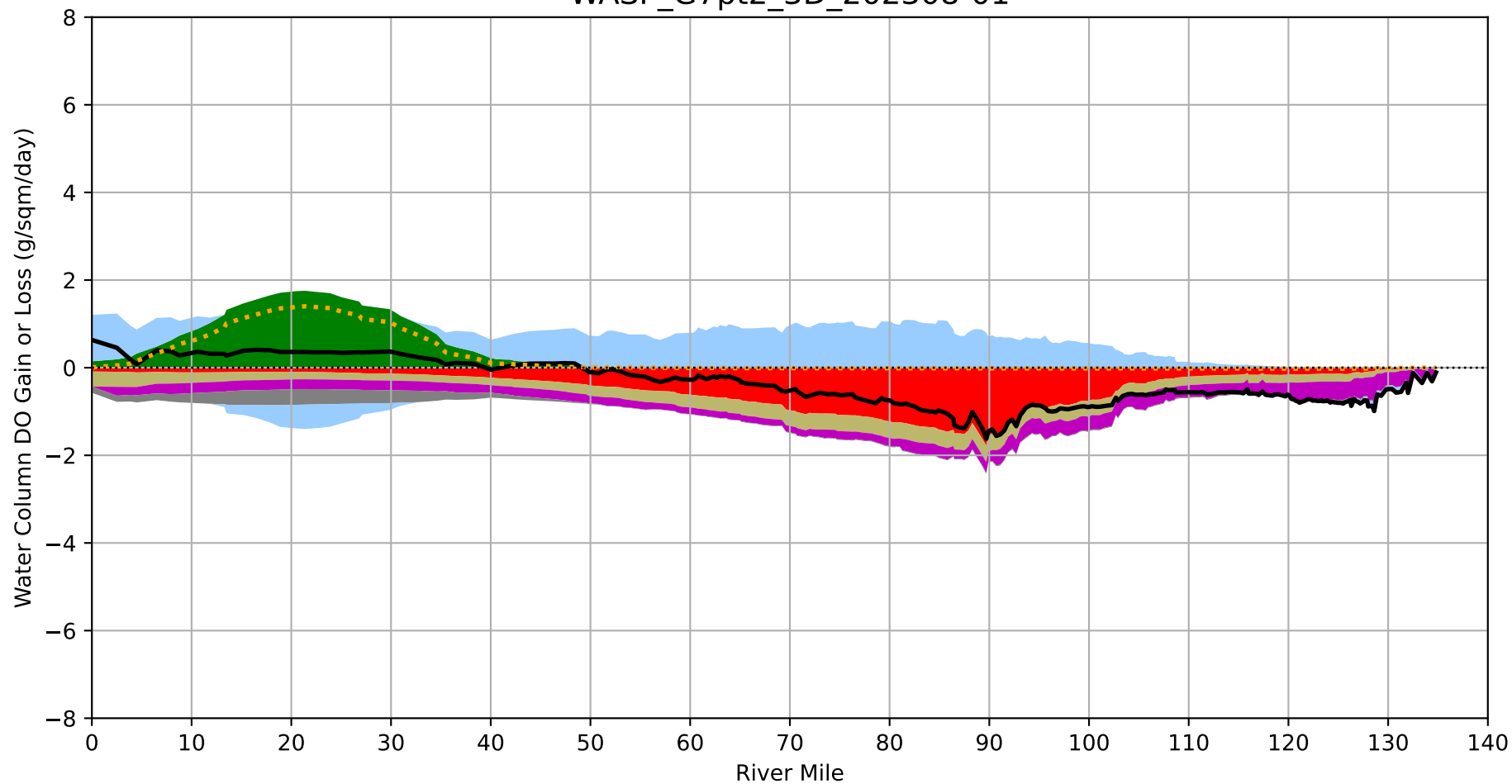


Appendix G: Diagnostic Analysis

Appendix G-1: DO component analysis

This appendix is in connection with Section 4.5.1 in the main report – Dissolved Oxygen Component Analysis. It presents the complete set of the dissolved oxygen gains (as positive) and losses (as negative) along the navigation channel for the 2018–2019 calibration and the corroboration year of 2012. The results are monthly-averaged and displayed in a stacked-fashion, represent the dissolved oxygen gain/loss over the entire water column.

Simulated DO Gain (+) and Loss (-) from Different Processes, January 2012 WASP_G7pt2_3D_202308-01

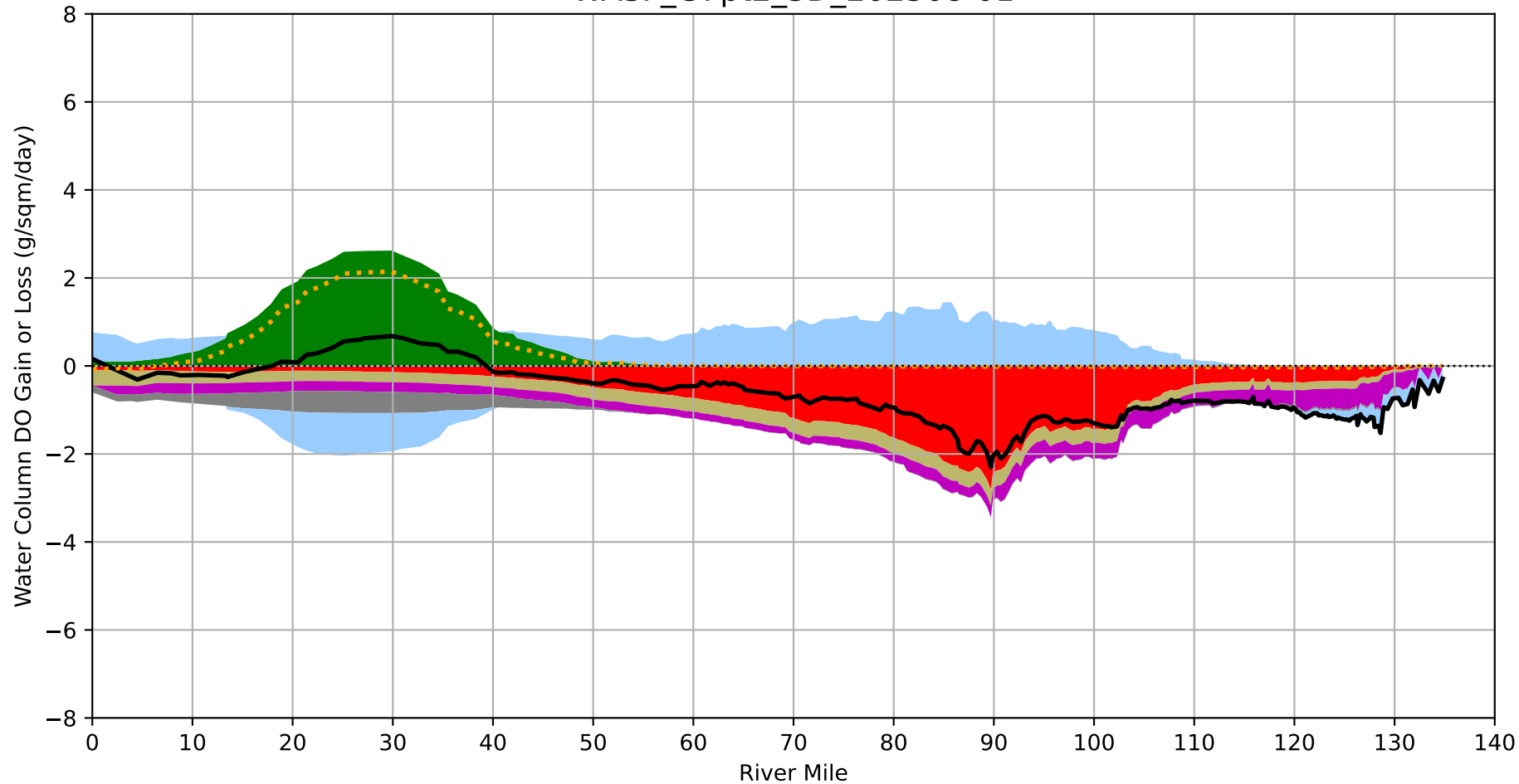


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 ⋯ Net Algae Production
■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, January 2012

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, February 2012 WASP_G7pt2_3D_202308-01

