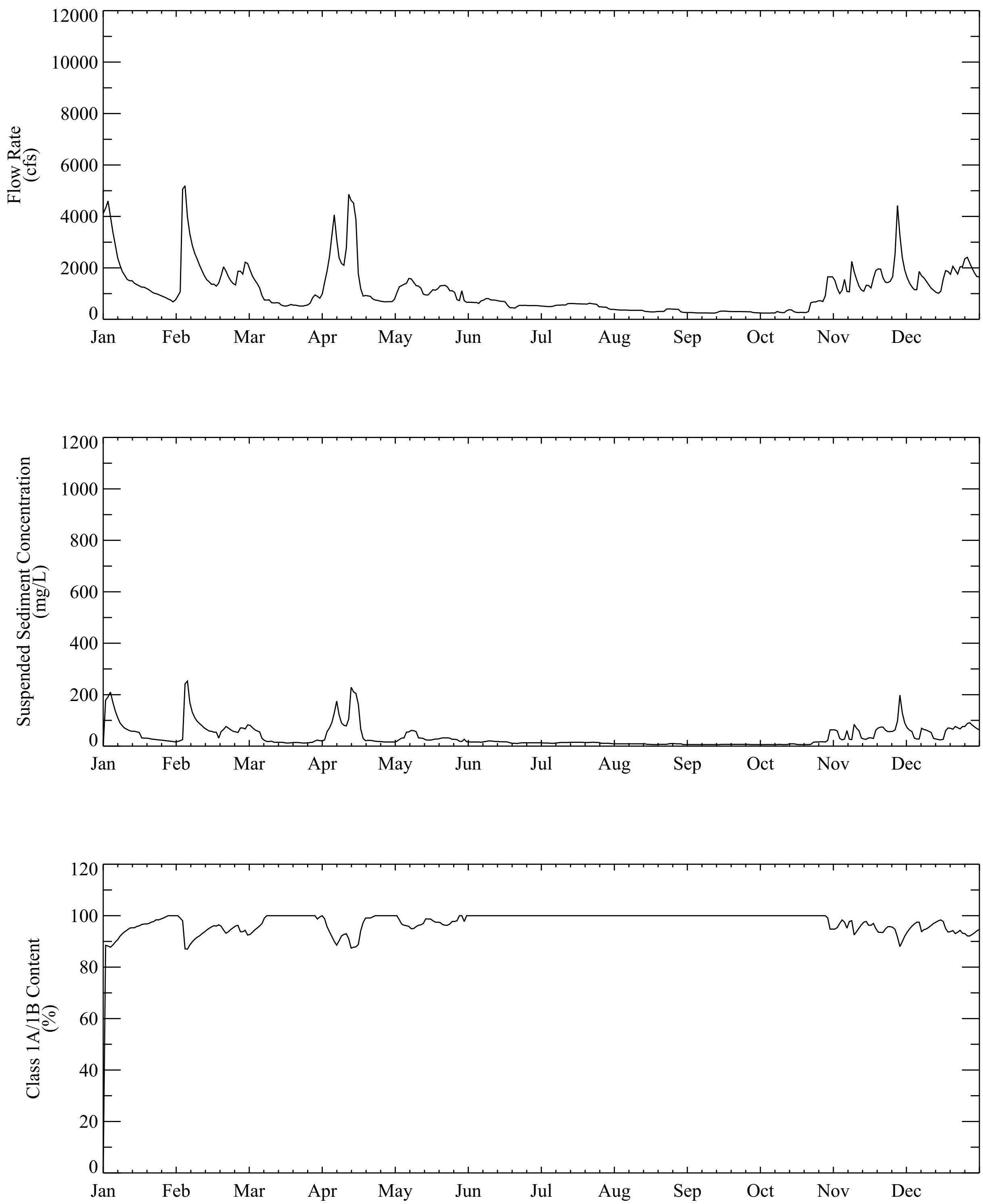
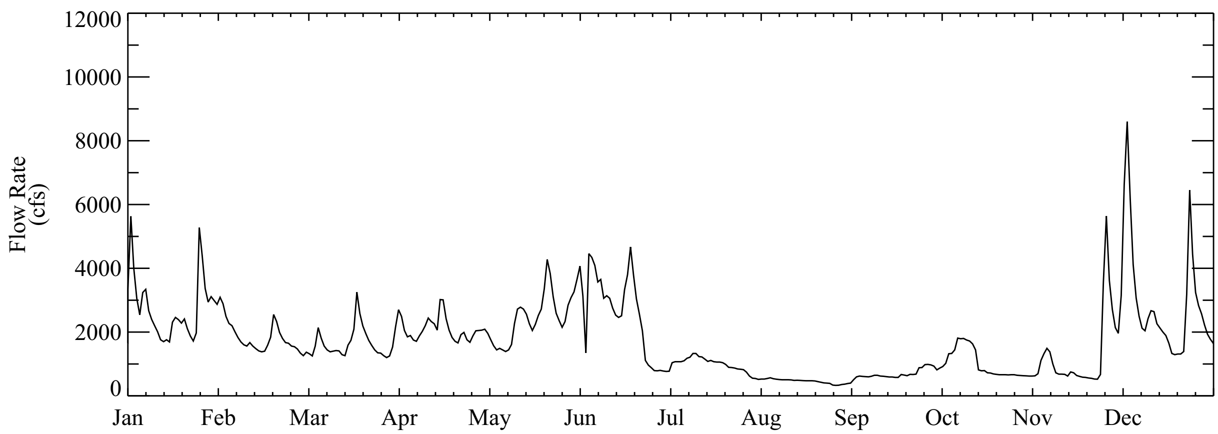
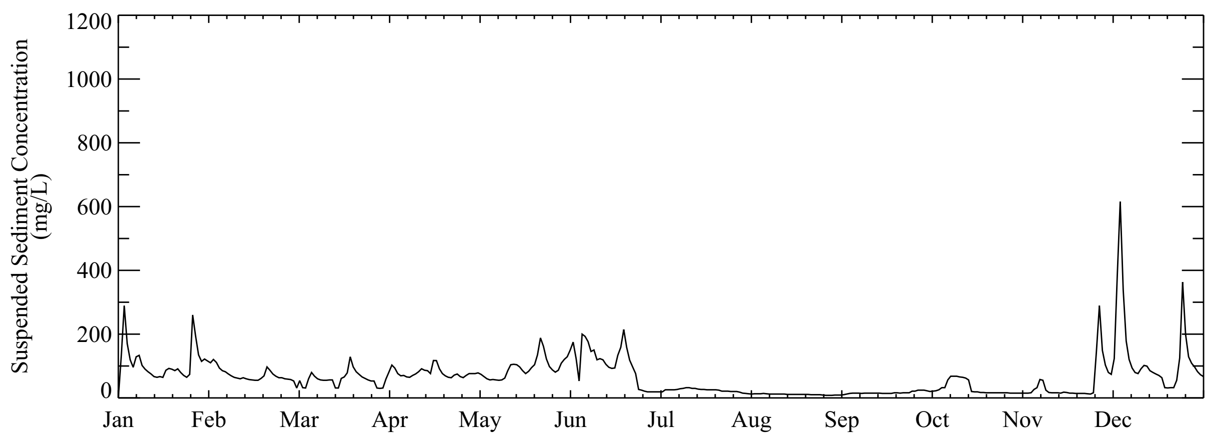


Figure D-4. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1963.





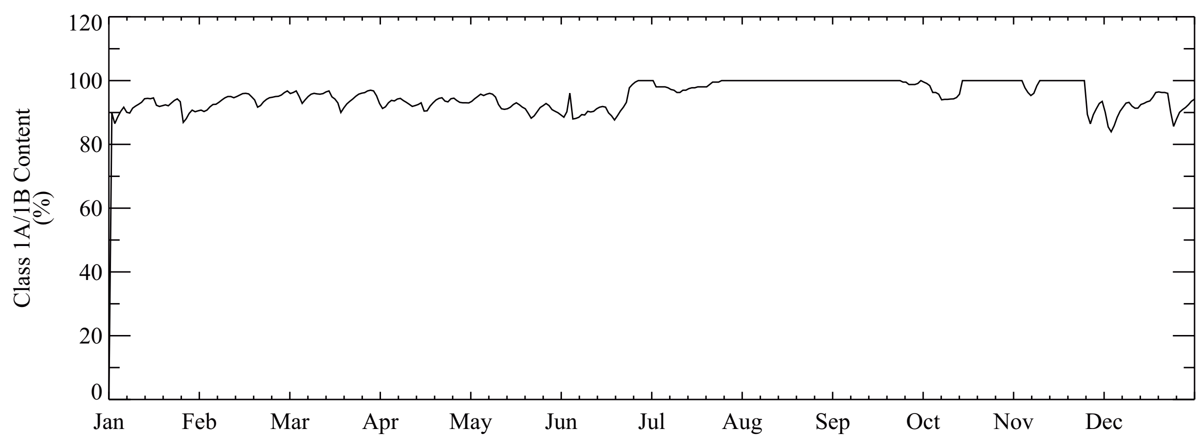


Figure D-5. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1964.

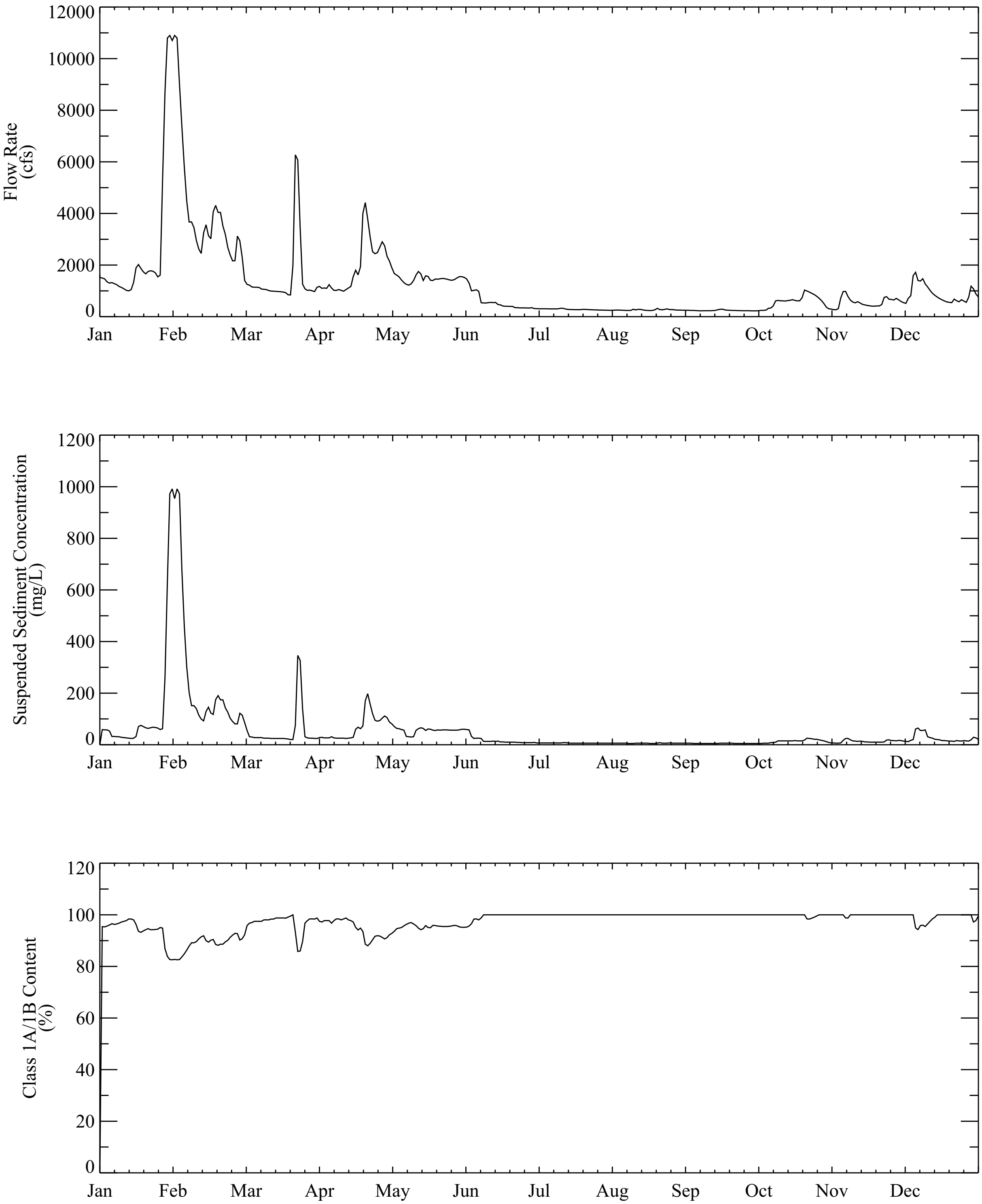


Figure D-6. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1965.

FC - \\fanghui\D_DRIVE\RETldw\Analysis\Model_input\BC_SED_CON\qaqc_retldw_model_sed_bc_inputfiles_4class.pro
Mon Jun 11 14:47:03 2007

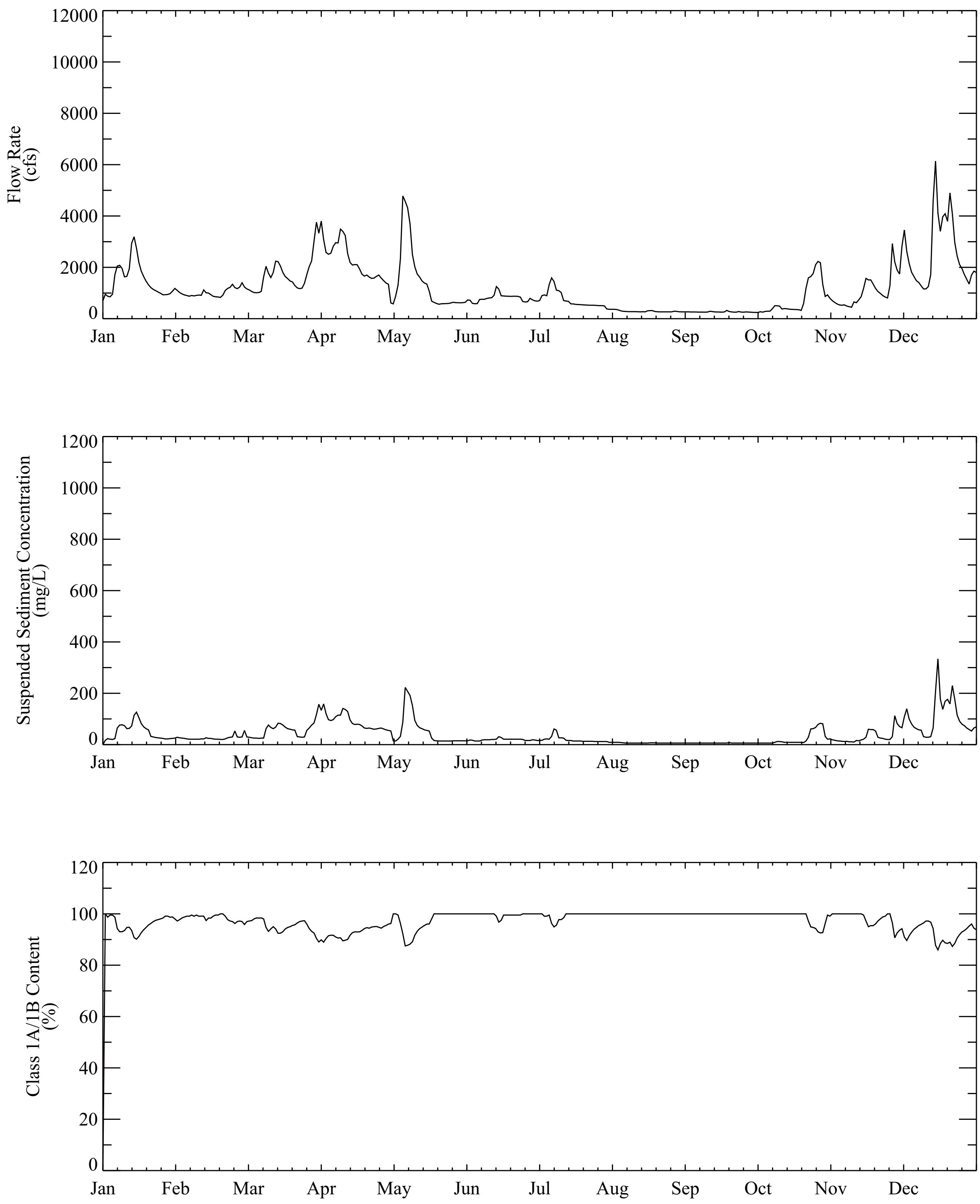


Figure D-7. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1966.

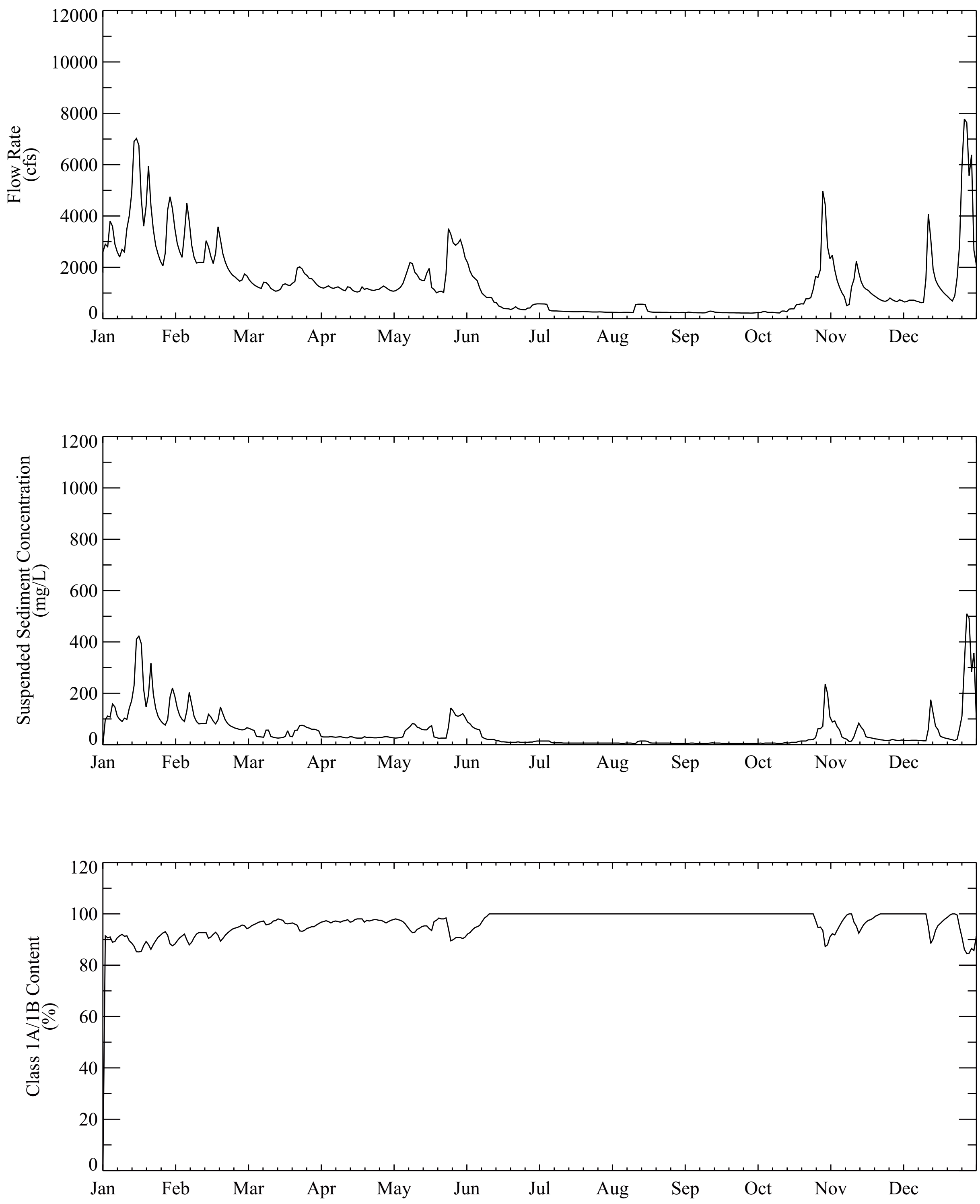


Figure D-8. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1967.

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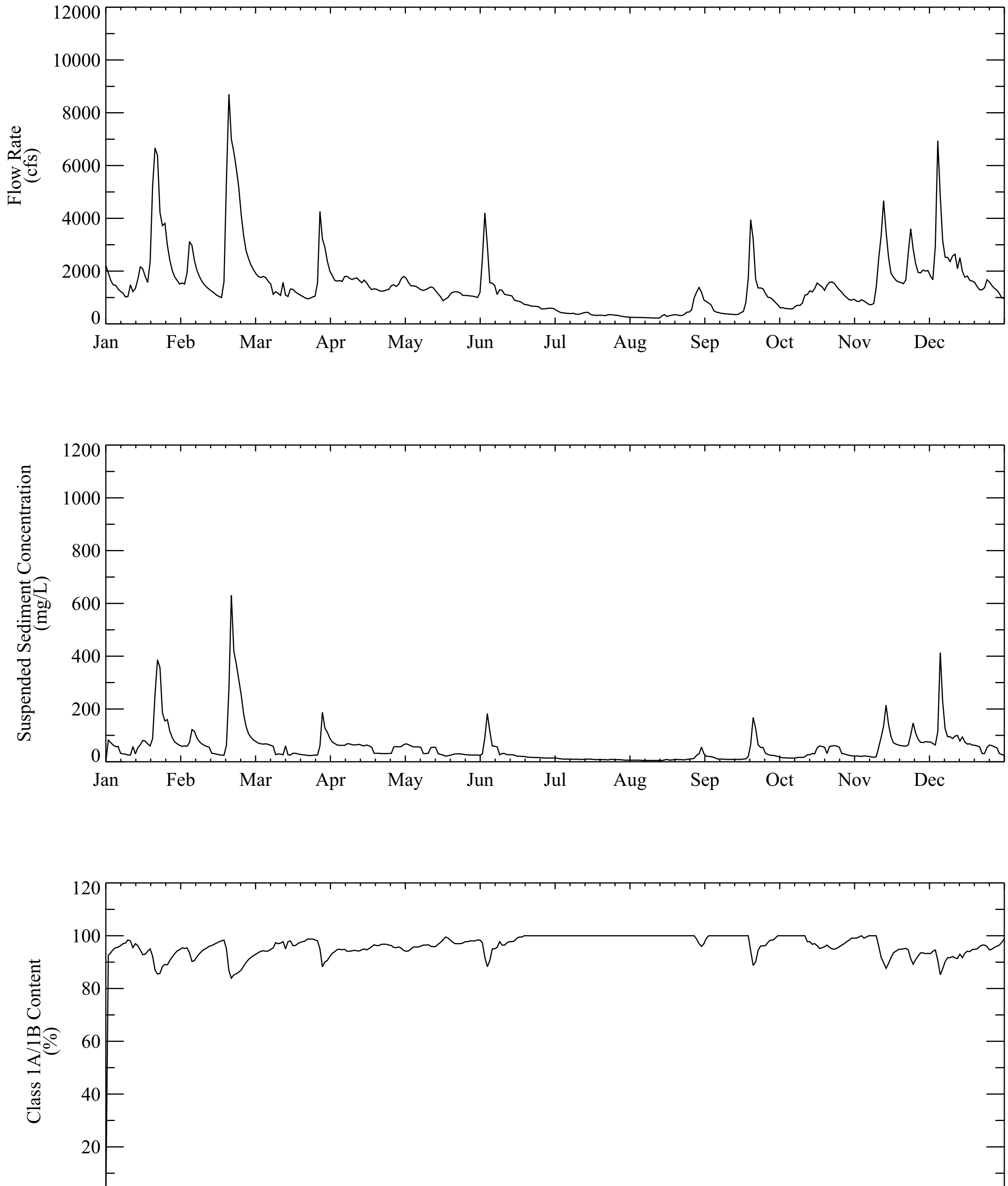

Figure D-9. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1968.

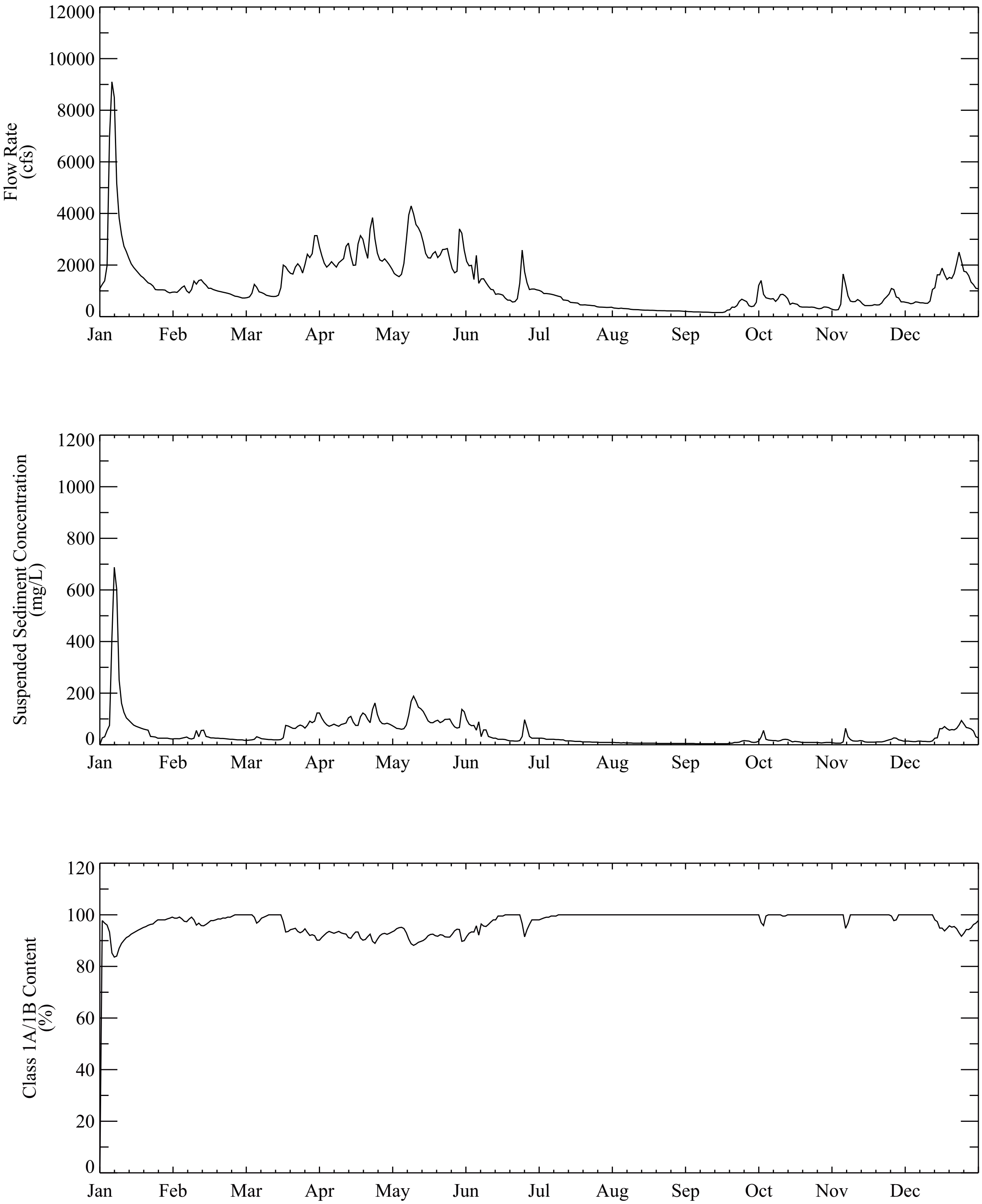

Figure D-10. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1969.

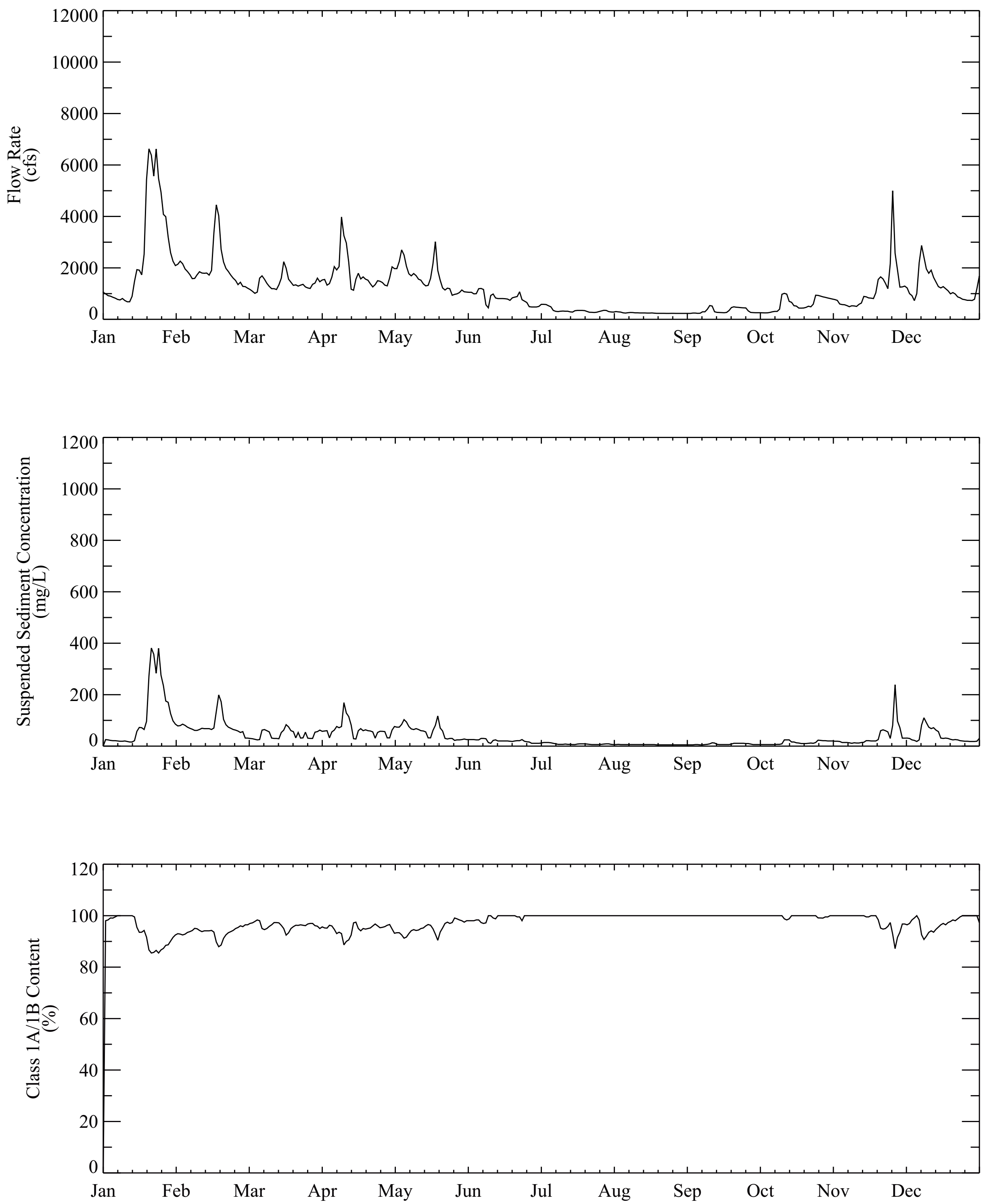

Figure D-11. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1970.

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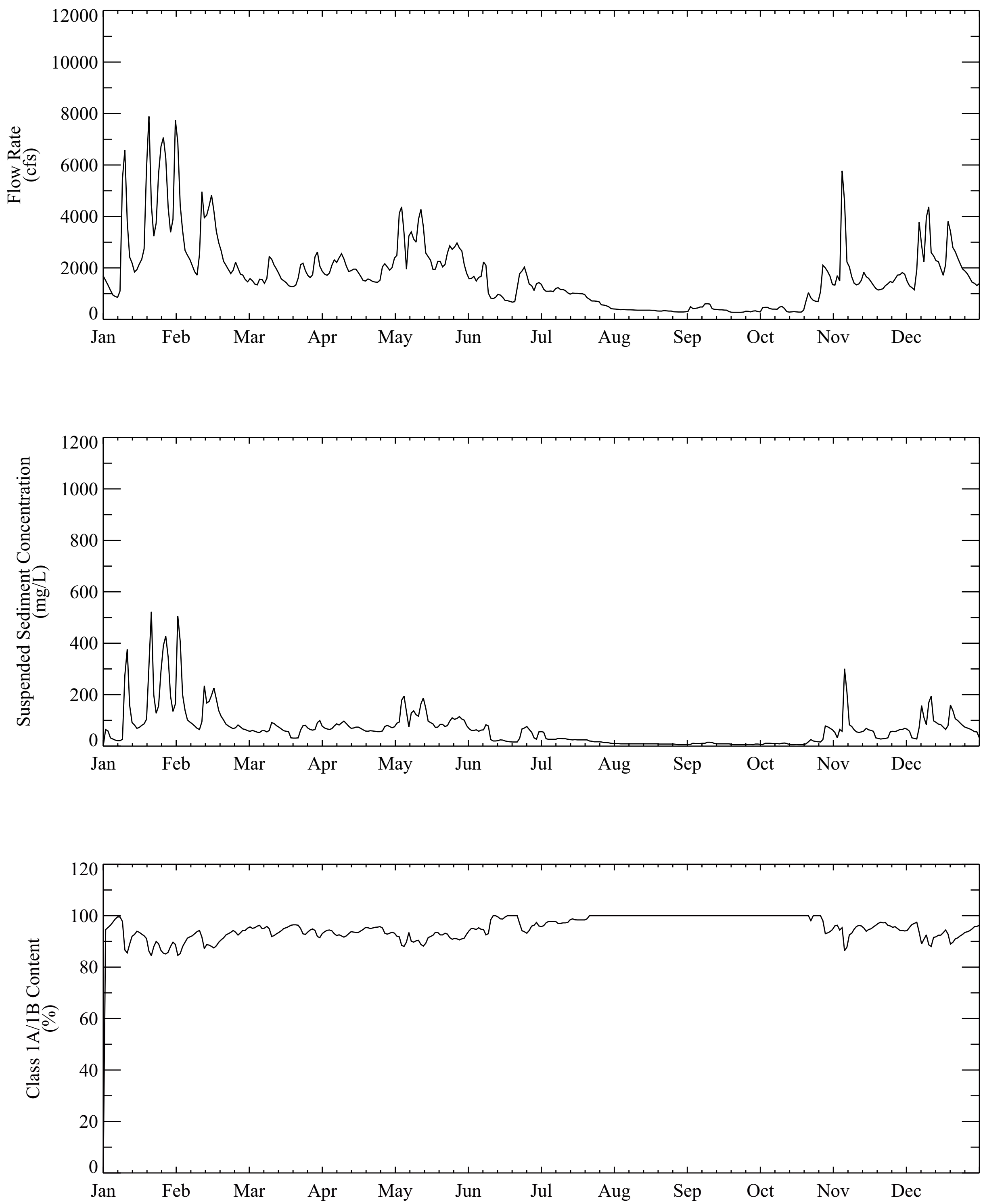

Figure D-12. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1971.

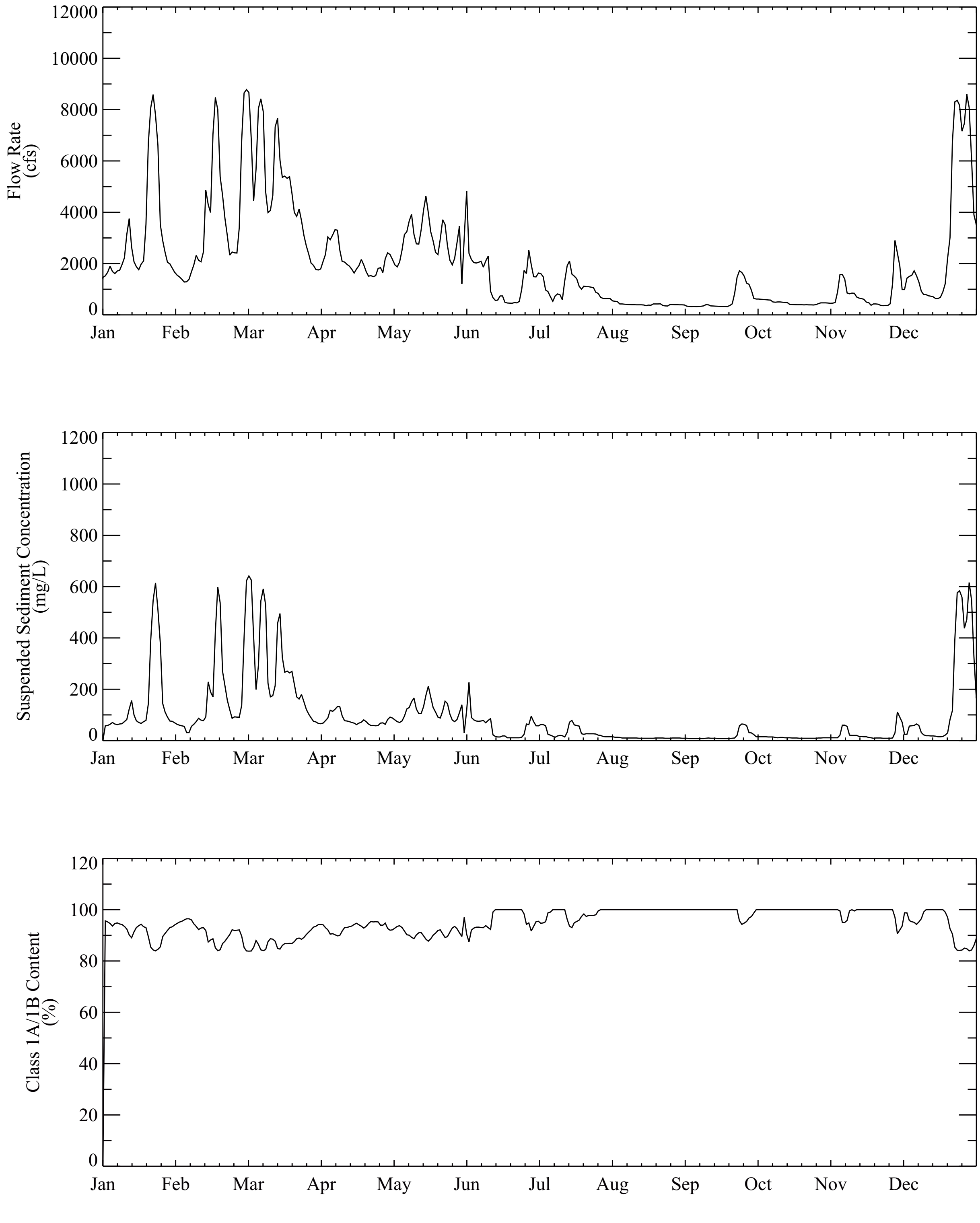

Figure D-13. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1972.

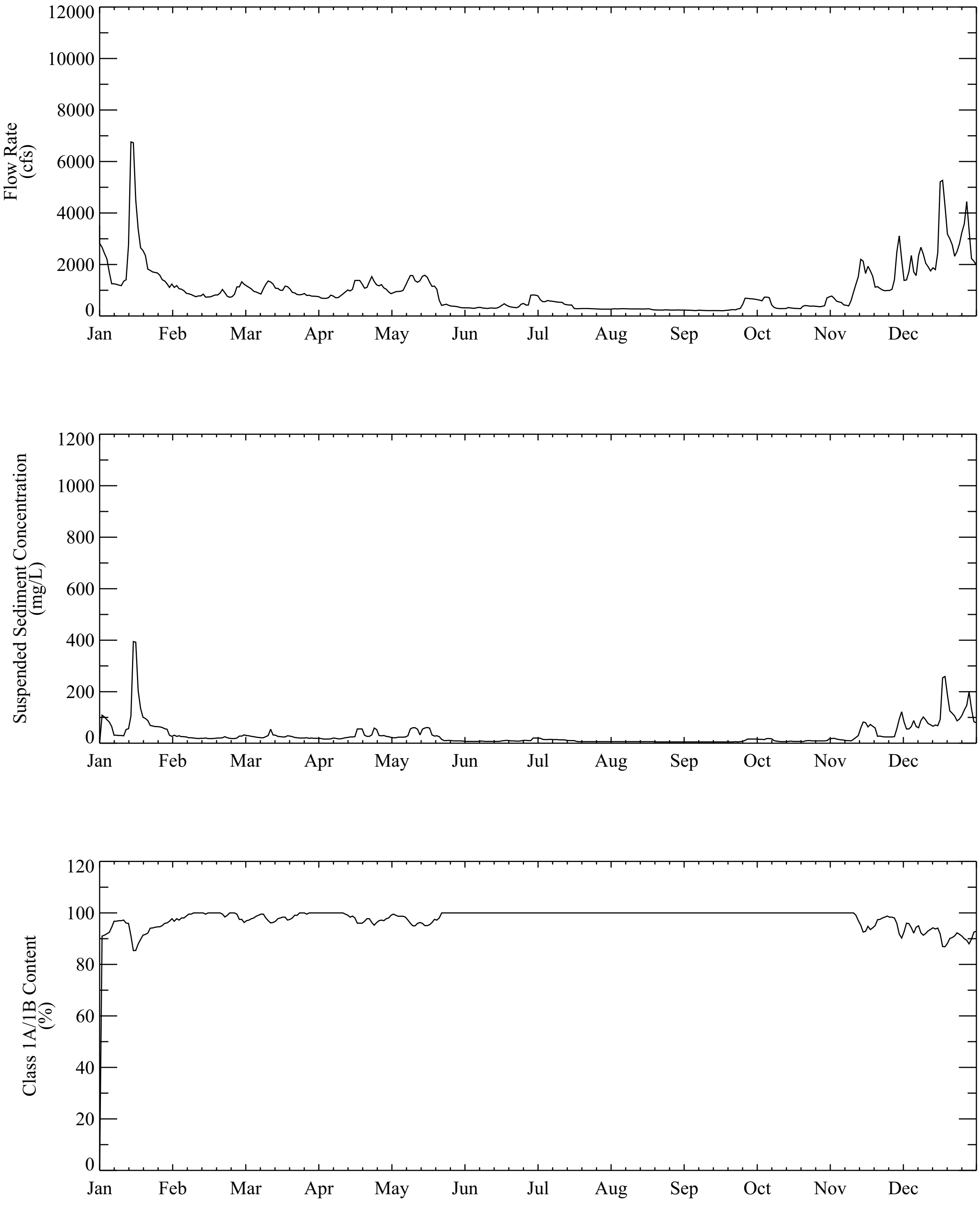

Figure D-14. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1973.

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Mon Jun 11 14:47:07 2007

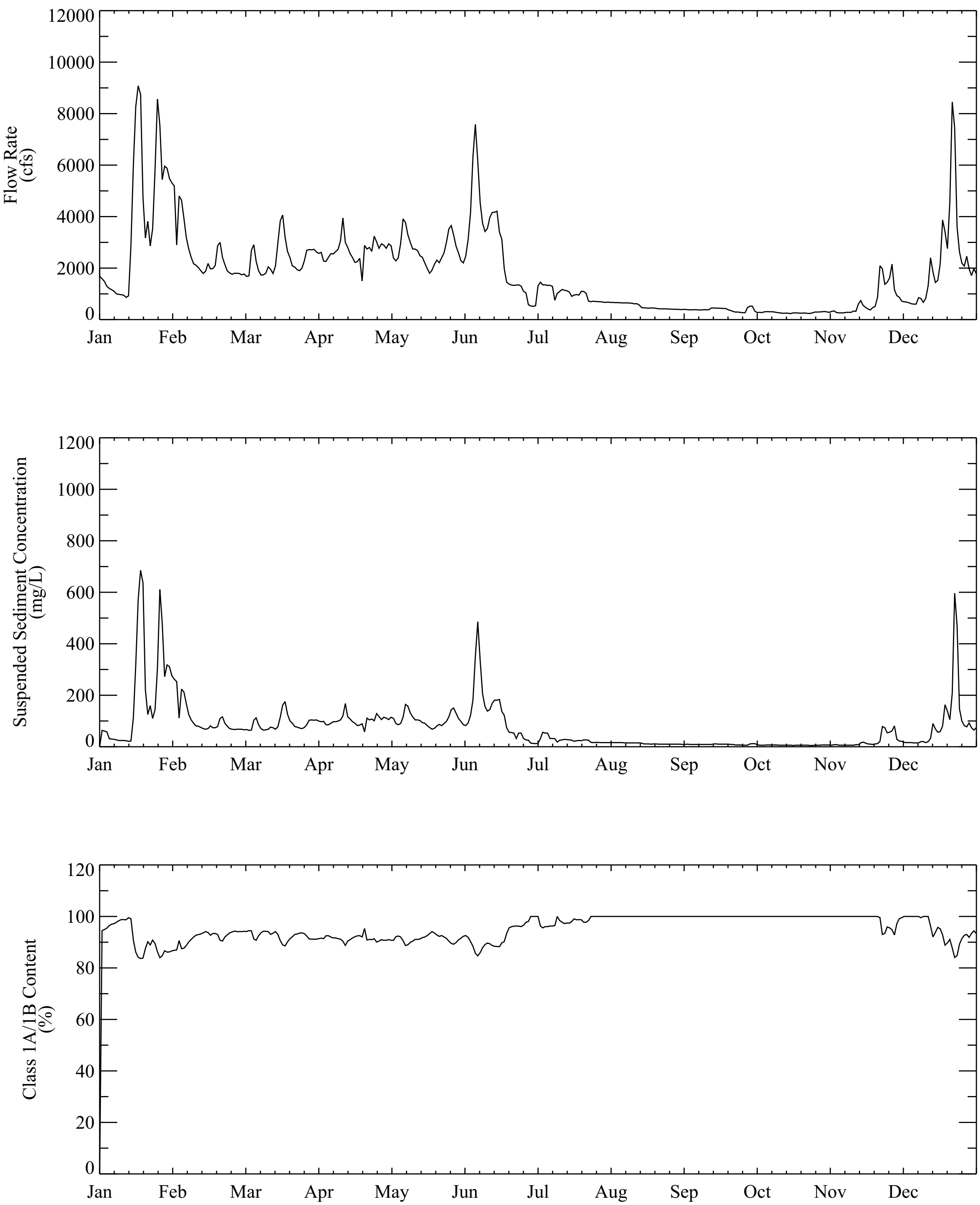

Figure D-15. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1974.

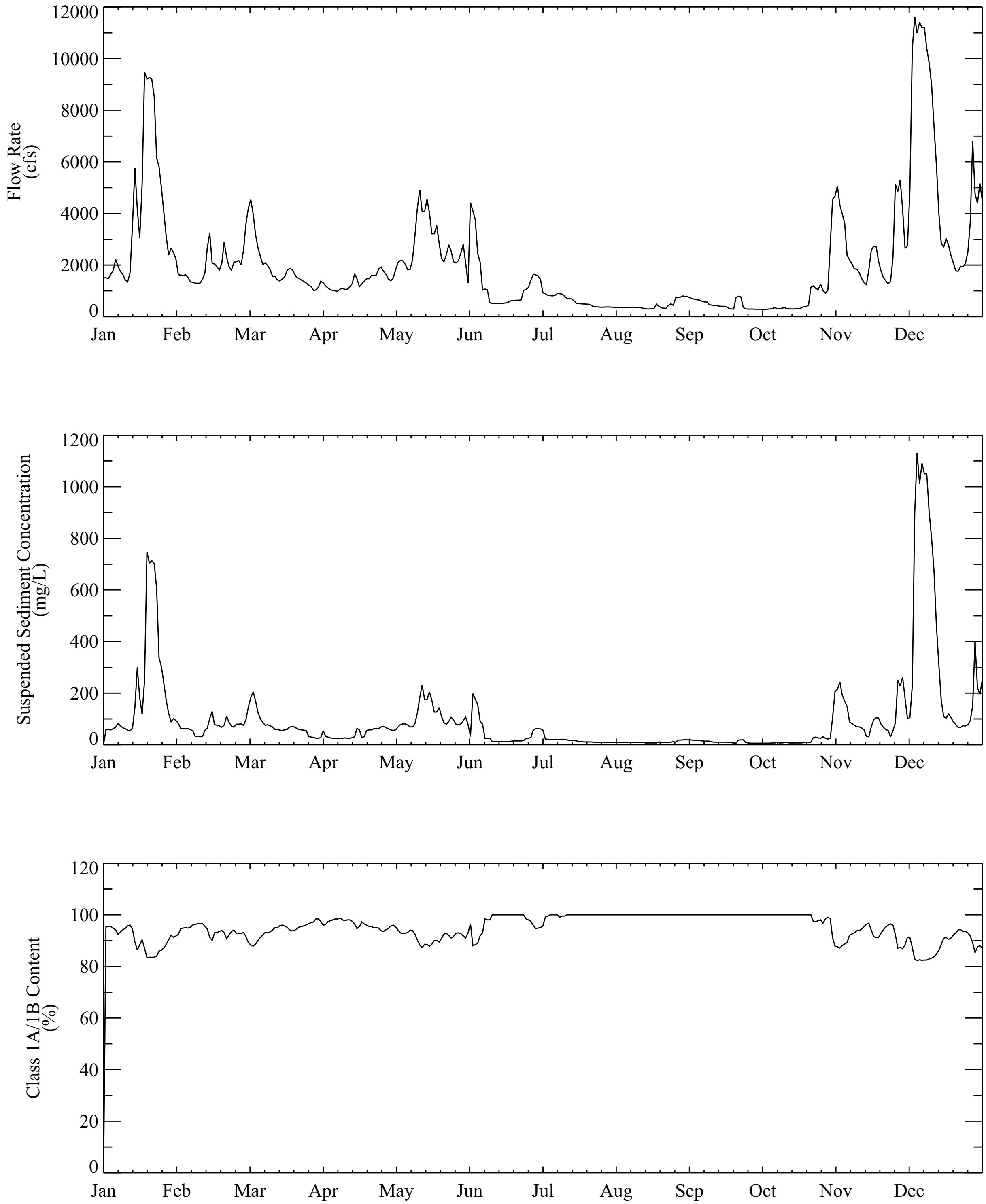

Figure D-16. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1975.

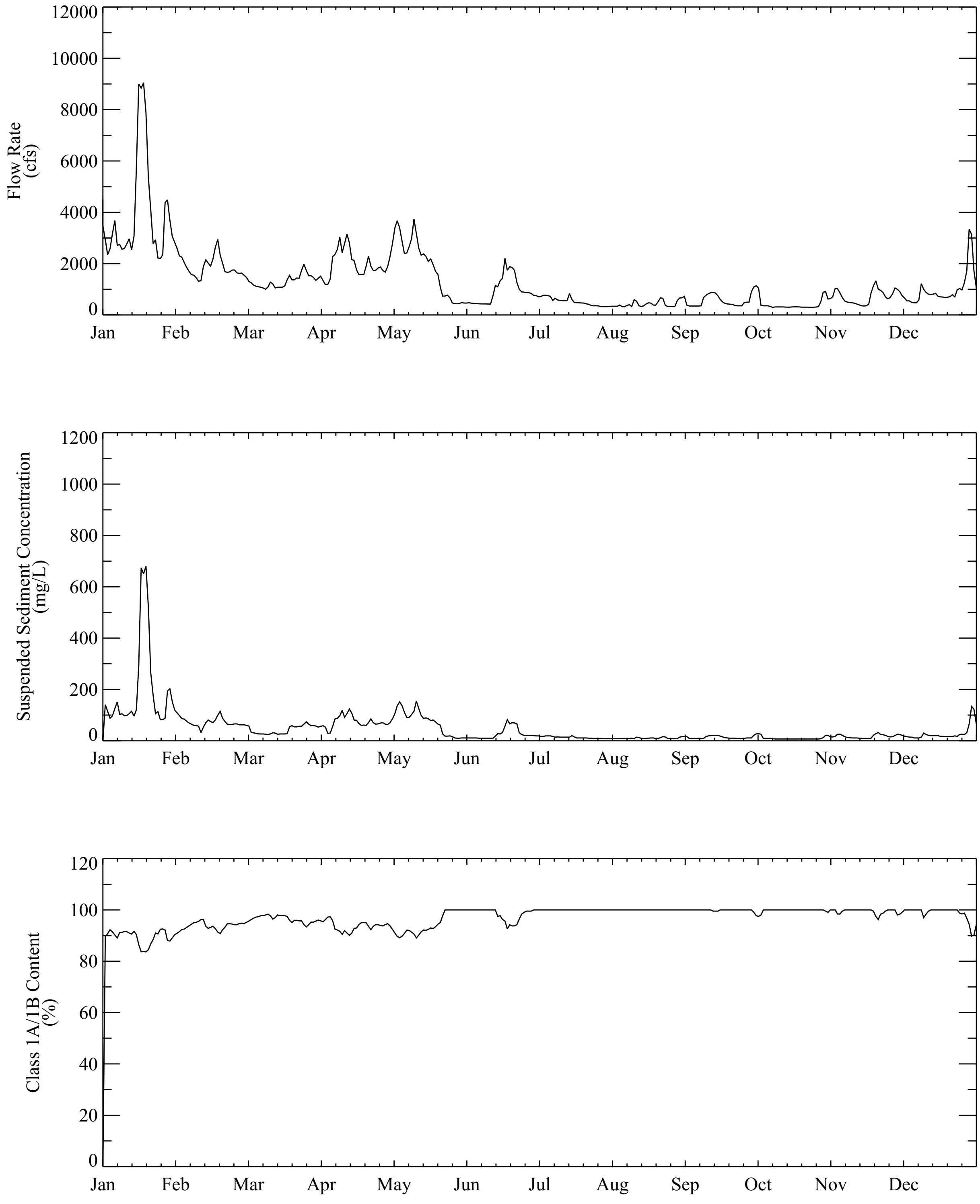

Figure D-17. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1976.

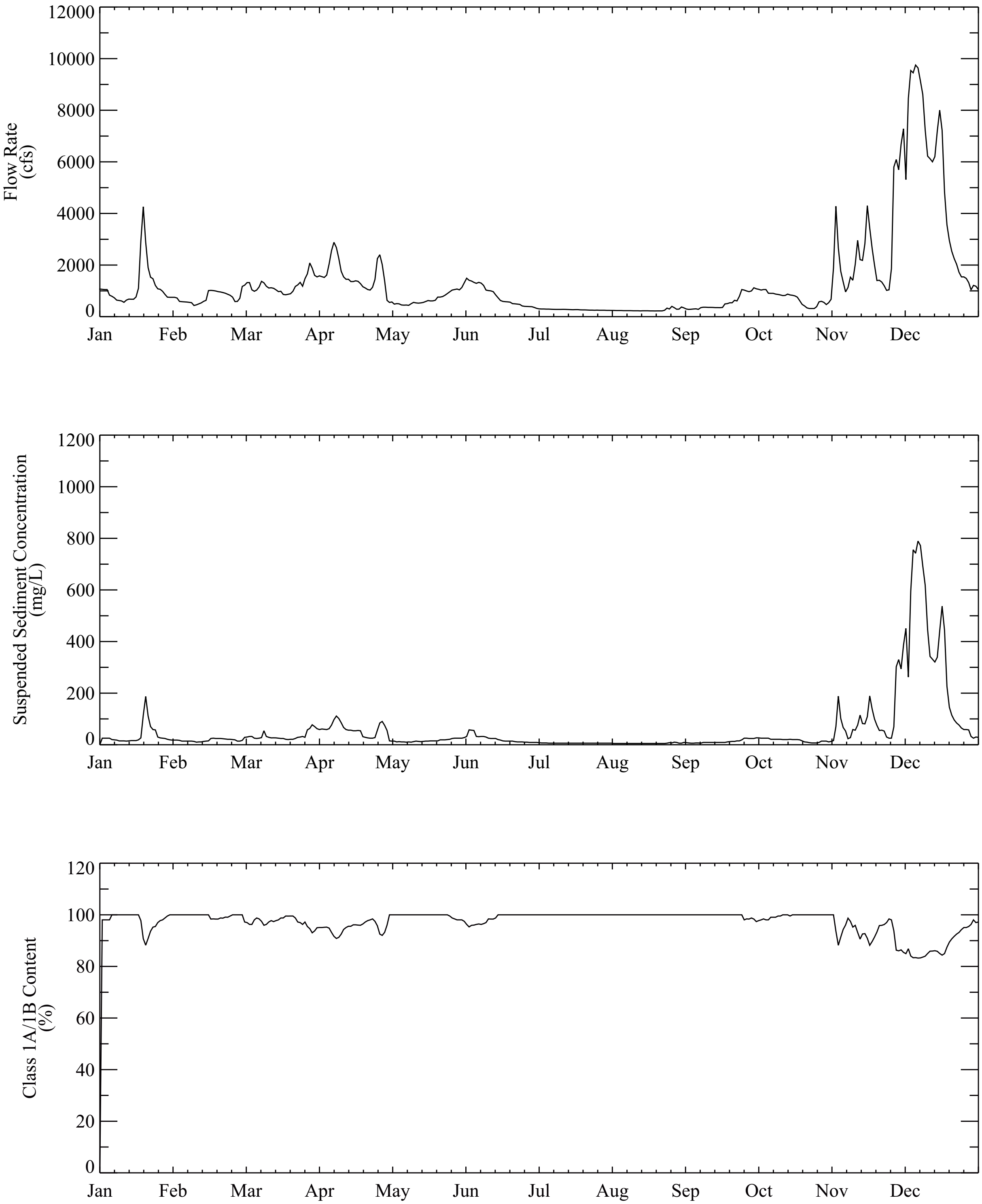

Figure D-18. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1977.

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Mon Jun 11 14:47:09 2007

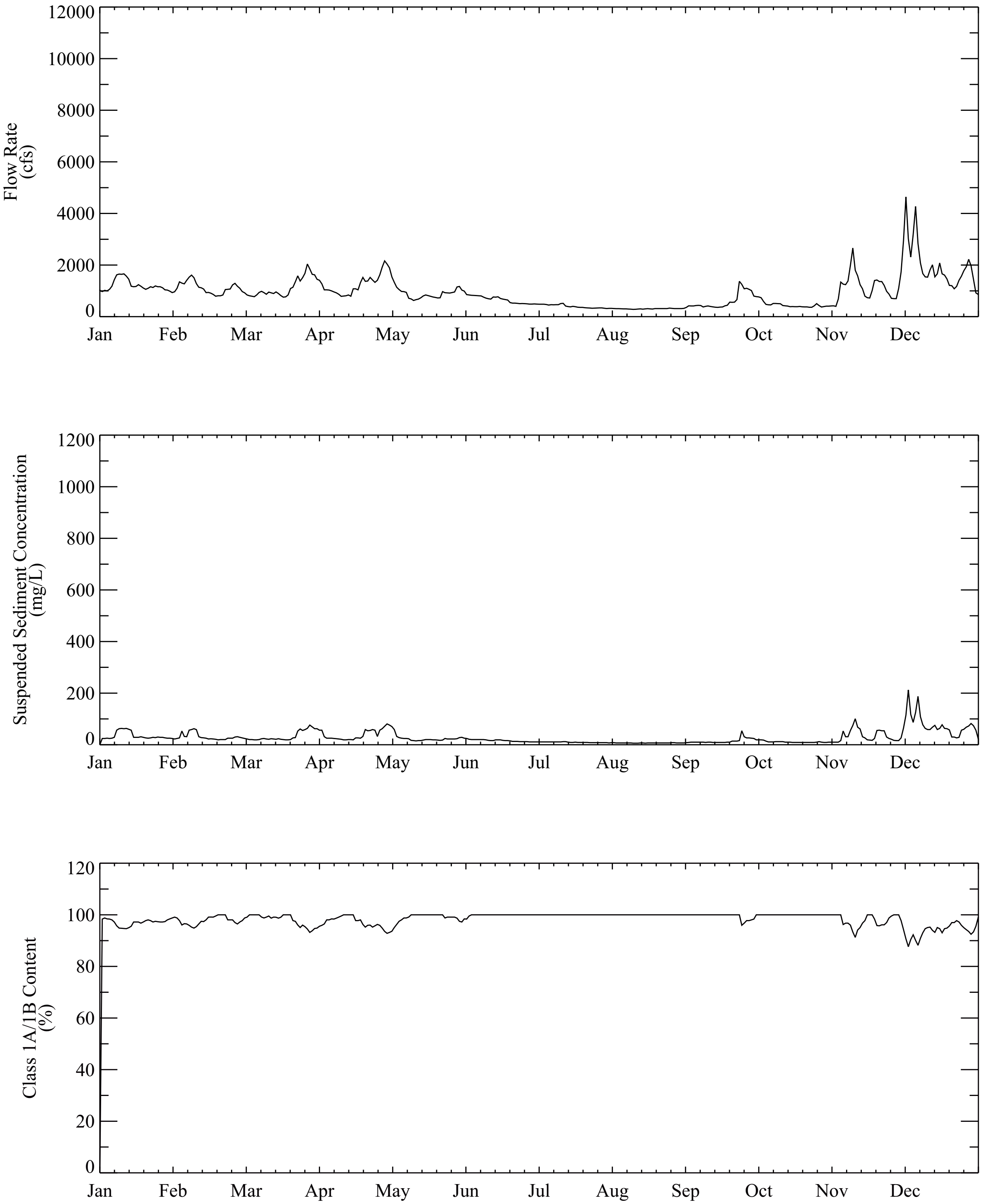

Figure D-19. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1978.

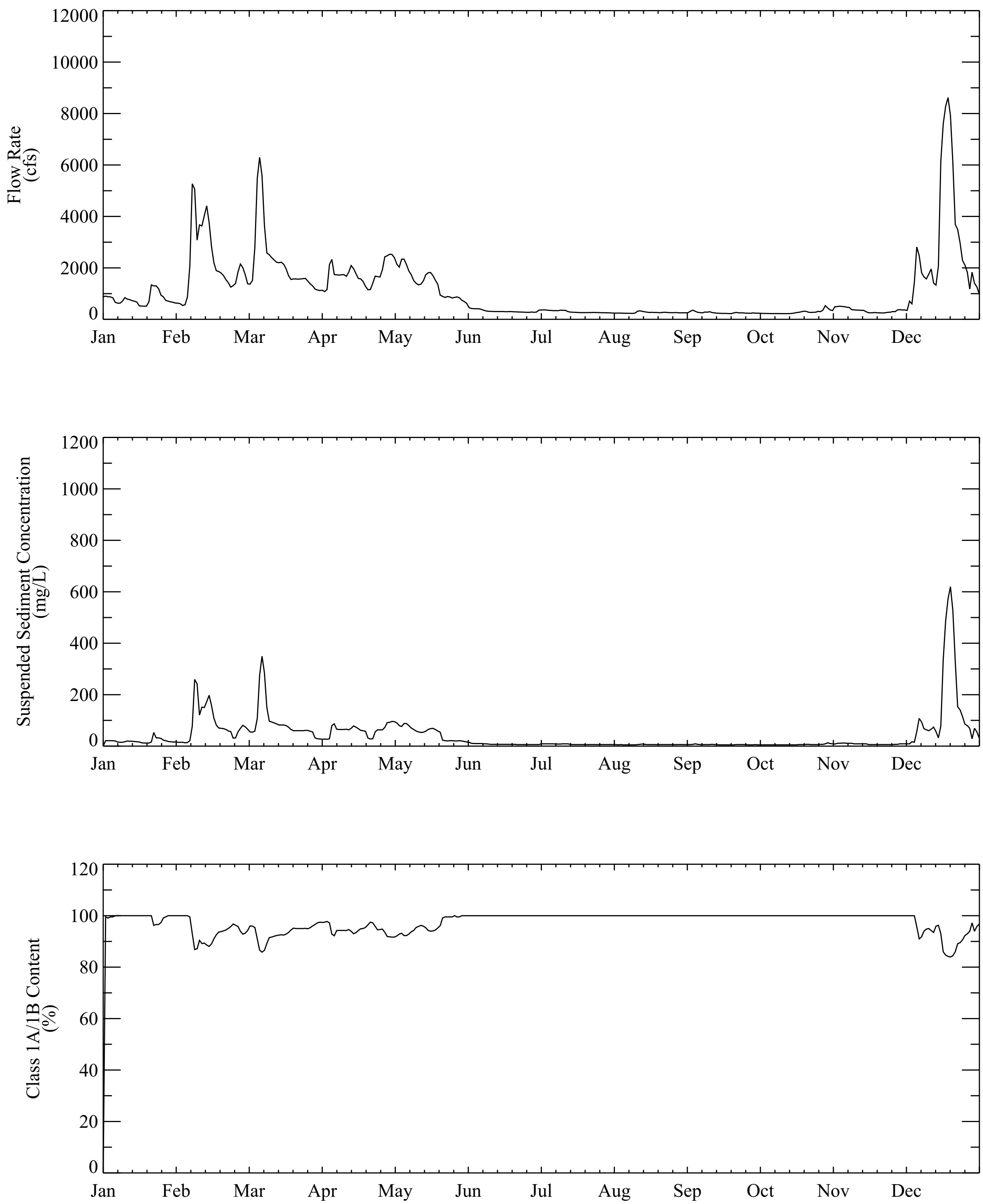

Figure D-20. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1979.

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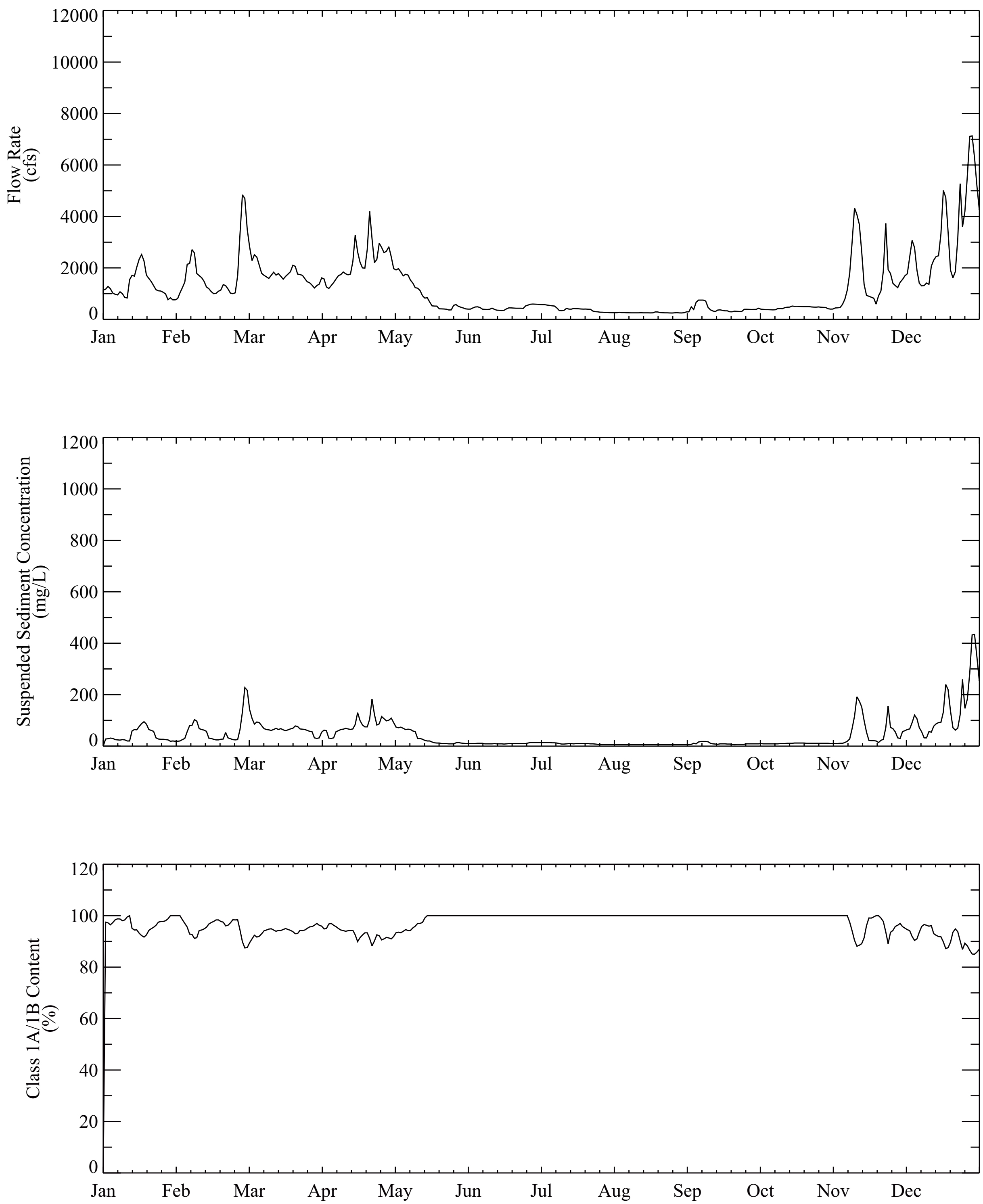


Figure D-21. Time series of flow rate, suspended sediment concentration, and class 1A/1B content at upstream boundary: 1980.

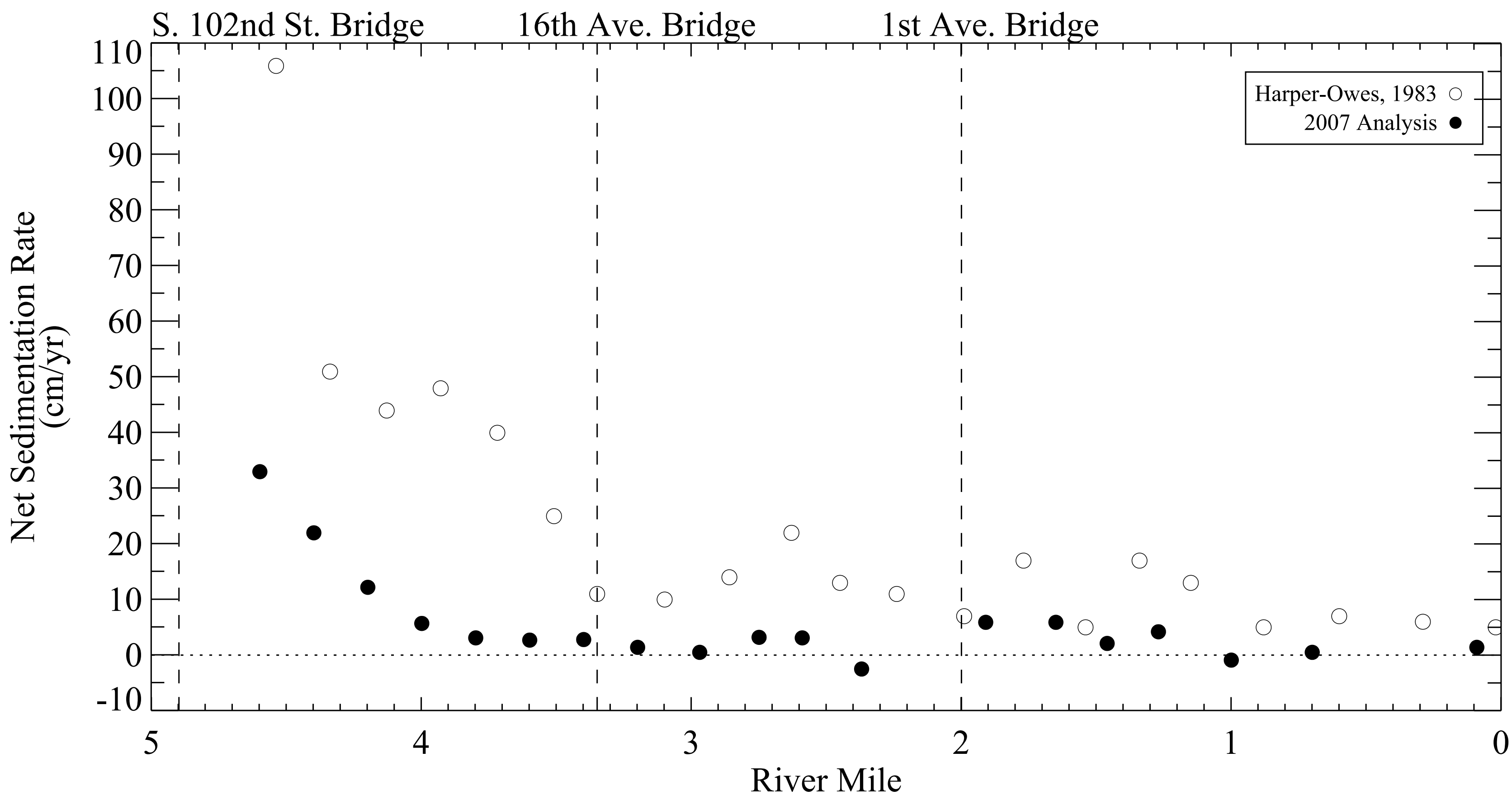
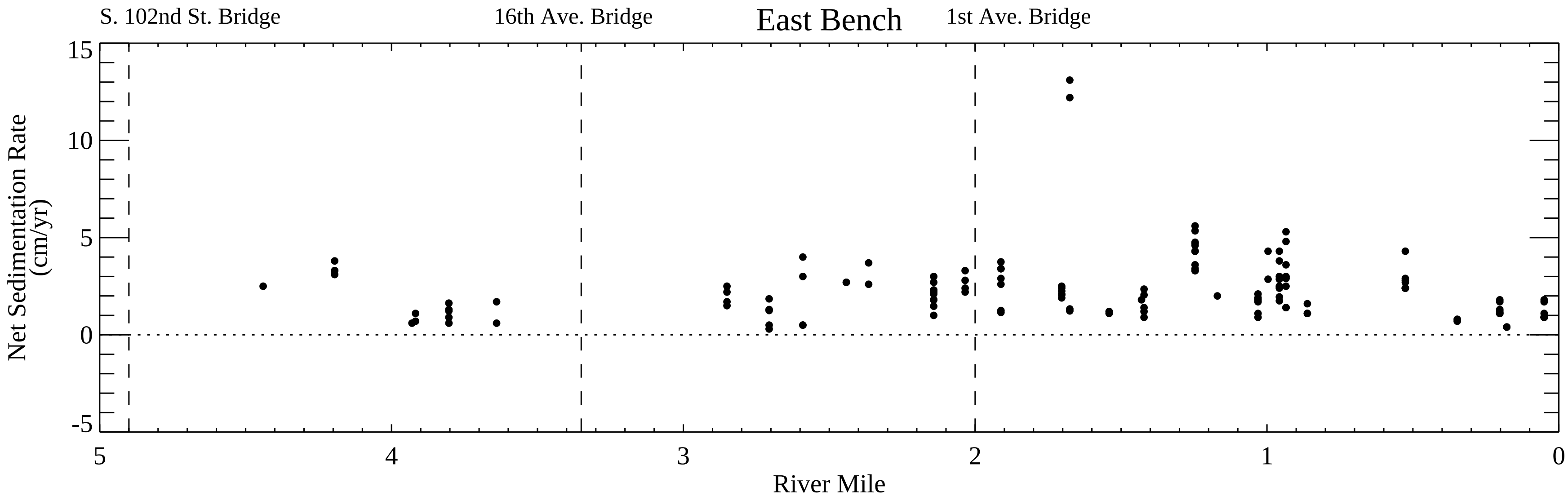


Figure D-22. Spatial distribution of estimated net sedimentation rates in navigation channel.

