# Appendix G: Biogeochemical Model Sensitivity Analyses Figures

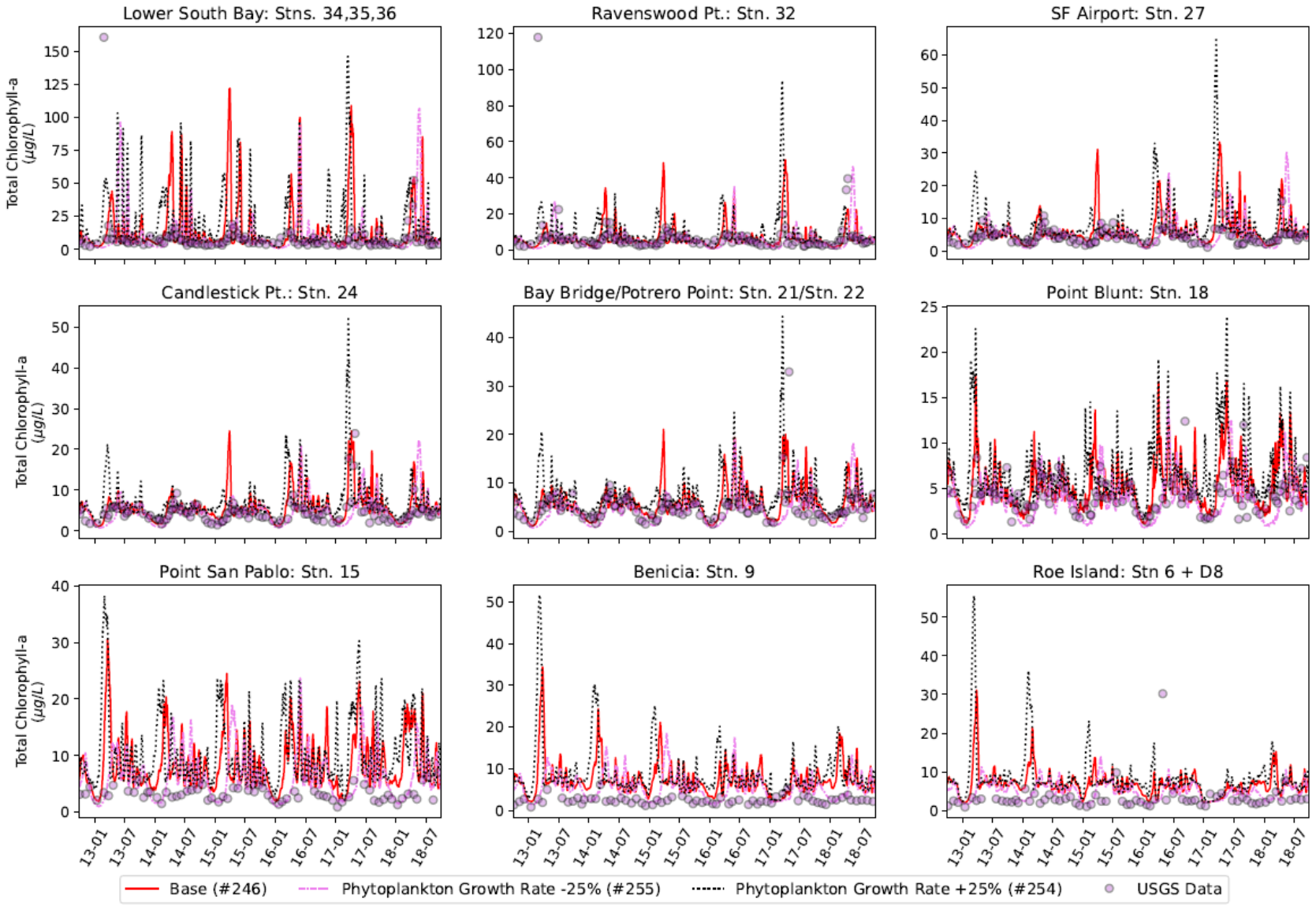



**Figure G.1. Sensitivity of predicted chlorophyll-a concentrations to phytoplankton growth rate**

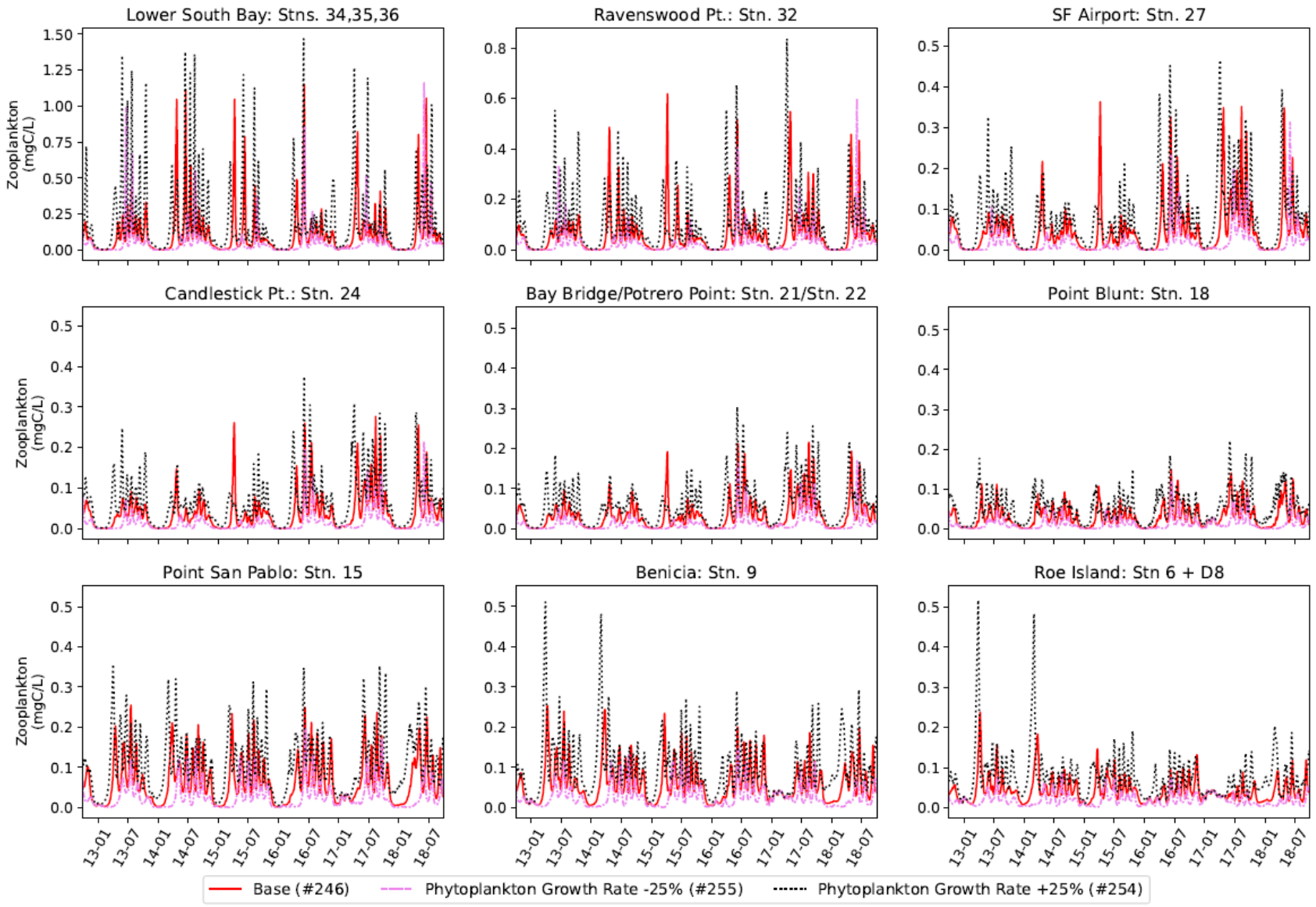
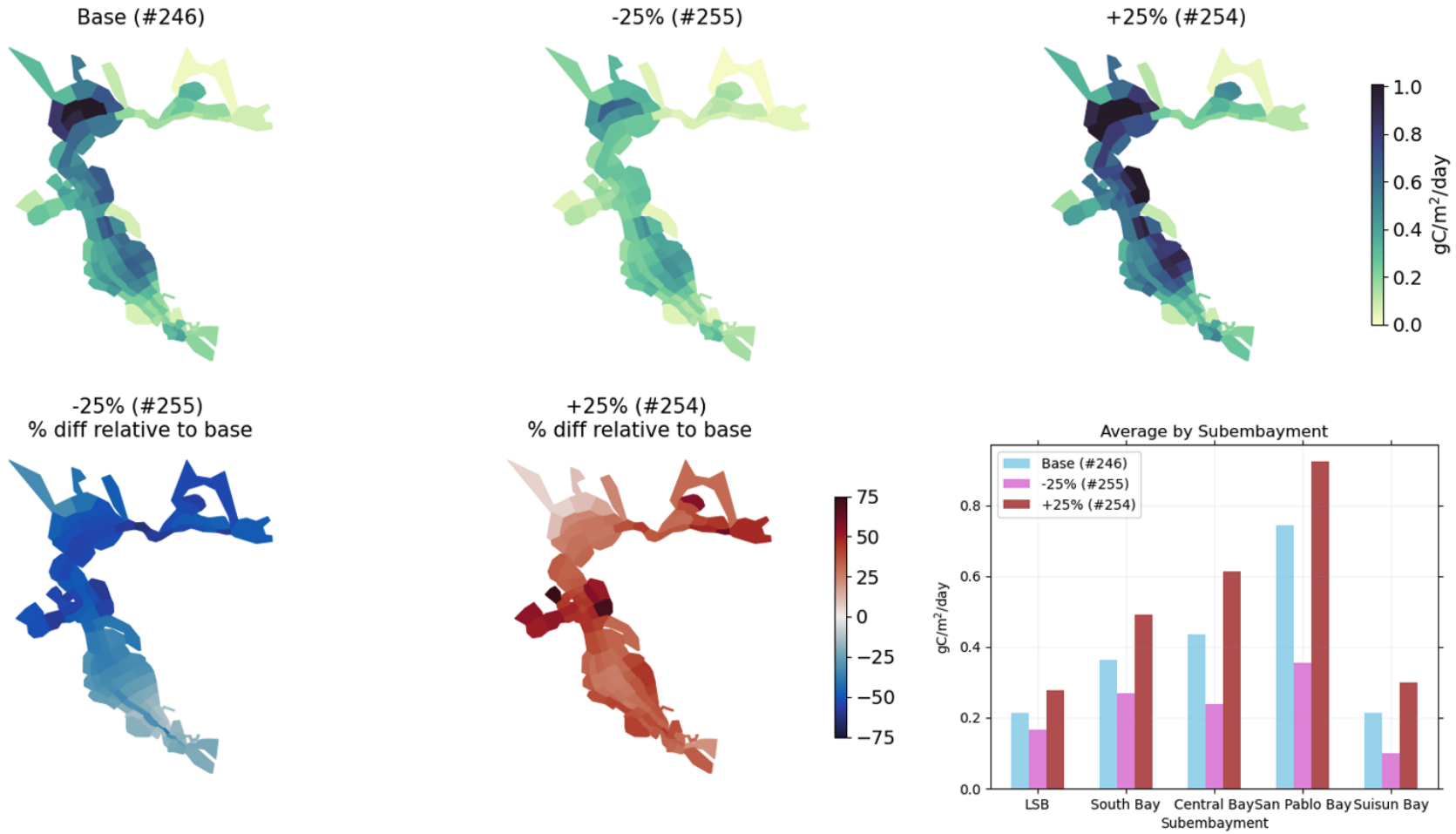



**Figure G.2. Sensitivity of predicted zooplankton concentrations to phytoplankton growth rate**




Note: Top panels show the average net primary production over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season.

**Figure G.3. Sensitivity of WY2018 growing season (Mar – Sep) net primary production to phytoplankton growth rate**

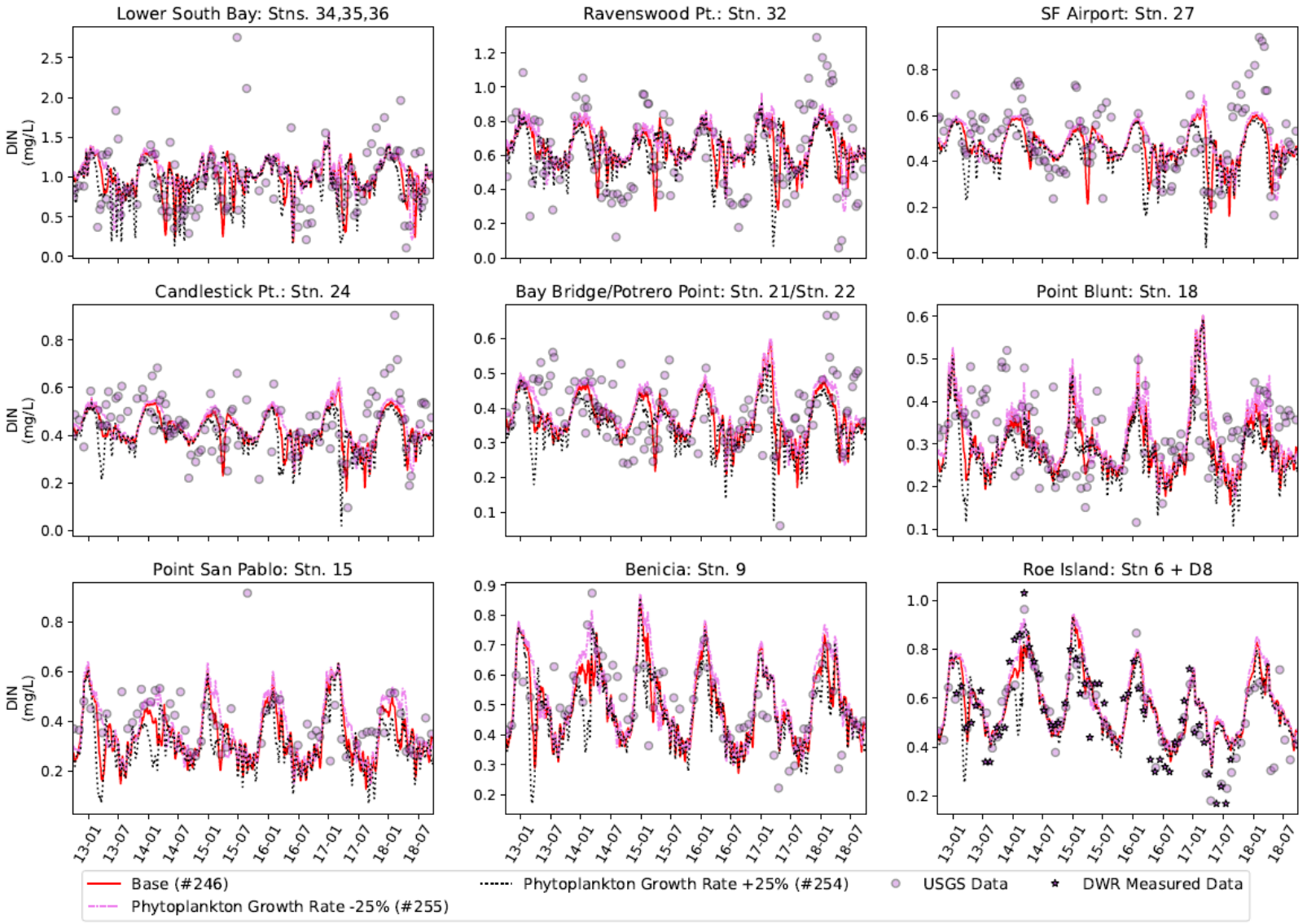
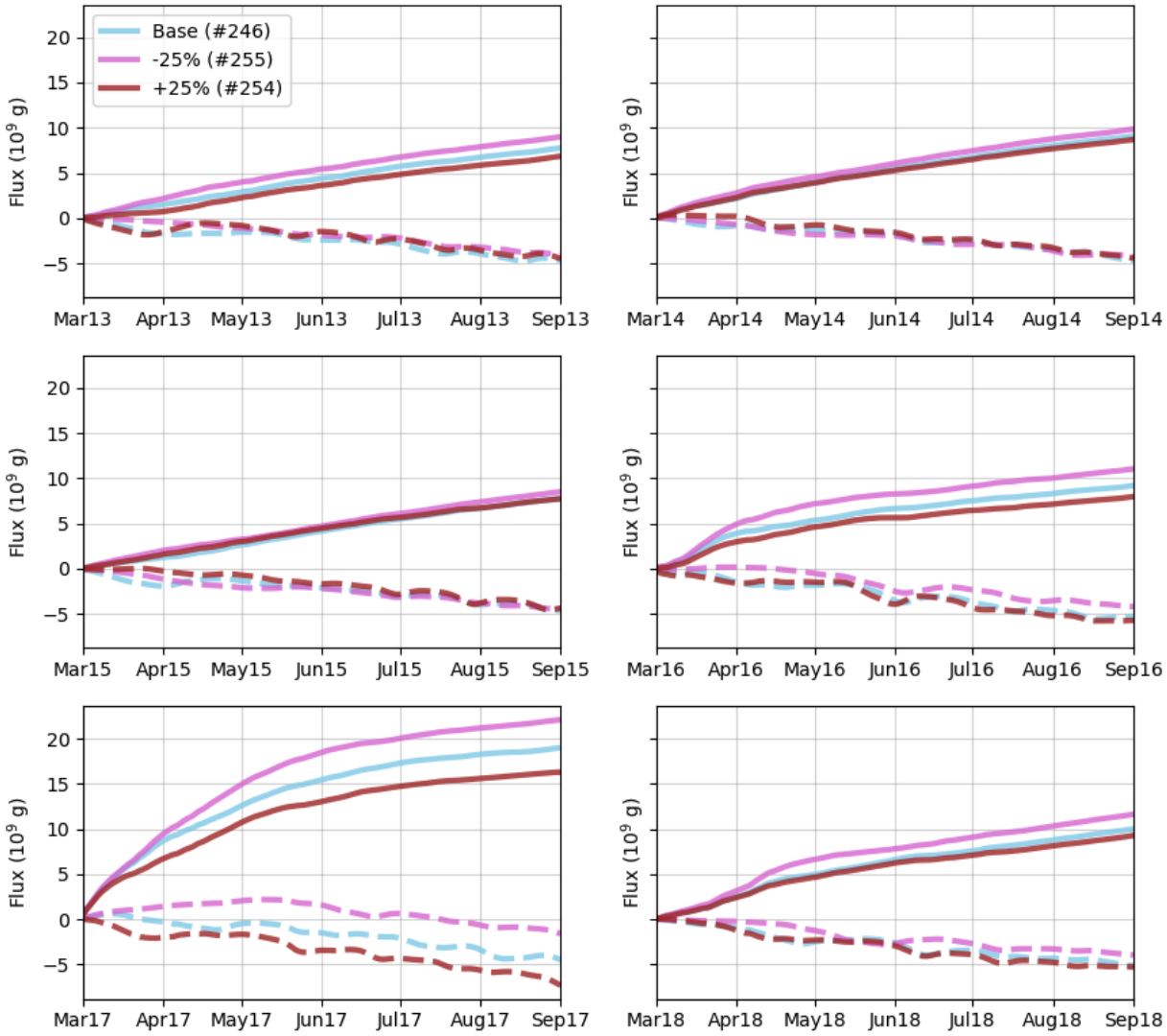



**Figure G.4. Sensitivity of predicted dissolved inorganic nitrogen (DIN) concentrations to phytoplankton growth rate**




Note: Solid lines represent cumulative flux out of Golden Gate and dashed lines show the net of all reactions for DIN within SFB starting from Mar 1 of each year.

**Figure G.5. Sensitivity of predicted coastal export across Golden Gate Bridge and net assimilation of dissolved inorganic nitrogen to phytoplankton growth rate**

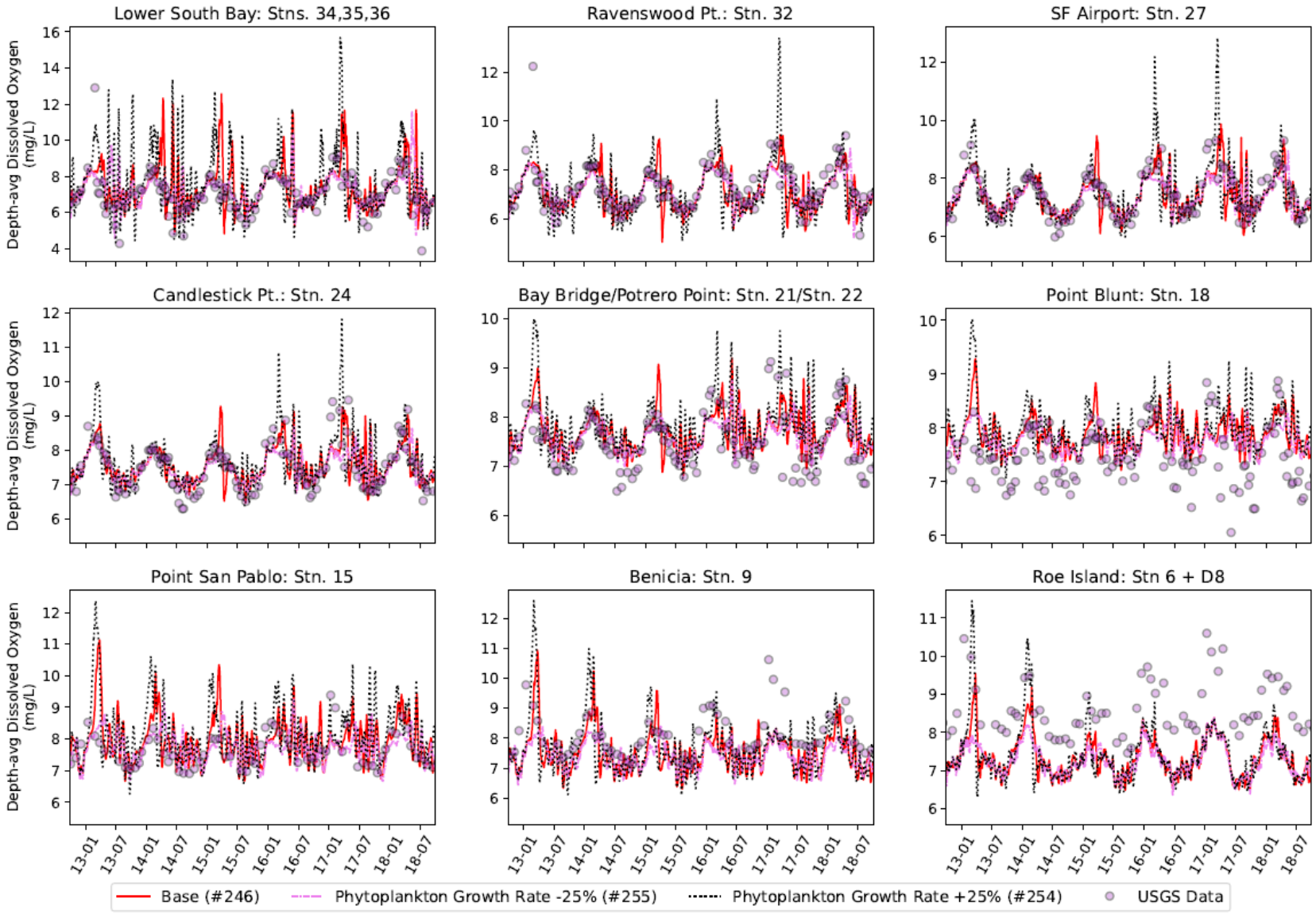
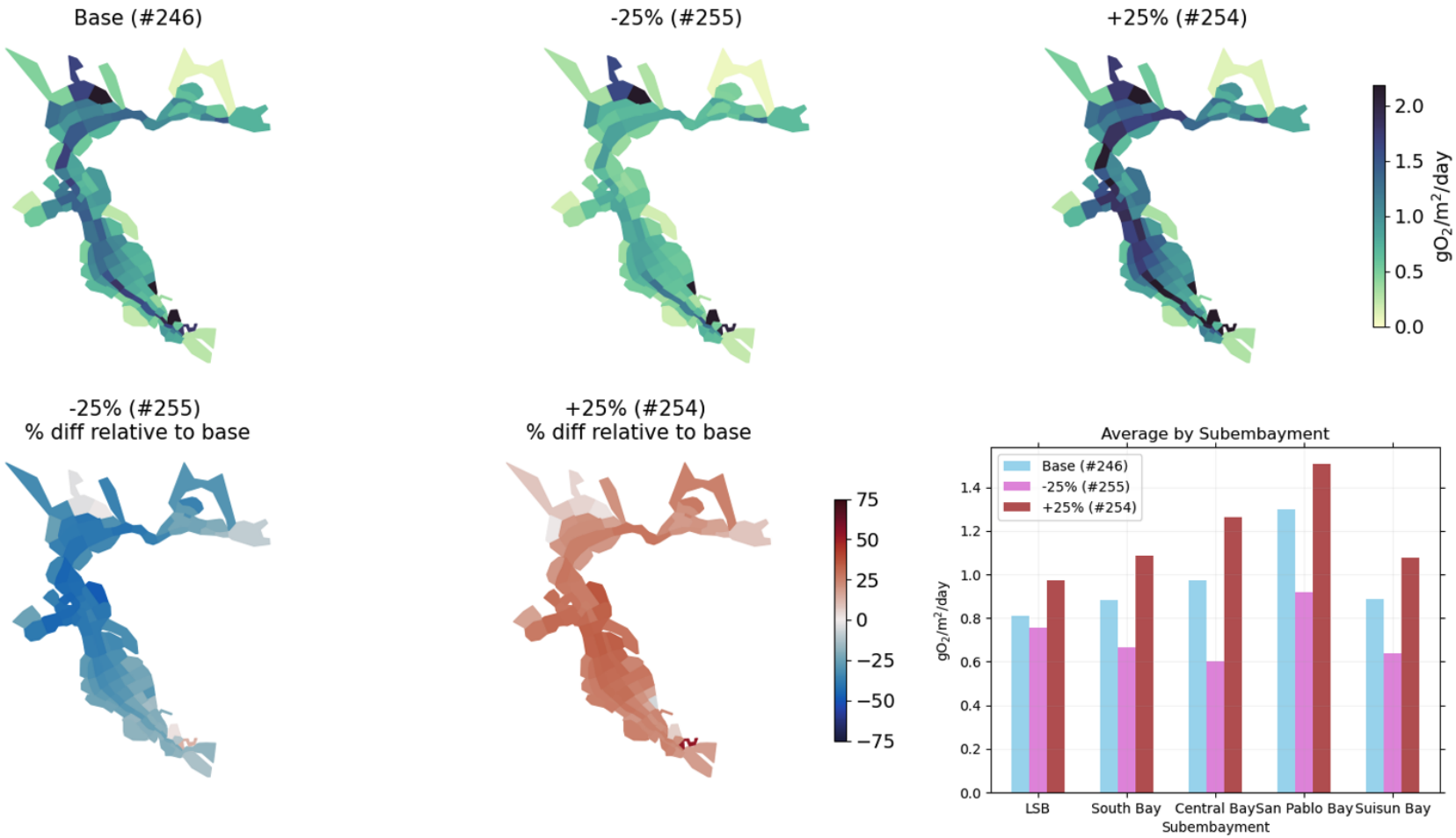



**Figure G.6. Sensitivity of predicted dissolved oxgen concentrations to phytoplankton growth rate**




Note: Top panels show the average water column DO consumption over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season. In the simplified sediment flux model in DWAQ, SOD is exerted in the bottom layer of the water column, therefore water column DO consumption includes SOD.