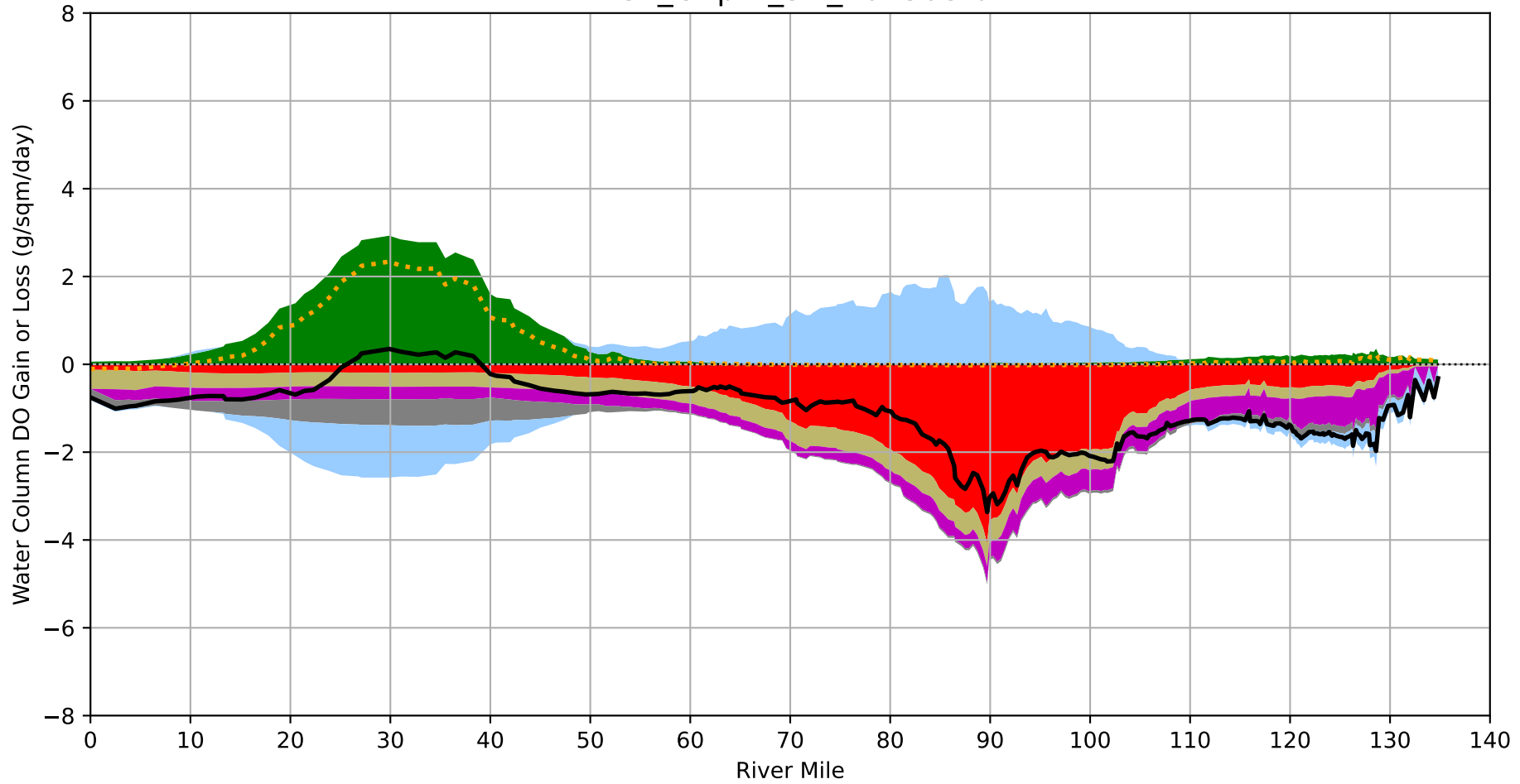


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 ⋯ Net Algae Production
 ■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, February 2012

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, March 2012 WASP_G7pt2_3D_202308-01

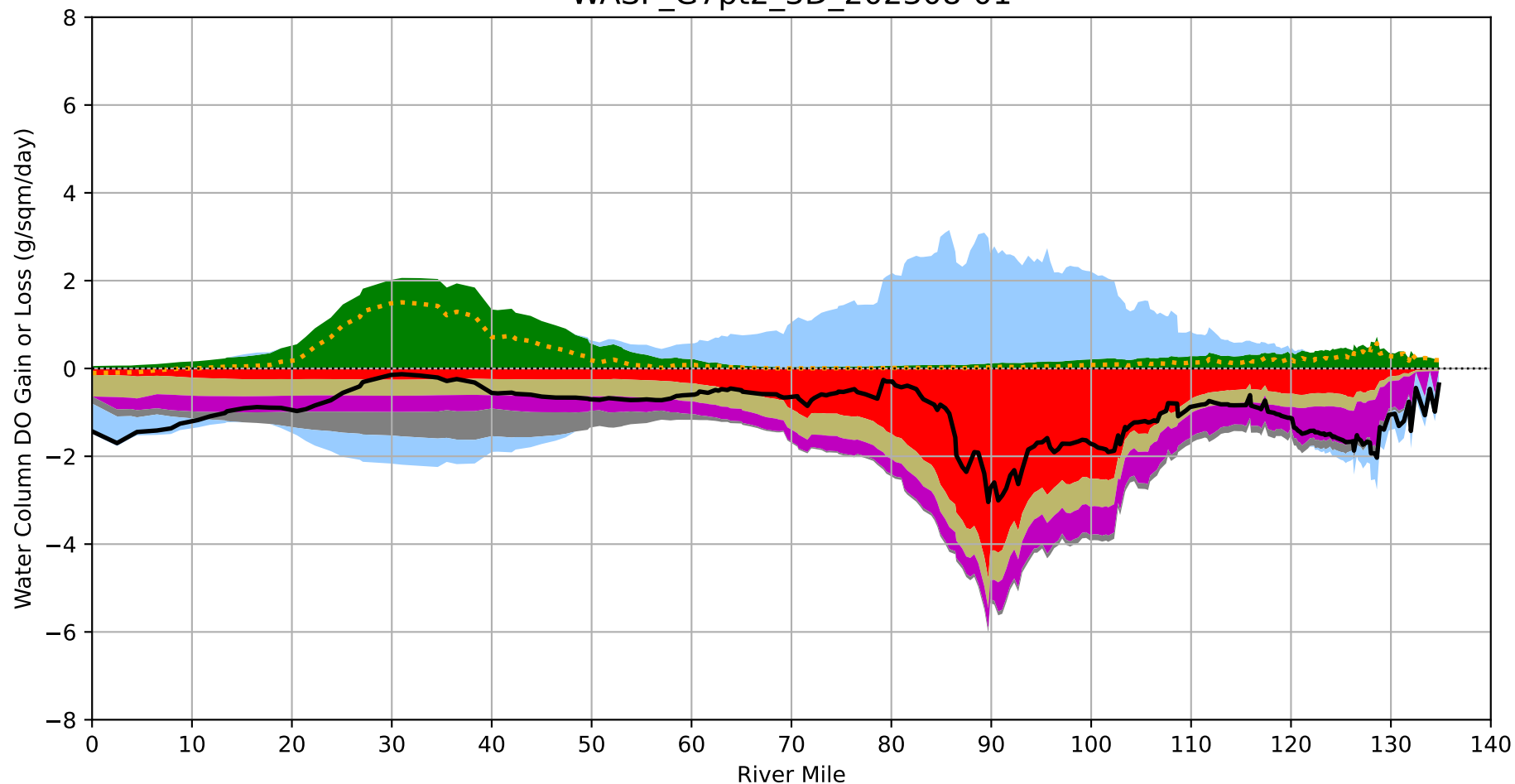


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 - - - Net Algae Production
 ■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, March 2012

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, April 2012 WASP_G7pt2_3D_202308-01

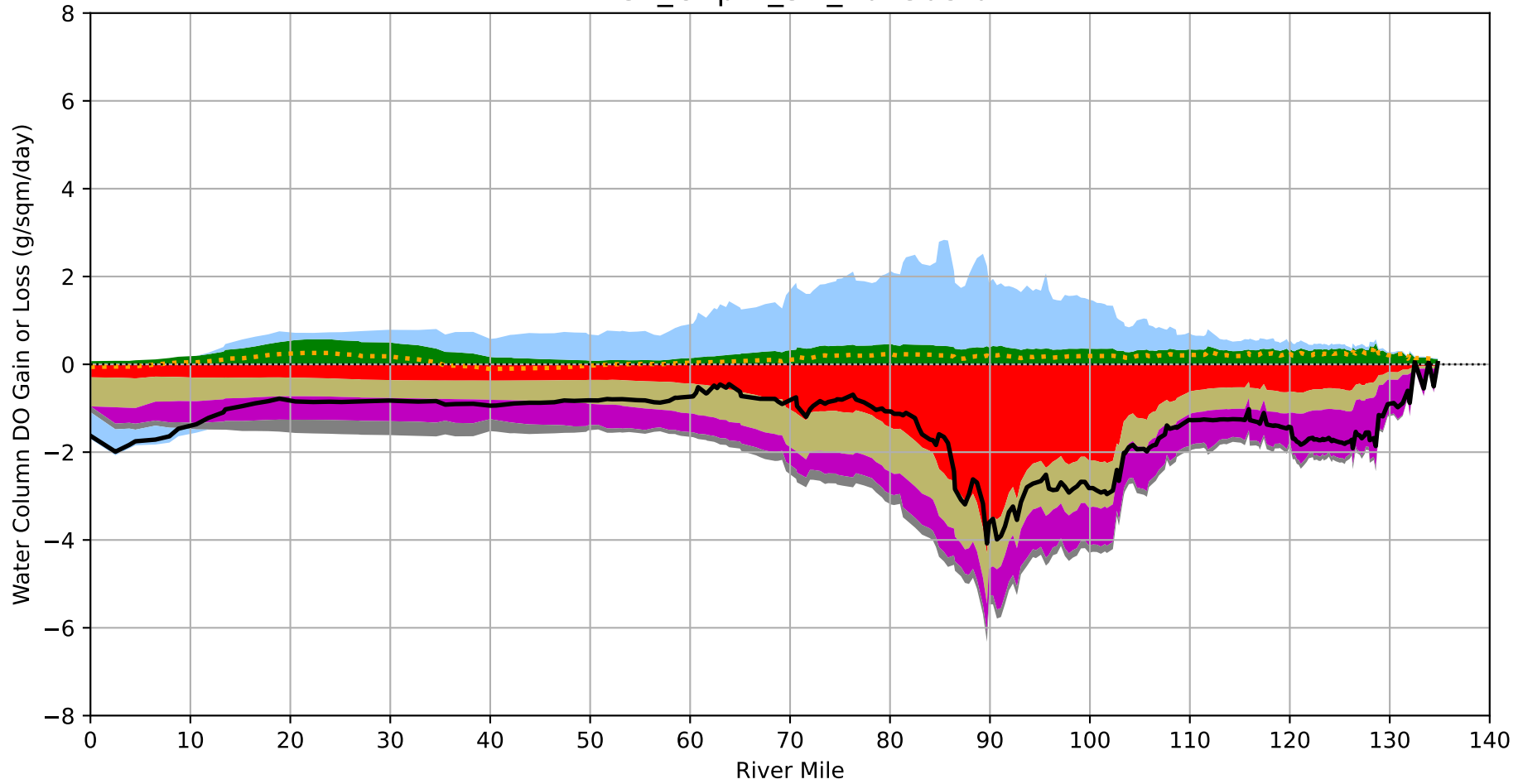


■ Algae Production ■ Nitrification (loss) ■ SOD (loss) ■ Algae Respiration (loss) — Net DO Flux - - - Net Algae Production
■ Reaeration ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, April 2012