FC - D:\RETldw\Analysis\Model_Outputs\sed_rate\net_sed_rate_charsize_indiv_hotst_070426_data_only.pro
Tue Jun 12 10:24:27 2007



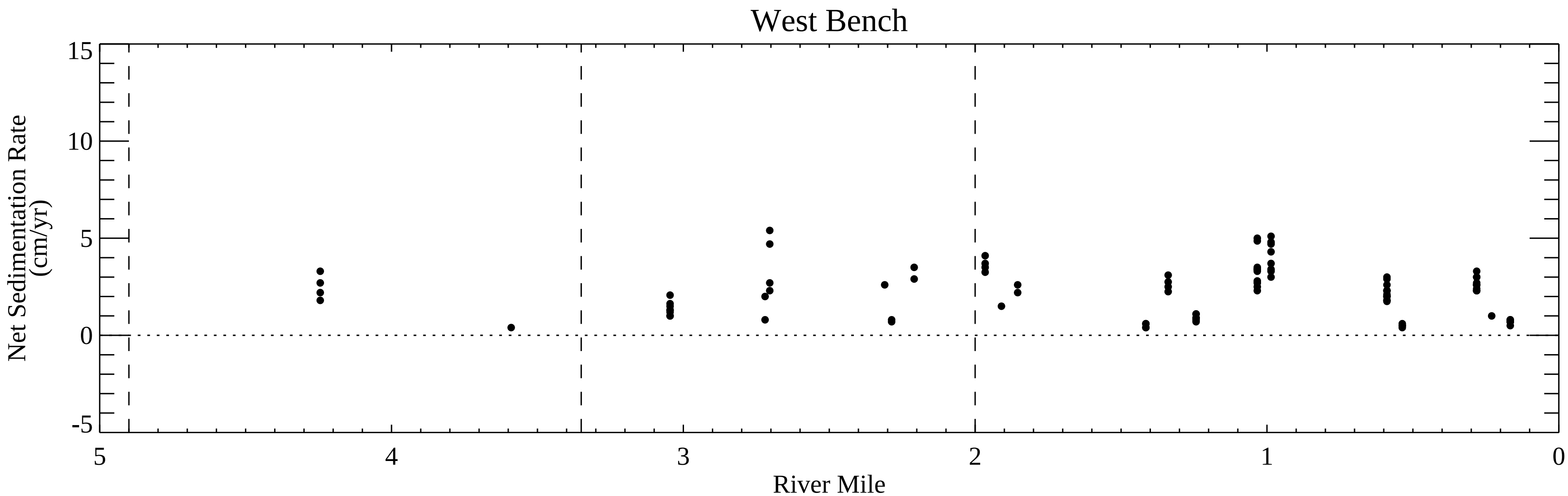


Figure D-23. Spatial distribution of estimated net sedimentation rates in east and west bench areas.

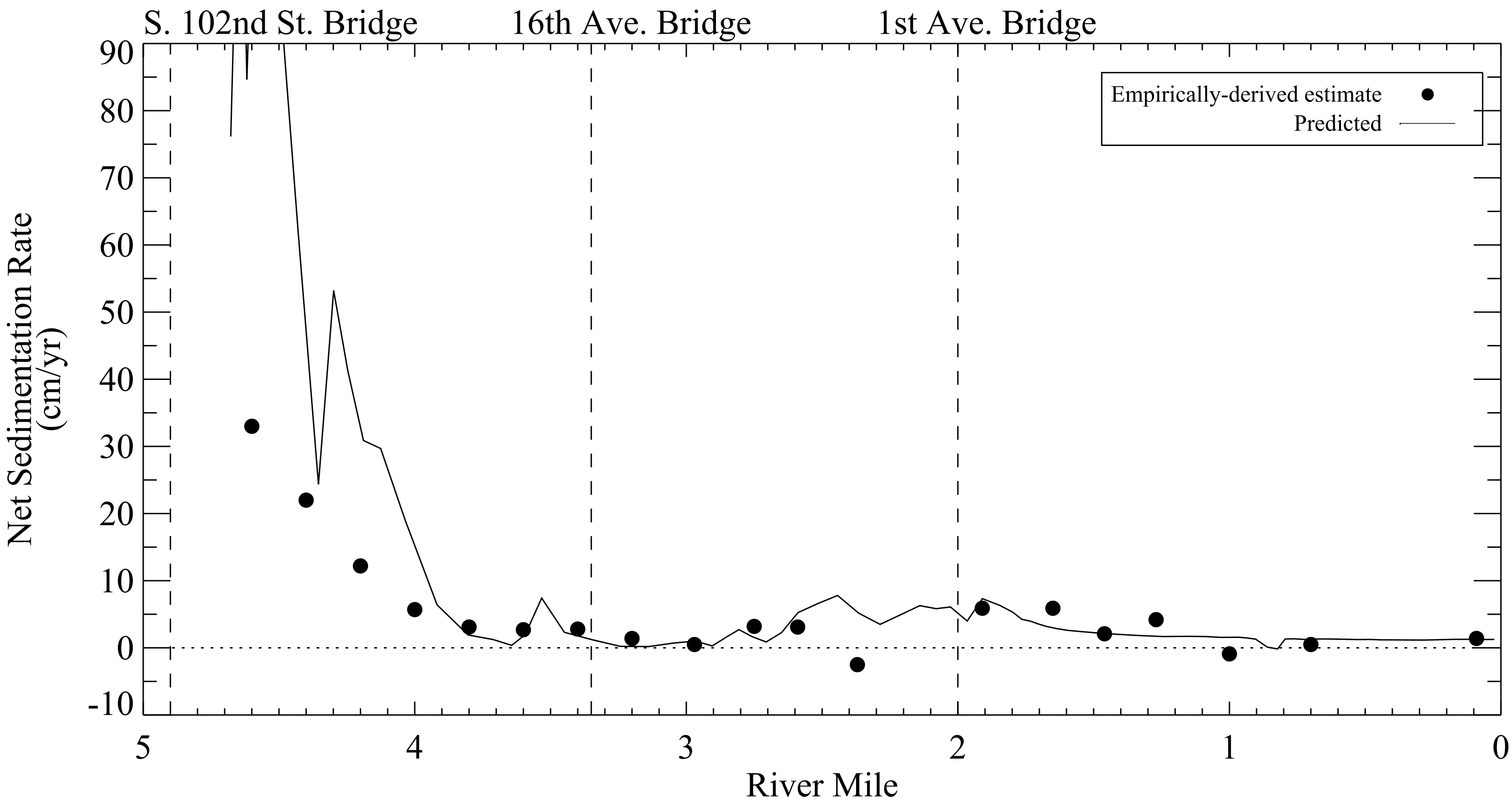


Figure D-24. Comparison of predicted and estimated net sedimentation rates in navigation channel for 21-year calibration period. Model results for simulation using active bed in non-cohesive bed areas in Green River. Predicted rates are average values for 21-year period.

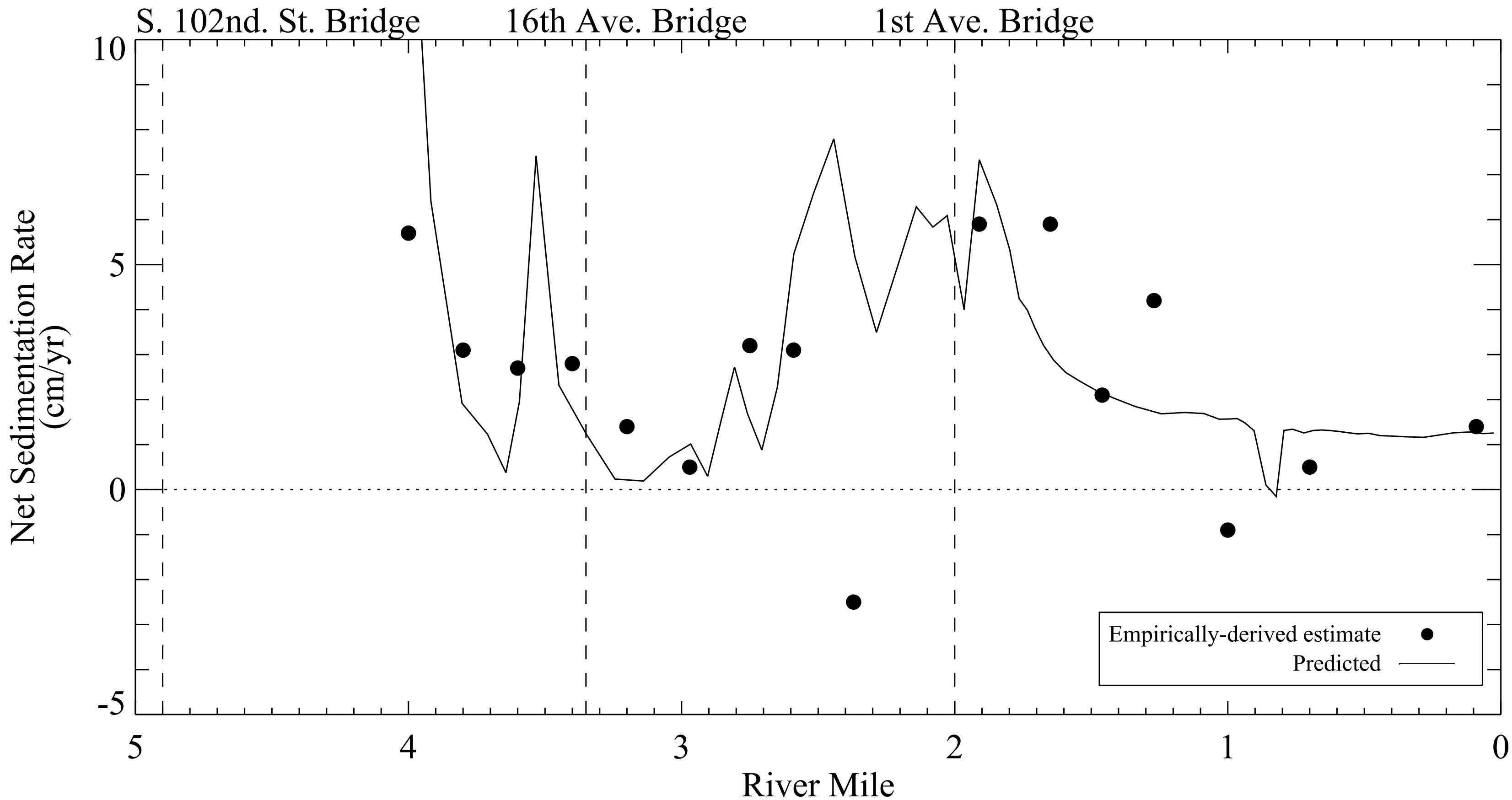


Figure D-25. Comparison of predicted and estimated net sedimentation rates in navigation channel for 21-year calibration period. Model results for simulation using active bed in non-cohesive bed areas in Green River. Predicted rates are average values for 21-year period.

FC - \\li\D_DRIVE\RETldw\Analysis\Model_Outputs\sed_rate\net_sed_rate_charsize_indiv_hotst_070426_ac.pro
Fri Jul 06 13:54:50 2007

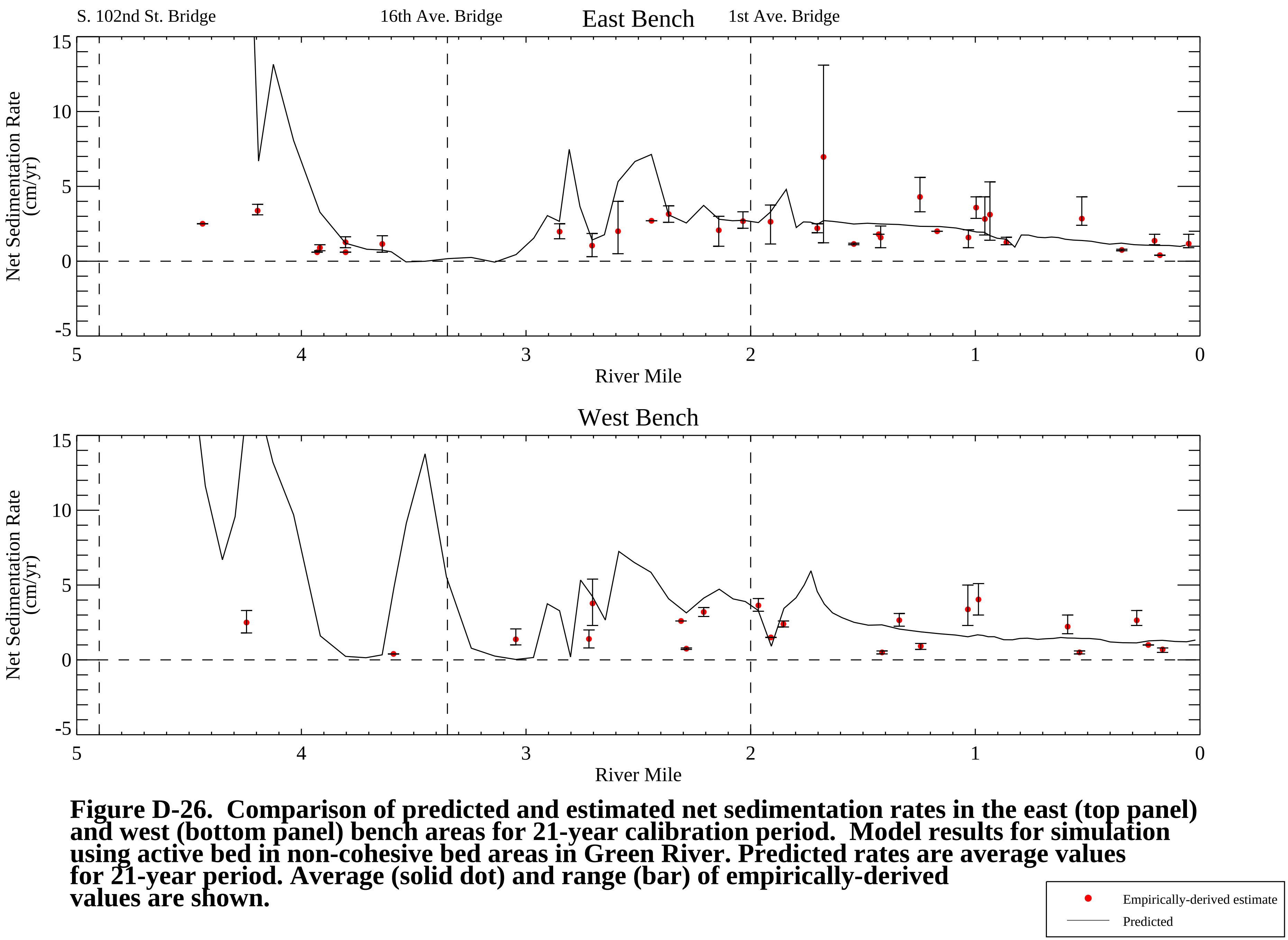


Figure D-26. Comparison of predicted and estimated net sedimentation rates in the east (top panel) and west (bottom panel) bench areas for 21-year calibration period. Model results for simulation using active bed in non-cohesive bed areas in Green River. Predicted rates are average values for 21-year period. Average (solid dot) and range (bar) of empirically-derived values are shown.

CO/LZ/FC - D:\RETldw\Analysis\Model_output\Sed_rate_bench_comp\080916\sed_rate_spatial_compare_21yr_D26_20080916.pro
Wed Sep 17 17:31:39 2008

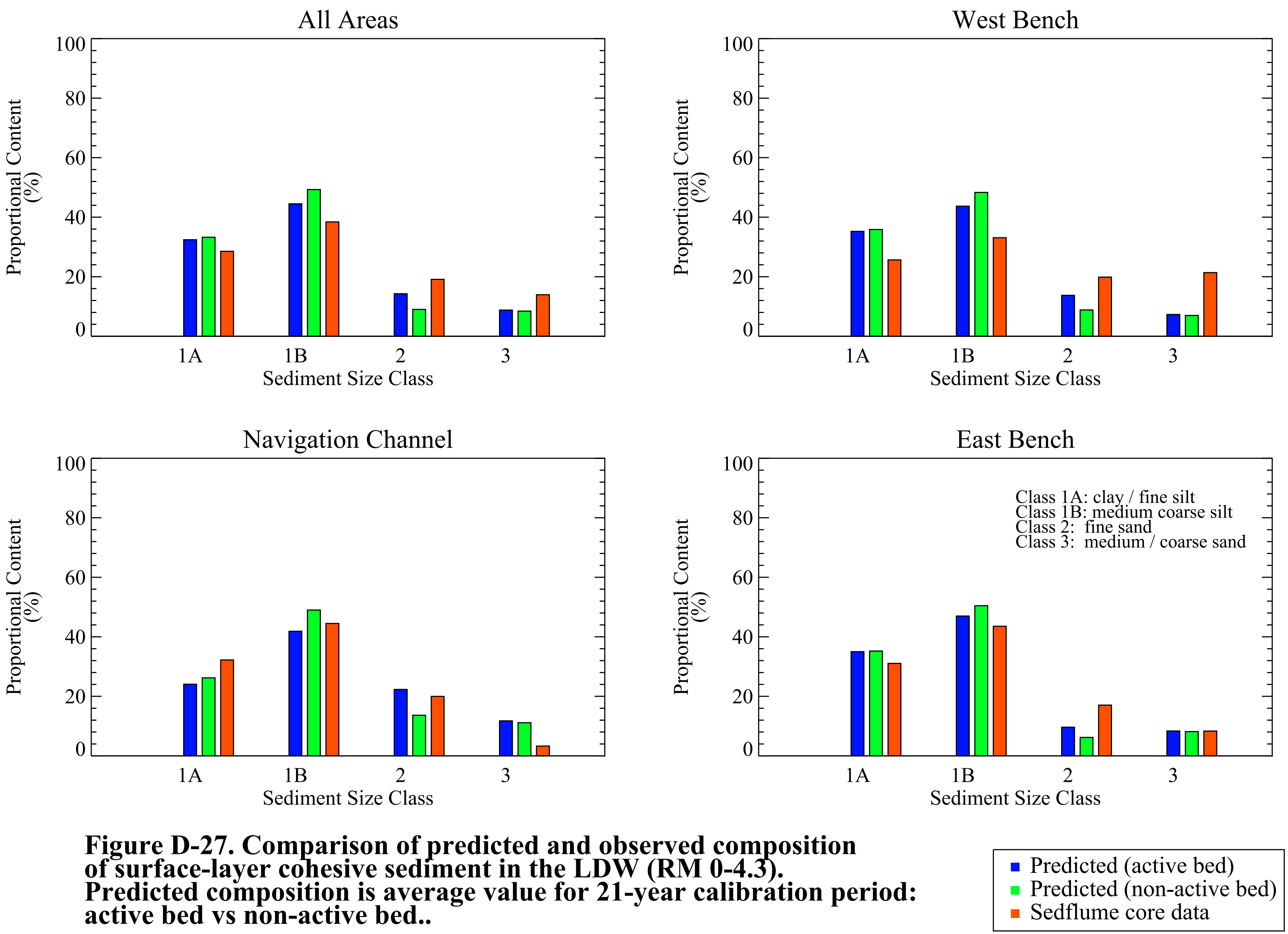


Figure D-27. Comparison of predicted and observed composition of surface-layer cohesive sediment in the LDW (RM 0-4.3). Predicted composition is average value for 21-year calibration period: active bed vs non-active bed..

FC/AC - D:\RETldw\Analysis\Model_output\compare_sedflume_comp\comp_2runs_with_sedflume_bar_080430.pro
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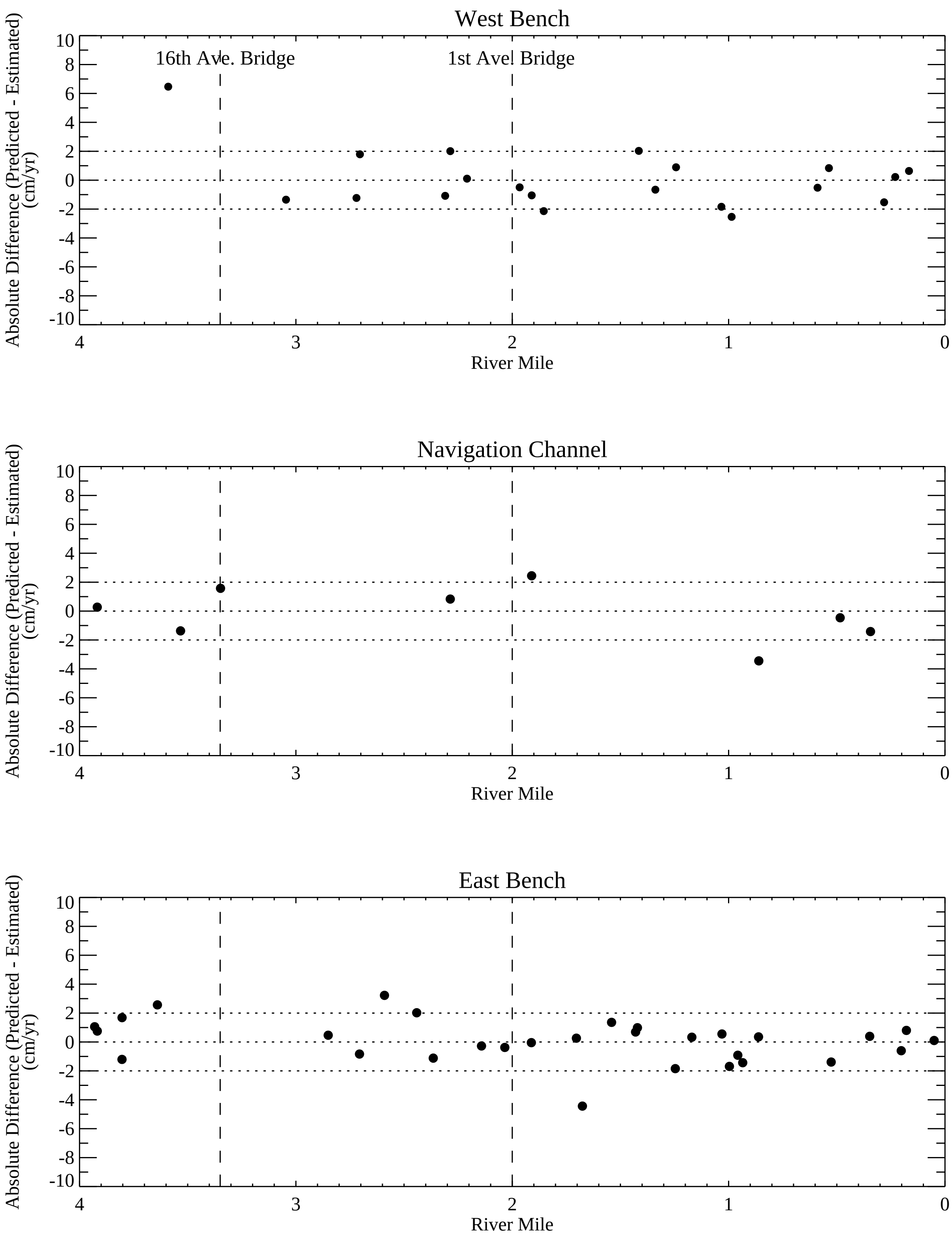

Figure D-28. Spatial variation of spatial uncertainty: absolute difference (predicted - empirically-derived estimate) based on 1-to-1 model-data comparison.

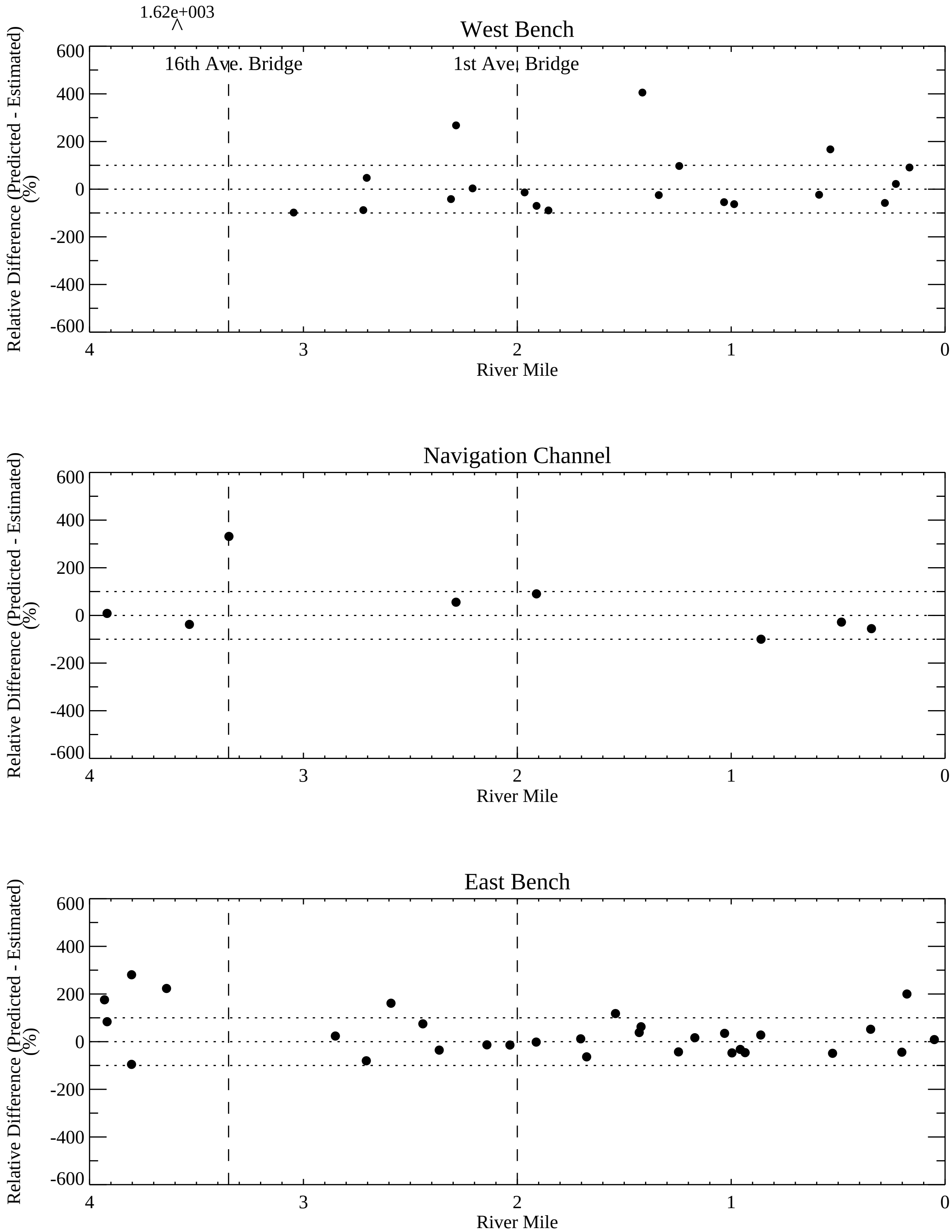

Figure D-29. Spatial variation of spatial uncertainty: relative difference (predicted - empirically-derived estimate) based on 1-to-1 model-data comparison.

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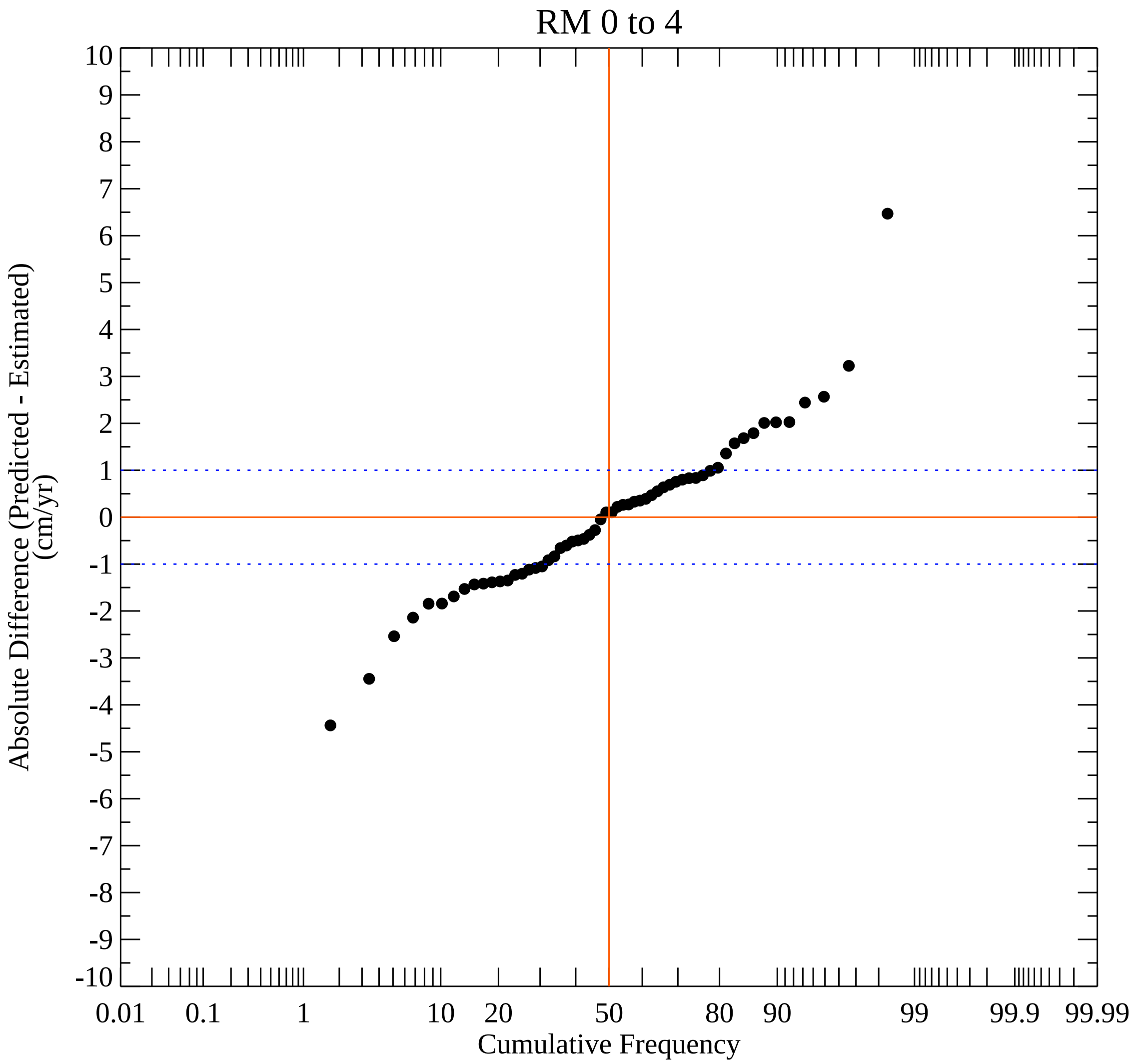

Figure D-30. Cumulative frequency of 1-to-1 absolute difference in sedimentation rate (predicted - empirically-derived estimate): RM 0 to 4, 30-year simulation.

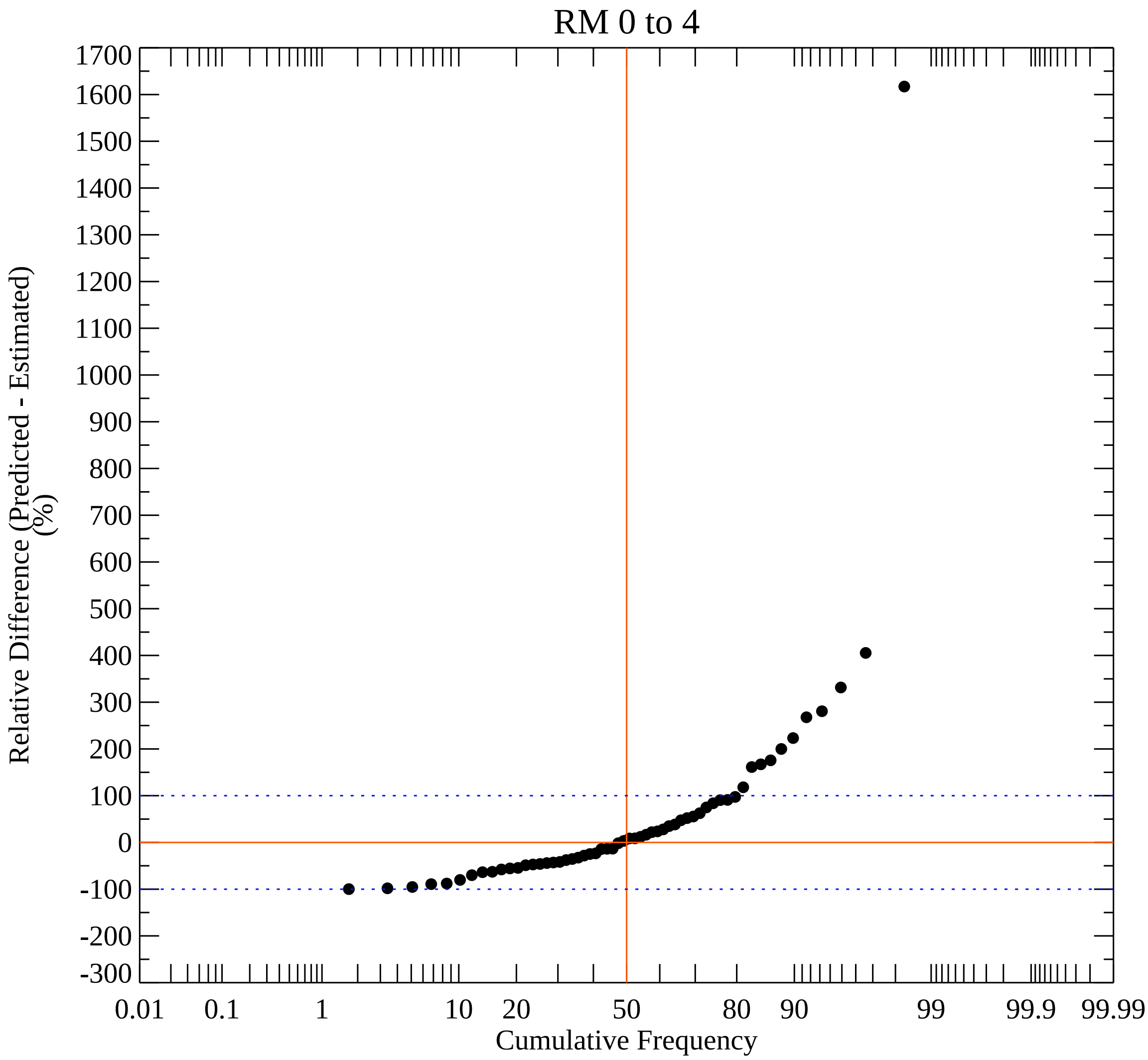

Figure D-31. Cumulative frequency of 1-to-1 relative difference in sedimentation rate (predicted - empirically-derived estimate): RM 0 to 4, 30-year simulation.

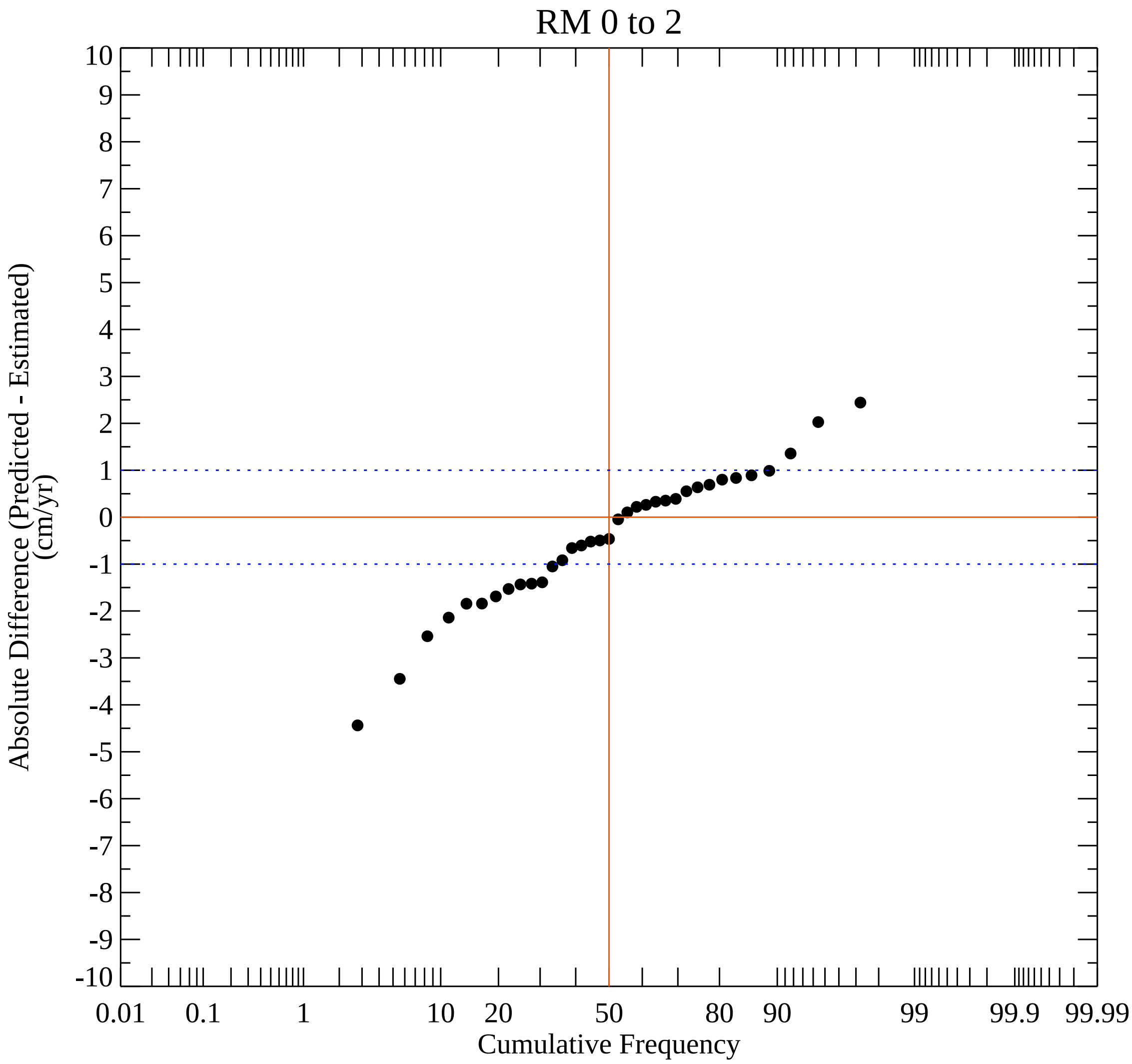

Figure D-32. Cumulative frequency of 1-to-1 absolute difference in sedimentation rate (predicted - empirically-derived estimate): RM 0 to 2, 30-year simulation.

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Wed Sep 17 15:01:57 2008

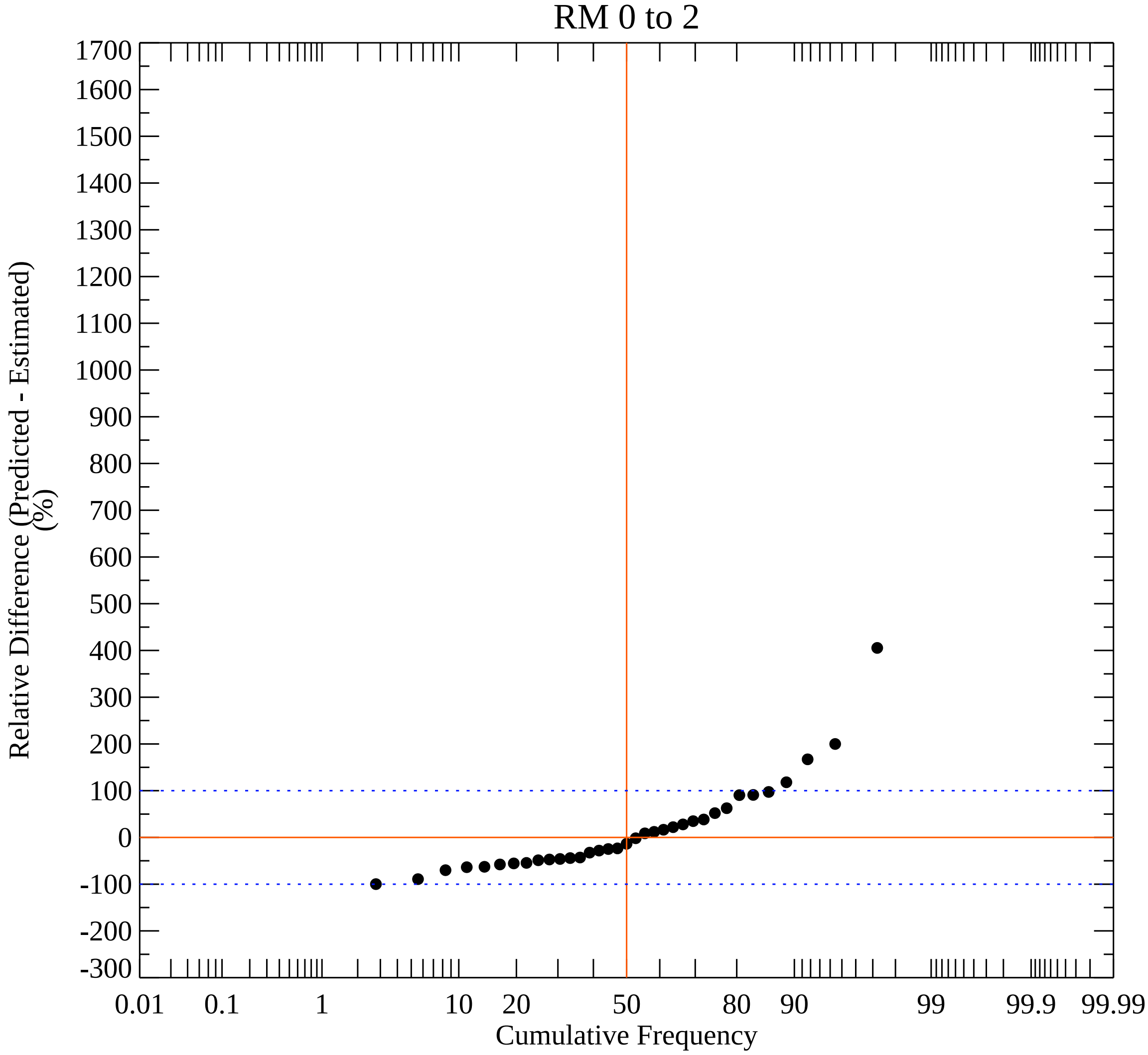

Figure D-33. Cumulative frequency of 1-to-1 relative difference in sedimentation rate (predicted - empirically-derived estimate): RM 0 to 2, 30-year simulation.

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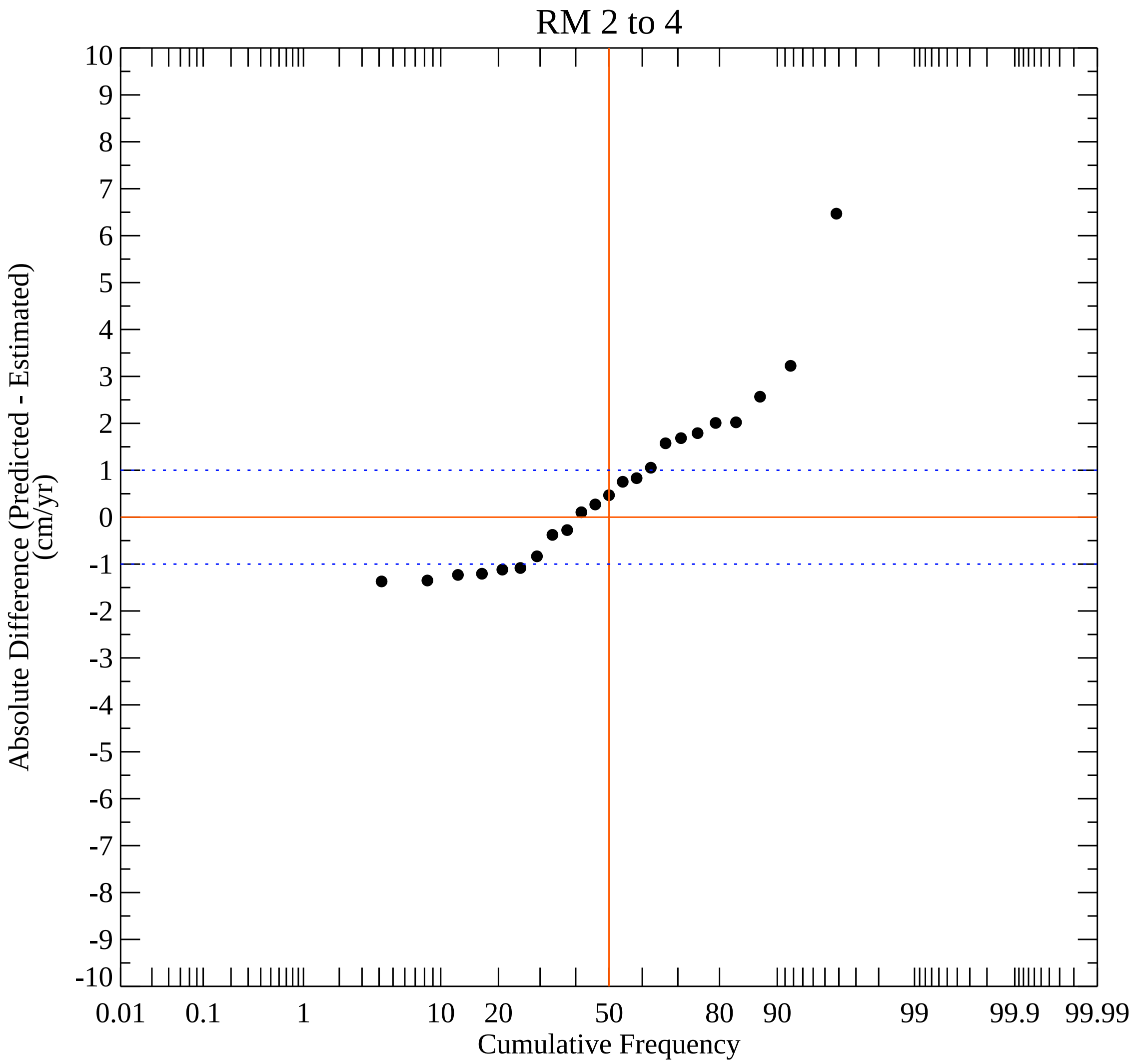


Figure D-34. Cumulative frequency of 1-to-1 absolute difference in sedimentation rate (predicted - empirically-derived estimate): RM 2 to 4, 30-year simulation.

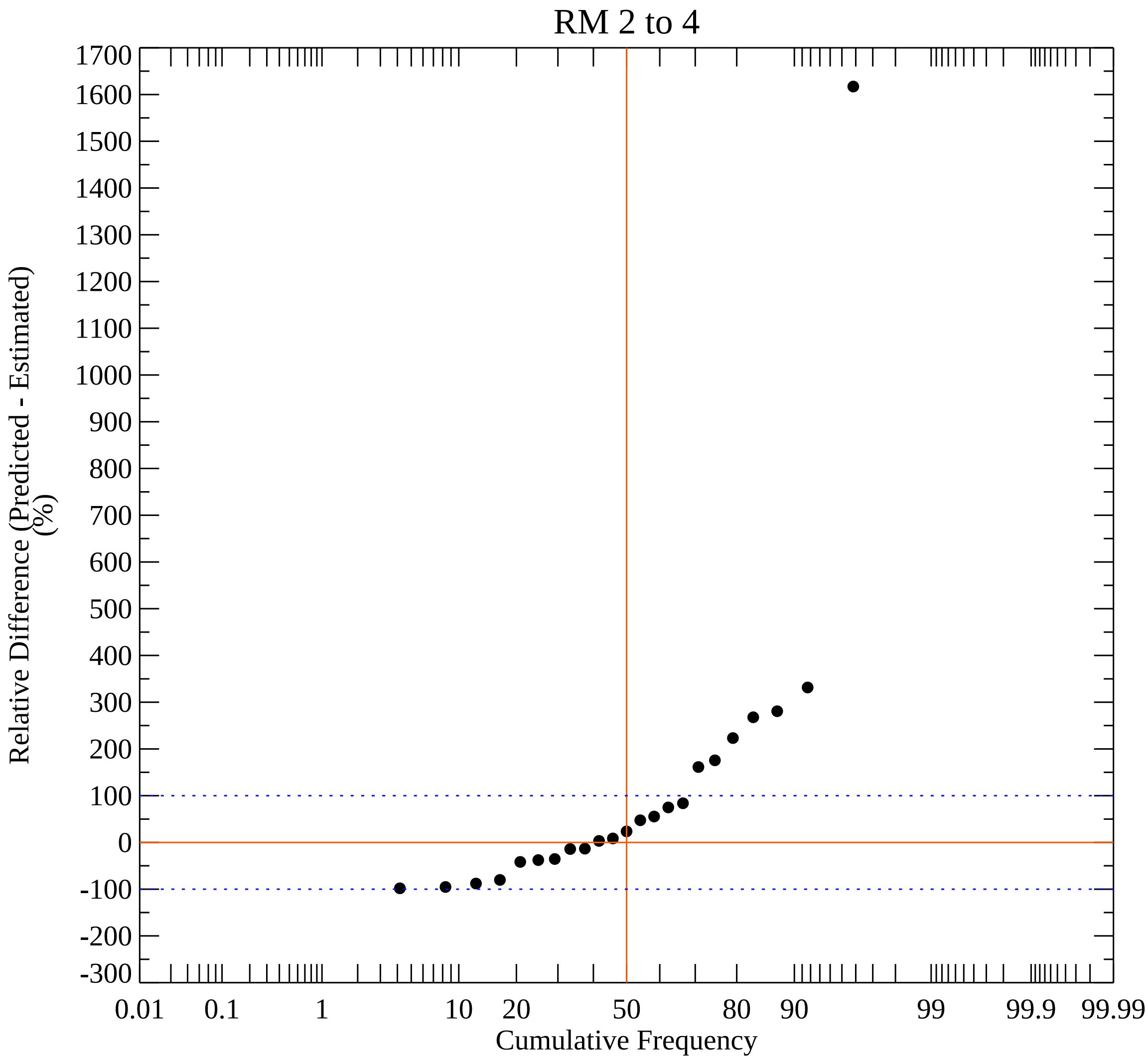


Figure D-35. Cumulative frequency of 1-to-1 relative difference in sedimentation rate (predicted - empirically-derived estimate): RM 2 to 4, 30-year simulation.

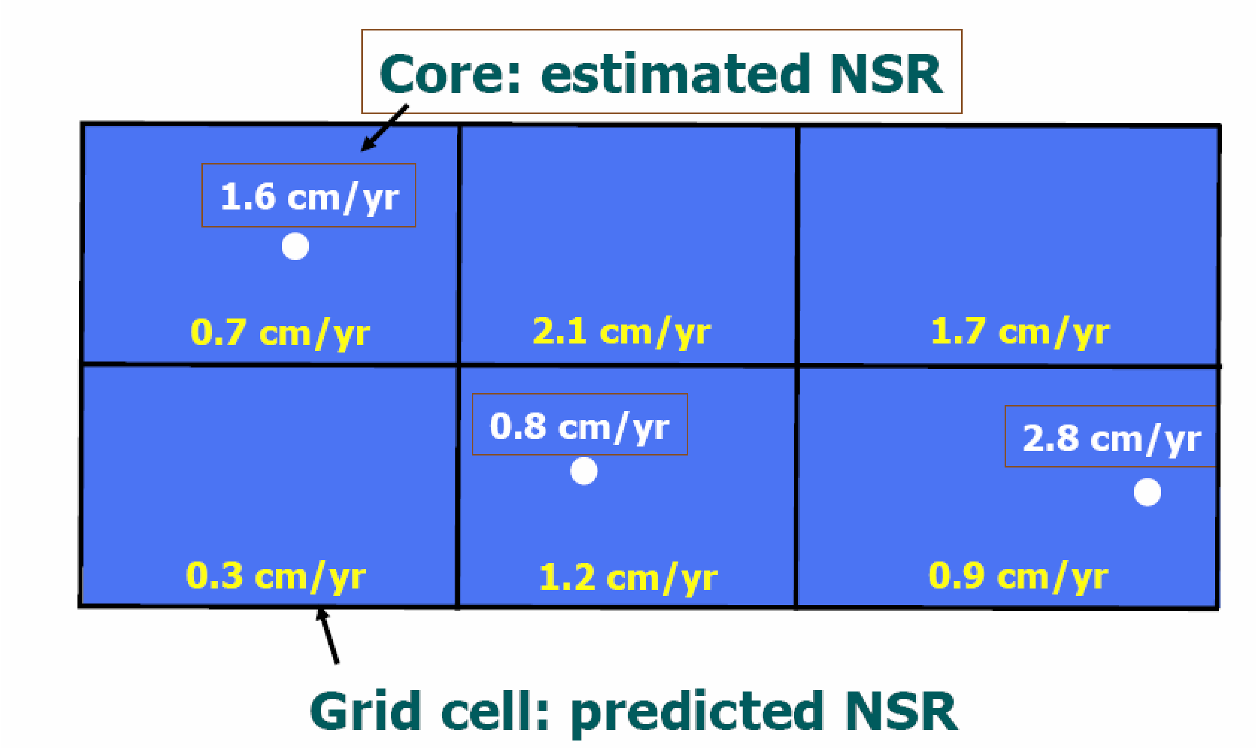
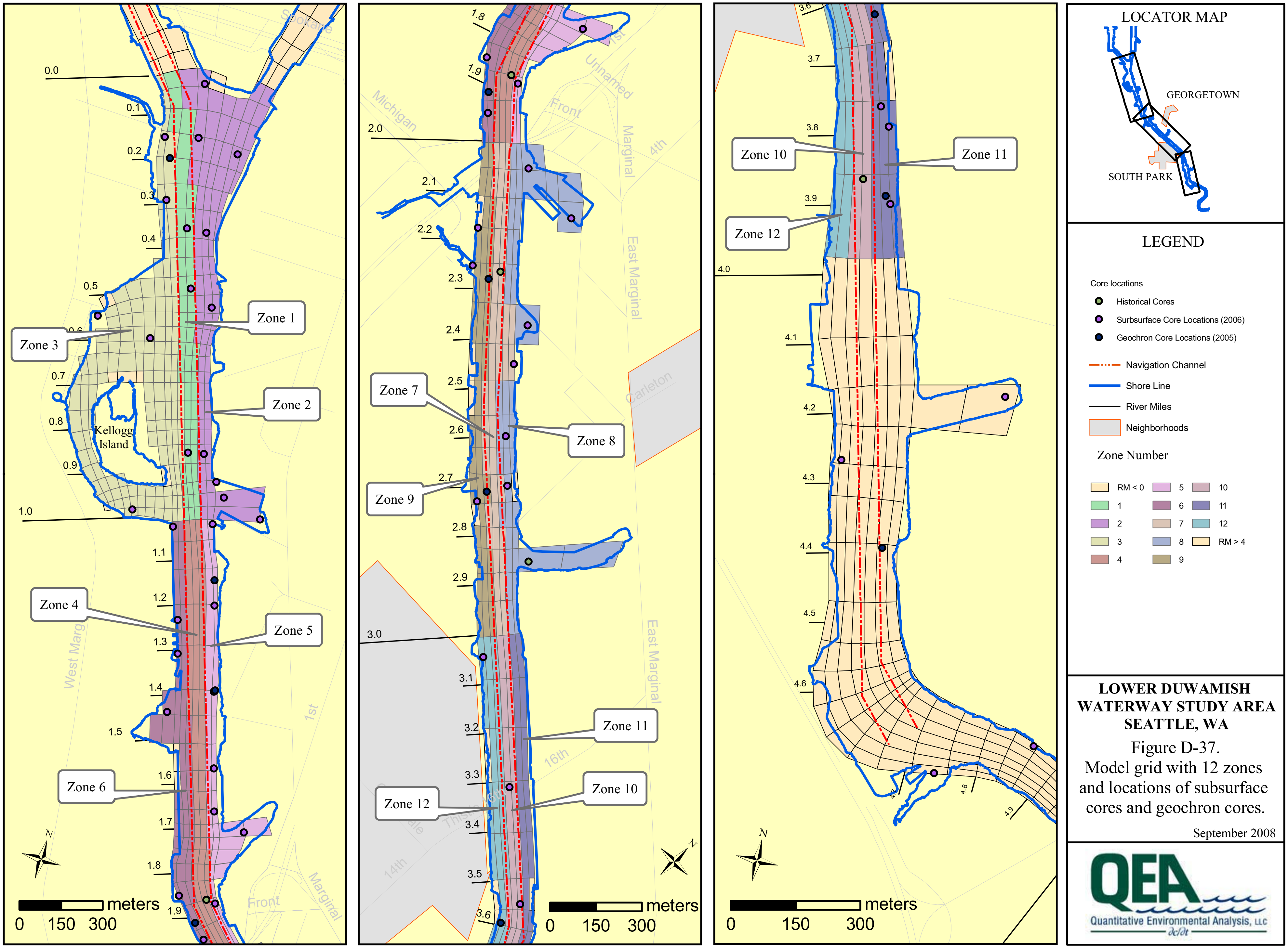


Figure D-36. Example calculation of absolute difference for a zone composed of 6 grid cells and 3 cores are within the zone.



LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-37.
Model grid with 12 zones and locations of subsurface cores and geochron cores.

September 2008

QEA Quantitative Environmental Analysis, LLC

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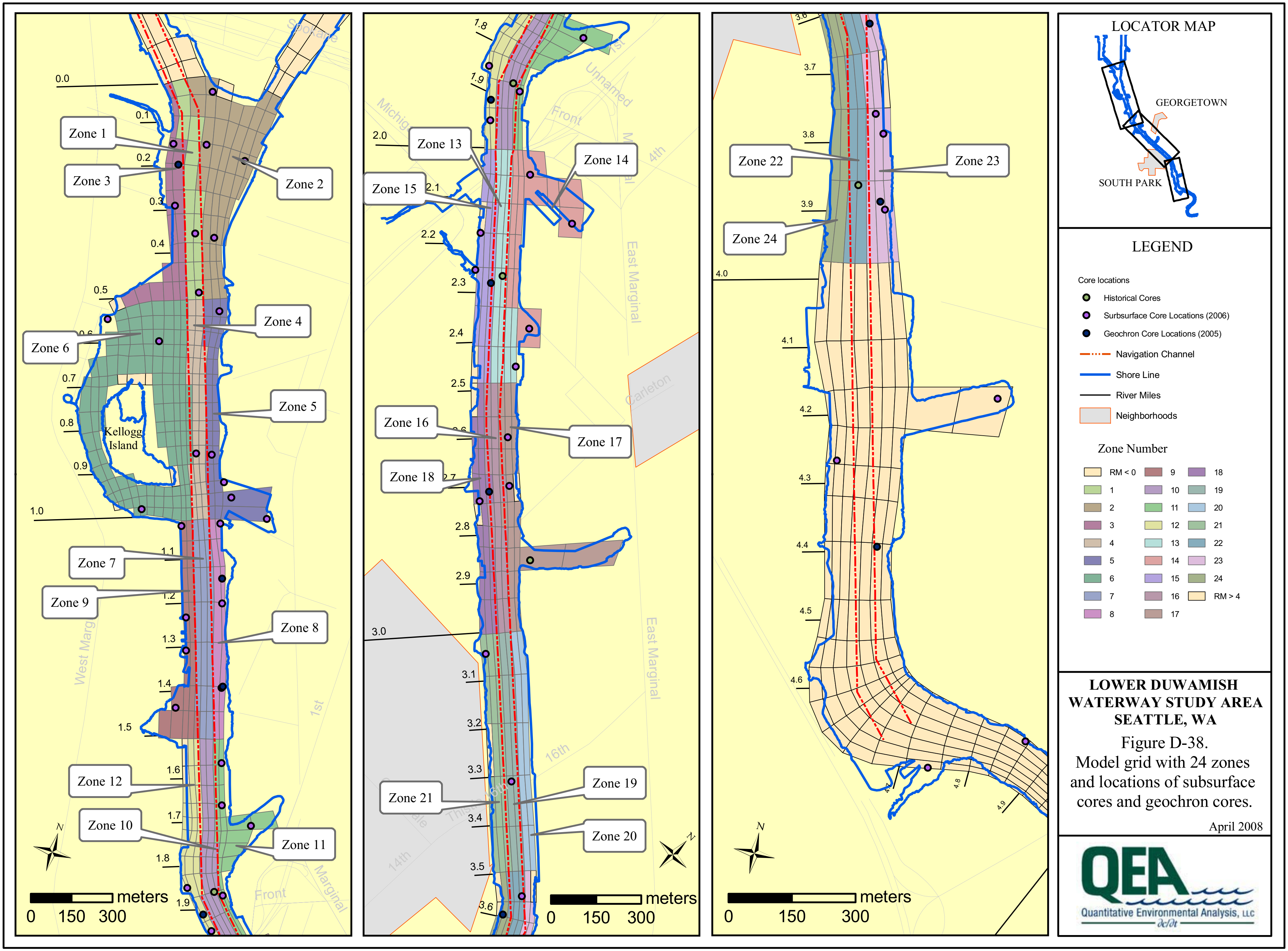

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-38.
Model grid with 24 zones and locations of subsurface cores and geochron cores.

April 2008

Quantitative Environmental Analysis, LLC

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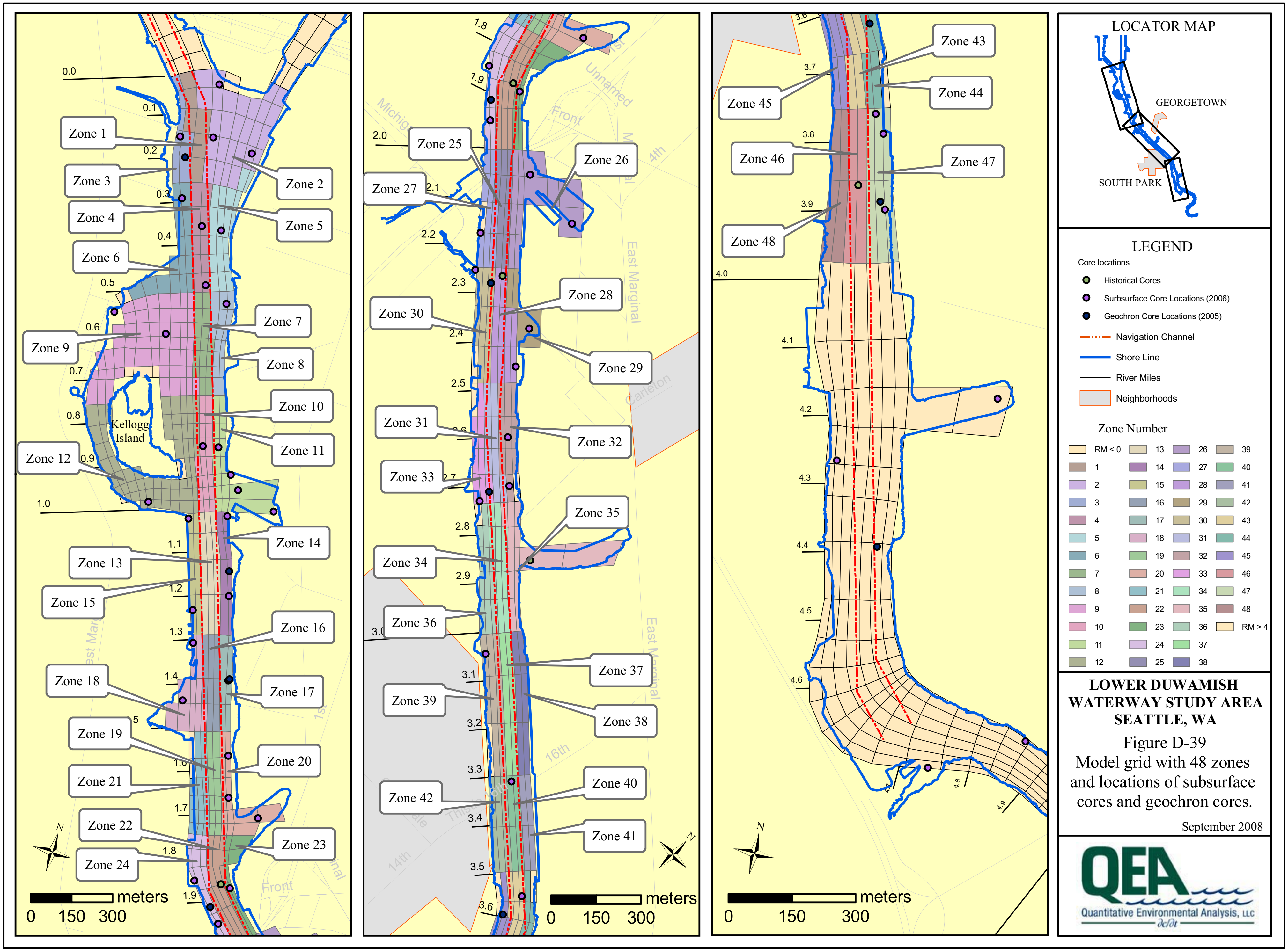

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-39
Model grid with 48 zones and locations of subsurface cores and geochron cores.

September 2008

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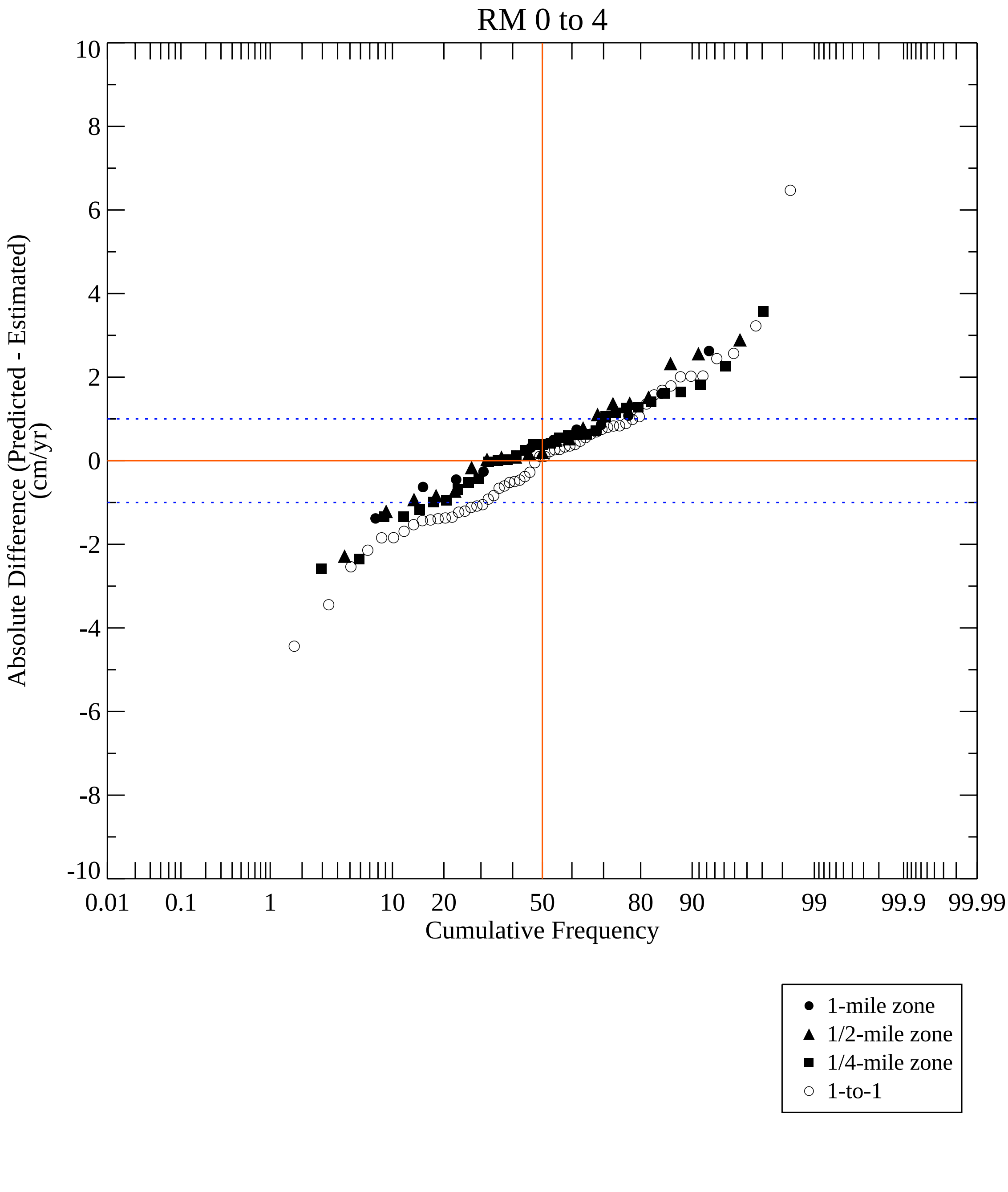

Figure D-40. Cumulative frequency of absolute difference in sedimentation rate (predicted - empirically-derived estimate): RM 0 to 4, 30-year simulation.

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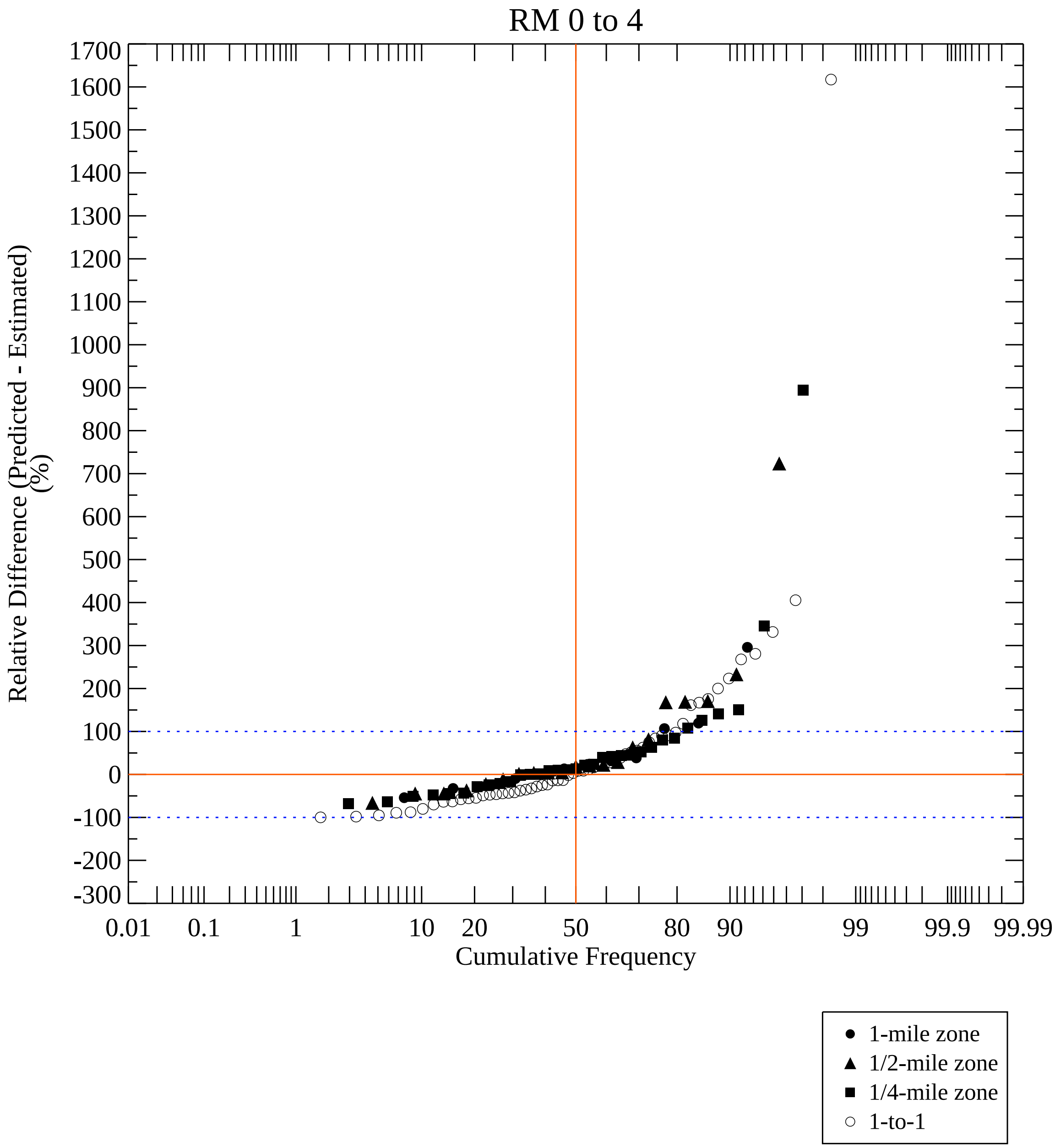

Figure D-41. Cumulative frequency of relative difference in sedimentation rate (predicted - empirically-derived estimate): RM 0 to 4, 30-year simulation.

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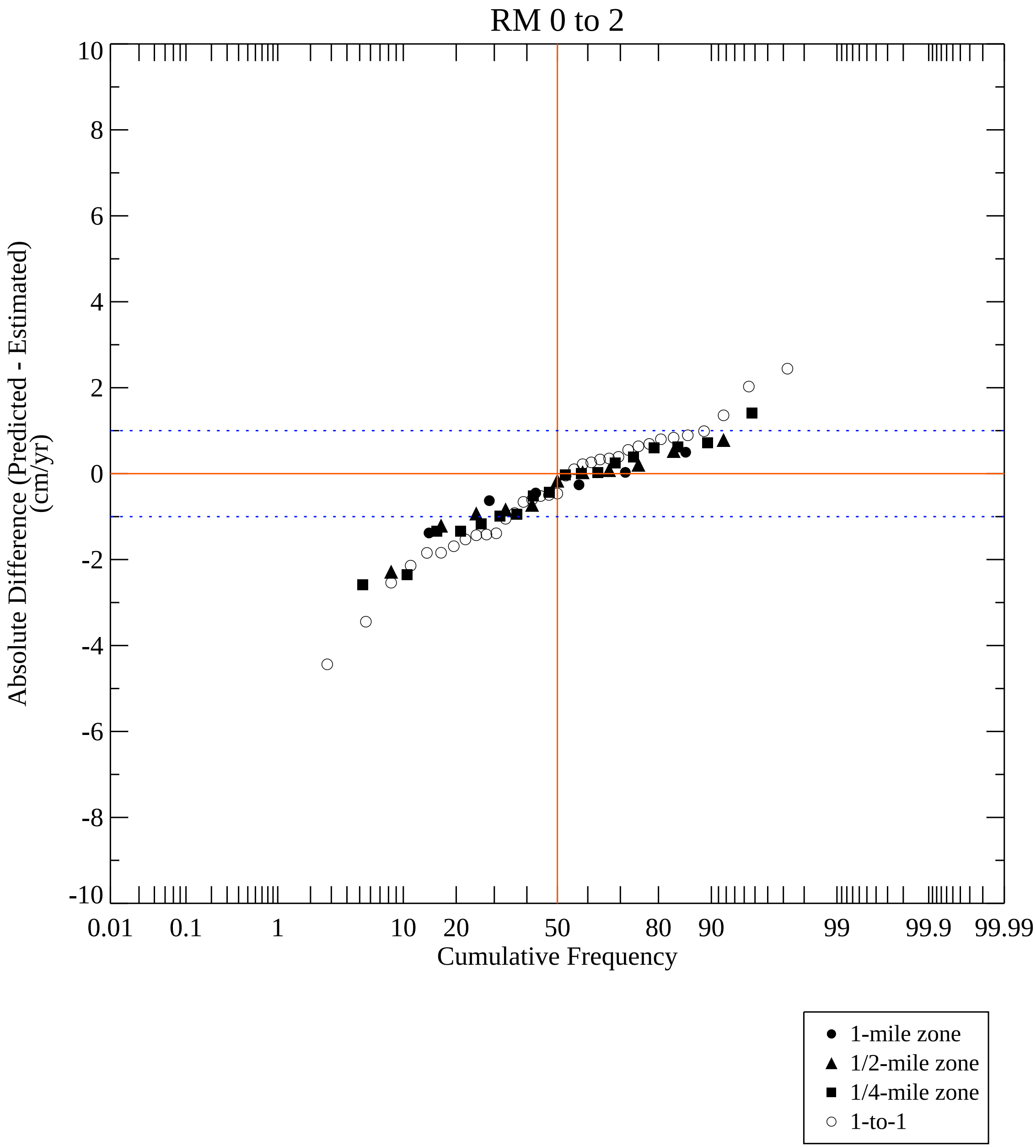

Figure D-42. Cumulative frequency of absolute difference in sedimentation rate (predicted - empirically-derived estimate): RM 0 to 2, 30-year simulation.