**Figure G.7. Sensitivity of predicted water column dissolved oxygen consumption to phytoplankton growth rate during the growing season in WY2018**

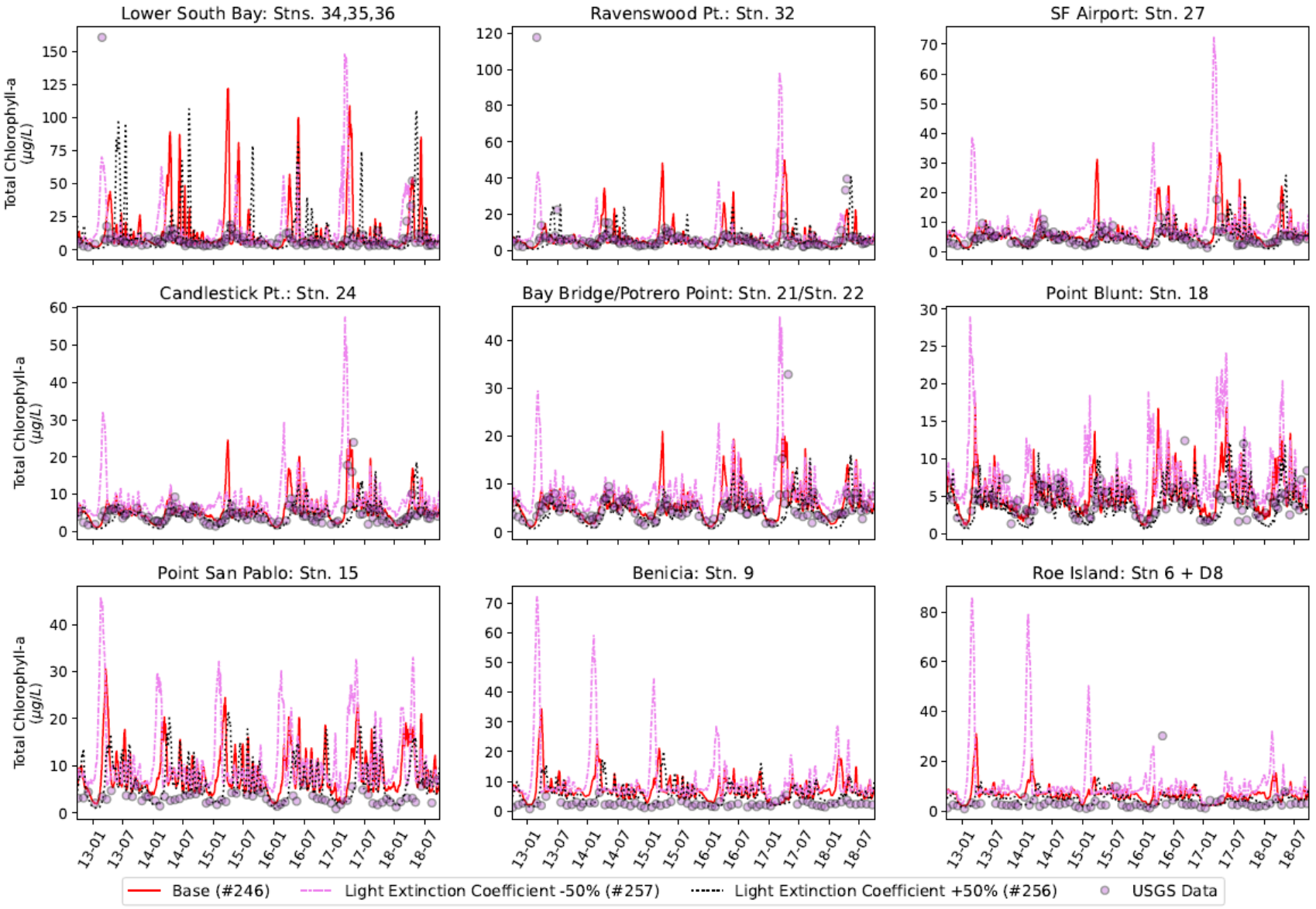



**Figure G.8. Sensitivity of predicted chlorophyll-a concentrations to light extinction**

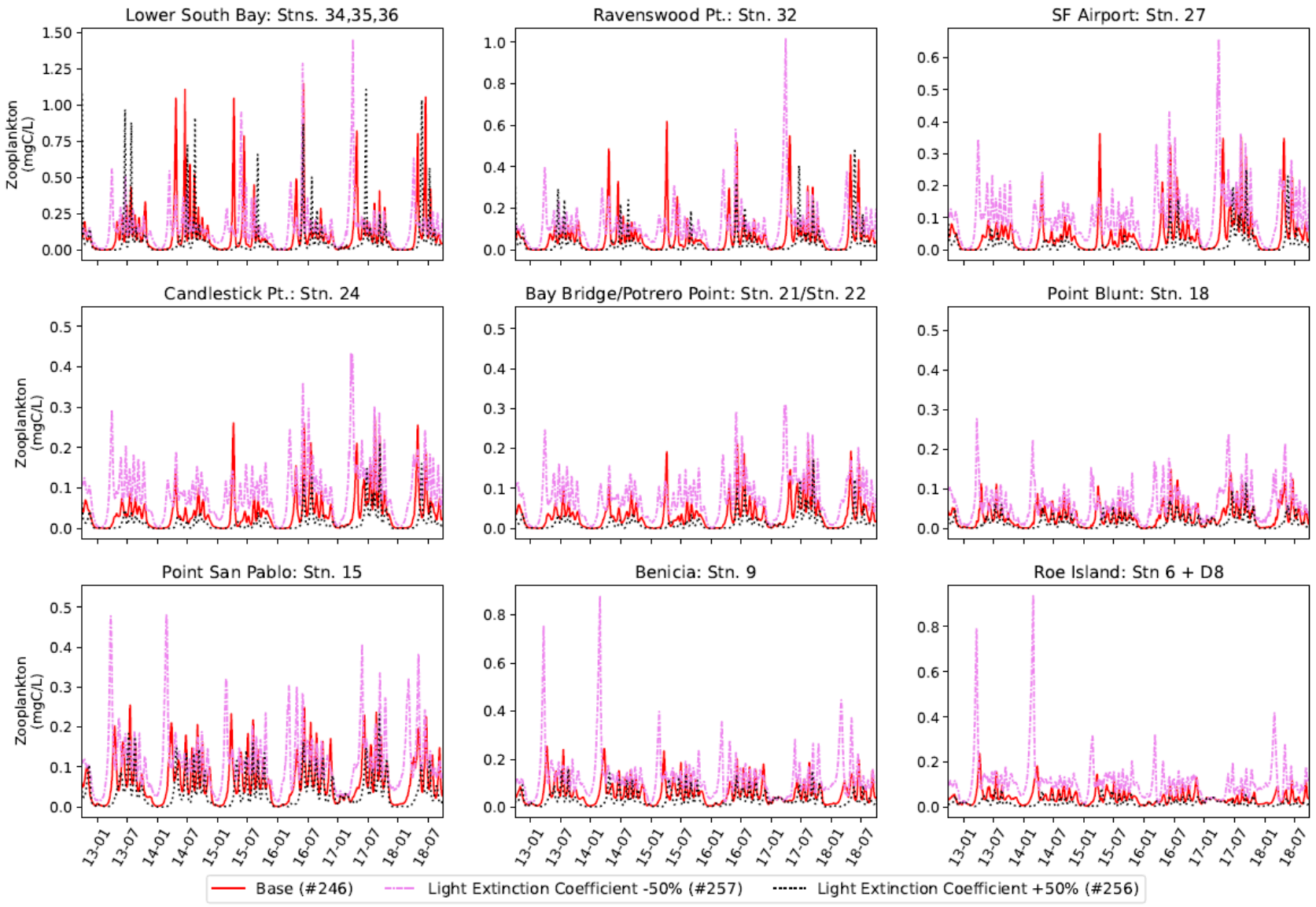
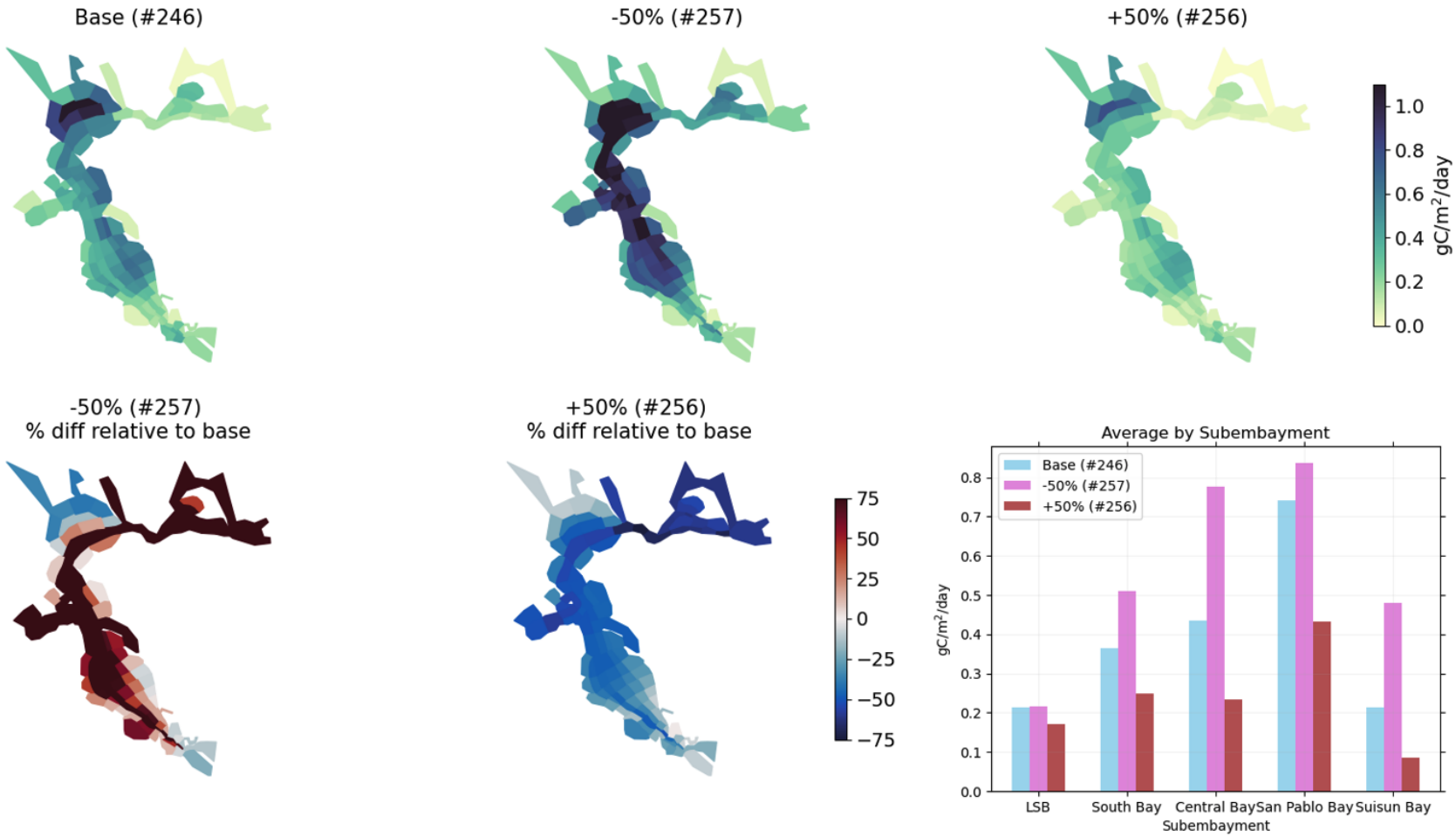



**Figure G.9. Sensitivity of predicted zooplankton concentrations to light extinction**




Note: Top panels show the average net primary production over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season.

**Figure G.10. Sensitivity of WY2018 growing season (Mar – Sep) primary production to light extinction**

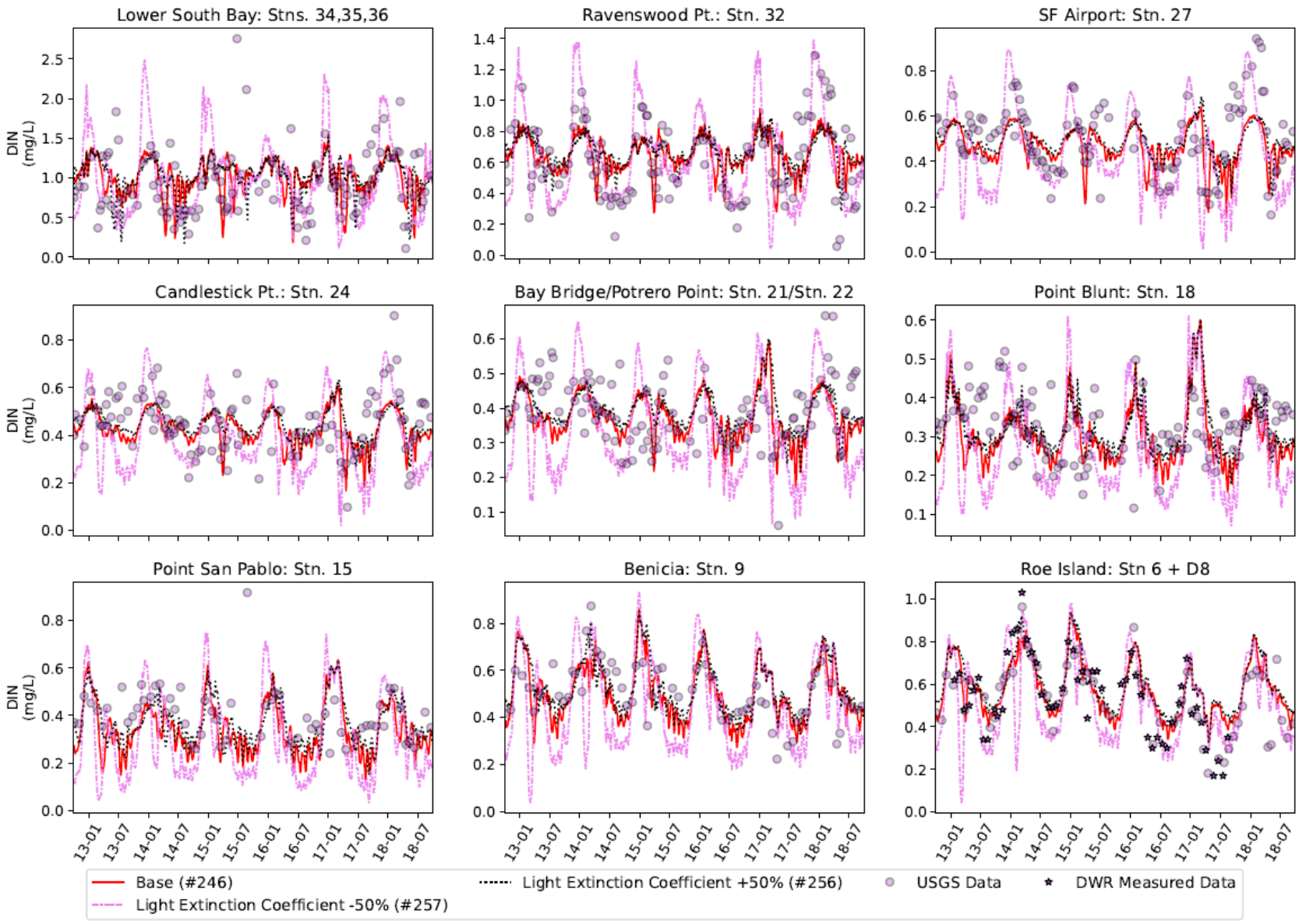
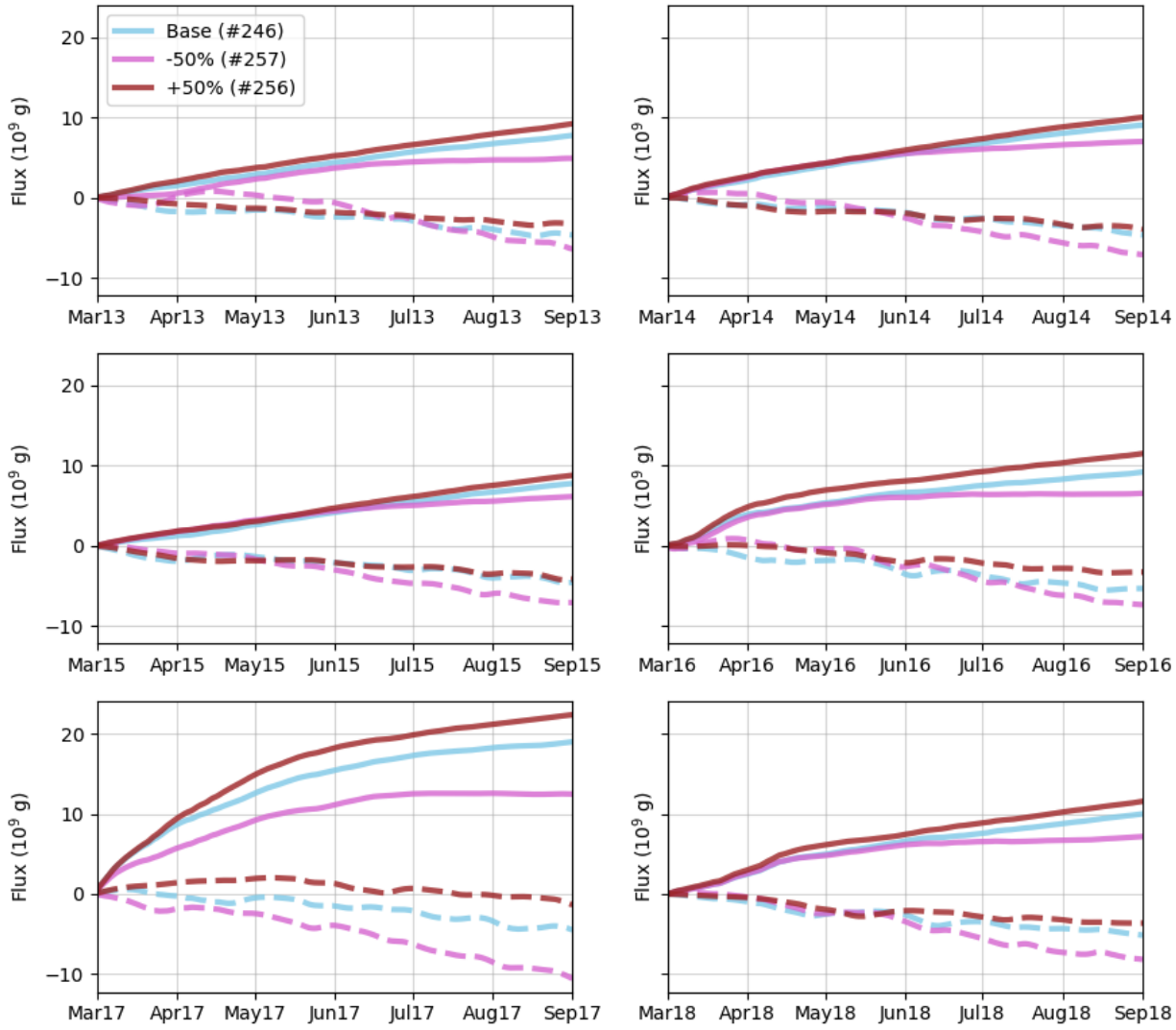



**Figure G.11. Sensitivity of predicted dissolved inorganic nitrogen (DIN) concentrations to light extinction**




Note: Solid lines represent cumulative flux out of Golden Gate and dashed lines show the net of all reactions for DIN within SFB starting from Mar 1 of each year.

**Figure G.12. Sensitivity of predicted coastal export of dissolved inorganic nitrogen to light extinction**

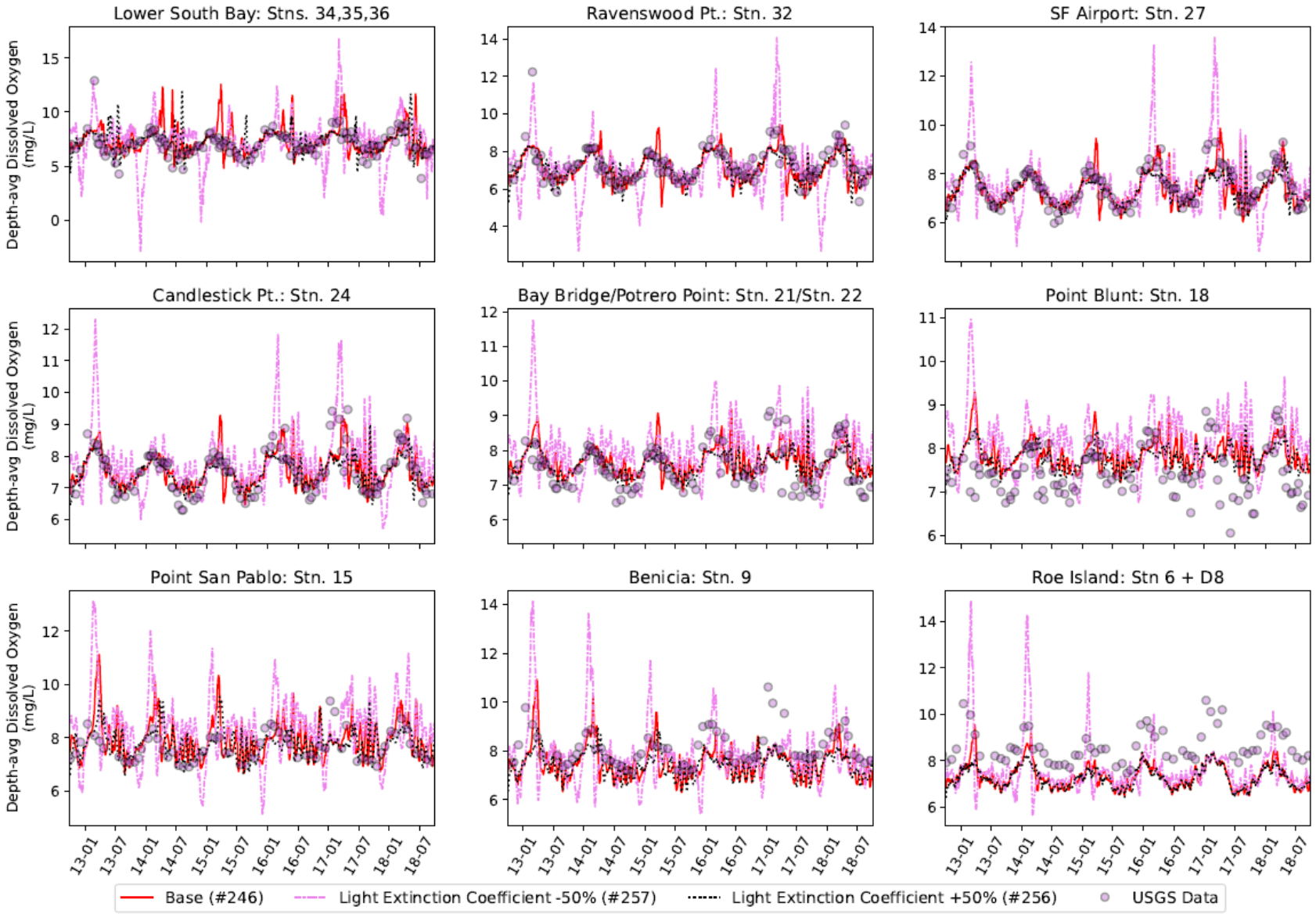
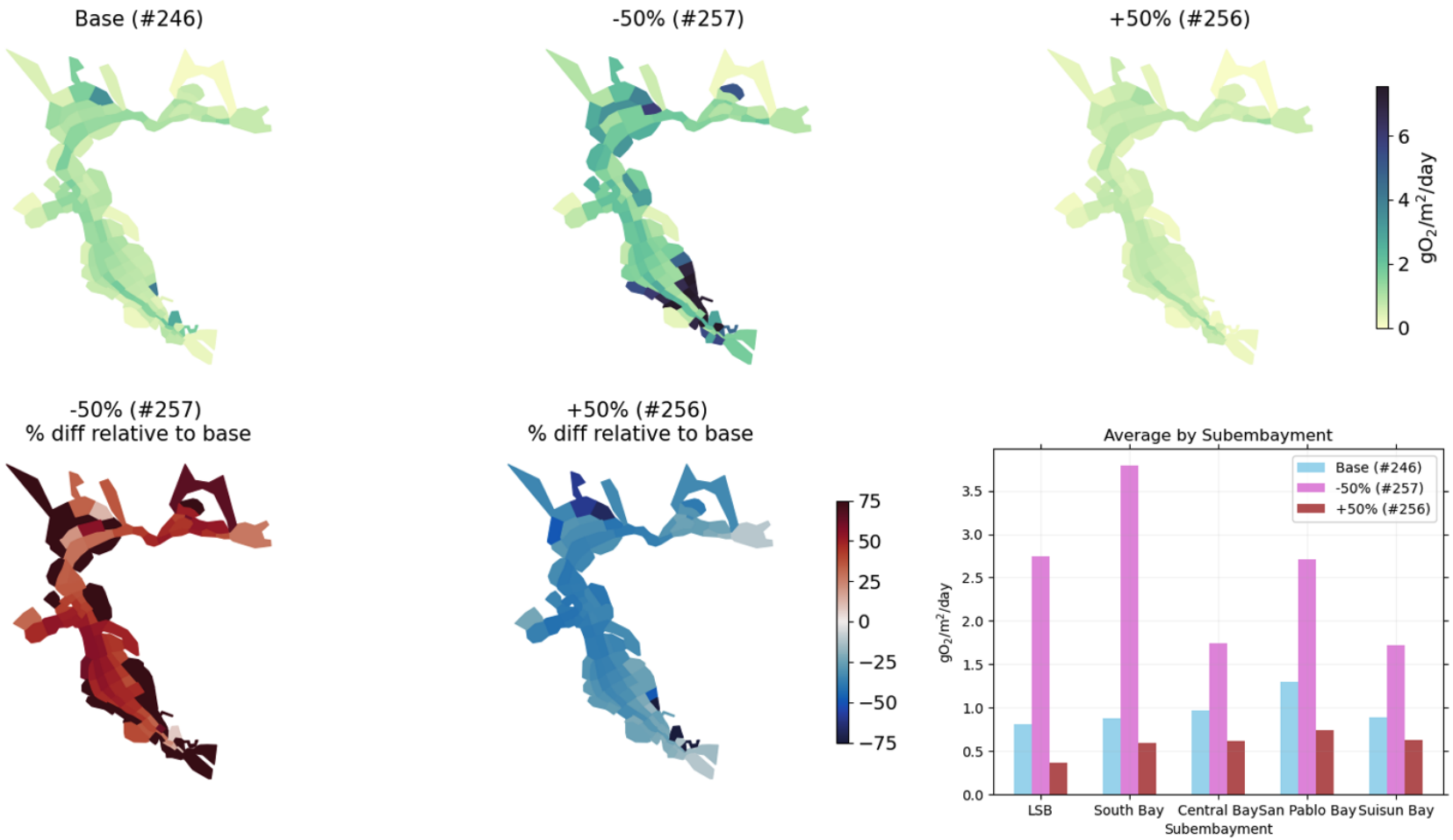



**Figure G.13. Sensitivity of predicted dissolved oxygen concentrations to light extinction**




Note: Top panels show the average water column DO consumption over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season. In the simplified sediment flux model in DWAQ, SOD is exerted in the bottom layer of the water column, therefore water column DO consumption includes SOD.