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

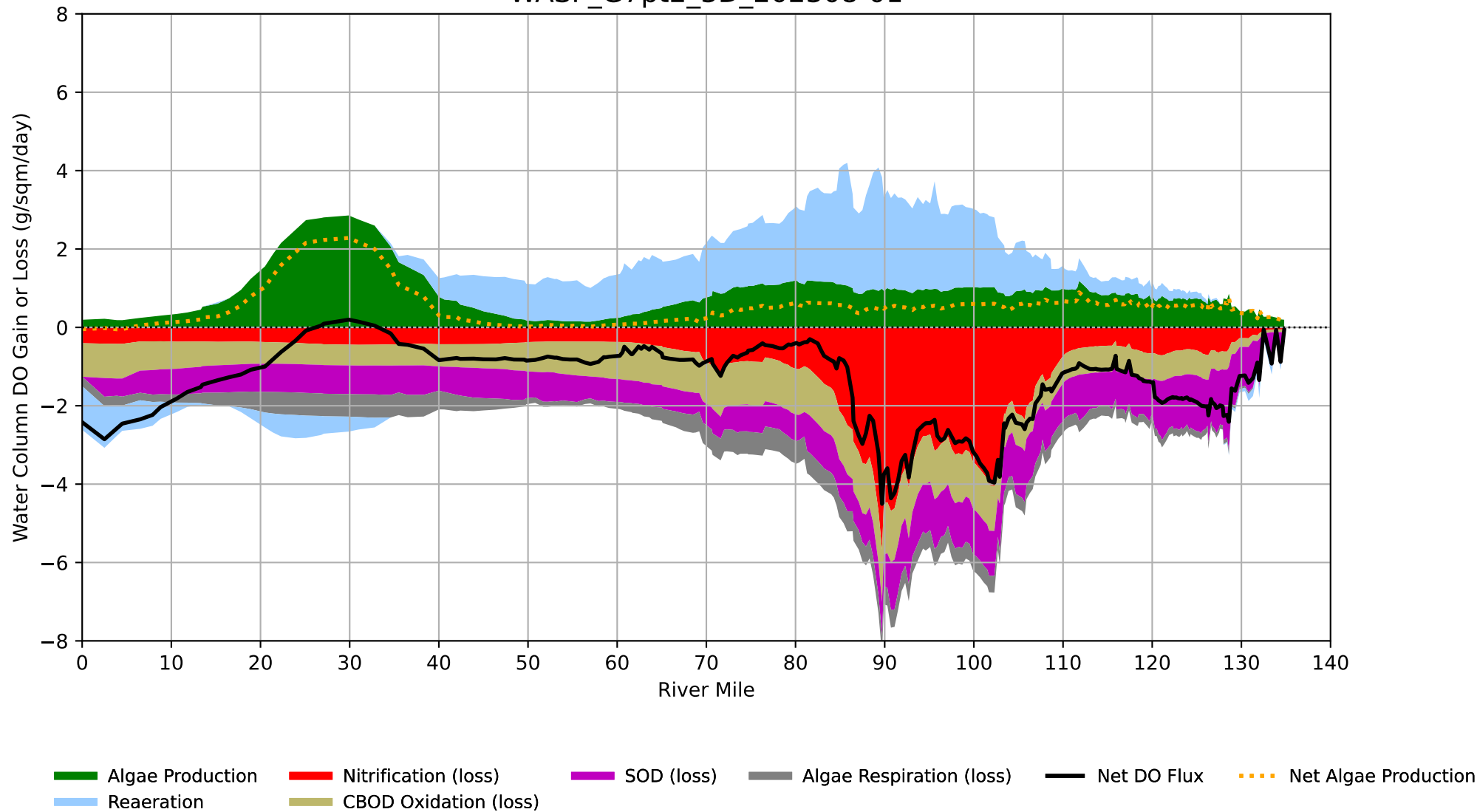
Simulated DO Gain (+) and Loss (-) from Different Processes, May 2012 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, May 2012

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

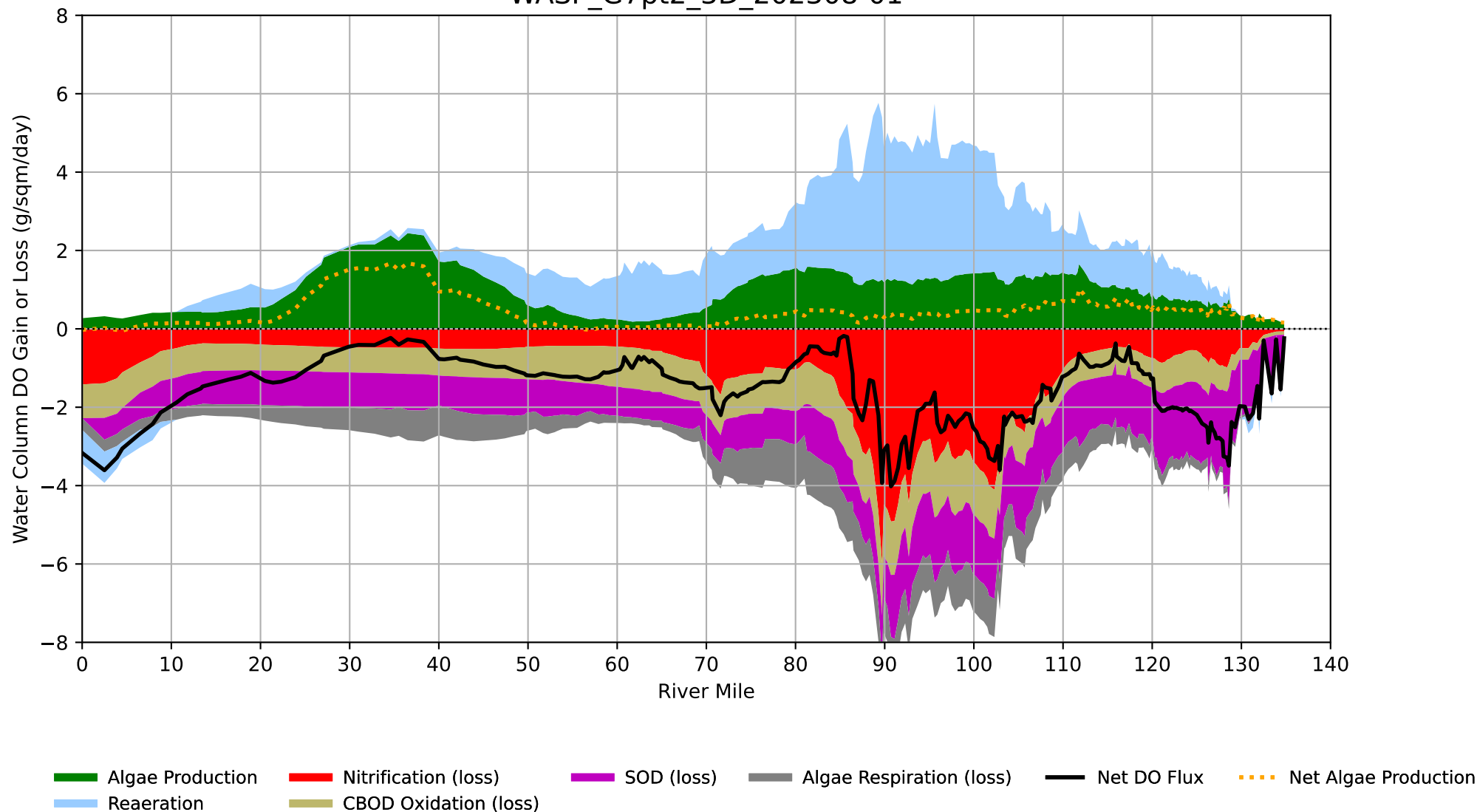
Simulated DO Gain (+) and Loss (-) from Different Processes, June 2012 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, June 2012