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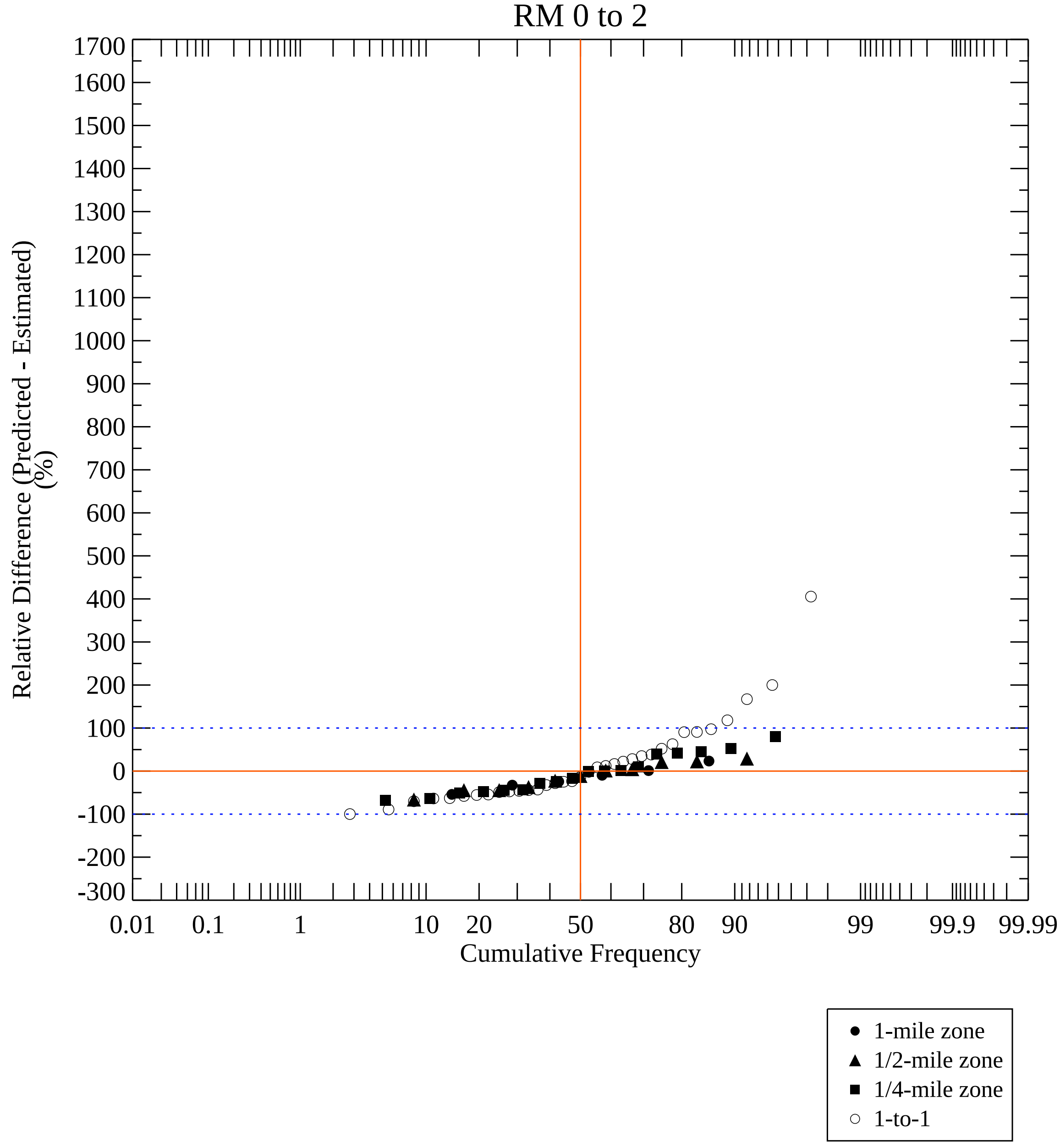

Figure D-43. Cumulative frequency of relative difference in sedimentation rate (predicted - empirically-derived estimate): RM 0 to 2, 30-year simulation.

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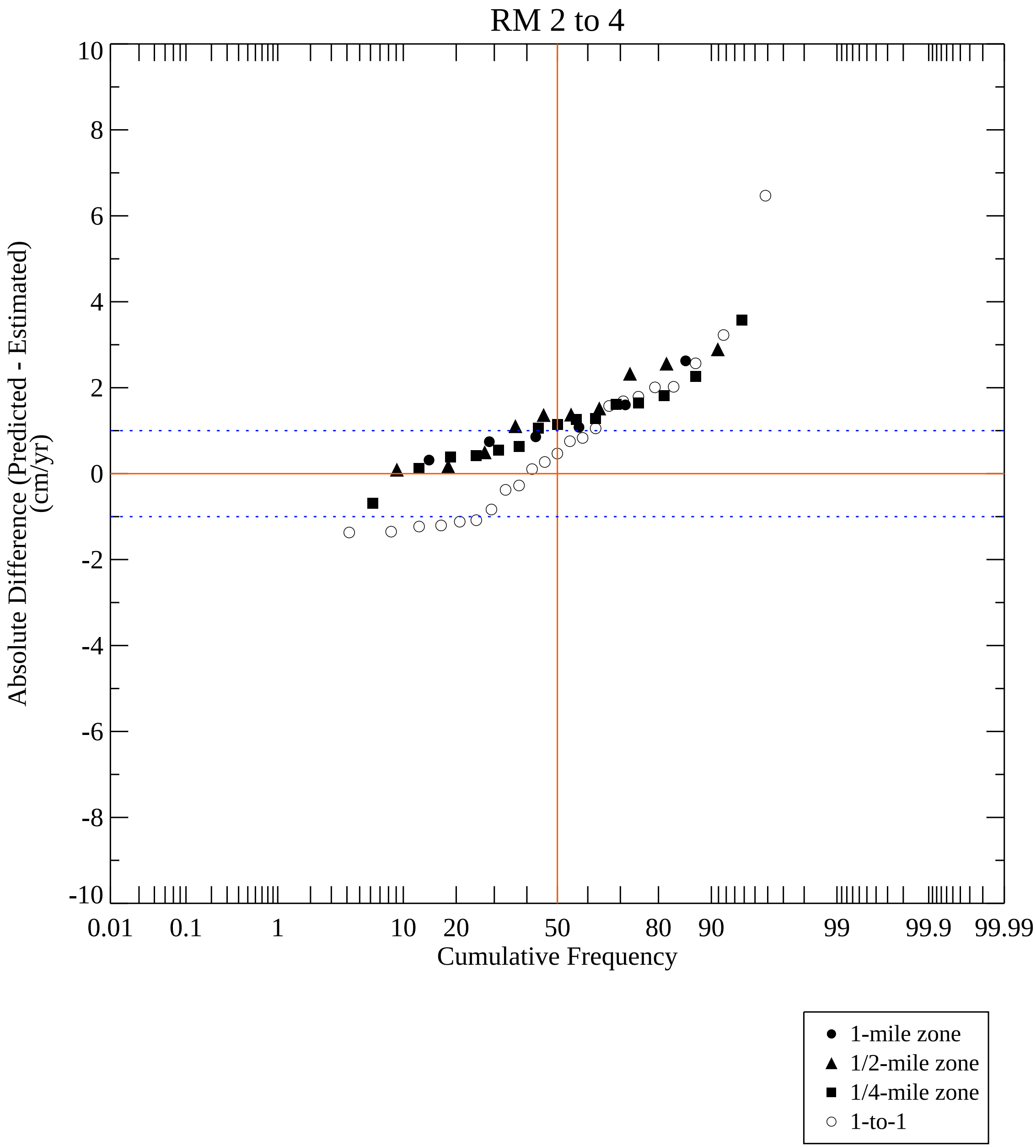

Figure D-44. Cumulative frequency of absolute difference in sedimentation rate (predicted - empirically-derived estimate): RM 2 to 4, 30-year simulation.

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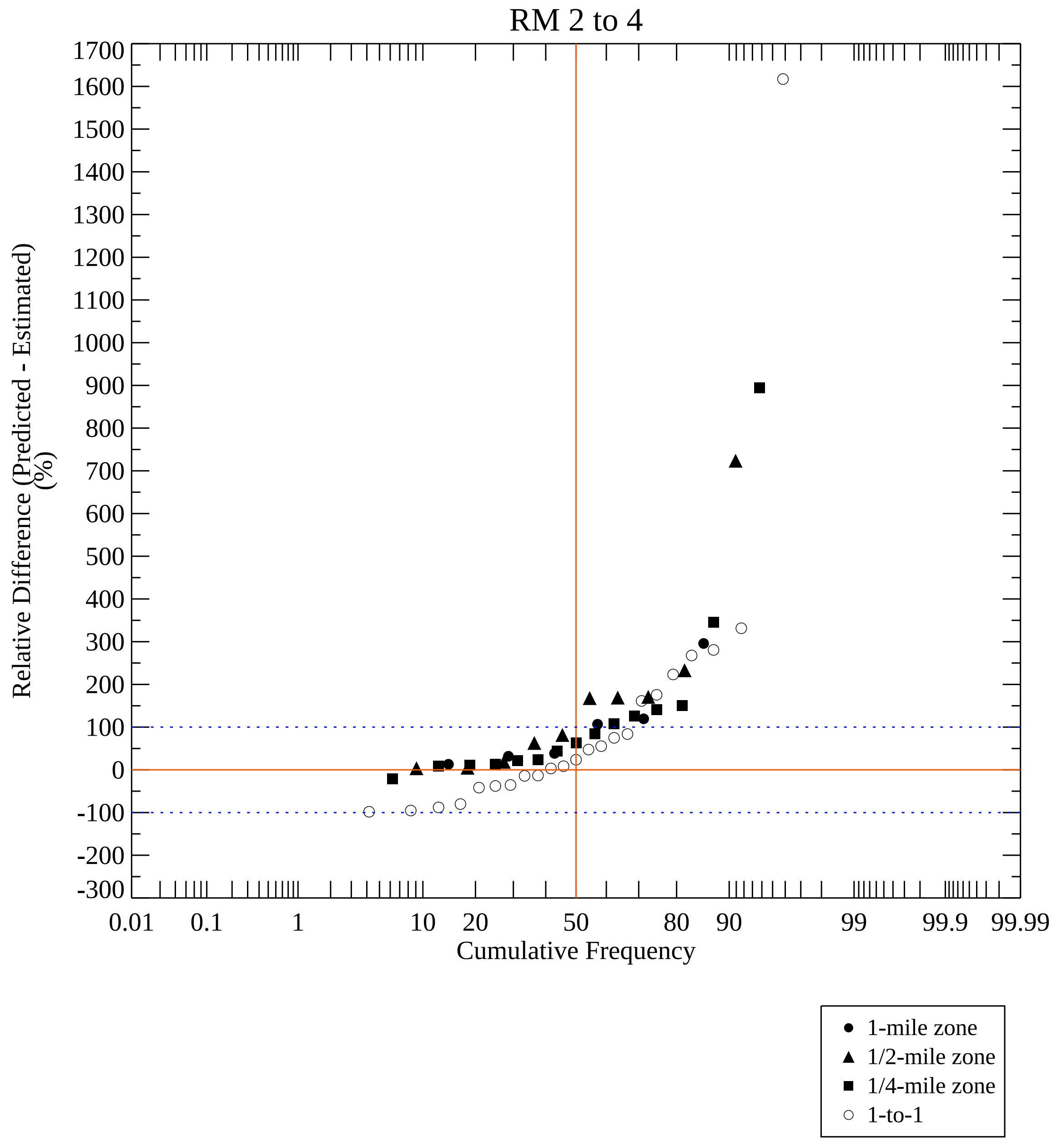

Figure D-45. Cumulative frequency of relative difference in sedimentation rate (predicted - empirically-derived estimate): RM 2 to 4, 30-year simulation.

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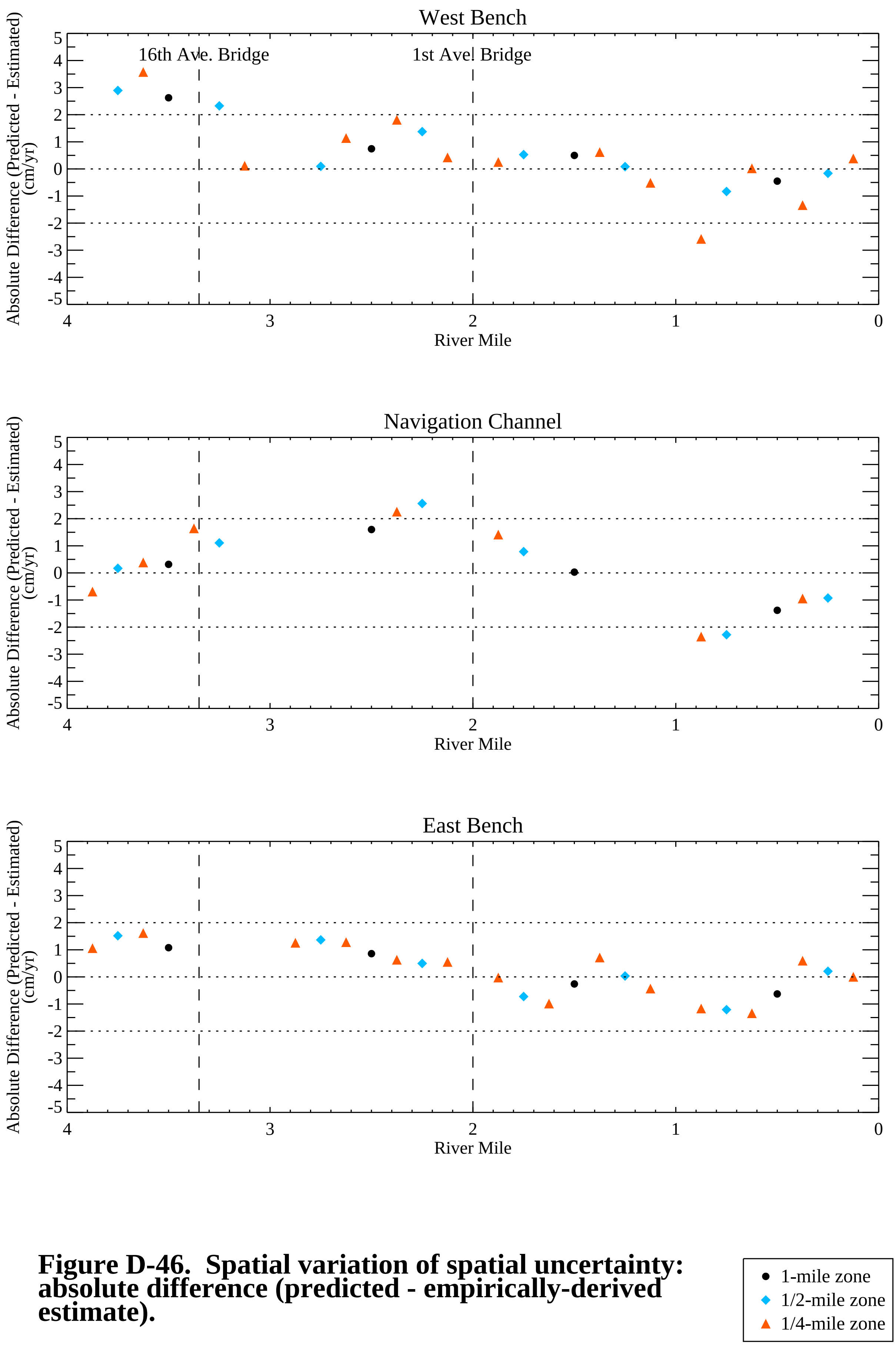


Figure D-46. Spatial variation of spatial uncertainty: absolute difference (predicted - empirically-derived estimate).

fc - D:\RETldw\Analysis\Model_output\uncertainty_analysis\Additional_EAA_cores\080917\spatial_plot_3_pannels_avg_separate_080917.pro
Wed Sep 17 14:24:53 2008

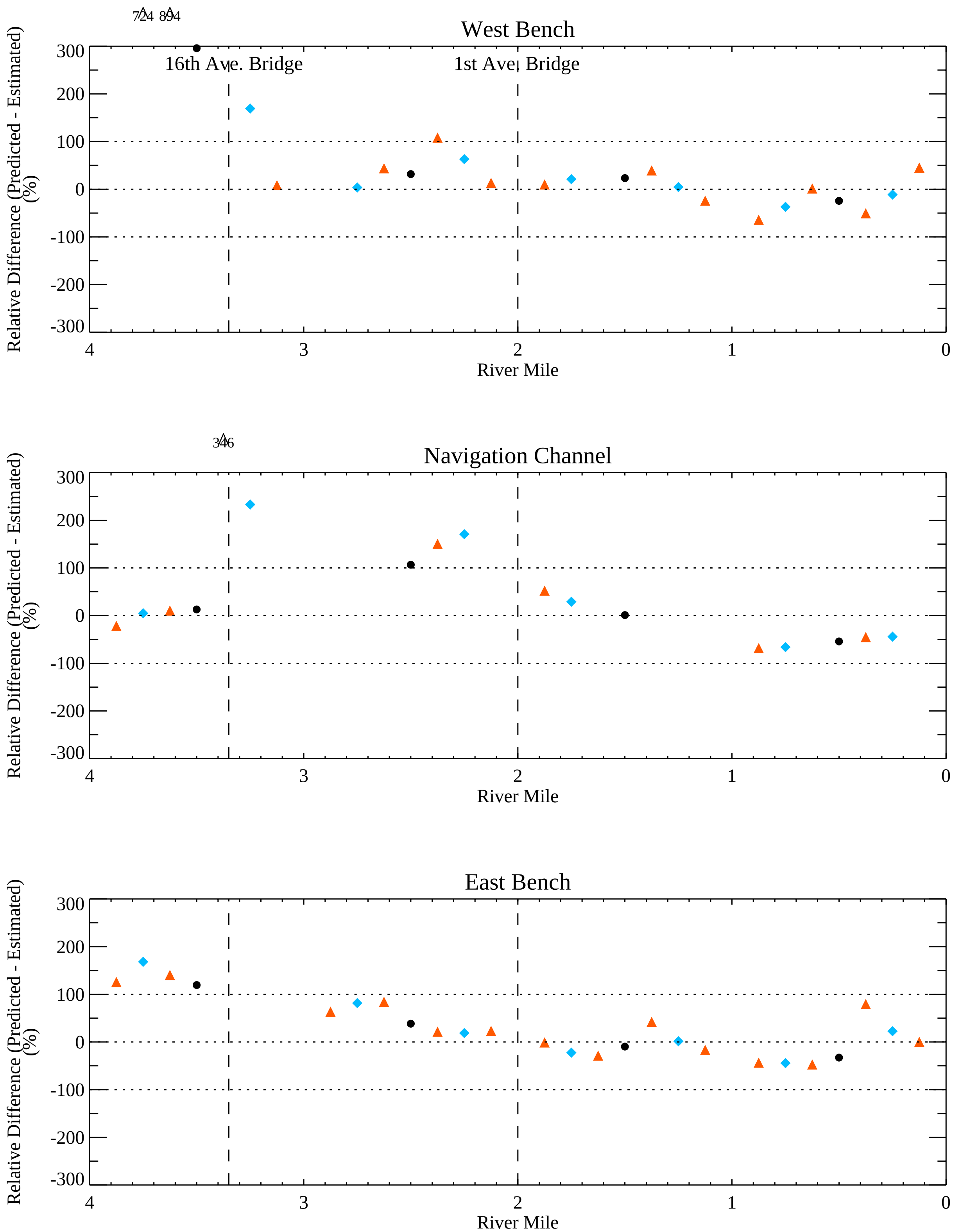
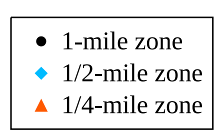
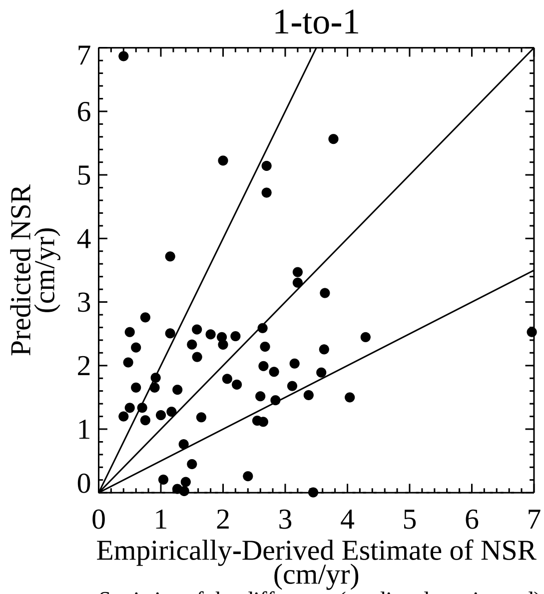
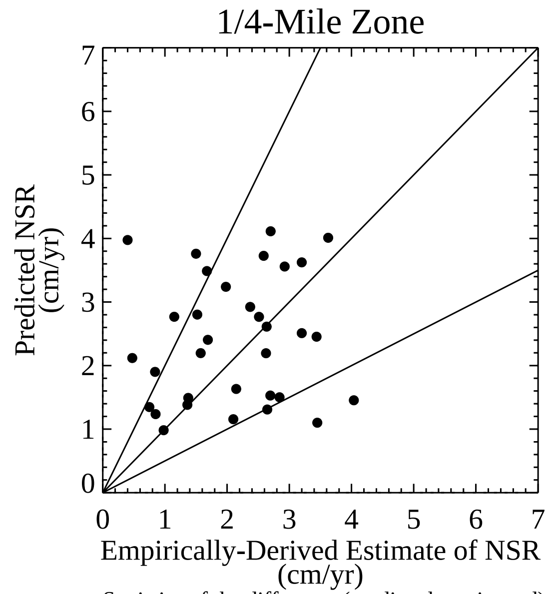


Figure D-47. Spatial variation of spatial uncertainty: relative difference (predicted - empirically-derived estimate).

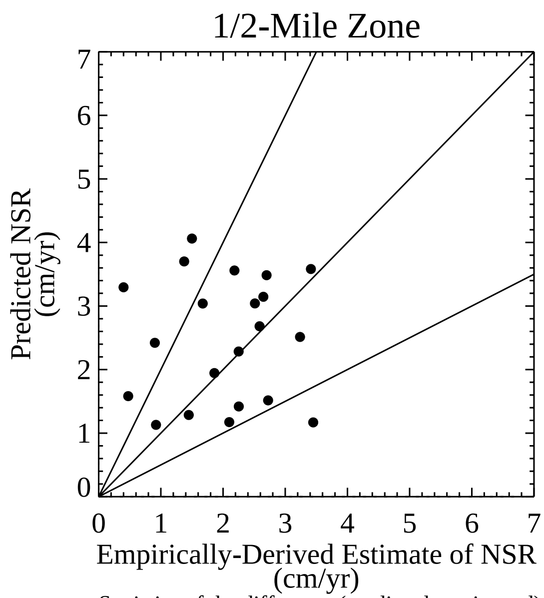




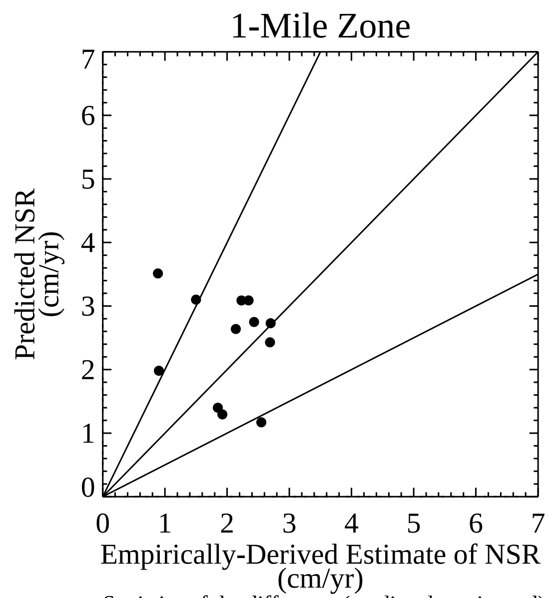
Statistics of the difference (predicted - estimated)
Median = 0.103
Mean = 0.00700
2Stderr = 0.452
Stdv = 1.72
Pencentage of points that within factor-of-2 lines = 60%



Statistics of the difference (predicted - estimated)
Median = 0.259
Mean = 0.285
2Stderr = 0.242
Stdv = 1.39
Pencentage of points that within factor-of-2 lines = 73%



Statistics of the difference (predicted - estimated)
Median = 0.330
Mean = 0.448
2Stderr = 0.289
Stdv = 1.33
Pencentage of points that within factor-of-2 lines = 71%

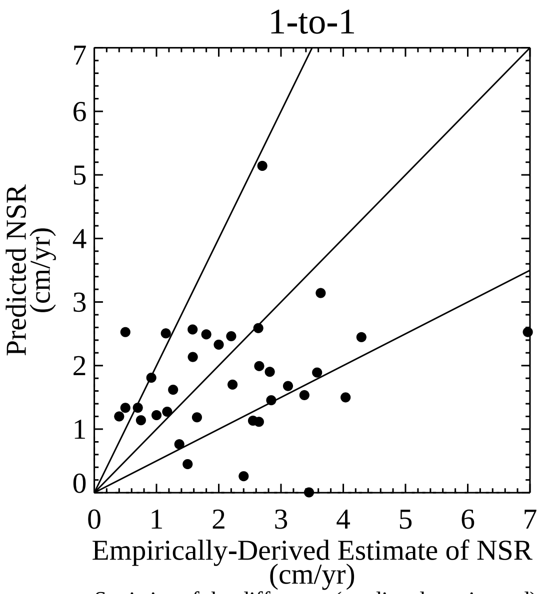


Statistics of the difference (predicted - estimated)
Median = 0.499
Mean = 0.419
2Stderr = 0.292
Stdv = 1.01
Pencentage of points that within factor-of-2 lines = 67%

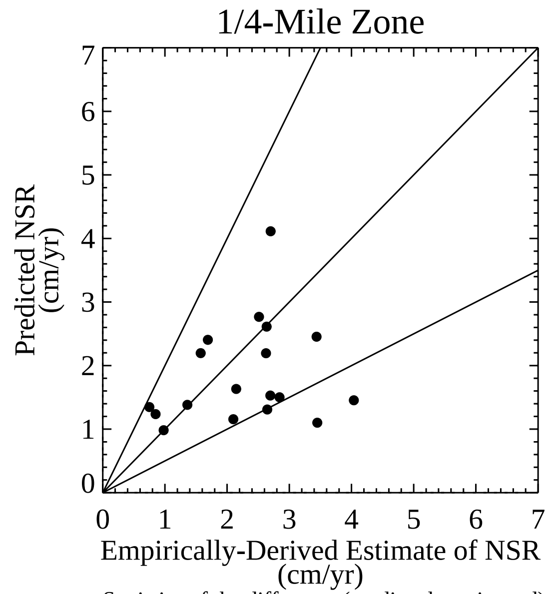
Figure D-48. Model data comparison of net sedimentation rate in RM 0 to 4: base case, 30-year simulation.

For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

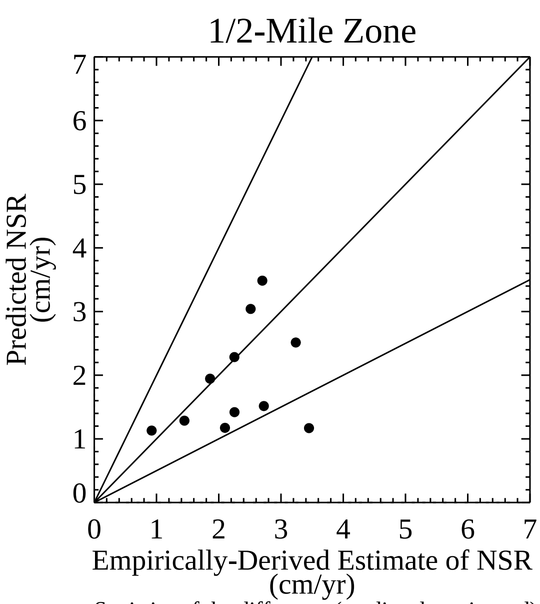
fc - D:\RETldw\Analysis\Model_output\uncertainty_analysis\Additional_EAA_cores\080917\plot_4p_avg_a_080917.pro
Wed Sep 17 15:49:19 2008



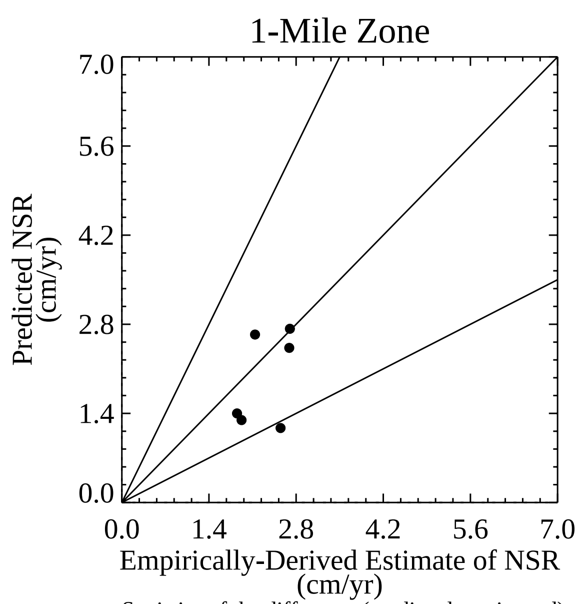
Statistics of the difference (predicted - estimated)
Median = -0.464
Mean = -0.445
2Stderr = 0.498
Stdv = 1.47
Pencentage of points that within factor-of-2 lines = 66%



Statistics of the difference (predicted - estimated)
Median = -1.05
Mean = -0.426
2Stderr = 0.289
Stdv = 1.23
Pencentage of points that within factor-of-2 lines = 83%



Statistics of the difference (predicted - estimated)
Median = -0.738
Mean = -0.409
2Stderr = 0.333
Stdv = 1.10
Pencentage of points that within factor-of-2 lines = 91%

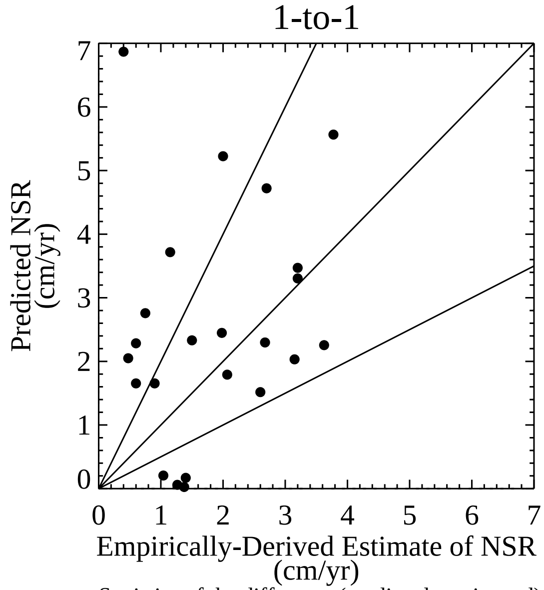


Statistics of the difference (predicted - estimated)
Median = -0.431
Mean = -0.365
2Stderr = 0.336
Stdv = 0.824
Pencentage of points that within factor-of-2 lines = 83%

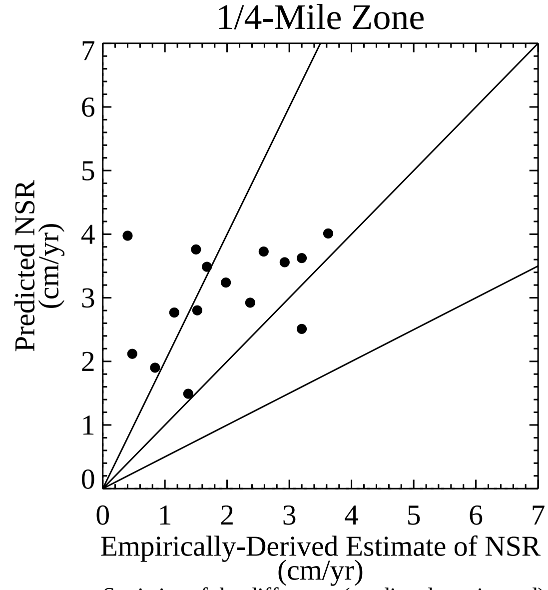
Figure D-49. Model data comparison of net sedimentation rate in RM 0 to 2: base case, 30-year simulation.

For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

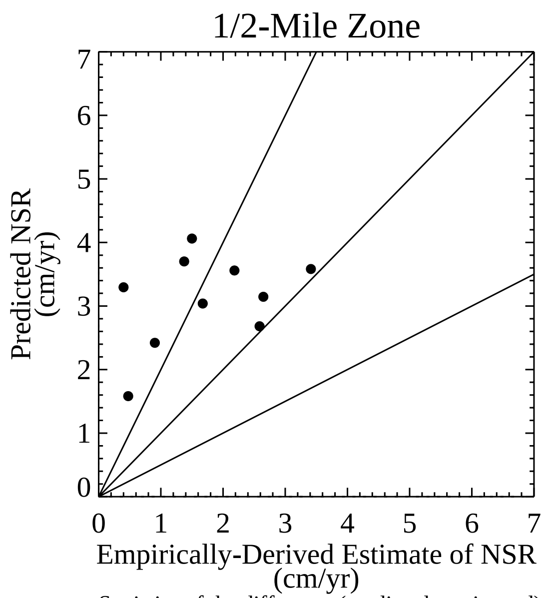
fc - D:\RETldw\Analysis\Model_output\uncertainty_analysis\Additional_EAA_cores\080917\plot_4p_avg_b_080917.pro
Wed Sep 17 15:53:48 2008



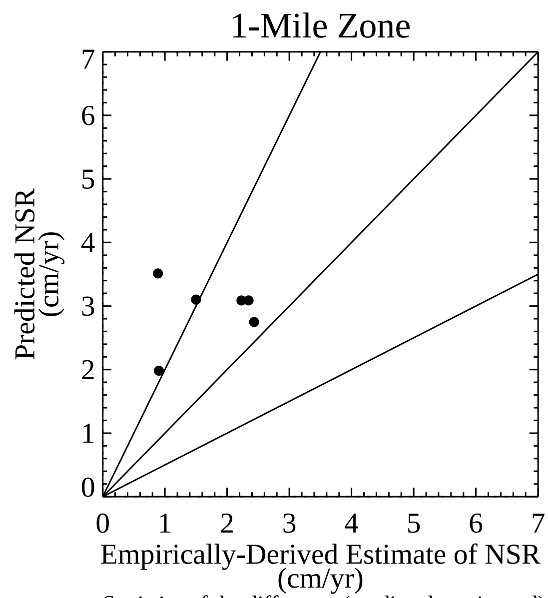
Statistics of the difference (predicted - estimated)
Median = 0.468
Mean = 0.695
2Stderr = 0.780
Stdv = 1.87
Pencentage of points that within factor-of-2 lines = 52%



Statistics of the difference (predicted - estimated)
Median = 1.56
Mean = 1.14
2Stderr = 0.333
Stdv = 1.29
Pencentage of points that within factor-of-2 lines = 60%



Statistics of the difference (predicted - estimated)
Median = 1.63
Mean = 1.39
2Stderr = 0.388
Stdv = 1.23
Pencentage of points that within factor-of-2 lines = 50%



Statistics of the difference (predicted - estimated)
Median = 1.22
Mean = 1.20
2Stderr = 0.361
Stdv = 0.885
Pencentage of points that within factor-of-2 lines = 50%

Figure D-50. Model data comparison of net sedimentation rate in RM 2 to 4: base case, 30-year simulation.

For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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Wed Sep 17 15:57:03 2008

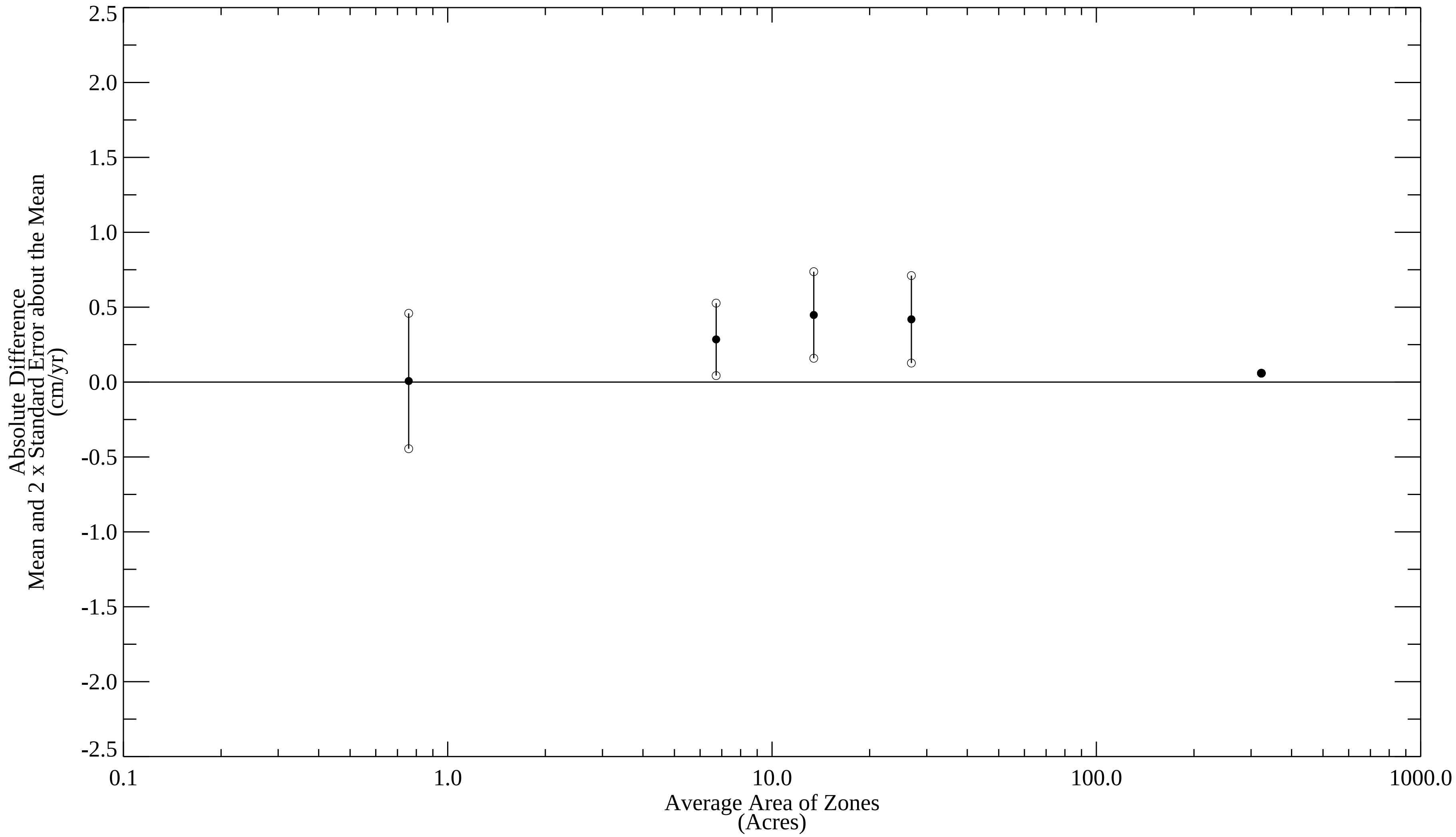

Figure D-51. Absolute difference in net sedimentation rate for different spatial scale: base case, 30-year simulation.

The solid dot represents the mean values. From left to right are for 1-to-1 data, 48-zone, 24-zone, 12-zone, and 1-zone (all area for RM 0-4) respectively.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

fc - D:\RETldw\Analysis\Model_output\uncertainty_analysis\Additional_EAA_cores\080917\plot_2p_avg_a_080917.pro
Wed Sep 17 16:08:44 2008

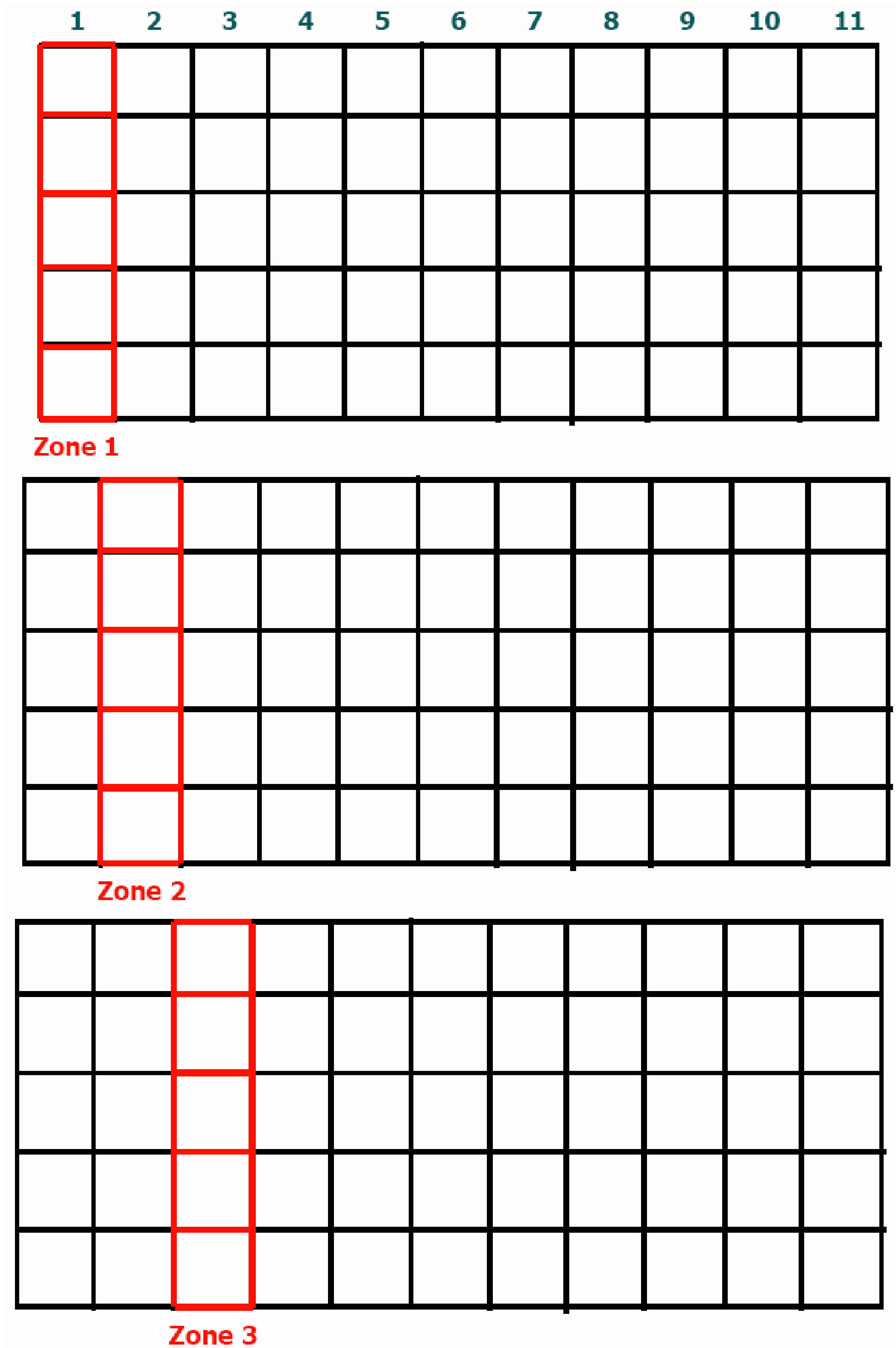

Figure D-52. Example of 1-row zones for spatial-scale analysis. Total of eleven 1-row zones for this illustrative example.

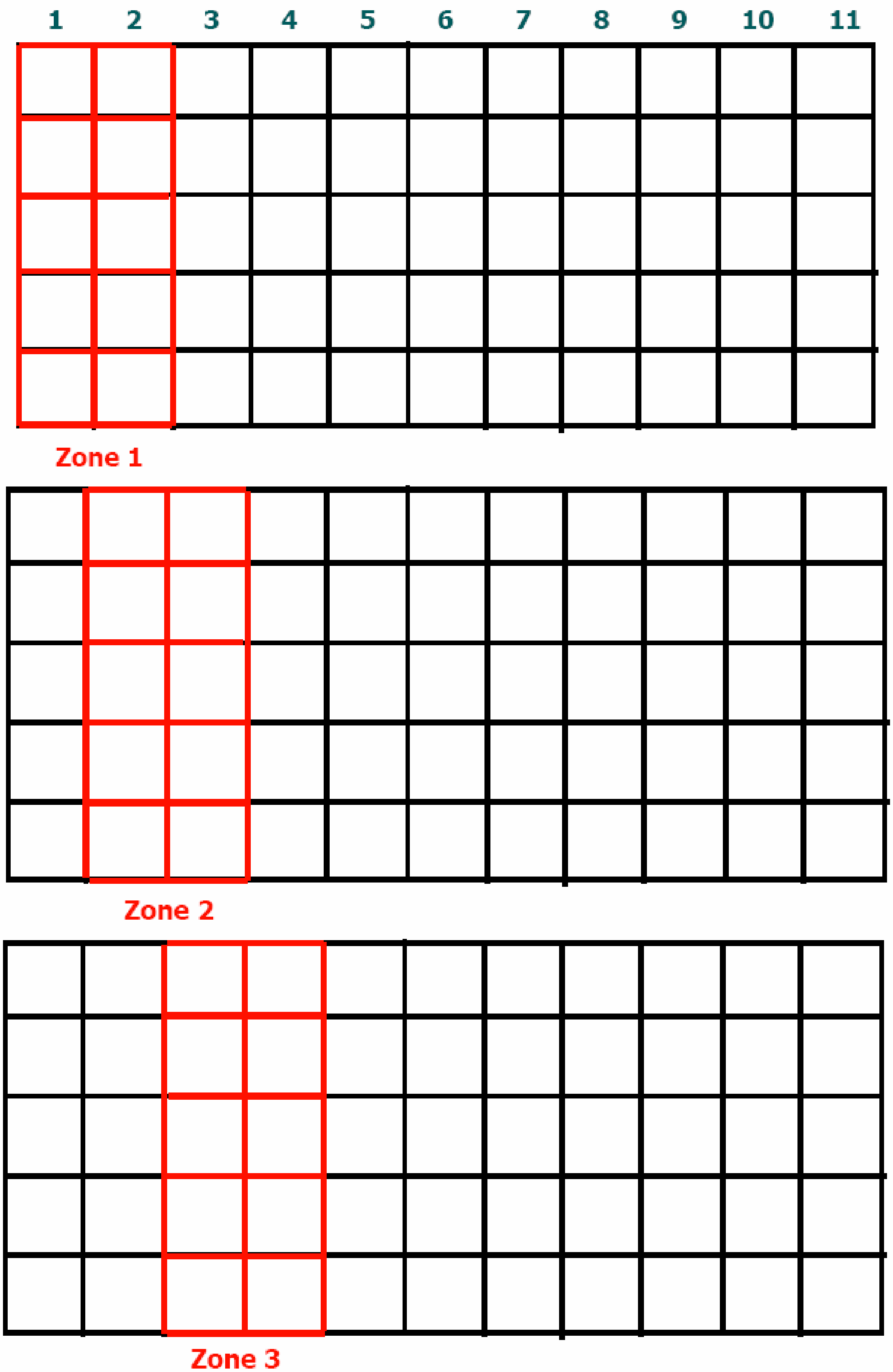

Figure D-53. Example of 2-row zones for spatial-scale analysis. Total of ten 2-row zones for this illustrative example.

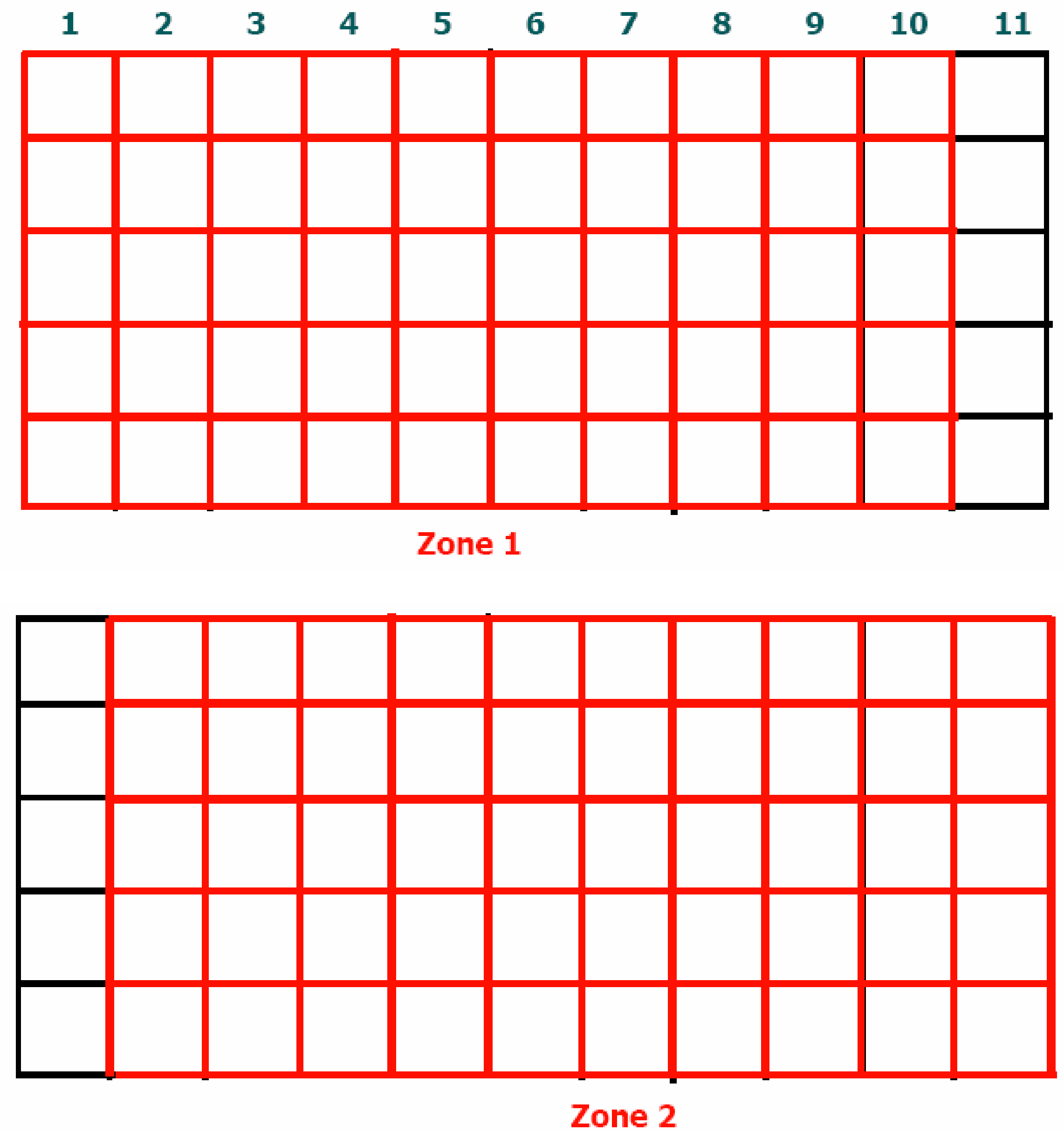

Figure D-54. Example of 10-row zones for spatial-scale analysis. Total of two 10-row zones for this illustrative example.

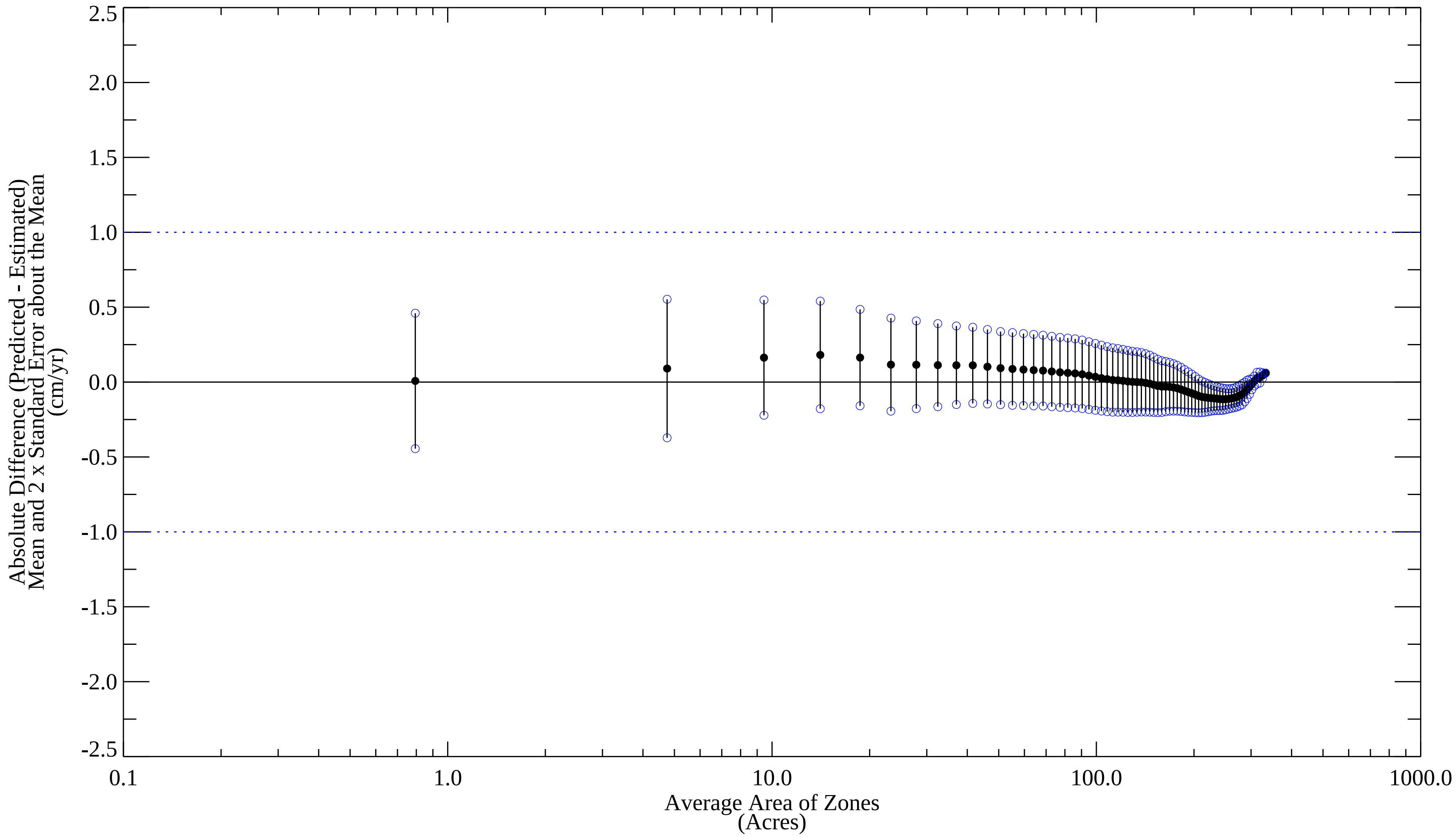

Figure D-55. Absolute difference in net sedimentation rate for different spatial scale: base case, RM 0 to 4, 30-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and emprircally-derived estimate of NSR, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

fc - D:\RETldw\Analysis\Model_output\uncertainty_analysis\Additional_EAA_cores\080917\plot_spatial_uncertainty_rm0_to_4_avg_transect_zones_1panel_080917.pro
Wed Sep 17 16:23:46 2008

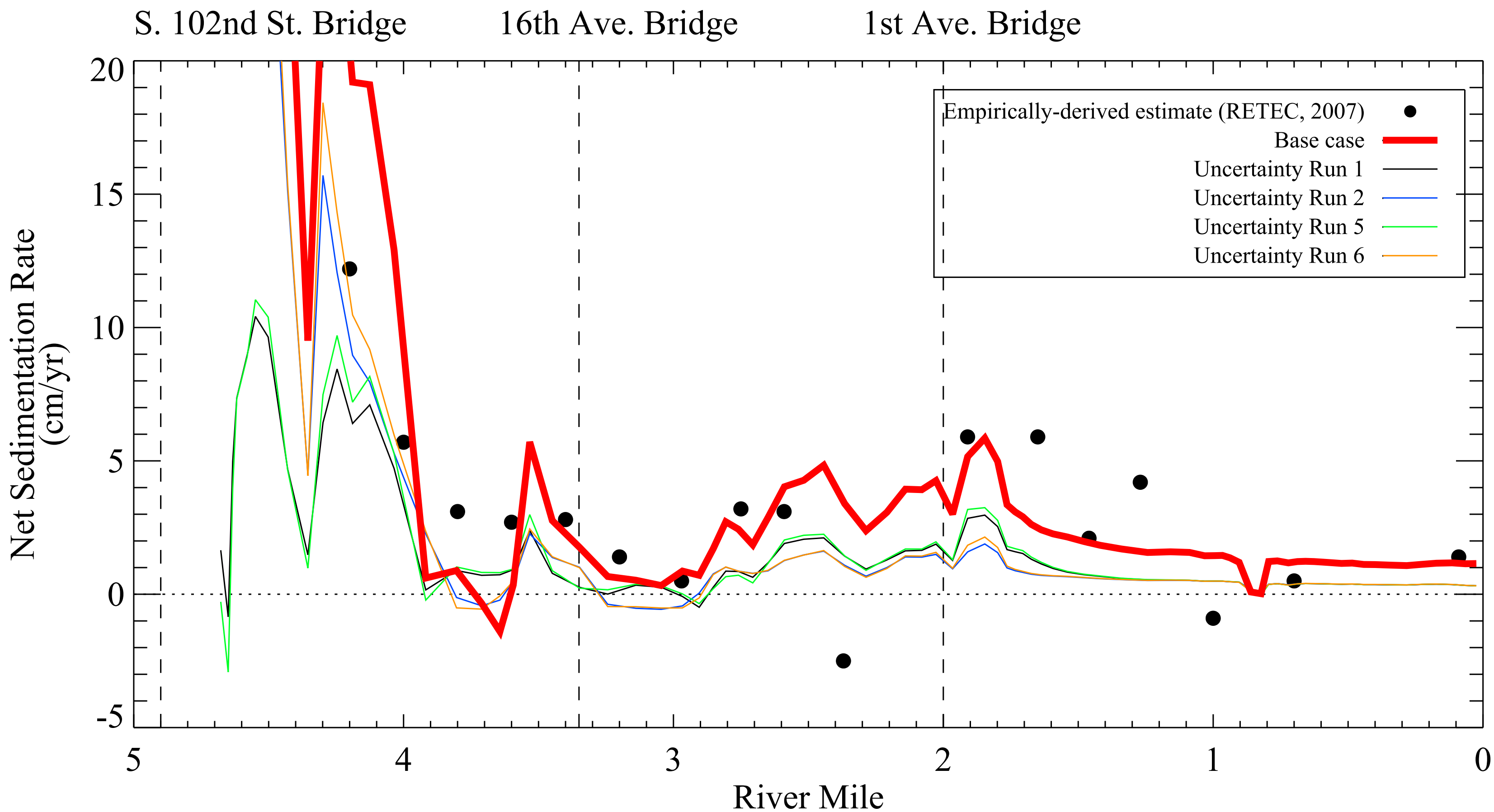

Figure D-56. Comparison of predicted and empirically-derived net sedimentation rates in the navigation channel for 6-year period: uncertainty runs 1, 2, 5, and 6.

fc/lz - \\Li\d_drive\RETldw\Analysis\Model_Outputs\sed_rate\plot_uncertainty_simulation_channel_4runs.pro
Thu May 01 15:23:13 2008

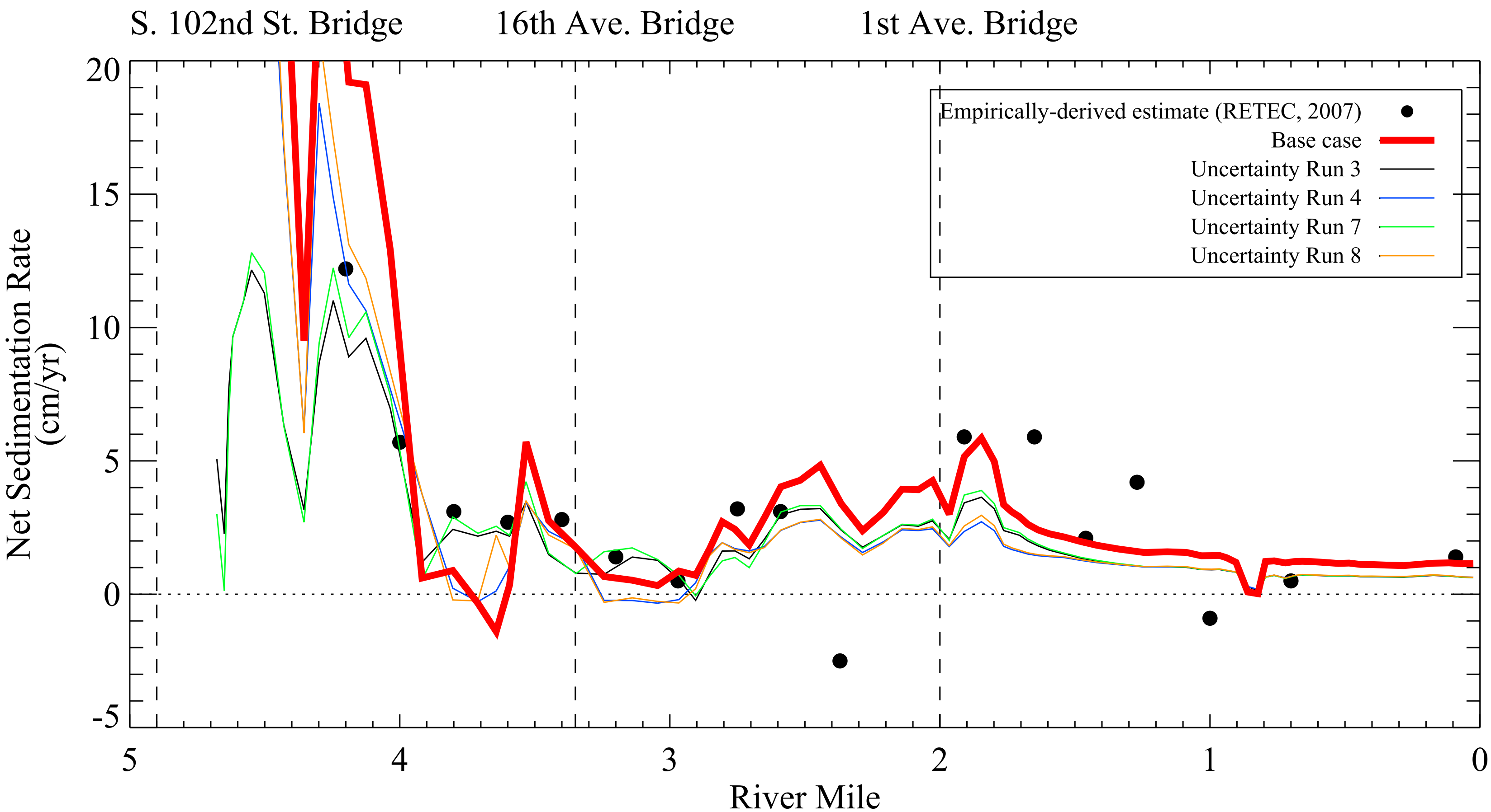

Figure D-57. Comparison of predicted and empirically-derived net sedimentation rates in the navigation channel for 6-year period: uncertainty runs 3, 4, 7, and 8.

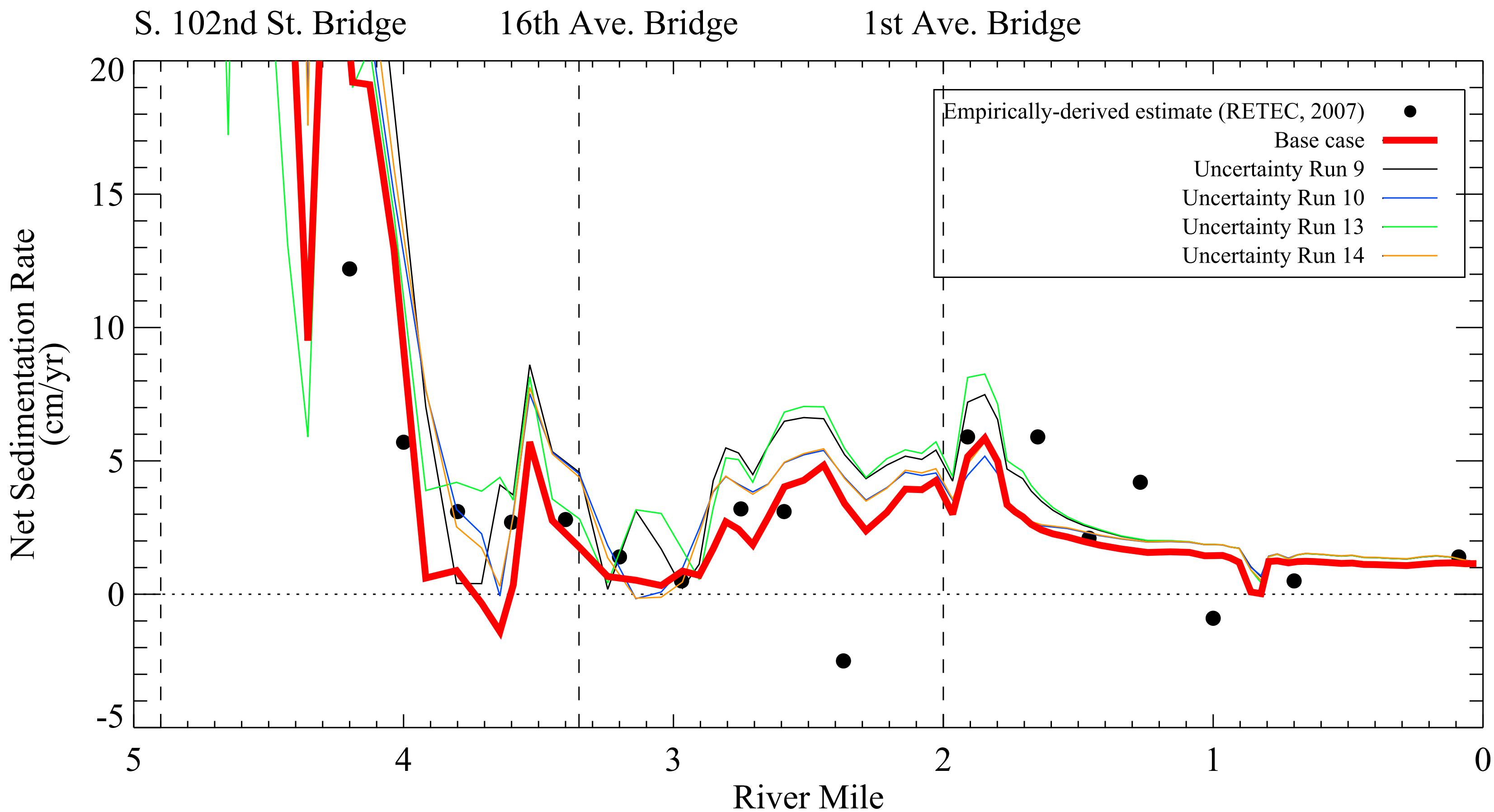

Figure D-58. Comparison of predicted and empirically-derived net sedimentation rates in the navigation channel for 6-year period: uncertainty runs 9, 10, 13, and 14.

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Thu May 01 15:27:22 2008

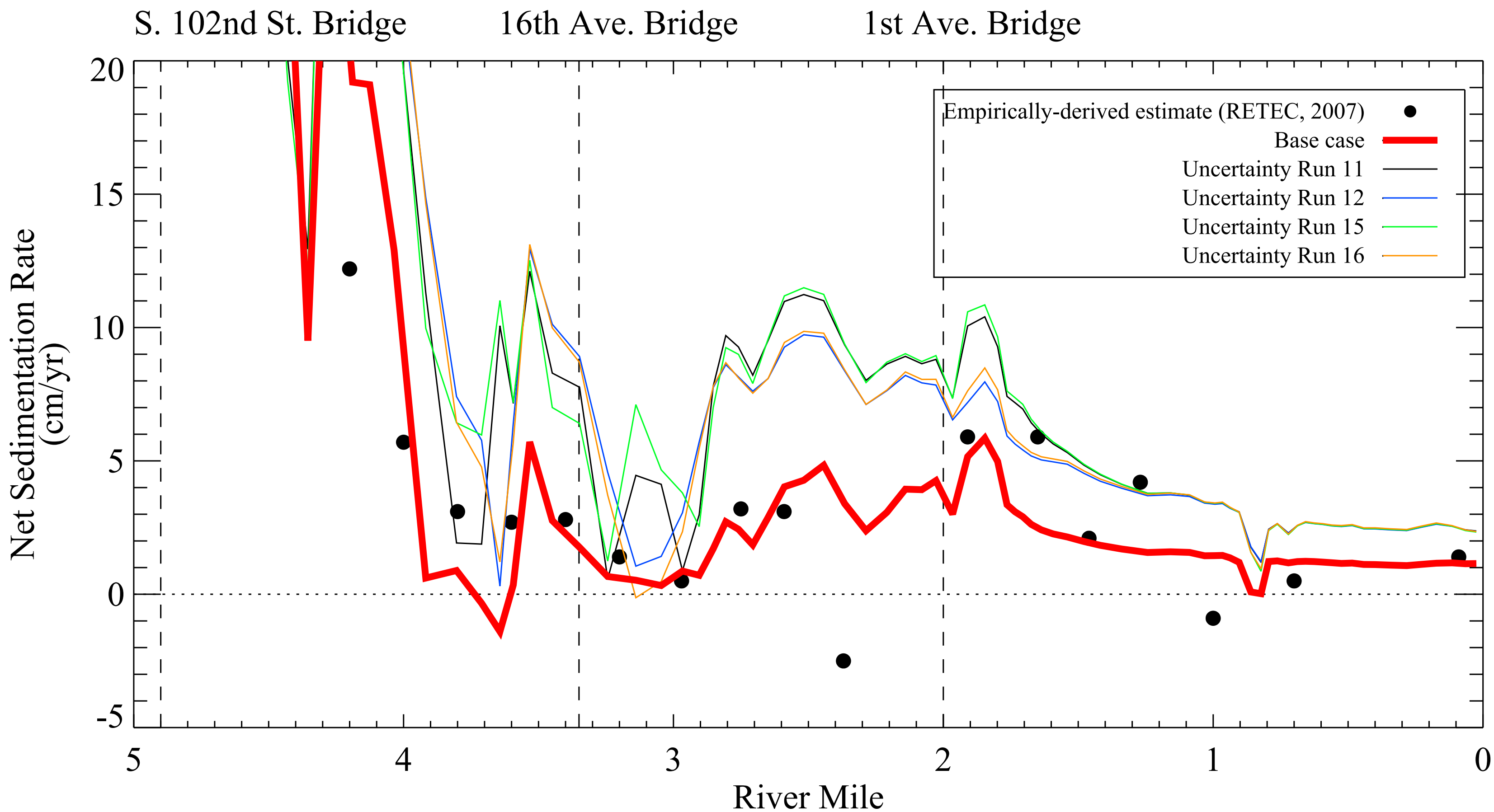

Figure D-59. Comparison of predicted and empirically-derived net sedimentation rates in the navigation channel for 6-year period: uncertainty runs 11, 12, 15, and 16.