**Figure G.14. Sensitivity of WY2018 growing season (Mar – Sep) water column dissolved oxygen consumption to light extinction**

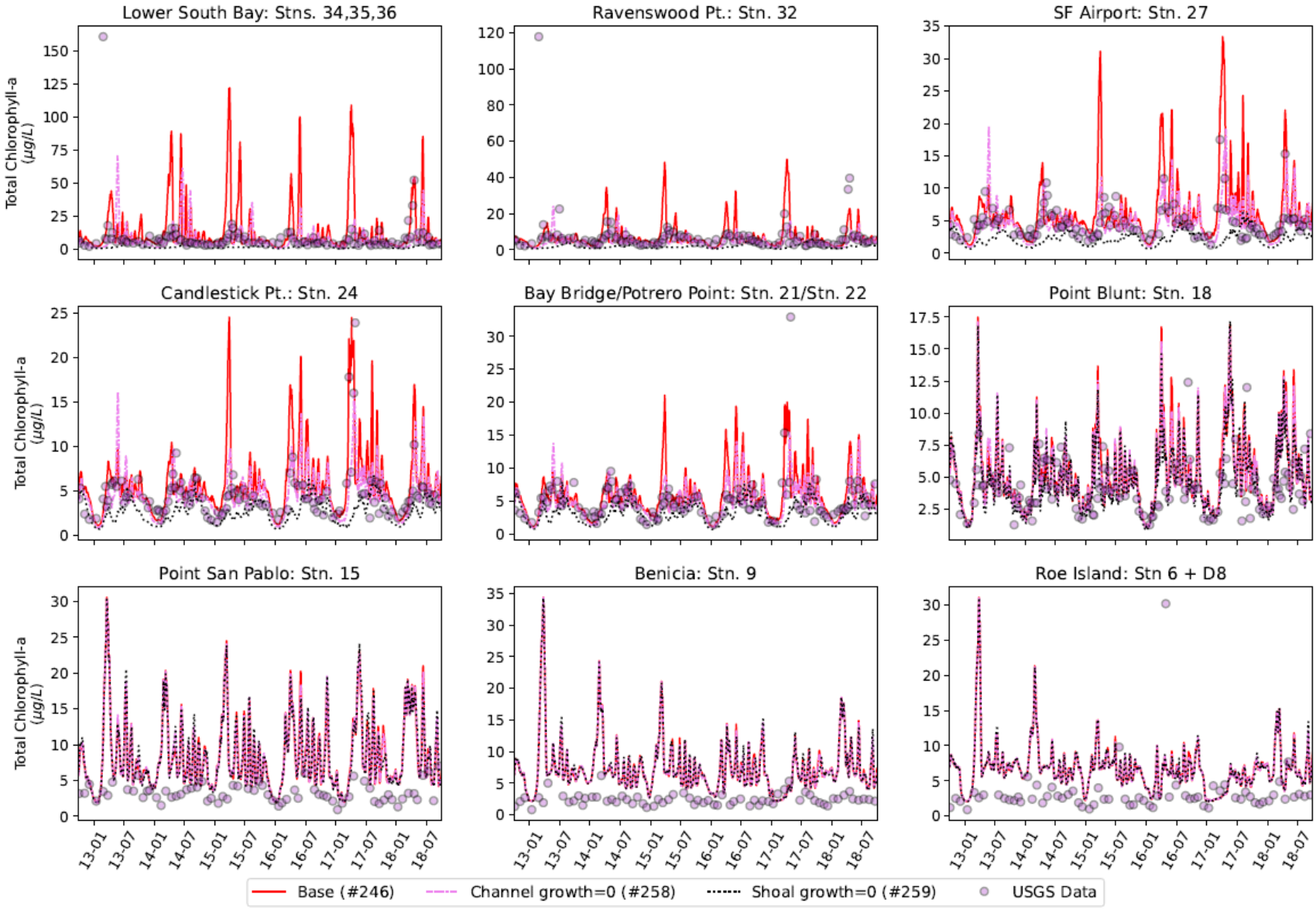



**Figure G.15. Sensitivity of predicted chlorophyll-a concentrations to channel and shoal production in South Bay**

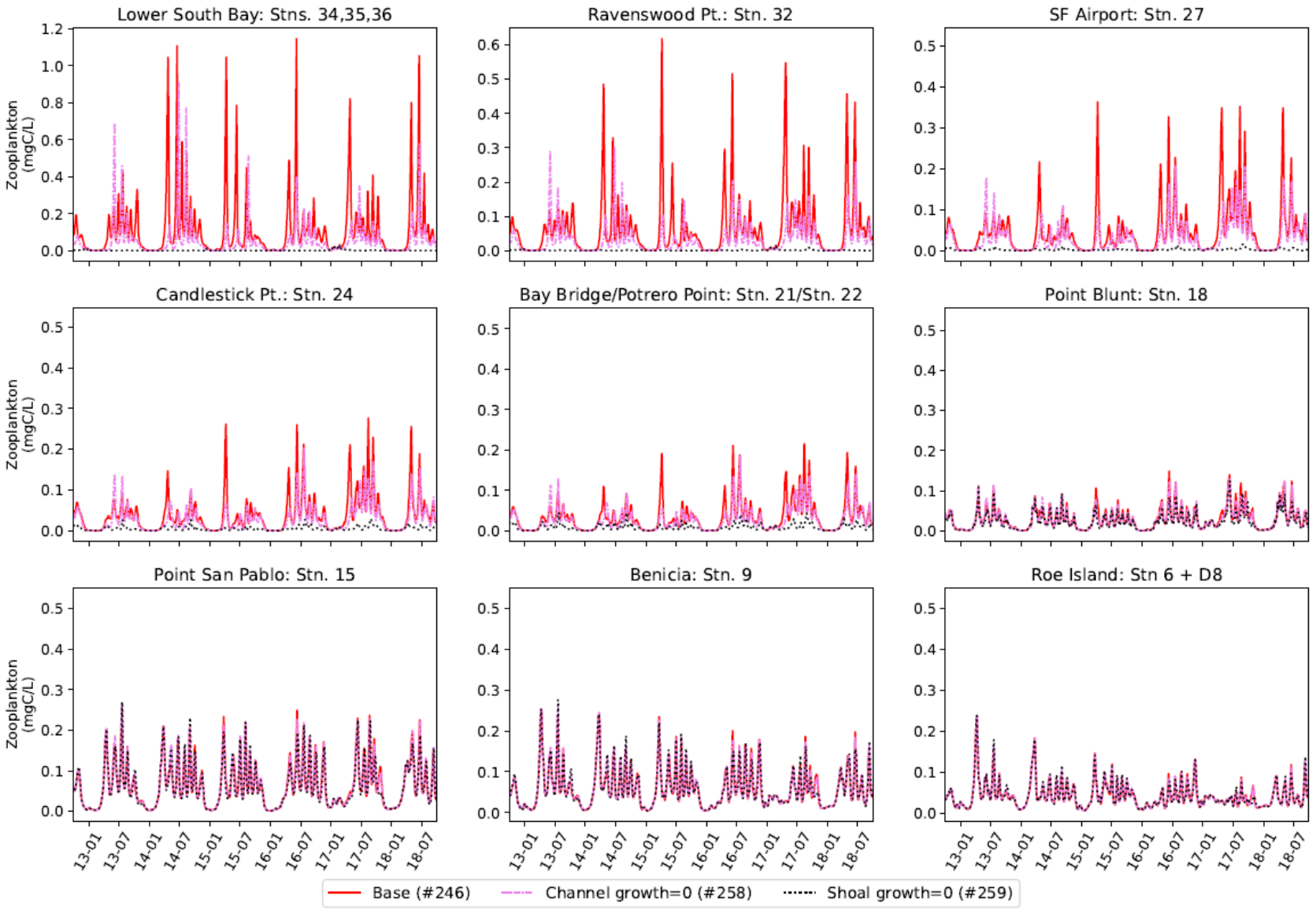
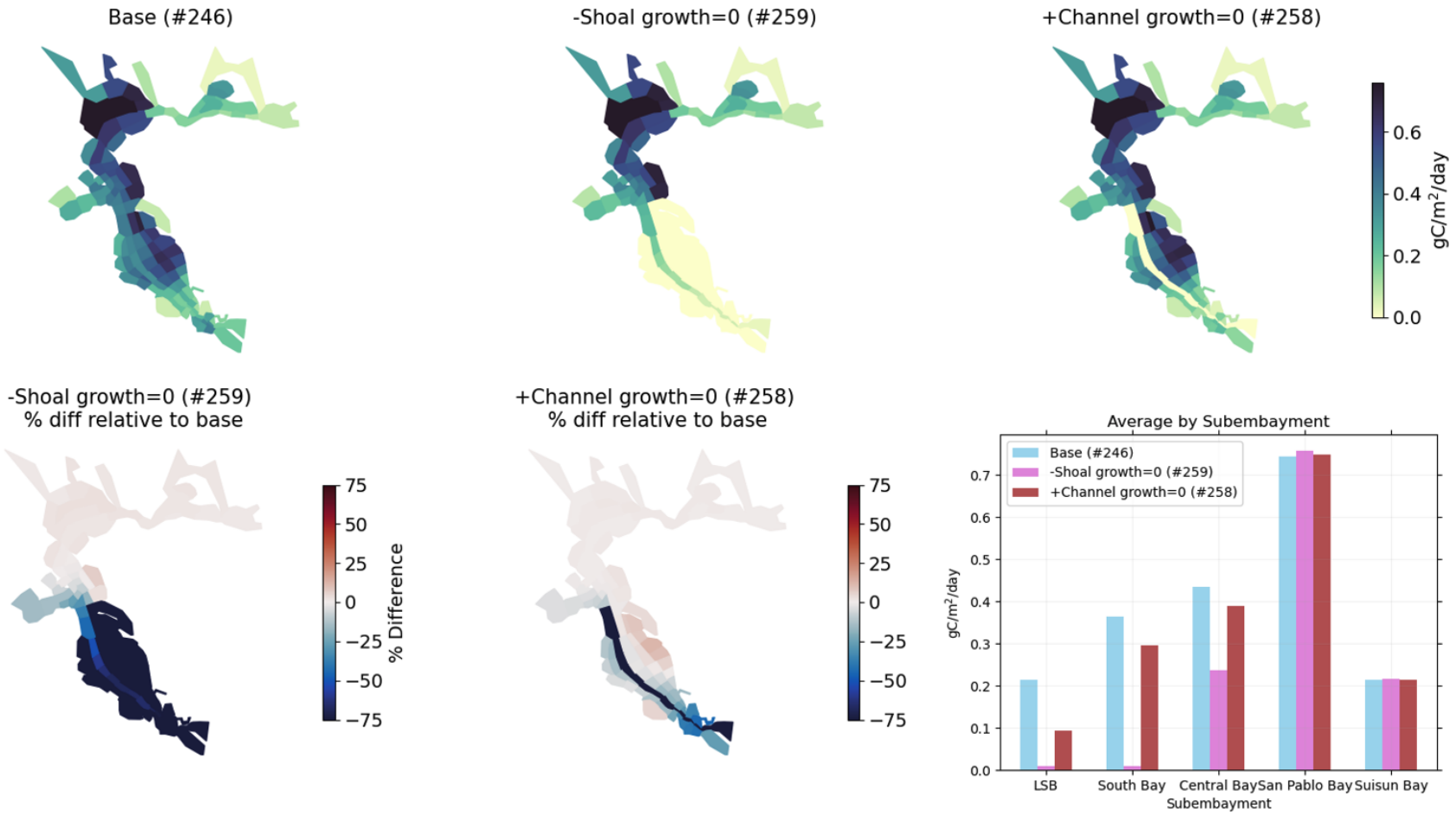



**Figure G.16. Sensitivity of predicted zooplankton concentrations to channel and shoal production in South Bay**




Note: Top panels show the average net primary production over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season.

**Figure G.17. Sensitivity of WY2018 growing season (Mar – Sep) primary production to channel and shoal production in South Bay**

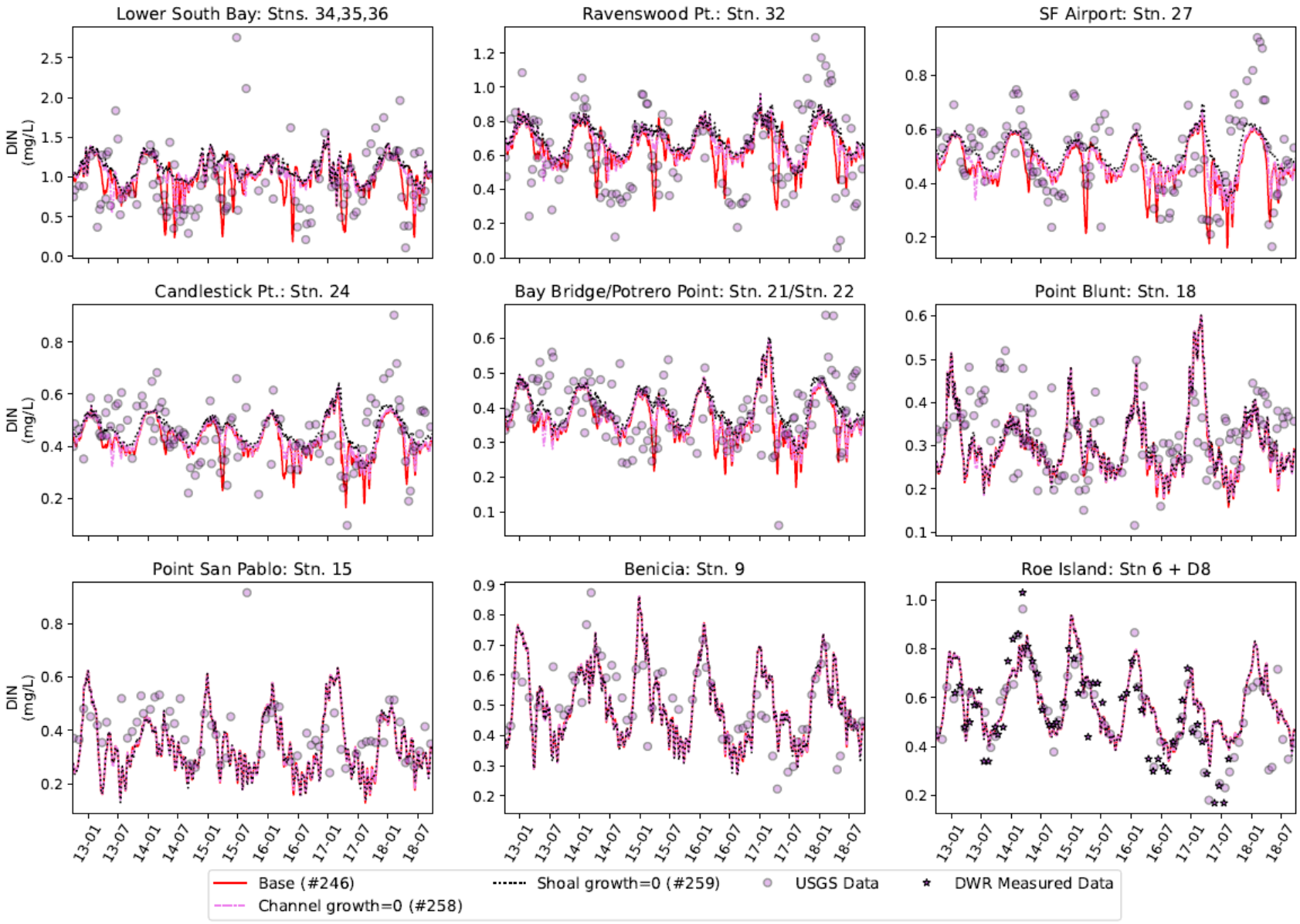
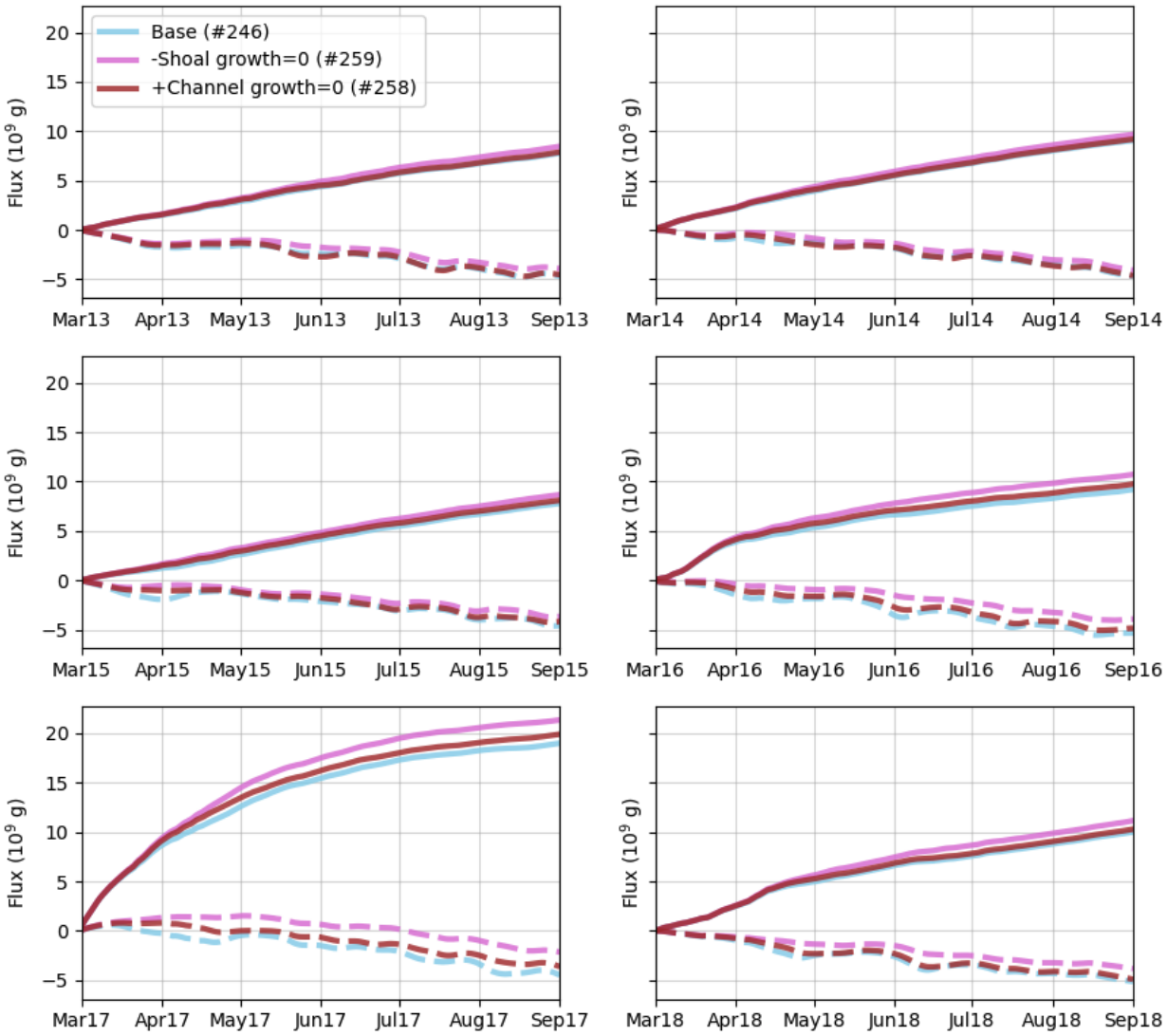



**Figure G.18. Sensitivity of predicted dissolved inorganic nitrogen (DIN) concentrations to channel and shoal production in South Bay**




Note: Solid lines represent cumulative flux out of Golden Gate and dashed lines show the net of all reactions for DIN within SFB starting from Mar 1 of each year.

**Figure G.19. Sensitivity of predicted coastal export of dissolved inorganic nitrogen to channel and shoal production in South Bay**

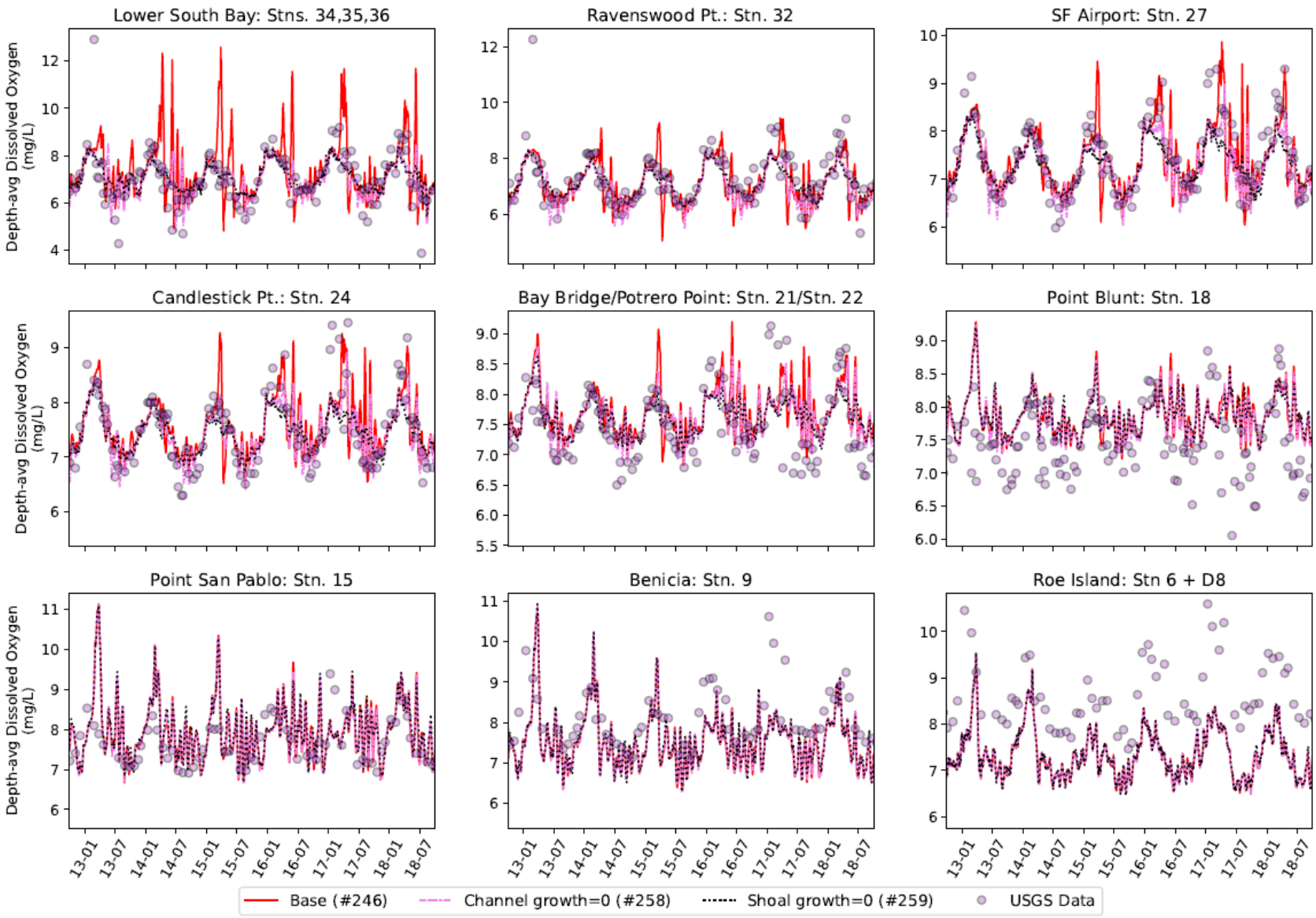
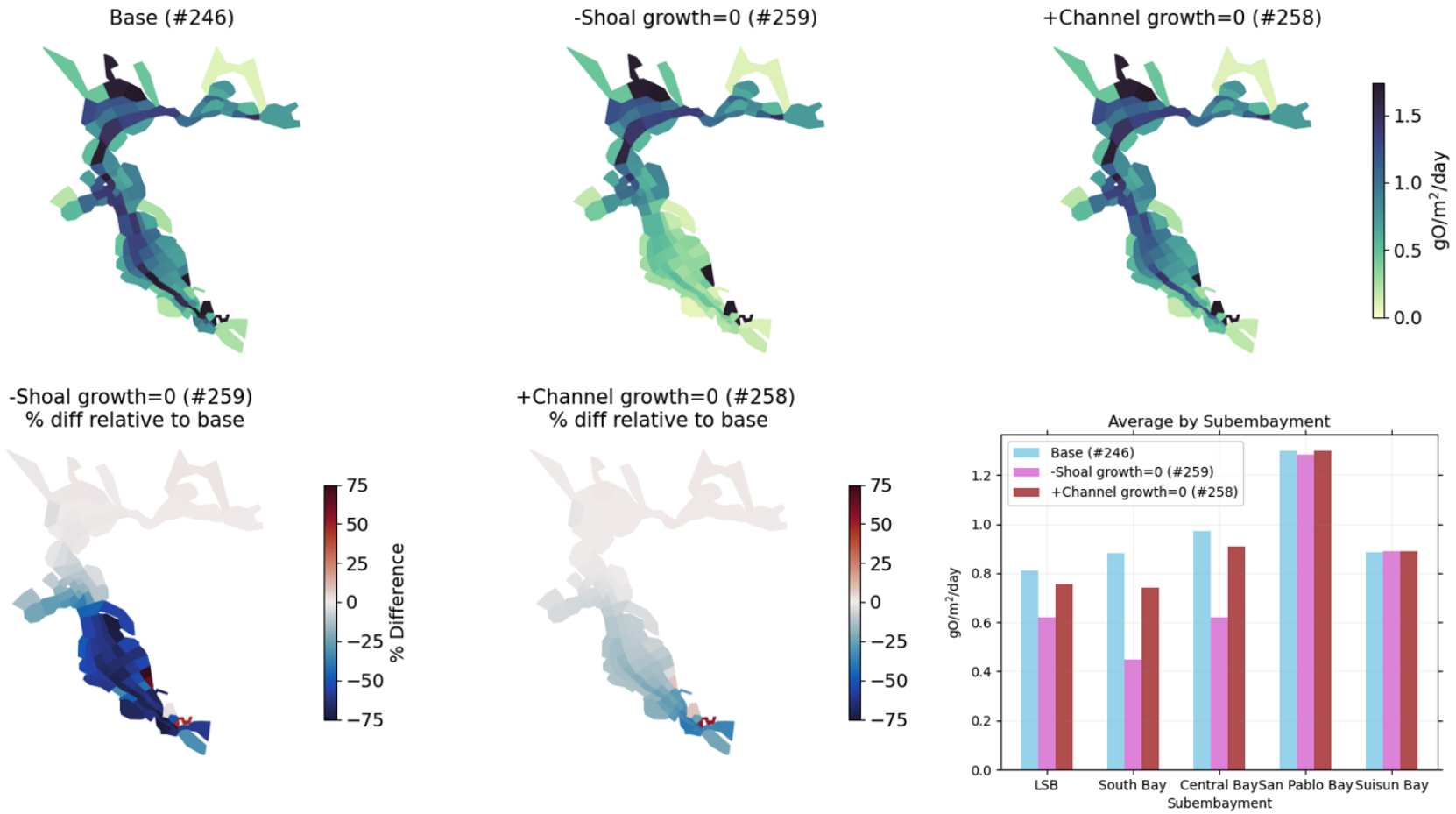



**Figure G.20. Sensitivity of predicted dissolved oxygen concentrations to channel and shoal production in South Bay**




Note: Top panels show the average water column DO consumption over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season. In the simplified sediment flux model in DWAQ, SOD is exerted in the bottom layer of the water column, therefore water column DO consumption includes SOD.