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

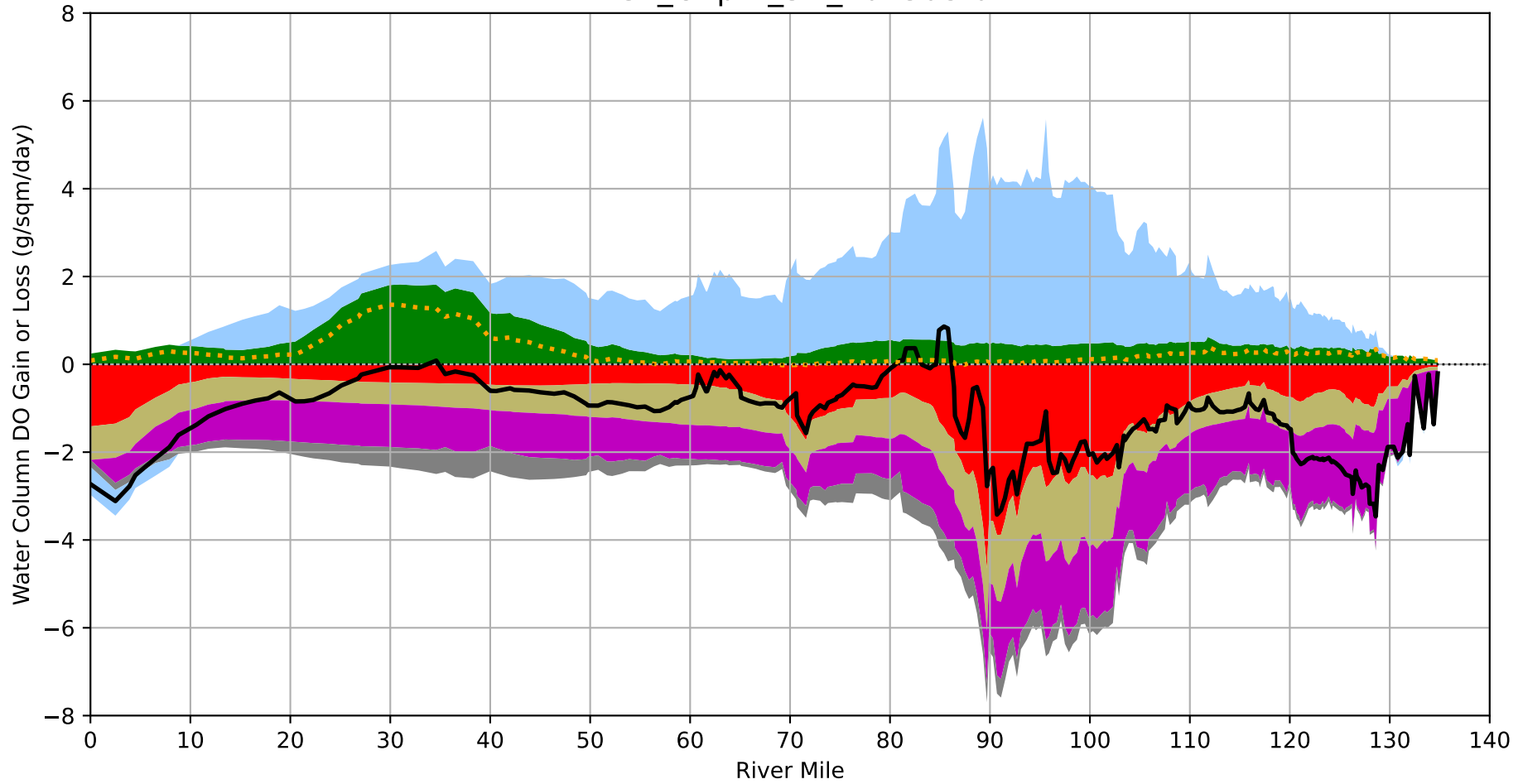
Simulated DO Gain (+) and Loss (-) from Different Processes, July 2012 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, July 2012

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, August 2012 WASP_G7pt2_3D_202308-01

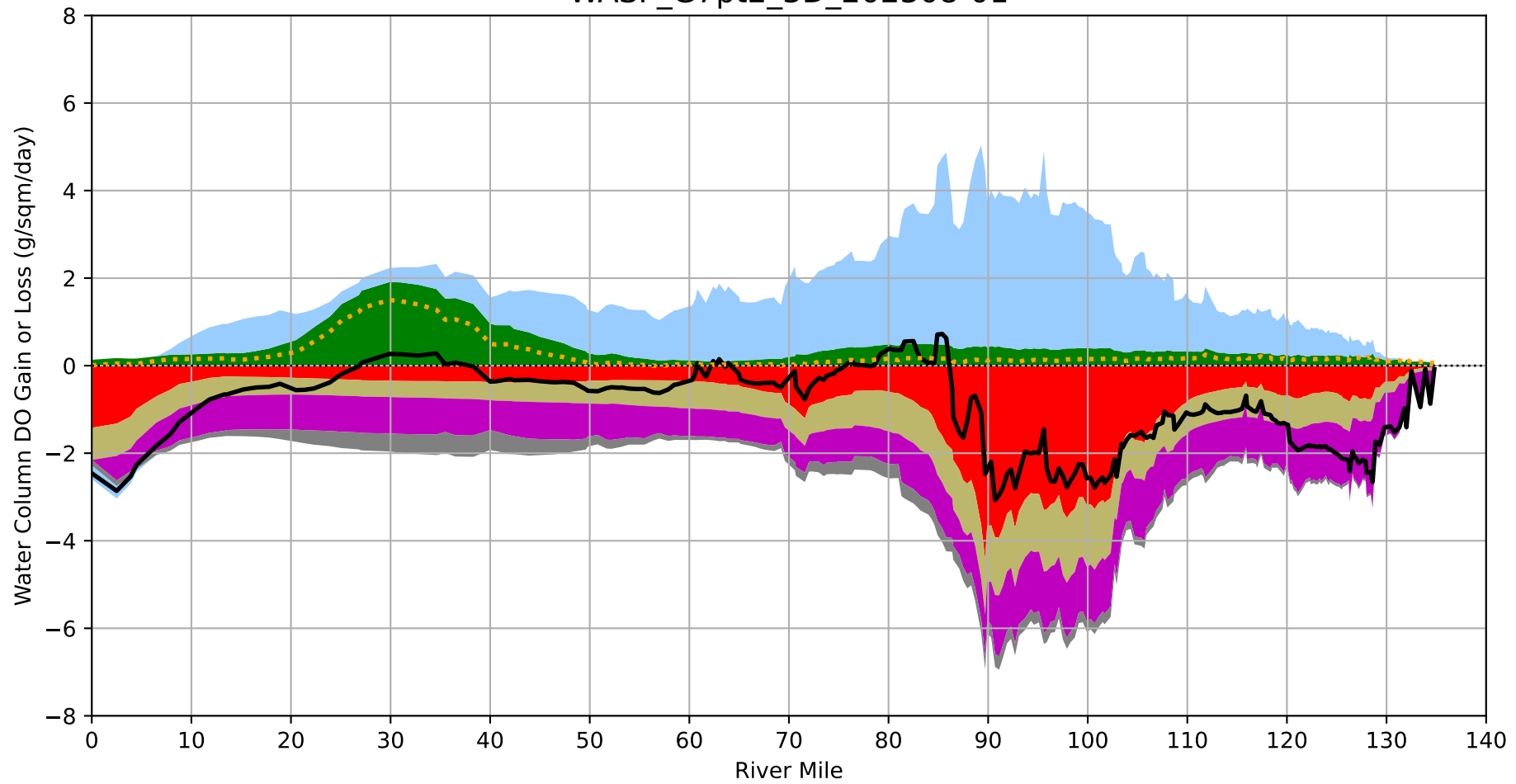


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 - - - Net Algae Production
 ■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, August 2012

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

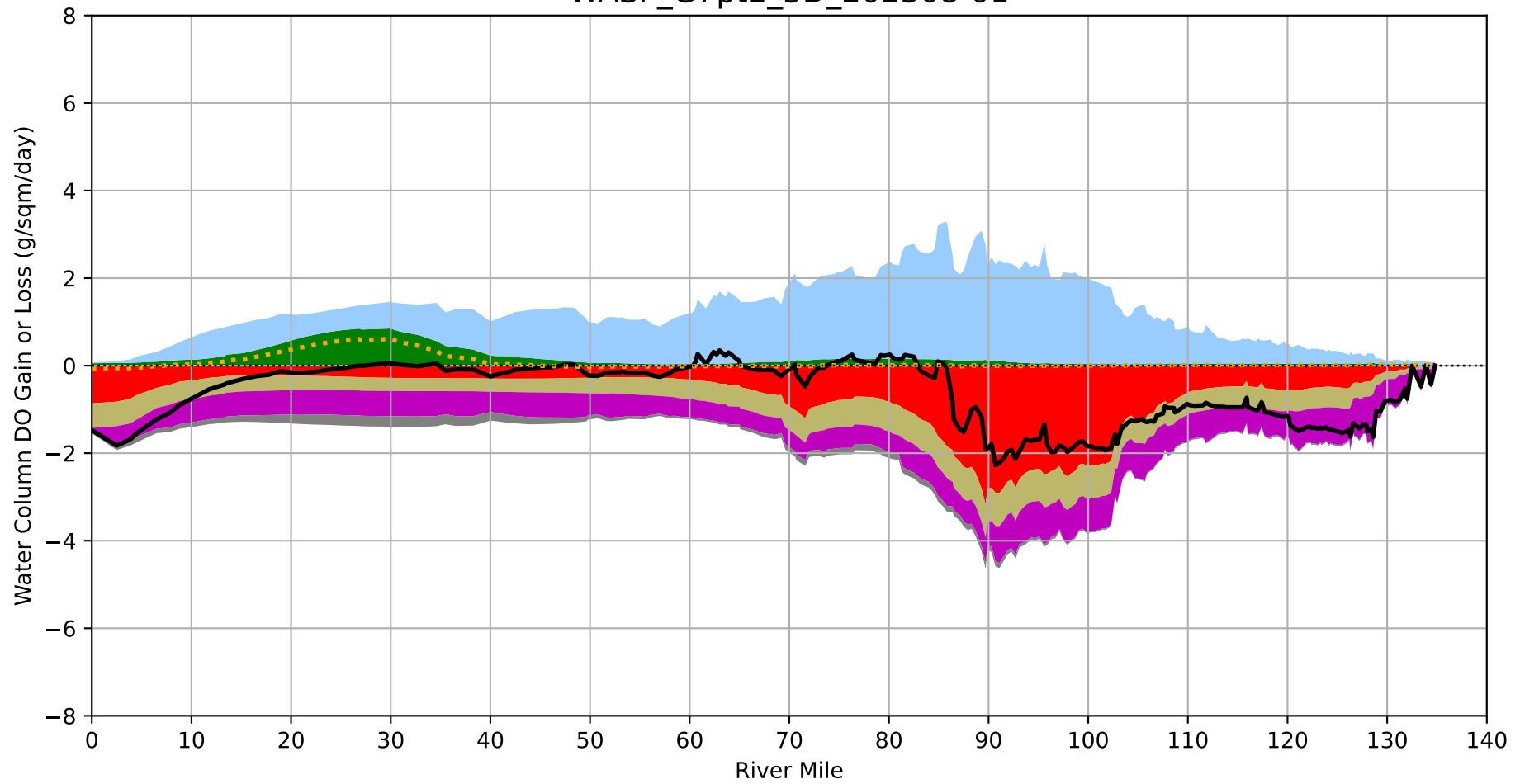
Simulated DO Gain (+) and Loss (-) from Different Processes, September 2012 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, September 2012