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Thu May 01 15:28:33 2008

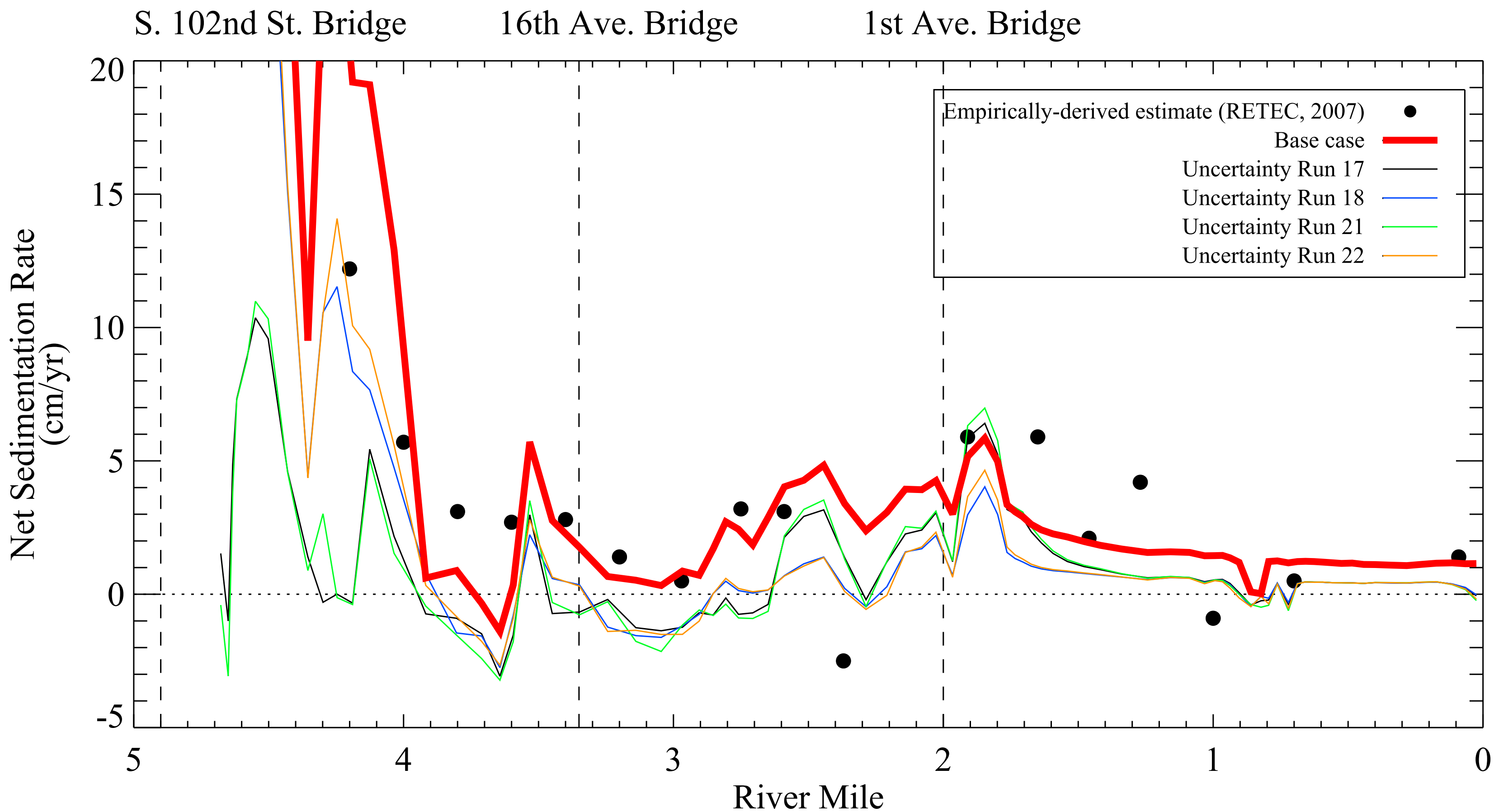

Figure D-60. Comparison of predicted and empirically-derived net sedimentation rates in the navigation channel for 6-year period: uncertainty runs 17, 18, 21, and 22.

fc/lz - \\Li\d_drive\RETldw\Analysis\Model_Outputs\sed_rate\plot_uncertainty_simulation_channel_4runs.pro
Thu May 01 15:29:38 2008

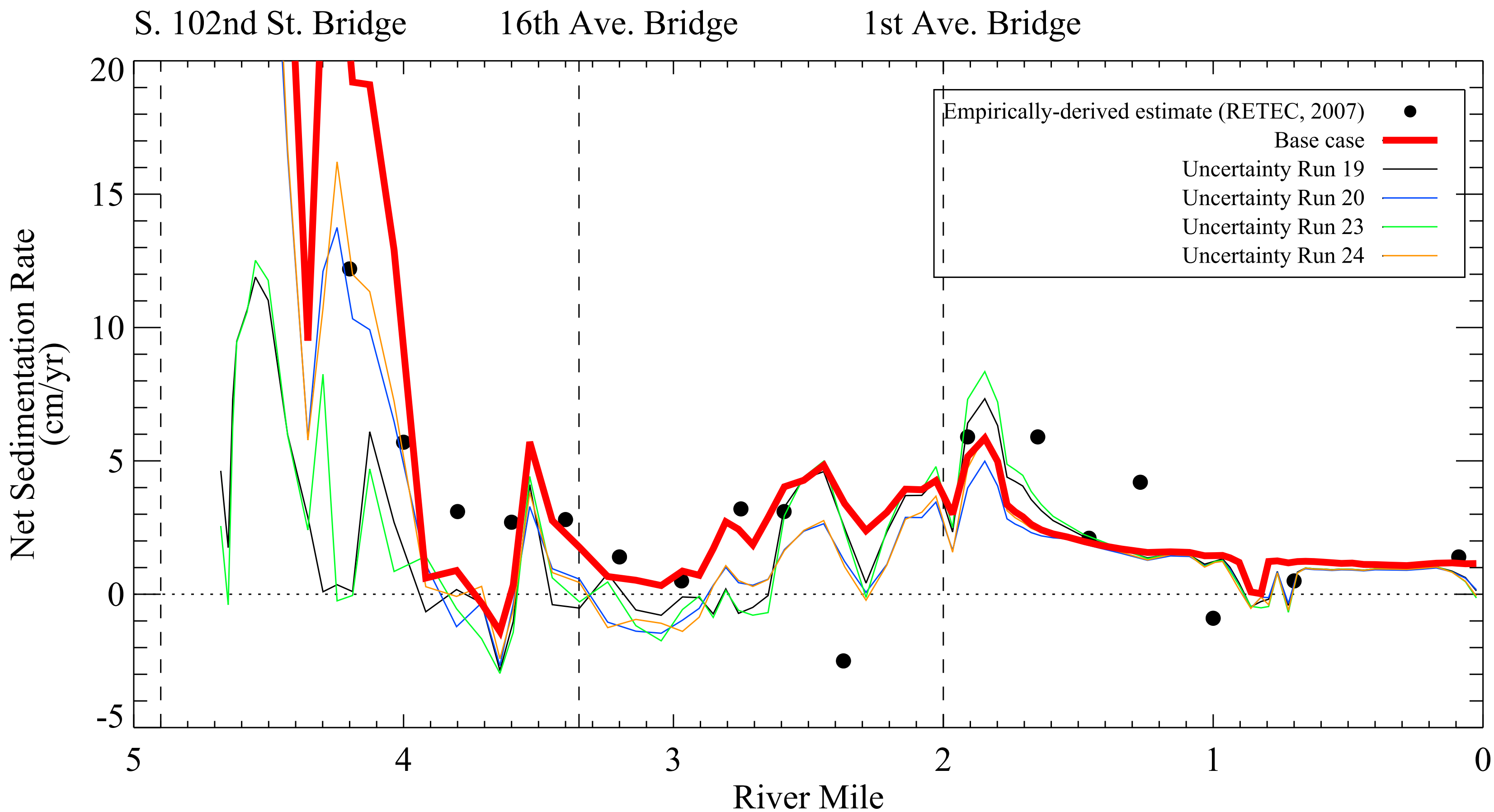

Figure D-61. Comparison of predicted and empirically-derived net sedimentation rates in the navigation channel for 6-year period: uncertainty runs 19, 20, 23, and 24.

fc/lz - \\Li\d_drive\RETldw\Analysis\Model_Outputs\sed_rate\plot_uncertainty_simulation_channel_4runs.pro
Thu May 01 15:30:23 2008

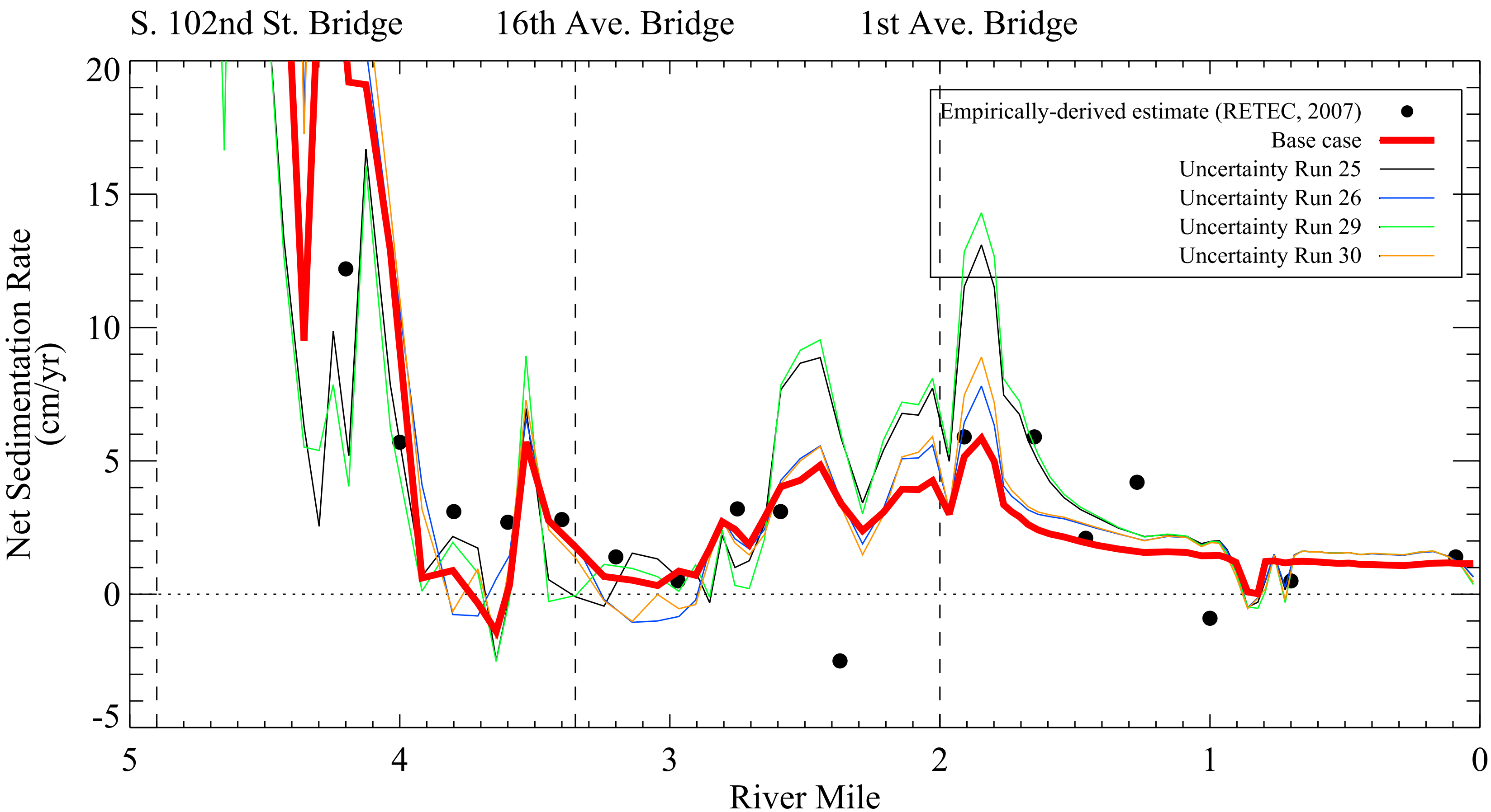

Figure D-62. Comparison of predicted and empirically-derived net sedimentation rates in the navigation channel for 6-year period: uncertainty runs 25, 26, 29, and 30.

fc/lz - \\Li\d_drive\RETldw\Analysis\Model_Outputs\sed_rate\plot_uncertainty_simulation_channel_4runs.pro
Thu May 01 15:31:20 2008

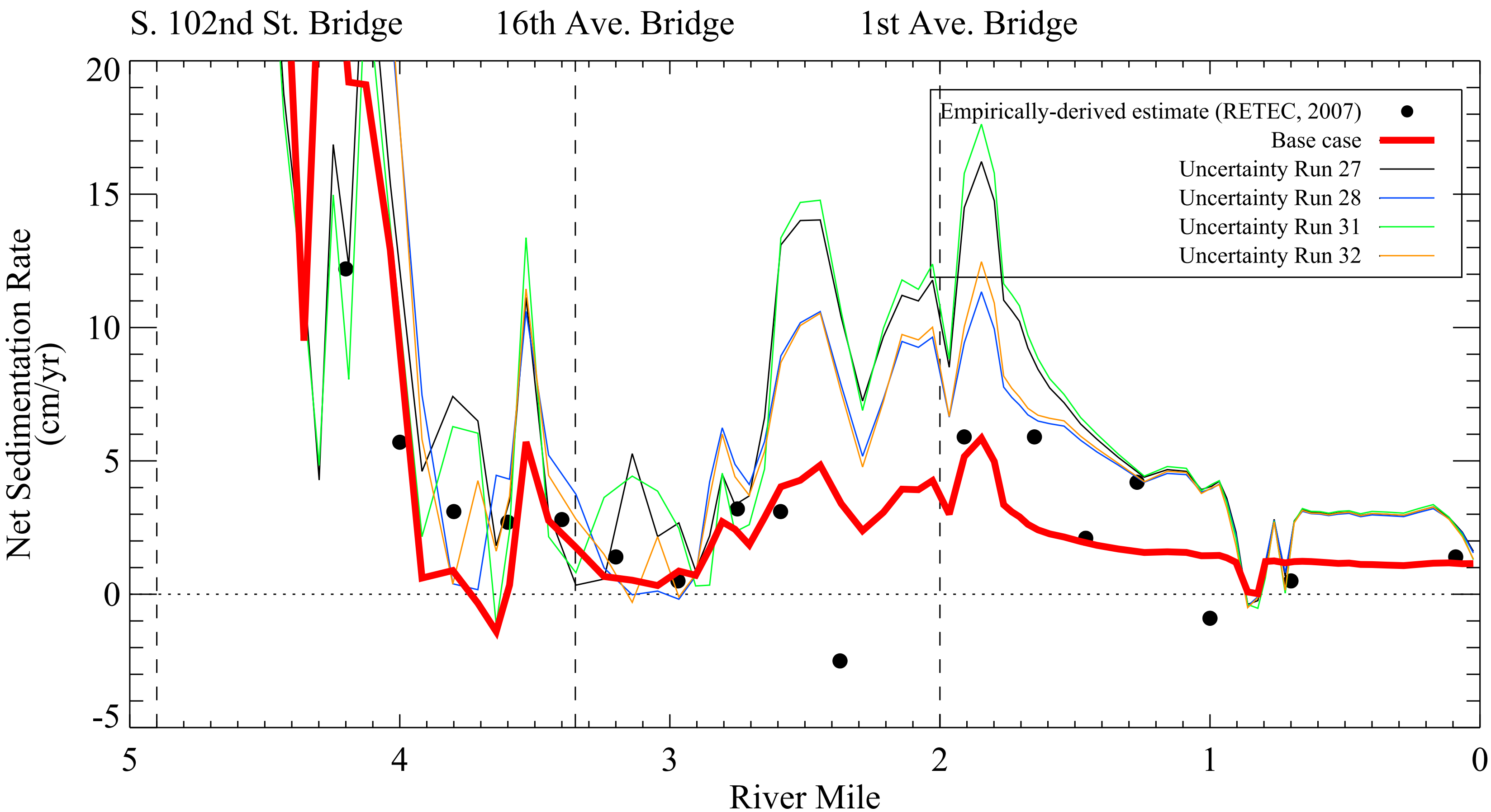

Figure D-63. Comparison of predicted and empirically-derived net sedimentation rates in the navigation channel for 6-year period: uncertainty runs 27, 28, 31, and 32.

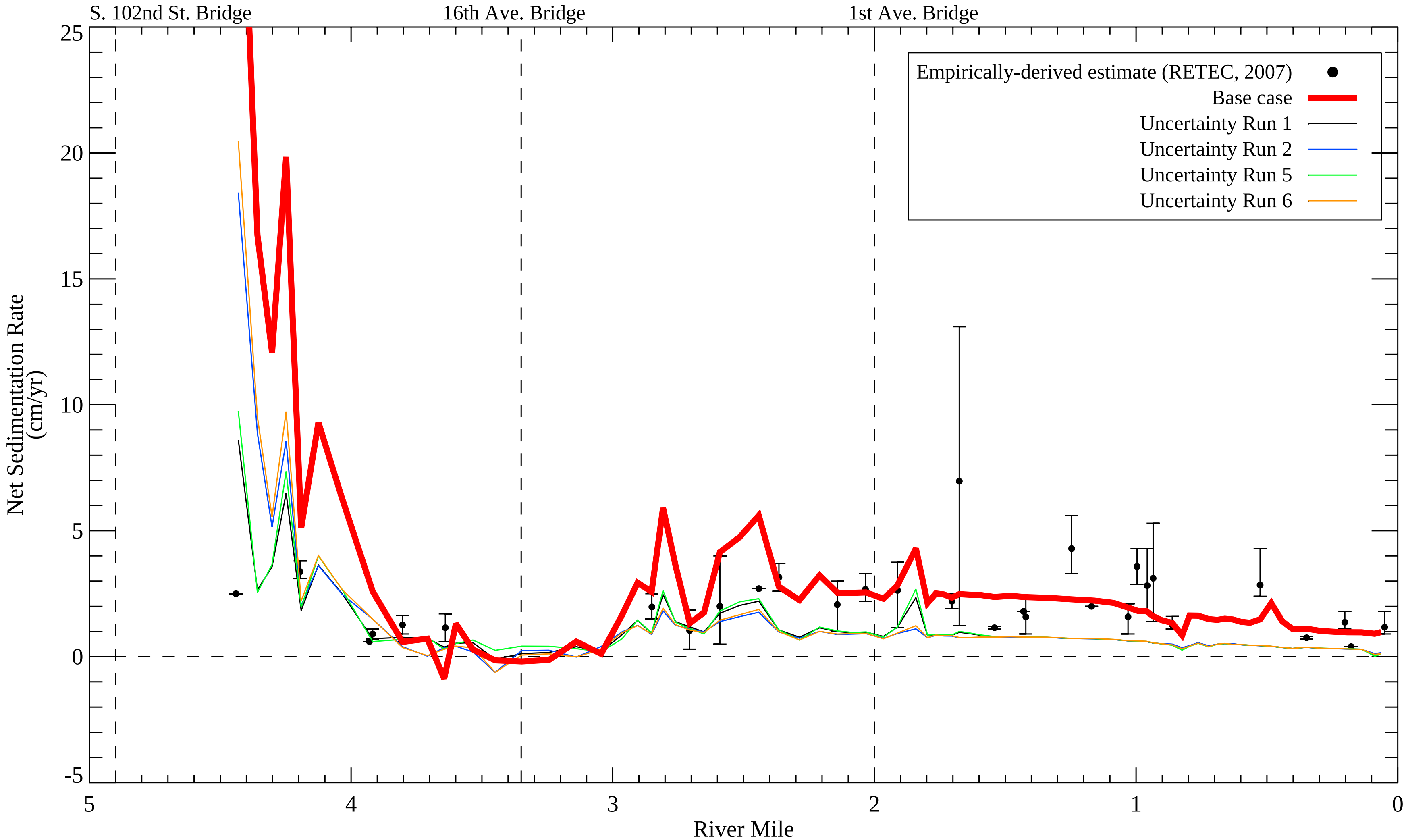

Figure D-64. Comparison of predicted and empirically-derived net sedimentation rates in the east bench areas: uncertainty runs 1, 2, 5, and 6.

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Thu Sep 18 16:38:40 2008

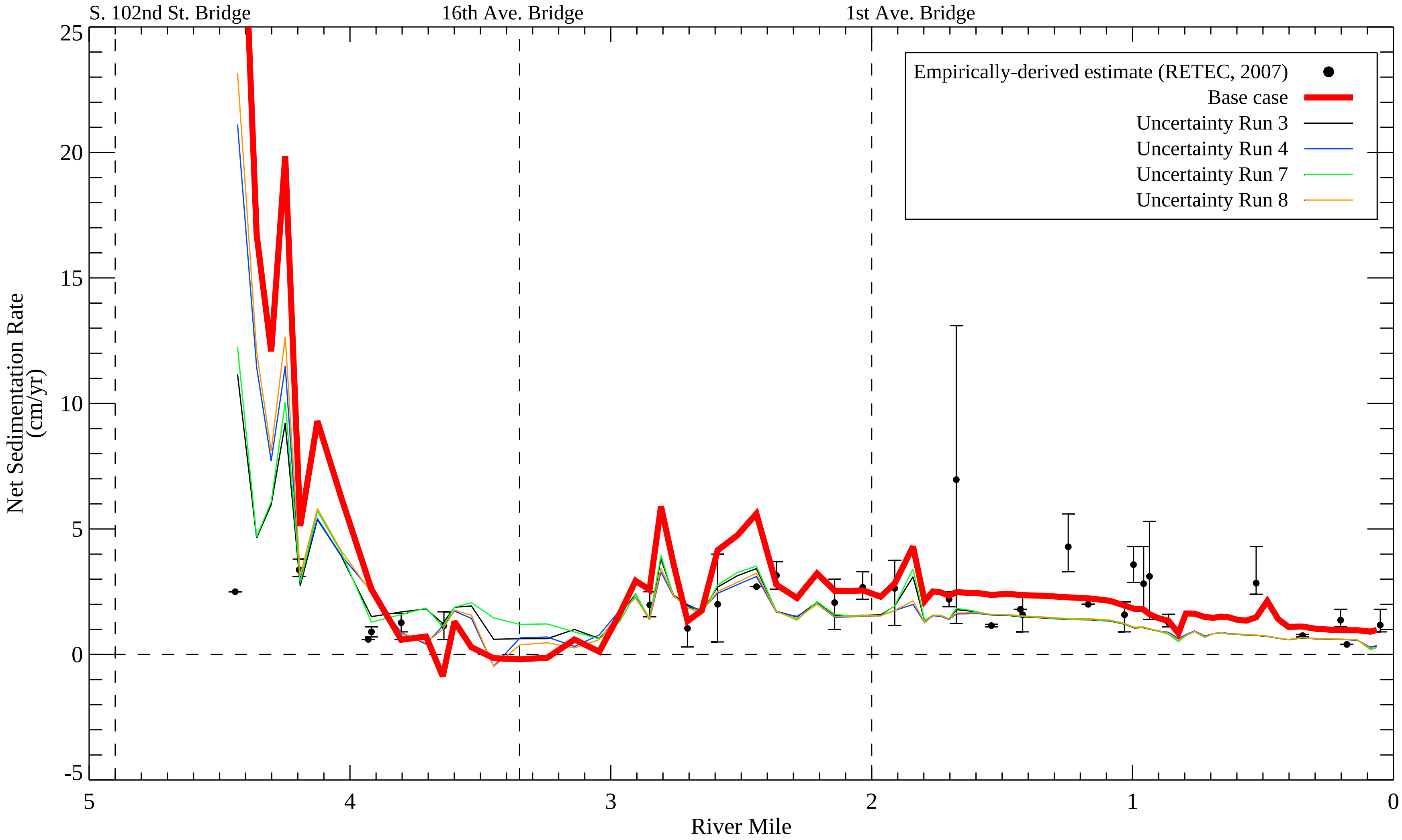

Figure D-65. Comparison of predicted and empirically-derived net sedimentation rates in the east bench areas: uncertainty runs 3, 4, 7, and 8.

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Thu Sep 18 16:41:23 2008

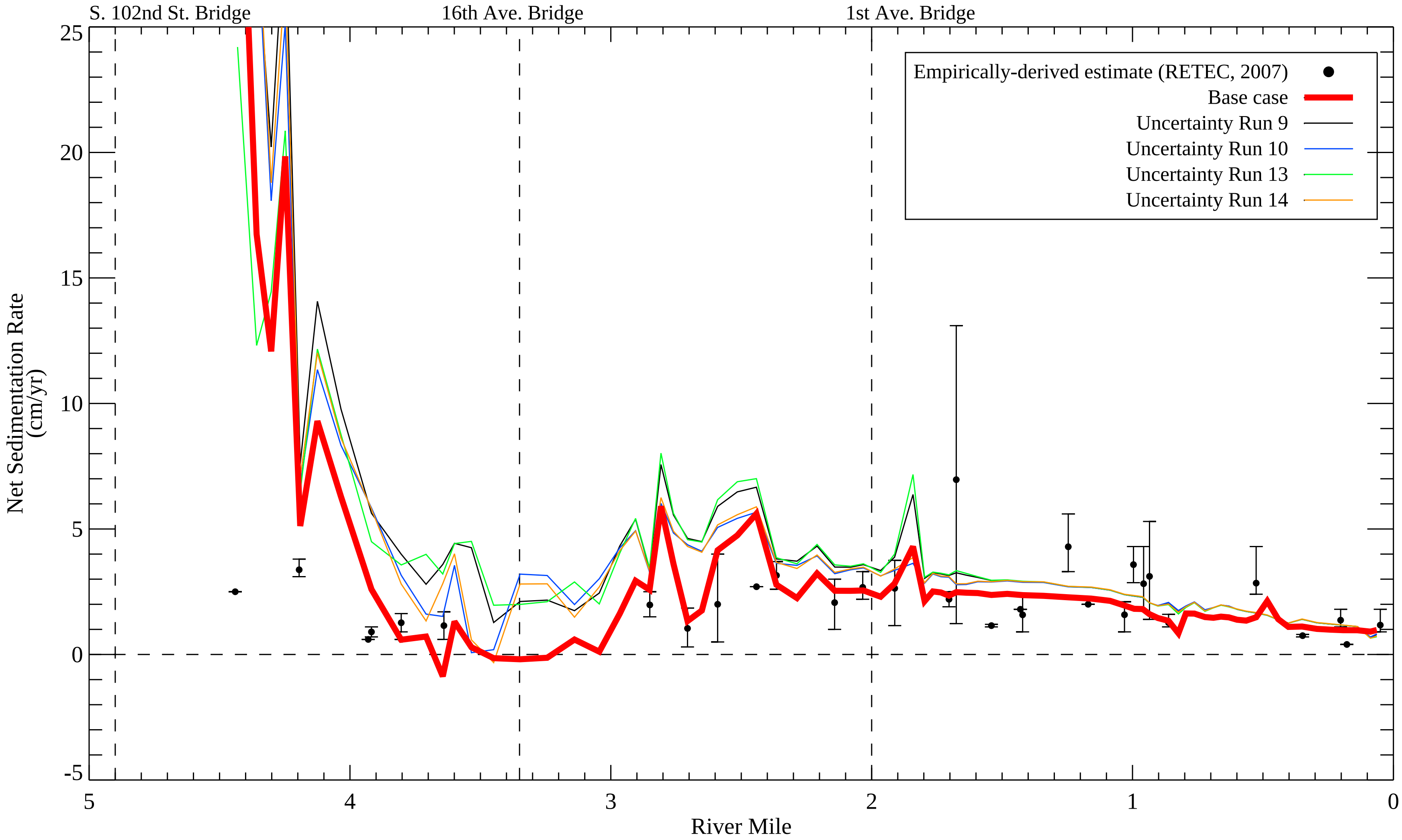

Figure D-66. Comparison of predicted and empirically-derived net sedimentation rates in the east bench areas: uncertainty runs 9, 10, 13, and 14.

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Thu Sep 18 16:42:58 2008

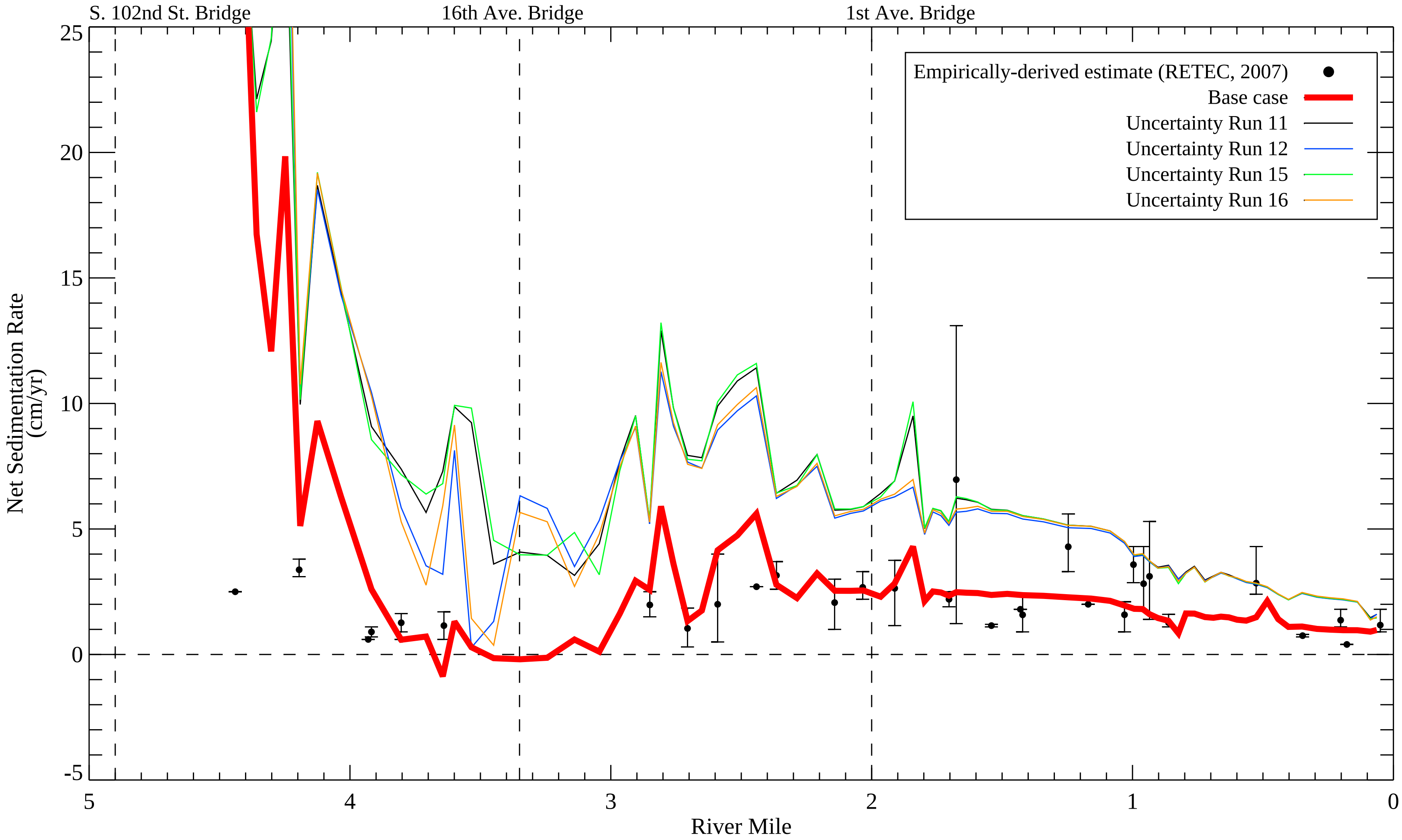

Figure D-67. Comparison of predicted and empirically-derived net sedimentation rates in the east bench areas: uncertainty runs 11, 12, 15, and 16.

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Thu Sep 18 16:44:27 2008

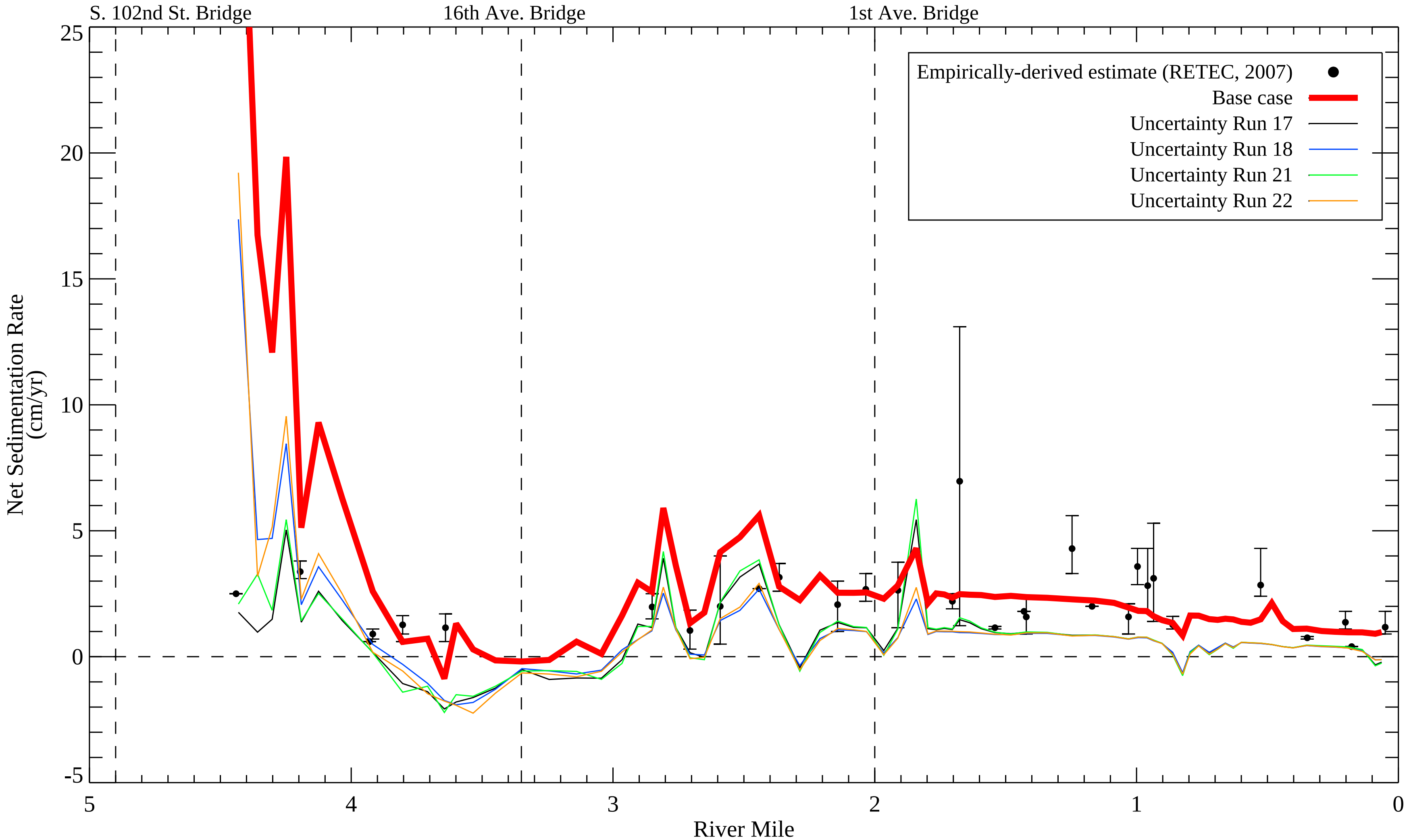

Figure D-68. Comparison of predicted and empirically-derived net sedimentation rates in the east bench areas: uncertainty runs 17, 18, 21, and 22.

lz/fc - \\Li\d_drive\RETldw\Analysis\Model_Outputs\sed_rate\plot_uncertainty_simulation_bench_4runs_rpt.pro
Thu Sep 18 16:46:03 2008

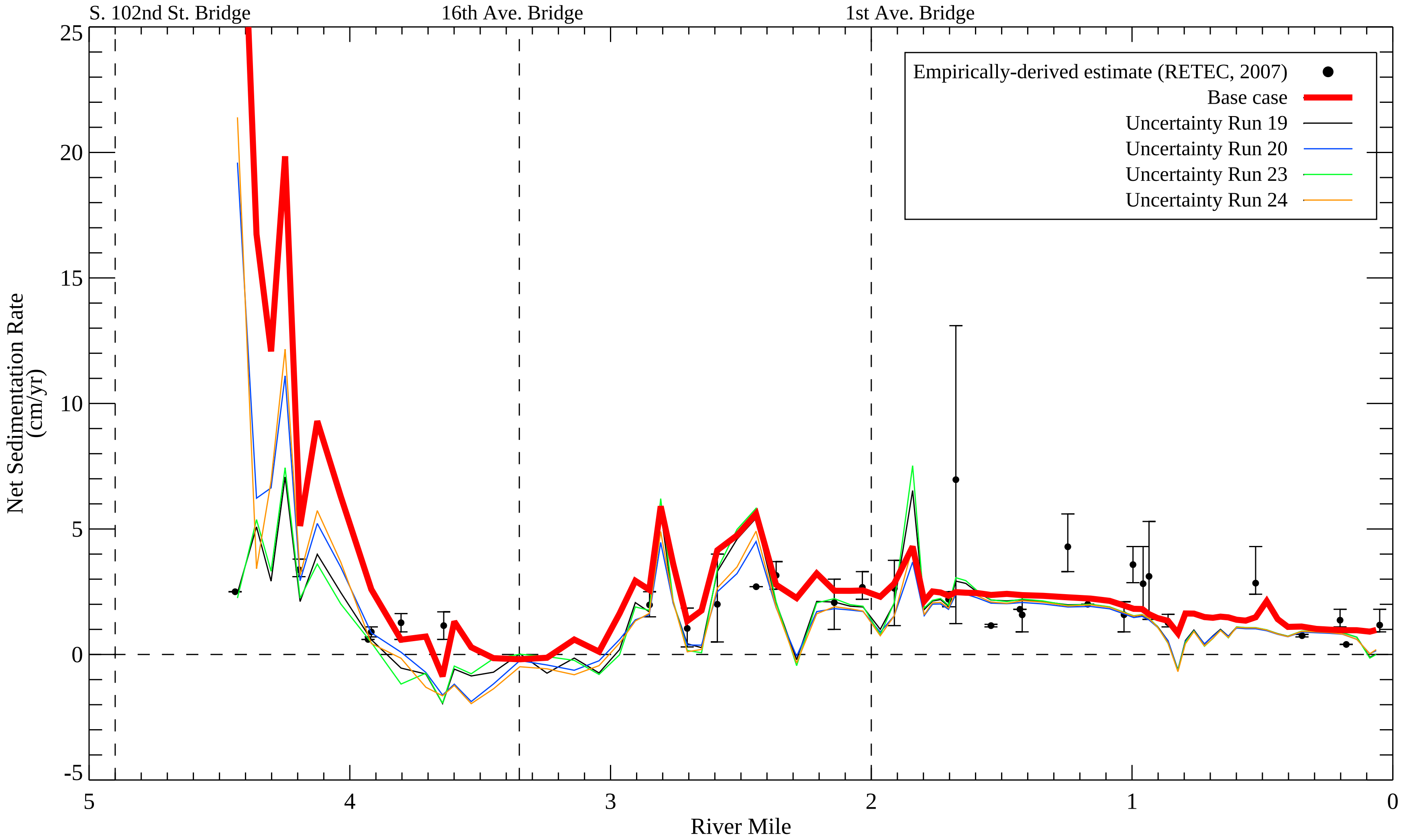

Figure D-69. Comparison of predicted and empirically-derived net sedimentation rates in the east bench areas: uncertainty runs 19, 20, 23, and 24.

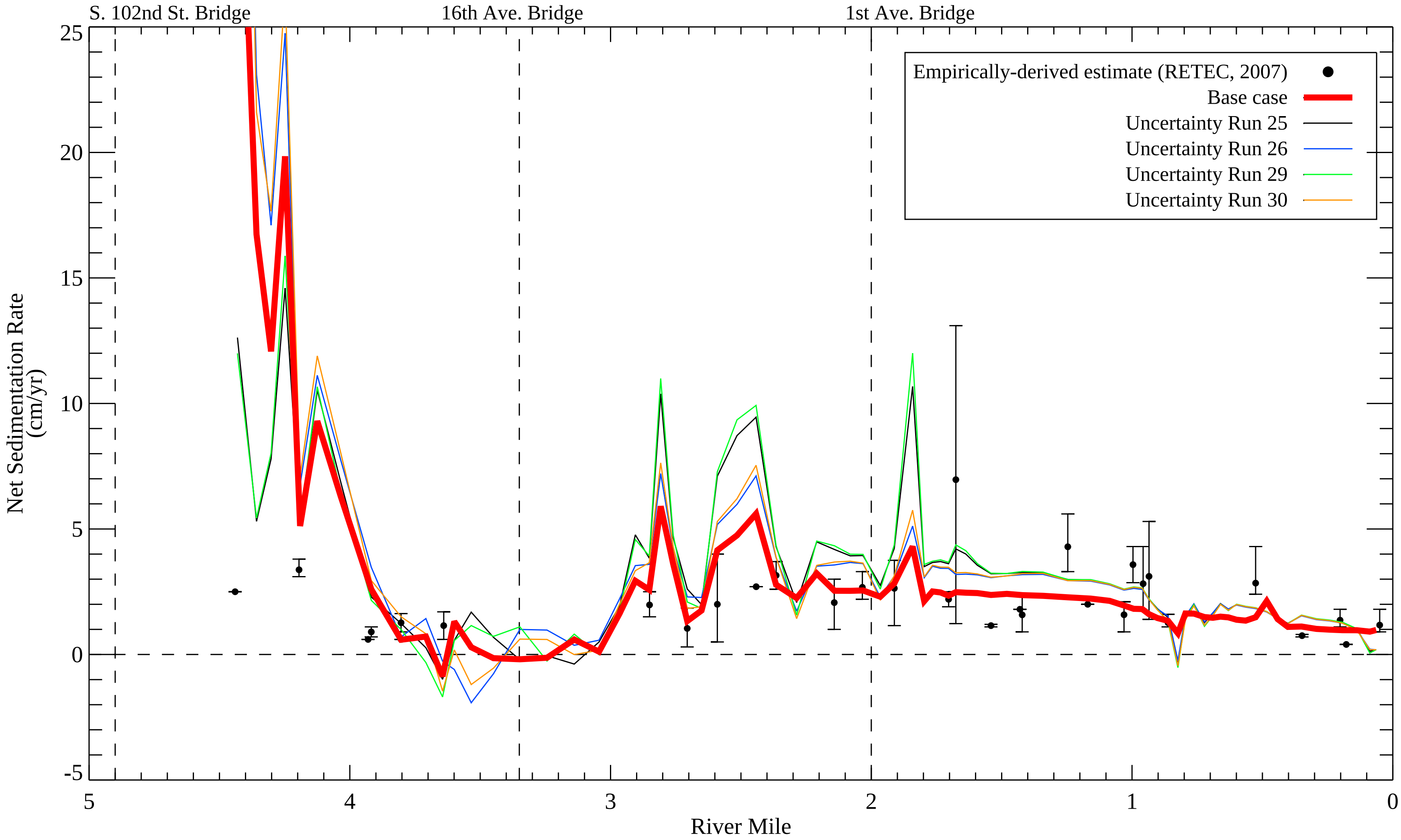

Figure D-70. Comparison of predicted and empirically-derived net sedimentation rates in the east bench areas: uncertainty runs 25, 26, 29, and 30.

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Thu Sep 18 16:49:54 2008

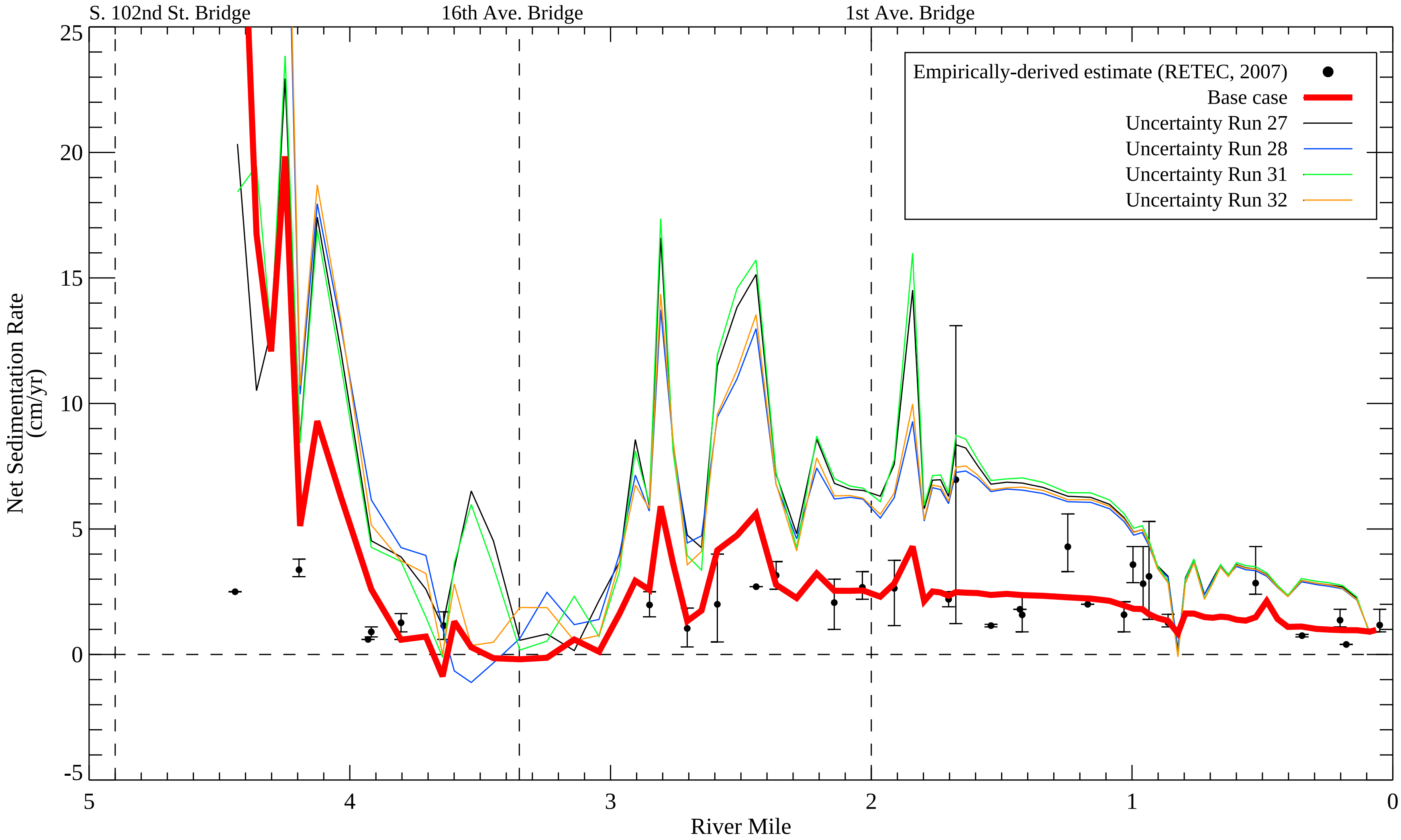

Figure D-71. Comparison of predicted and empirically-derived net sedimentation rates in the east bench areas: uncertainty runs 27, 28, 31, and 32.

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Thu Sep 18 16:51:44 2008

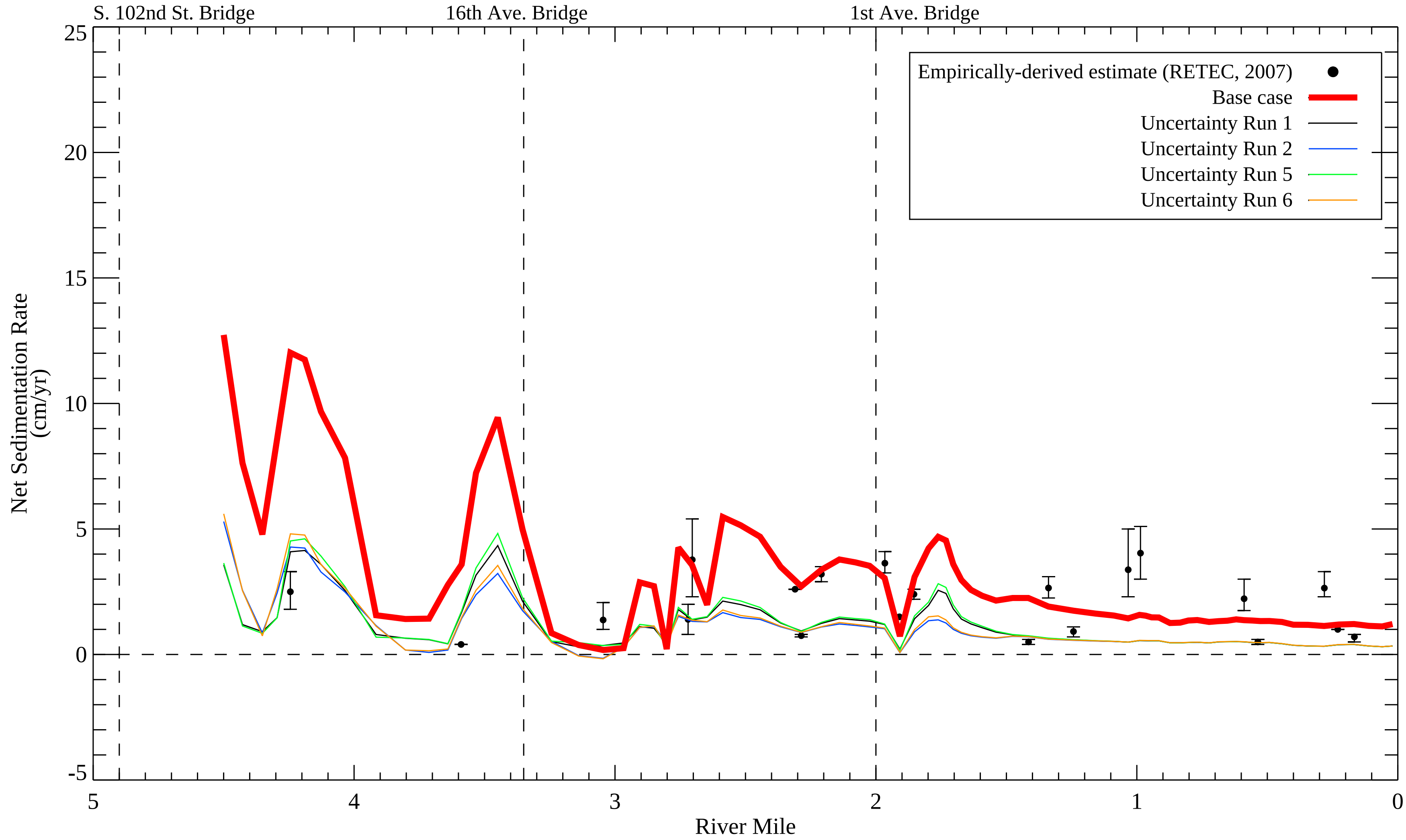

Figure D-72. Comparison of predicted and empirically-derived net sedimentation rates in the west bench areas: uncertainty runs 1, 2, 5, and 6.

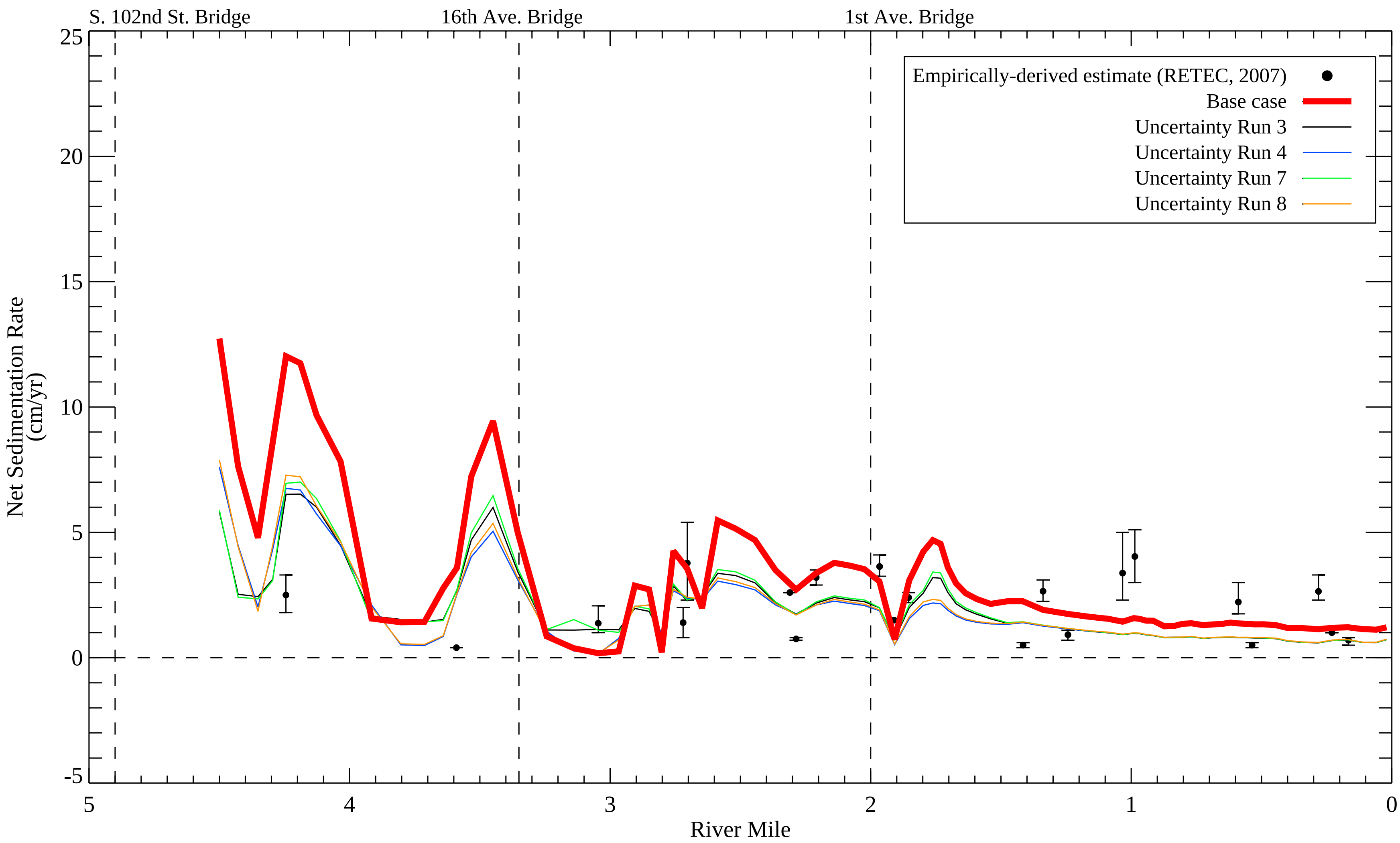

Figure D-73. Comparison of predicted and empirically-derived net sedimentation rates in the west bench areas: uncertainty runs 3, 4, 7, and 8.

lz/fc - \\Li\d_drive\RETldw\Analysis\Model_Outputs\sed_rate\plot_uncertainty_simulation_bench_4runs_rpt.pro
Thu Sep 18 16:41:46 2008

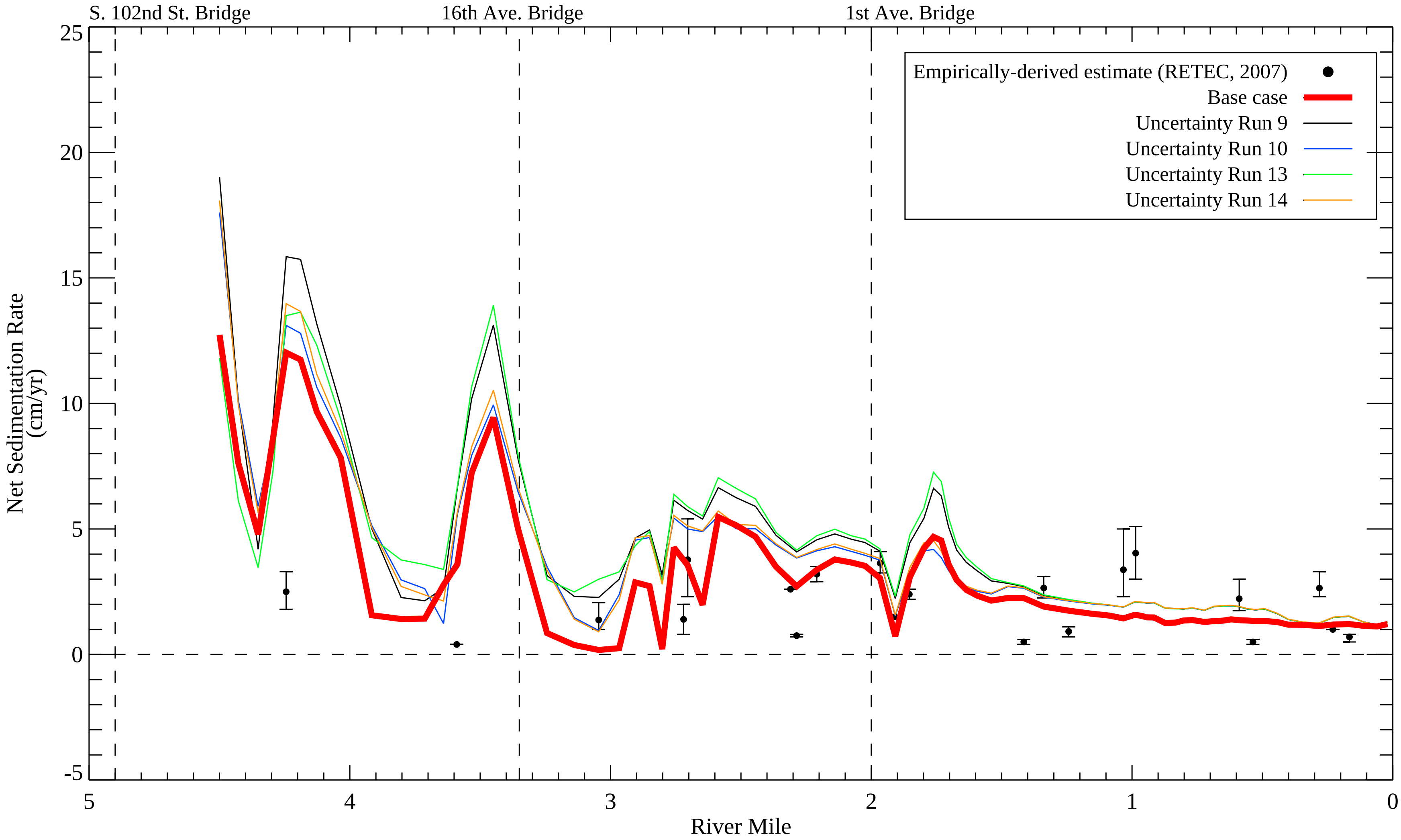

Figure D-74. Comparison of predicted and empirically-derived net sedimentation rates in the west bench areas: uncertainty runs 9, 10, 13, and 14.

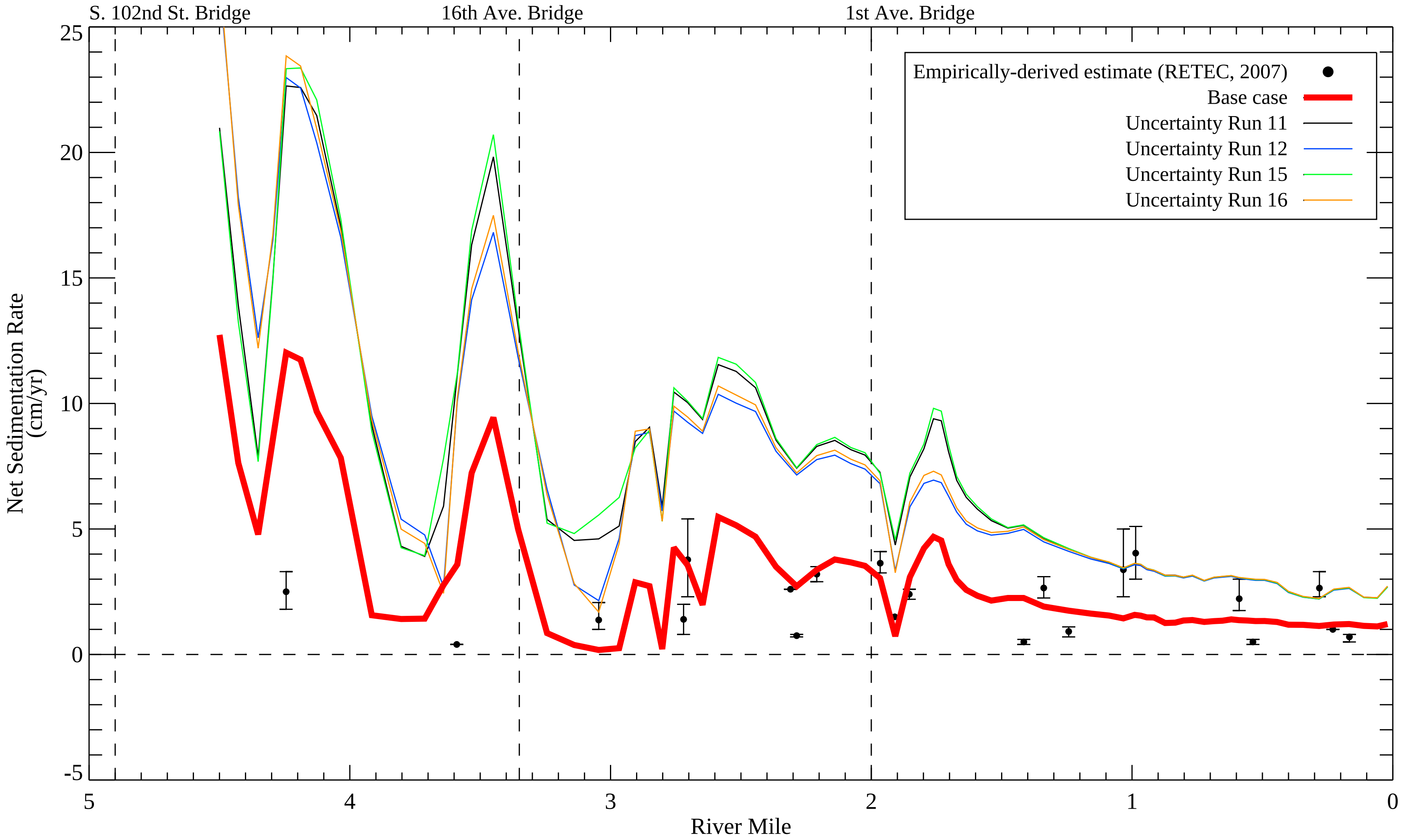

Figure D-75. Comparison of predicted and empirically-derived net sedimentation rates in the west bench areas: uncertainty runs 11, 12, 15, and 16.

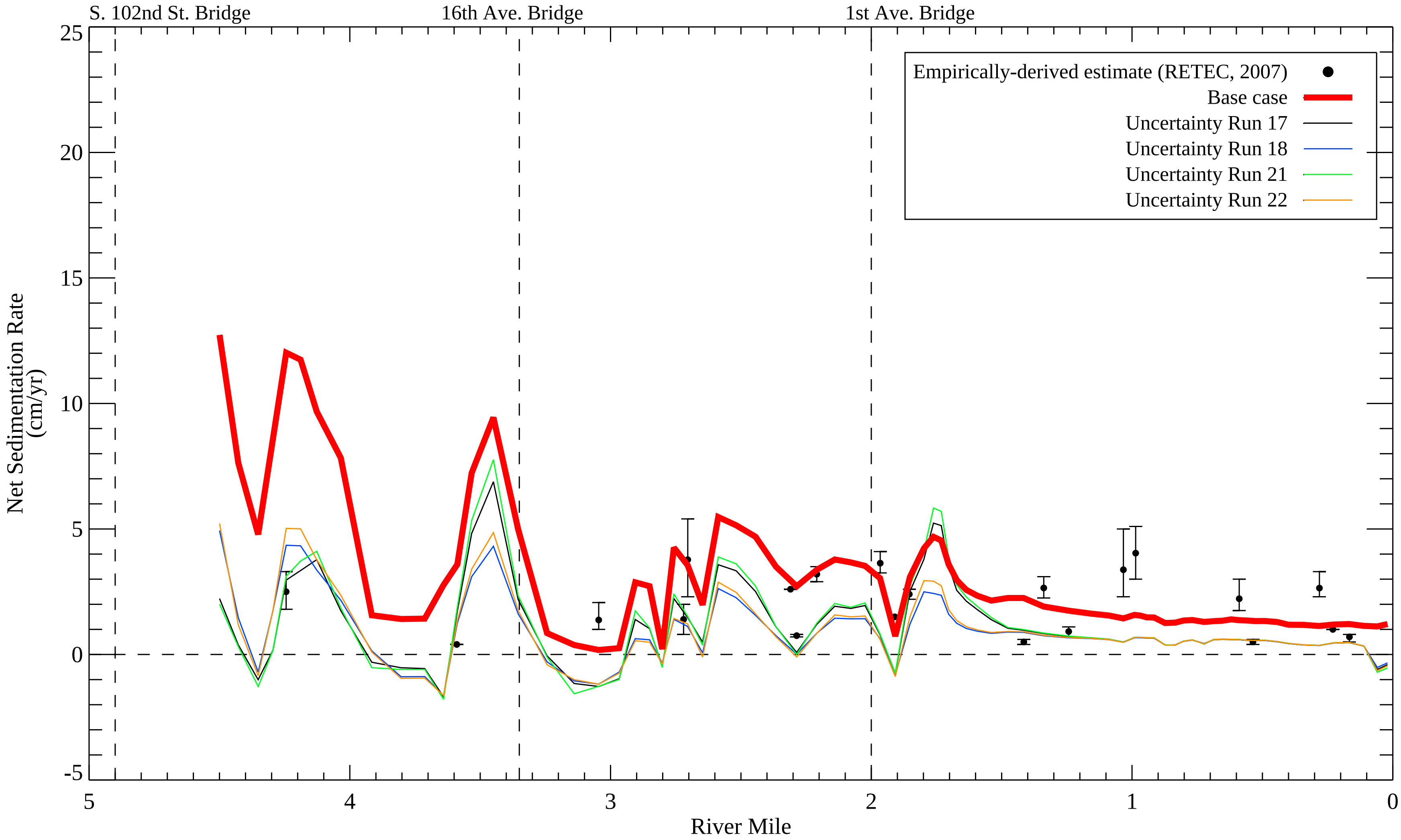

Figure D-76. Comparison of predicted and empirically-derived net sedimentation rates in the west bench areas: uncertainty runs 17, 18, 21, and 22.

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Thu Sep 18 16:46:47 2008

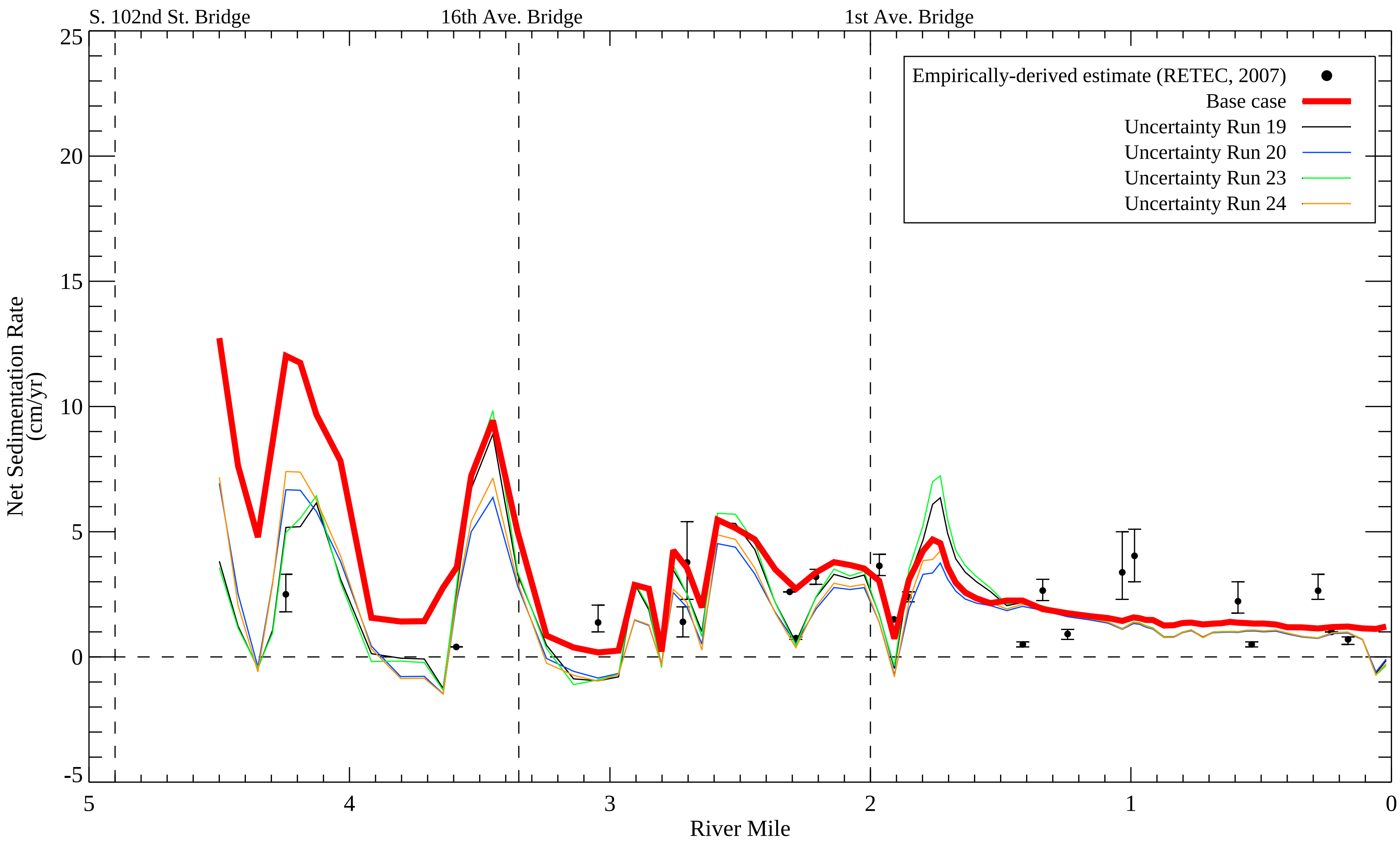

Figure D-77. Comparison of predicted and empirically-derived net sedimentation rates in the west bench areas: uncertainty runs 19, 20, 23, and 24.

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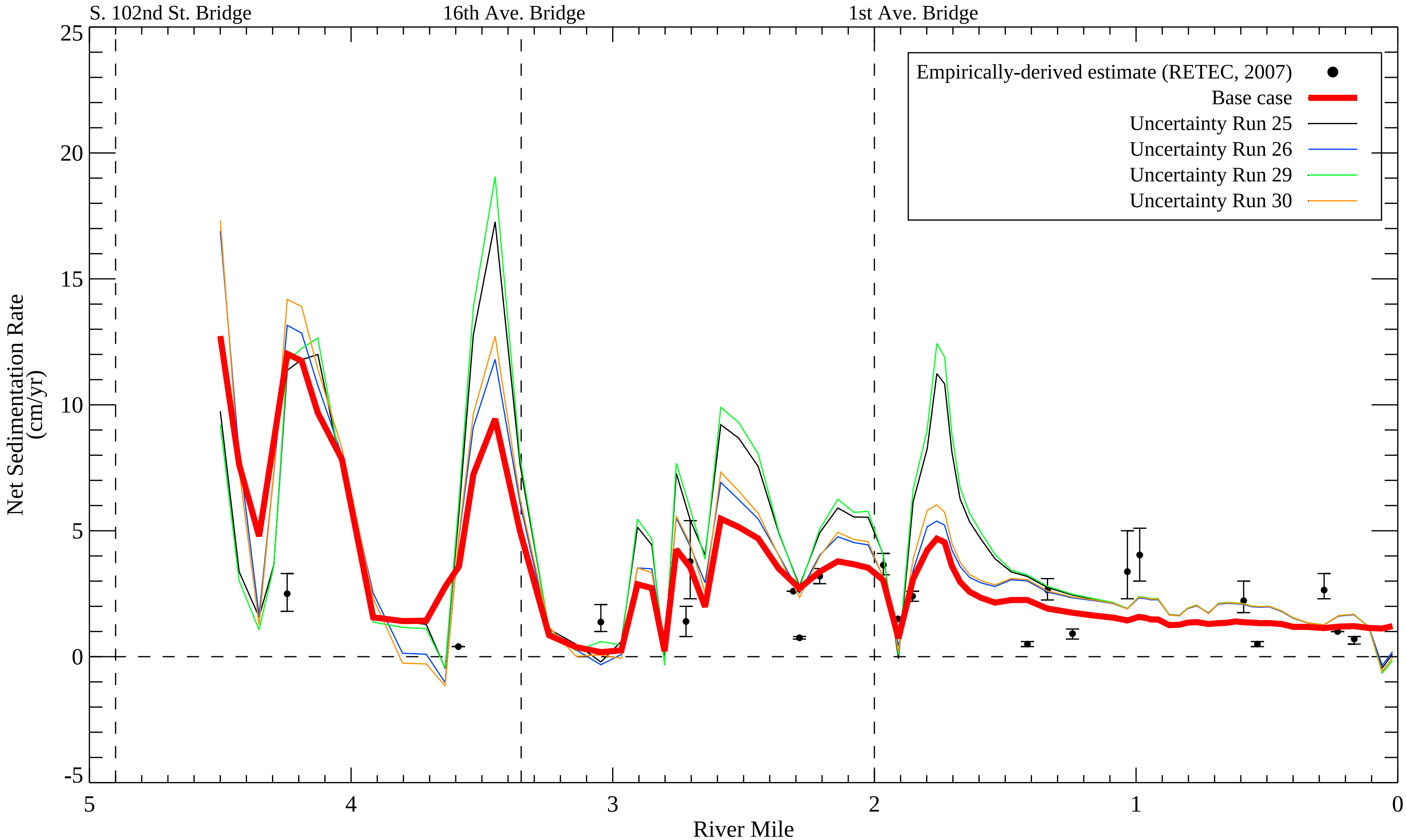

Figure D-78. Comparison of predicted and empirically-derived net sedimentation rates in the west bench areas: uncertainty runs 25, 26, 29, and 30.

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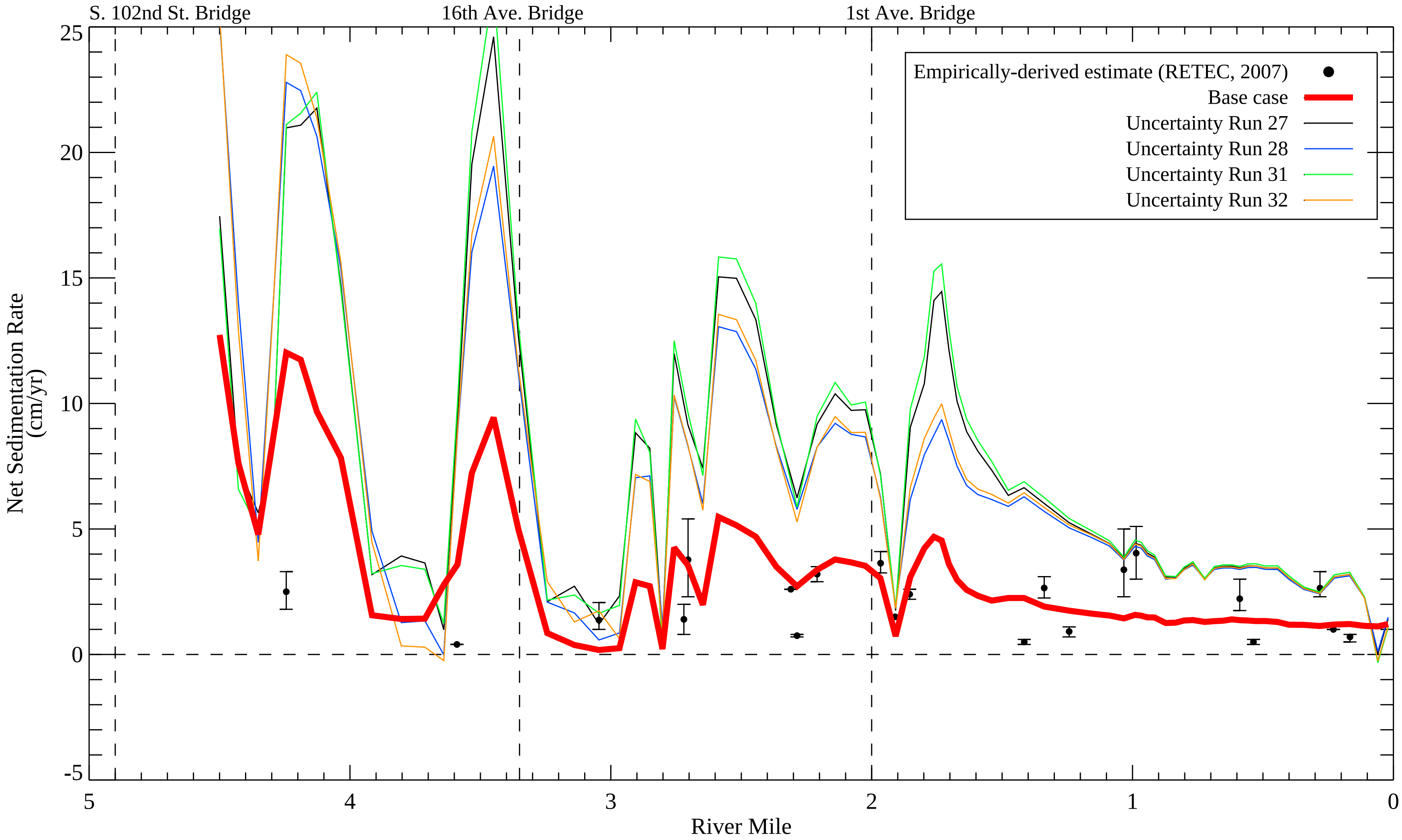

Figure D-79. Comparison of predicted and empirically-derived net sedimentation rates in the west bench areas: uncertainty runs 27, 28, 31, and 32.

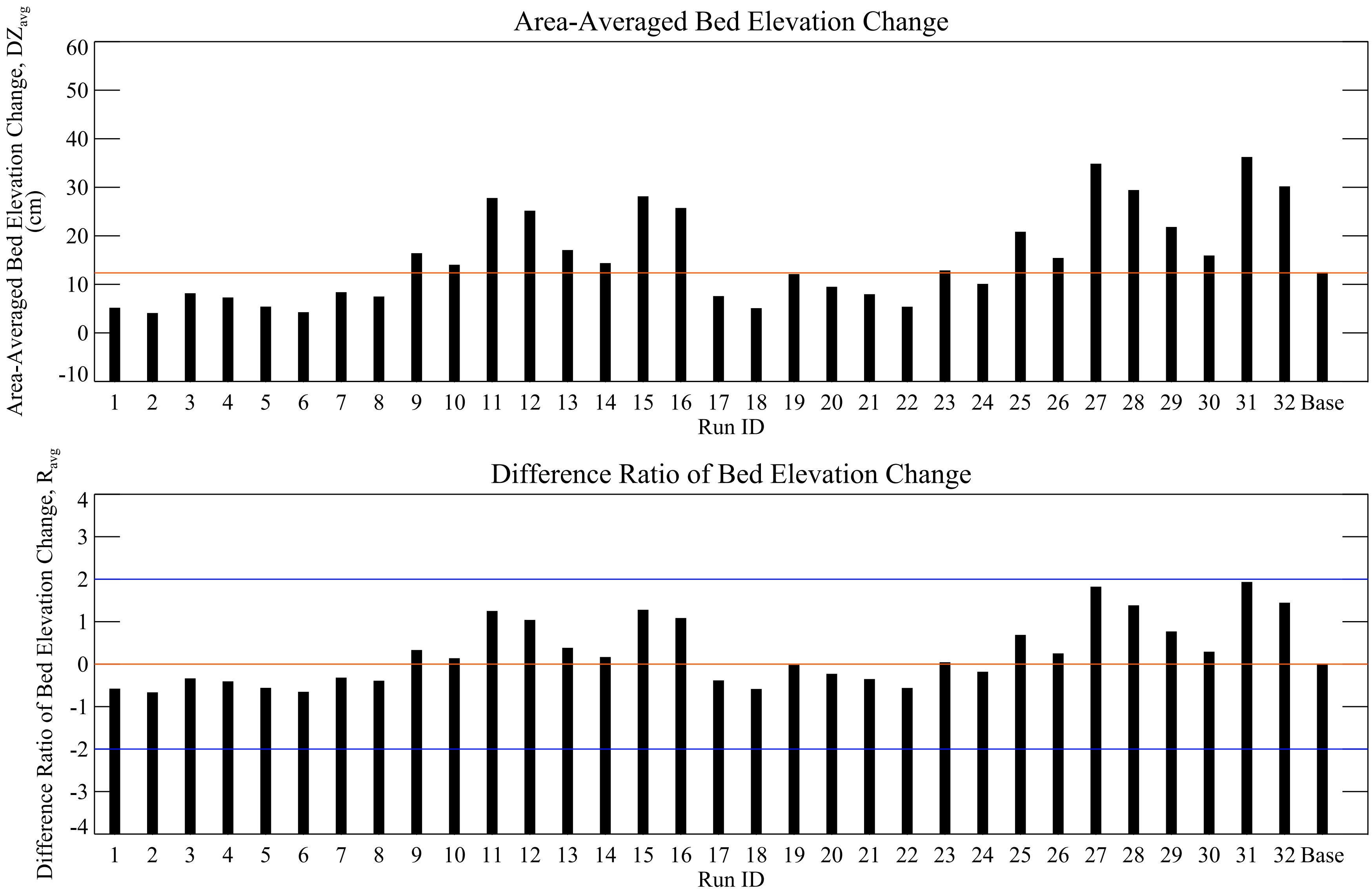

Figure D-80. Average difference ratio and average bed elevation change for zone 1: RM 0 to 2.2, navigation channel.