**Figure G.21. Sensitivity of predicted WY2018 growing season (Mar – Sep) water column dissolved oxygen consumption to channel and shoal production in South Bay**

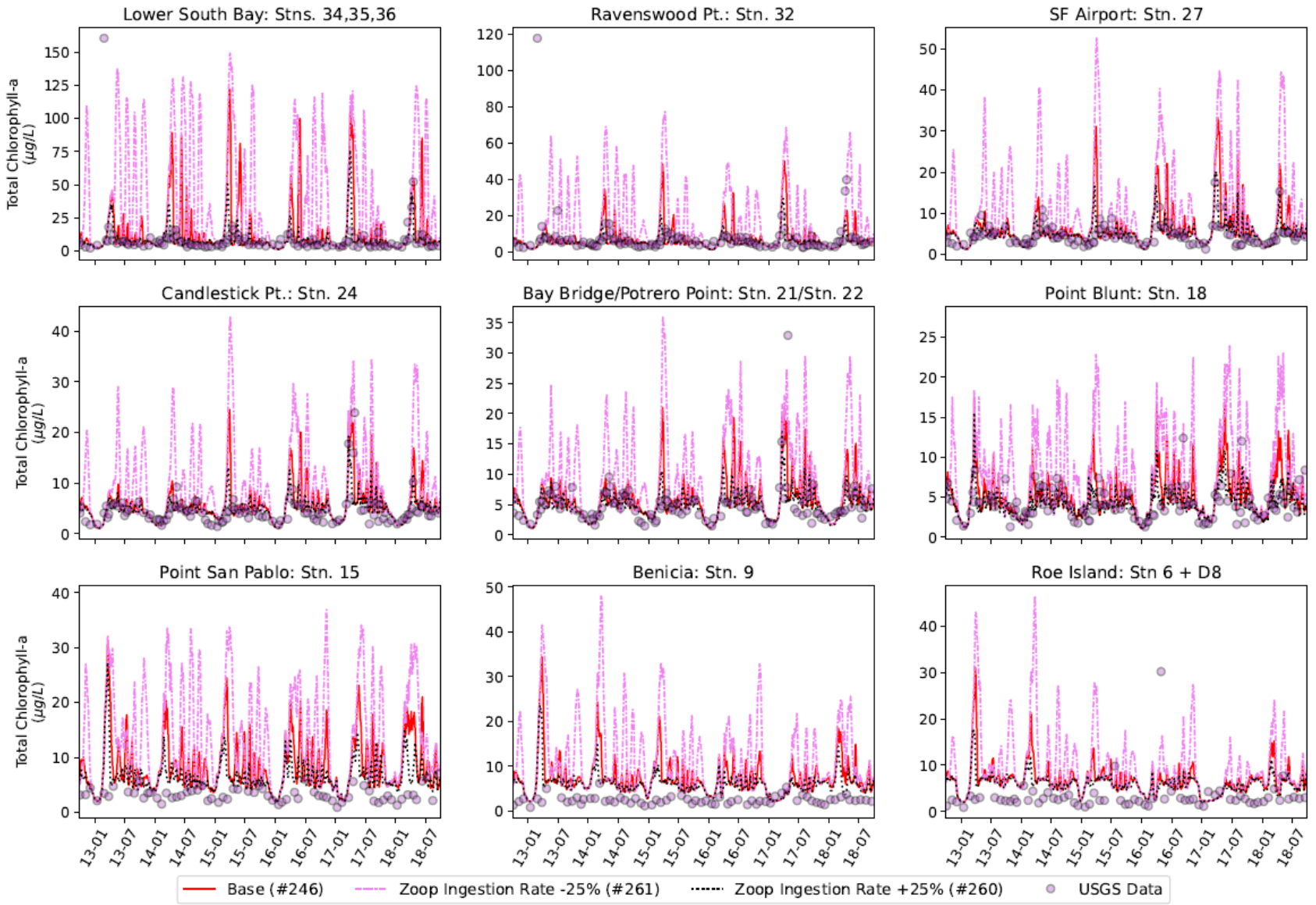



**Figure G.22. Sensitivity of predicted chlorophyll-a concentrations to zooplankton ingestion rate**

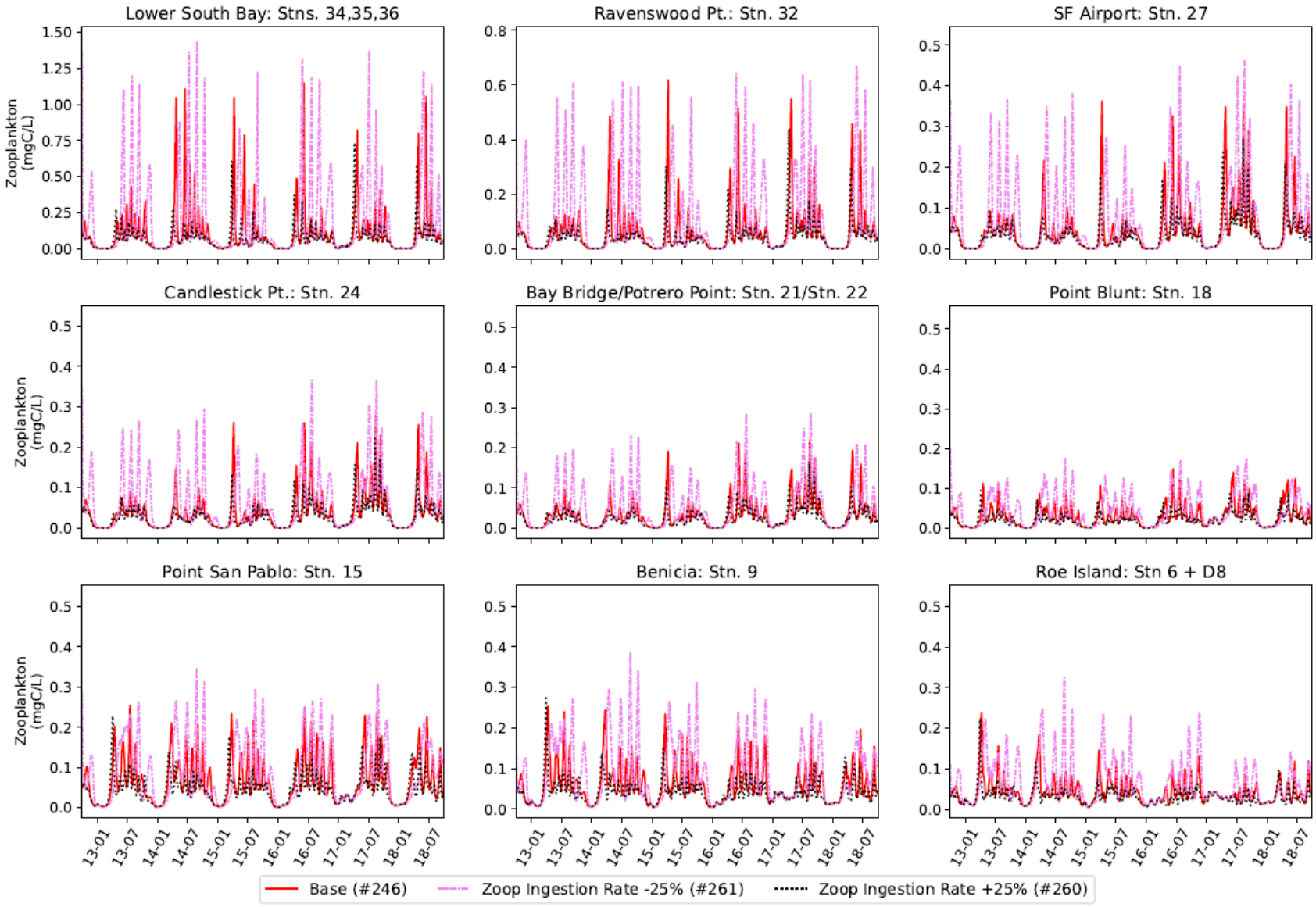
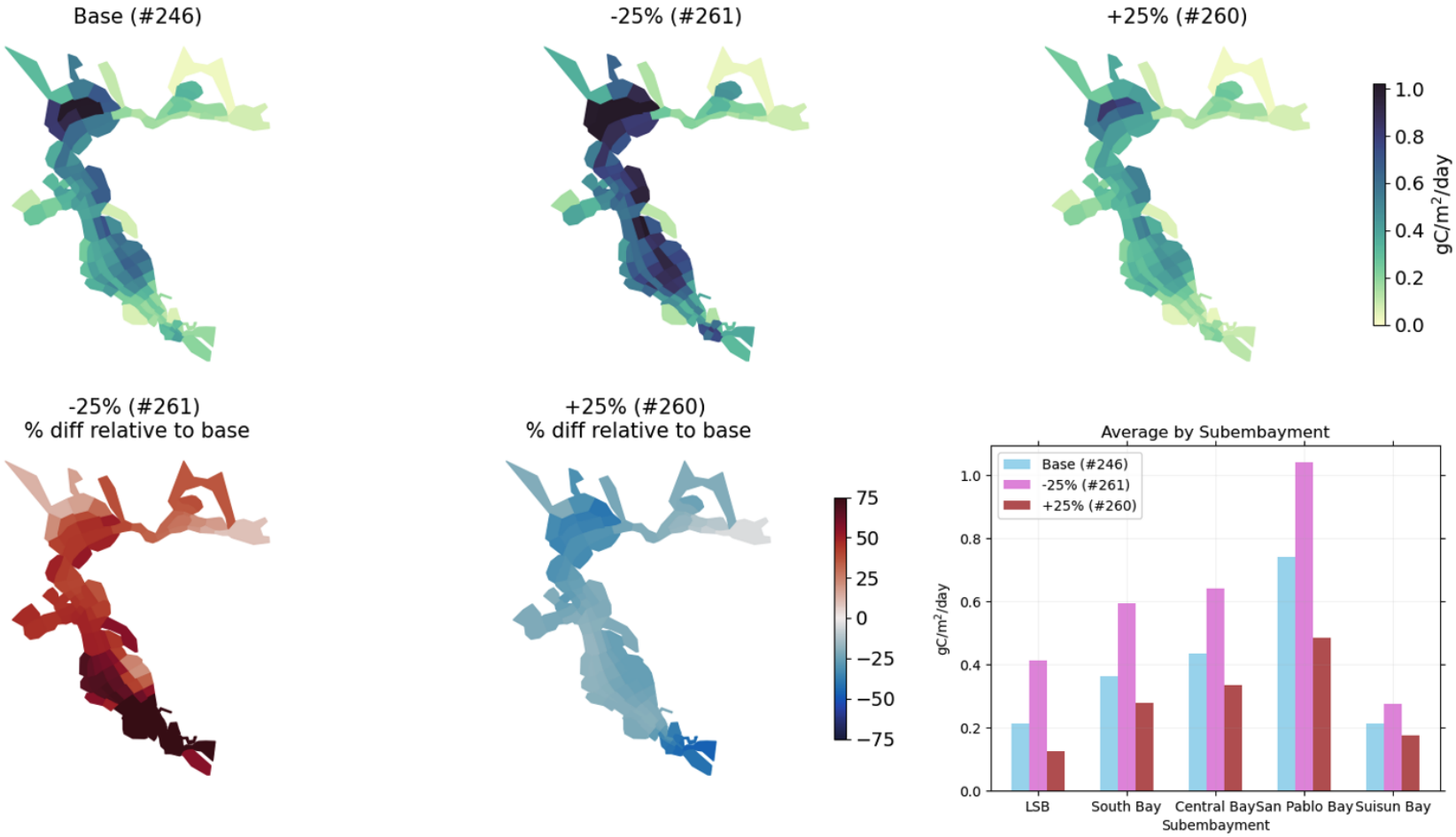



**Figure G.23. Sensitivity of predicted zooplankton concentrations to zooplankton ingestion rate**




Note: Top panels show the average net primary production over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season.

**Figure G.24. Sensitivity of WY2018 growing season (Mar – Sep) primary production to zooplankton ingestion rate**

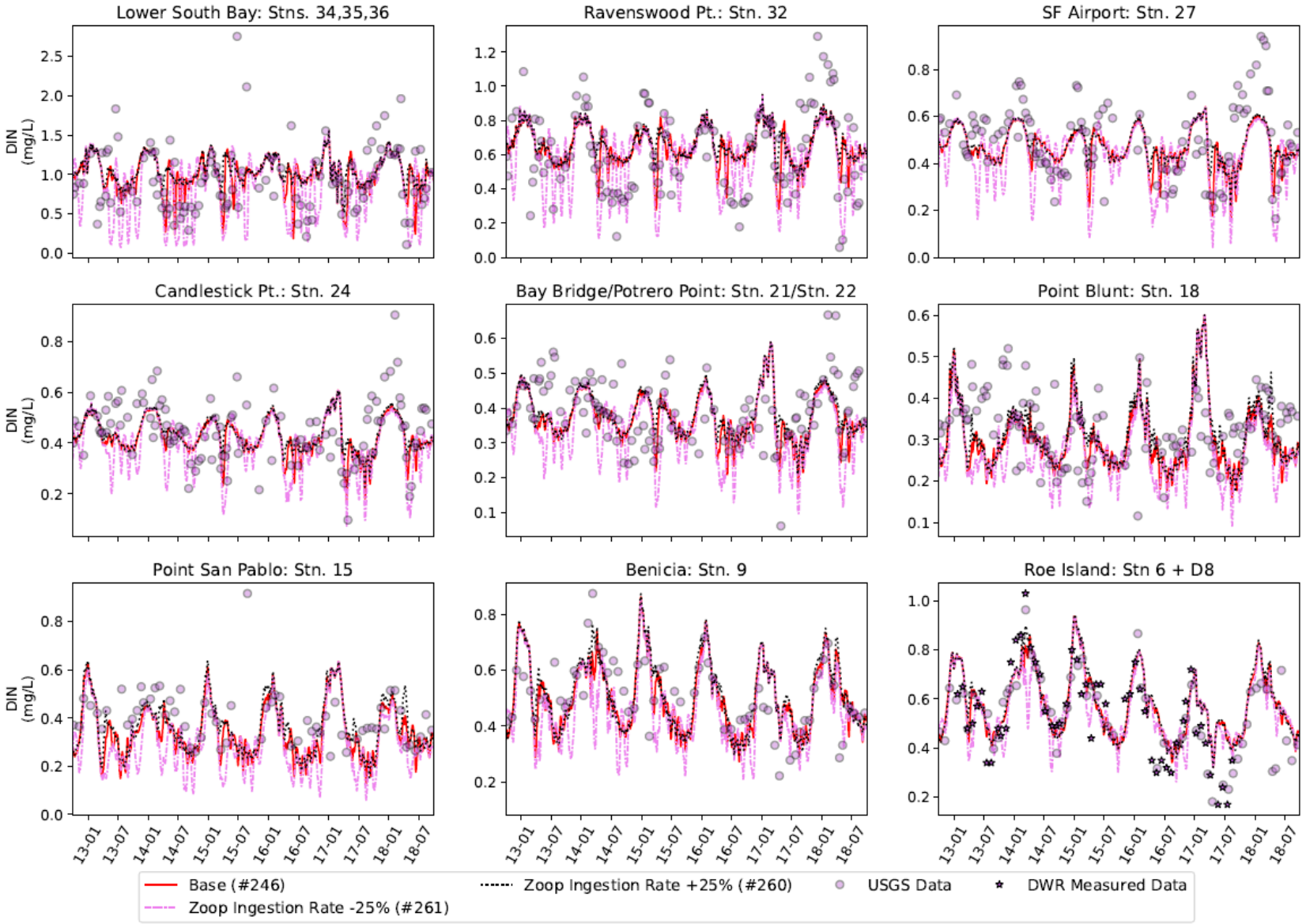
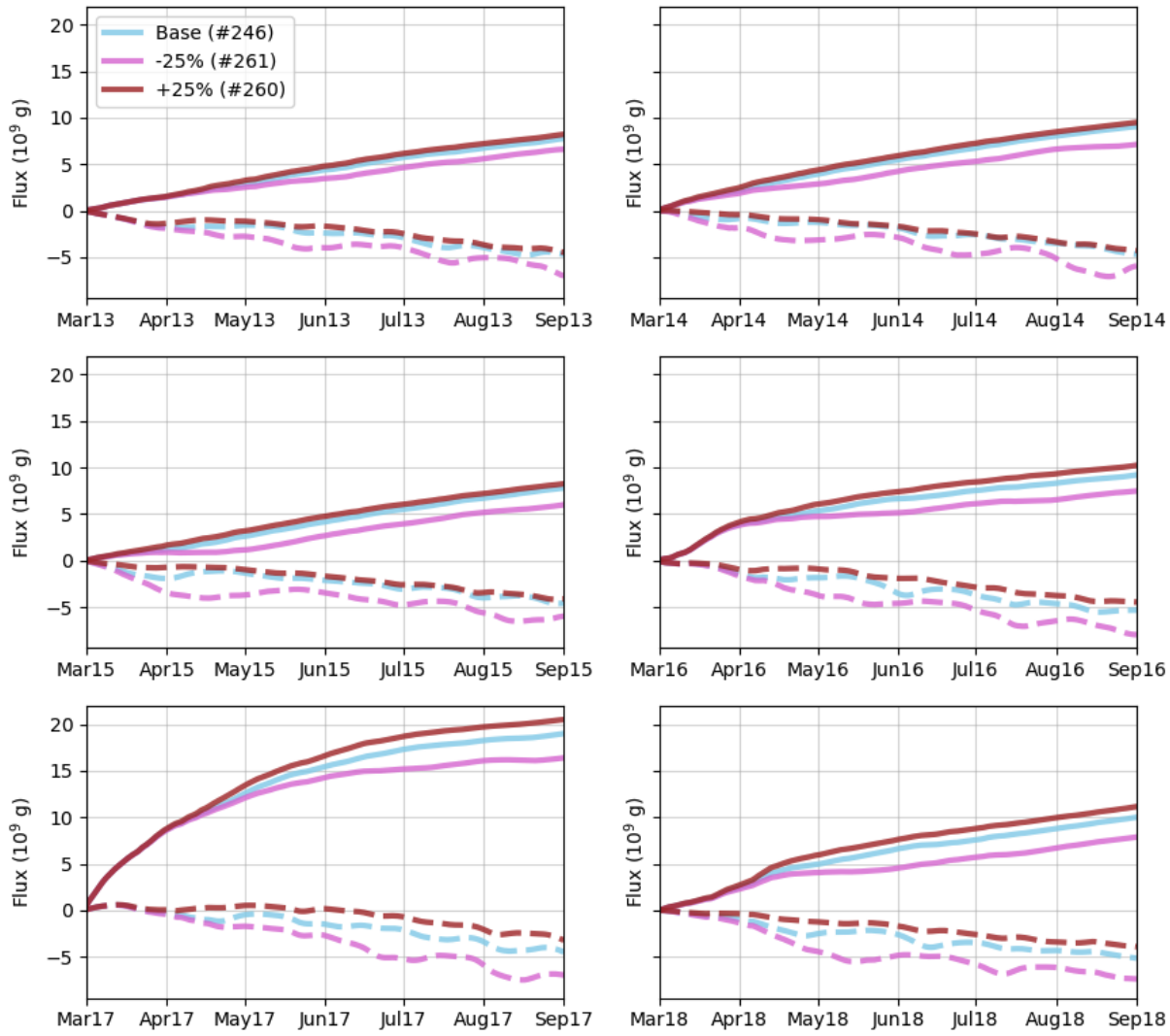



**Figure G.25. Sensitivity of predicted dissolved inorganic nitrogen (DIN) concentrations to zooplankton ingestion rate**




Note: Solid lines represent cumulative flux out of Golden Gate and dashed lines show the net of all reactions for DIN within SFB starting from Mar 1 of each year

**Figure G.26. Sensitivity of predicted coastal export of dissolved inorganic nitrogen to zooplankton ingestion rate**

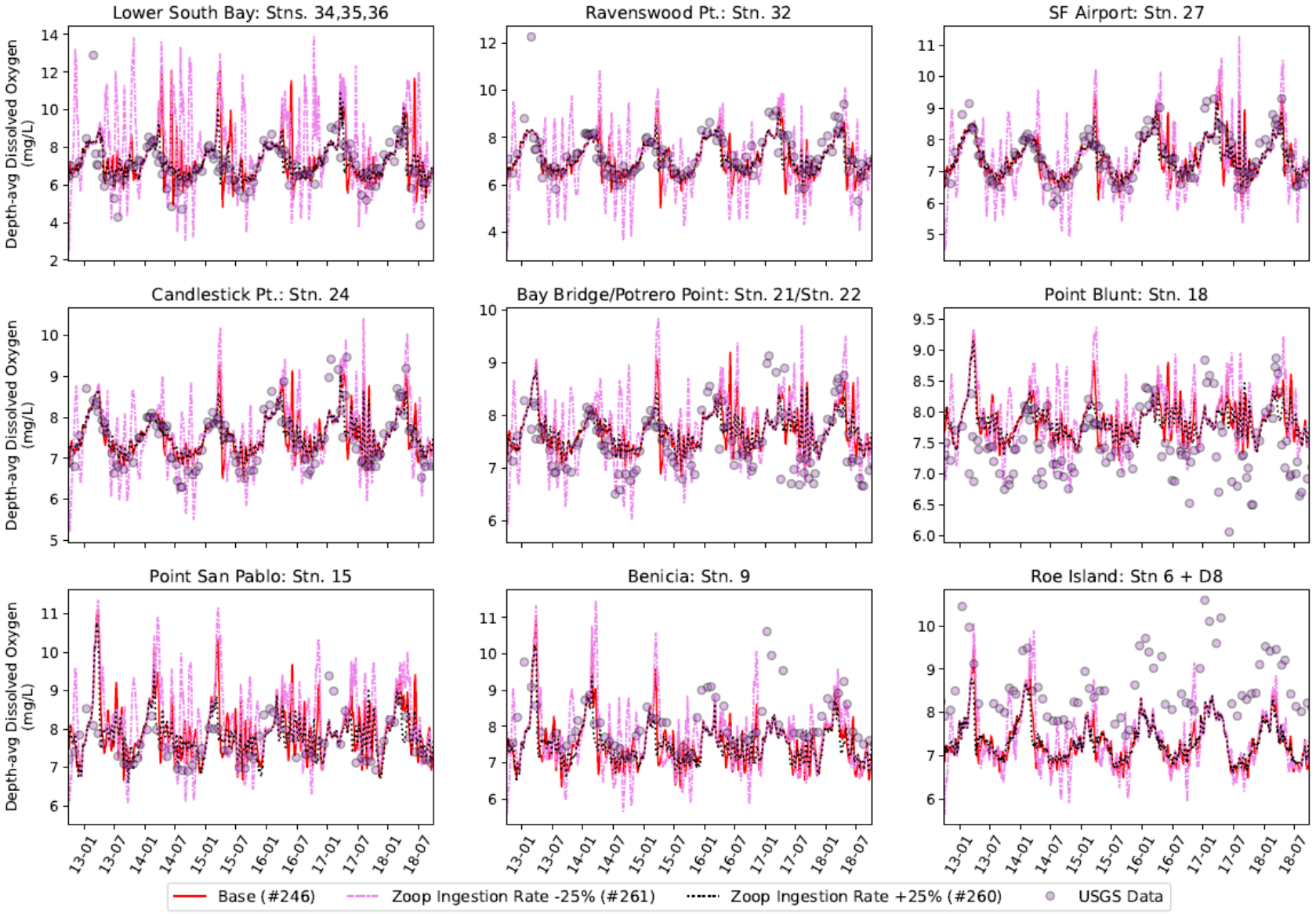
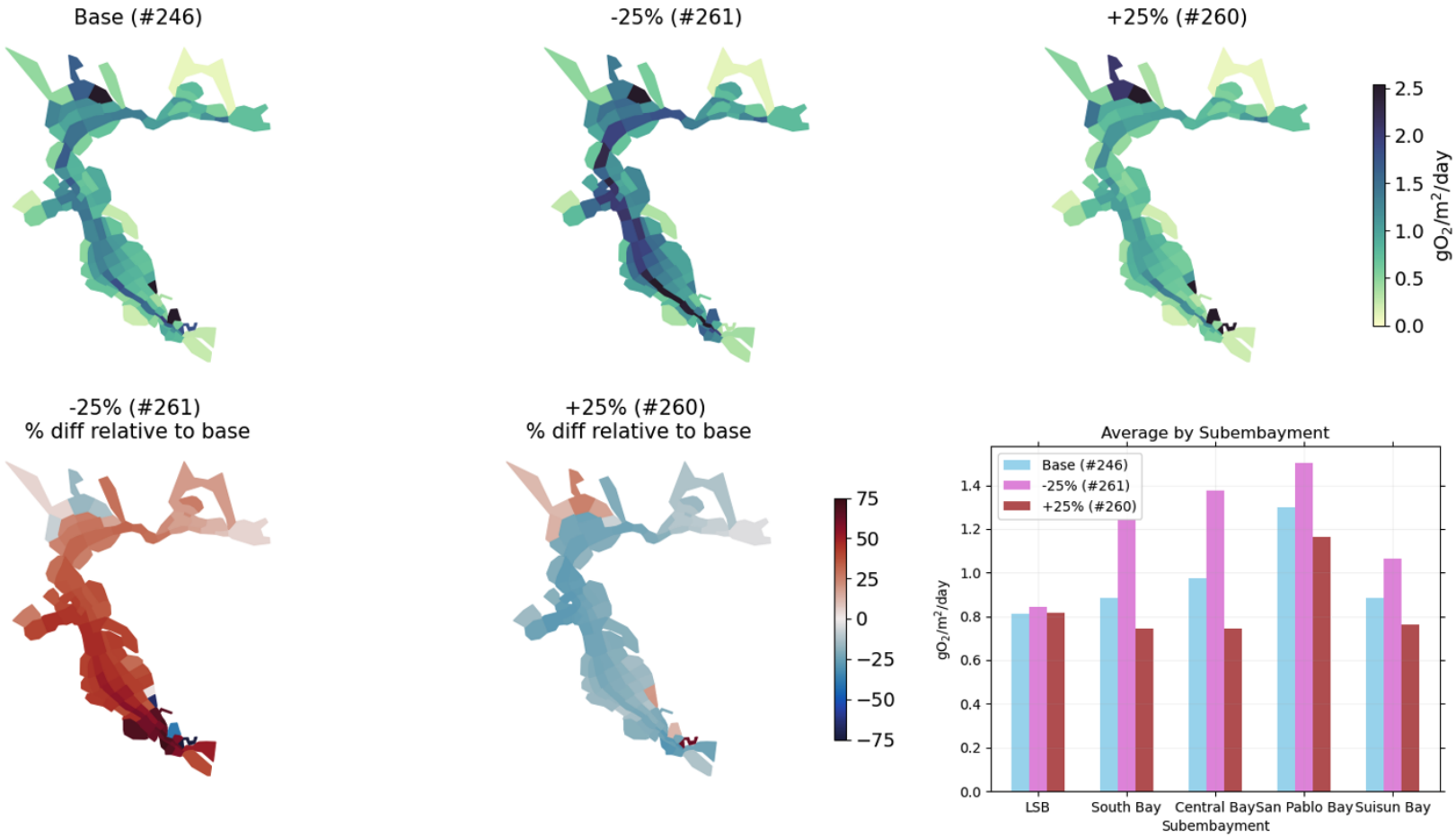



**Figure G.27. Sensitivity of predicted dissolved oxygen concentrations to zooplankton ingestion rate**




Note: Top panels show the average water column DO consumption over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season. In the simplified sediment flux model in DWAQ, SOD is exerted in the bottom layer of the water column, therefore water column DO consumption includes SOD.