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, October 2012 WASP_G7pt2_3D_202308-01

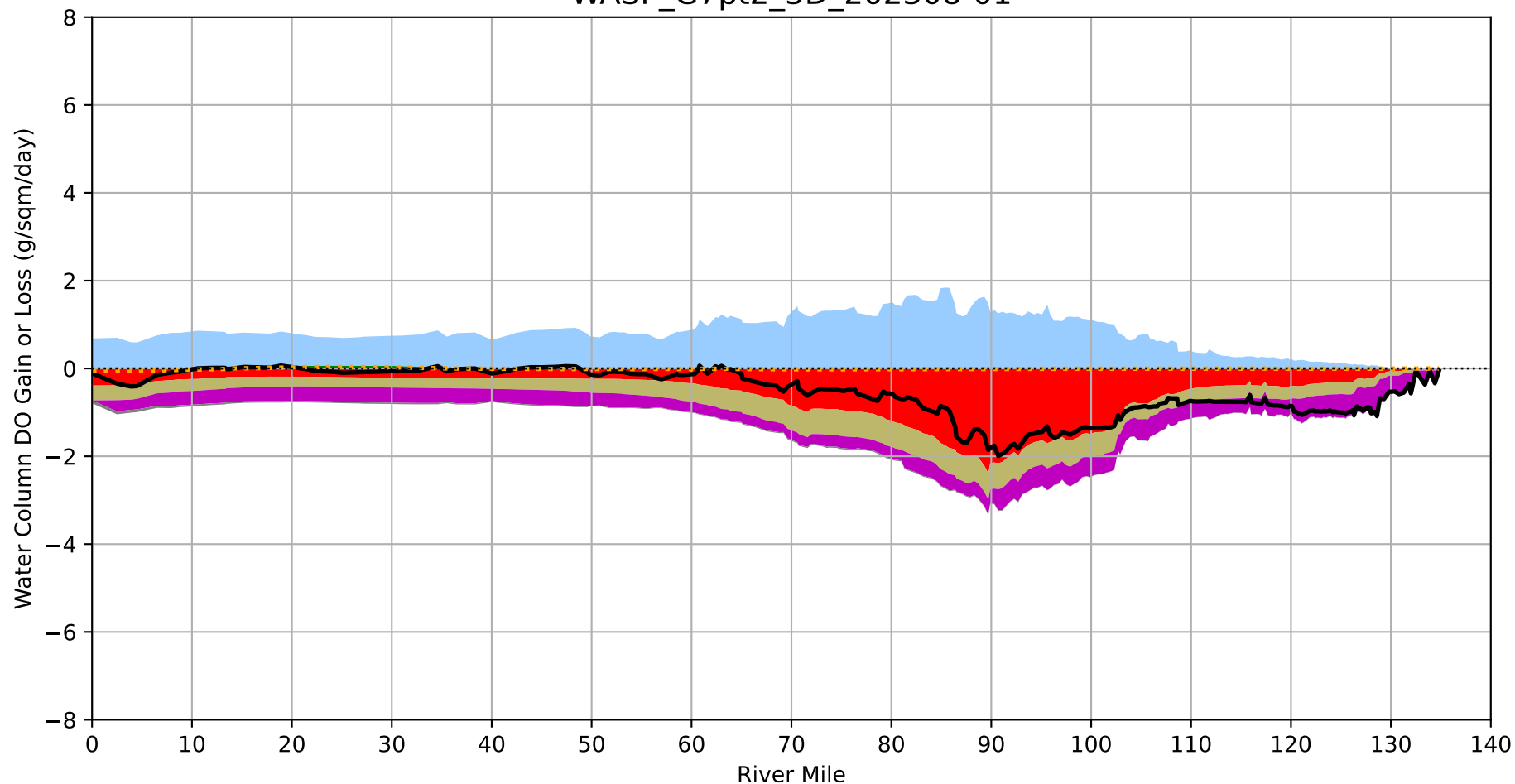


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 ⋯ Net Algae Production
■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, October 2012

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

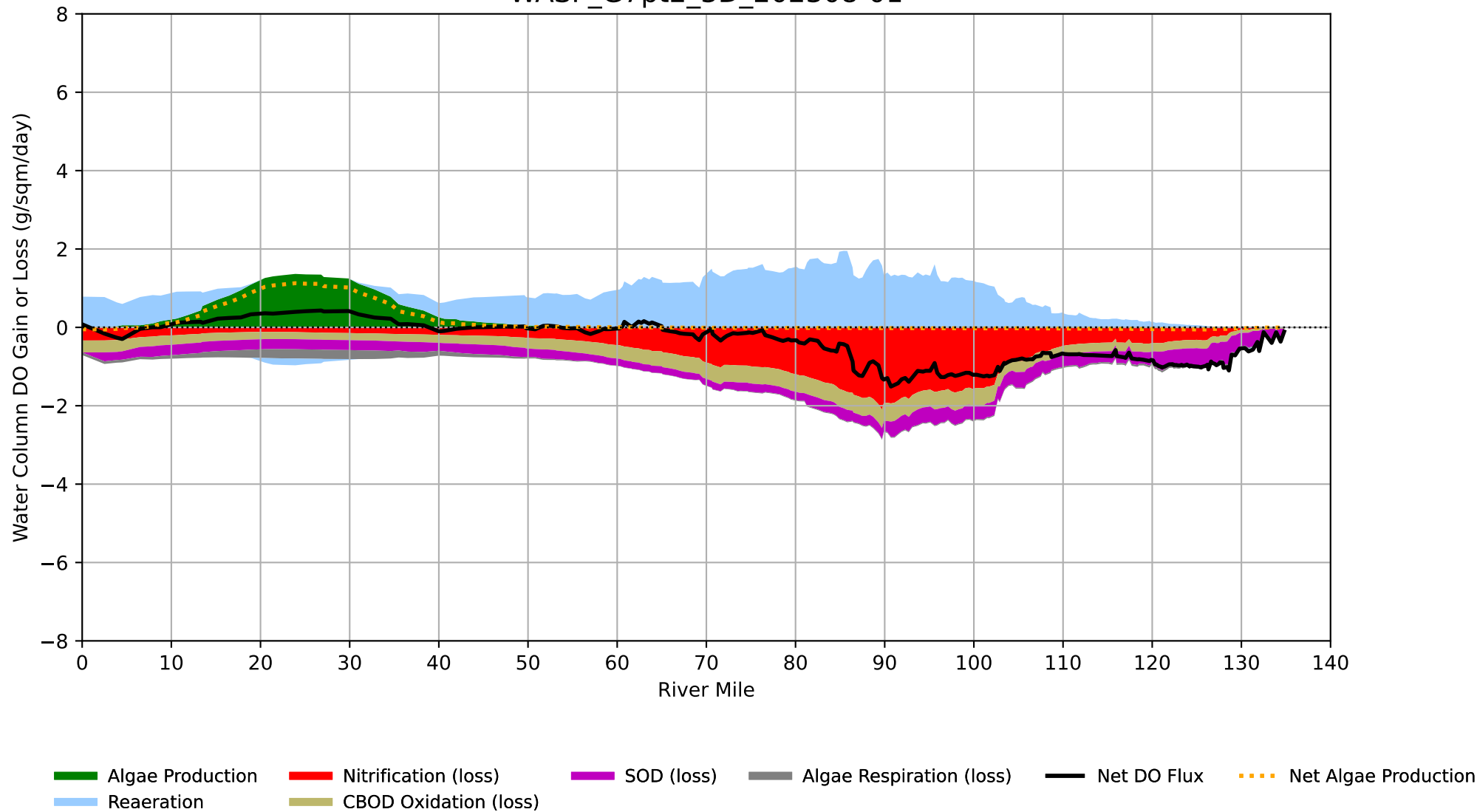
Simulated DO Gain (+) and Loss (-) from Different Processes, November 2012 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, November 2012