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Fri Apr 25 17:01:35 2008

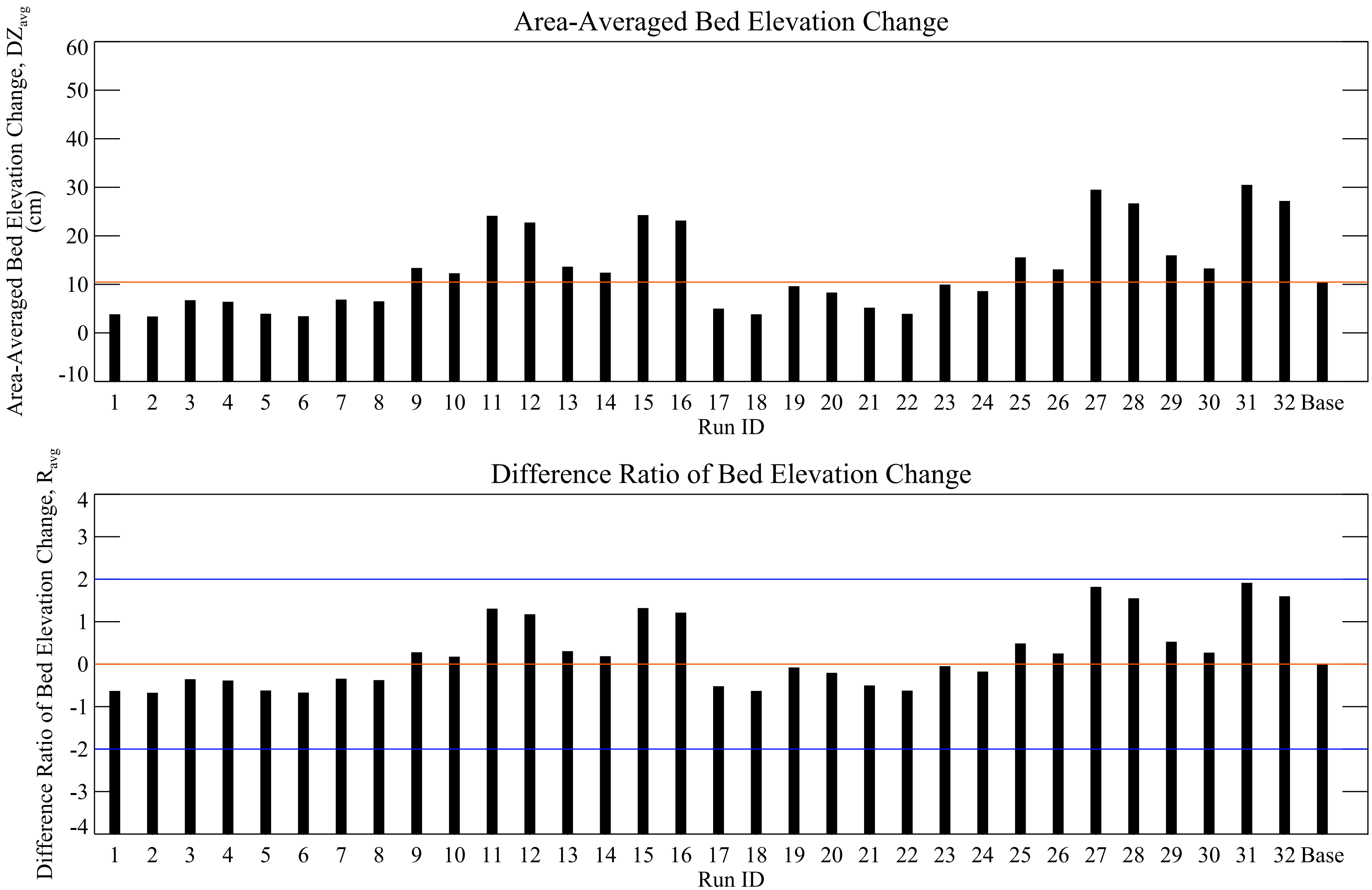

Figure D-81. Average difference ratio and average bed elevation change for zone 2: RM 0 to 2.2, east bench area.

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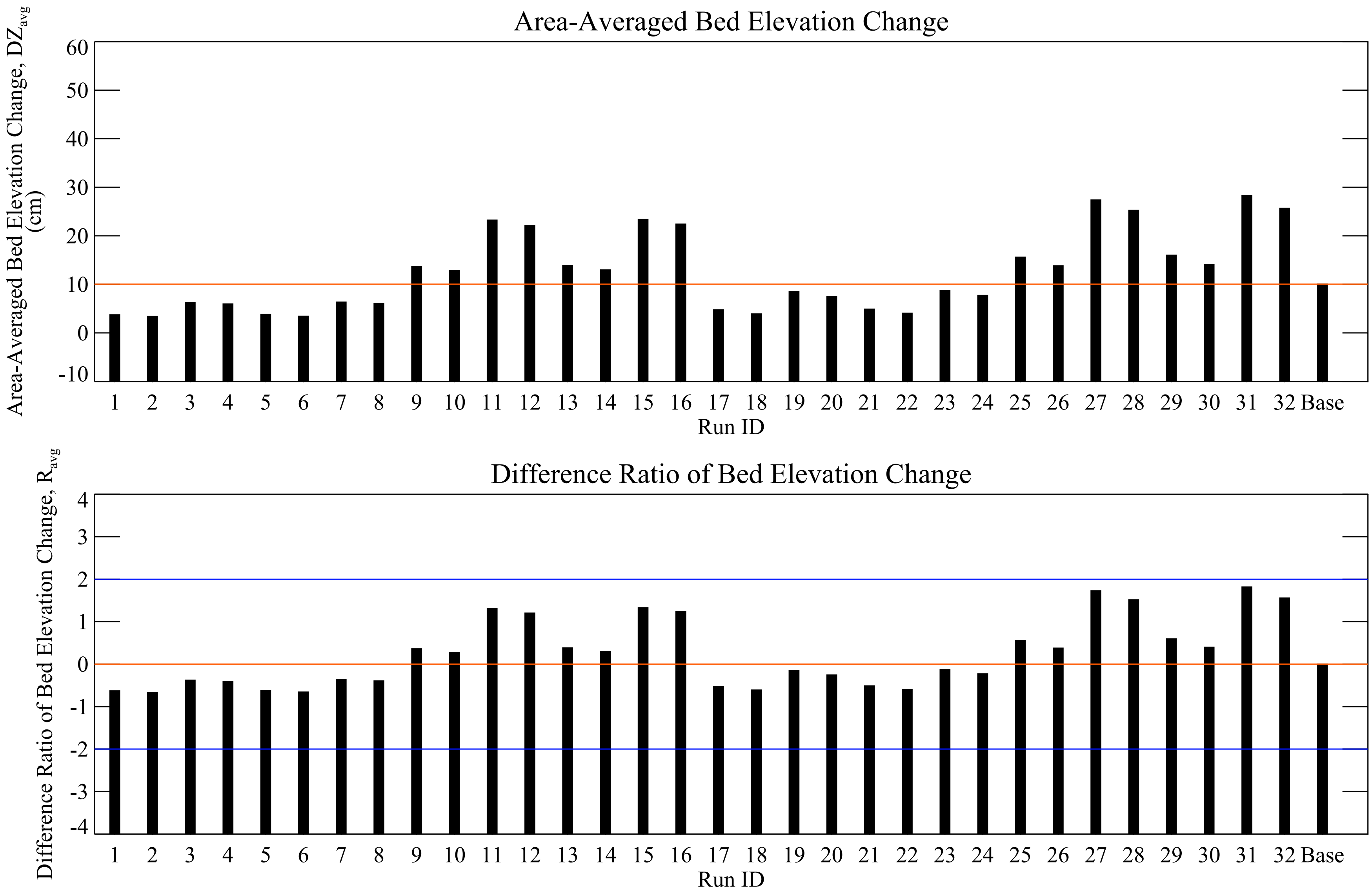

Figure D-82. Average difference ratio and average bed elevation change for zone 3: RM 0 to 2.2, west bench area.

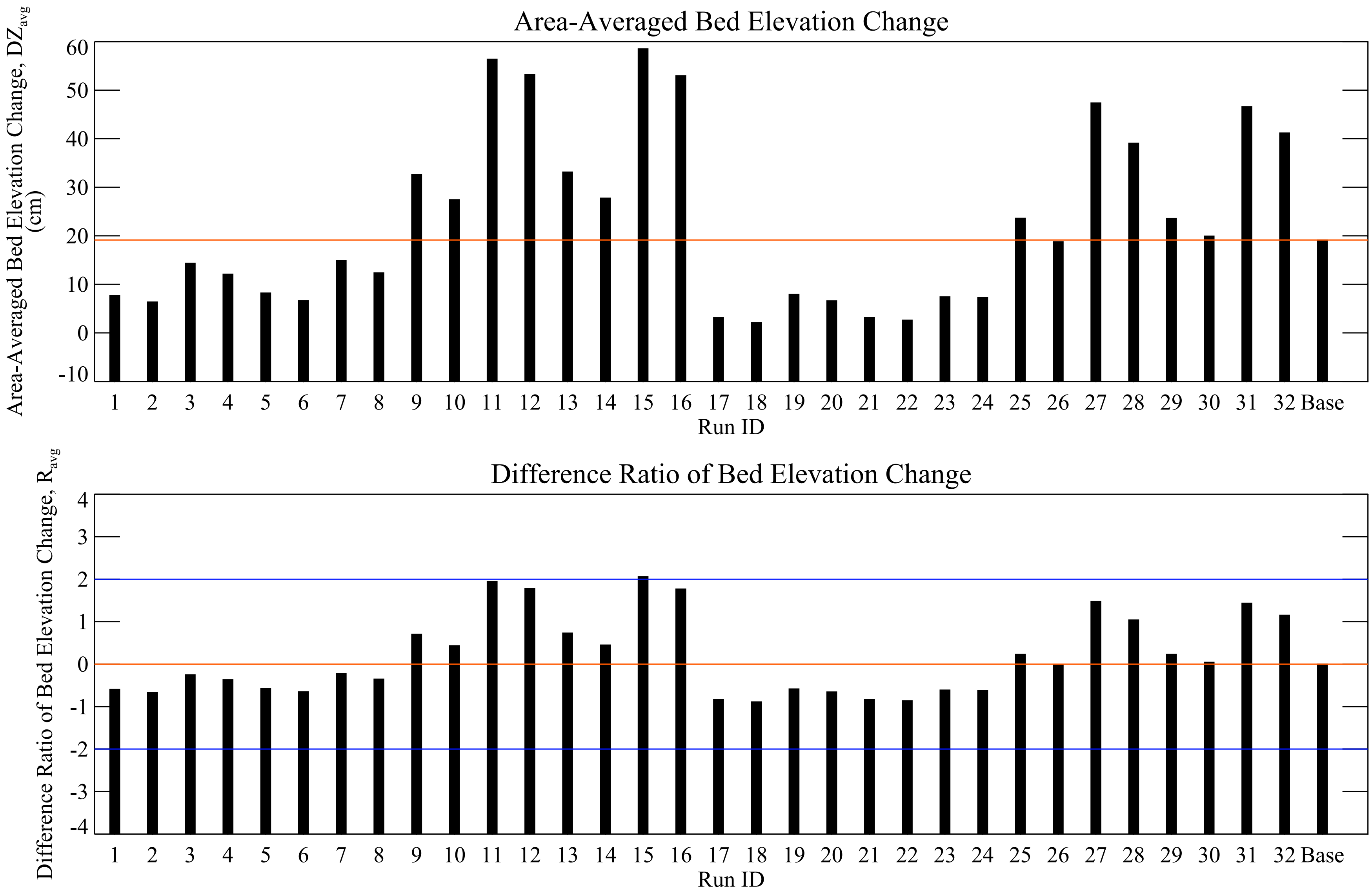

Figure D-83. Average difference ratio and average bed elevation change for zone 4: RM 2.2 to 4.0, navigation channel.

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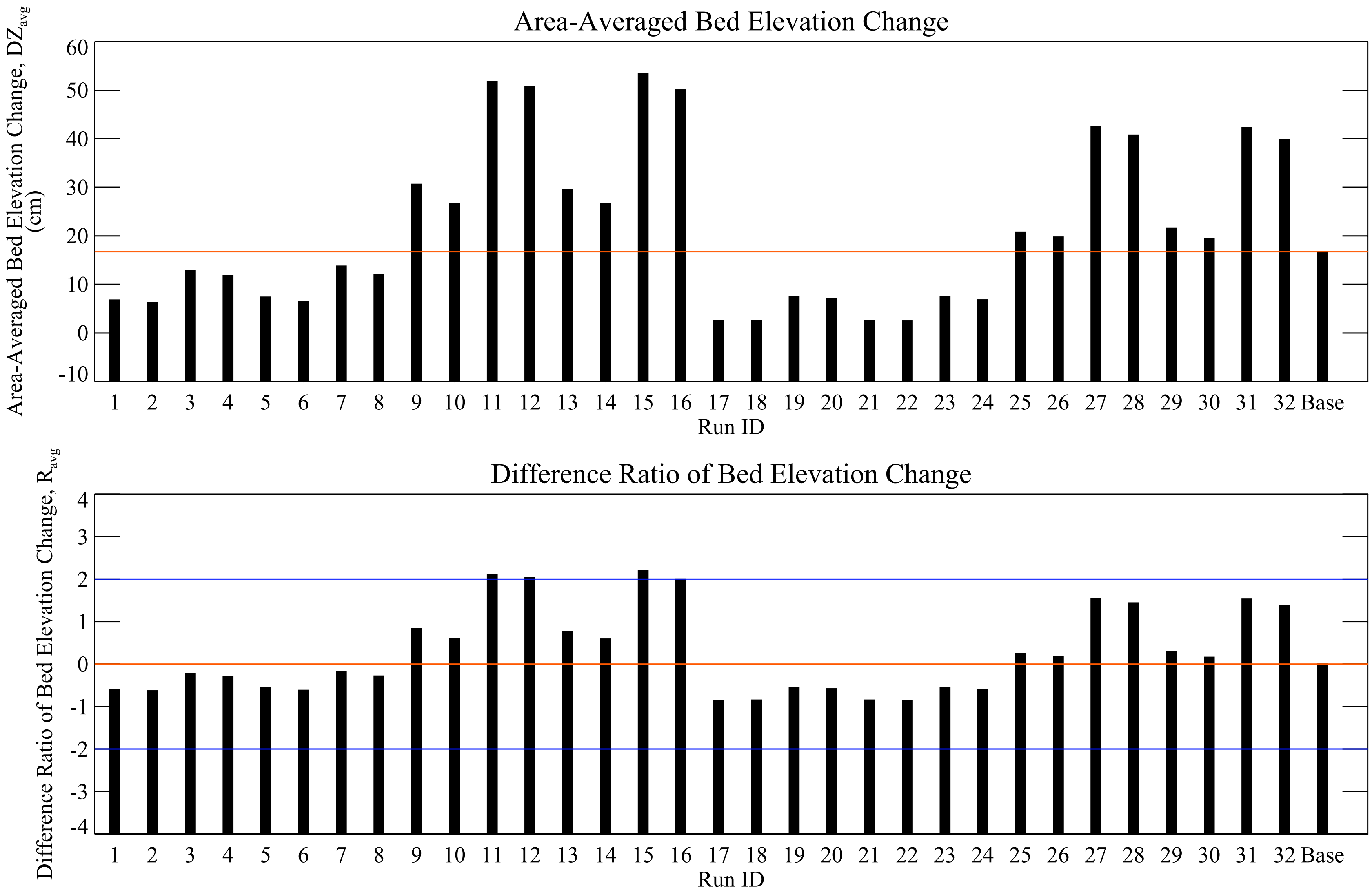

Figure D-84. Average difference ratio and average bed elevation change for zone 5: RM 2.2 to 4.0, east bench area.

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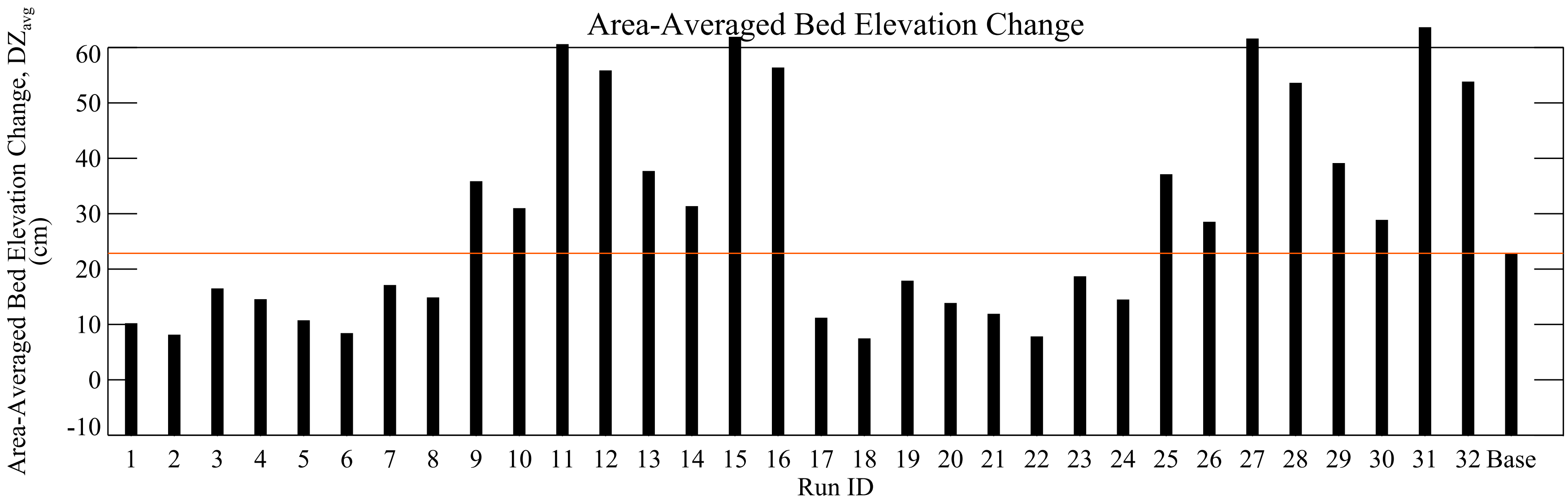

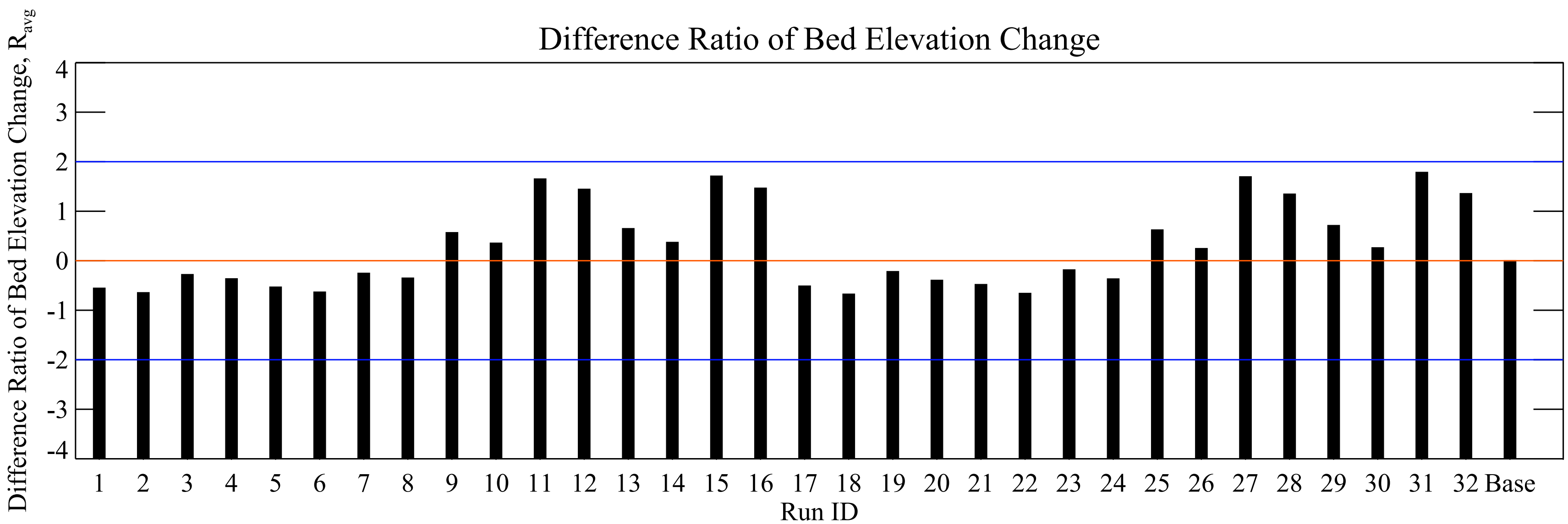

Figure D-85. Average difference ratio and average bed elevation change for zone 6: RM 2.2 to 4.0, west bench area.

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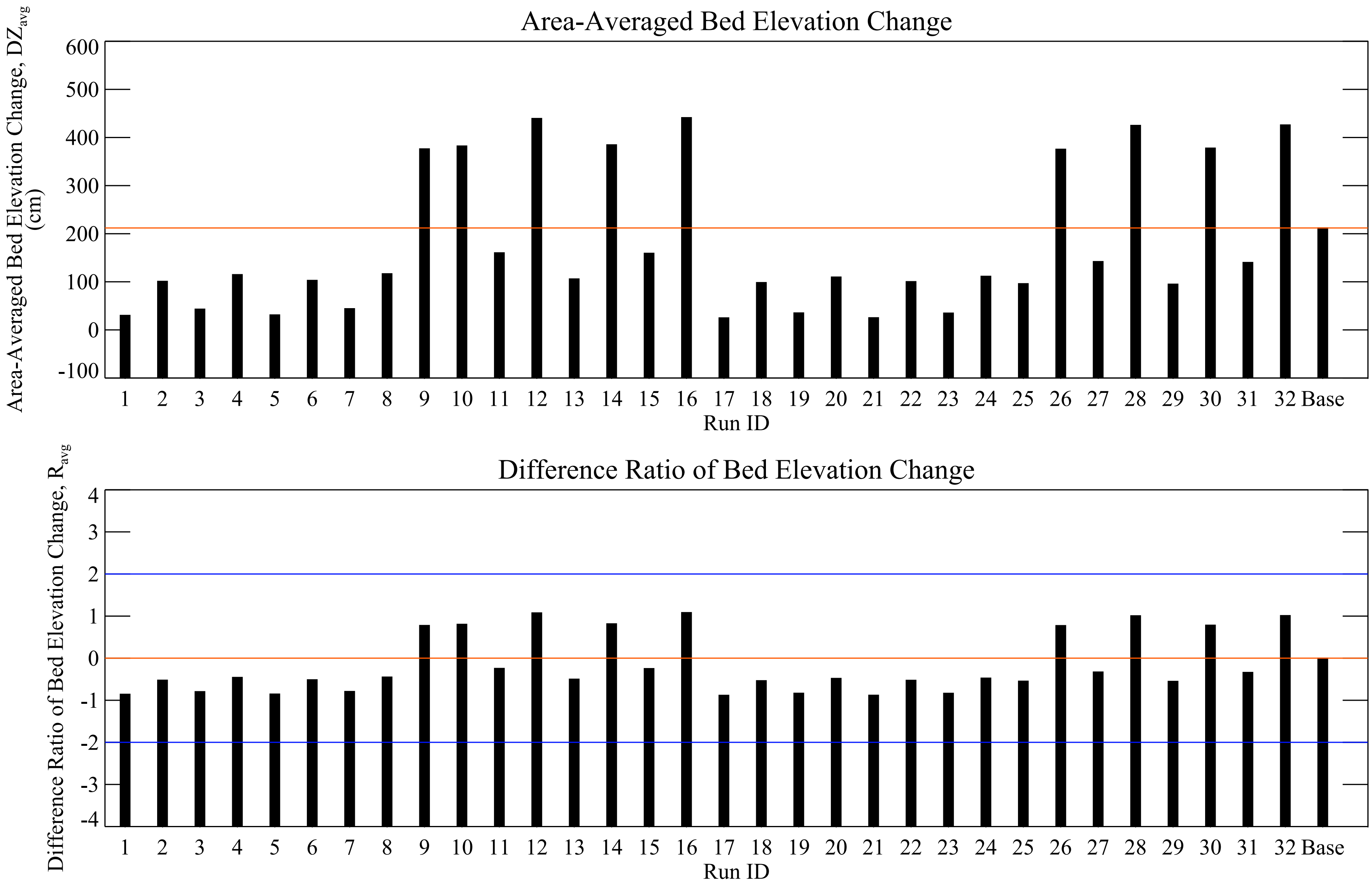

Figure D-86. Average difference ratio and average bed elevation change for zone 7: RM 4.0 to 4.8, navigation channel.

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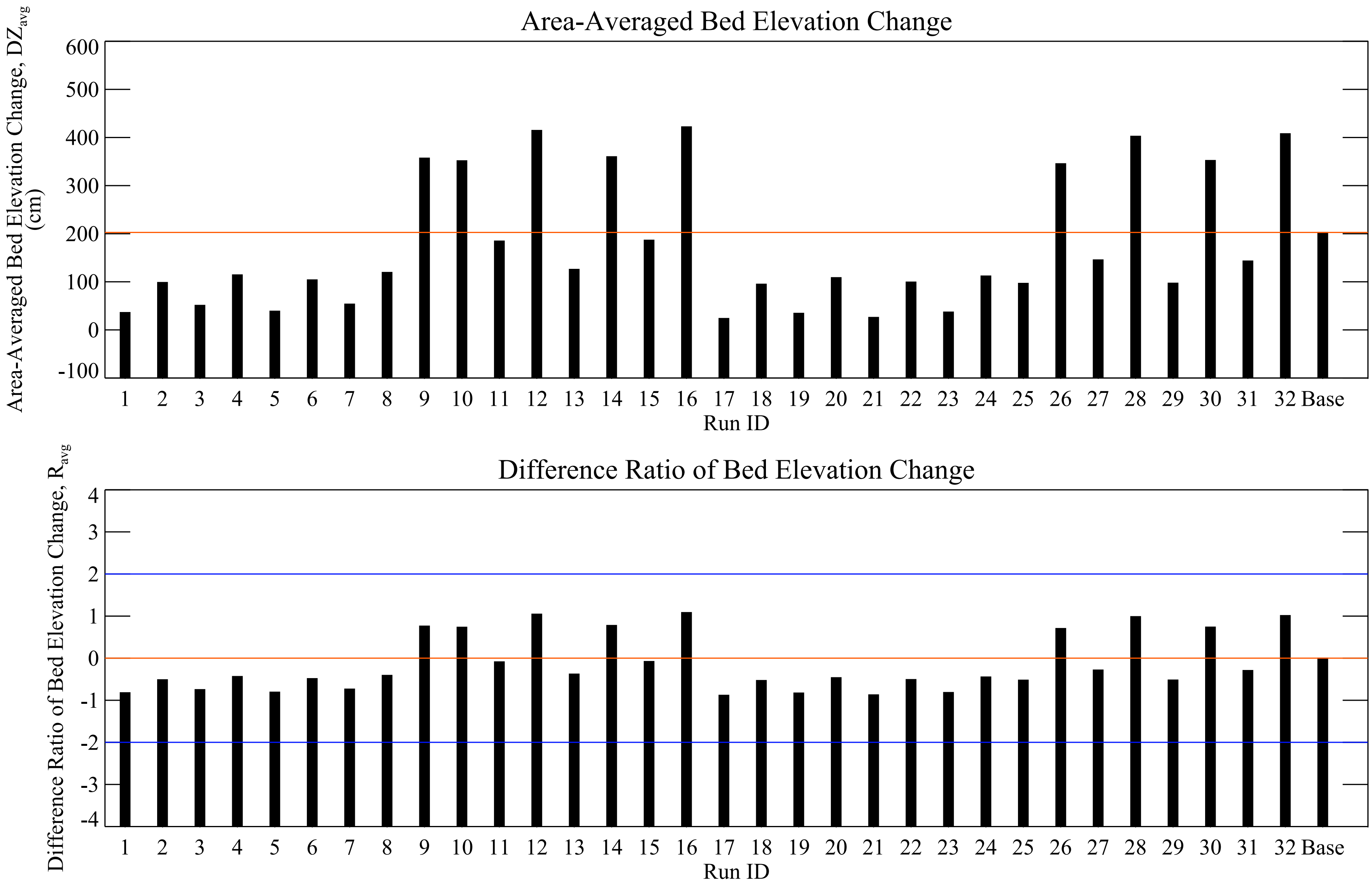

Figure D-87. Average difference ratio and average bed elevation change for zone 8: RM 4.0 to 4.8, east bench area.

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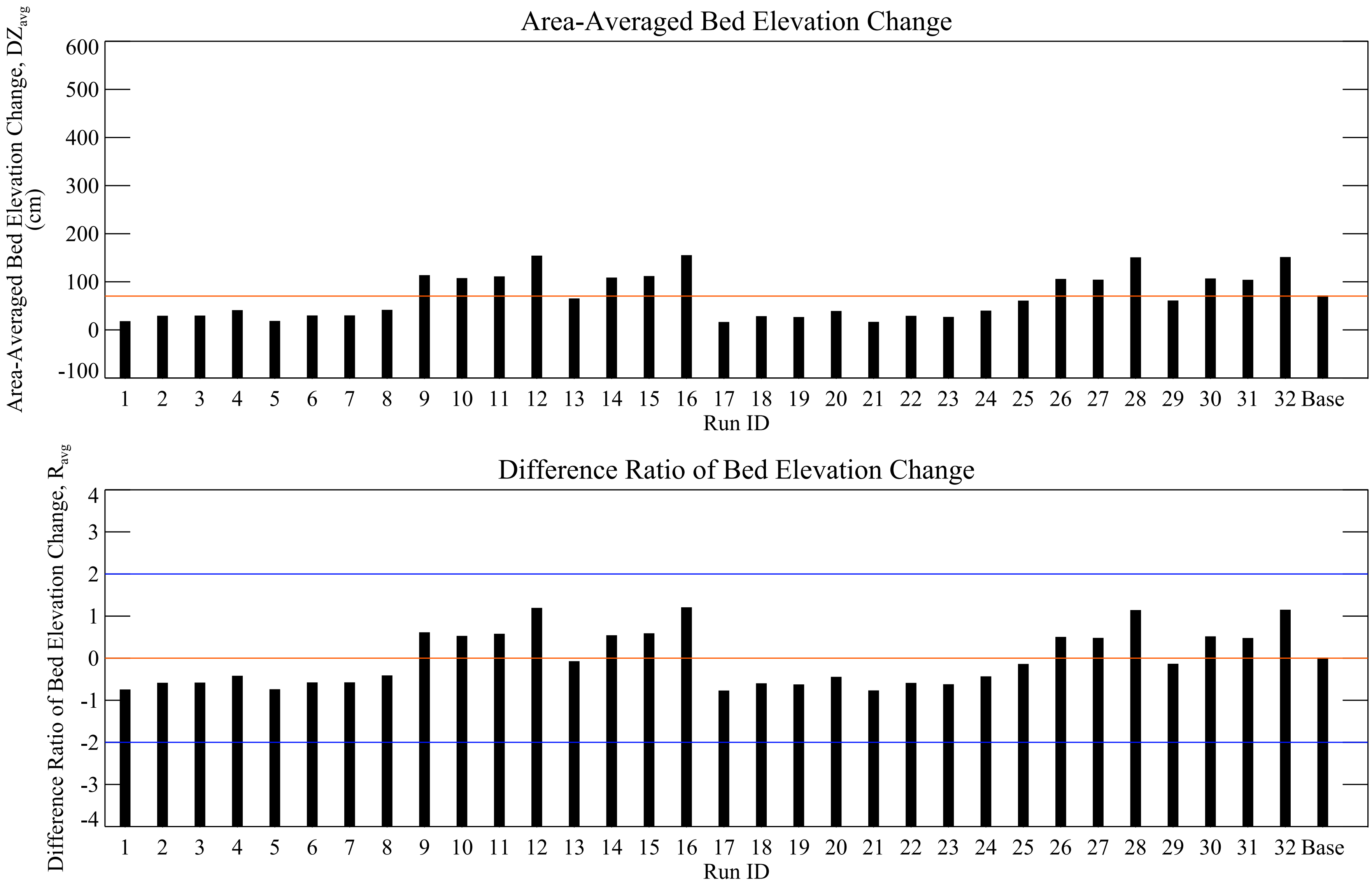

Figure D-88. Average difference ratio and average bed elevation change for zone 9: RM 4.0 to 4.8, west bench area.

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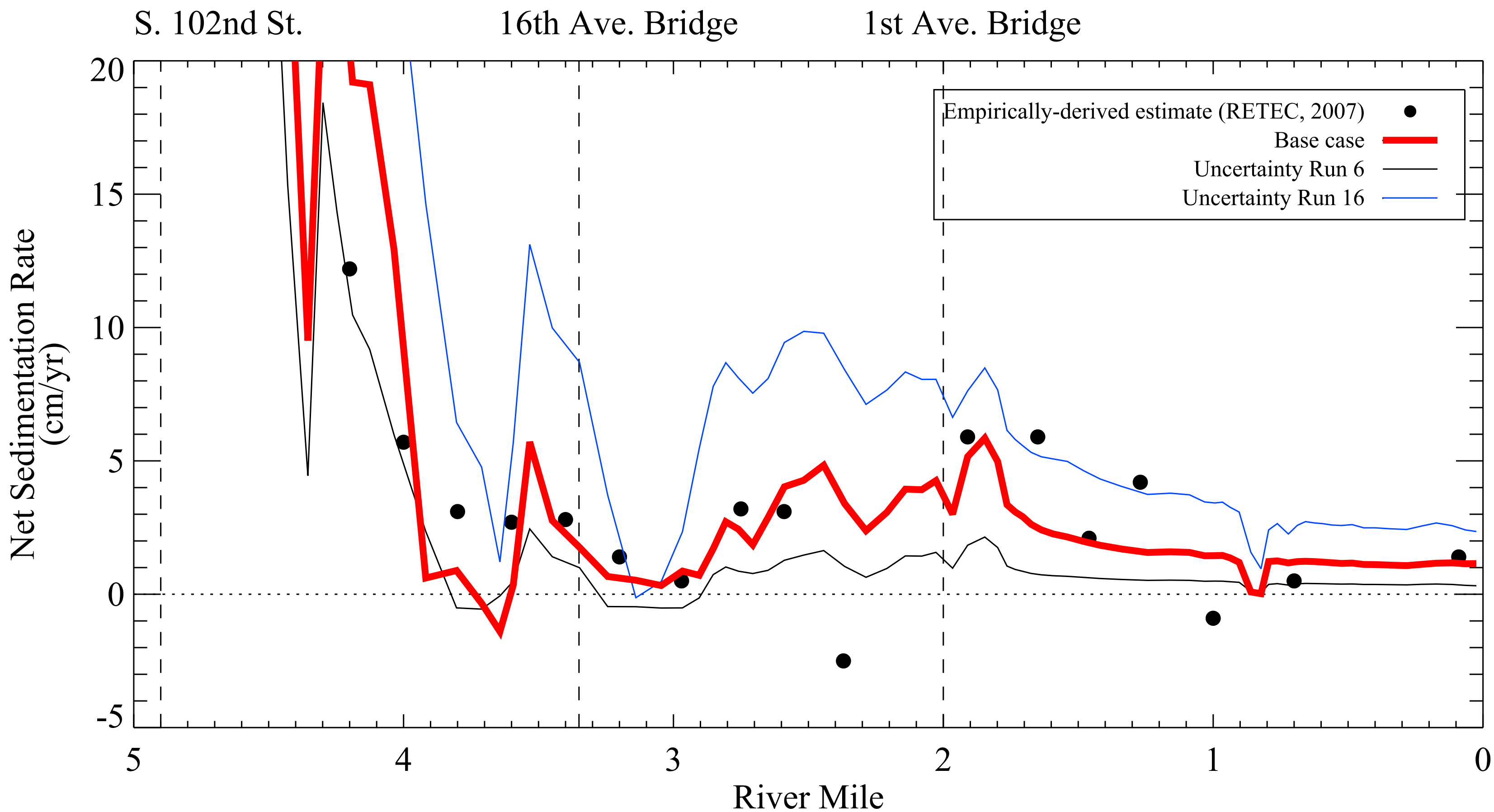

Figure D-89. Comparison of predicted and observed net sedimentation rates in the navigation channel for 6-year period: base case, ultimate lower-bound (run 6), and ultimate upper-bound (run 16).

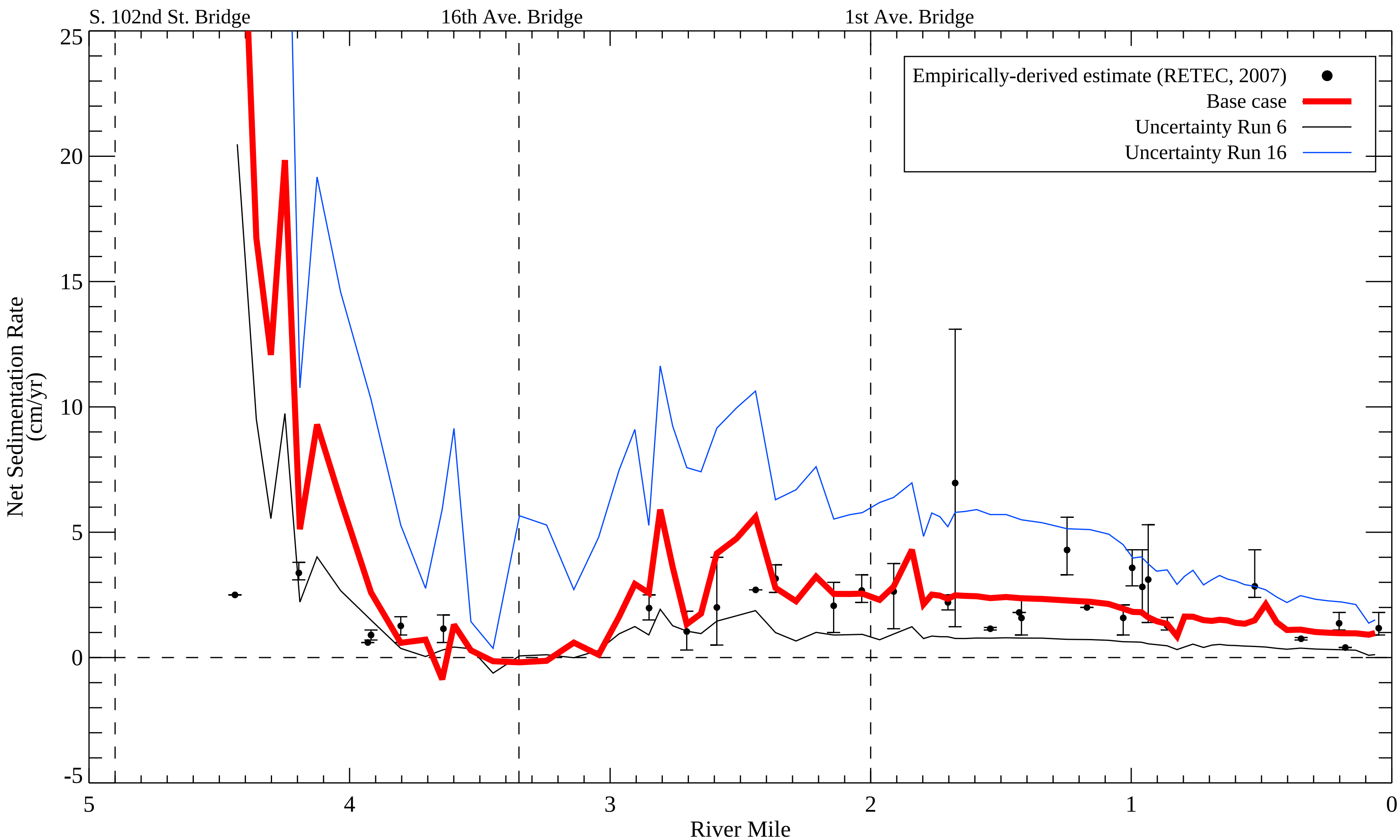

Figure D-90. Comparison of predicted and empirically-derived net sedimentation rates in the east bench areas for 6-year period: base case, ultimate lower-bound (run 6), and ultimate upper-bound (run 16).

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Wed Sep 17 16:08:16 2008

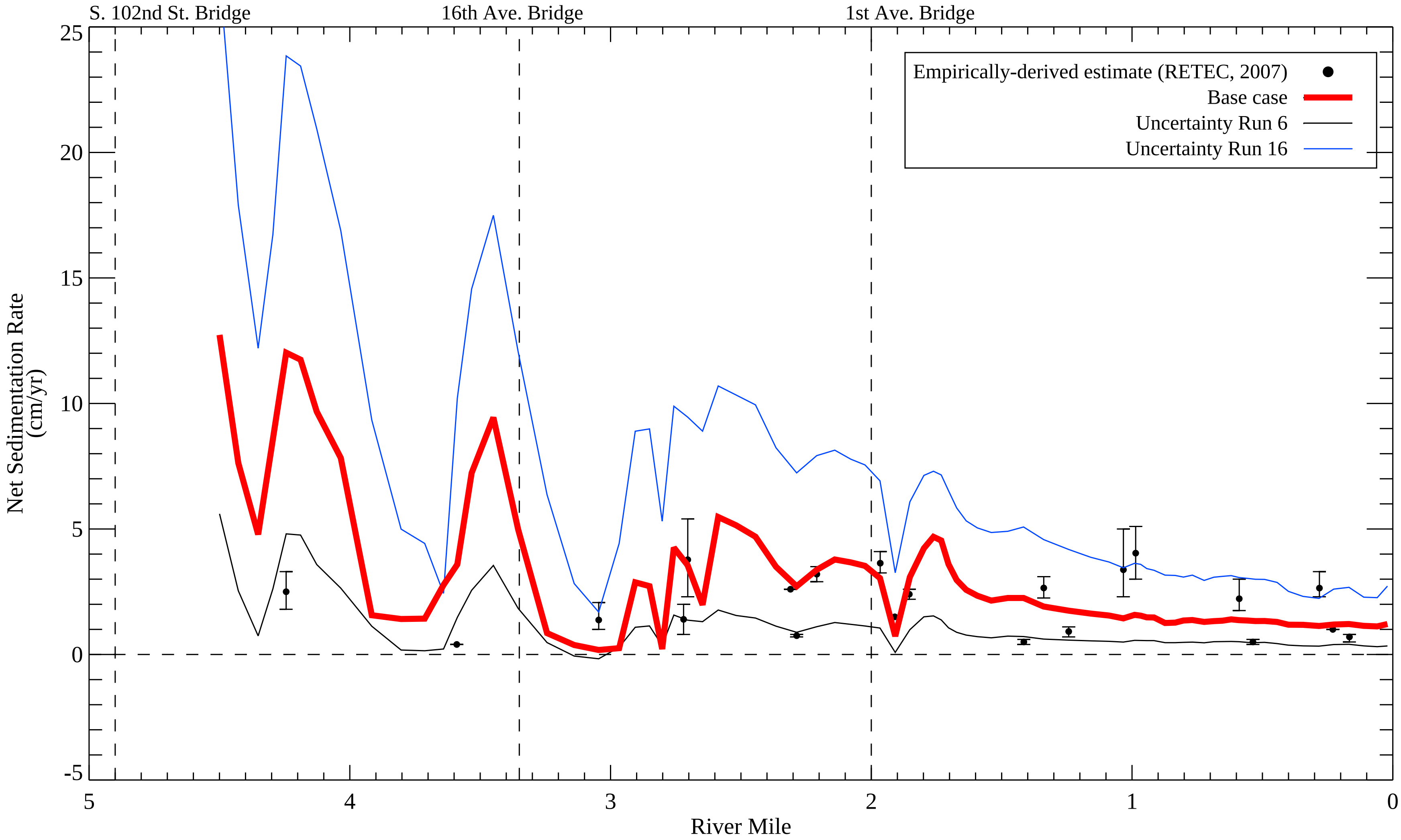
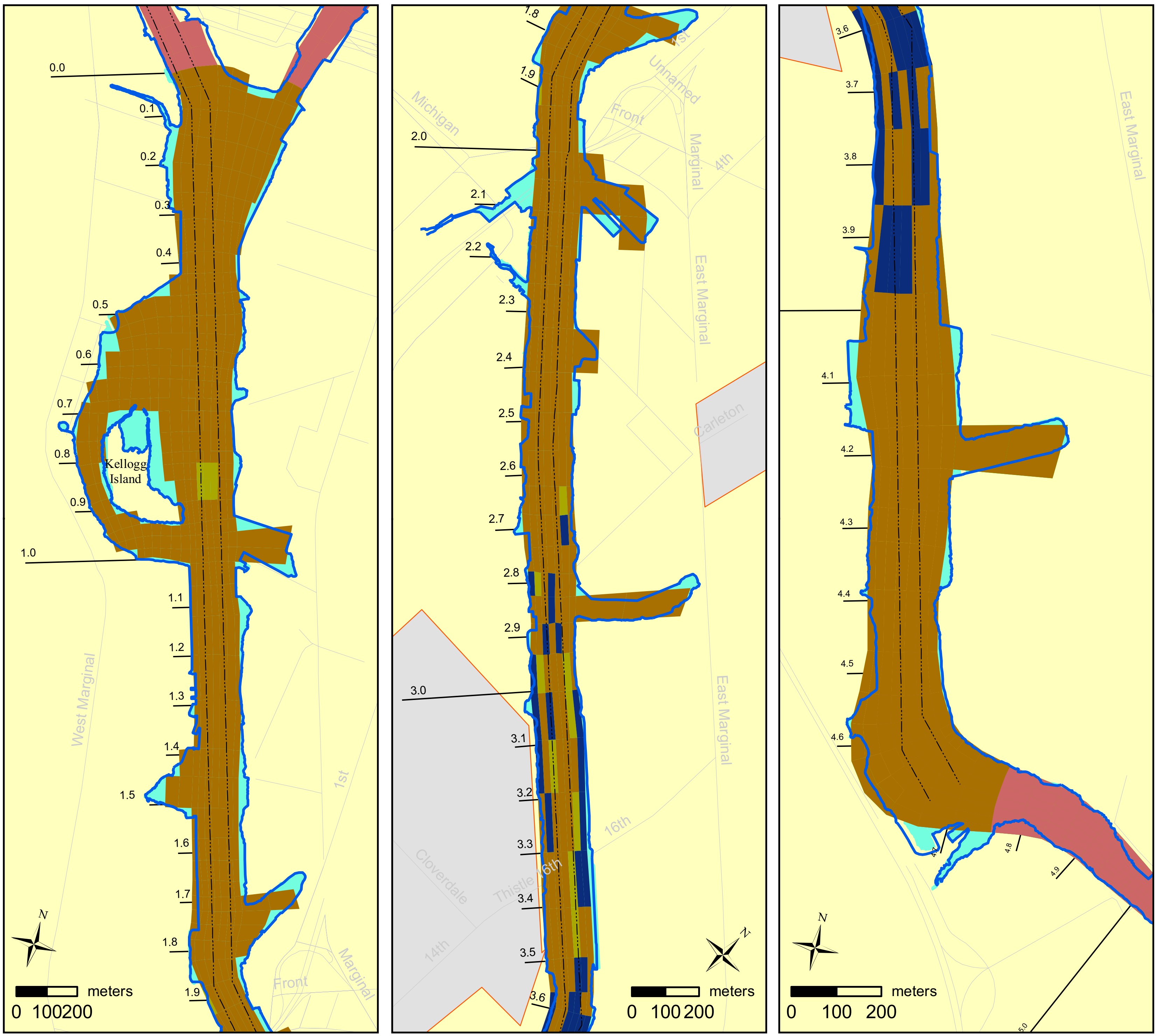
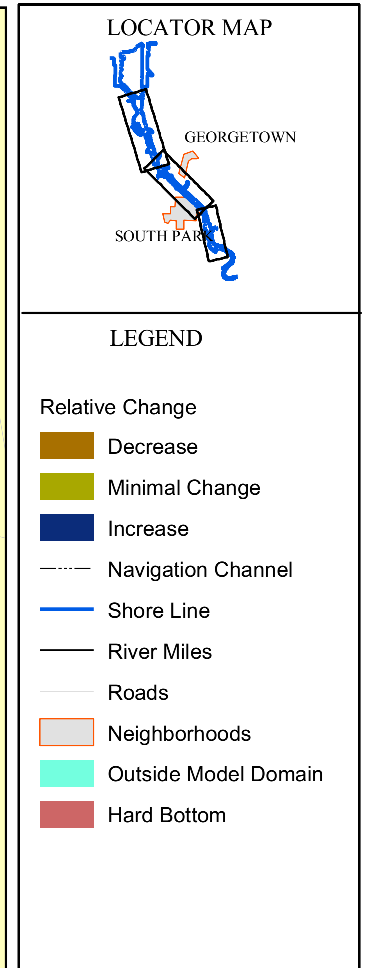


Figure D-91. Comparison of predicted and empirically-derived net sedimentation rates in the west bench areas for 6-year period: base case, ultimate lower-bound (run 6), and ultimate upper-bound (run 16).





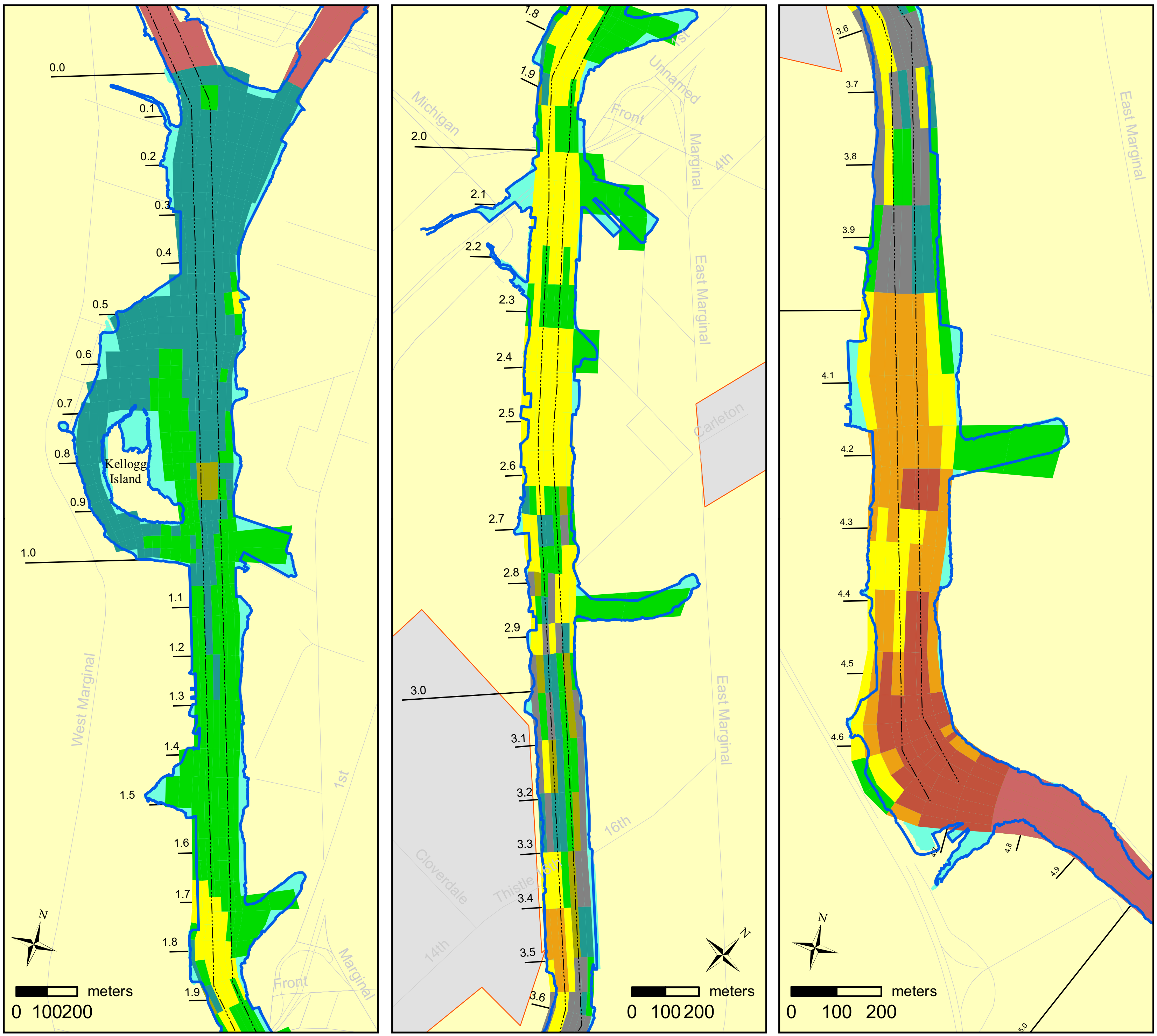
LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

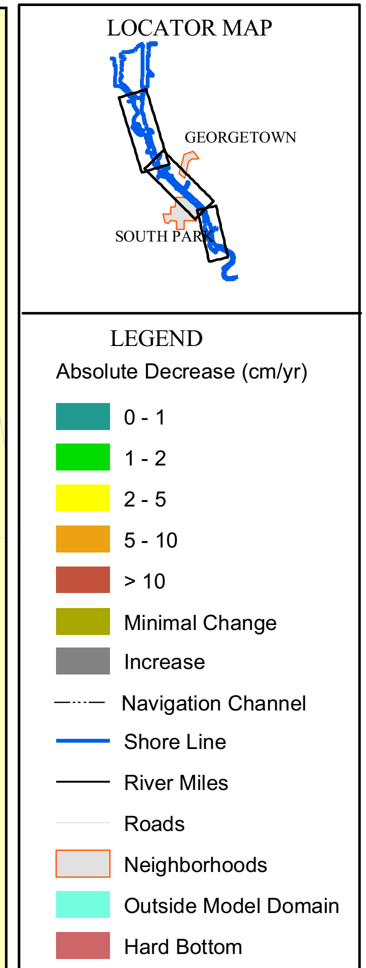
Figure D-92.
Spatial distribution of predicted change in sedimentation for 6-year period ultimate lower-bound versus base case.

April 2008

QEA Quantitative Environmental Analysis, LLC

FC- \\Gis_station\D_DRIVE\Private\RETldw\GIS_plot\layout_bed_elv_chg_070205-1.mxd





LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-93. Spatial distribution of predicted absolute decrease in sedimentation for 6-year period ultimate lower-bound versus base case.

April 2008

QEA Quantitative Environmental Analysis, LLC

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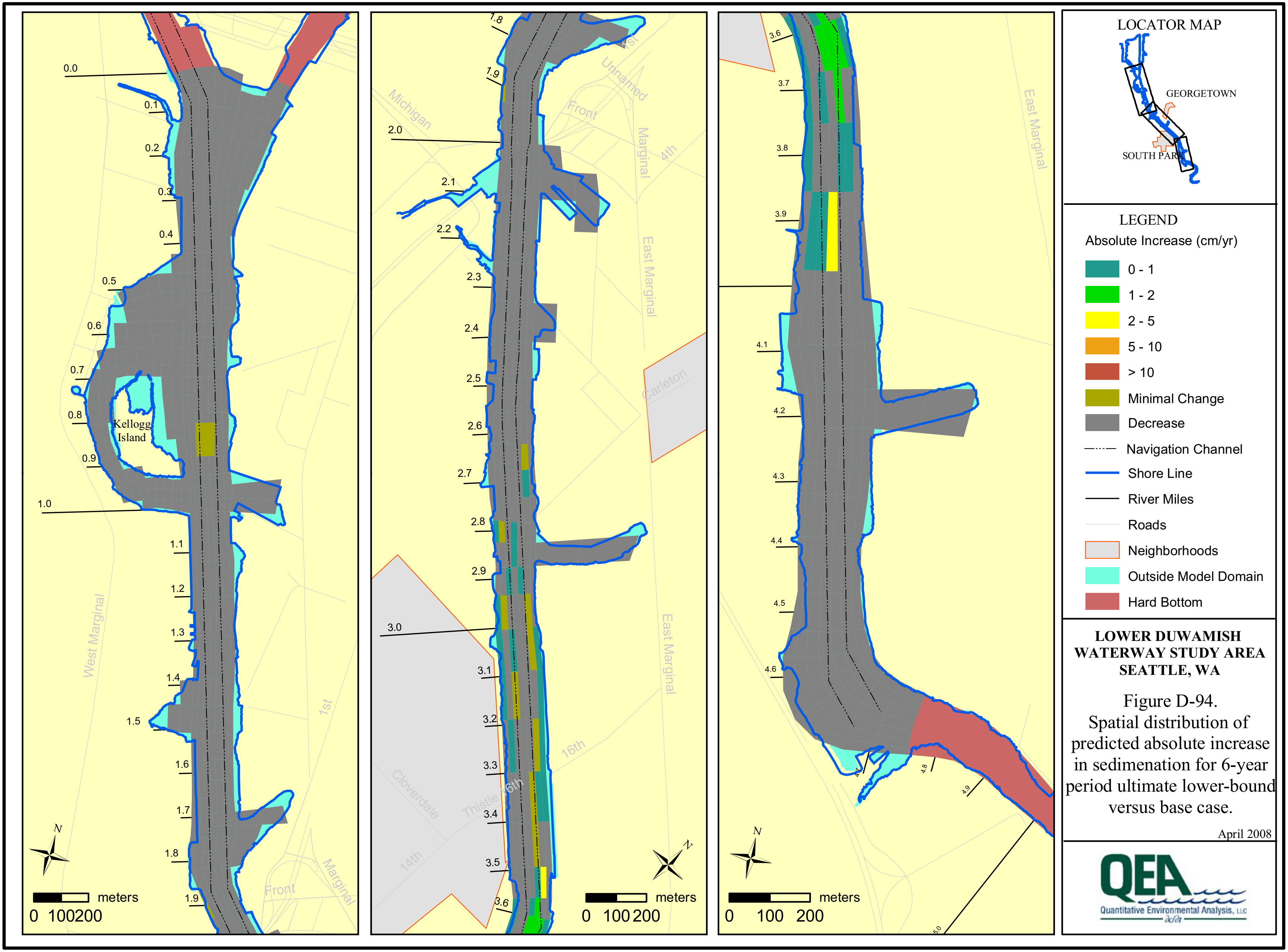
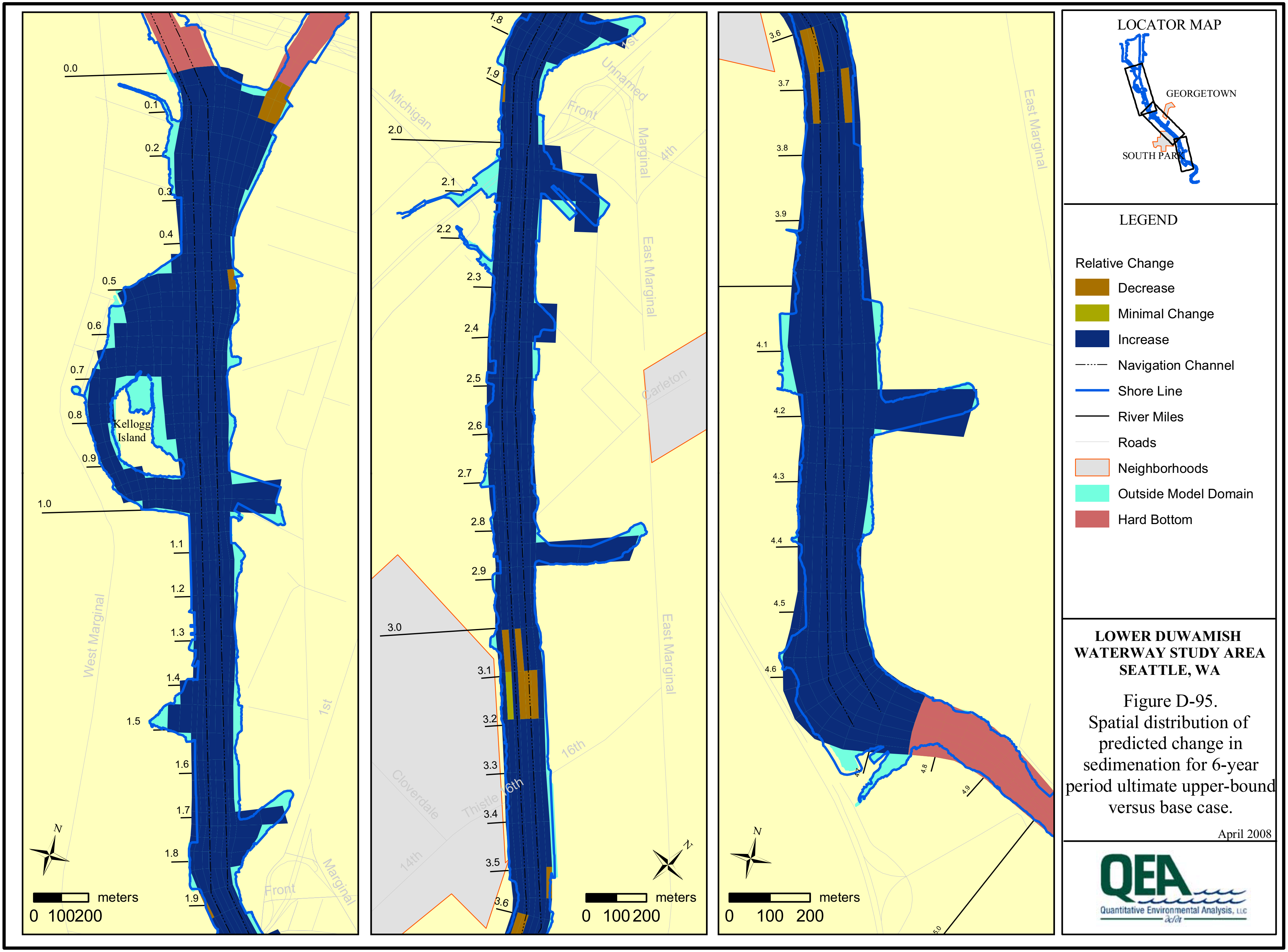


LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-94.
Spatial distribution of predicted absolute increase in sedimentation for 6-year period ultimate lower-bound versus base case.

April 2008

FC- \\Gis_station\D_DRIVE\Private\RETldw\GIS_plot\layout_bed_elv_chg_070205-1.mxd



LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-95. Spatial distribution of predicted change in sedimentation for 6-year period ultimate upper-bound versus base case.

April 2008

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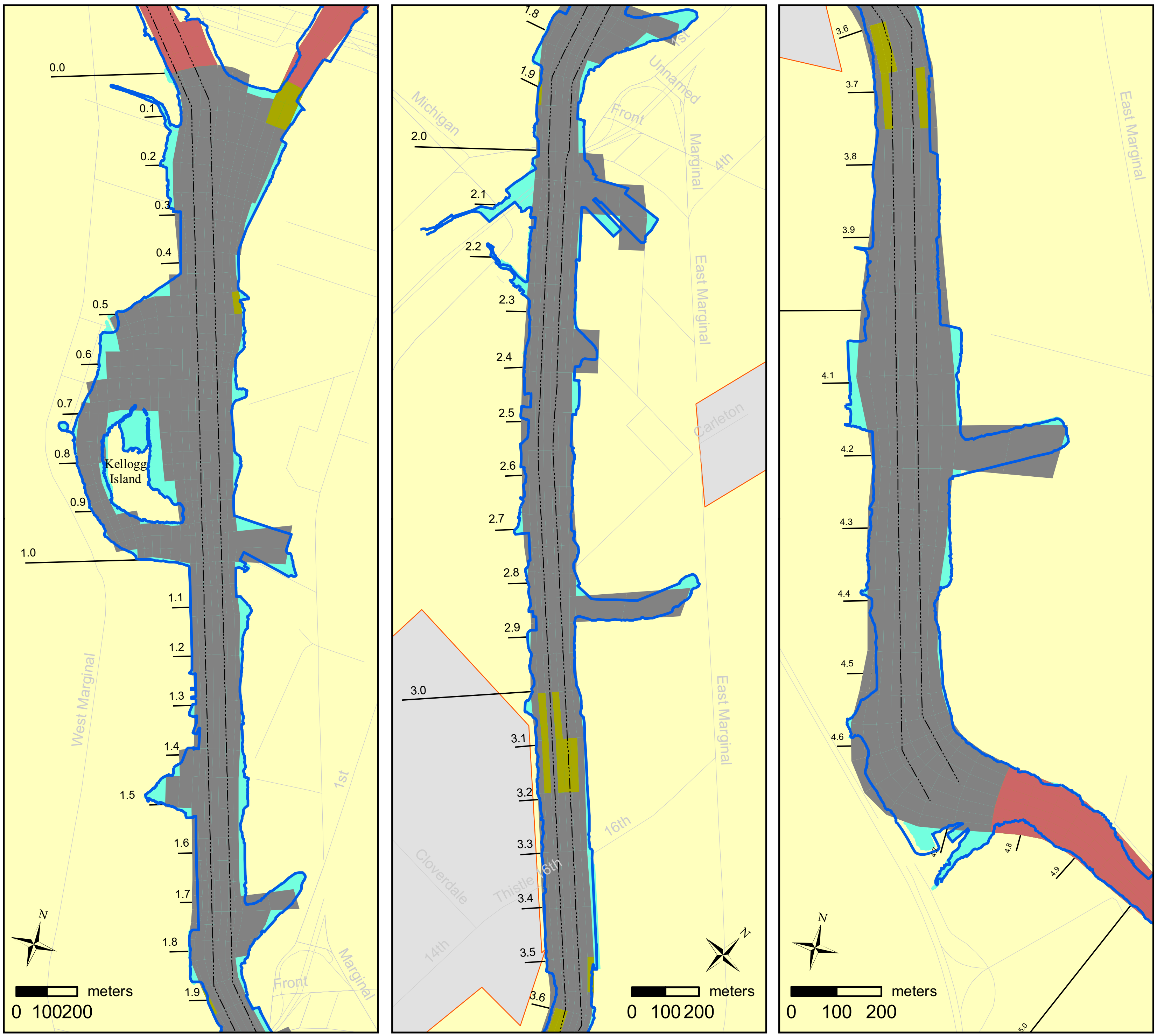

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-96. Spatial distribution of predicted absolute decrease in sedimentation for 6-year period ultimate upper-bound versus base case.

April 2008

Quantitative Environmental Analysis, LLC

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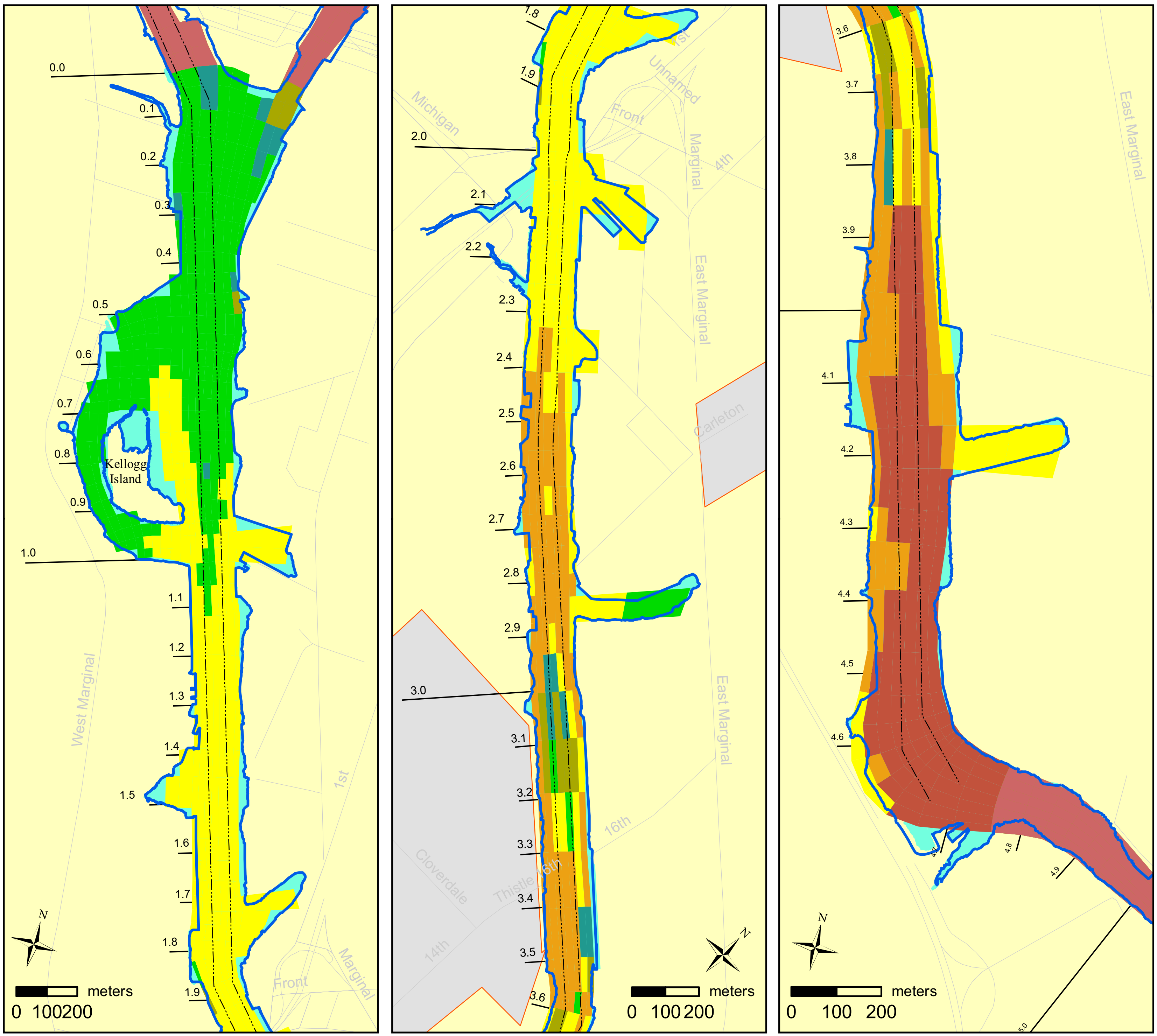
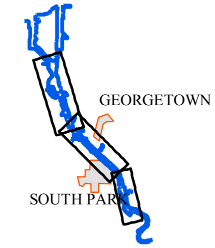


LOCATOR MAP



LEGEND

Absolute Increase (cm/yr)

- 0 - 1
- 1 - 2
- 2 - 5
- 5 - 10
- > 10
- Minimal Change
- Decrease
- Navigation Channel
- Shore Line
- River Miles
- Roads
- Neighborhoods
- Outside Model Domain
- Hard Bottom

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-97.
Spatial distribution of predicted absolute increase in sedimentation for 6-year period ultimate upper-bound versus base case.

April 2008

Quantitative Environmental Analysis, LLC

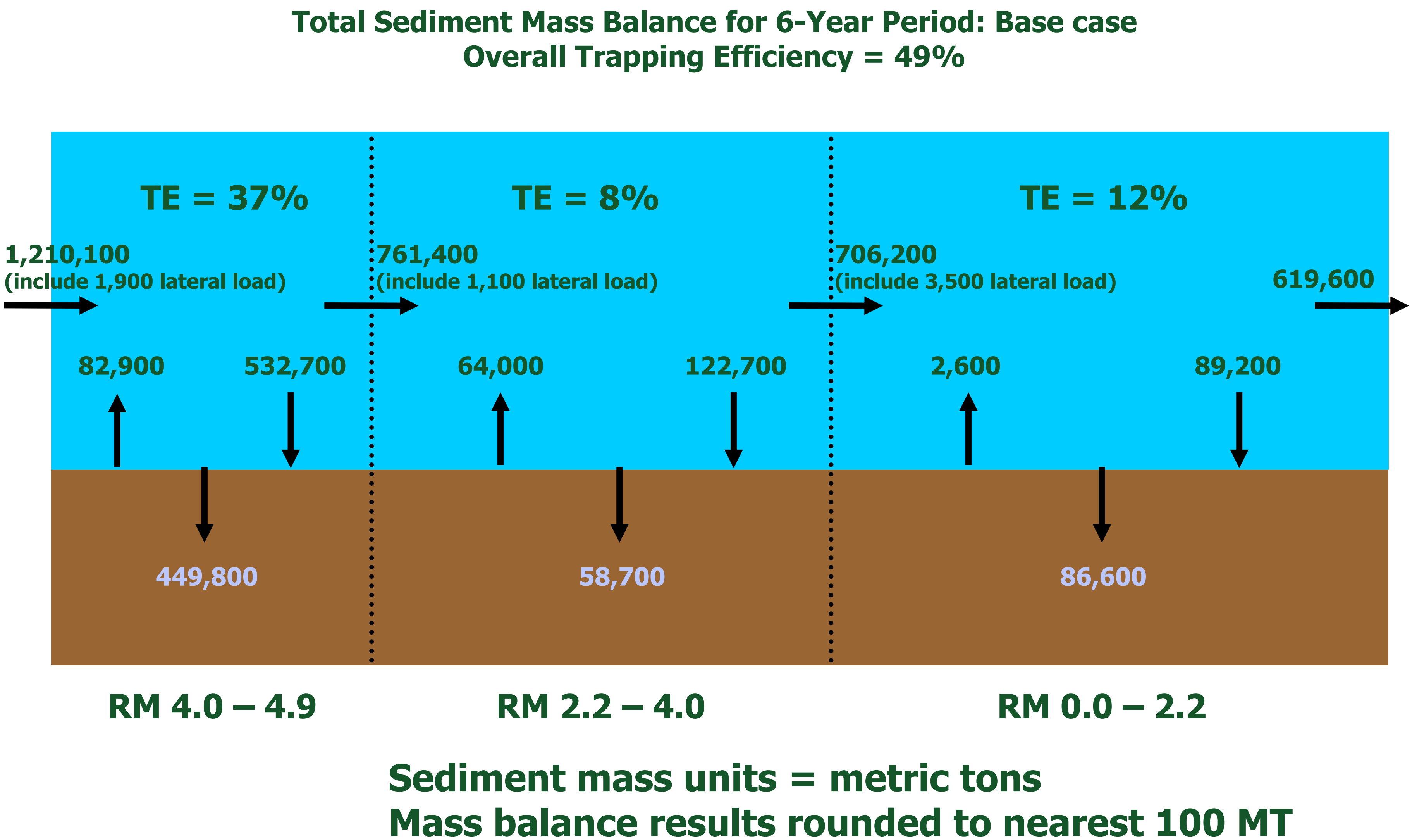


Figure D-98. Total sediment mass balances for 6-year period: base case.

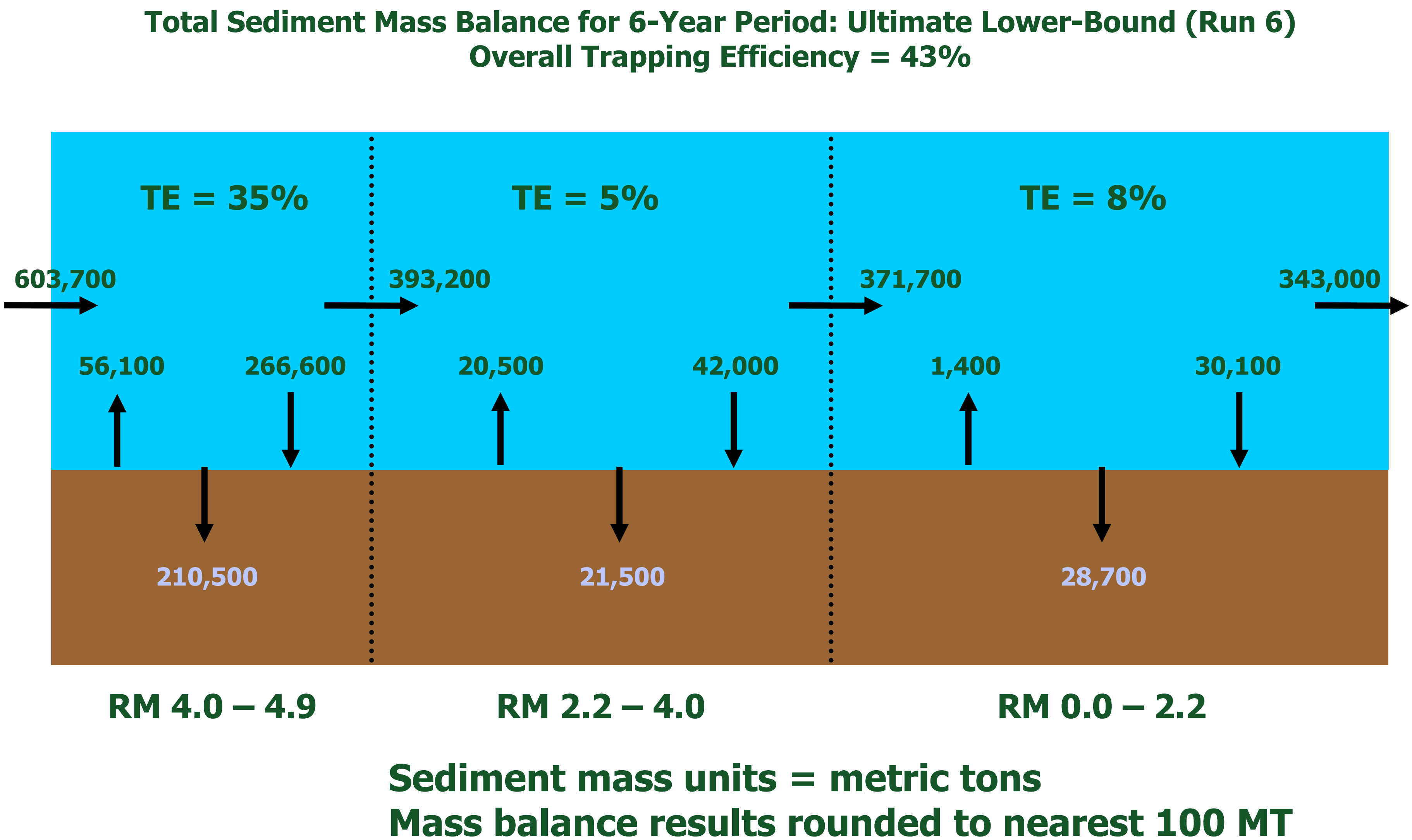


Figure D-99. Total sediment mass balances for 6-year period: ultimate lower-bound.