**Figure G.28. Sensitivity of WY2018 growing season (Mar – Sep) predicted water column dissolved oxygen consumption to zooplankton ingestion rate**

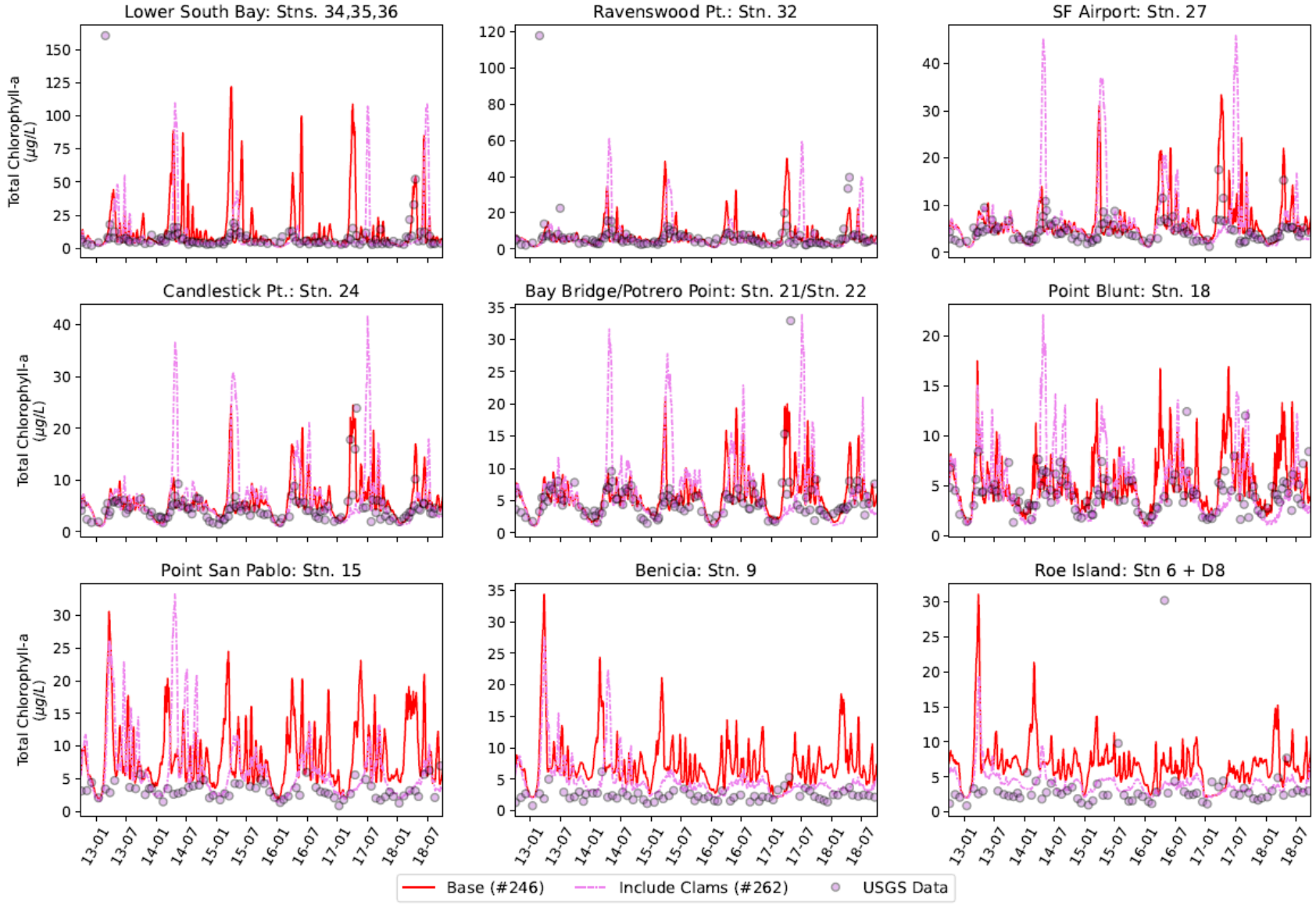



**Figure G.29. Sensitivity of predicted chlorophyll-a concentrations to inclusion of a benthic grazer**

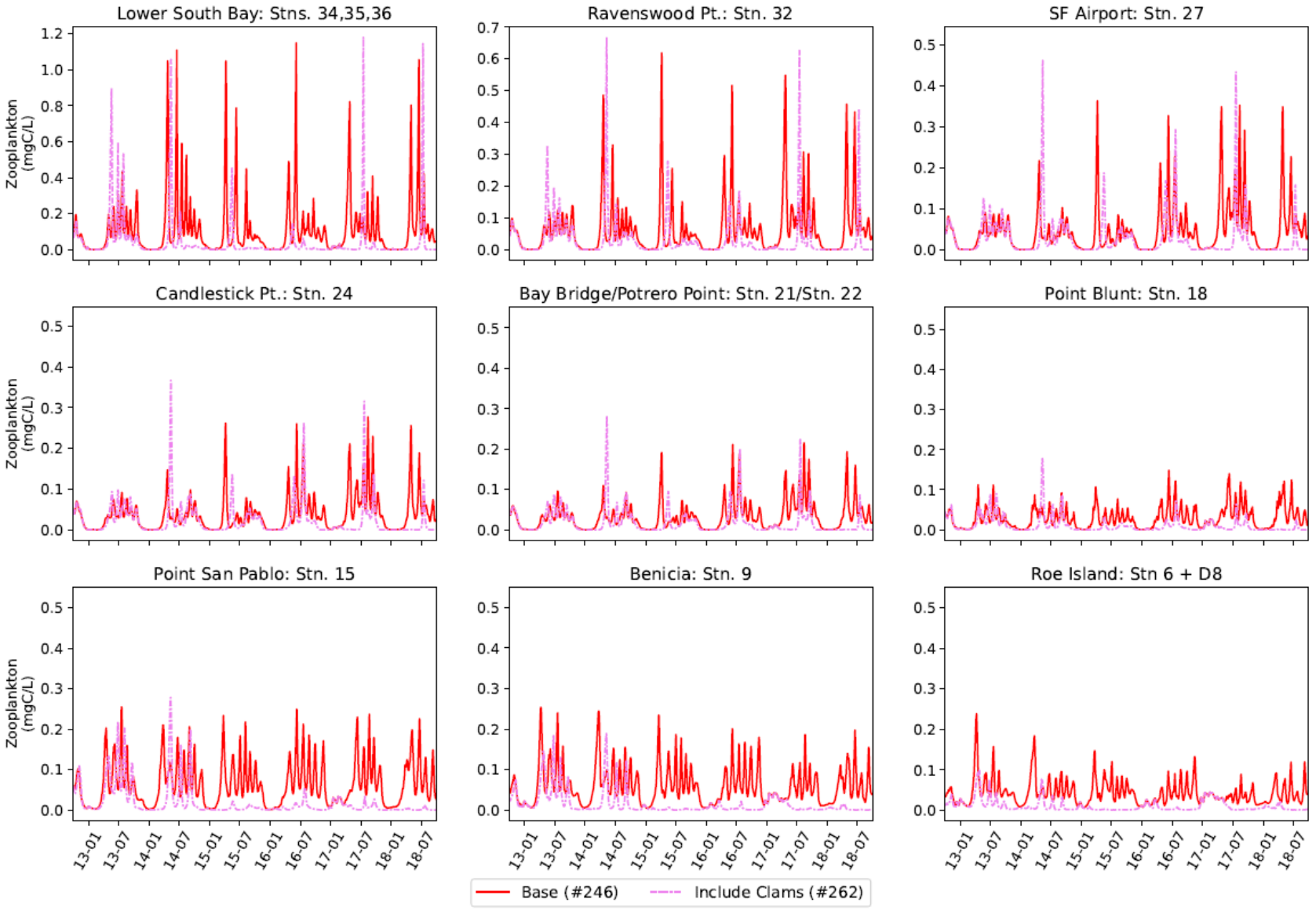
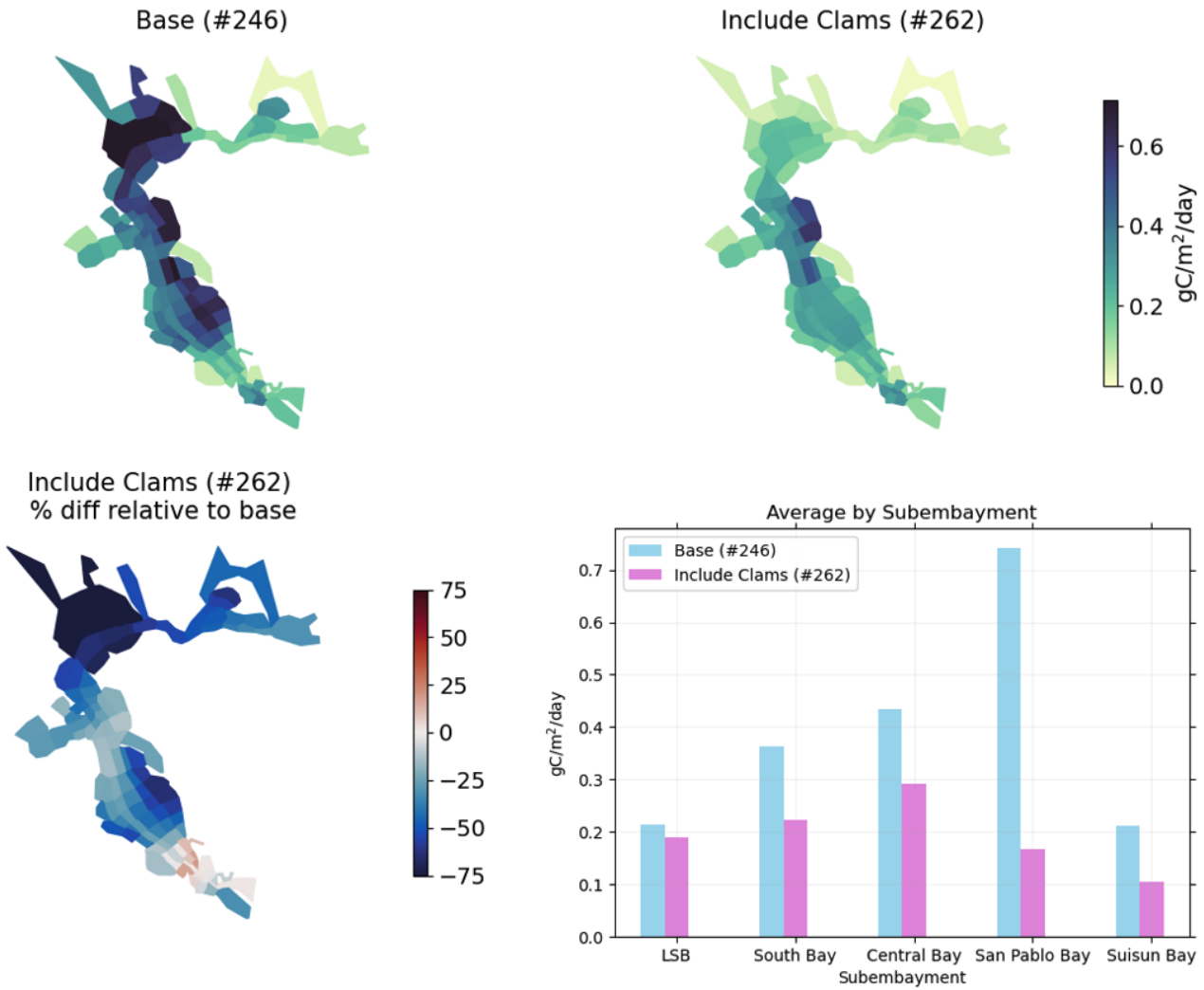



**Figure G.30. Sensitivity of predicted zooplankton concentrations to inclusion of a benthic grazer**




Note: Top panels show the average net primary production over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season.

**Figure G.31. Sensitivity of WY2018 growing season (Mar – Sep) primary production to inclusion of a benthic grazer**

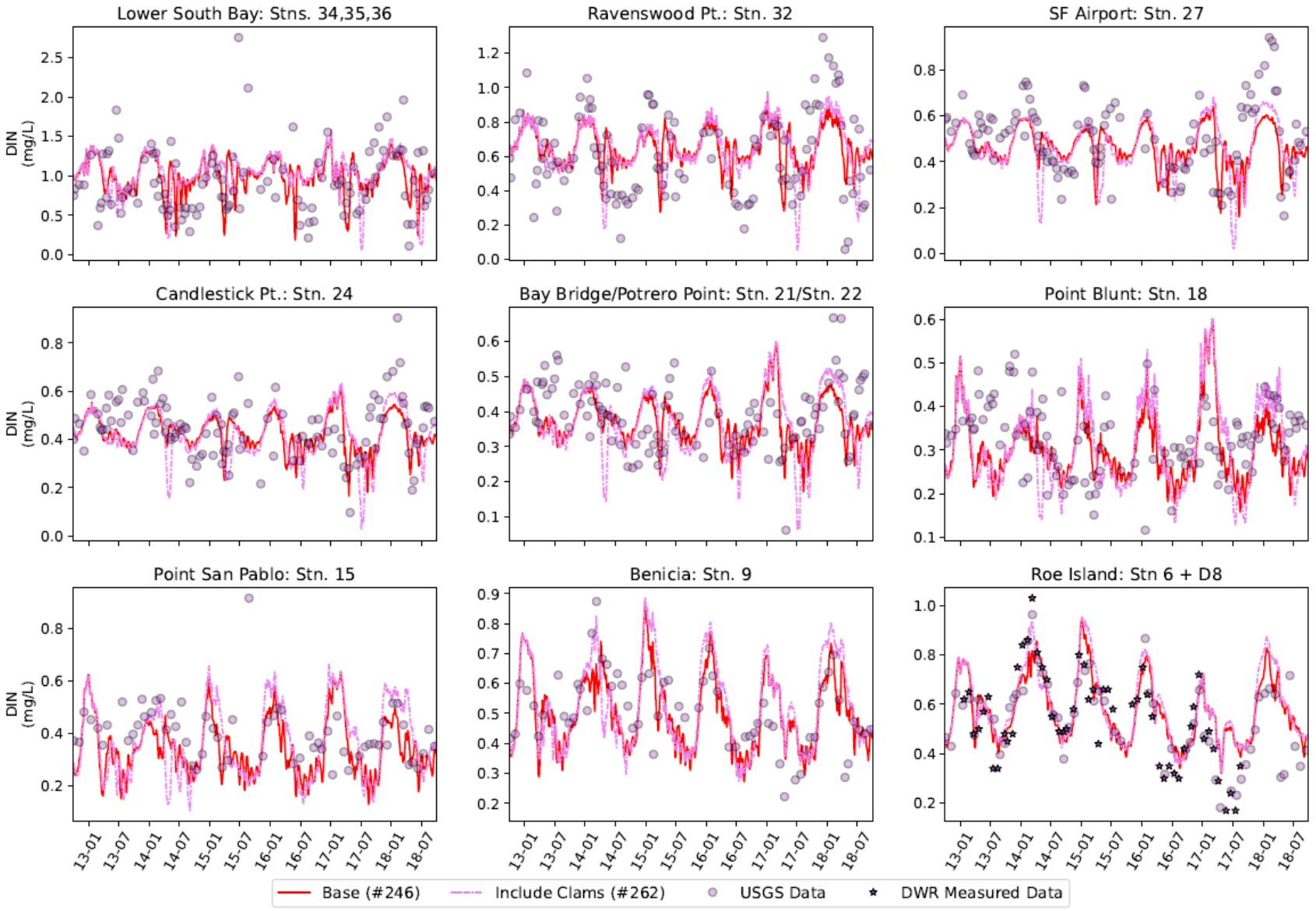
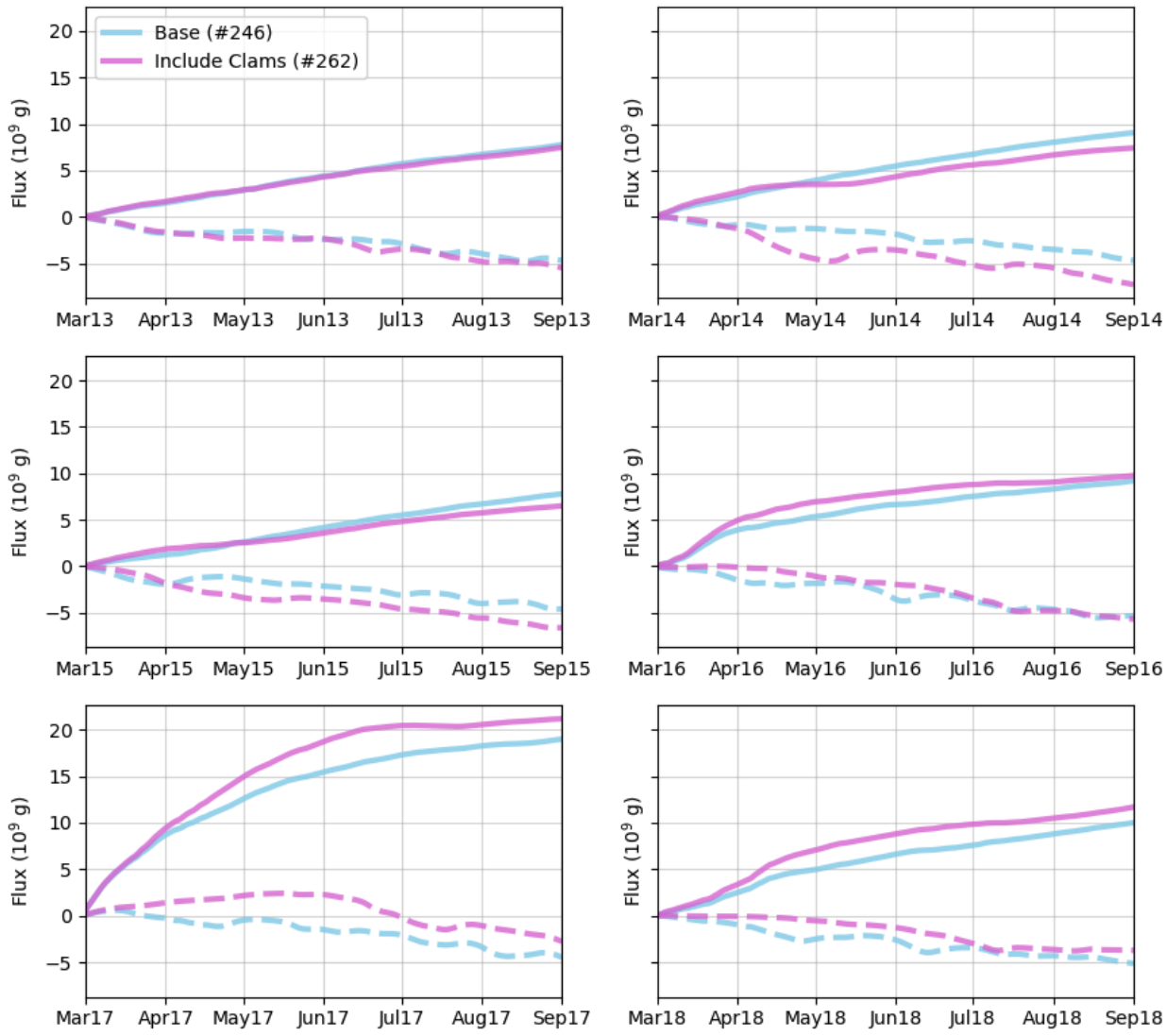



**Figure G.32. Sensitivity of predicted dissolved inorganic nitrogen (DIN) concentrations to inclusion of a benthic grazer**




Note: Solid lines represent cumulative flux out of Golden Gate and dashed lines show the net of all reactions for DIN within SFB starting from Mar 1 of each year.

**Figure G.33. Sensitivity of predicted coastal export of dissolved inorganic nitrogen to inclusion of a benthic grazer**

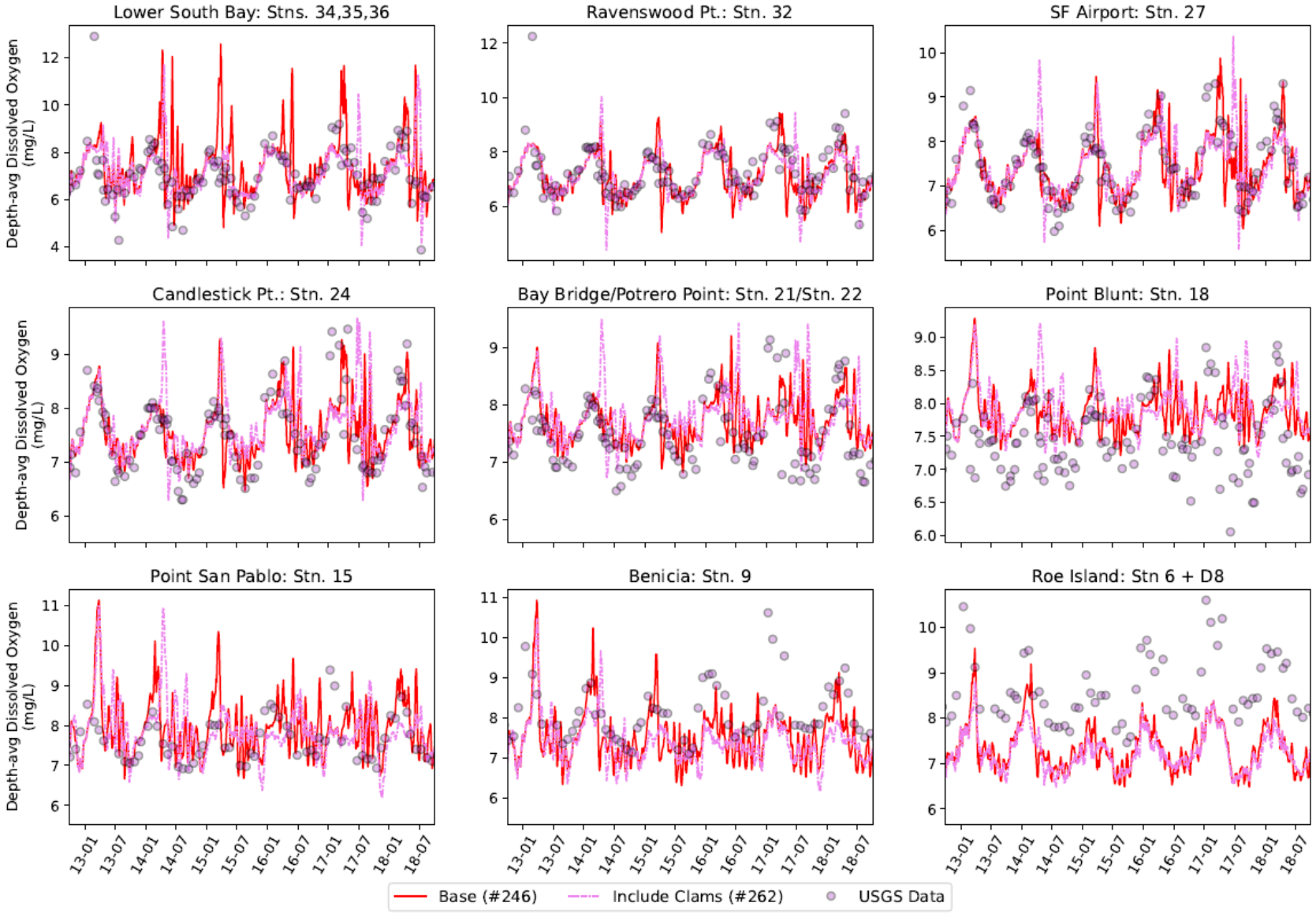
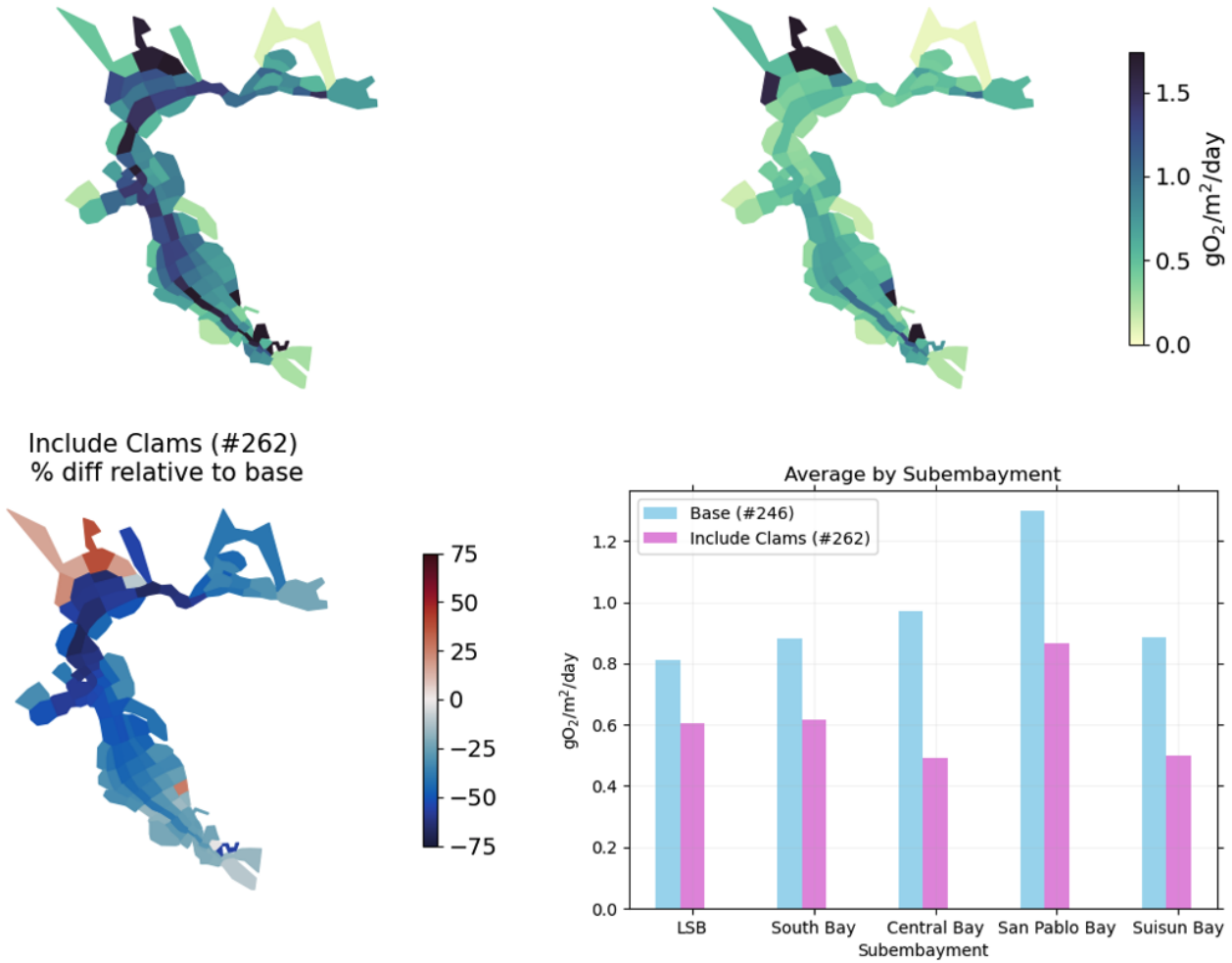



**Figure G.34. Sensitivity of predicted dissolved oxygen concentrations to inclusion of a benthic grazer**




Note: Top panels show the average water column DO consumption over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season. In the simplified sediment flux model in DWAQ, SOD is exerted in the bottom layer of the water column, therefore water column DO consumption includes SOD.