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

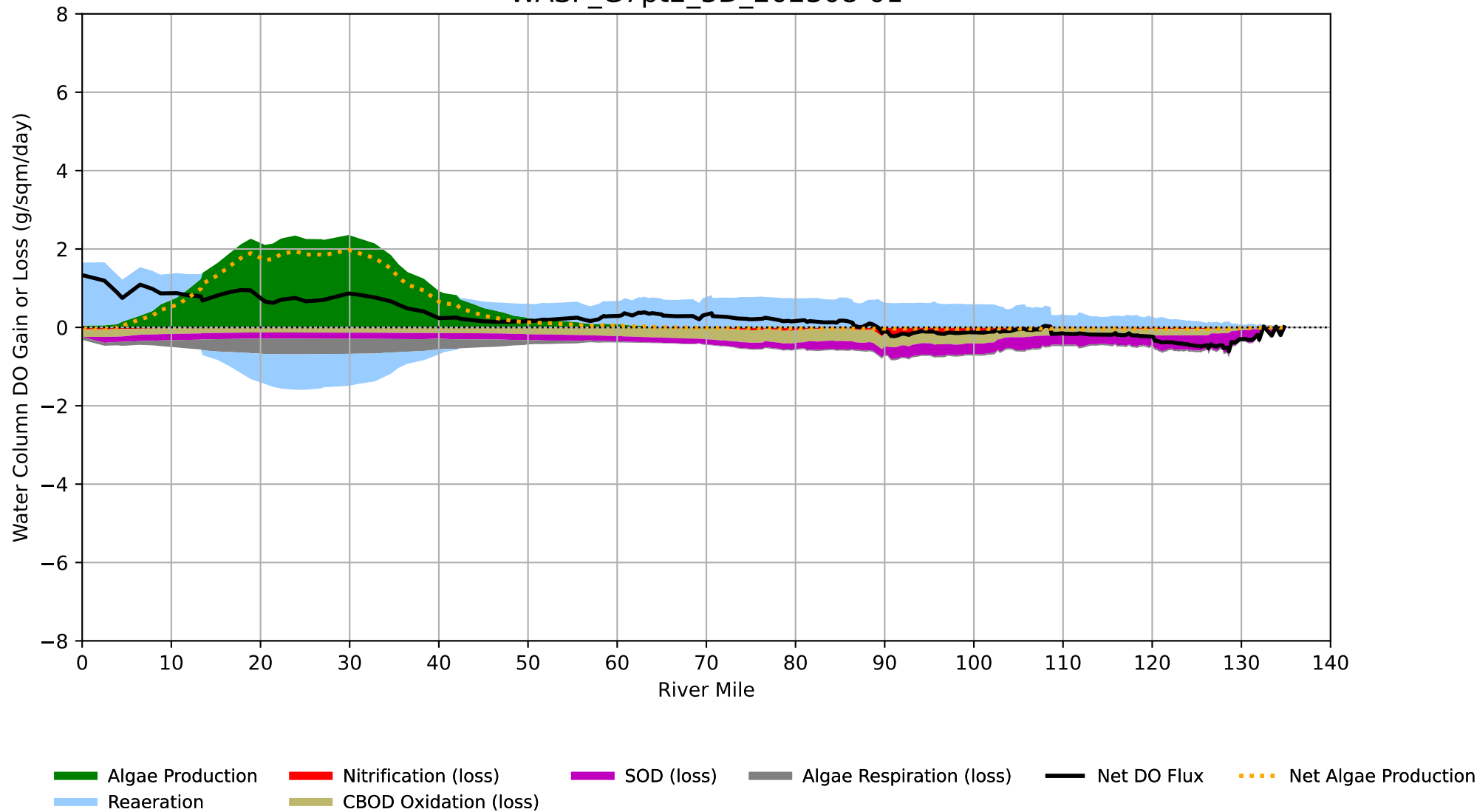
Simulated DO Gain (+) and Loss (-) from Different Processes, December 2012 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, December 2012

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

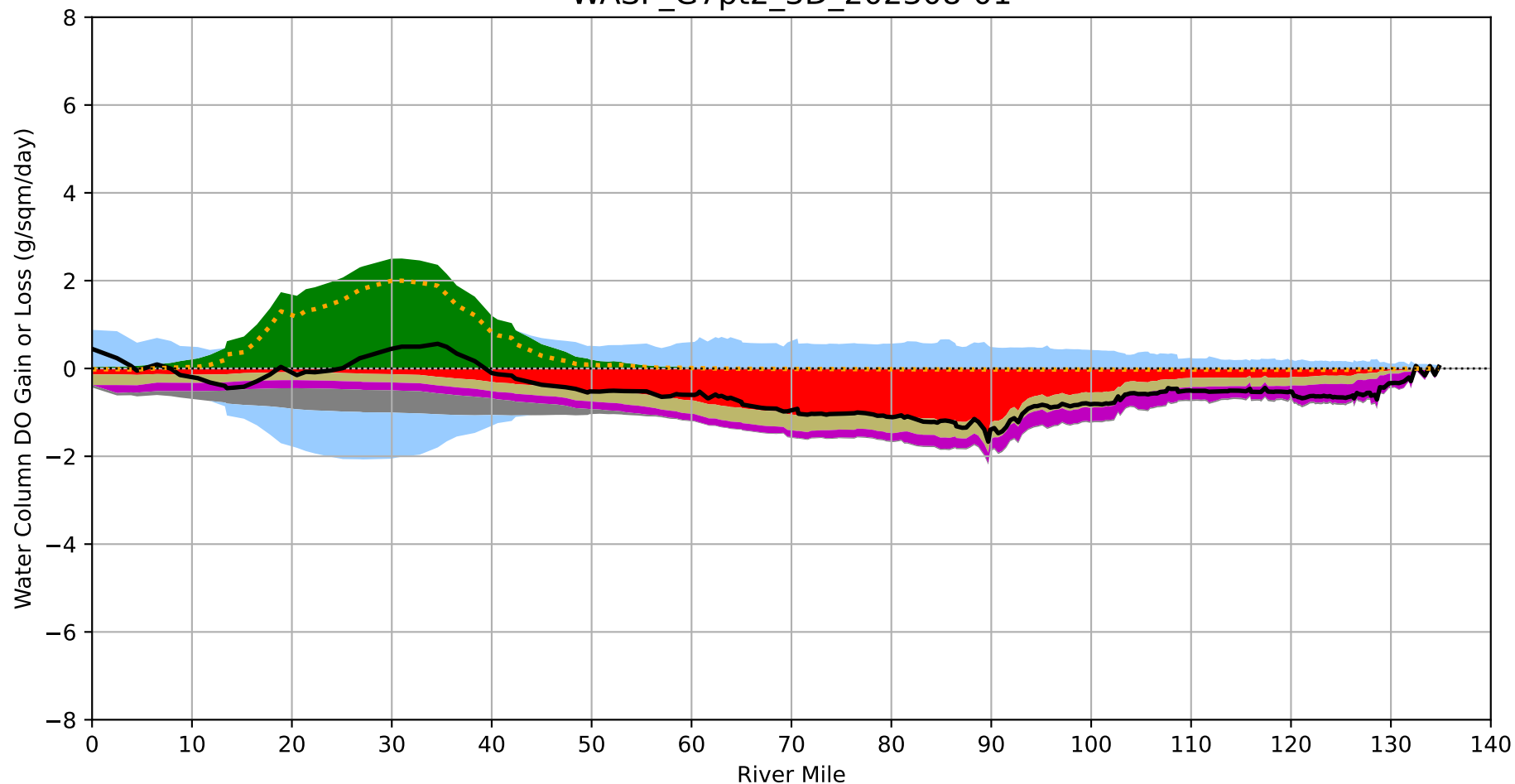
Simulated DO Gain (+) and Loss (-) from Different Processes, January 2018 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, January 2018

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, February 2018 WASP_G7pt2_3D_202308-01

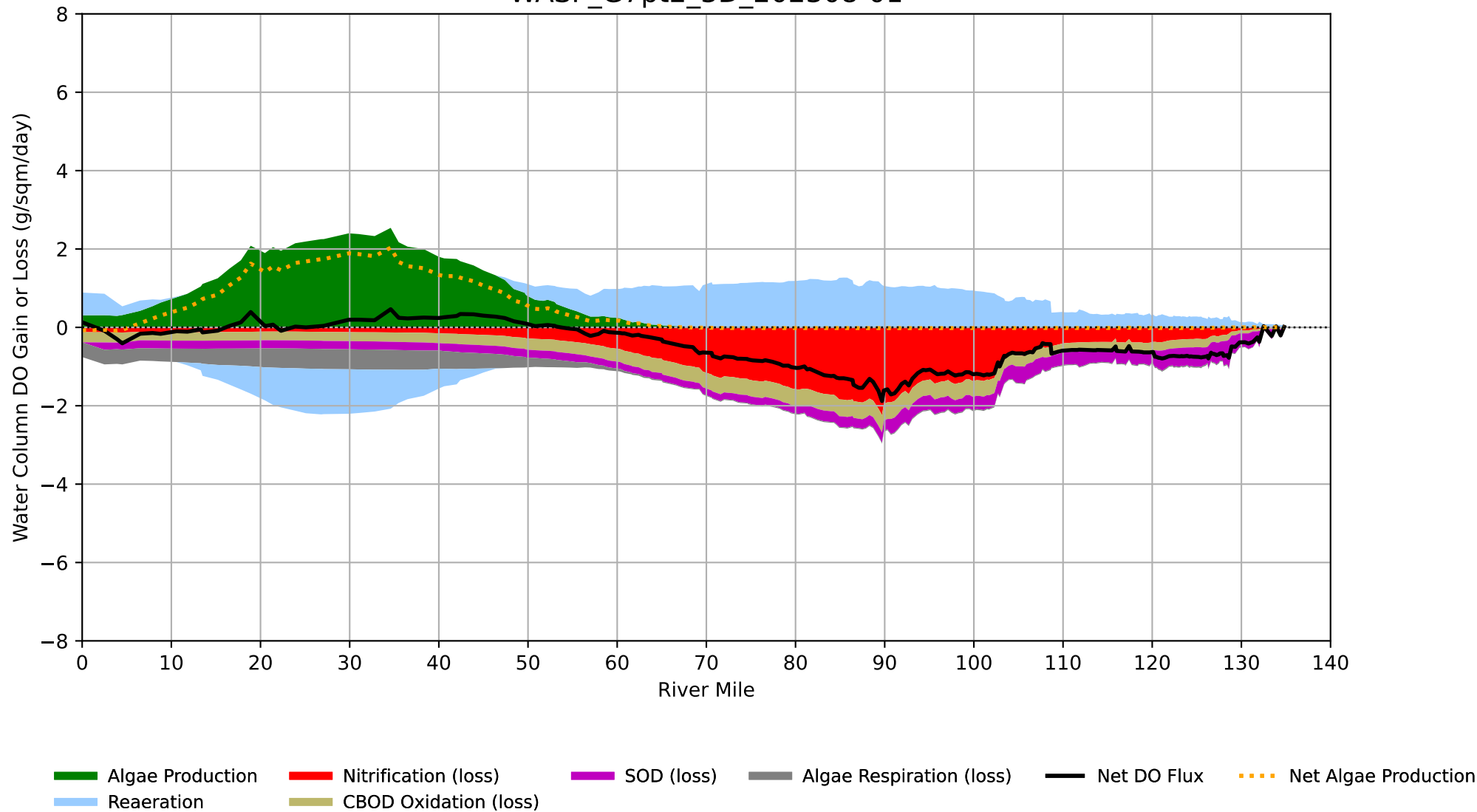


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 - - - Net Algae Production
■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, February 2018