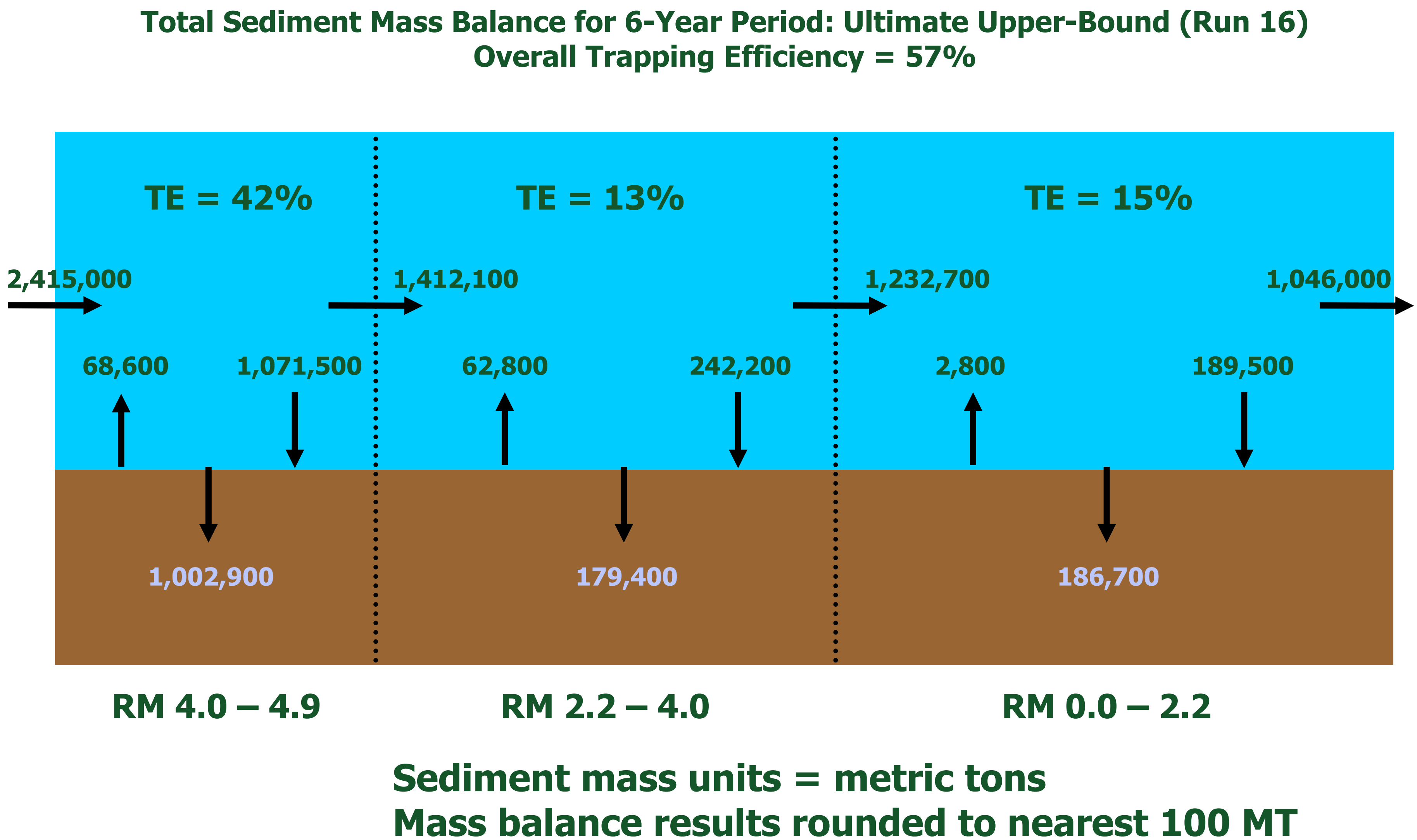
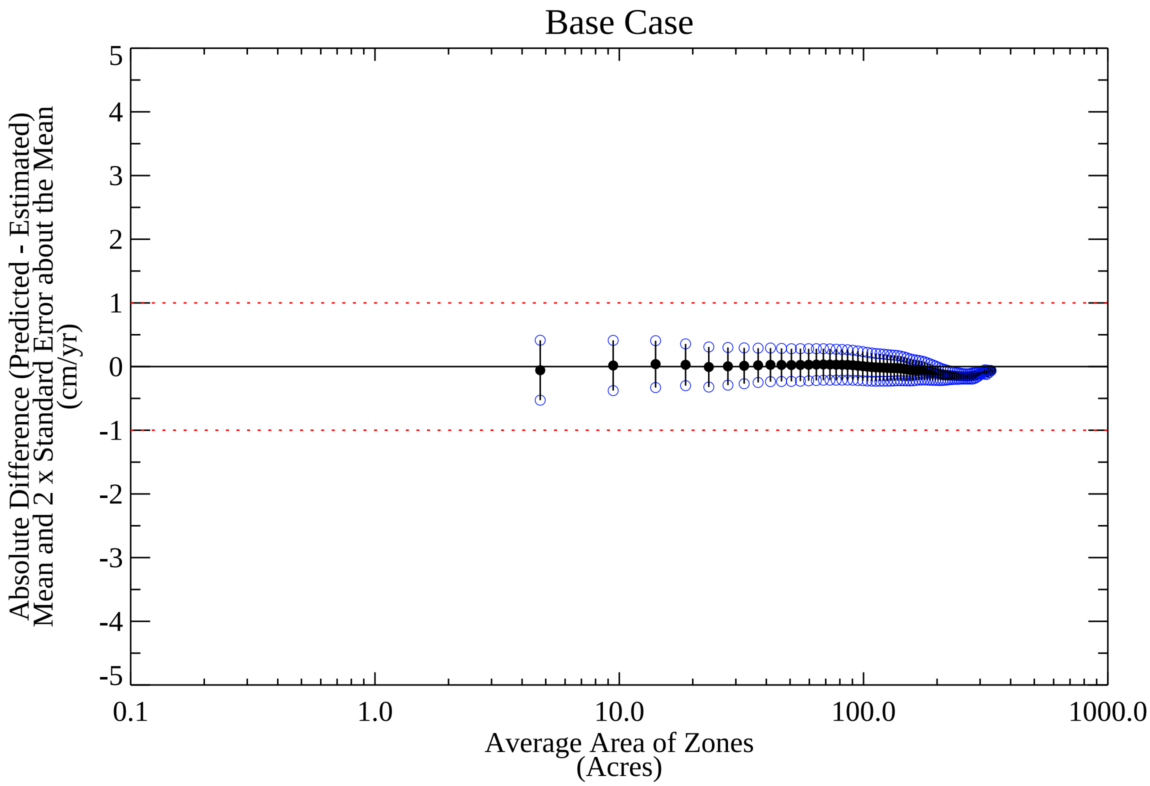


Figure D-100. Total sediment mass balances for 6-year period: ultimate upper-bound.



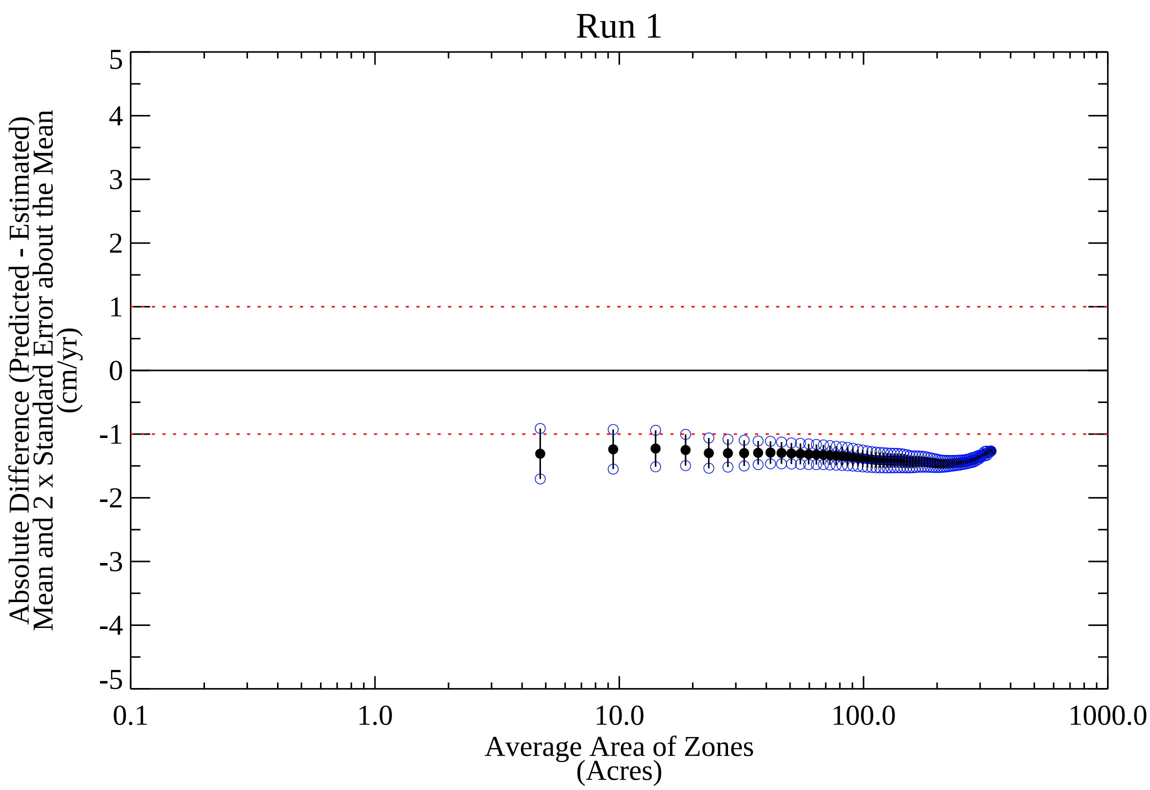
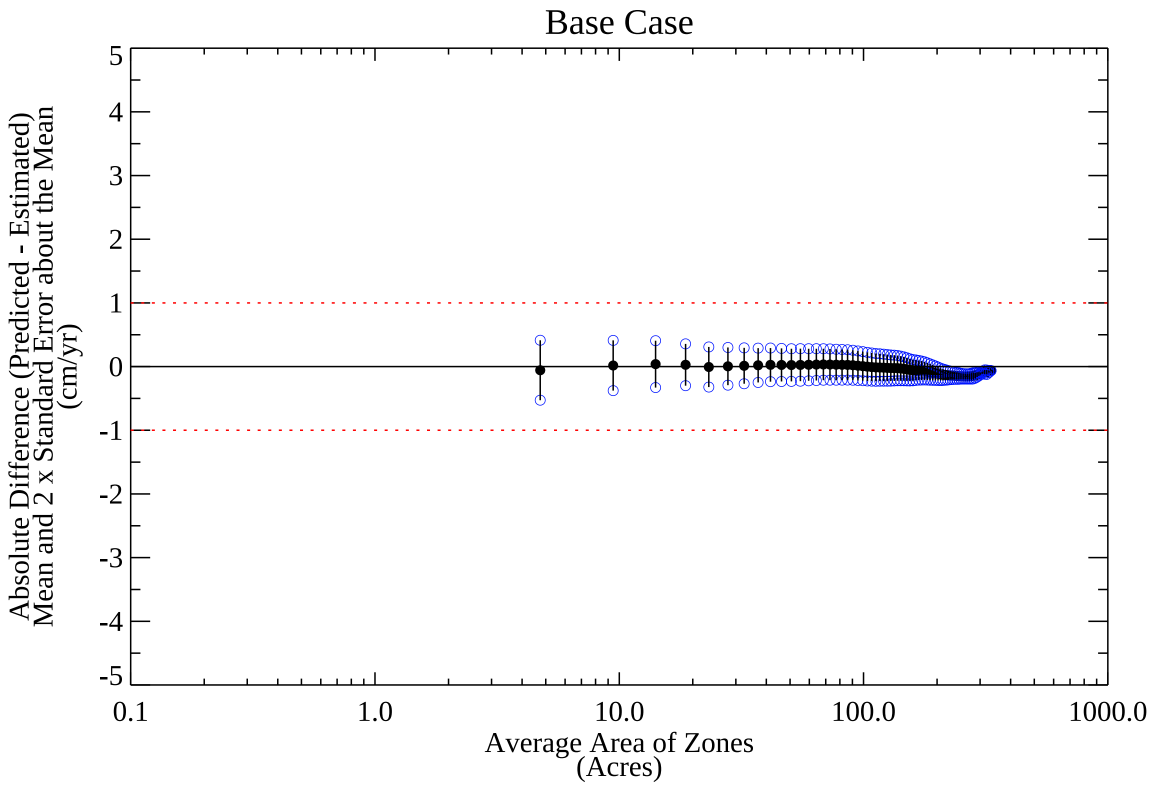


Figure D-101. Absolute difference in net sedimentation rate for different spatial scale: Run 1, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

fc - D:\RETldw\Analysis\Model_output\uncertainty_analysis\Additional_EAA_cores\080917\plot_6yr_spatial_uncertainty_rm0_to_4_avg_transect_zones_a_080917.pro
Fri Sep 19 10:20:16 2008



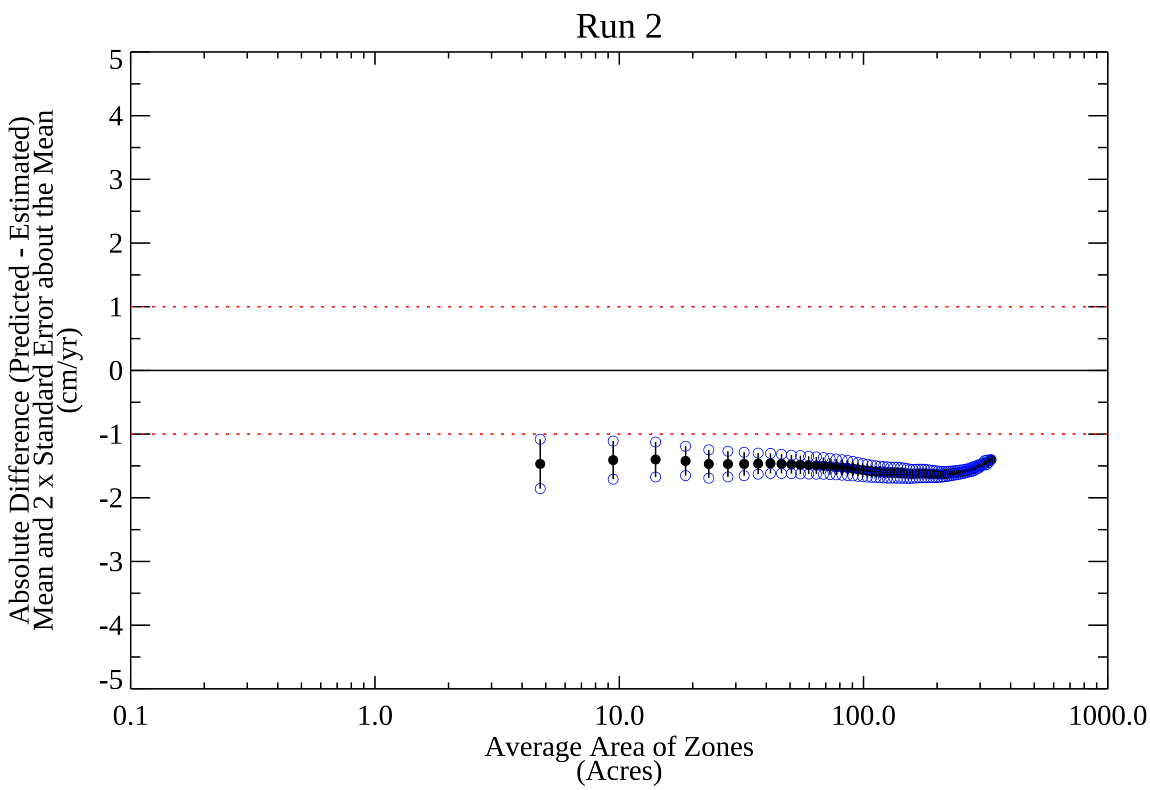


Figure D-102. Absolute difference in net sedimentation rate for different spatial scale: Run 2, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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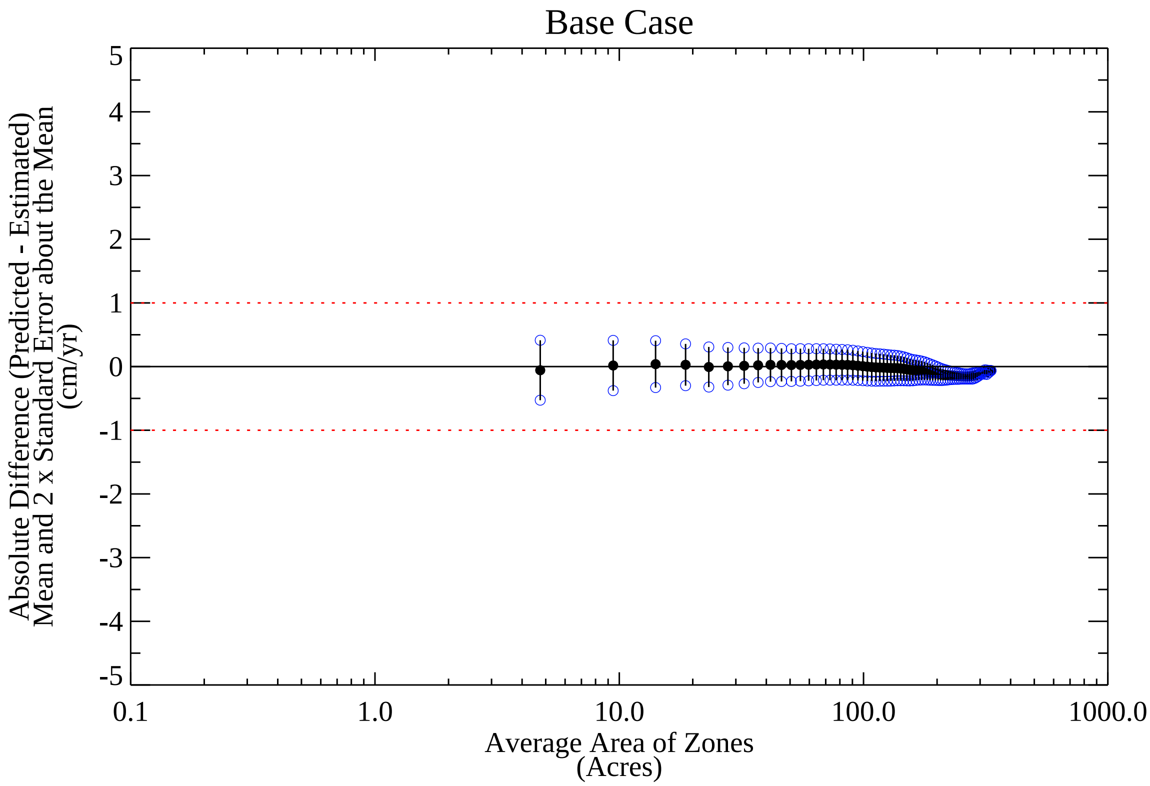

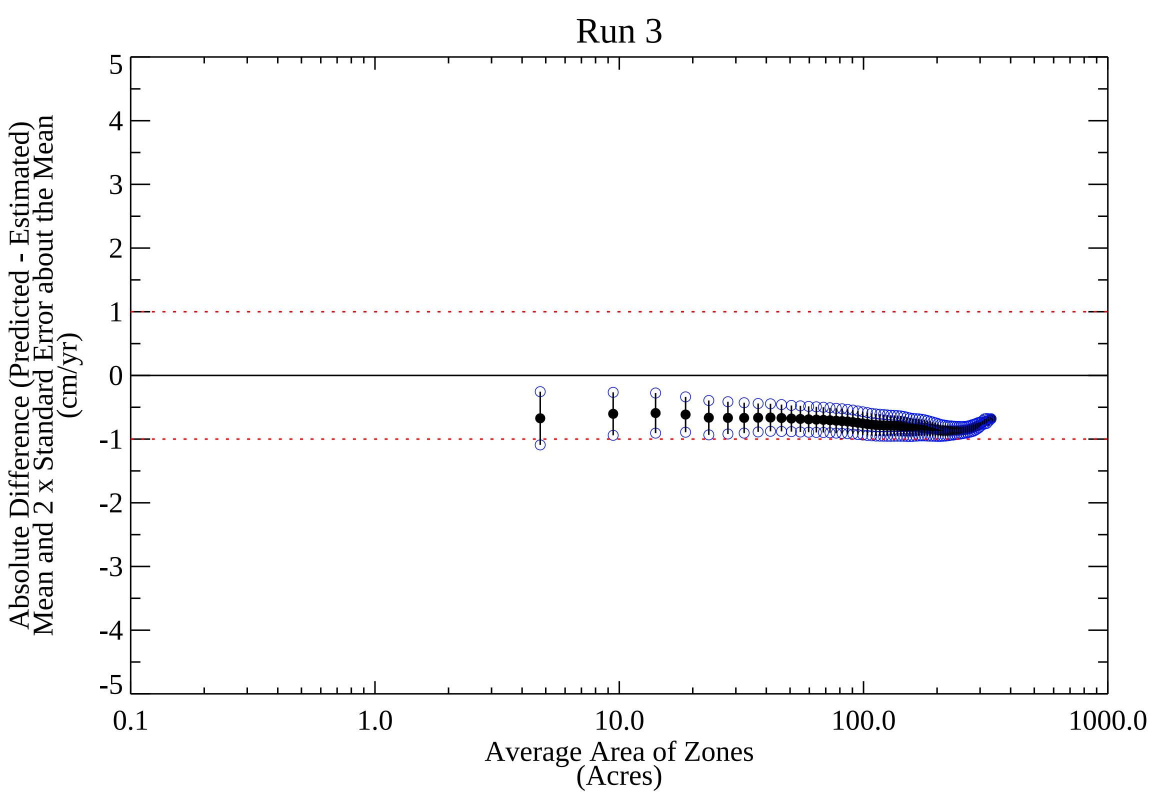

Figure D-103. Absolute difference in net sedimentation rate for different spatial scale: Run 3, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

fc - D:\RETldw\Analysis\Model_output\uncertainty_analysis\Additional_EAA_cores\080917\plot_6yr_spatial_uncertainty_rm0_to_4_avg_transect_zones_a_080917.pro
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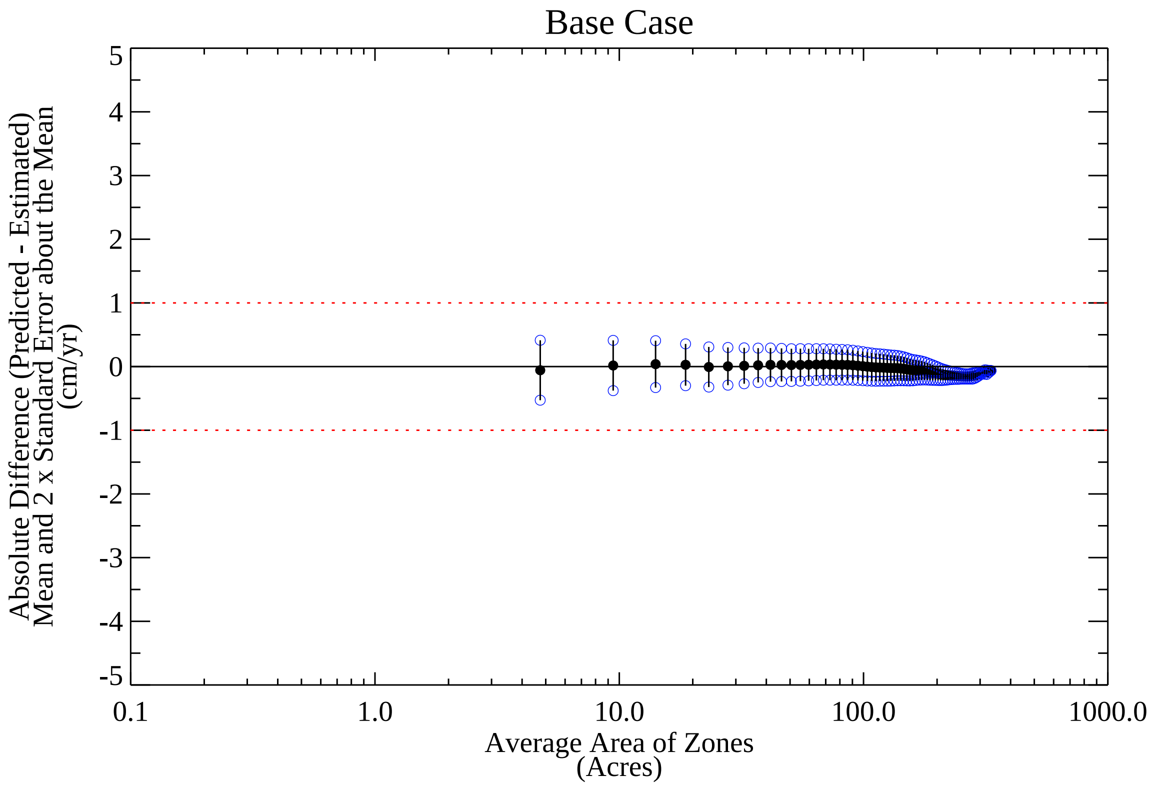

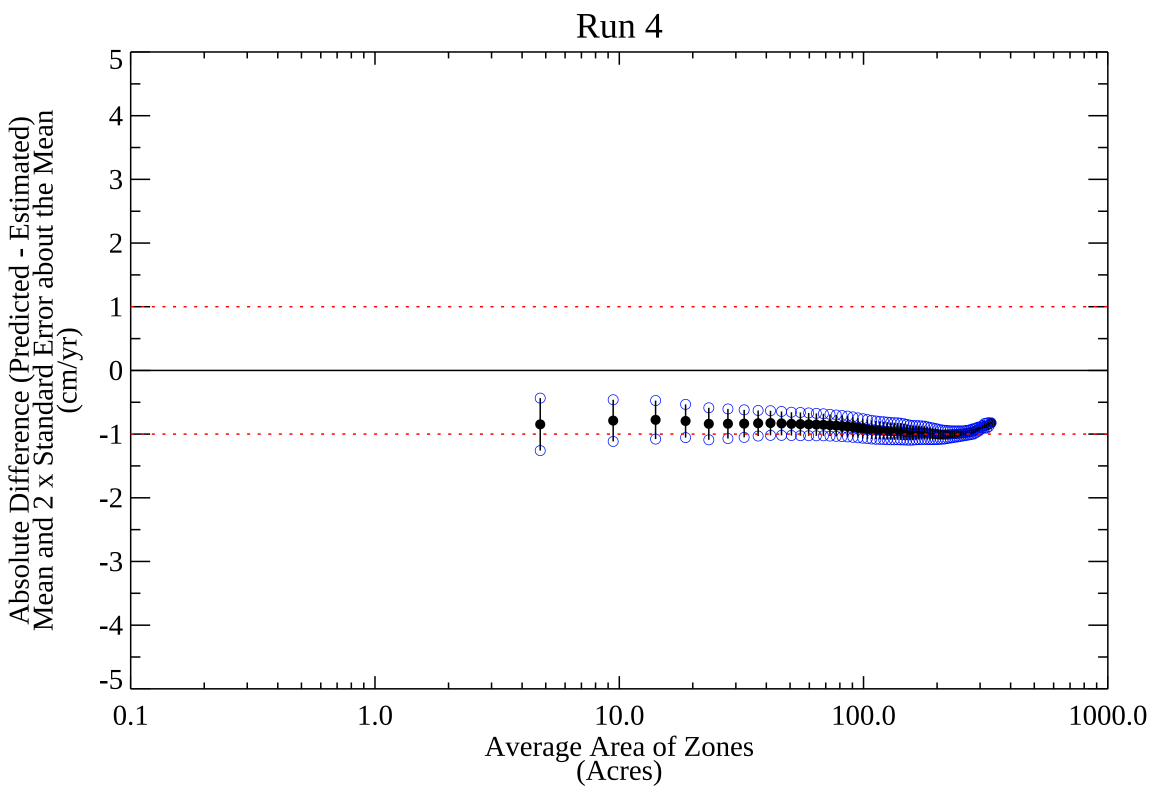

Figure D-104. Absolute difference in net sedimentation rate for different spatial scale: Run 4, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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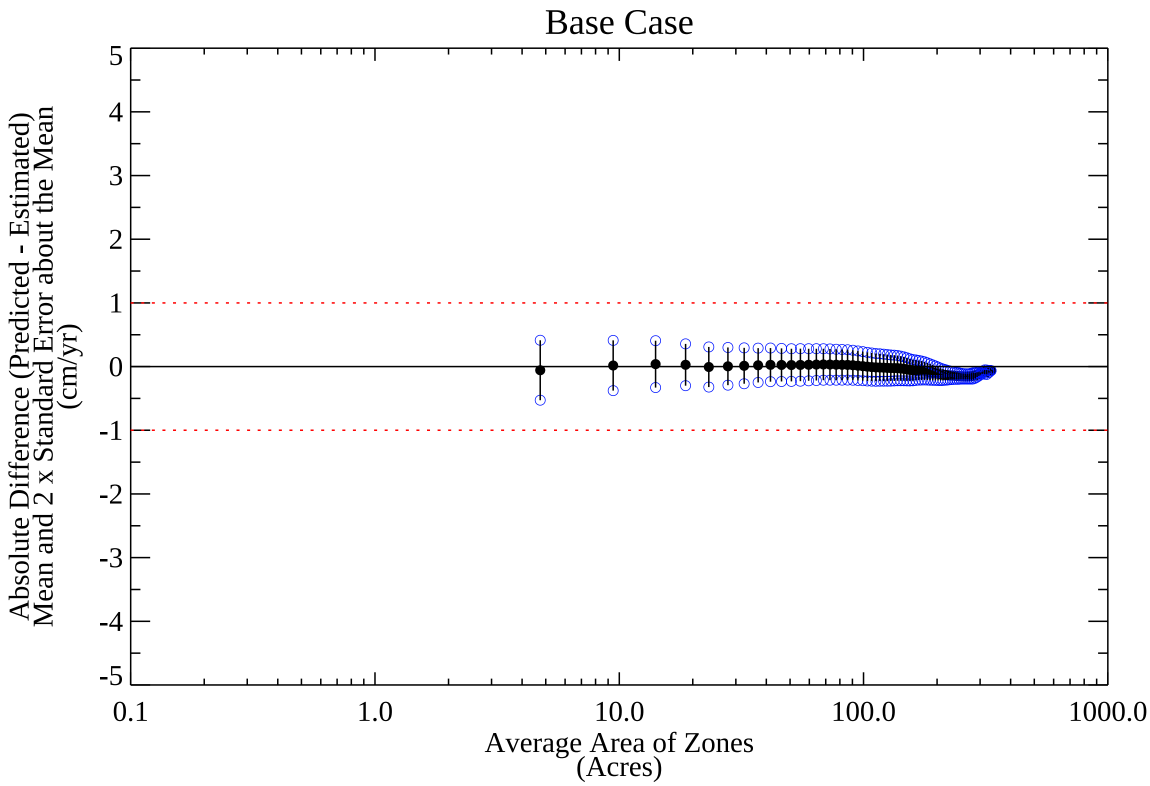

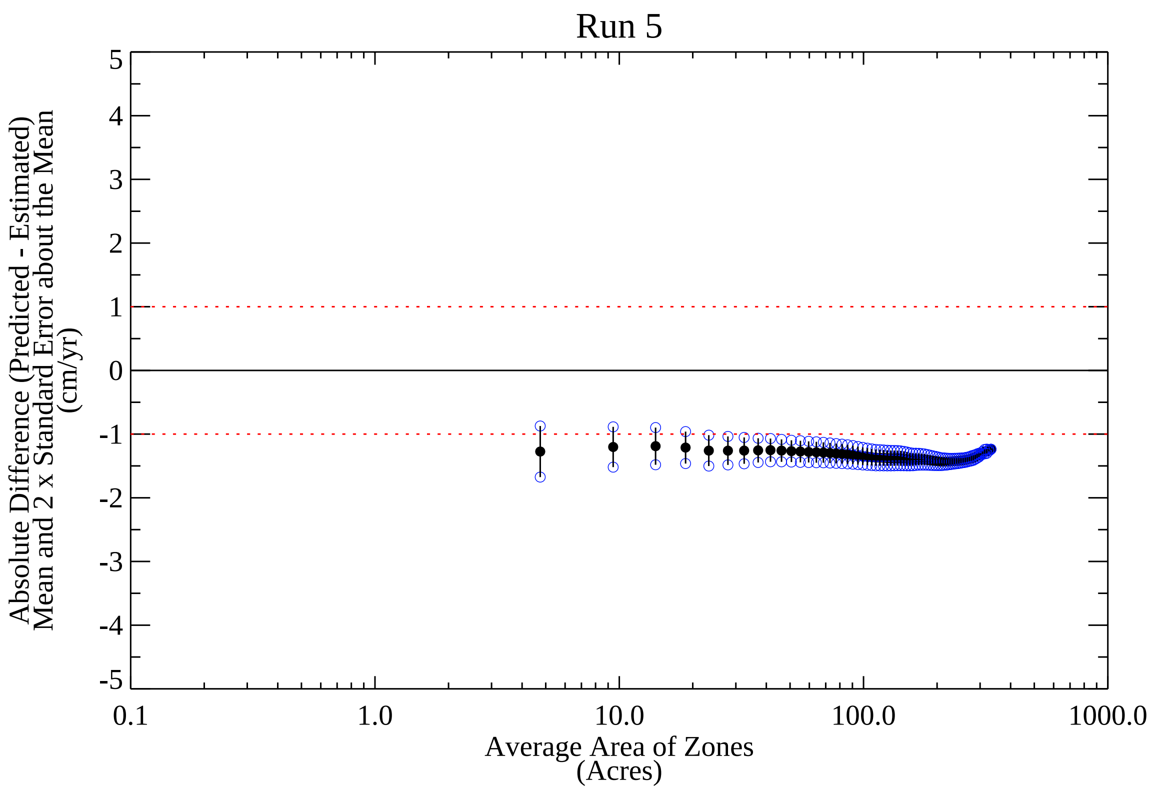

Figure D-105. Absolute difference in net sedimentation rate for different spatial scale: Run 5, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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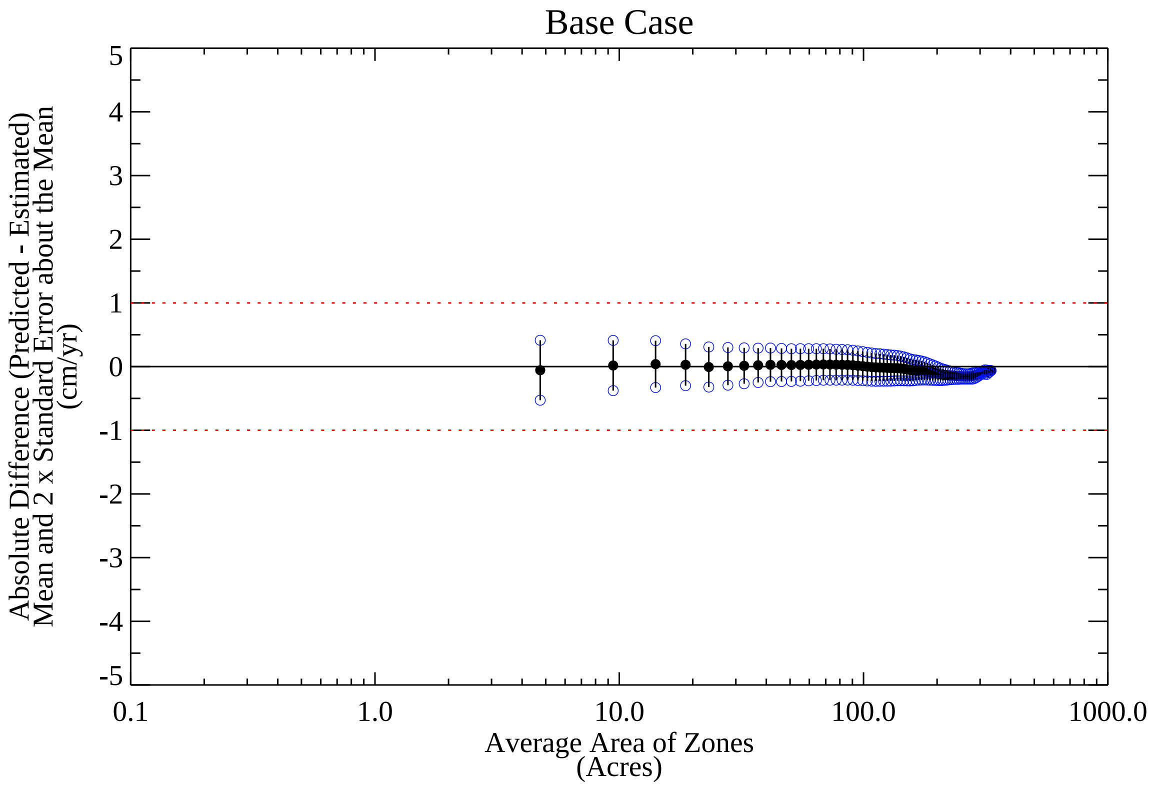

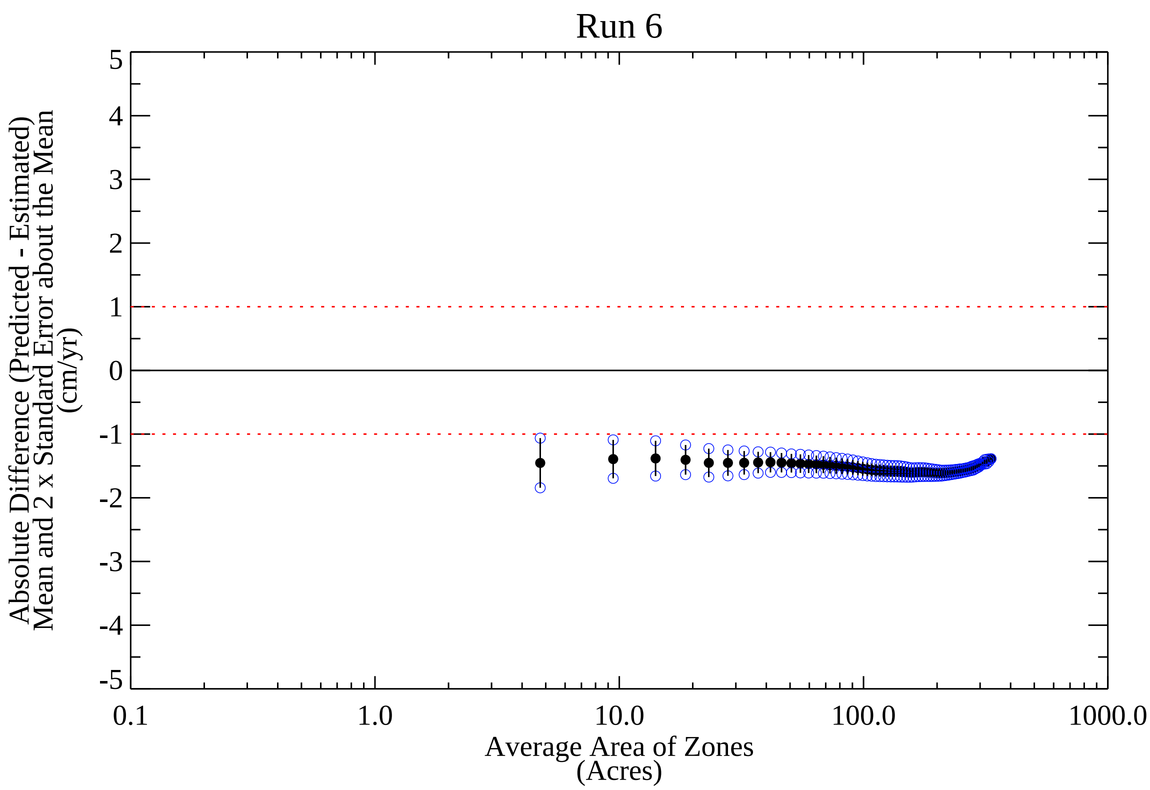

Figure D-106. Absolute difference in net sedimentation rate for different spatial scale: Run 6, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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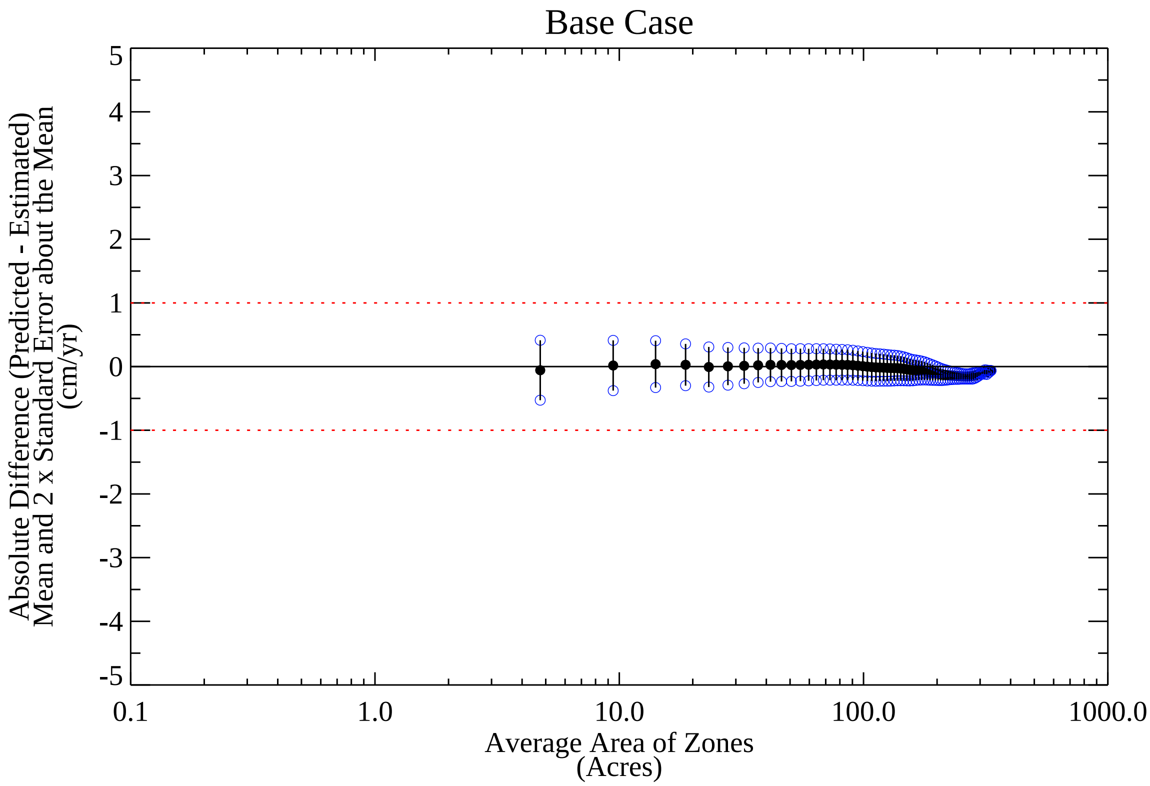

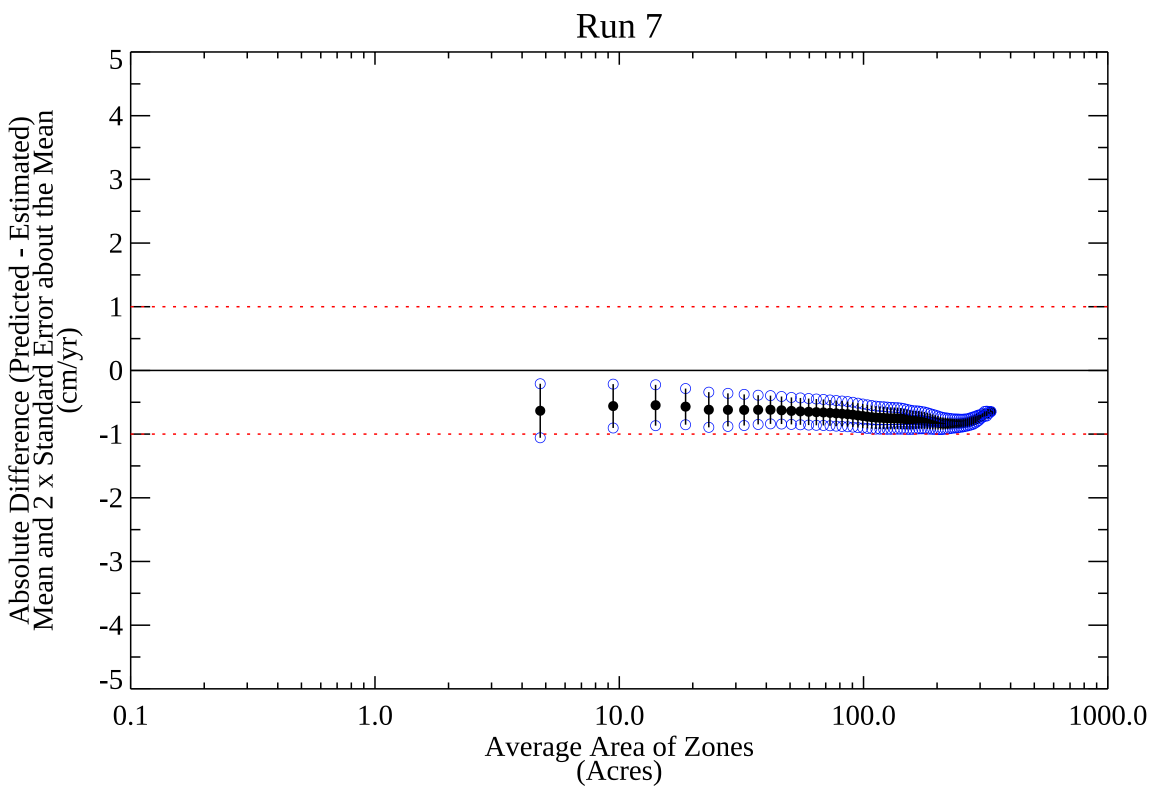

Figure D-107. Absolute difference in net sedimentation rate for different spatial scale: Run 7, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.

For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.

1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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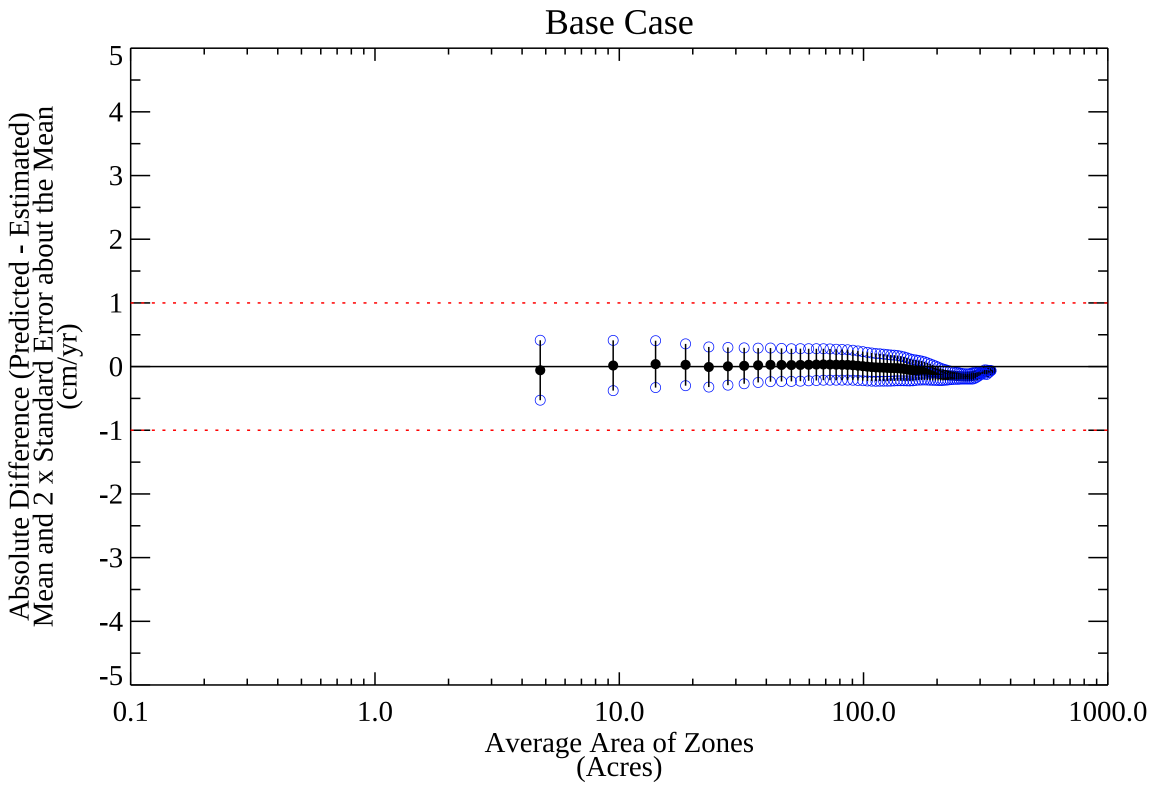

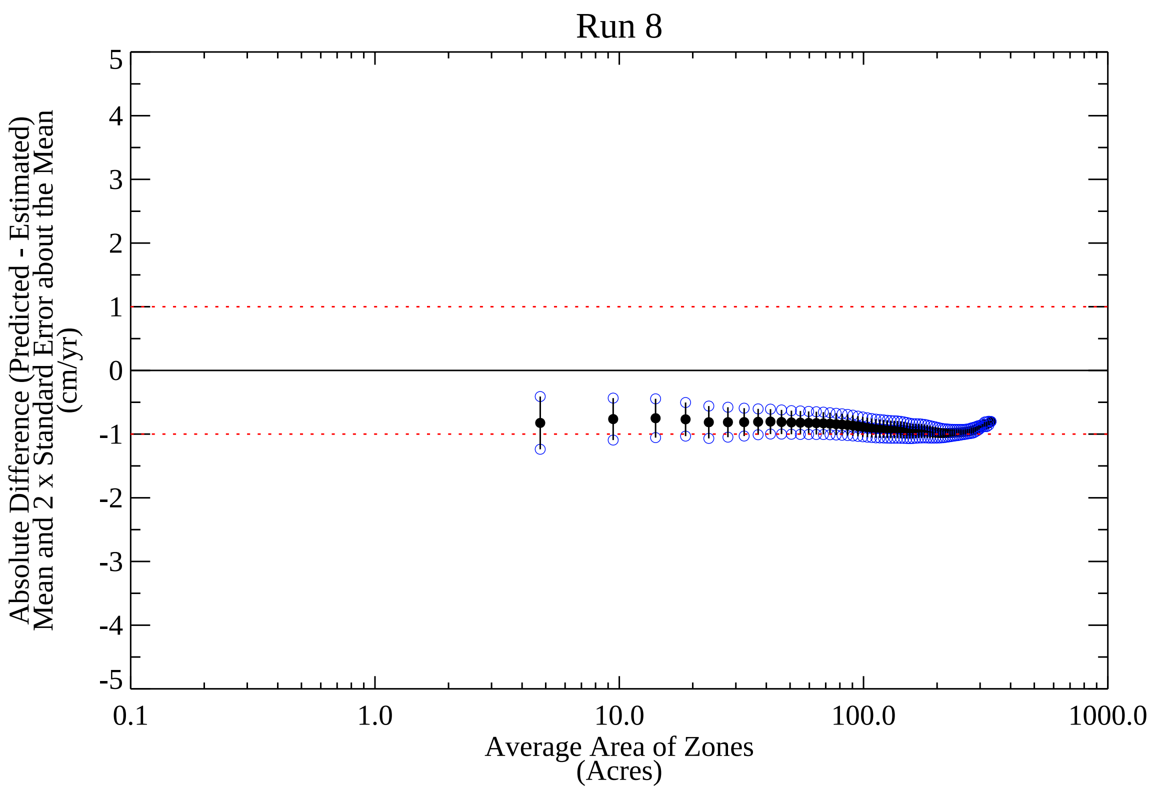

Figure D-108. Absolute difference in net sedimentation rate for different spatial scale: Run 8, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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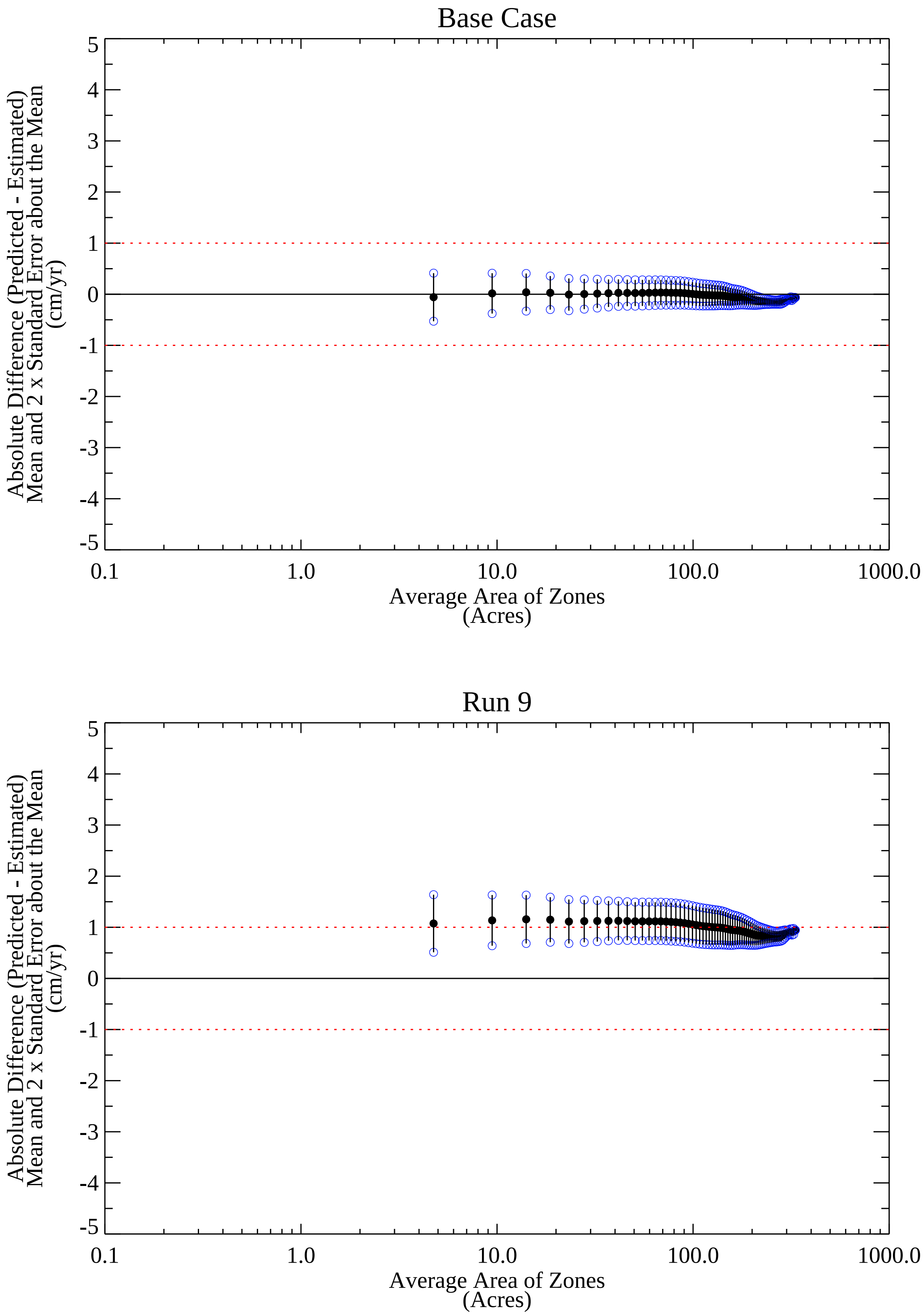

Figure D-109. Absolute difference in net sedimentation rate for different spatial scale: Run 9, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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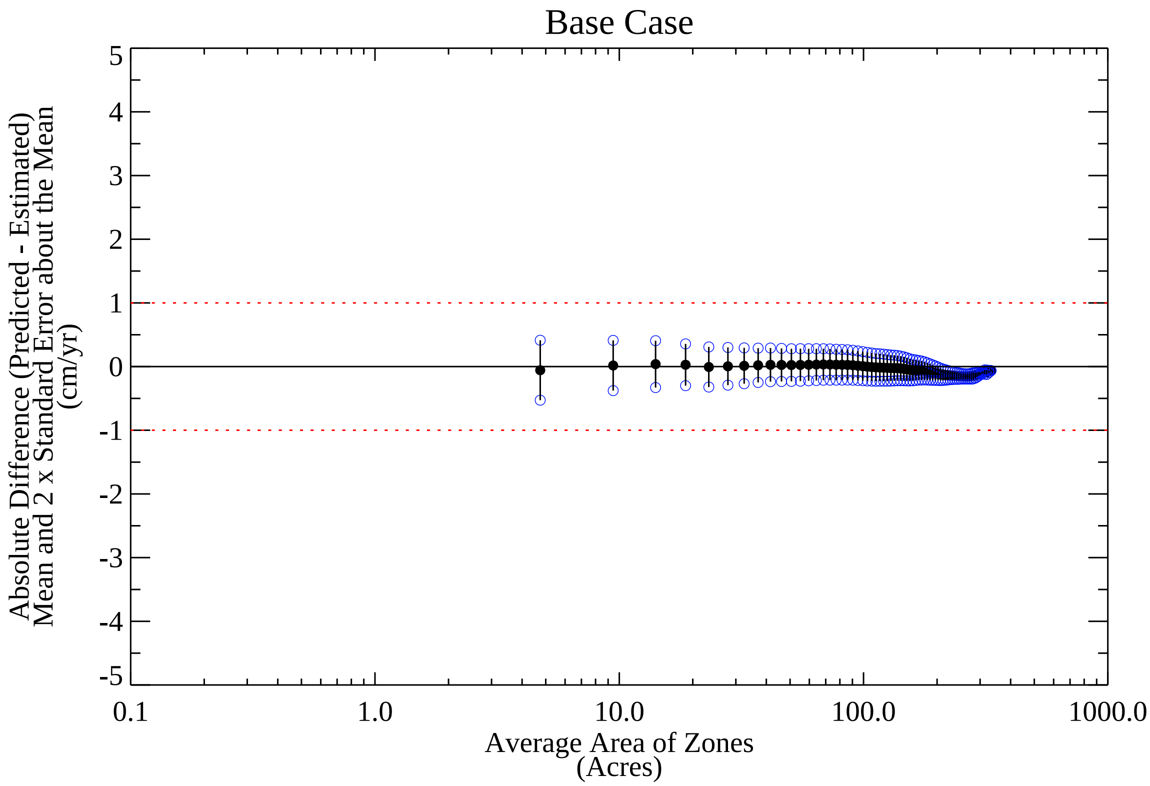

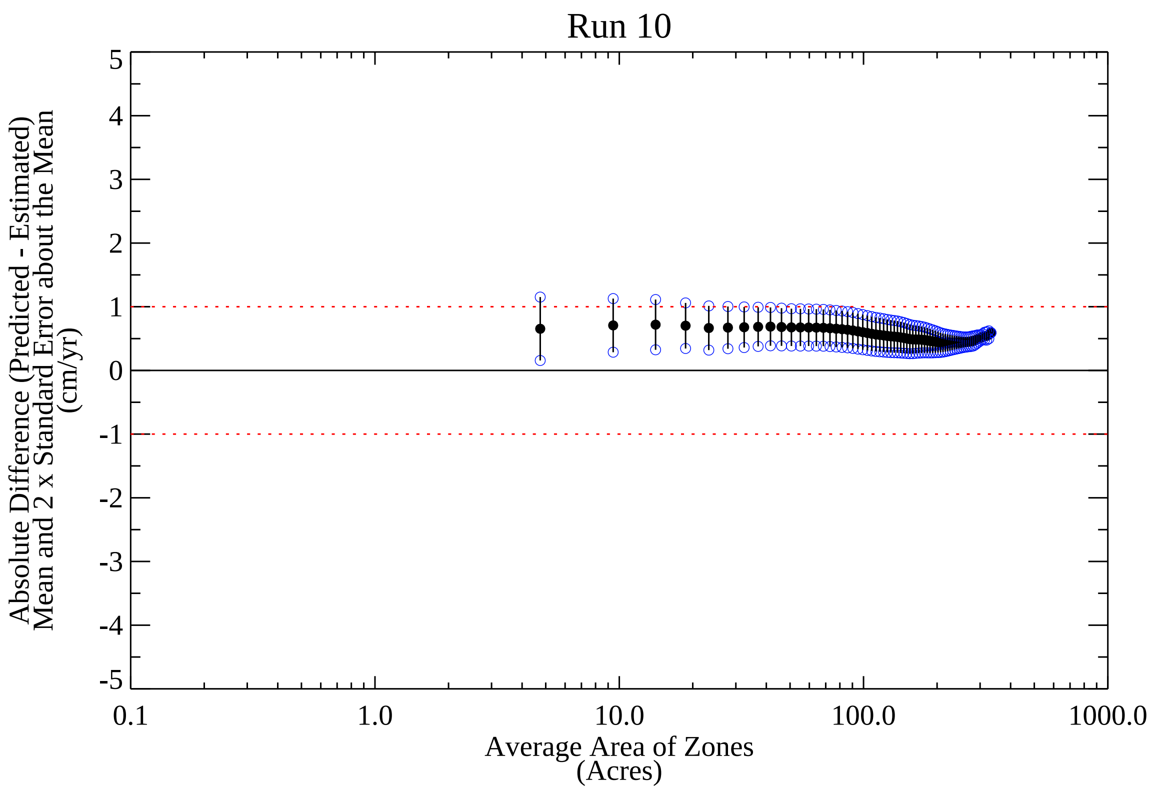

Figure D-110. Absolute difference in net sedimentation rate for different spatial scale: Run 10, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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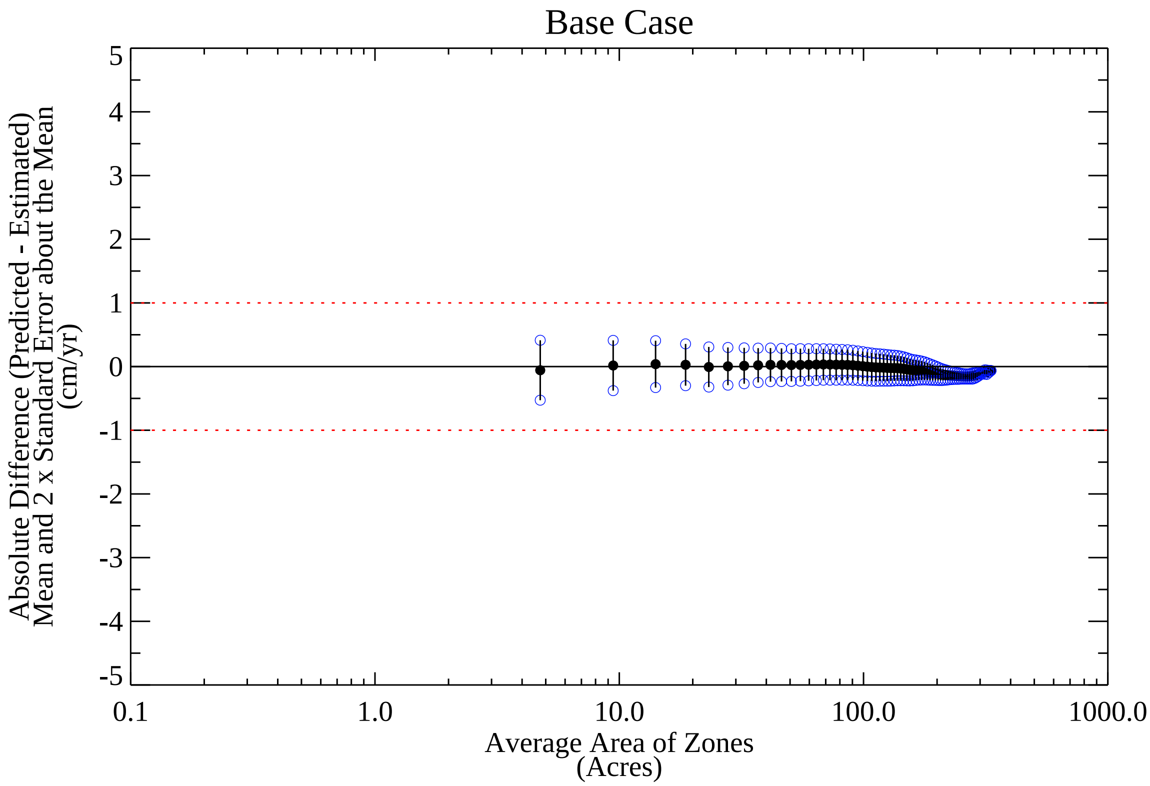

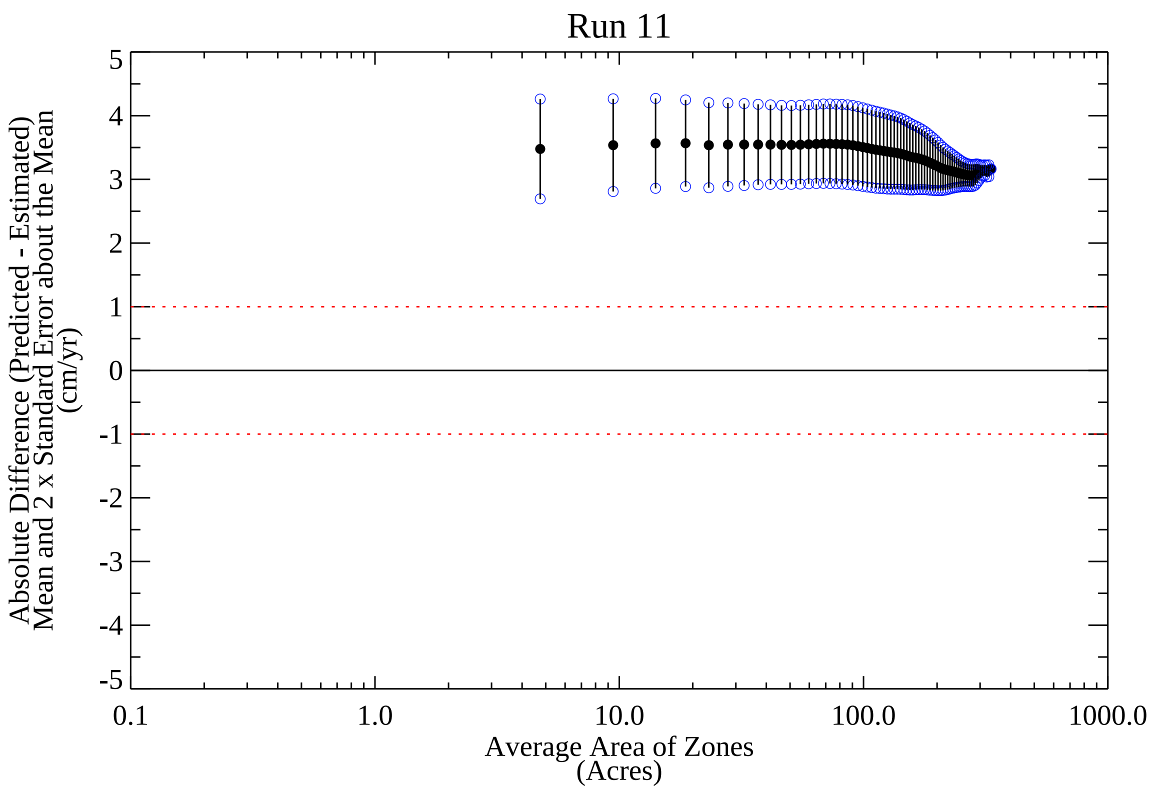

Figure D-111. Absolute difference in net sedimentation rate for different spatial scale: Run 11, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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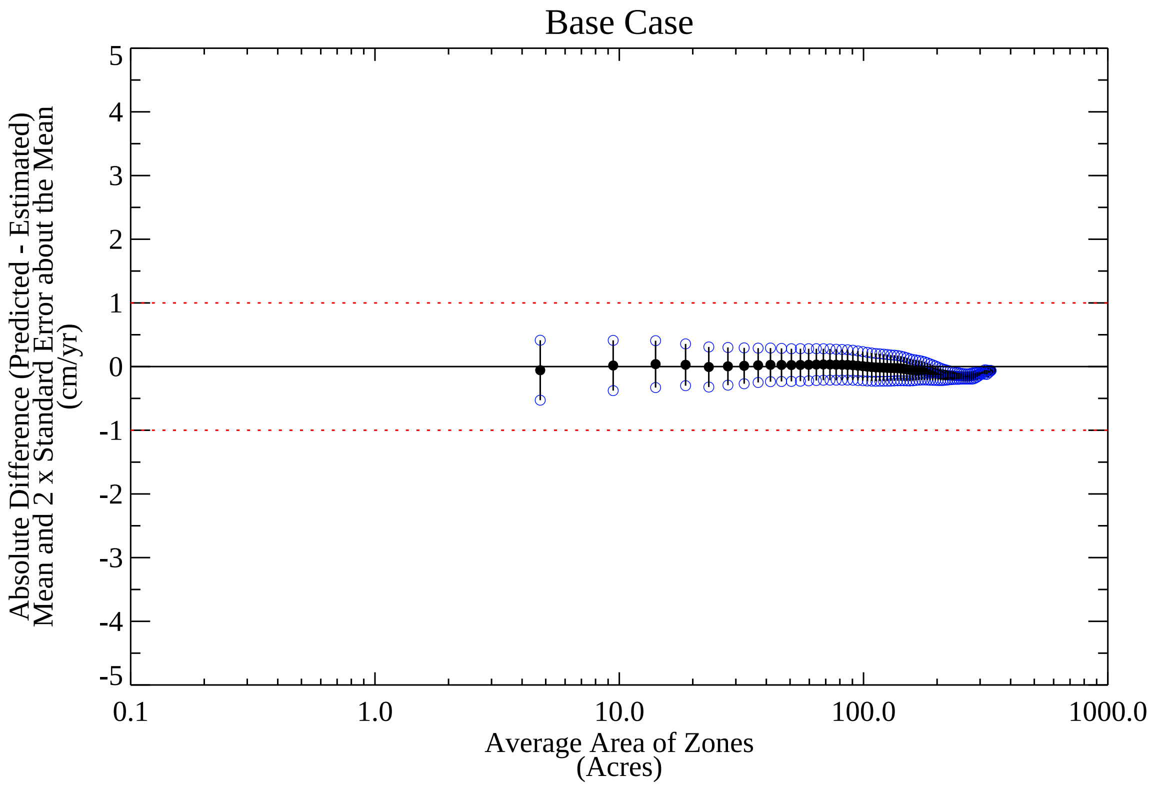


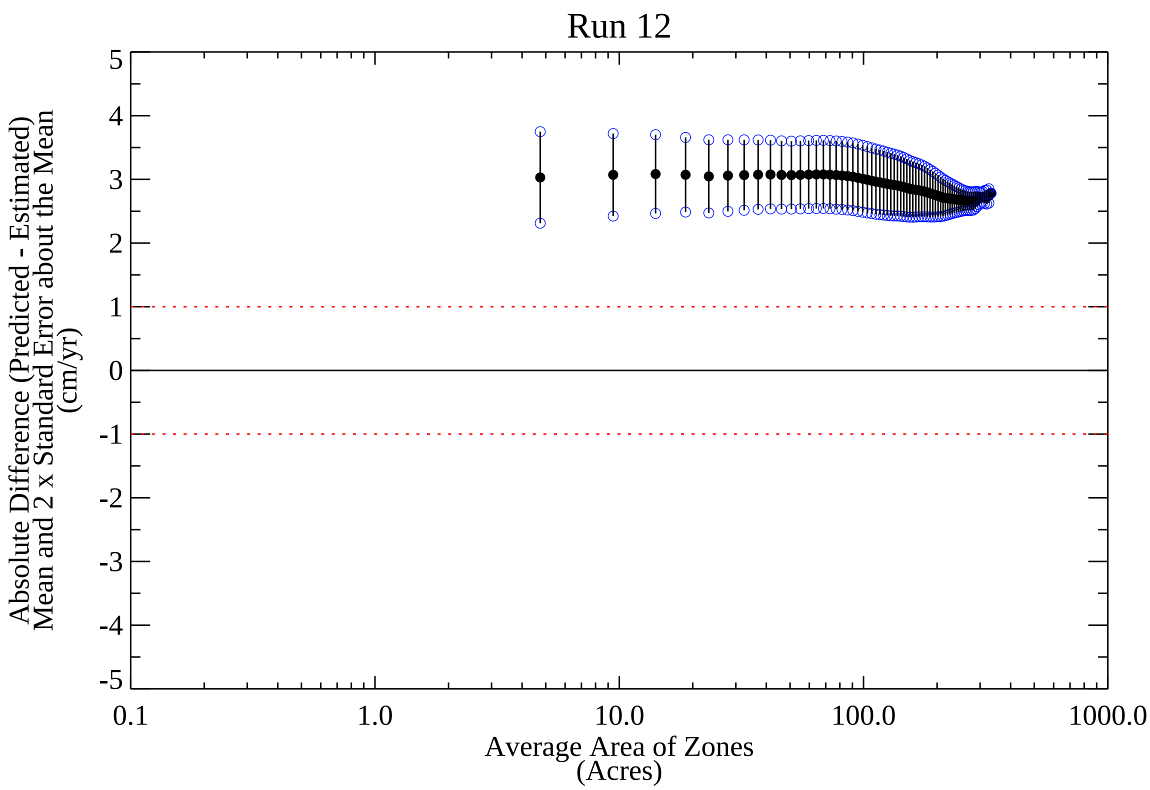
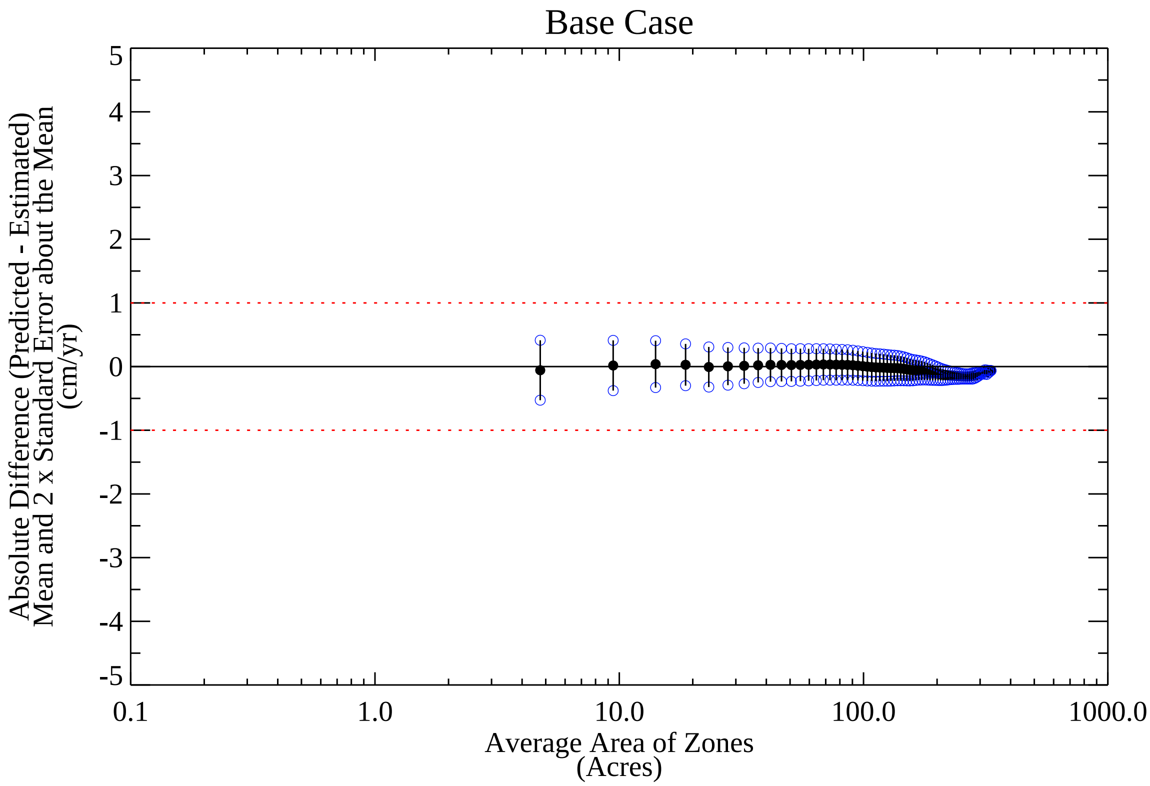


Figure D-112. Absolute difference in net sedimentation rate for different spatial scale: Run 12, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..