**Figure G.35. Sensitivity of WY2018 growing season (Mar – Sep) predicted water column dissolved oxygen consumption to inclusion of a benthic grazer**

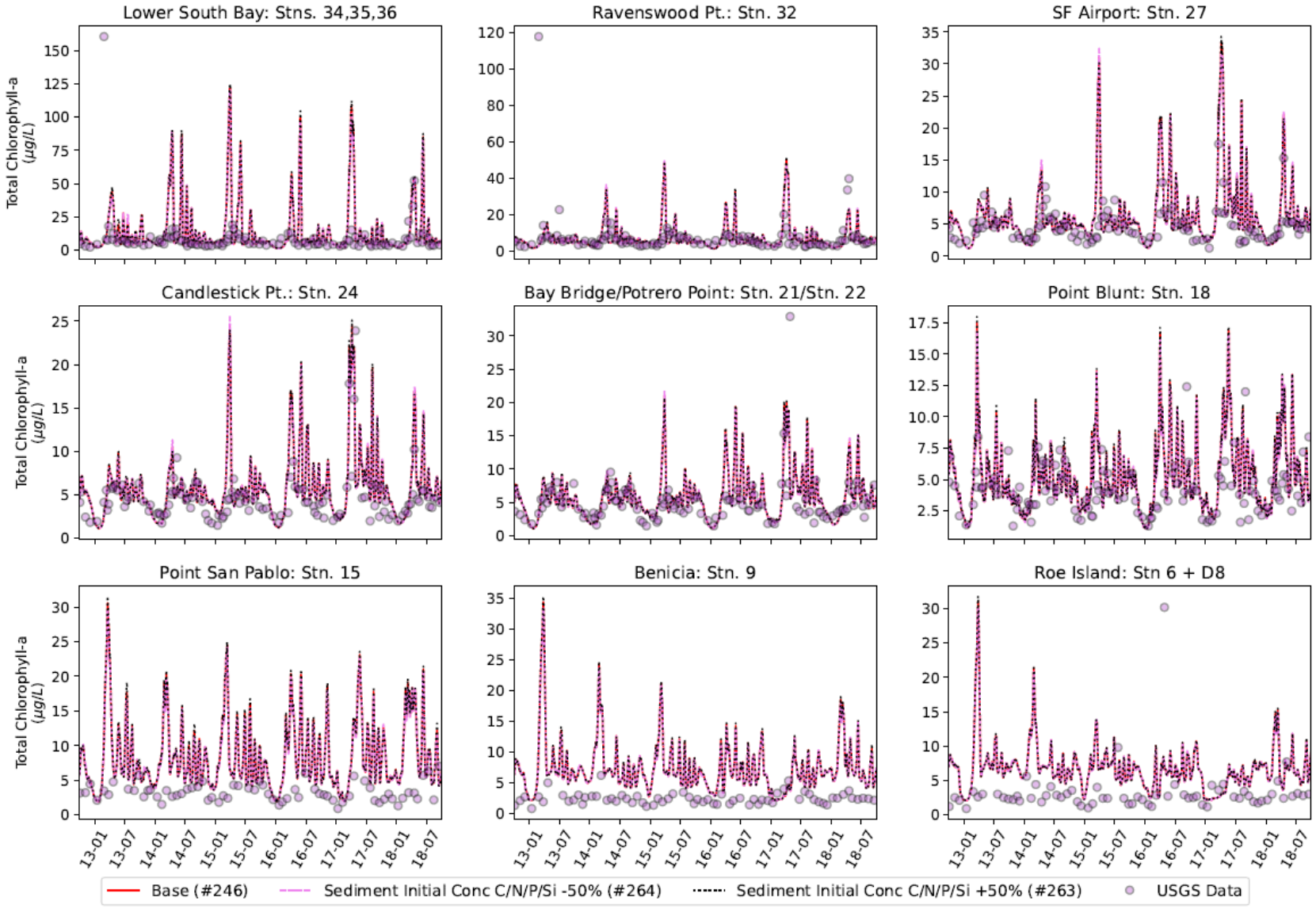



**Figure G.36. Sensitivity of predicted chlorophyll-a concentrations to sediment initial condition**

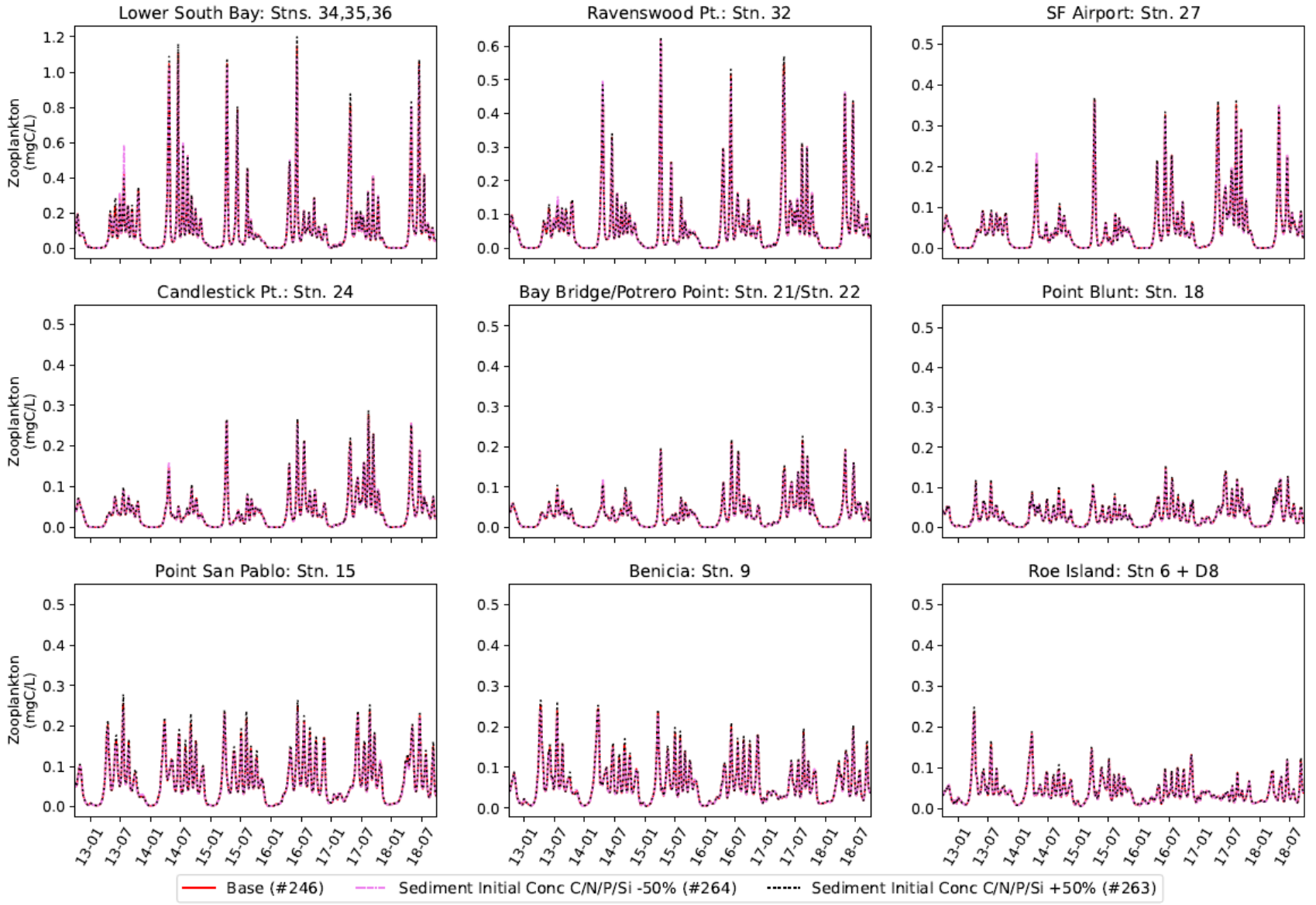
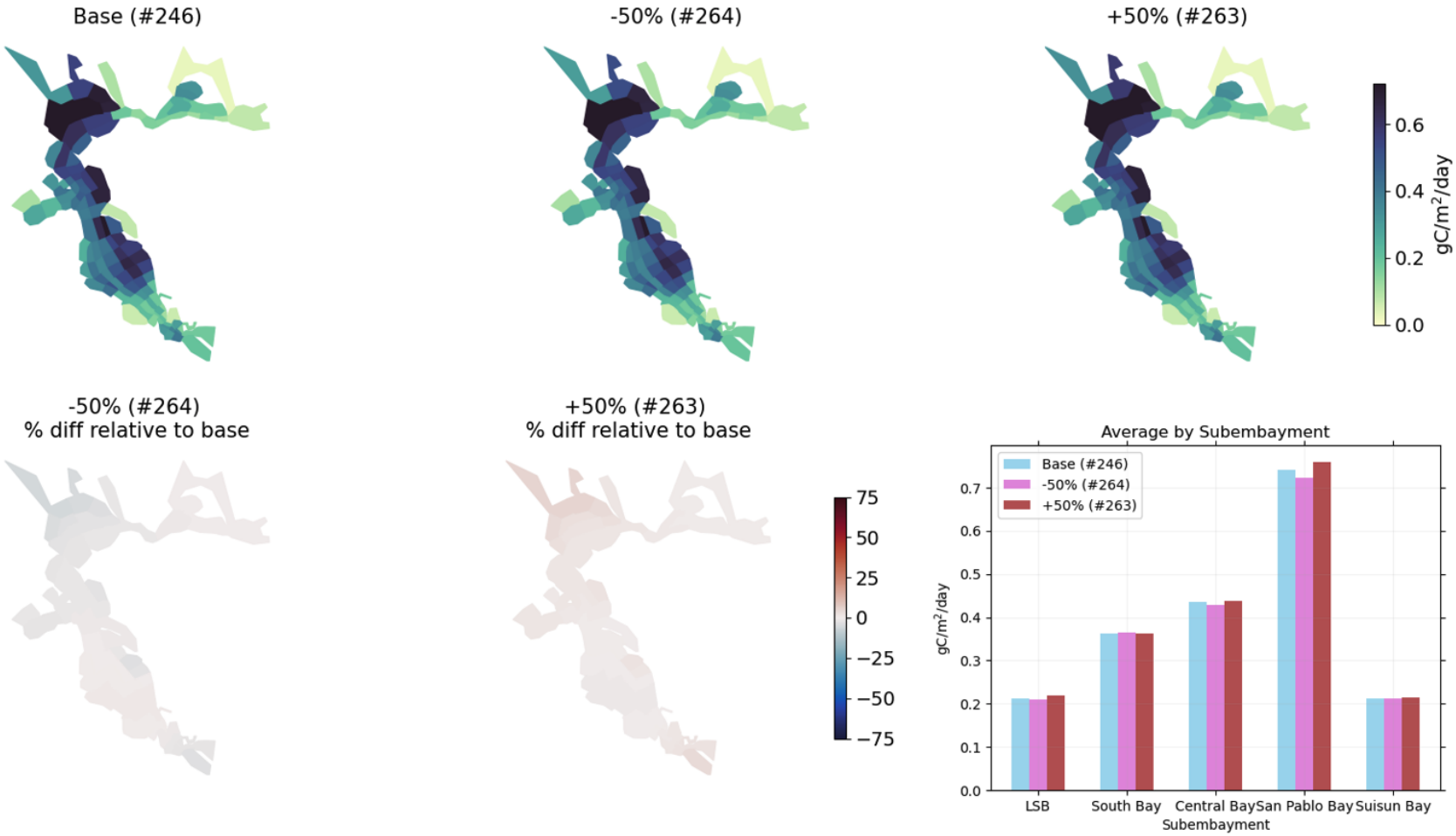



**Figure G.37. Sensitivity of predicted zooplankton concentrations to sediment initial condition**




Note: Top panels show the average net primary production over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season.

**Figure G.38. Sensitivity of WY2018 growing season (Mar – Sep) primary production to sediment initial condition**

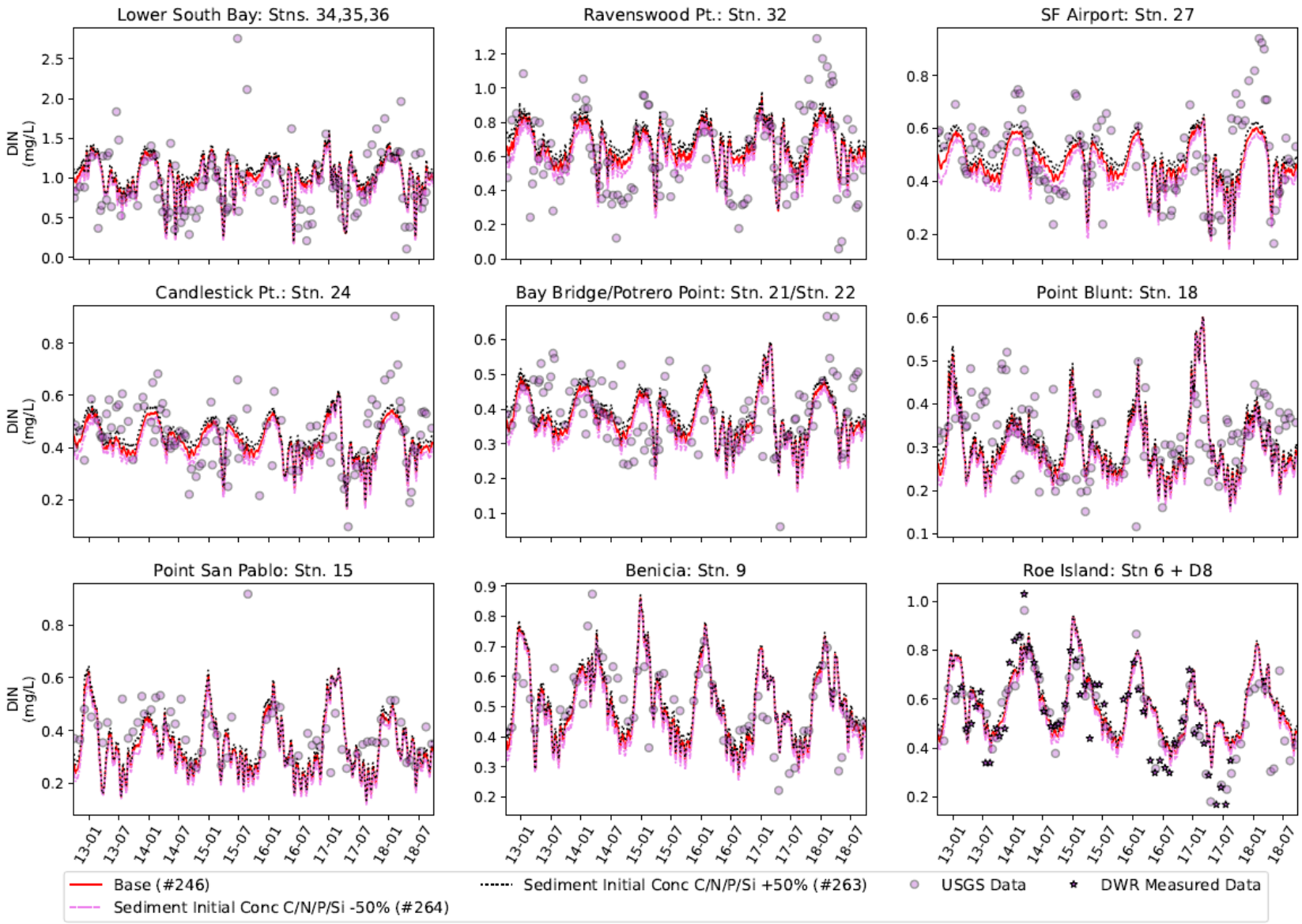
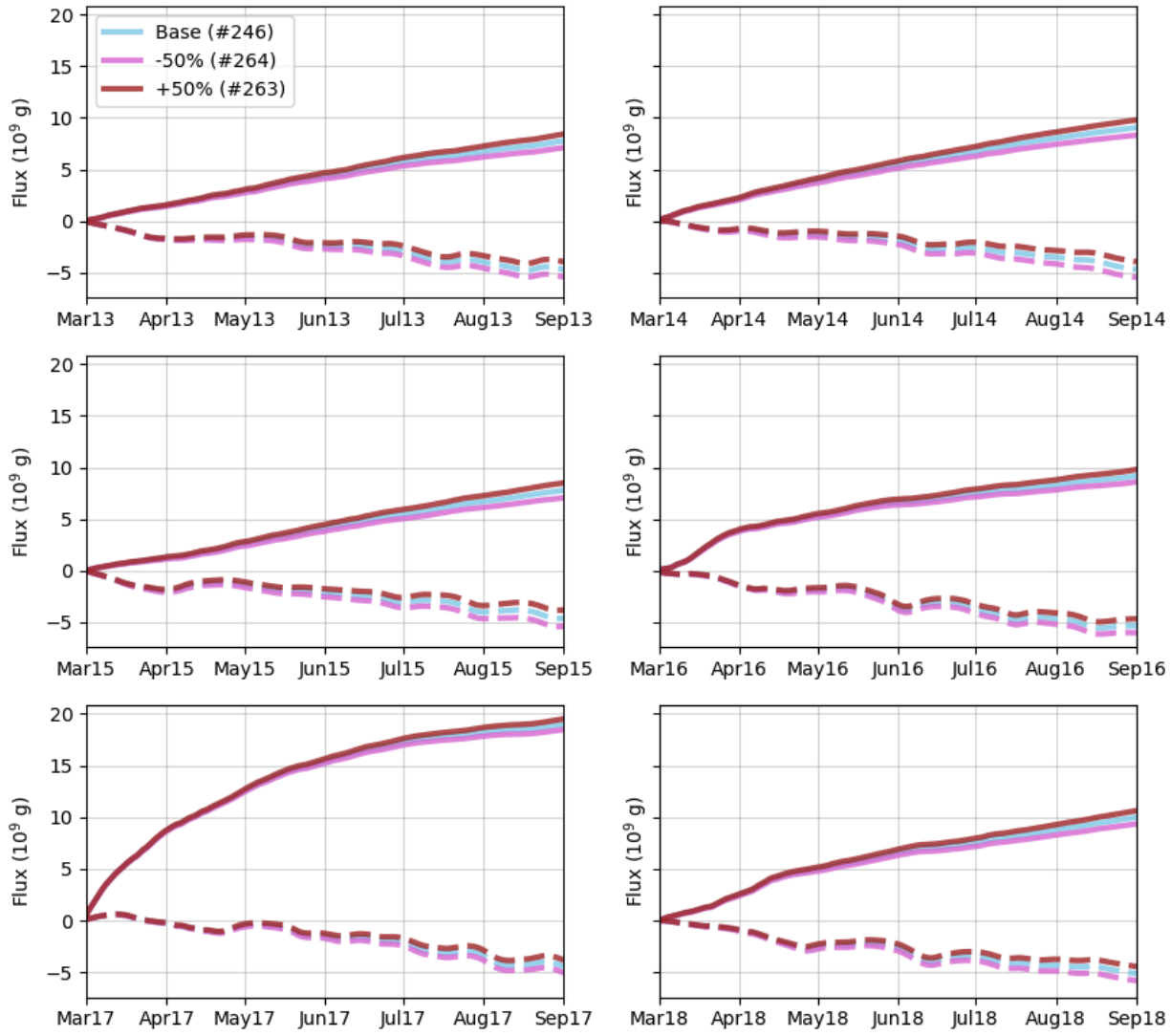



**Figure G.39. Sensitivity of predicted dissolved inorganic nitrogen (DIN) concentrations to sediment initial condition**




Note: Solid lines represent cumulative flux out of Golden Gate and dashed lines show the net of all reactions for DIN within San Francisco Bay starting from Mar 1 of each year

**Figure G.40. Sensitivity of predicted coastal export of dissolved inorganic nitrogen to sediment initial condition**

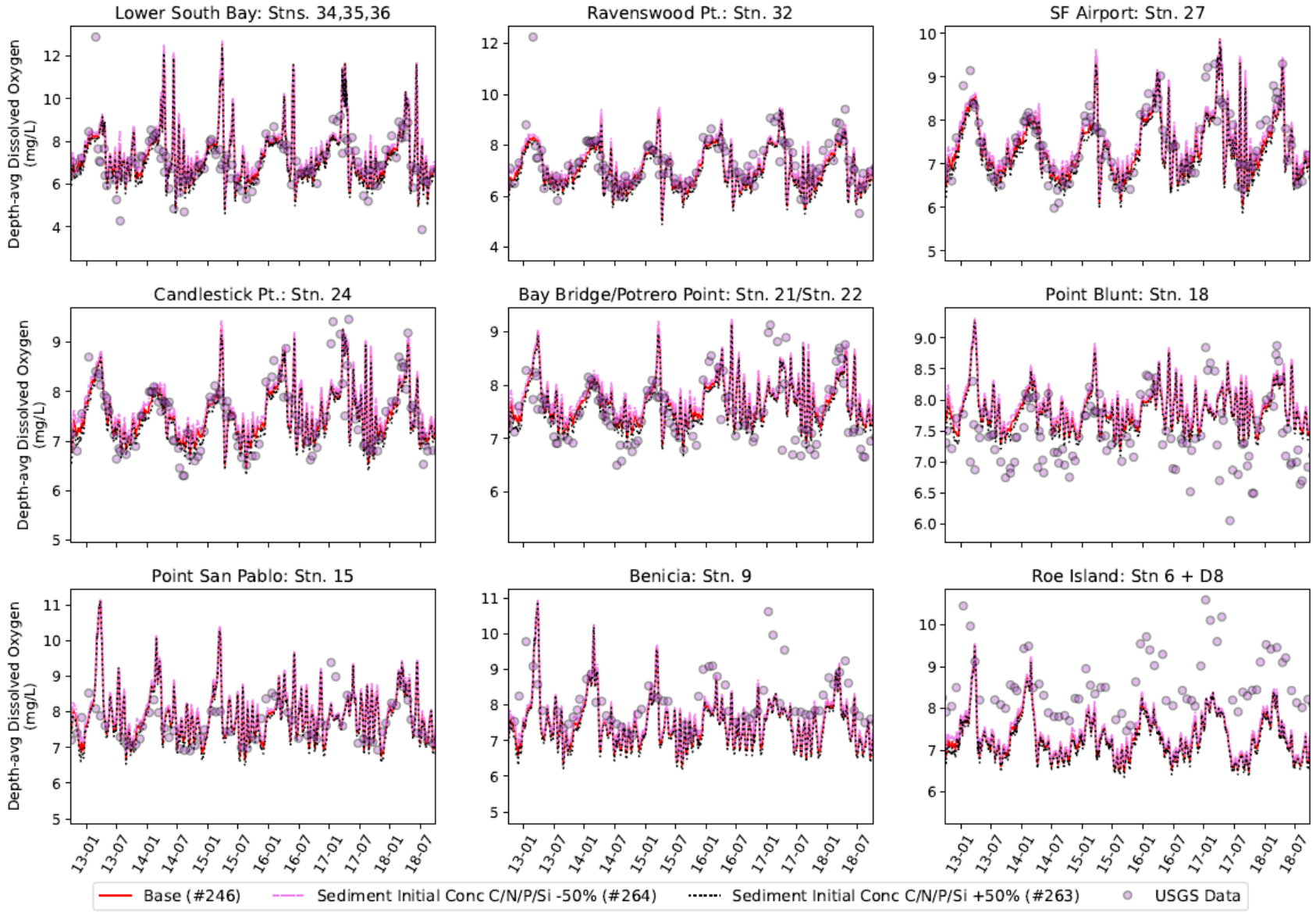
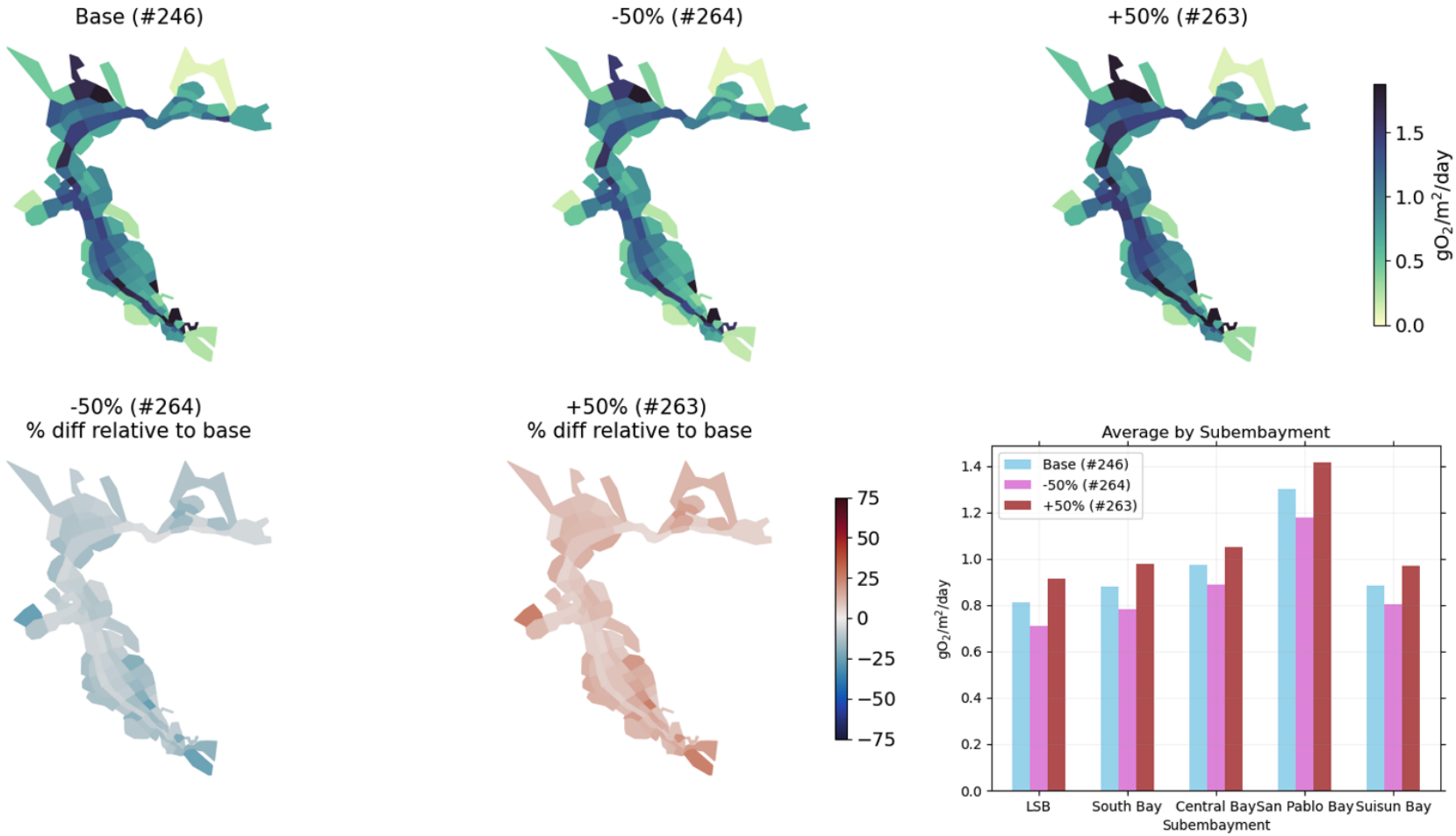



**Figure G.41. Sensitivity of predicted dissolved oxygen concentrations to sediment initial condition**




Note: Top panels show the average water column DO consumption over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season. In the simplified sediment flux model in DWAQ, SOD is exerted in the bottom layer of the water column, therefore water column DO consumption includes SOD.