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

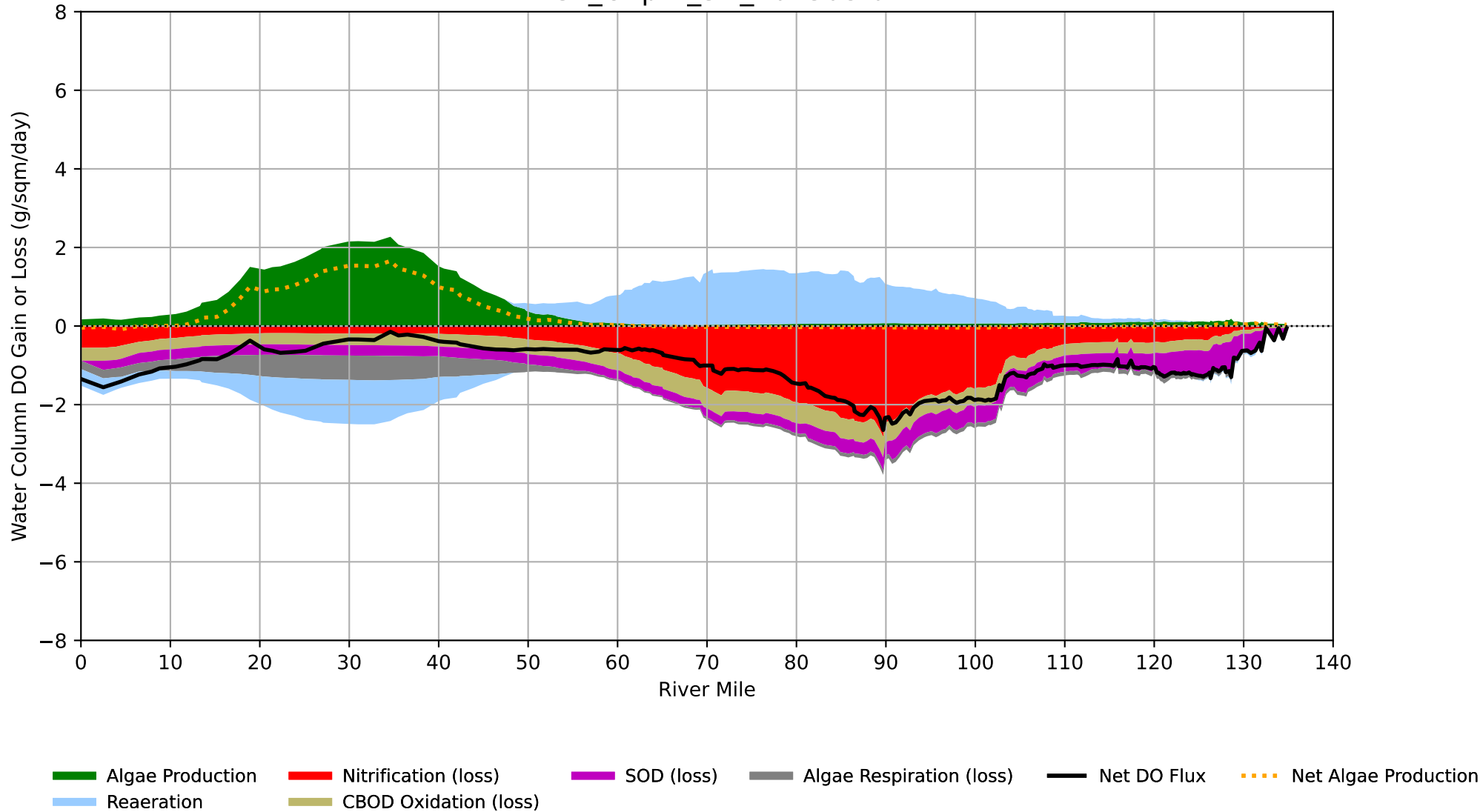
Simulated DO Gain (+) and Loss (-) from Different Processes, March 2018 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, March 2018

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

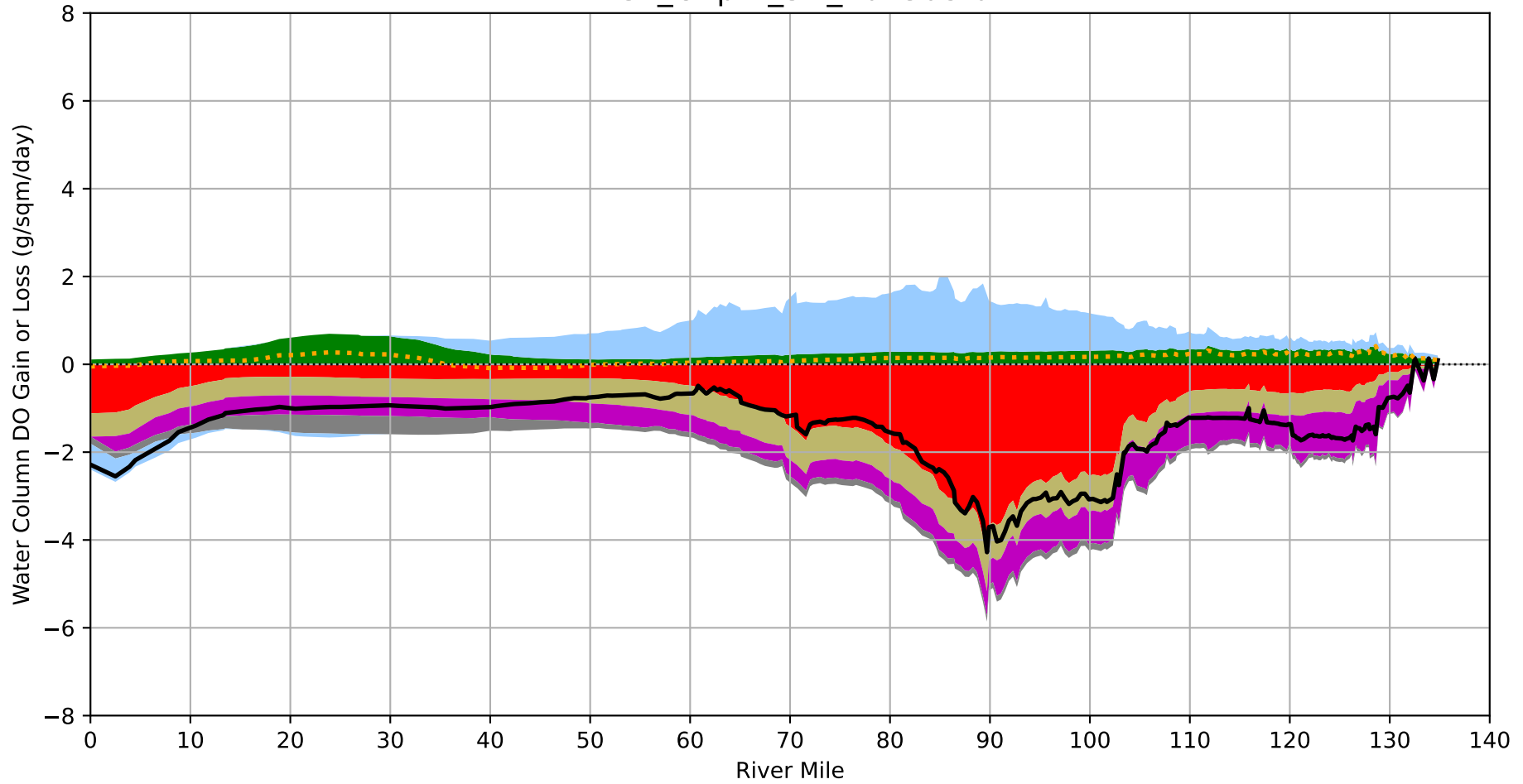
Simulated DO Gain (+) and Loss (-) from Different Processes, April 2018 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, April 2018

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, May 2018 WASP_G7pt2_3D_202308-01