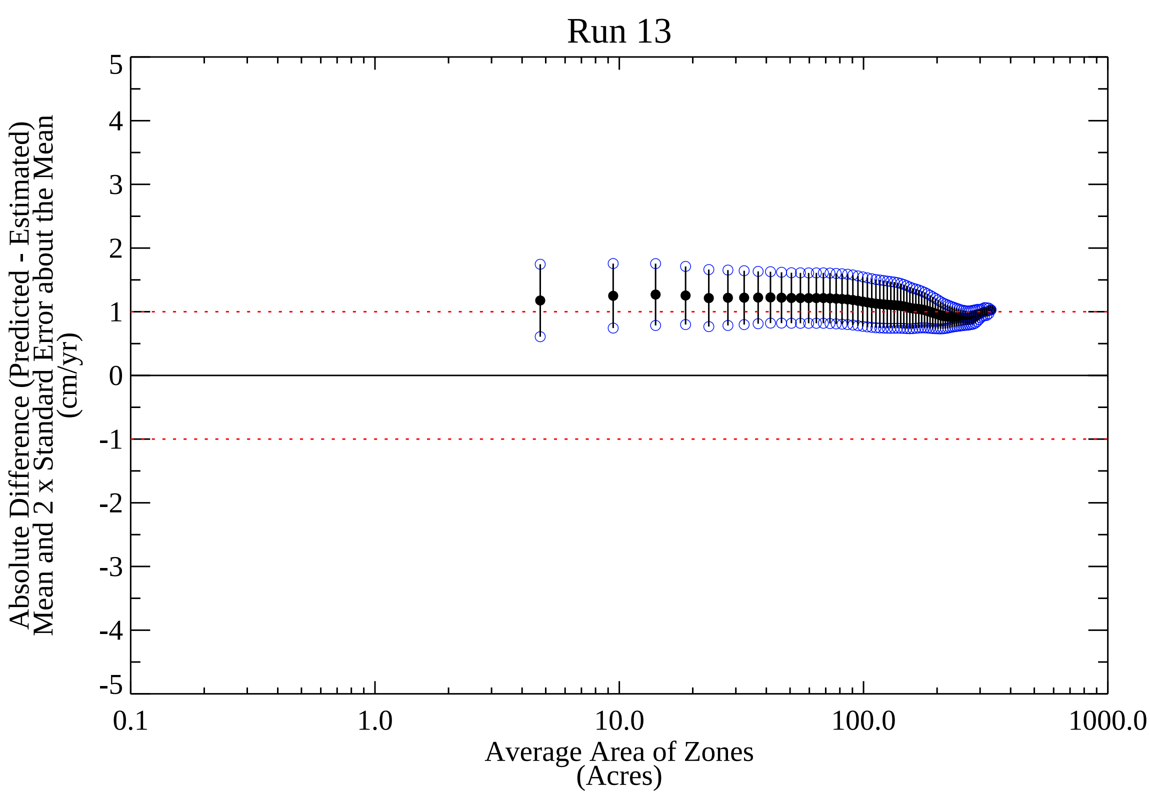


Figure D-113. Absolute difference in net sedimentation rate for different spatial scale: Run 13, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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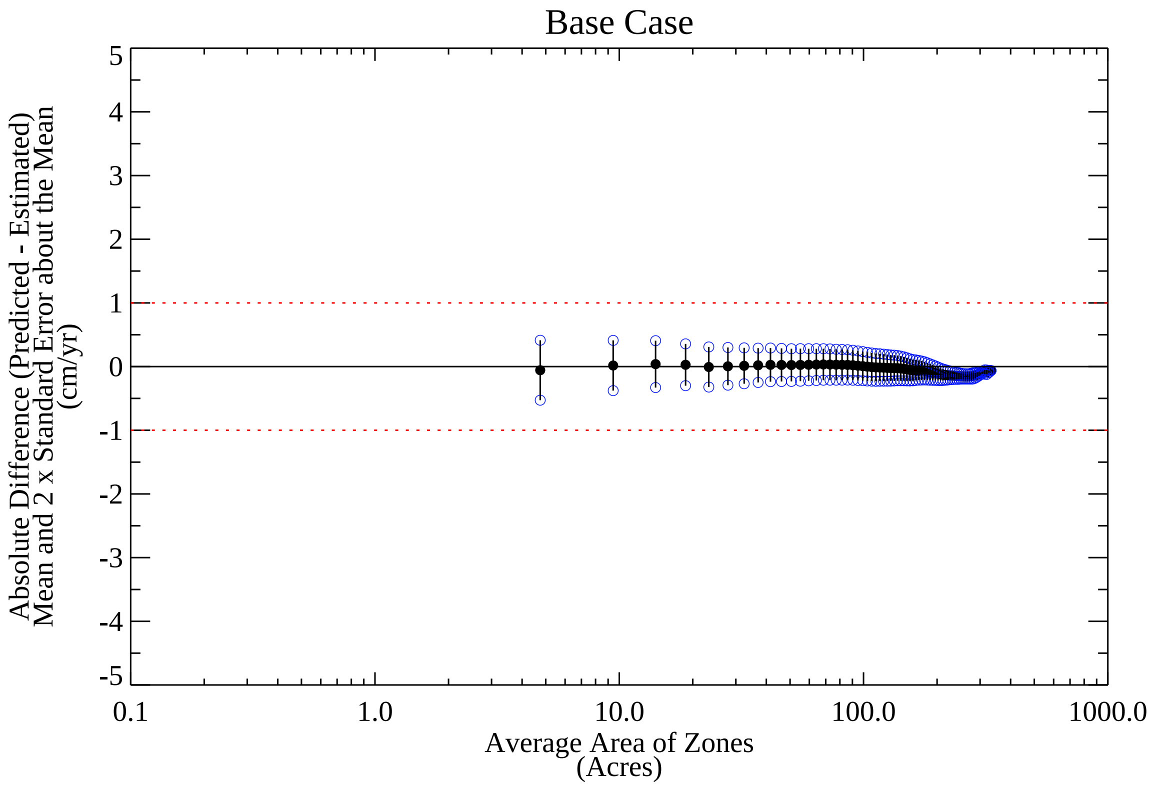

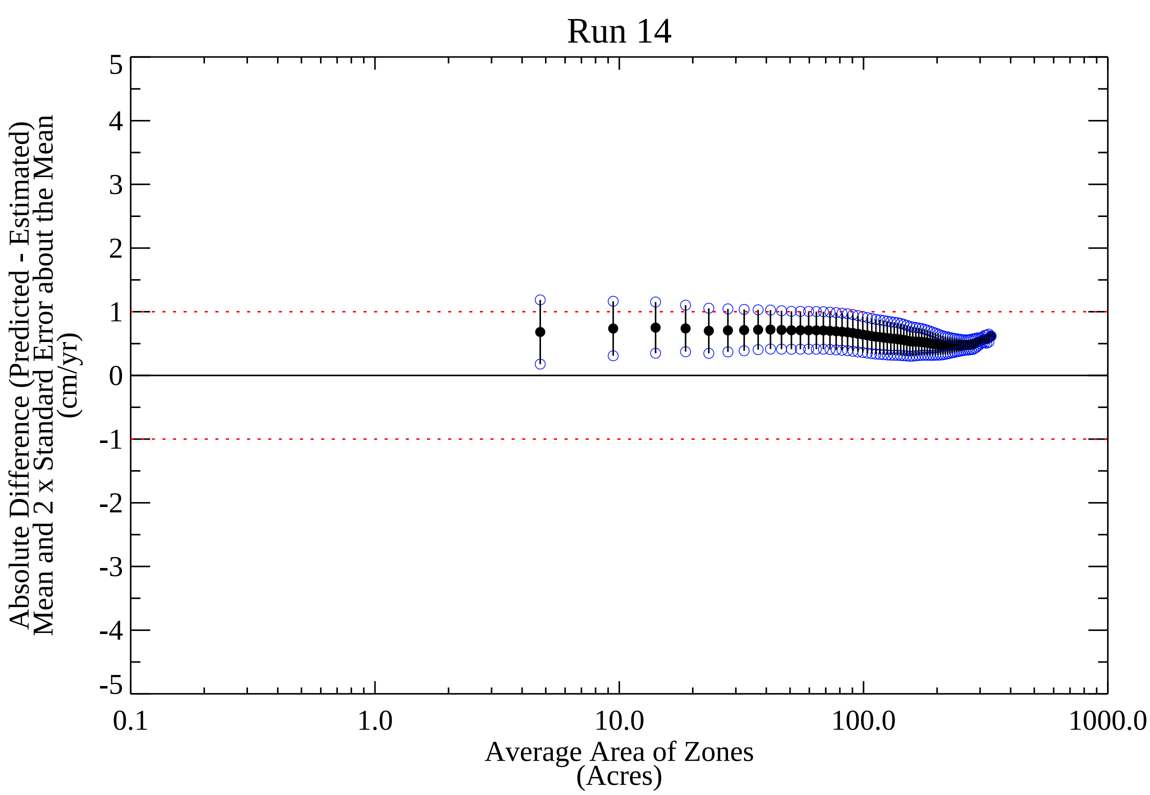

Figure D-114. Absolute difference in net sedimentation rate for different spatial scale: Run 14, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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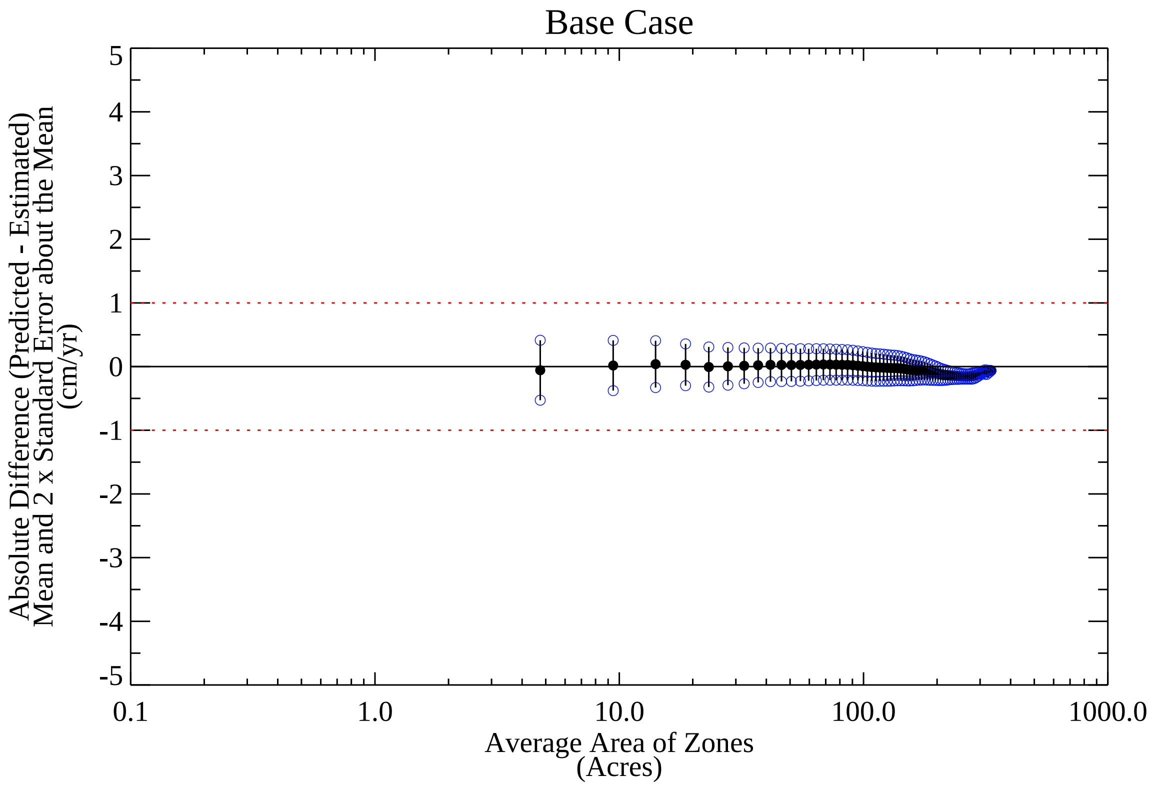

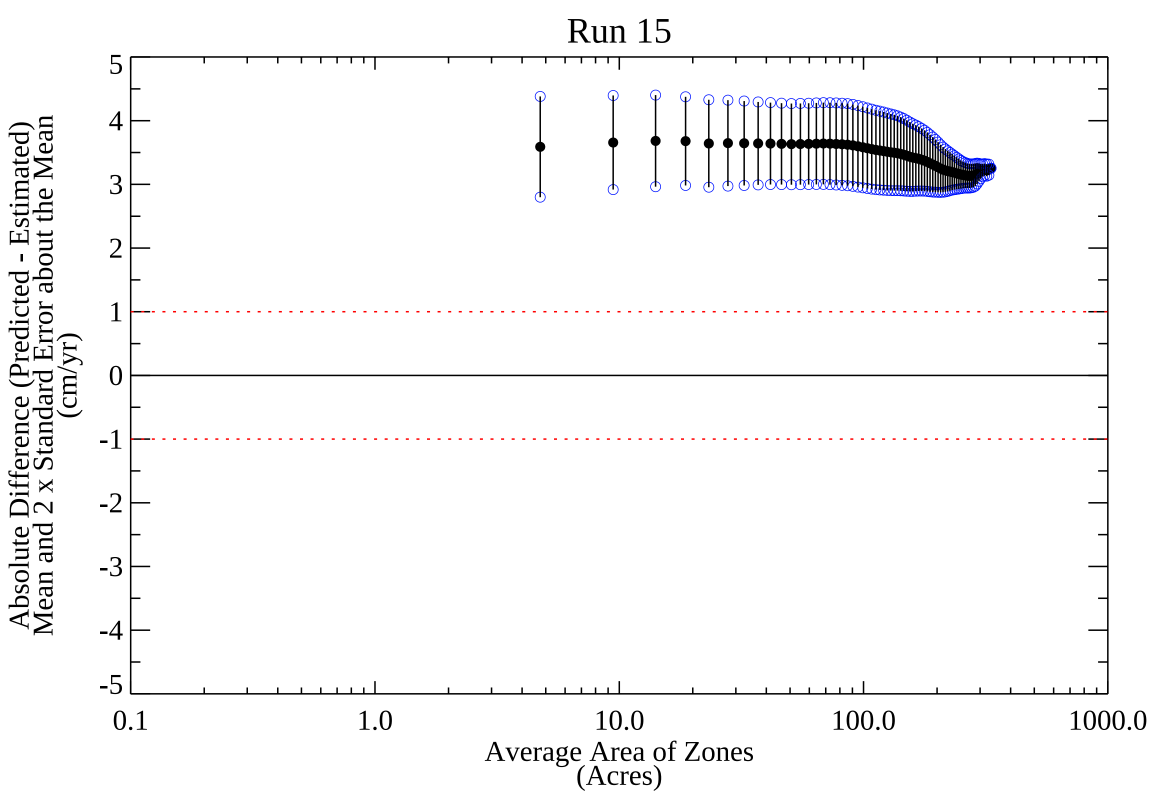

Figure D-115. Absolute difference in net sedimentation rate for different spatial scale: Run 15, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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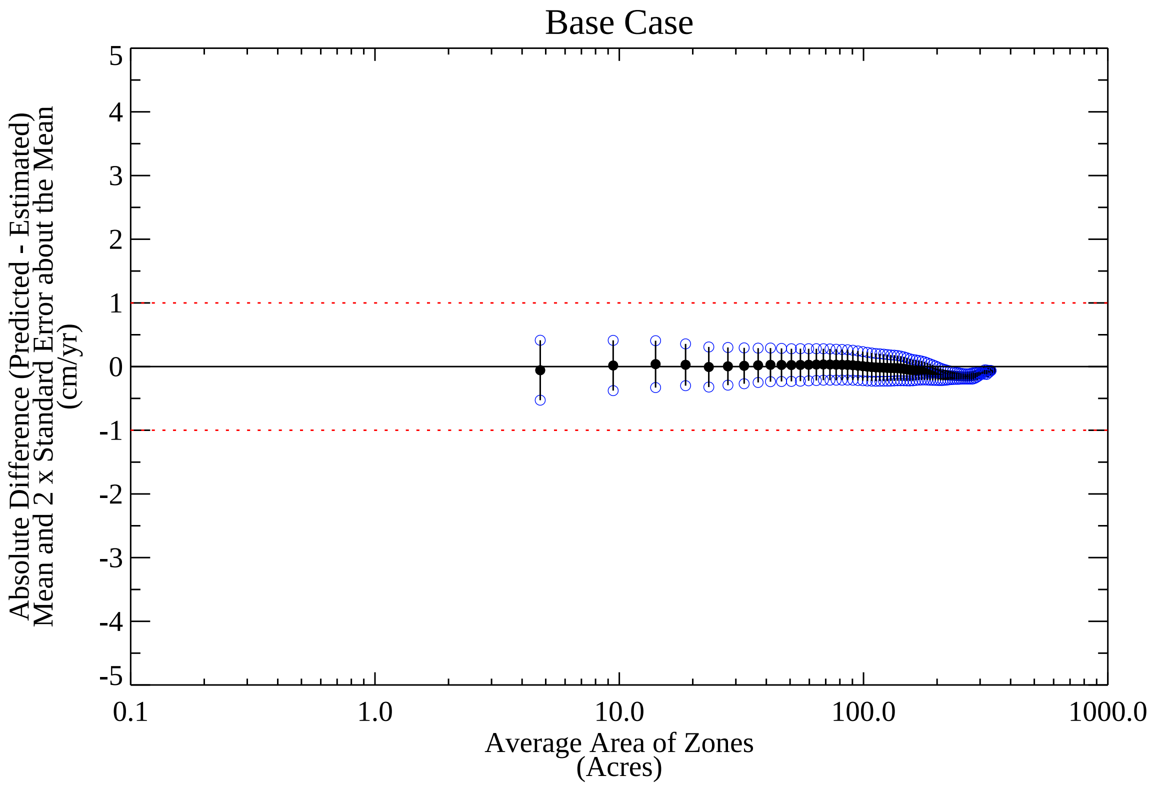

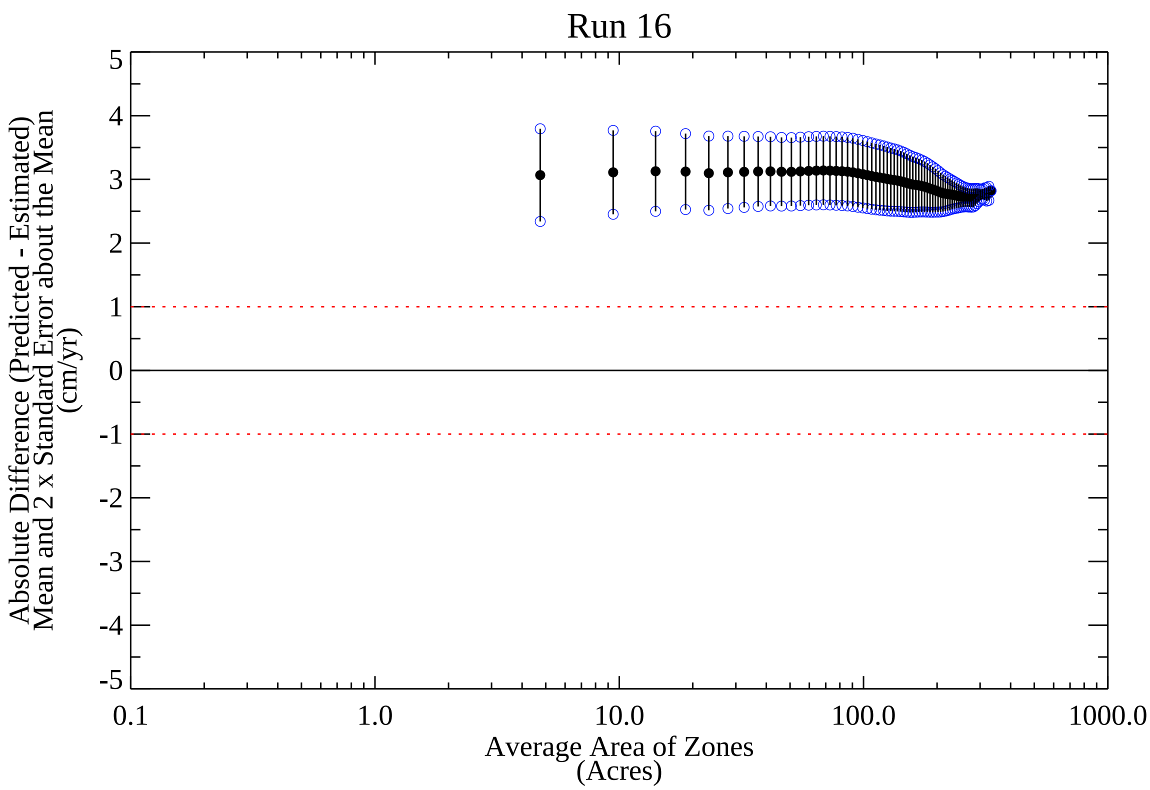

Figure D-116. Absolute difference in net sedimentation rate for different spatial scale: Run 16, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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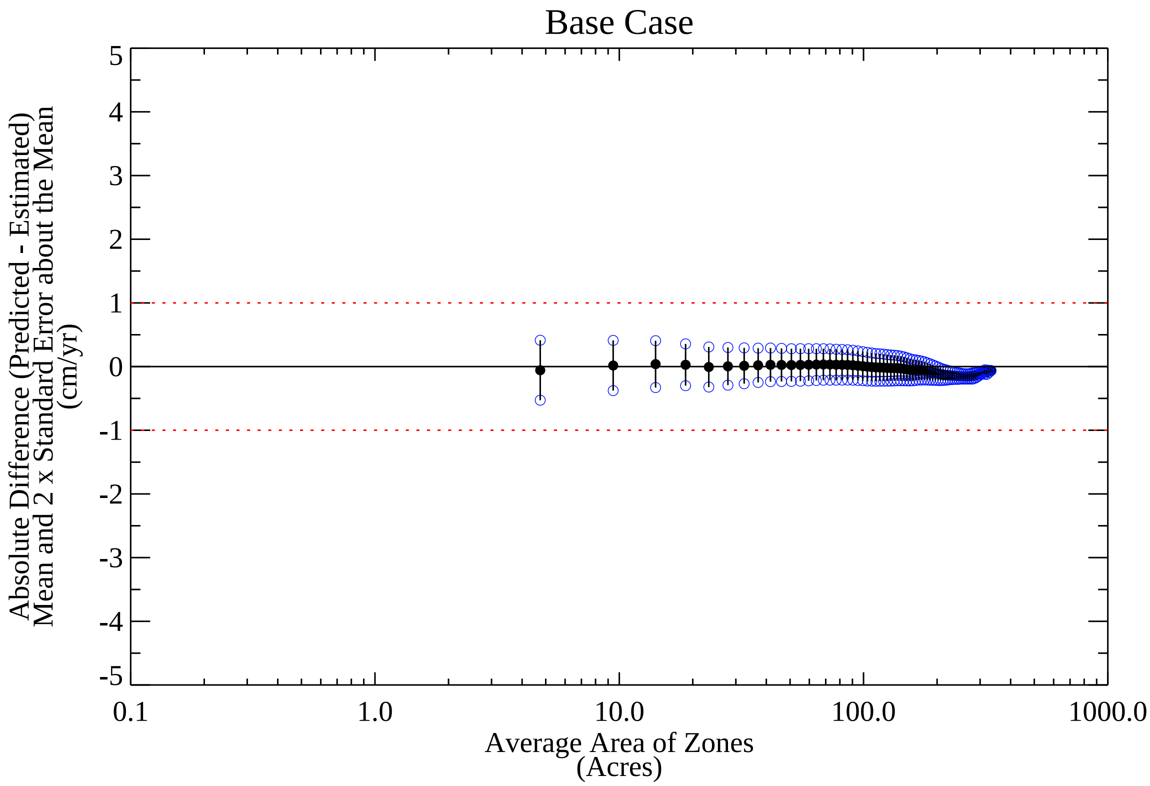

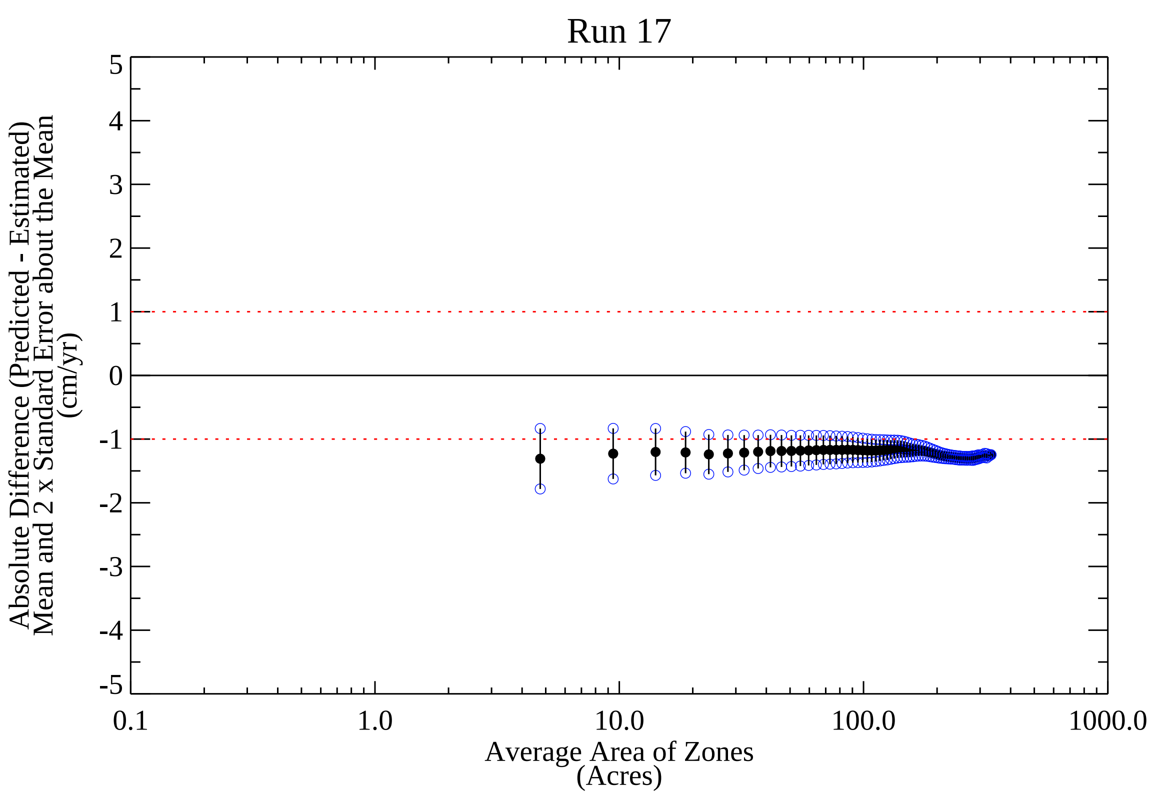

Figure D-117. Absolute difference in net sedimentation rate for different spatial scale: Run 17, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.

For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.

1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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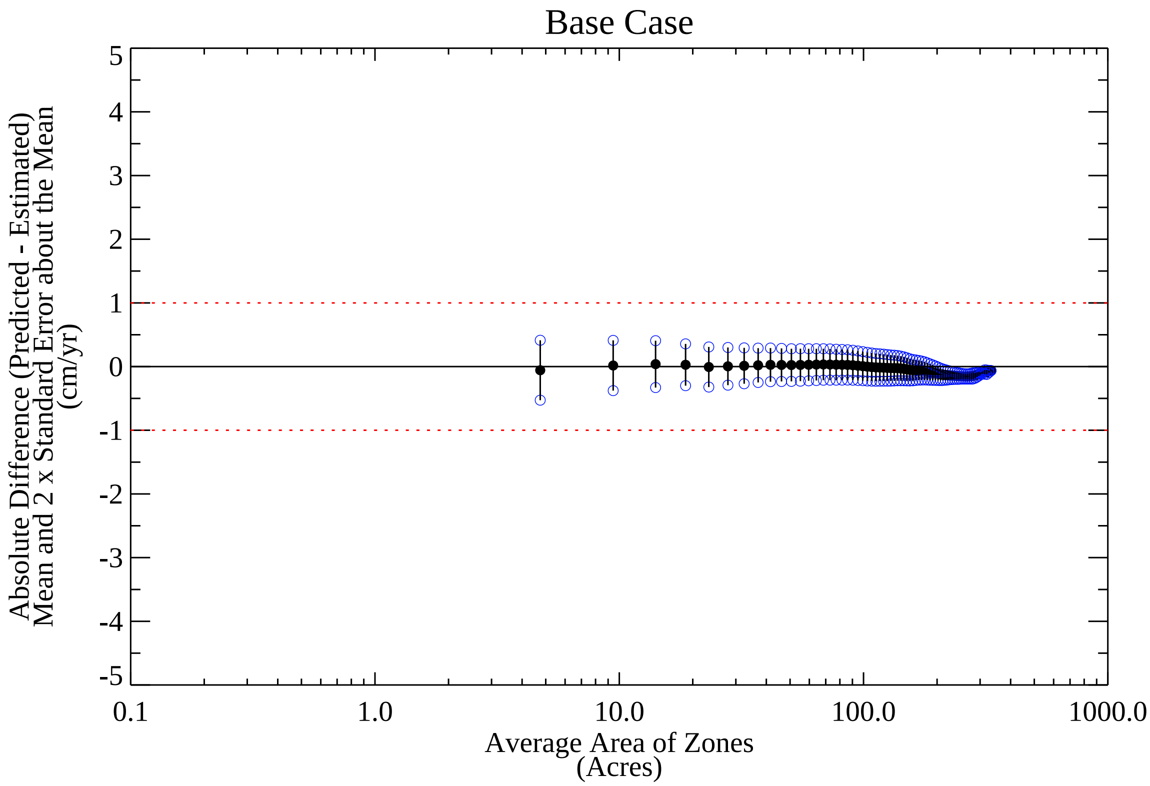

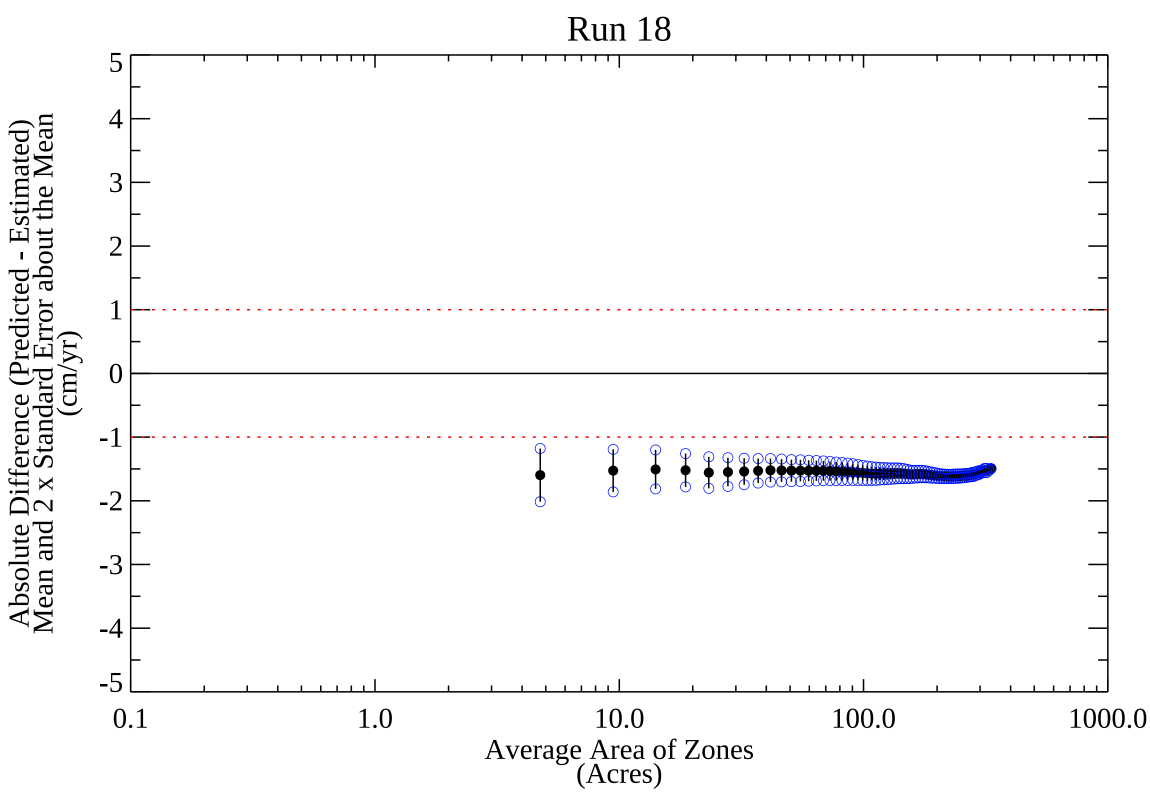

Figure D-118. Absolute difference in net sedimentation rate for different spatial scale: Run 18, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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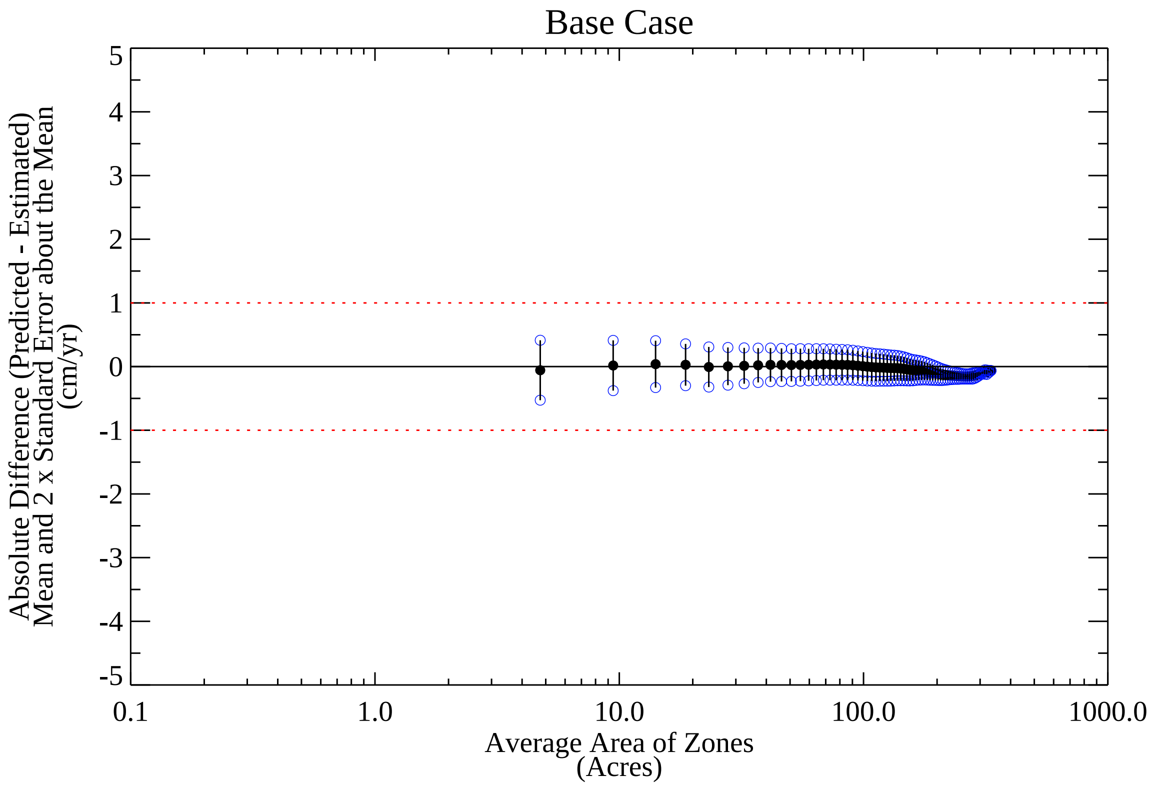


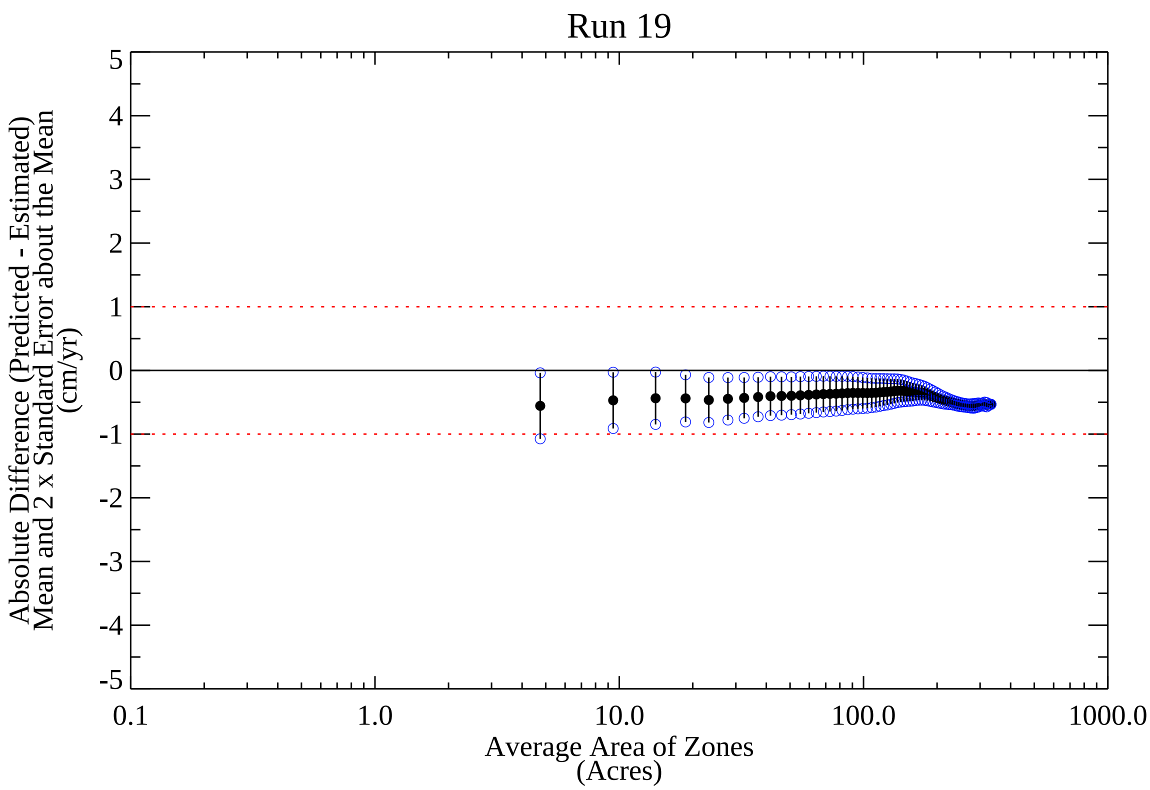
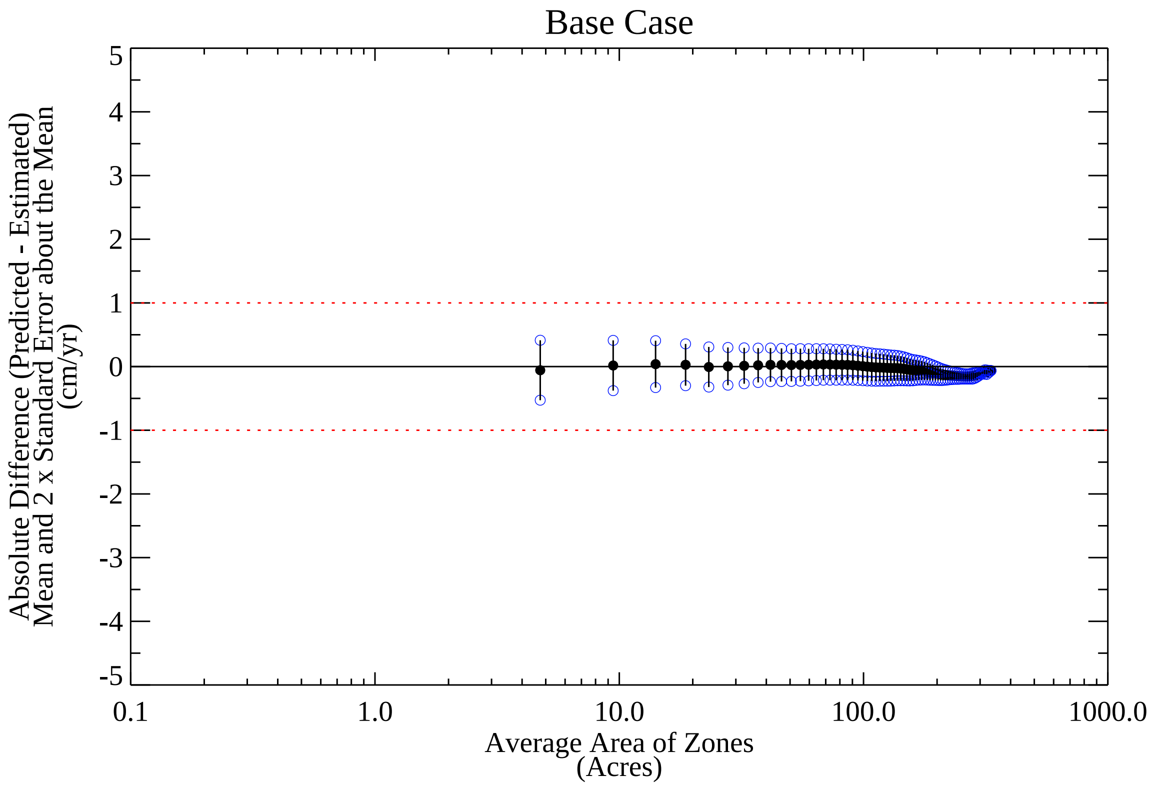


Figure D-119. Absolute difference in net sedimentation rate for different spatial scale: Run 19, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..



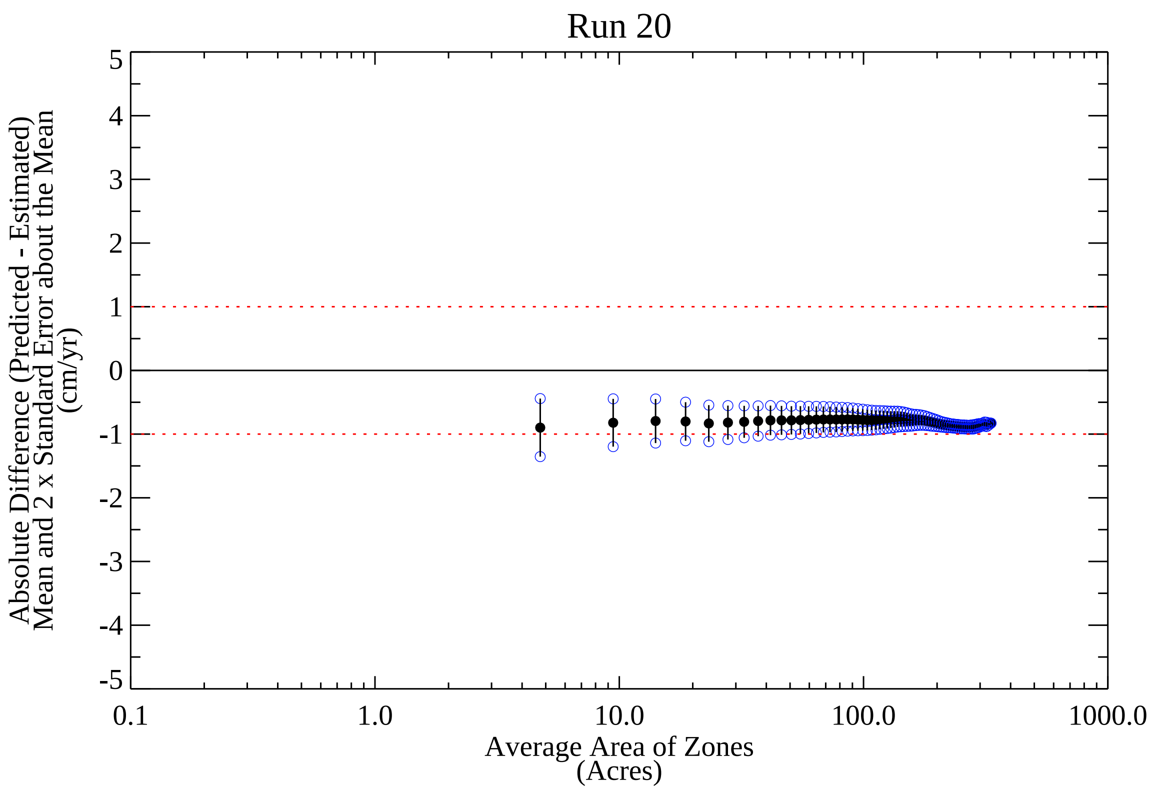
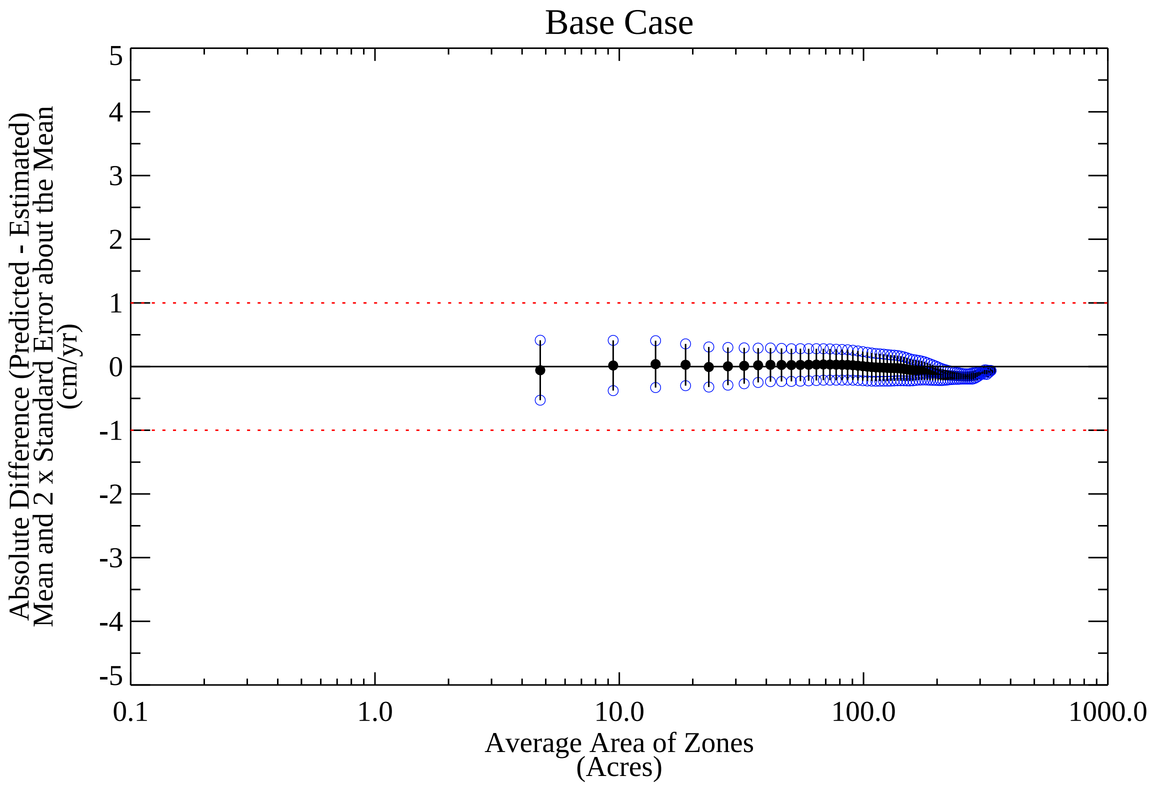


Figure D-120. Absolute difference in net sedimentation rate for different spatial scale: Run 20, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..



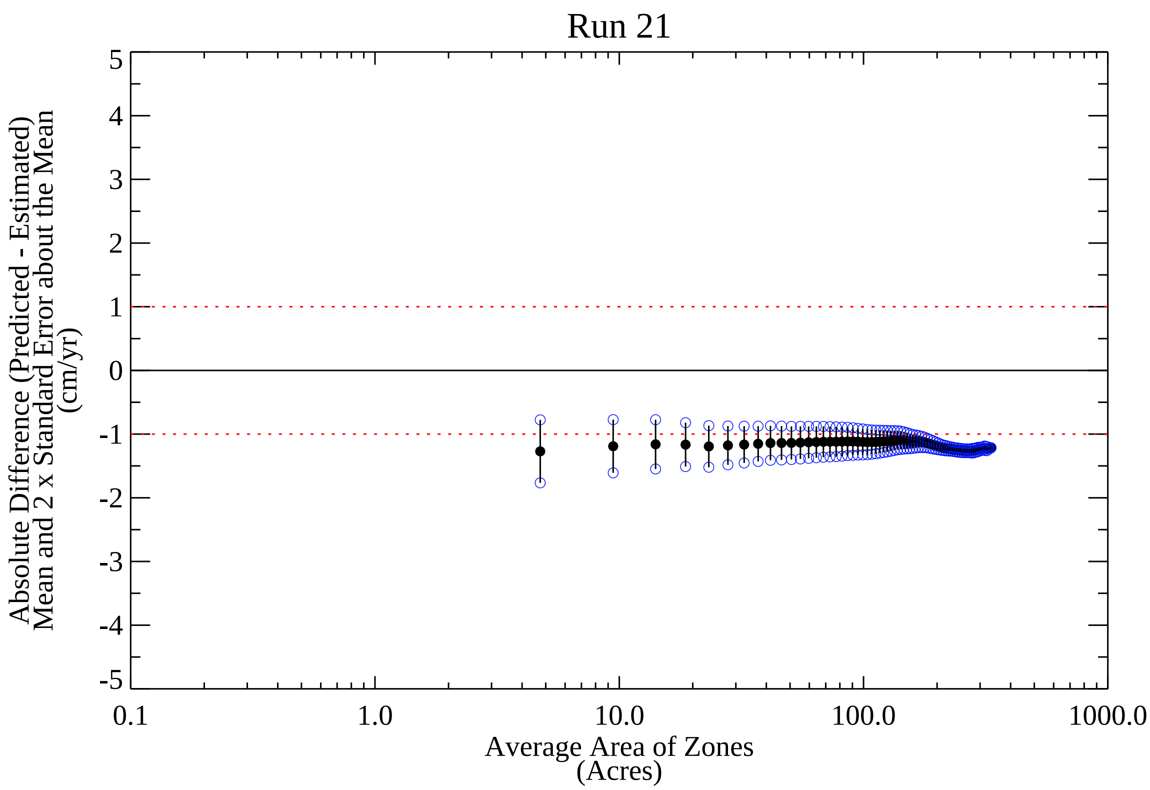


Figure D-121. Absolute difference in net sedimentation rate for different spatial scale: Run 21, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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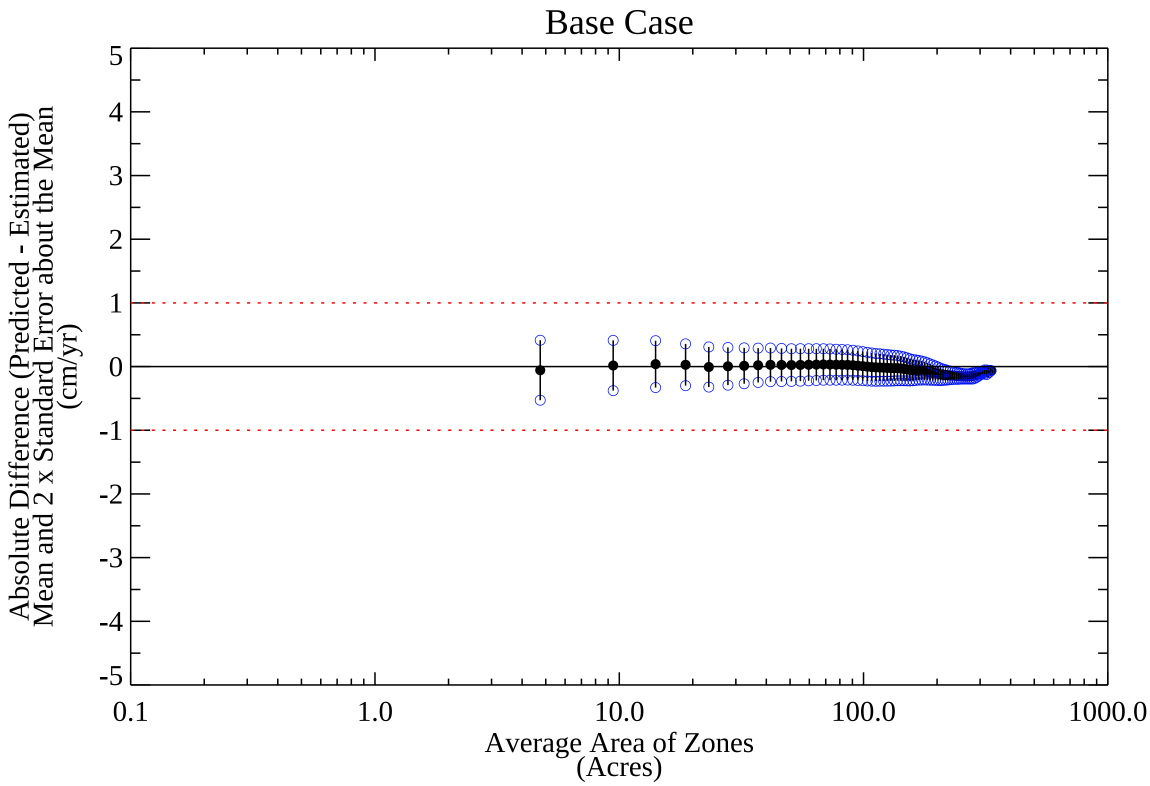

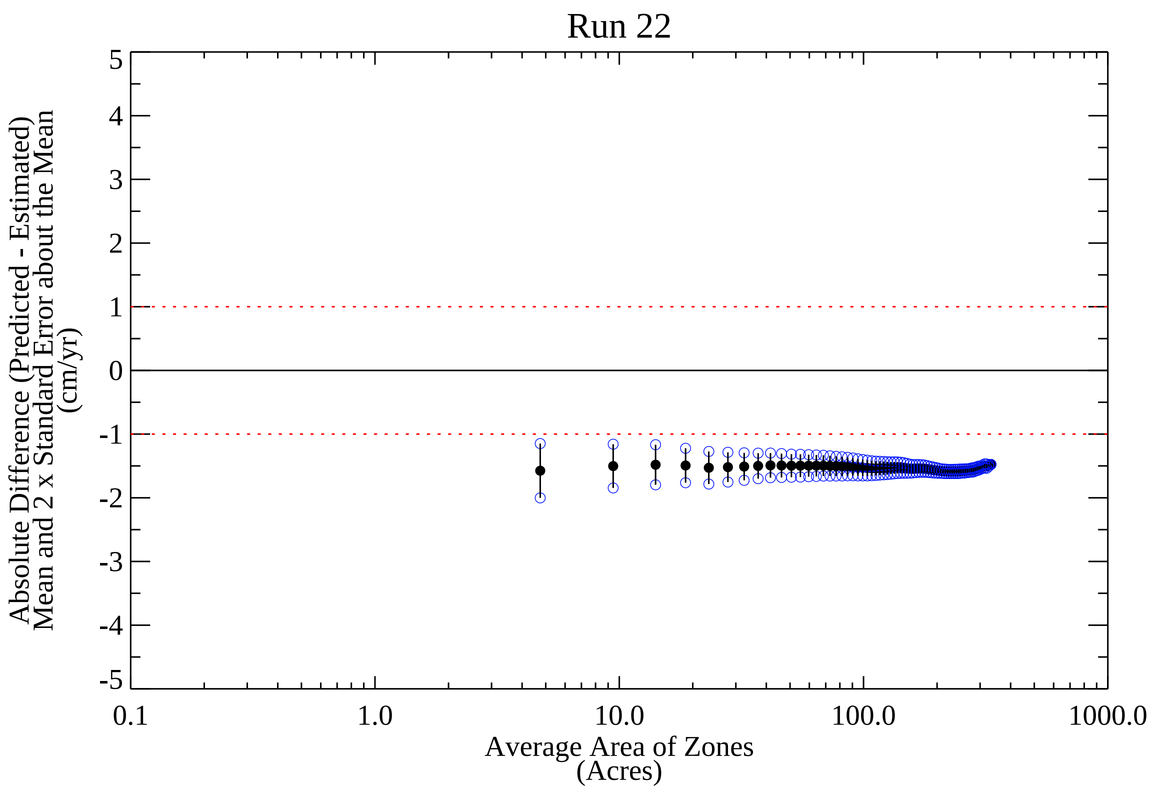

Figure D-122. Absolute difference in net sedimentation rate for different spatial scale: Run 22, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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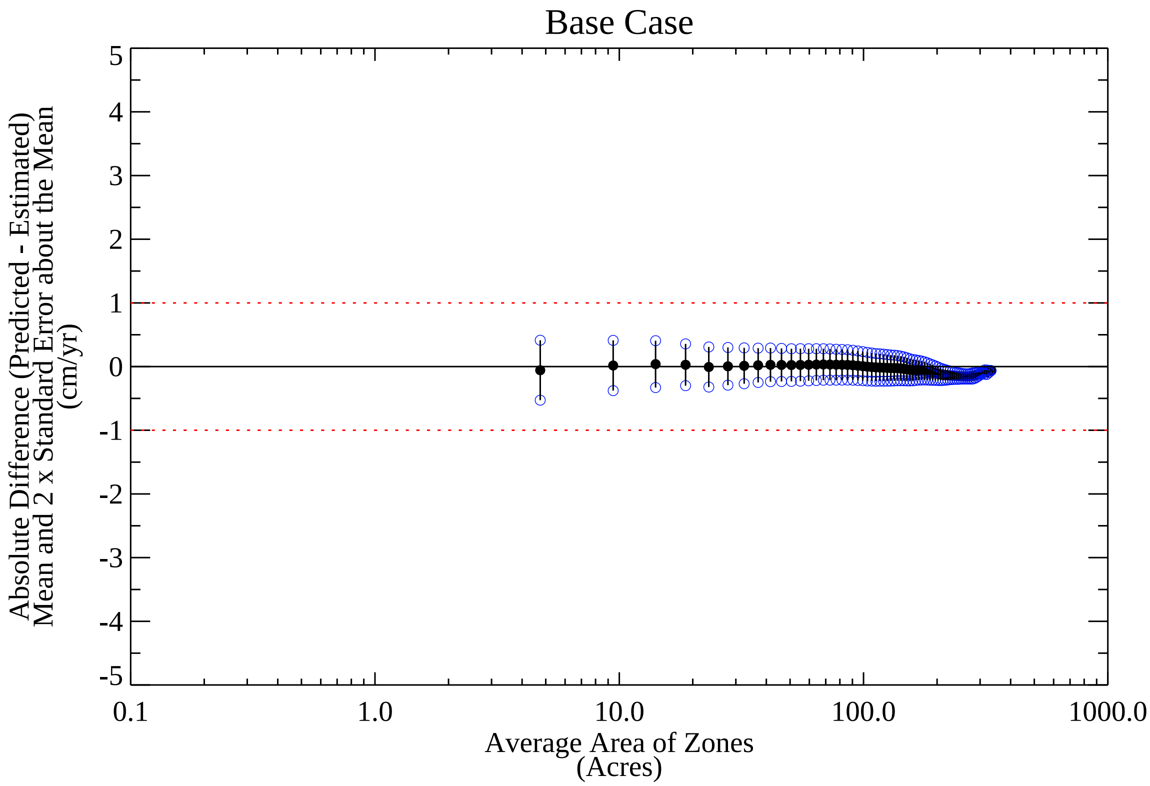

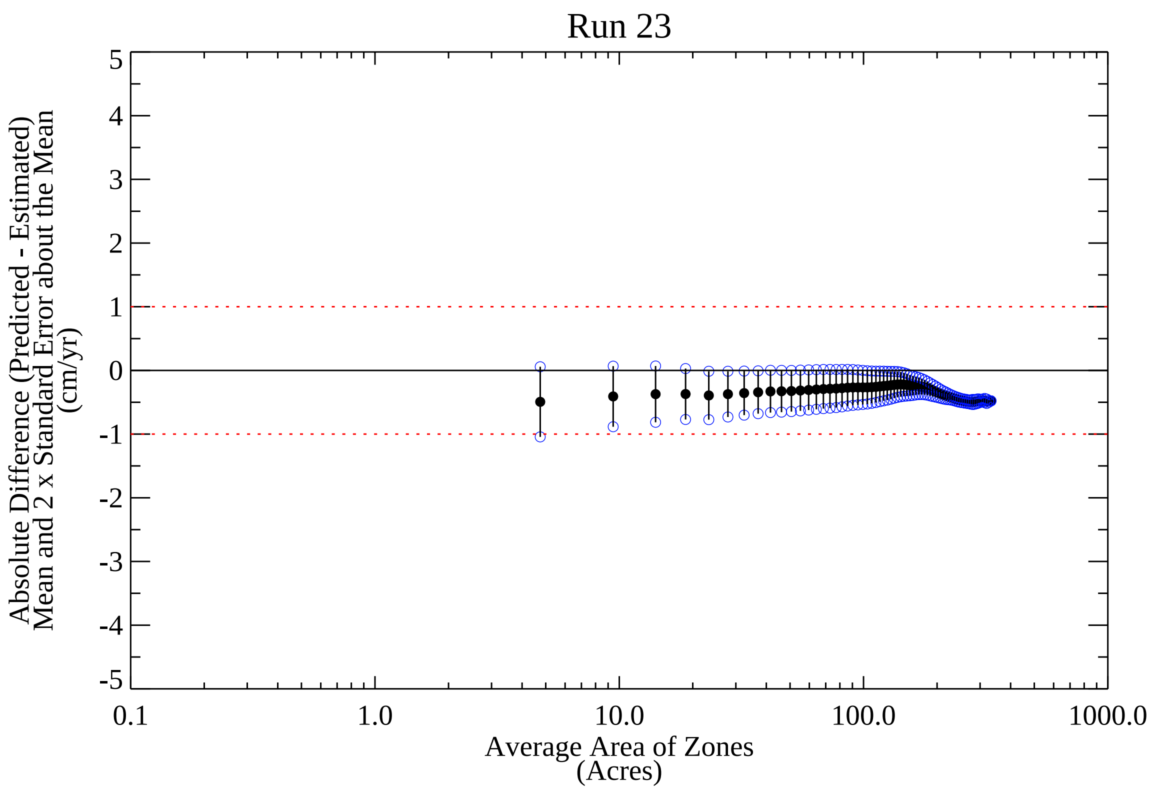

Figure D-123. Absolute difference in net sedimentation rate for different spatial scale: Run 23, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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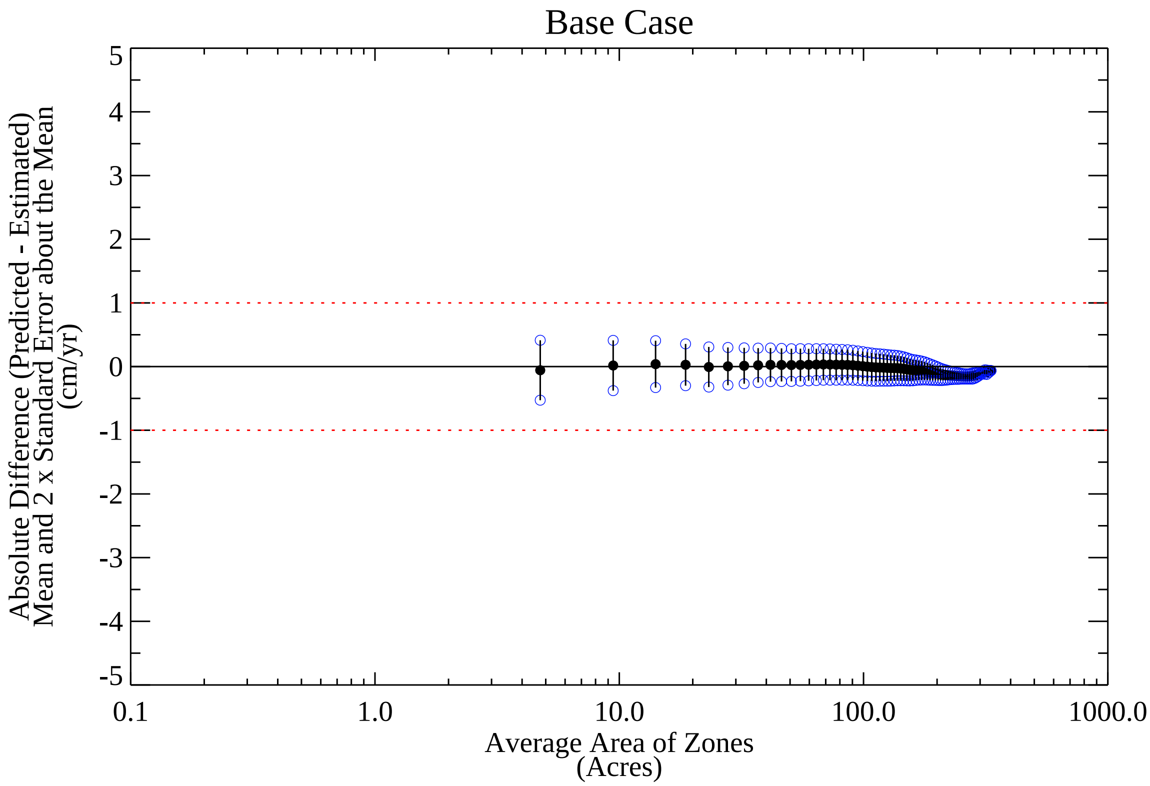


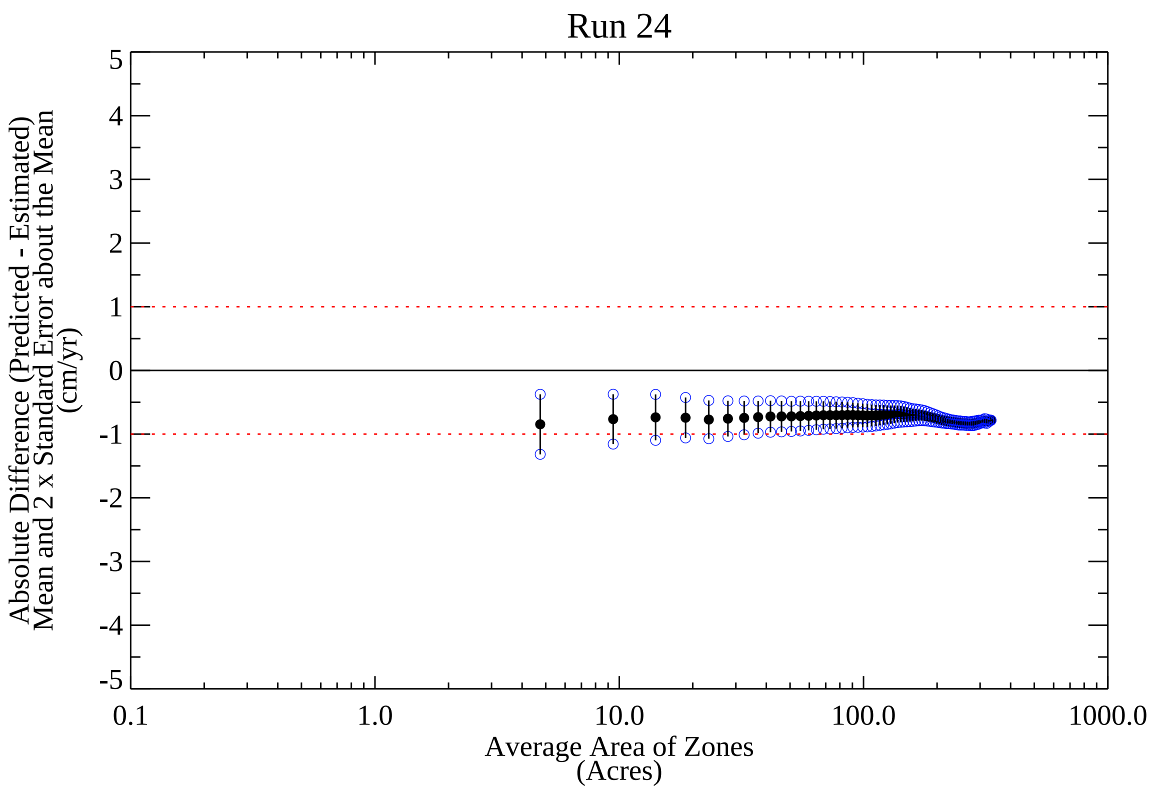
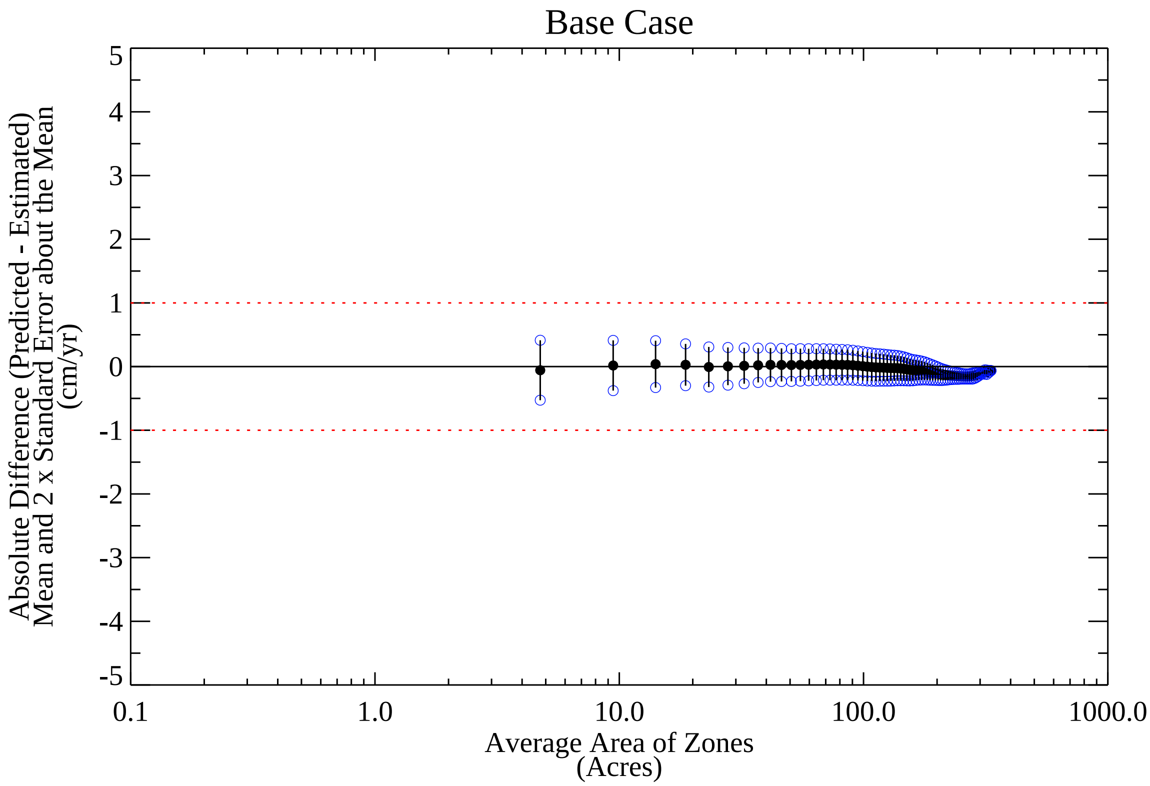


Figure D-124. Absolute difference in net sedimentation rate for different spatial scale: Run 24, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..



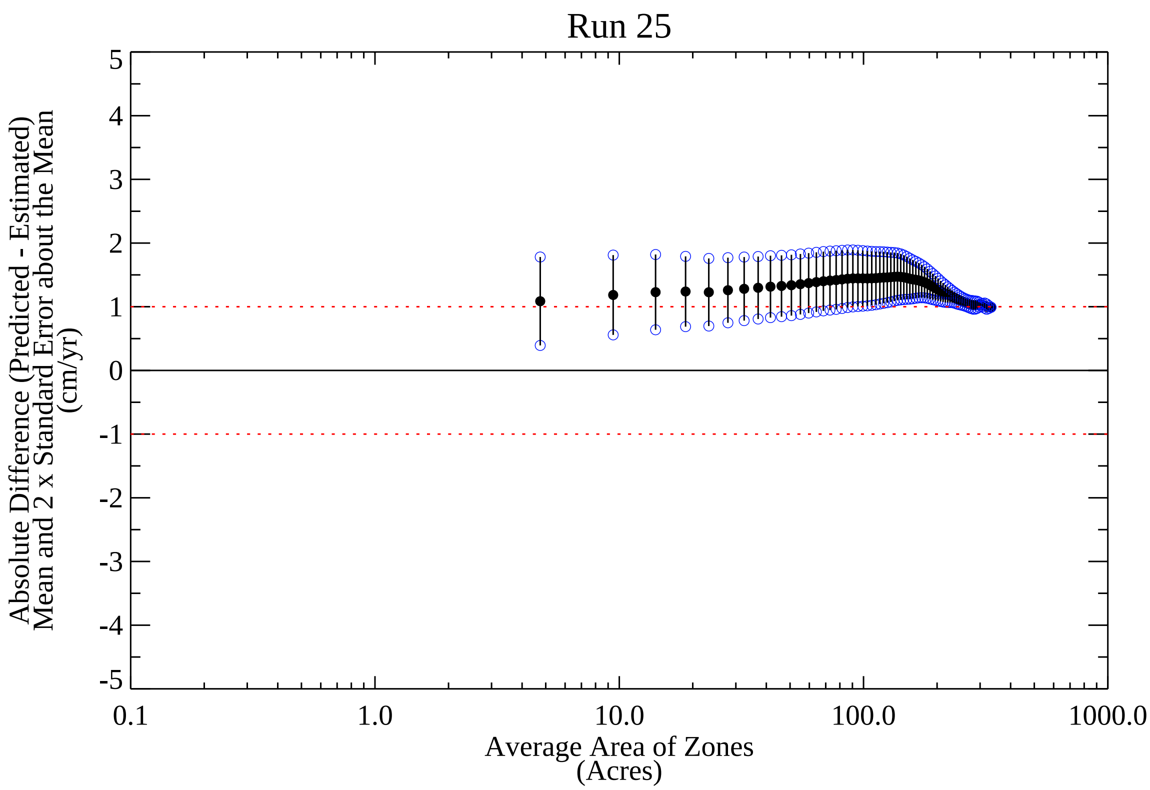


Figure D-125. Absolute difference in net sedimentation rate for different spatial scale: Run 25, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.

For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.