**Figure G.42. Sensitivity of WY2018 growing season (Mar – Sep) predicted water column dissolved oxygen consumption to sediment initial condition**

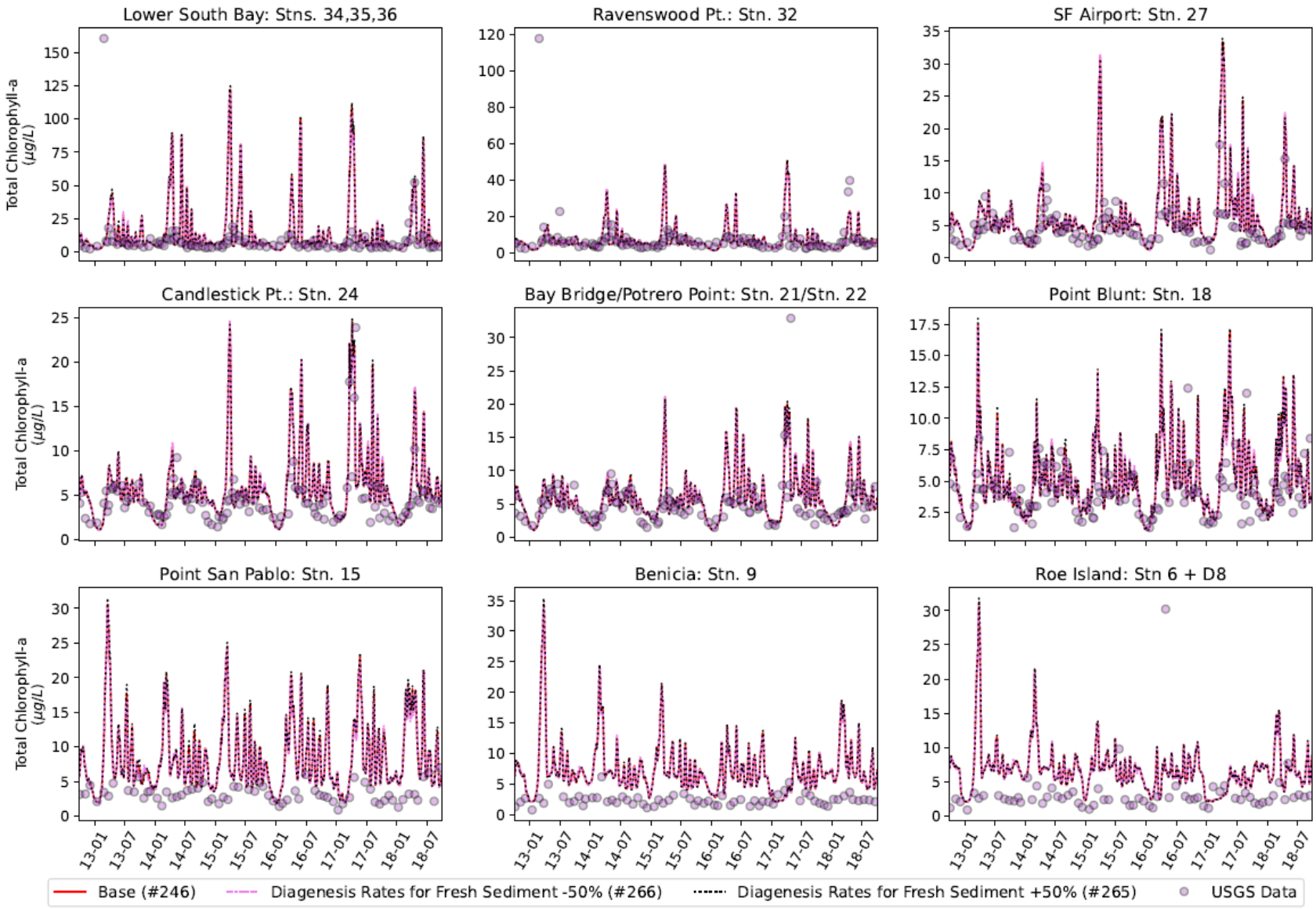



**Figure G.43. Sensitivity of predicted chlorophyll-a concentrations to freshly deposited material (Sediment Layer 1) diagenesis**

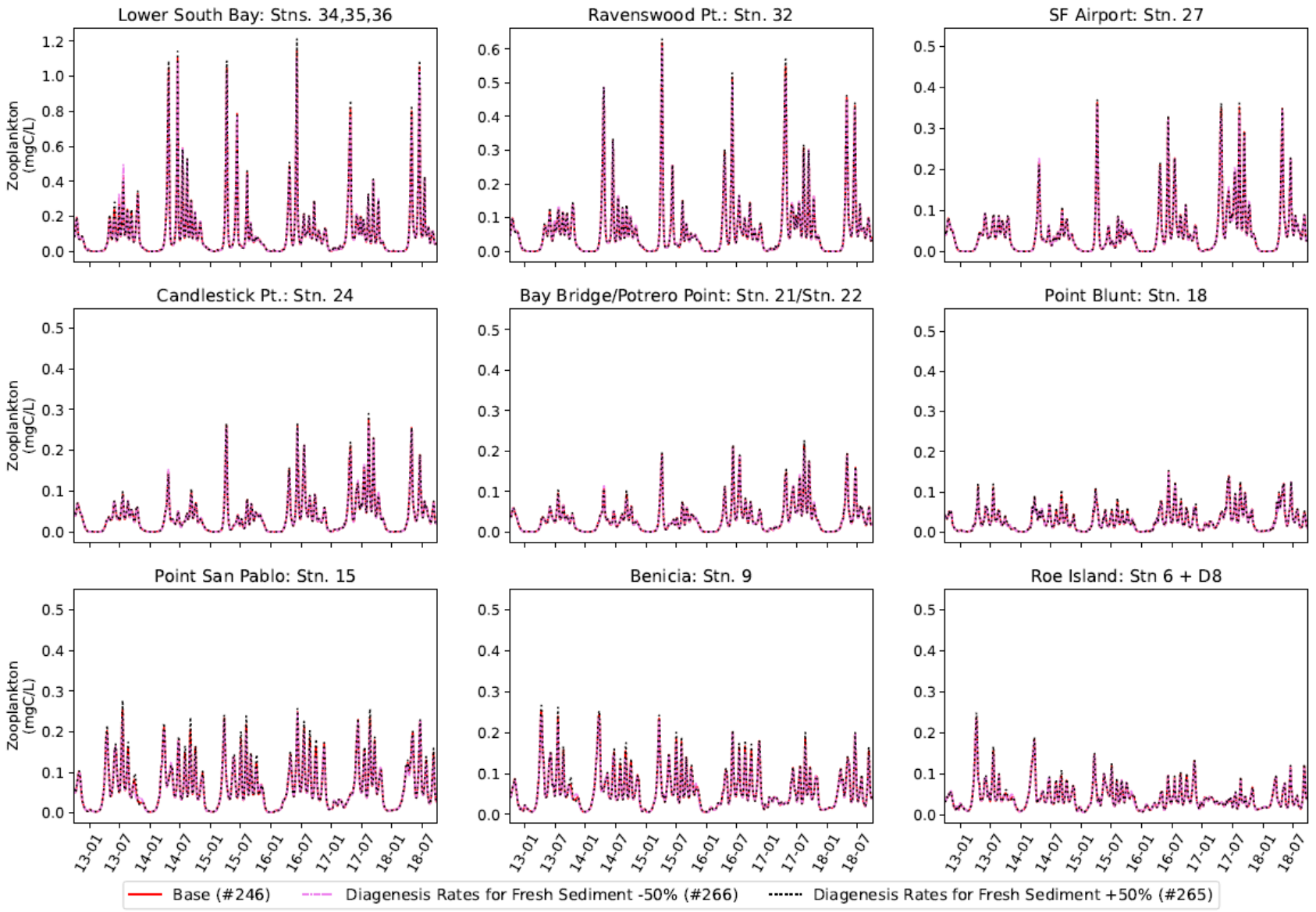
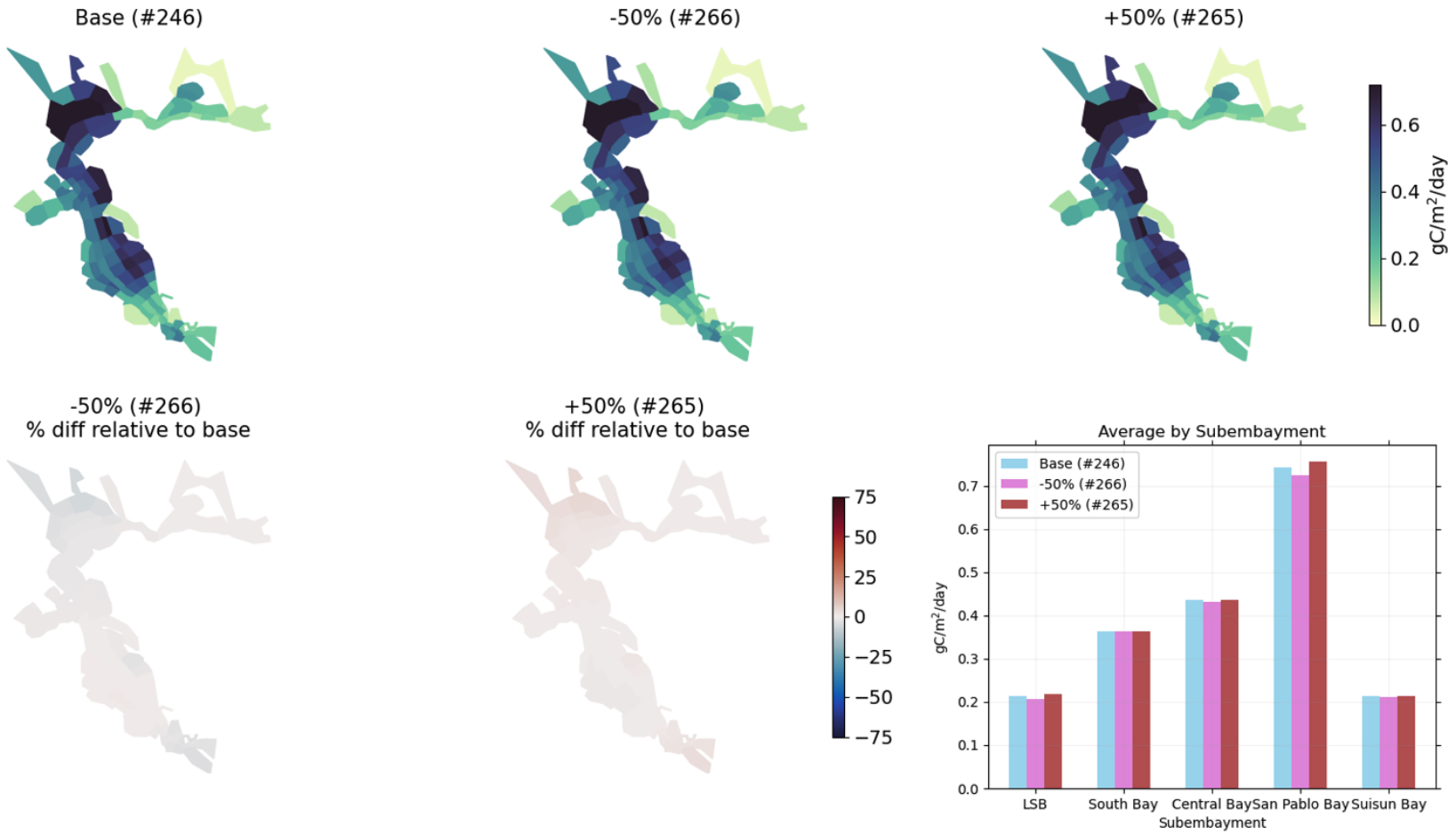



**Figure G.44. Sensitivity of predicted zooplankton concentrations to freshly deposited material (Sediment Layer 1) diagenesis**




Note: Top panels show the average net primary production over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season.

**Figure G.45. Sensitivity of WY2018 growing season (Mar – Sep) primary production to freshly deposited material (Sediment Layer 1) diagenesis**

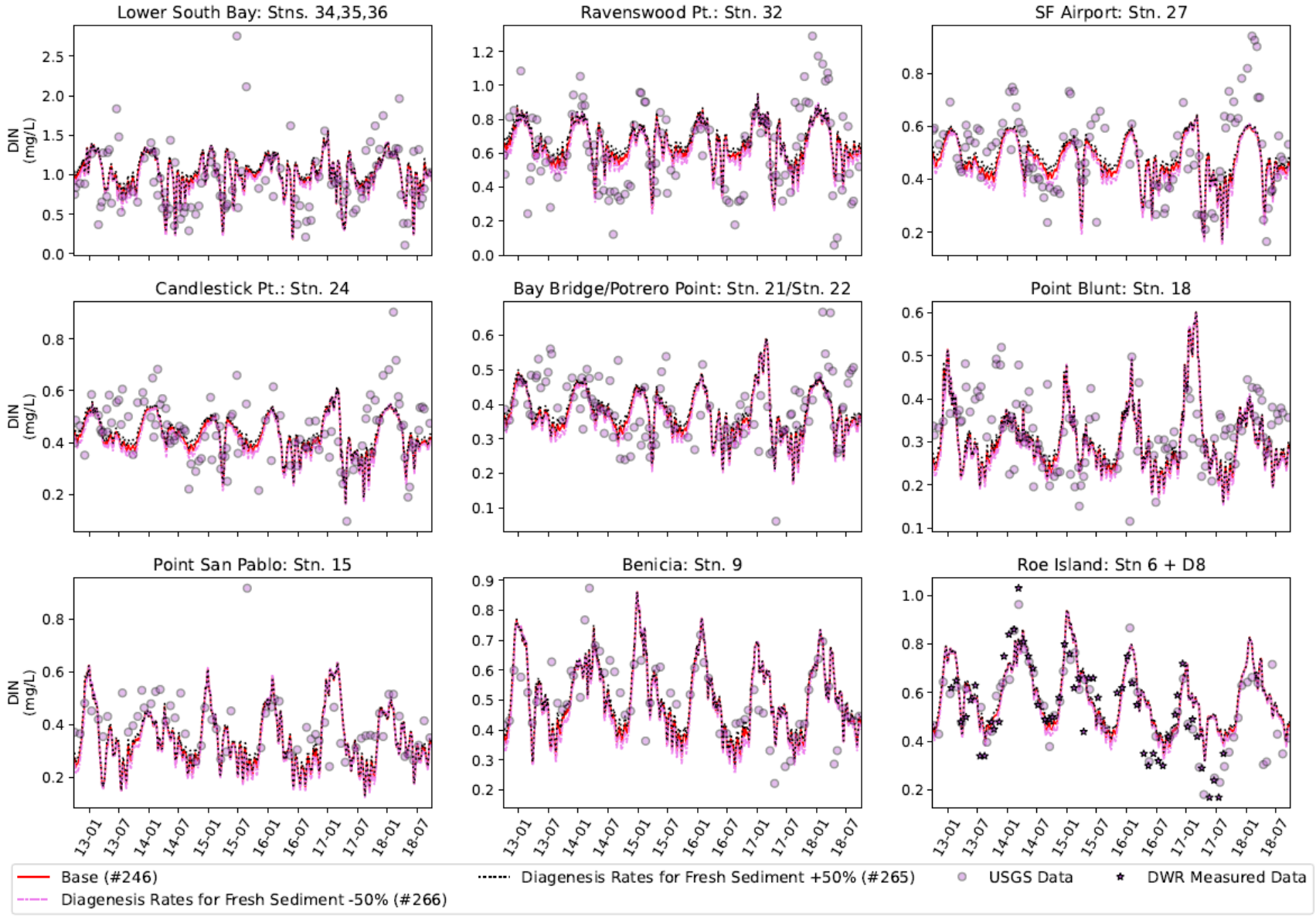
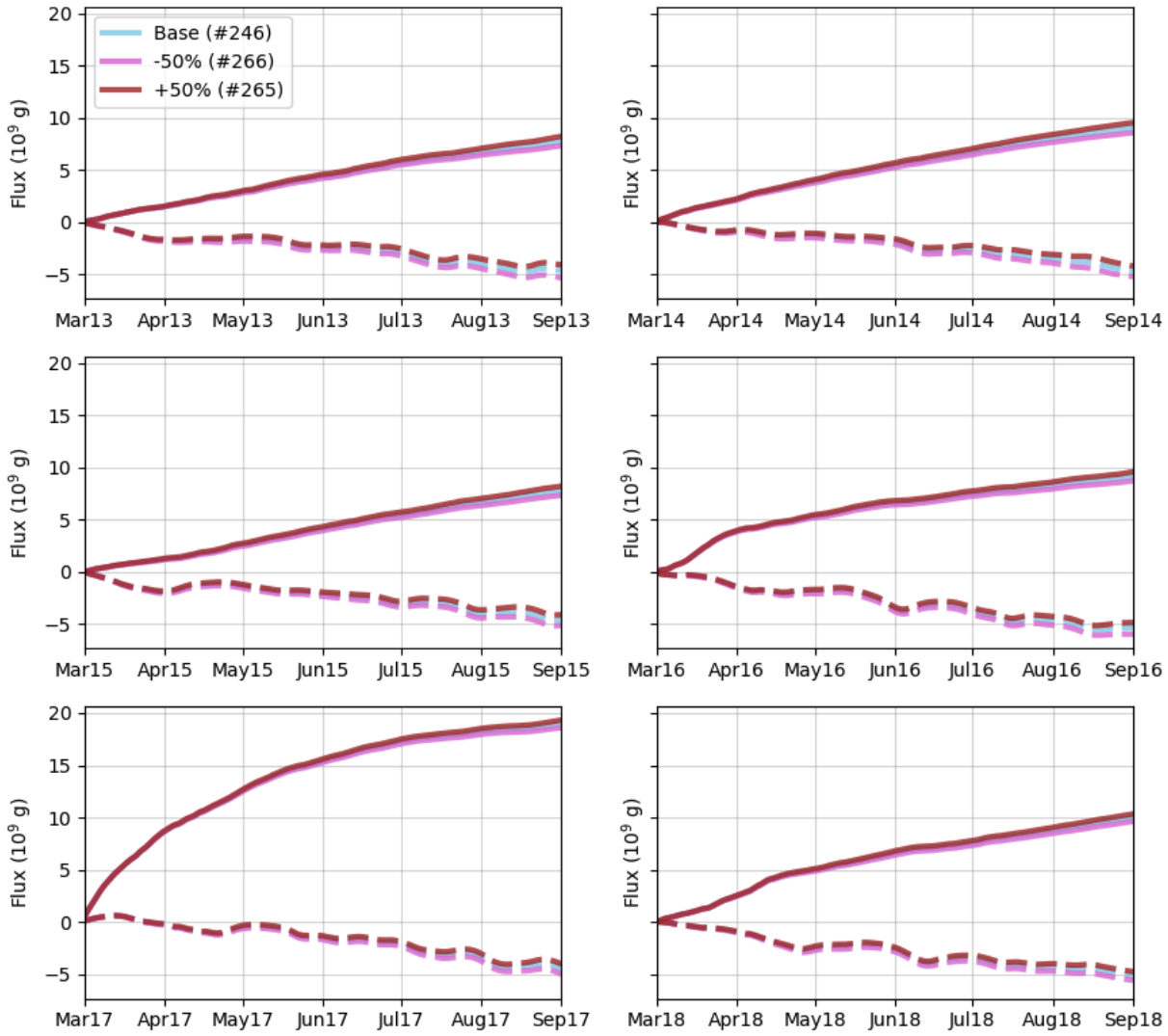



**Figure G.46. Sensitivity of predicted dissolved inorganic nitrogen DIN concentrations to freshly deposited material (Sediment Layer 1) diagenesis**




Note: Solid lines represent cumulative flux out of Golden Gate, and dashed lines show the net of all reactions for DIN within SFB starting from Mar 1 of each year.

**Figure G.47. Sensitivity of predicted coastal export of dissolved inorganic nitrogen to freshly deposited material (Sediment Layer 1) diagenesis**

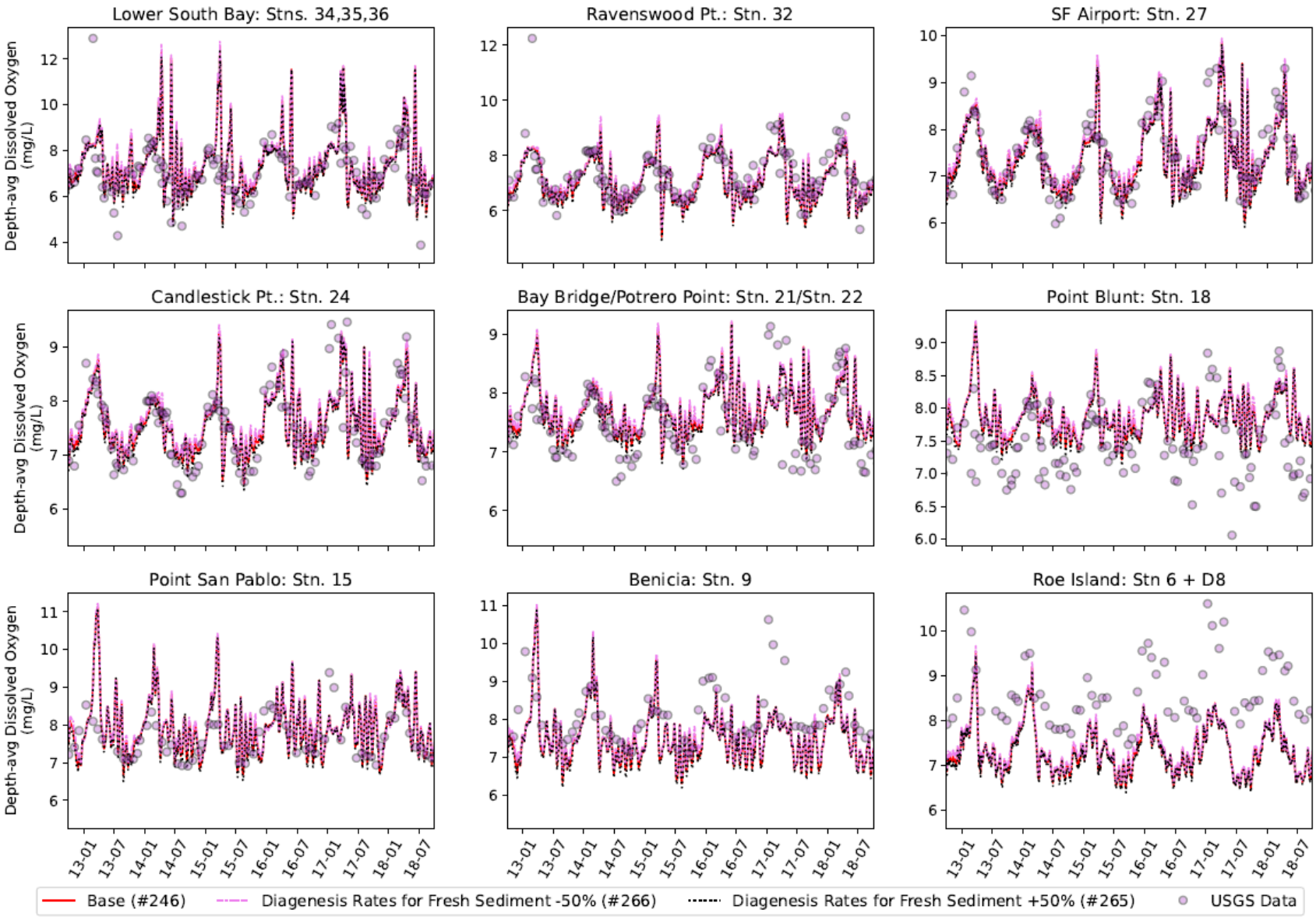
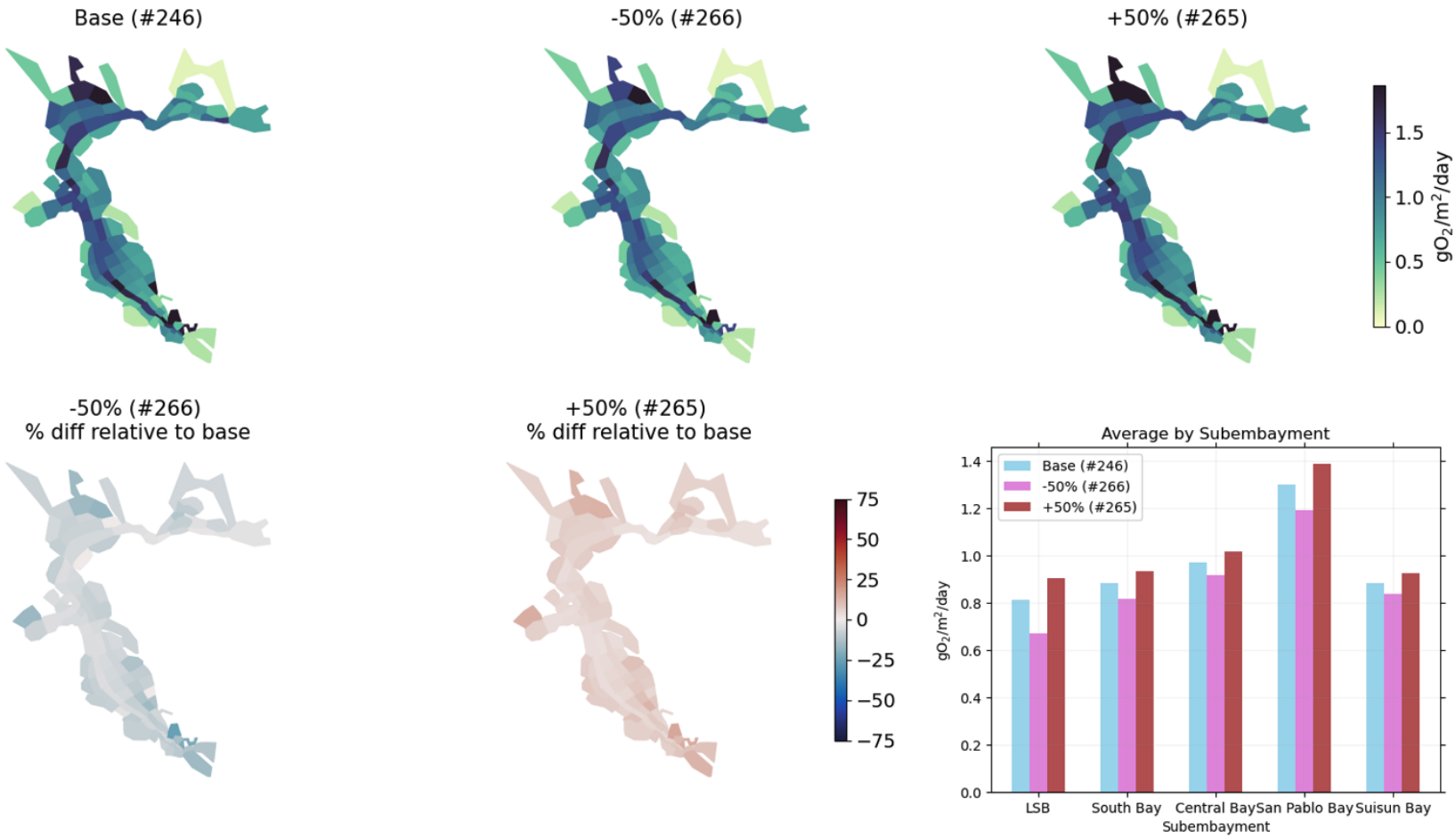



**Figure G.48. sensitivity of predicted dissolved oxygen concentrations to freshly deposited material (Sediment Layer 1) diagenesis**




Note: Top panels show the average water column DO consumption over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season. In the simplified sediment flux model in DWAQ, SOD is exerted in the bottom layer of the water column, therefore water column DO consumption includes SOD.

**Figure G.49. Sensitivity of WY2018 growing season (Mar – Sep) predicted water column dissolved oxygen consumption to freshly deposited material (Sediment Layer 1) diagenesis**

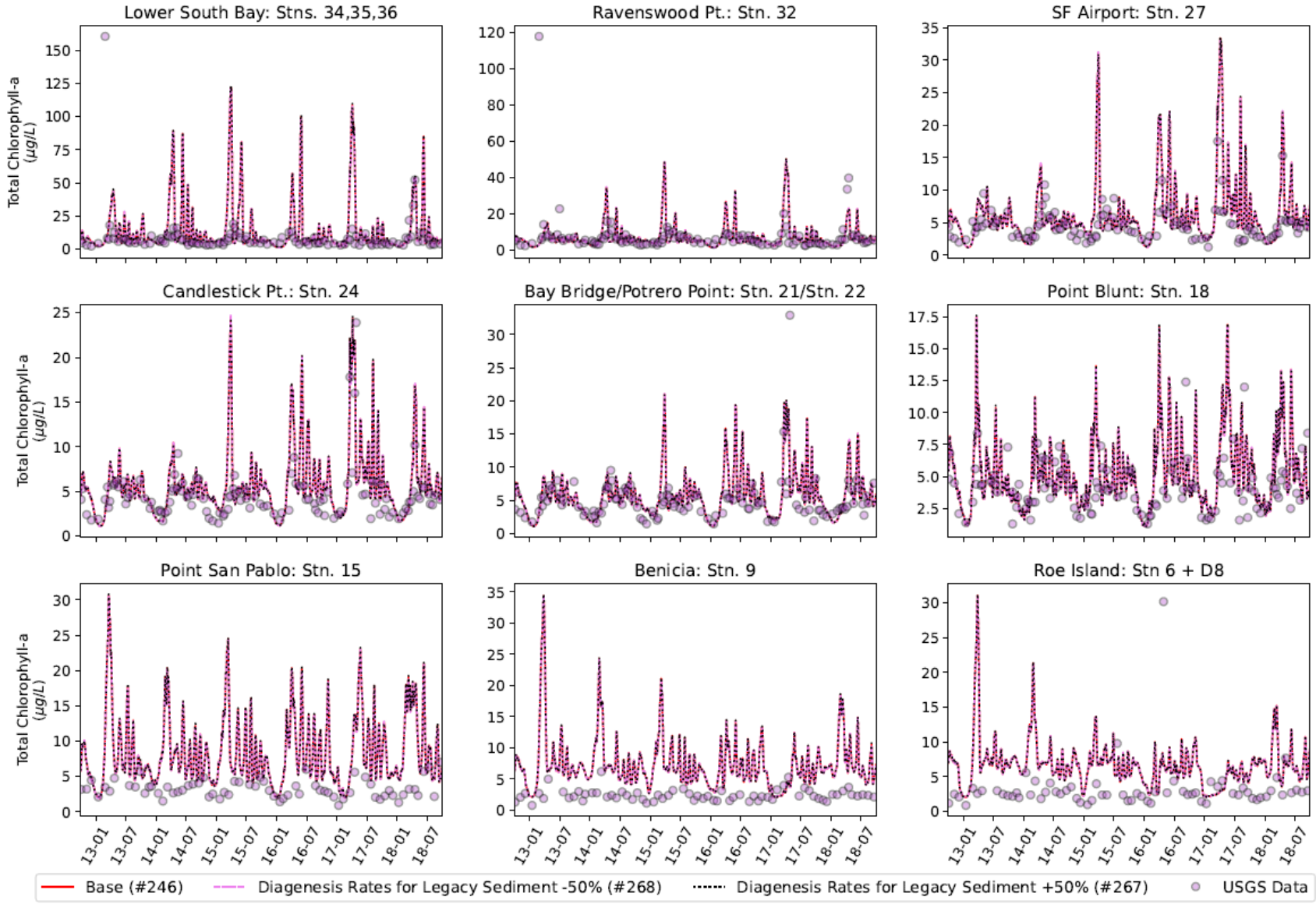



**Figure G.50. Sensitivity of predicted chlorophyll-a concentrations to legacy Material (Sediment Layer 2) diagenesis**

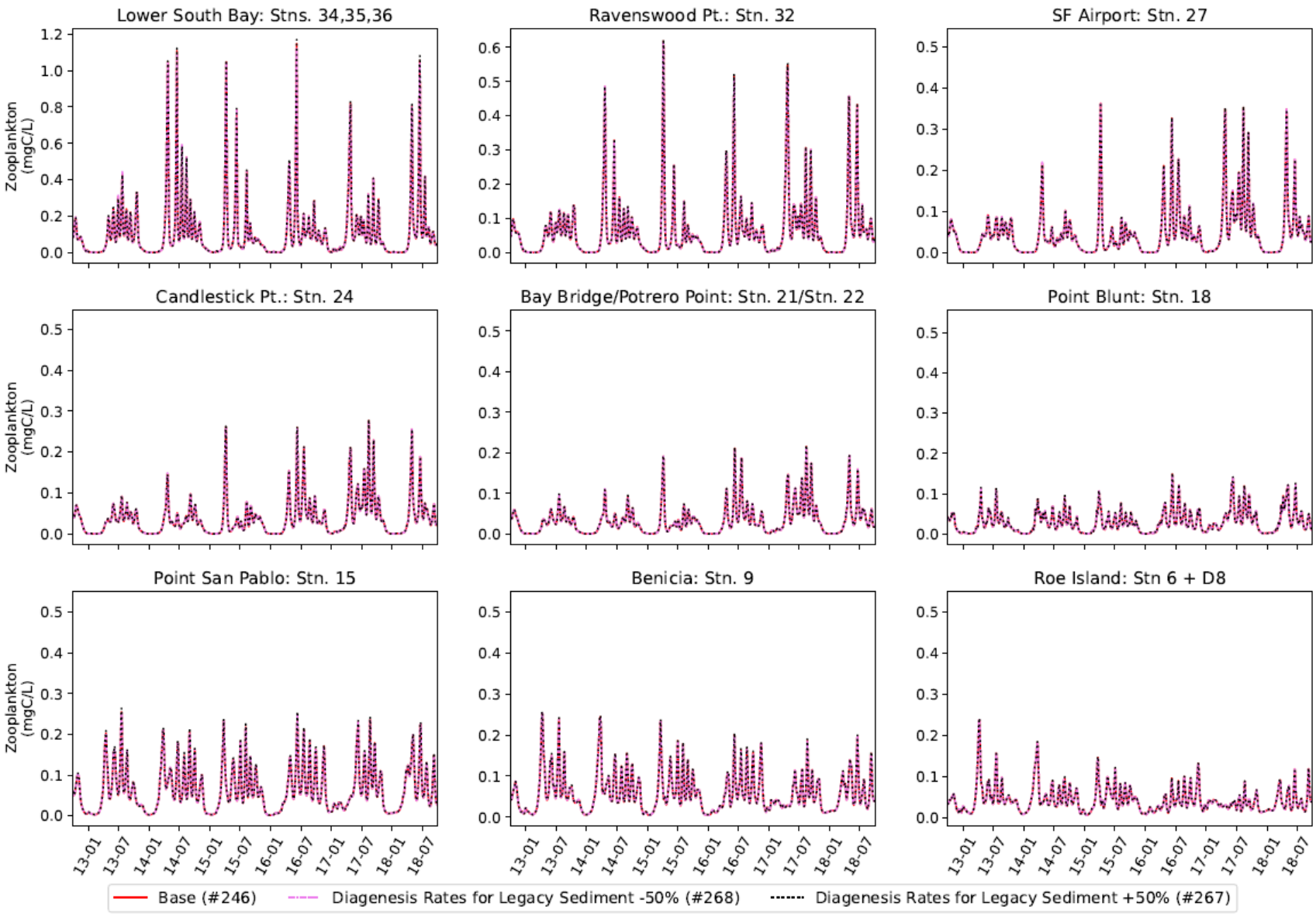
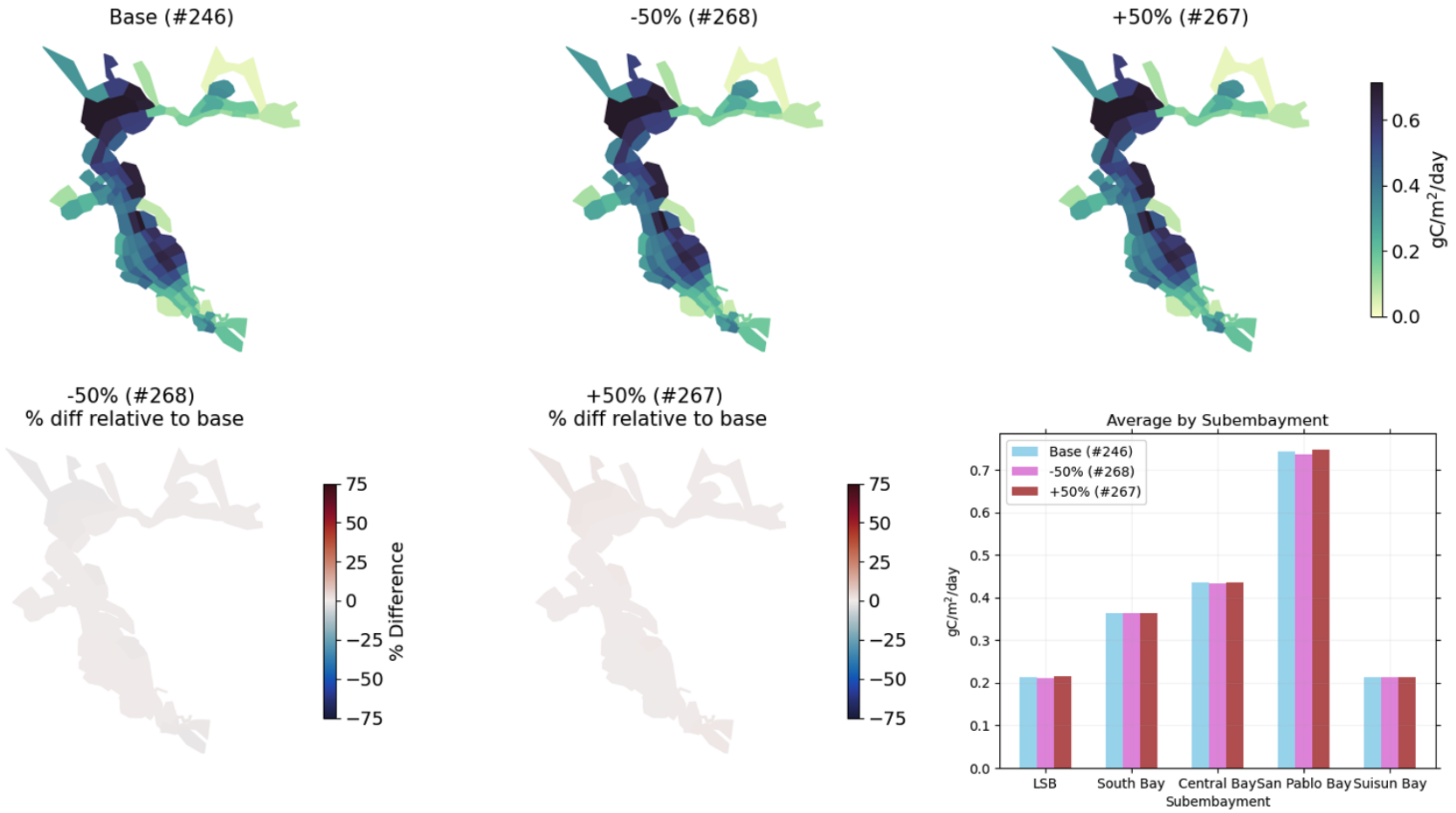



**Figure G.51. Sensitivity of predicted chlorophyll-a concentrations to legacy material (Sediment Layer 2) diagenesis**




Note: Top panels show the average net primary production over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season.

**Figure G.52. Sensitivity of WY2018 growing season (Mar – Sep) primary production to legacy material (Sediment Layer 2) diagenesis**

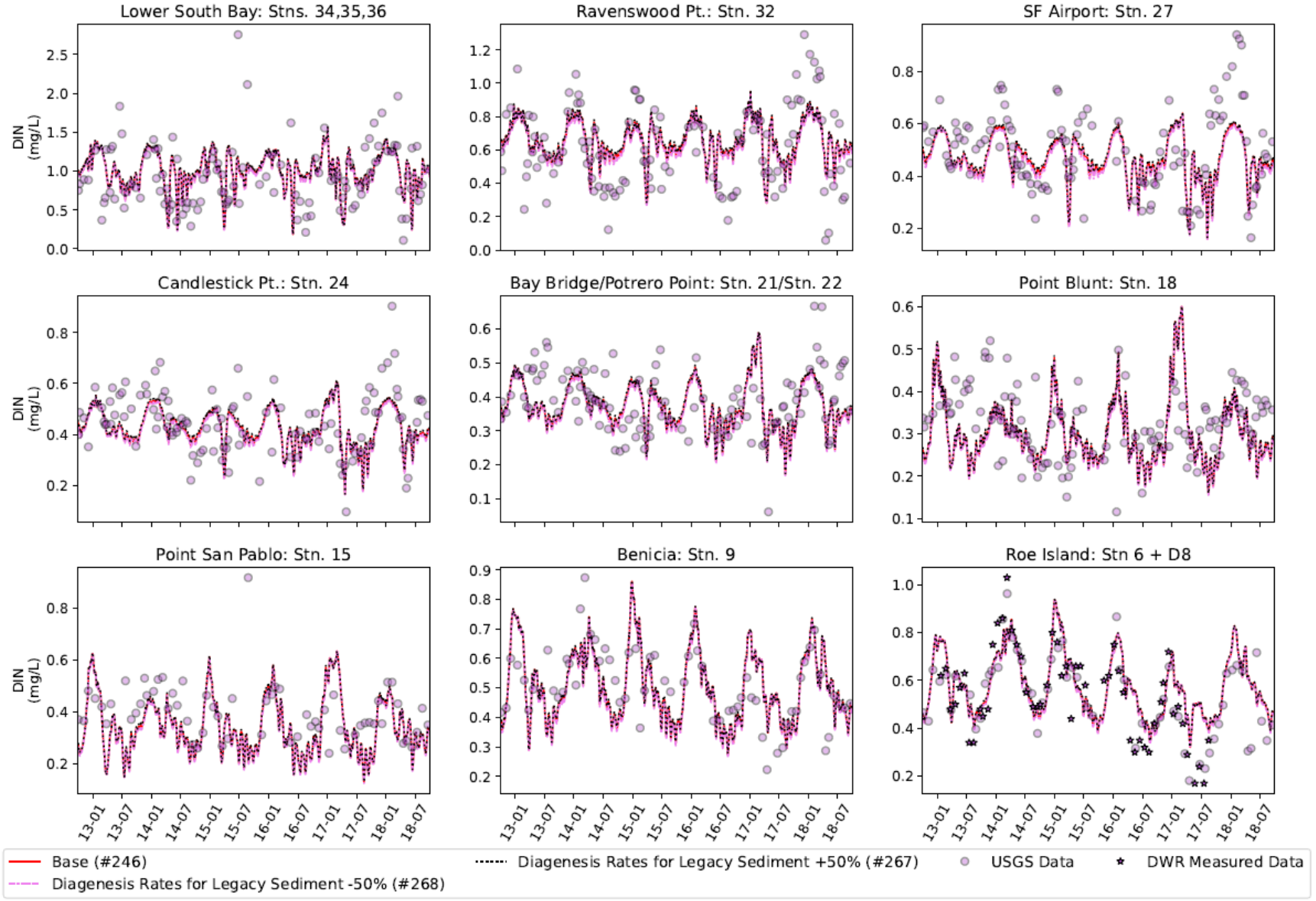
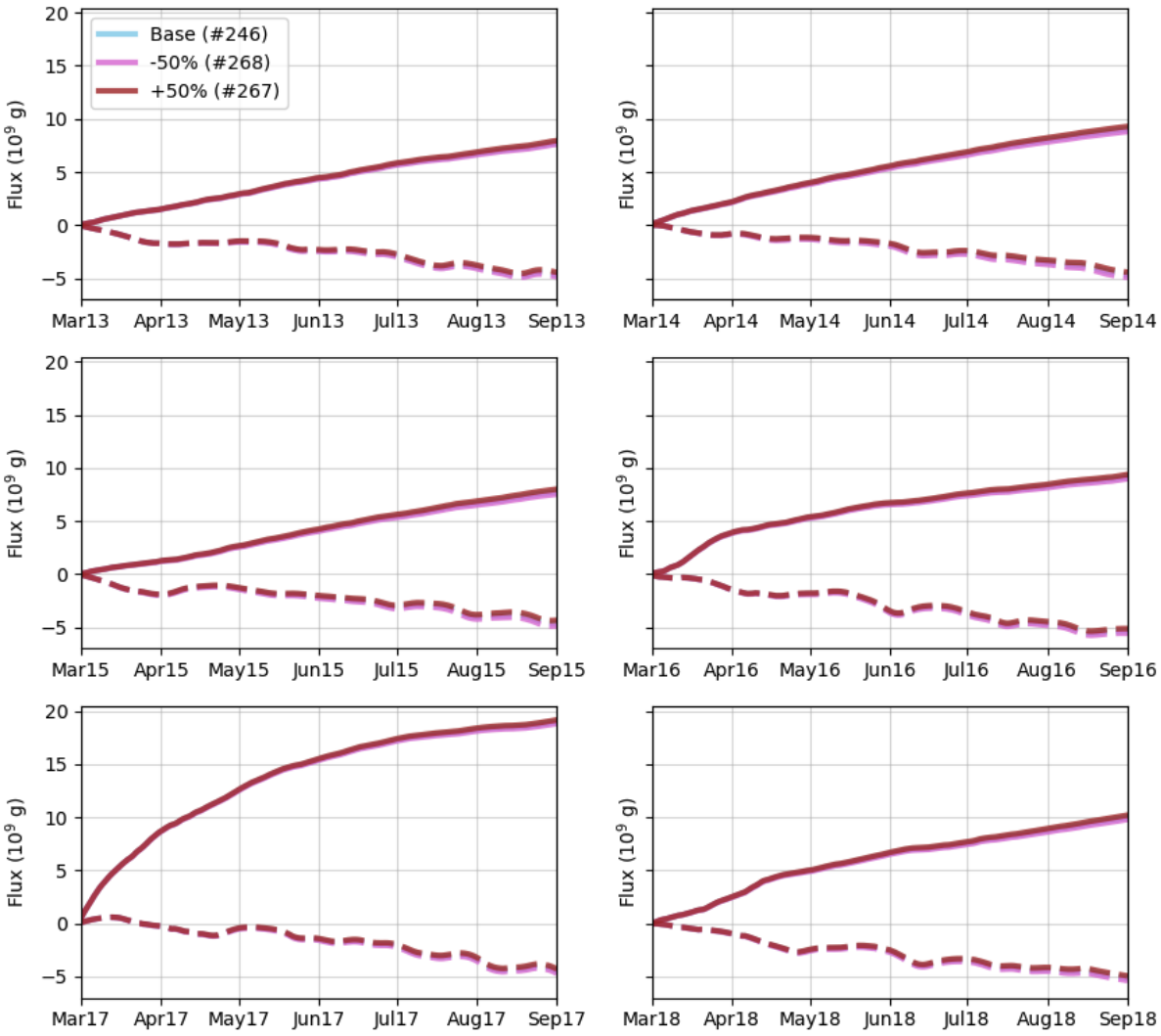



**Figure G.53. Sensitivity of predicted dissolved inorganic nitrogen (DIN) concentrations to legacy material (Sediment Layer 2) diagenesis**




Note: Solid lines represent cumulative flux out of Golden Gate, and dashed lines show the net of all reactions for DIN within SFB starting from Mar 1 of each year.

**Figure G.54. Sensitivity of predicted coastal export of dissolved inorganic nitrogen to legacy material (Sediment Layer 2) diagenesis**

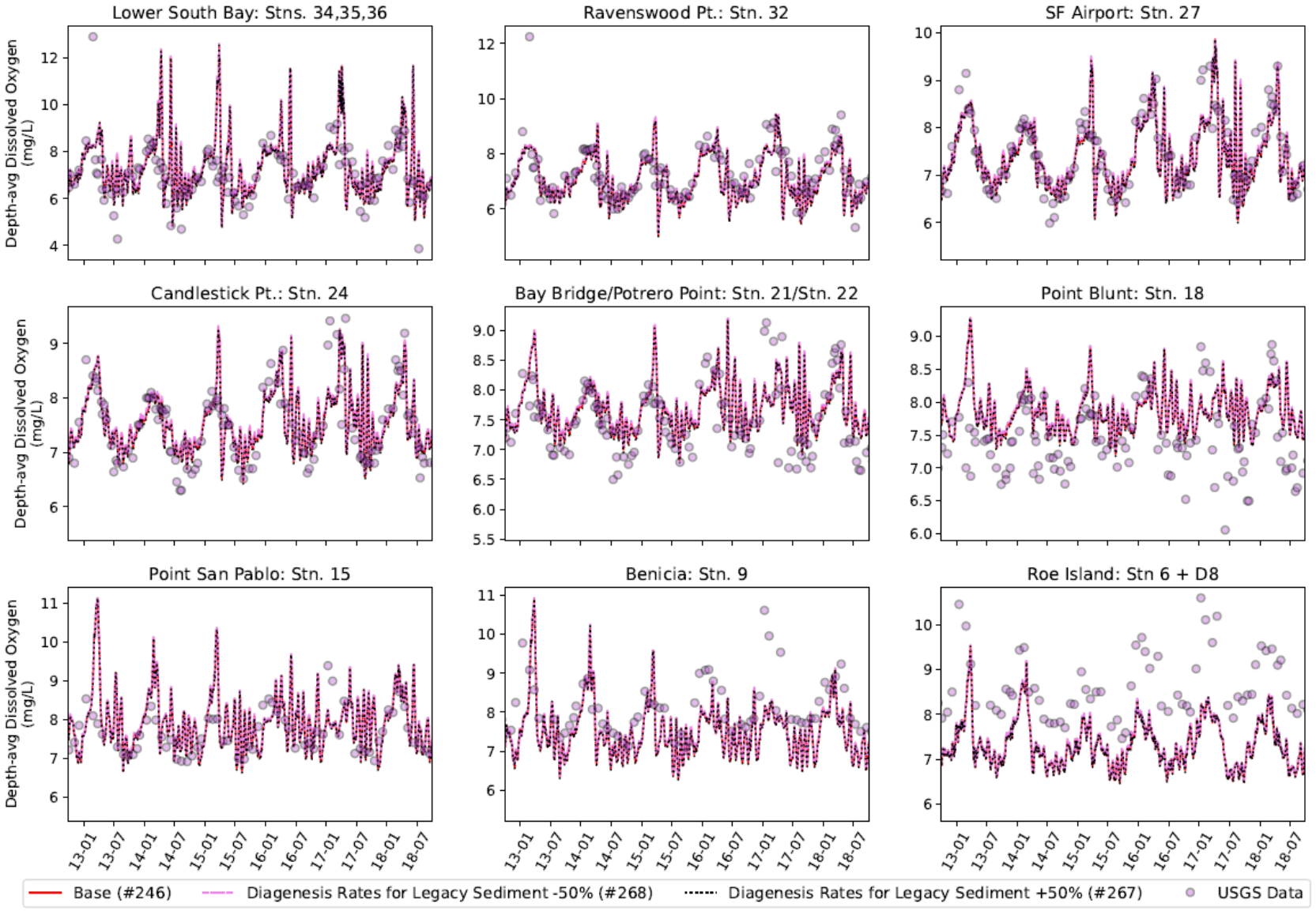
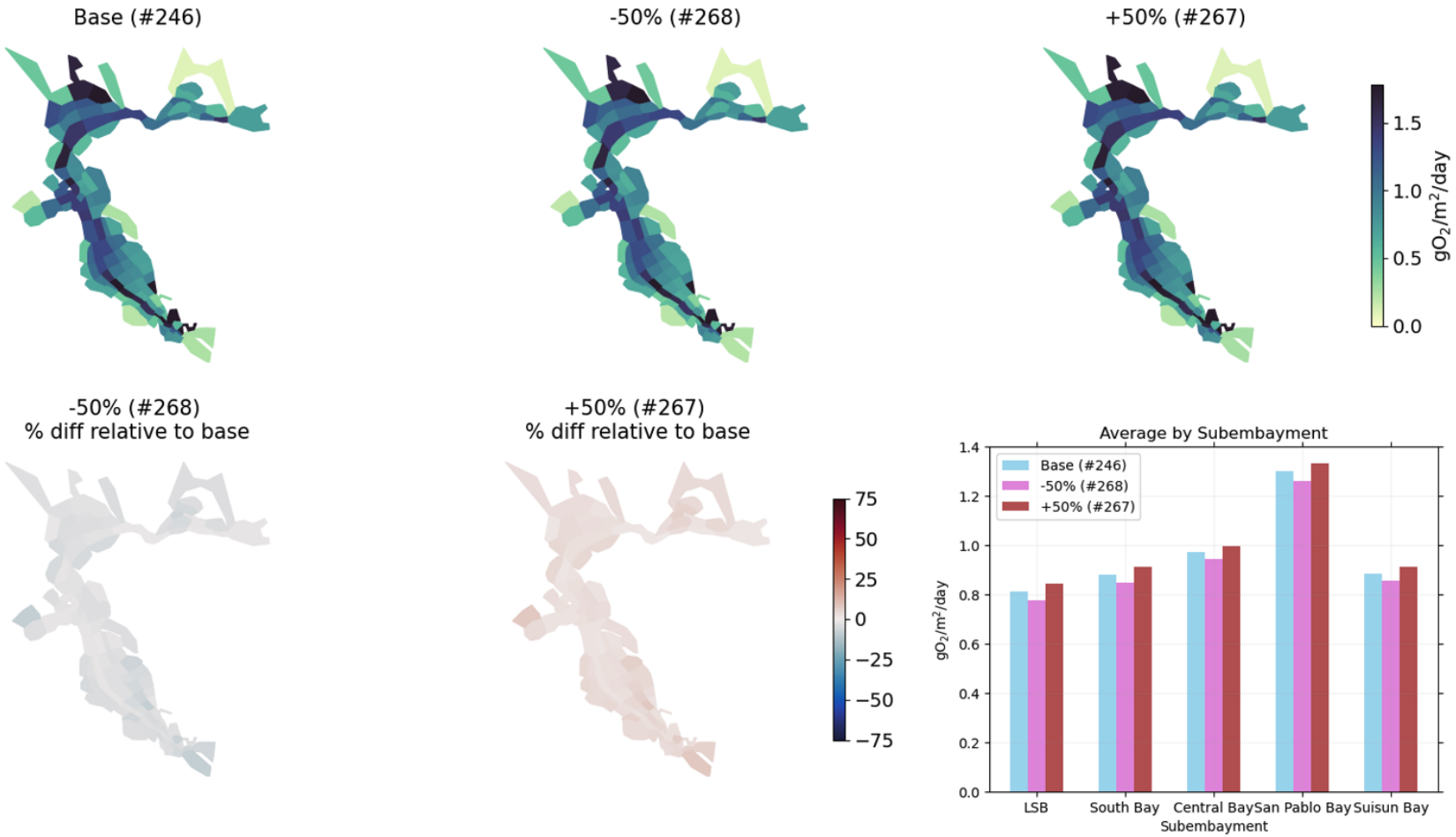



**Figure G.55. Sensitivity of predicted dissolved oxyten concentrations to legacy material (Sediment Layer 2) diagenesis**




Note: Top panels show the average water column DO consumption over the growing season (Mar – Sep); spatial maps in bottom panels show the percent difference between the base case and the corresponding sensitivity run (i.e., sensitivity run – base case); bar charts show the average calculated over all model segments within each subembayment over the growing season. In the simplified sediment flux model in DWAQ, SOD is exerted in the bottom layer of the water column, therefore water column DO consumption includes SOD.

**Figure G.56. Sensitivity of WY2018 growing season (Mar – Sep) predicted water column dissolved oxygen consumption to legacy material (Sediment Layer 2) diagenesis**