1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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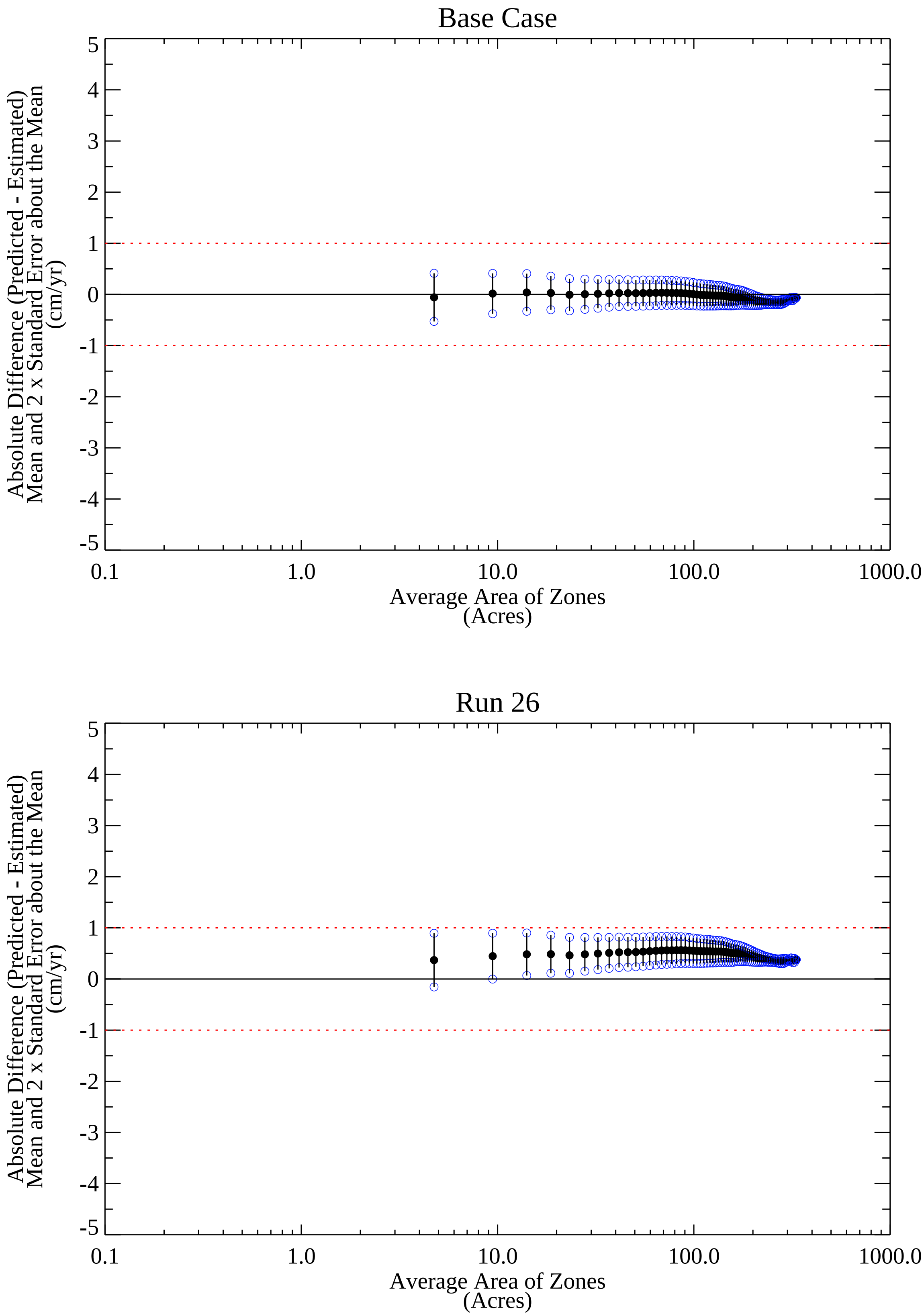

Figure D-126. Absolute difference in net sedimentation rate for different spatial scale: Run 26, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.

1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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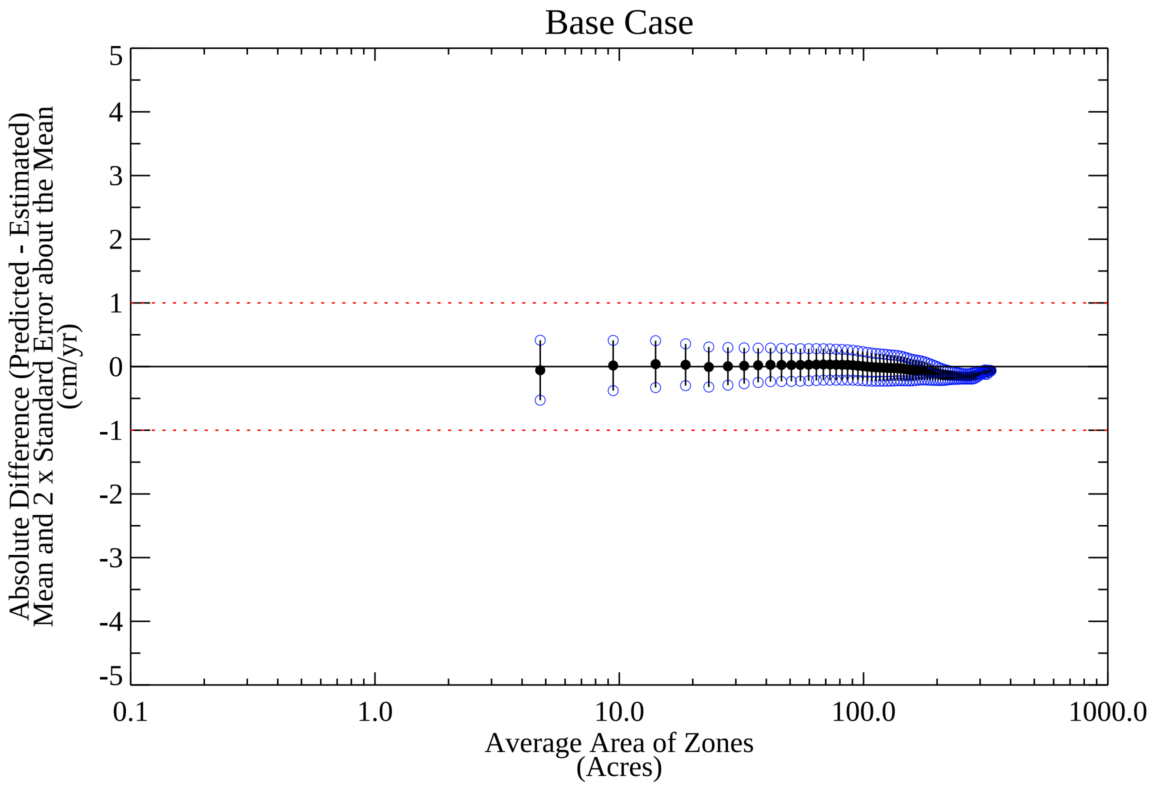

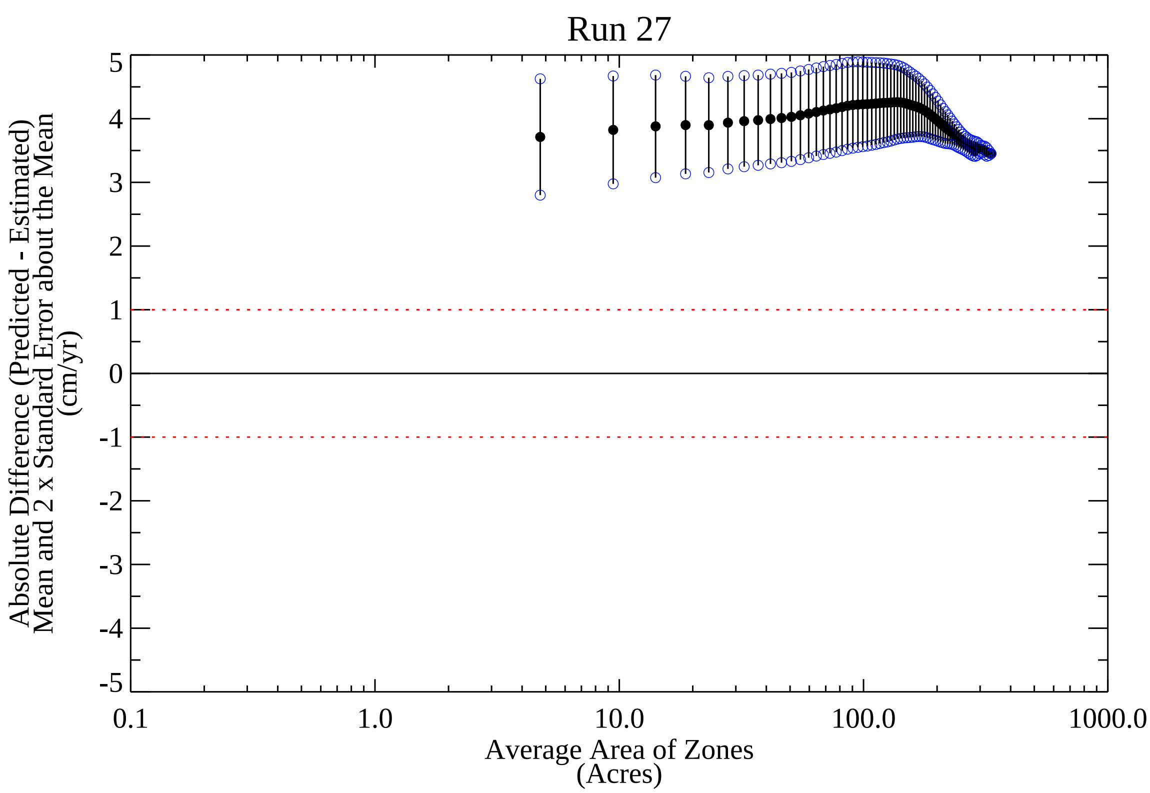

Figure D-127. Absolute difference in net sedimentation rate for different spatial scale: Run 27, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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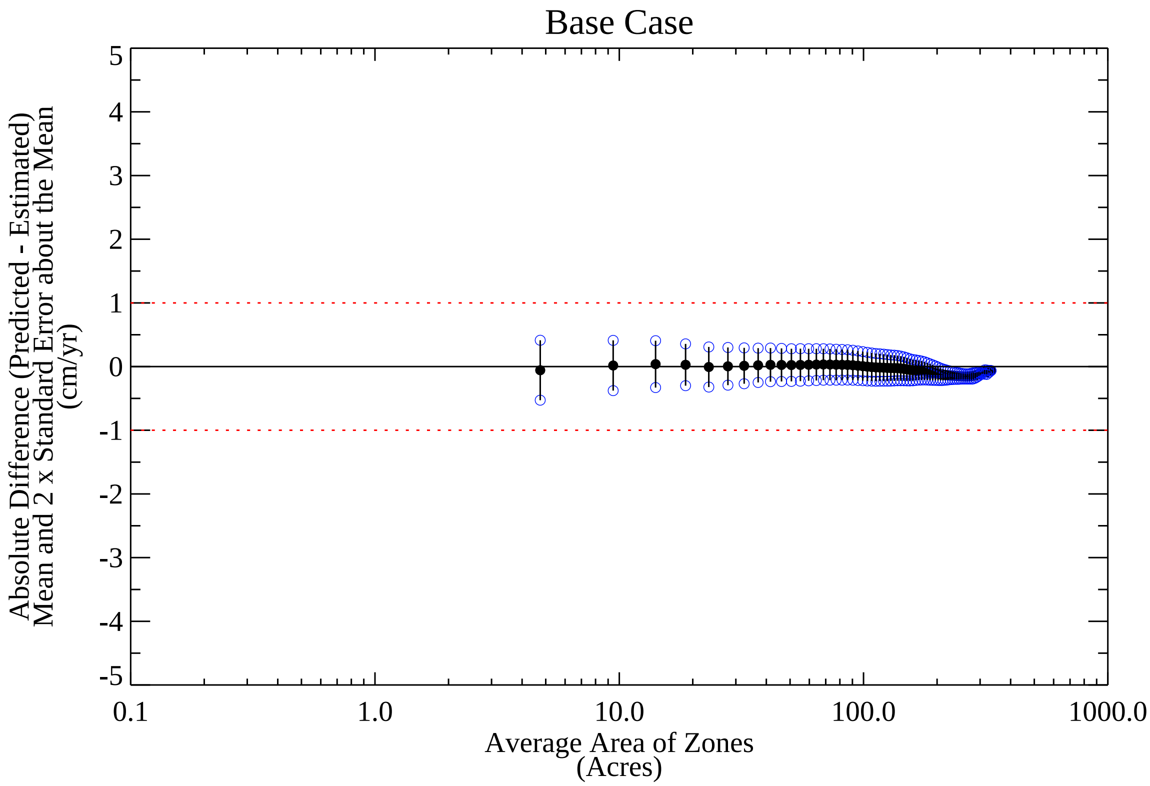


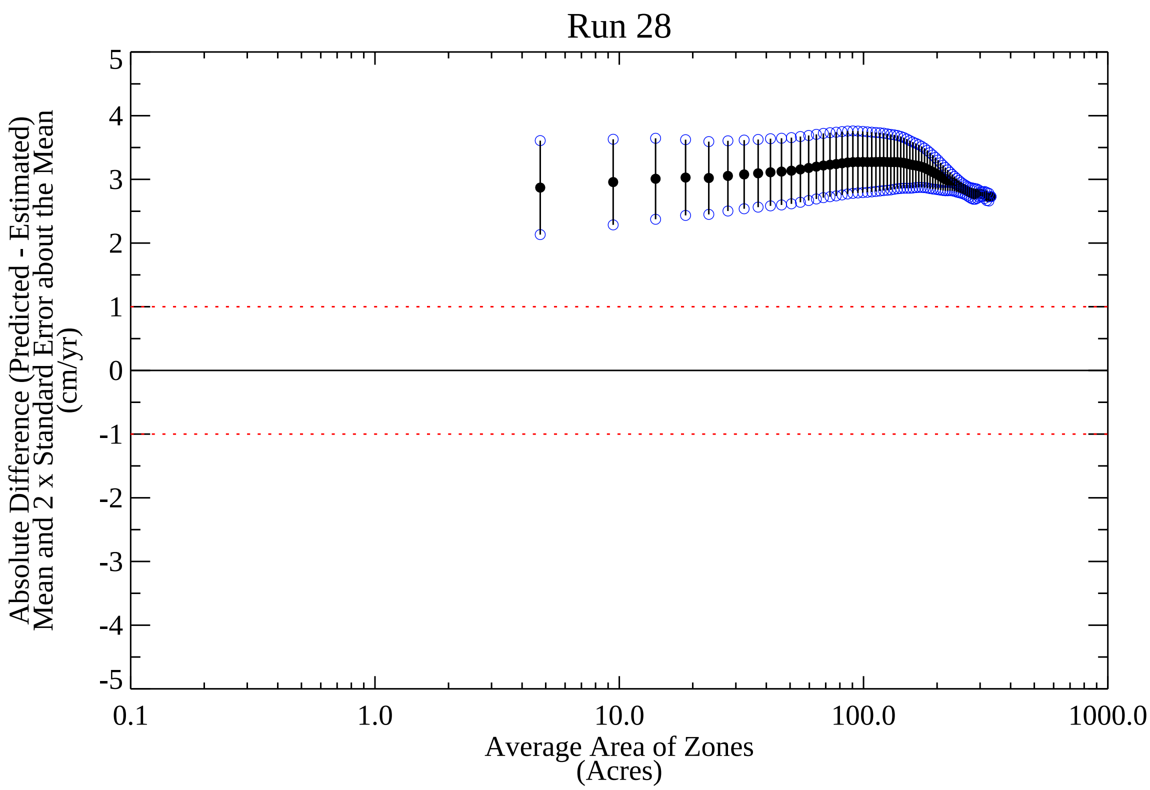
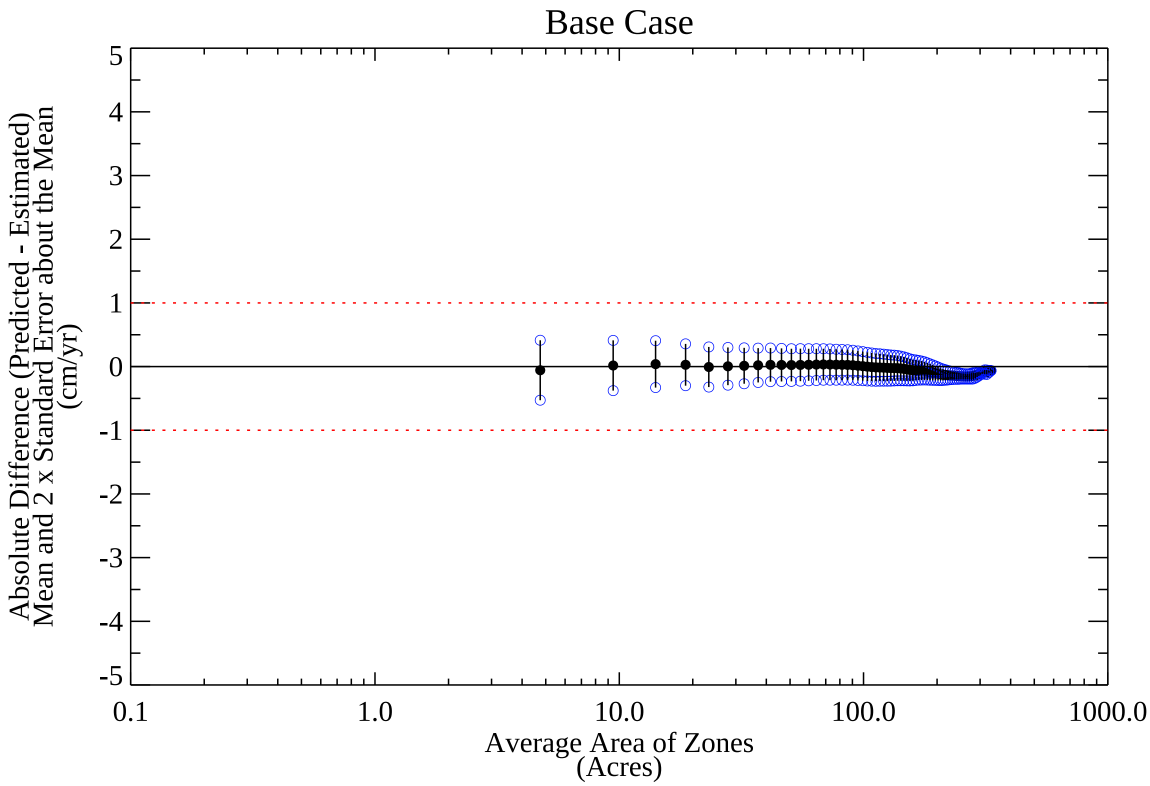


Figure D-128. Absolute difference in net sedimentation rate for different spatial scale: Run 28, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..



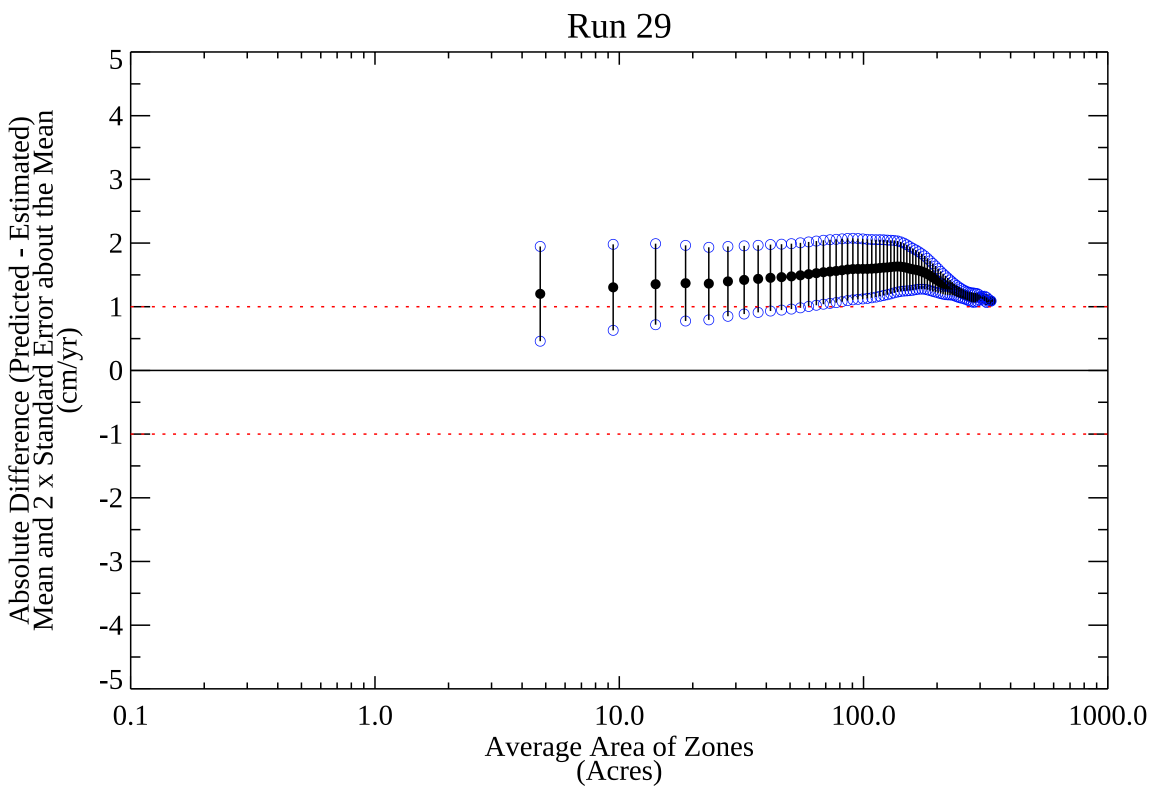


Figure D-129. Absolute difference in net sedimentation rate for different spatial scale: Run 29, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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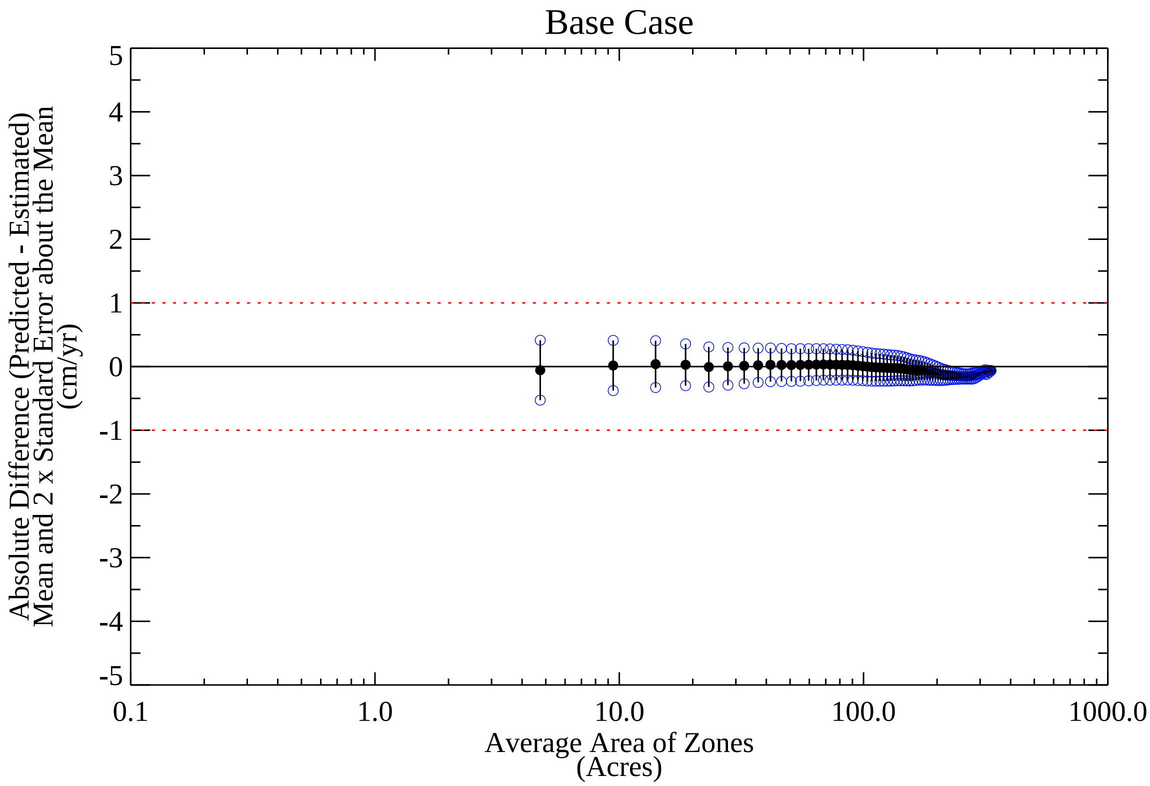

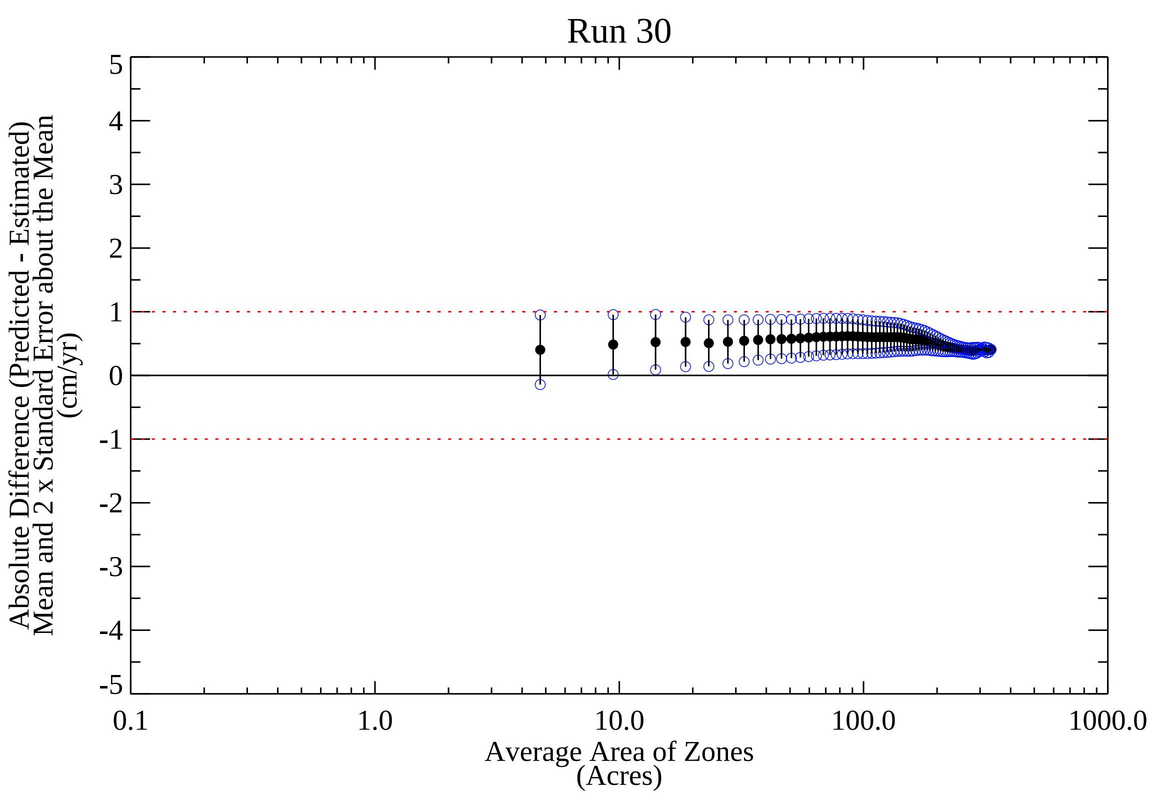

Figure D-130. Absolute difference in net sedimentation rate for different spatial scale: Run 30, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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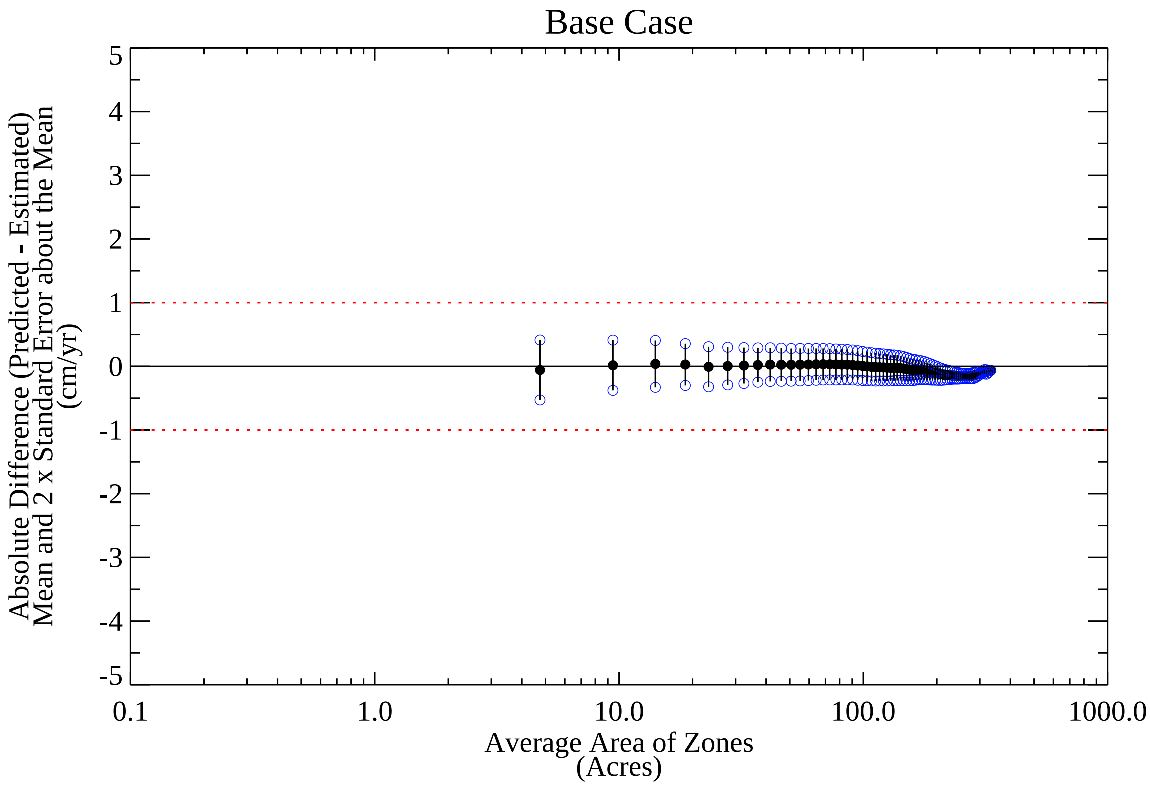

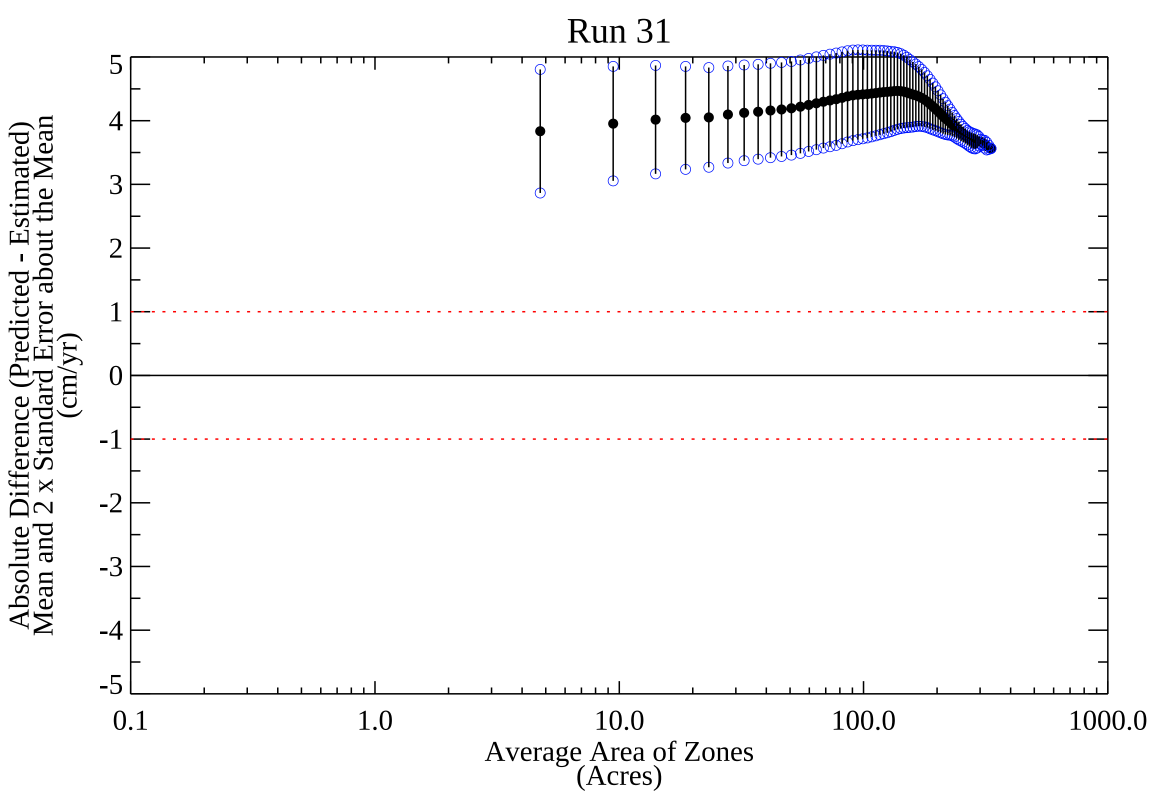

Figure D-131. Absolute difference in net sedimentation rate for different spatial scale: Run 31, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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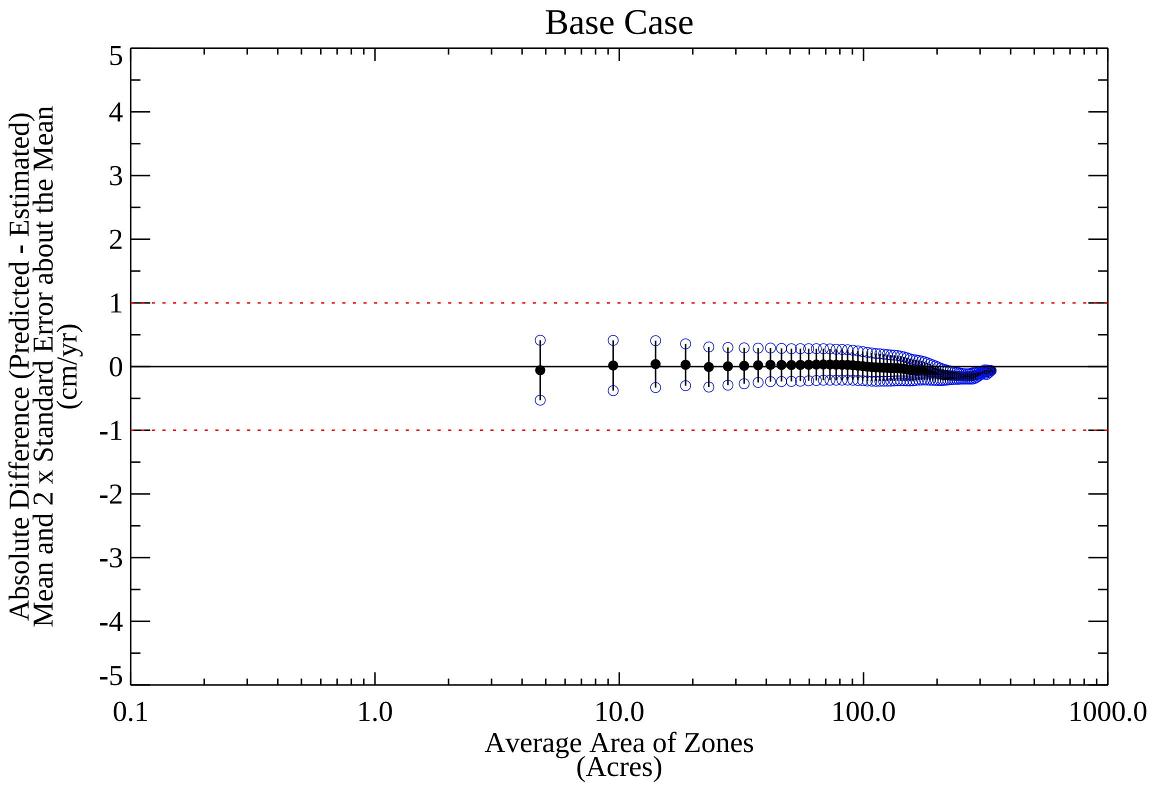

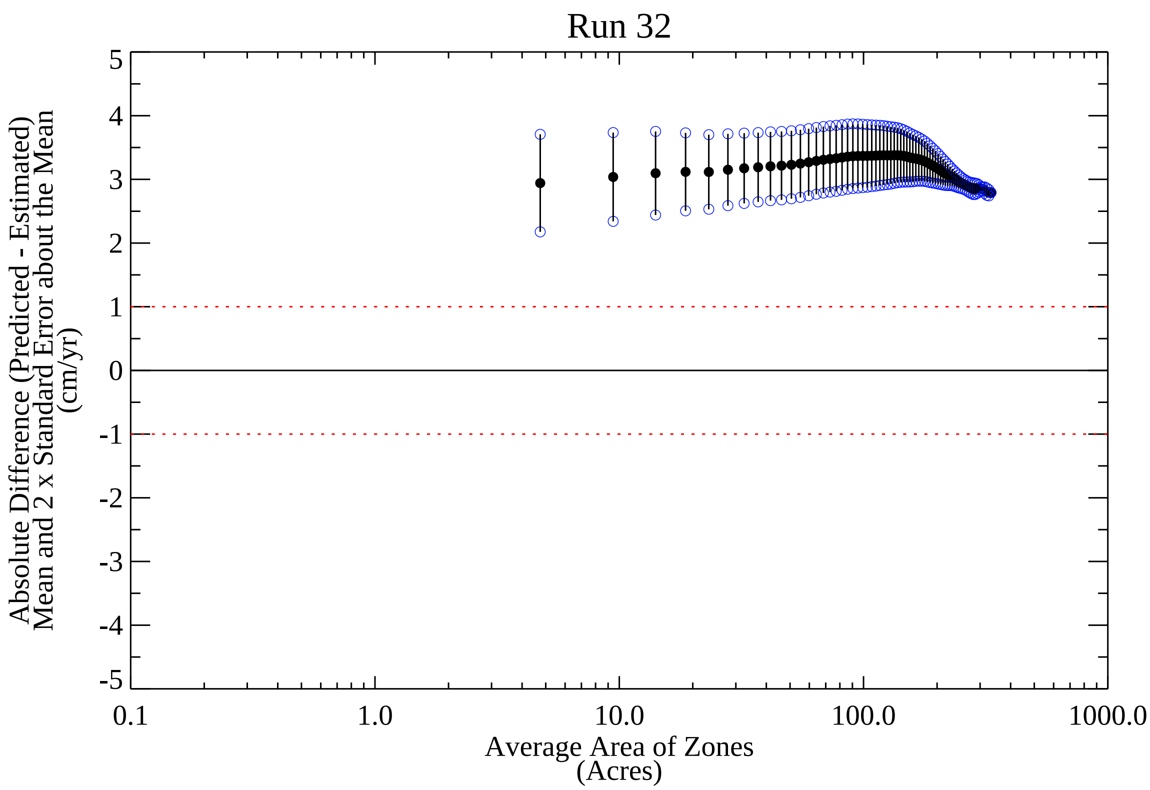

Figure D-132. Absolute difference in net sedimentation rate for different spatial scale: Run 32, RM 0 to 4, 6-year simulation.

The solid dot represents the mean values for given spatial scale.
For given spatial scale, the statistics of the absolute difference in net sedimentation rate (NSR) (predicted - estimated) is calculated as follows.
1. Calculate average NSR value for each zone for given spatial scale based on predicted and estimated data, and create two data sets NSR_{pre_zone} and NSR_{est_zone} respectively.
2. Calculate statistics (mean, median, standard error and standard deviation) of NSR_{pre_zone} and NSR_{est_zone}.
3. The final mean or median of the absolute difference for this spatial scale is then calculated as the difference of the mean or median of the above two data sets.
4. The final 2StdErr or Stdv values for this spatial scale is then calculated as the square root of the sum of the 2StdErr square or Stdv square from the two data sets..

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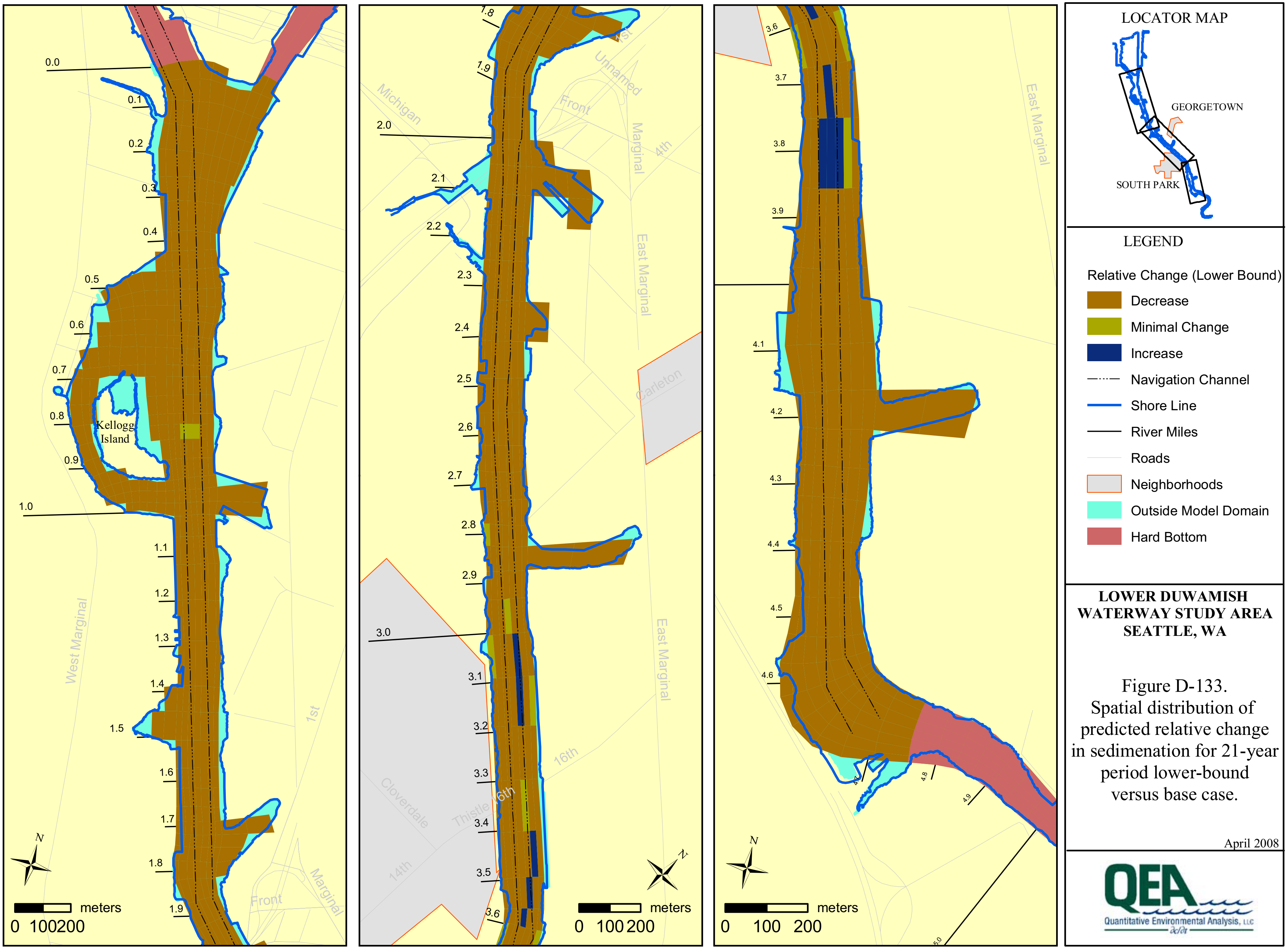

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-133.
Spatial distribution of predicted relative change in sedimentation for 21-year period lower-bound versus base case.

April 2008

QEA Quantitative Environmental Analysis, LLC

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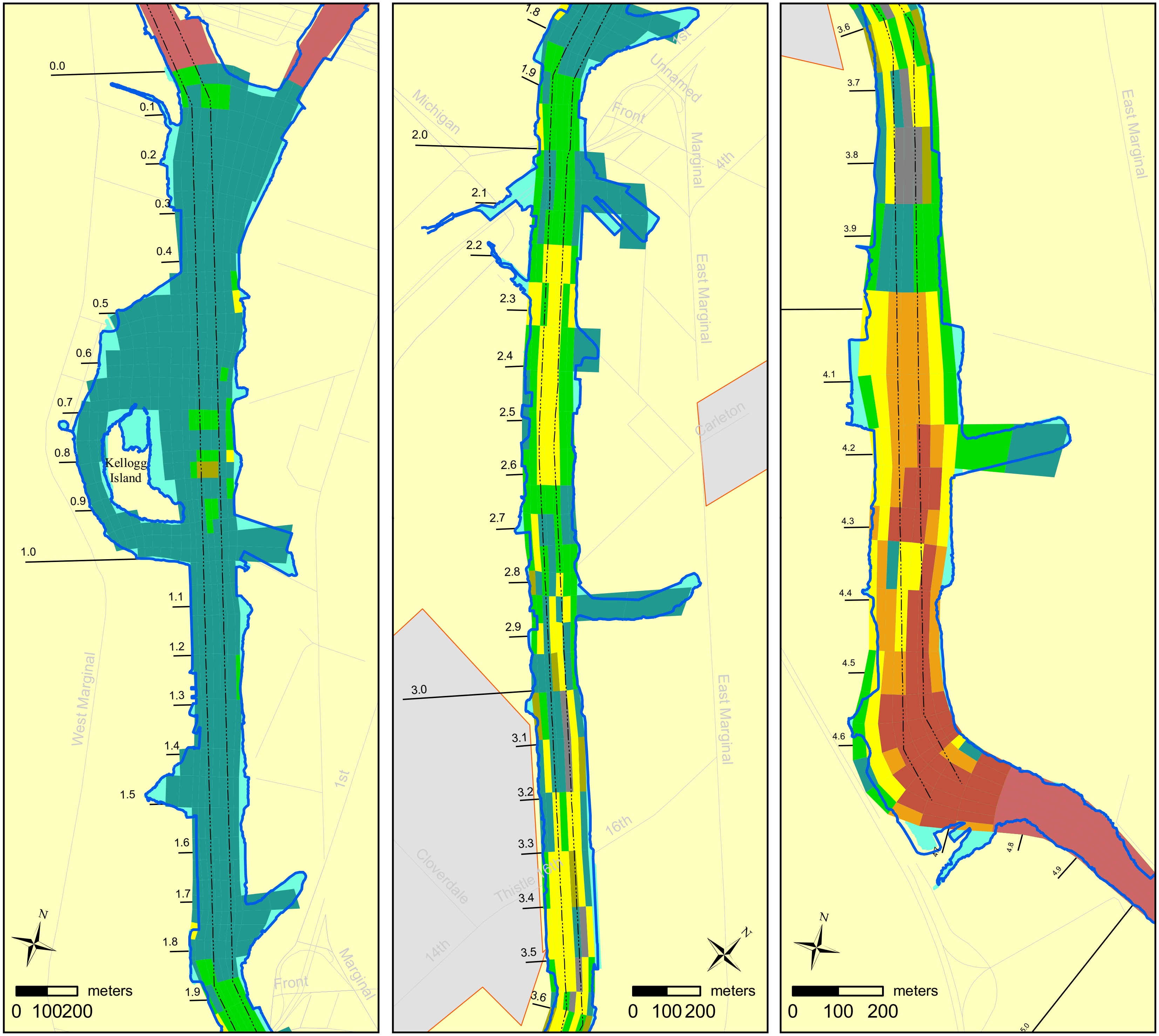
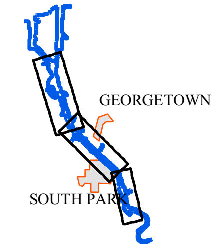


LOCATOR MAP



LEGEND

Absolute Decrease (cm/yr)

- 0 - 1
- 1 - 2
- 2 - 5
- 5 - 10
- > 10
- Minimal Change
- Increase
- Navigation Channel
- Shore Line
- River Miles
- Roads
- Neighborhoods
- Outside Model Domain
- Hard Bottom

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-134.
Spatial distribution of predicted absolute decrease in sedimentation for 21-year period lower-bound versus base case.

April 2008

QEA
Quantitative Environmental Analysis, LLC

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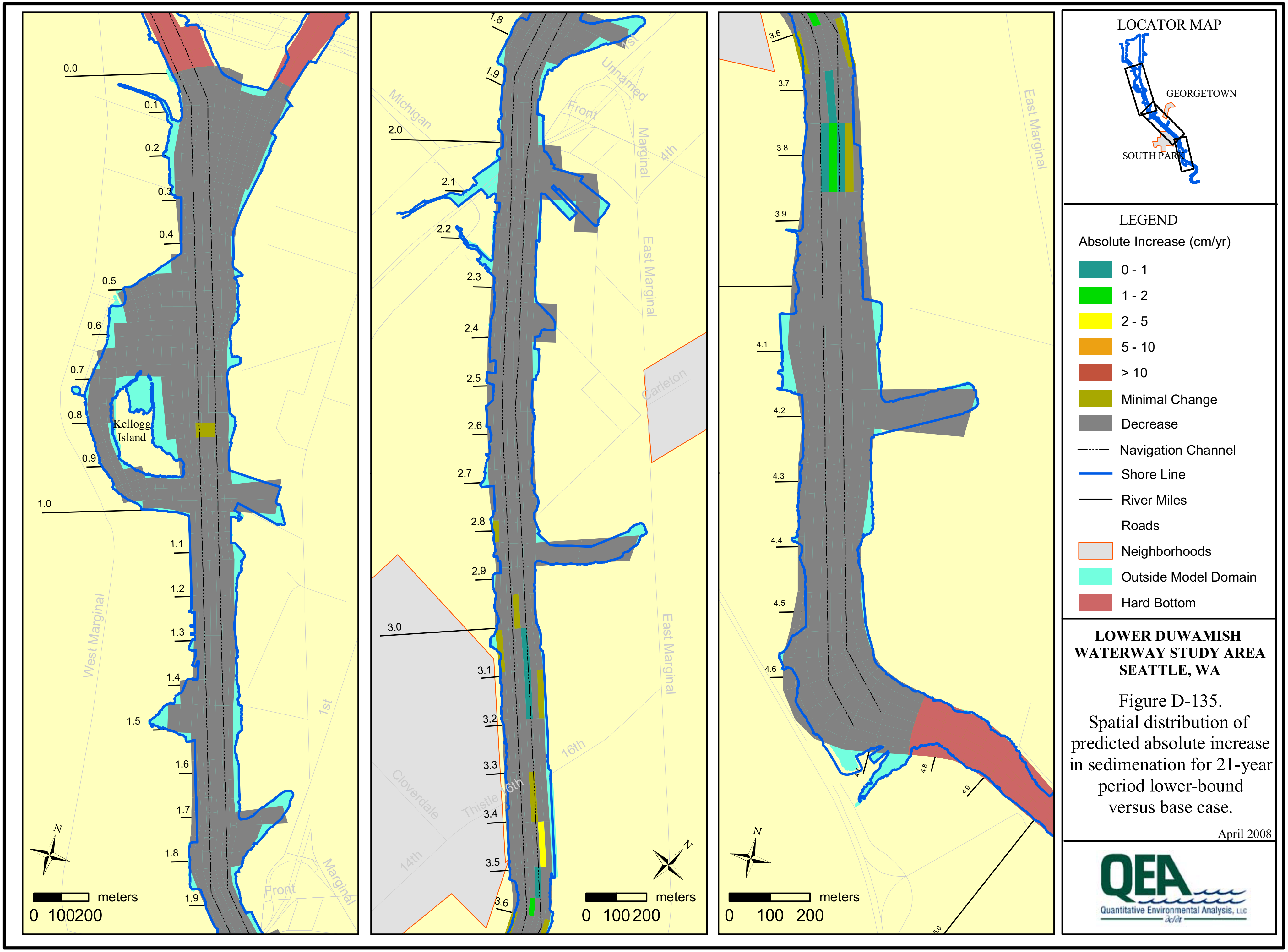

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-135.
Spatial distribution of predicted absolute increase in sedimentation for 21-year period lower-bound versus base case.

April 2008

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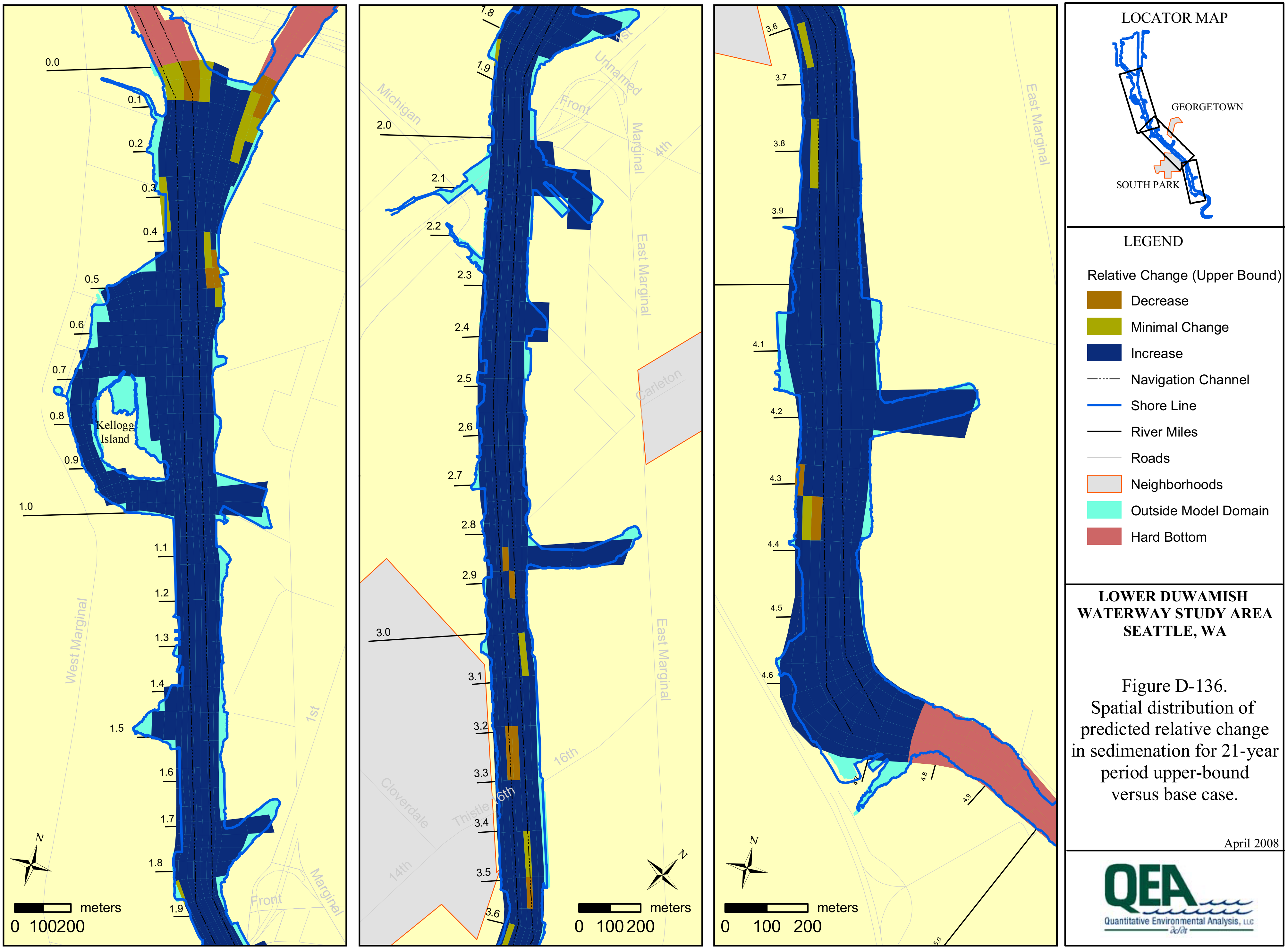

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-136.
Spatial distribution of predicted relative change in sedimentation for 21-year period upper-bound versus base case.

April 2008

QEA Quantitative Environmental Analysis, LLC

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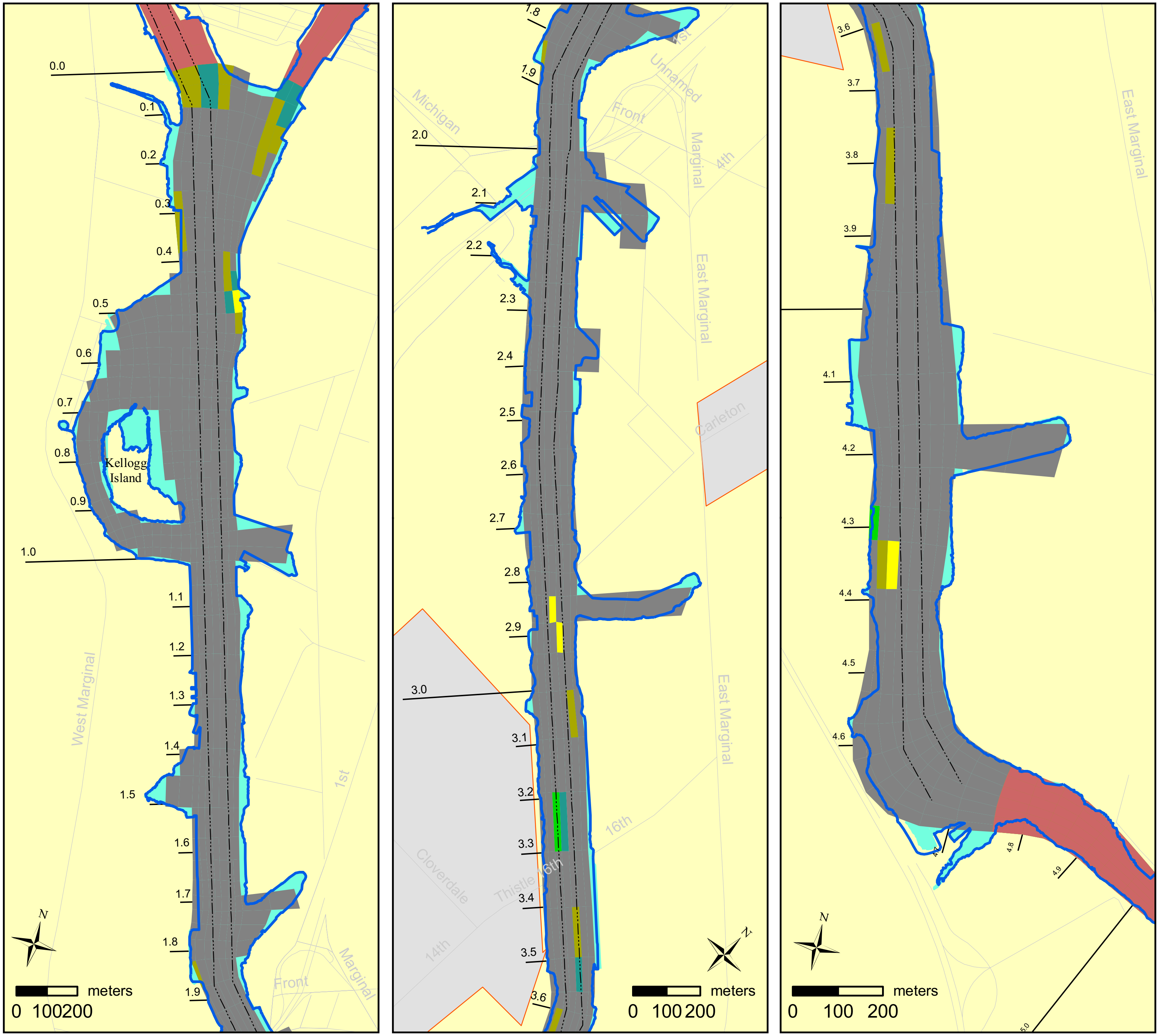
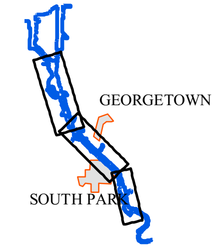


LOCATOR MAP



LEGEND

Absolute Decrease (cm/yr)

- 0 - 1
- 1 - 2
- 2 - 5
- 5 - 10
- > 10
- Minimal Change
- Increase
- Navigation Channel
- Shore Line
- River Miles
- Roads
- Neighborhoods
- Outside Model Domain
- Hard Bottom

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-137.
Spatial distribution of predicted absolute decrease in sedimentation for 21-year period upper-bound versus base case.

April 2008

QEA Quantitative Environmental Analysis, LLC

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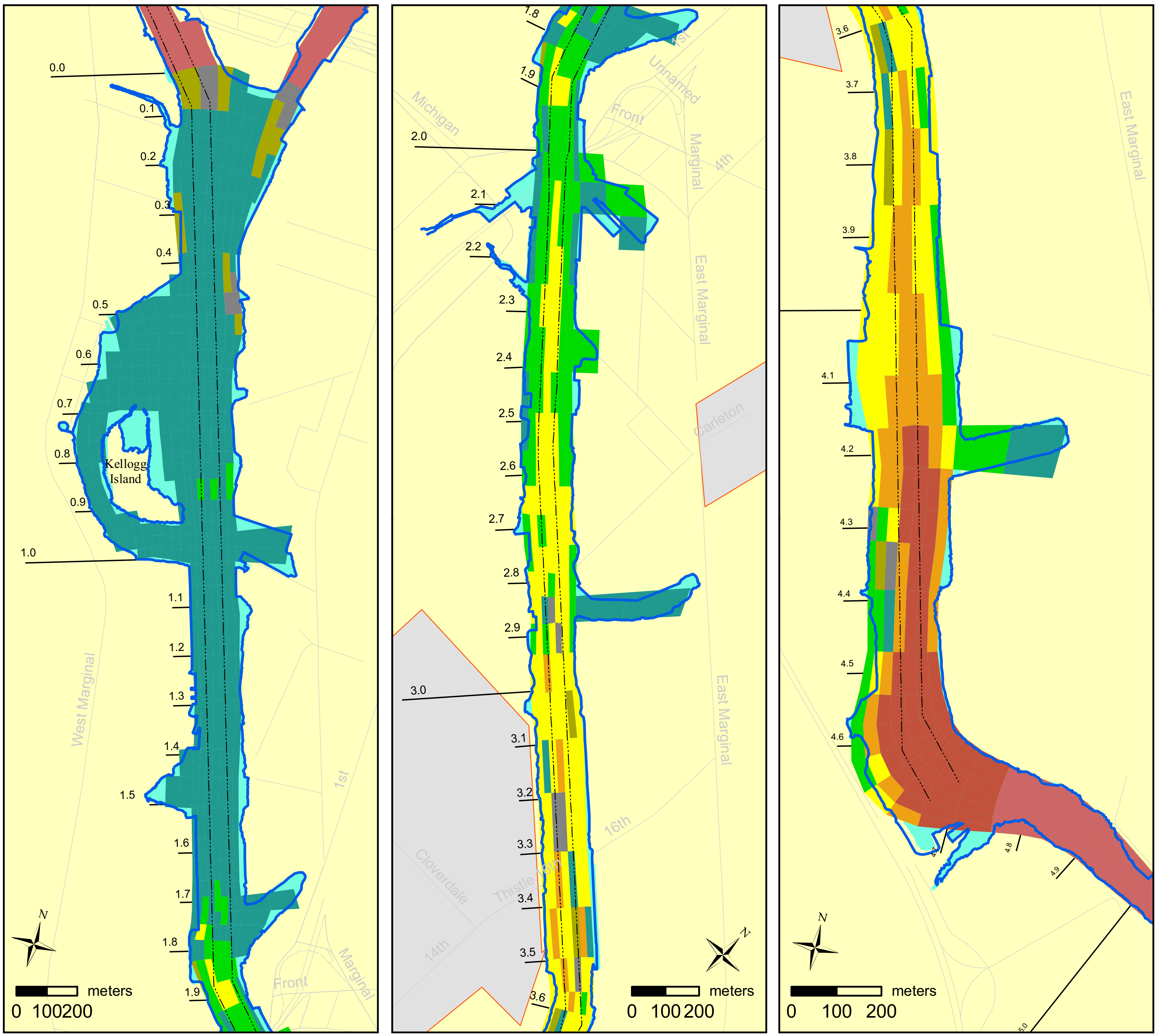
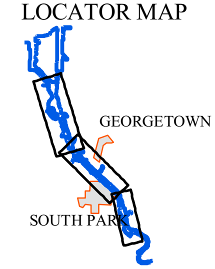


LOCATOR MAP



LEGEND

Absolute Increase (cm/yr)

- 0 - 1
- 1 - 2
- 2 - 5
- 5 - 10
- > 10
- Minimal Change
- Decrease
- Navigation Channel
- Shore Line
- River Miles
- Roads
- Neighborhoods
- Outside Model Domain
- Hard Bottom

LOWER DUWAMISH WATERWAY STUDY AREA SEATTLE, WA

Figure D-138. Spatial distribution of predicted absolute increase in sedimentation for 21-year period upper-bound versus base case.

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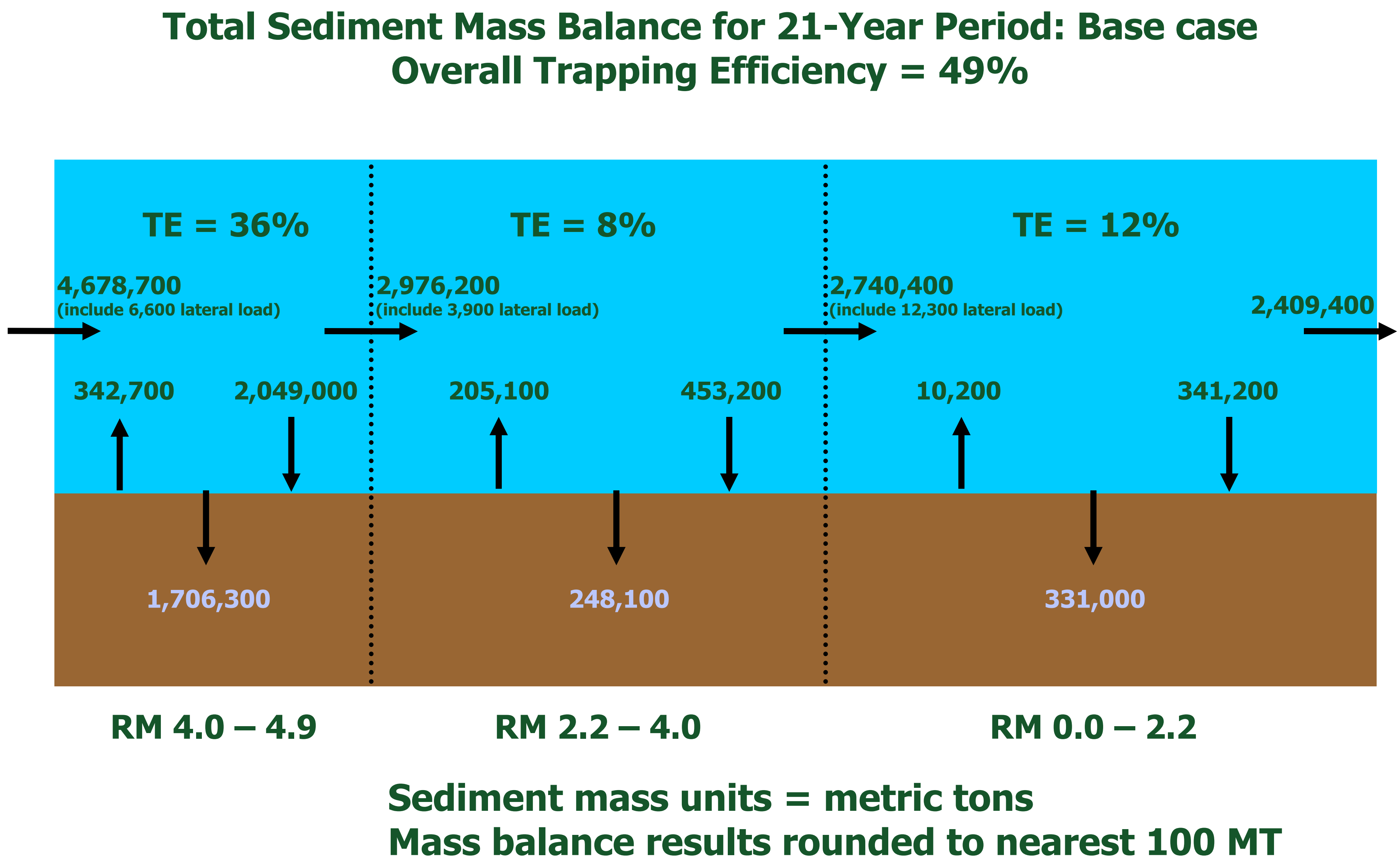

Figure D-139. Total sediment mass balances for 21-year period: base case.

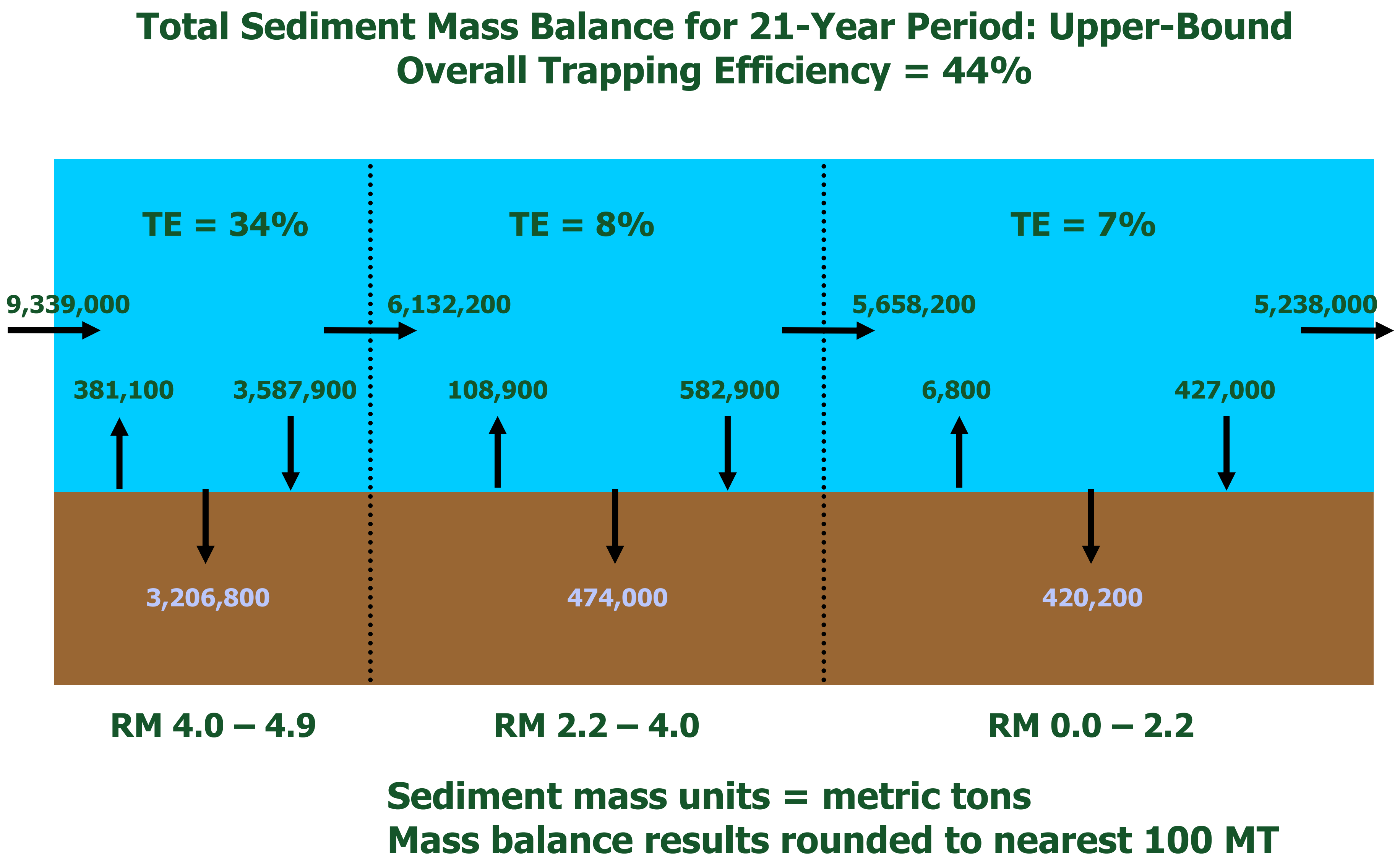

Figure D-140. Total sediment mass balances for 21-year period: upper-bound.

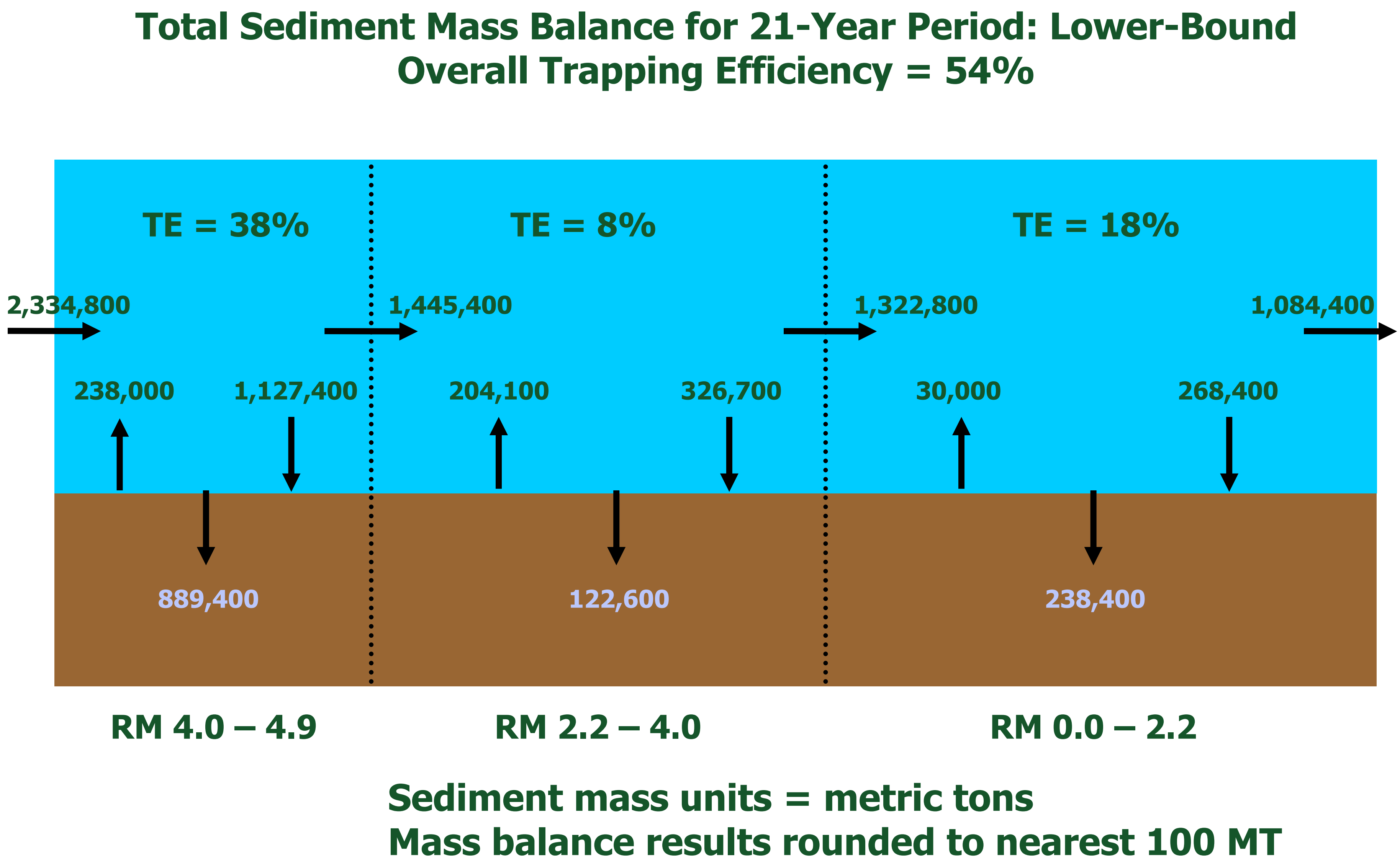

Figure D-141. Total sediment mass balances for 21-year period: lower-bound.