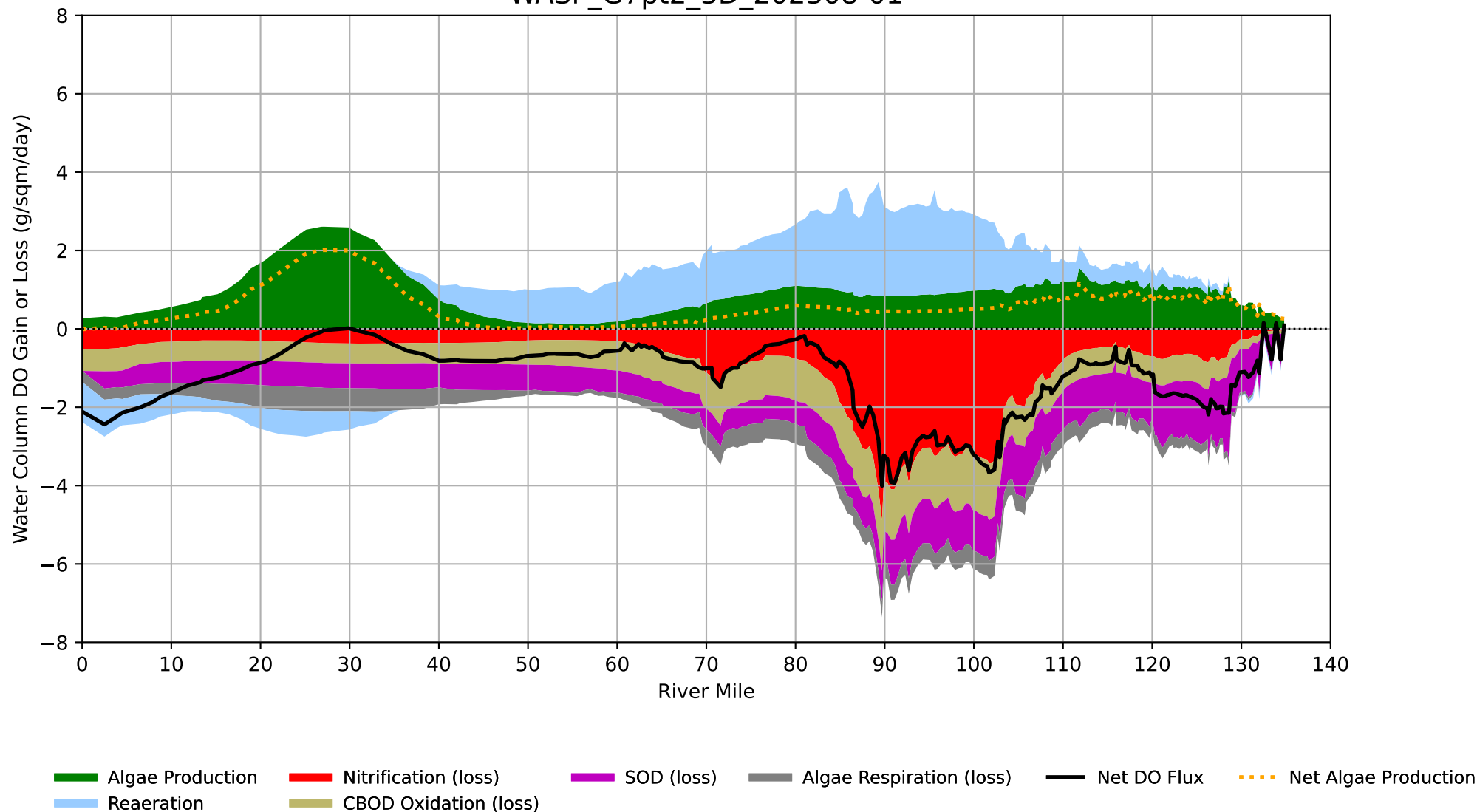


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 - - - Net Algae Production
■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, May 2018

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

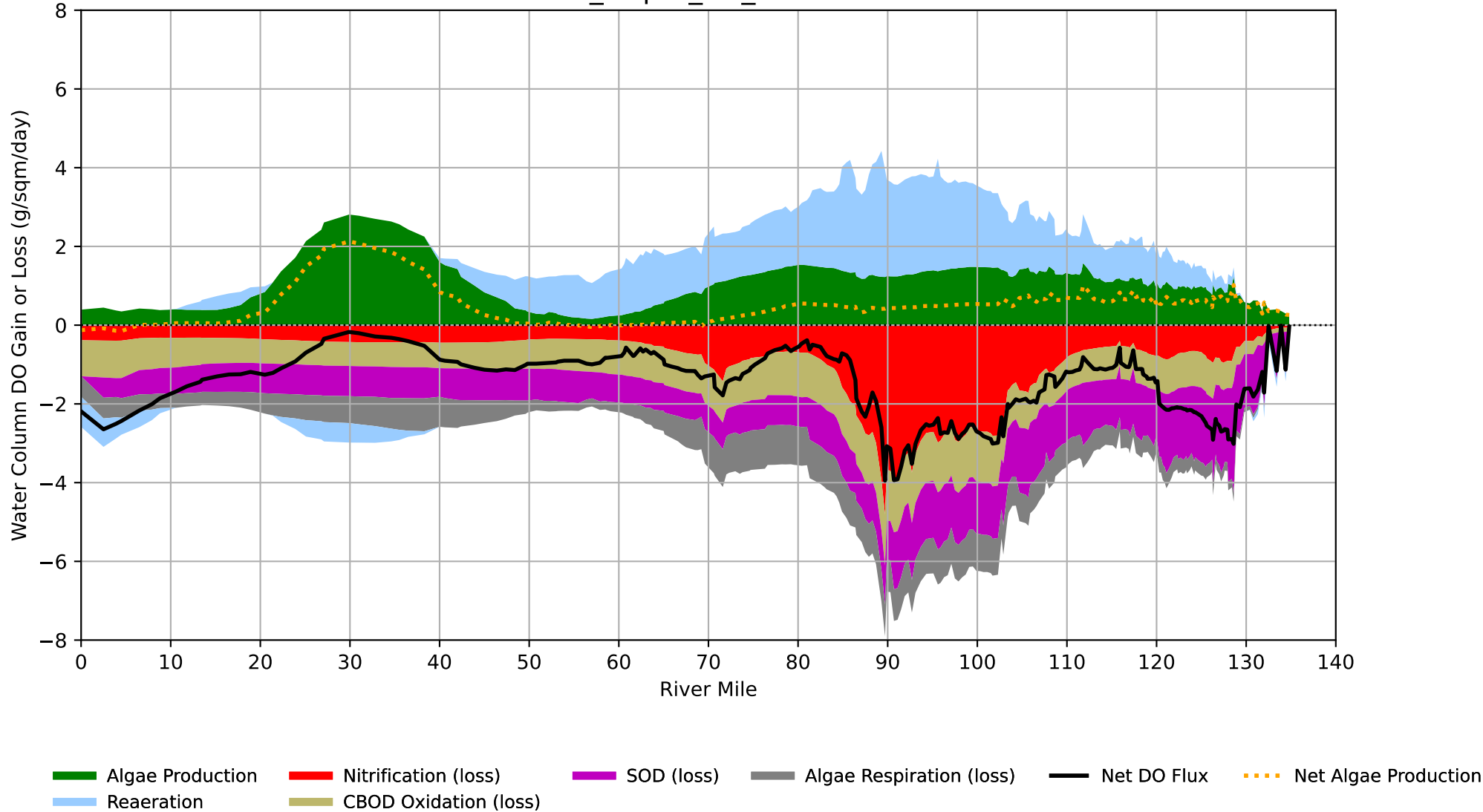
Simulated DO Gain (+) and Loss (-) from Different Processes, June 2018 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, June 2018

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

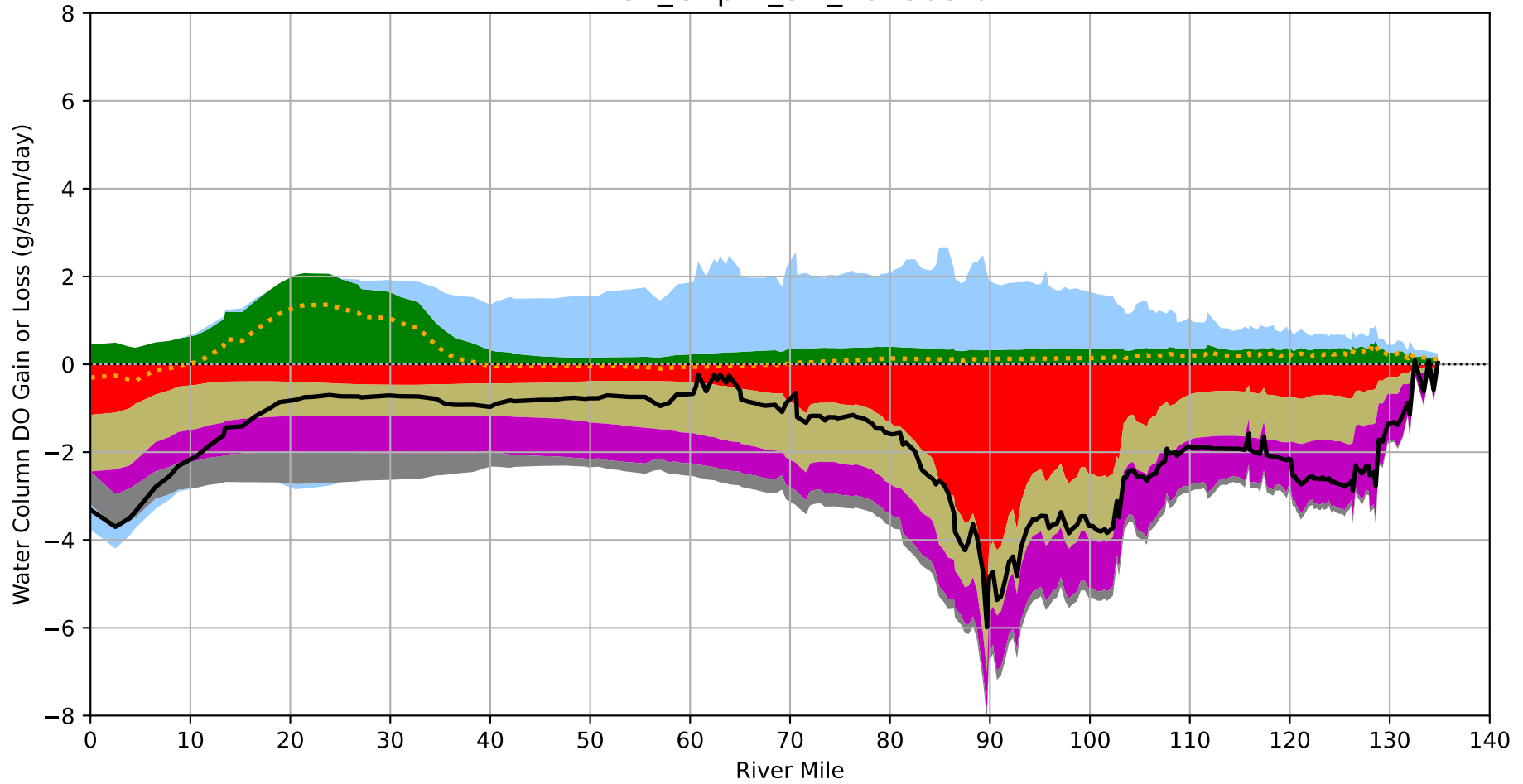
Simulated DO Gain (+) and Loss (-) from Different Processes, July 2018 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, July 2018

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, August 2018 WASP_G7pt2_3D_202308-01

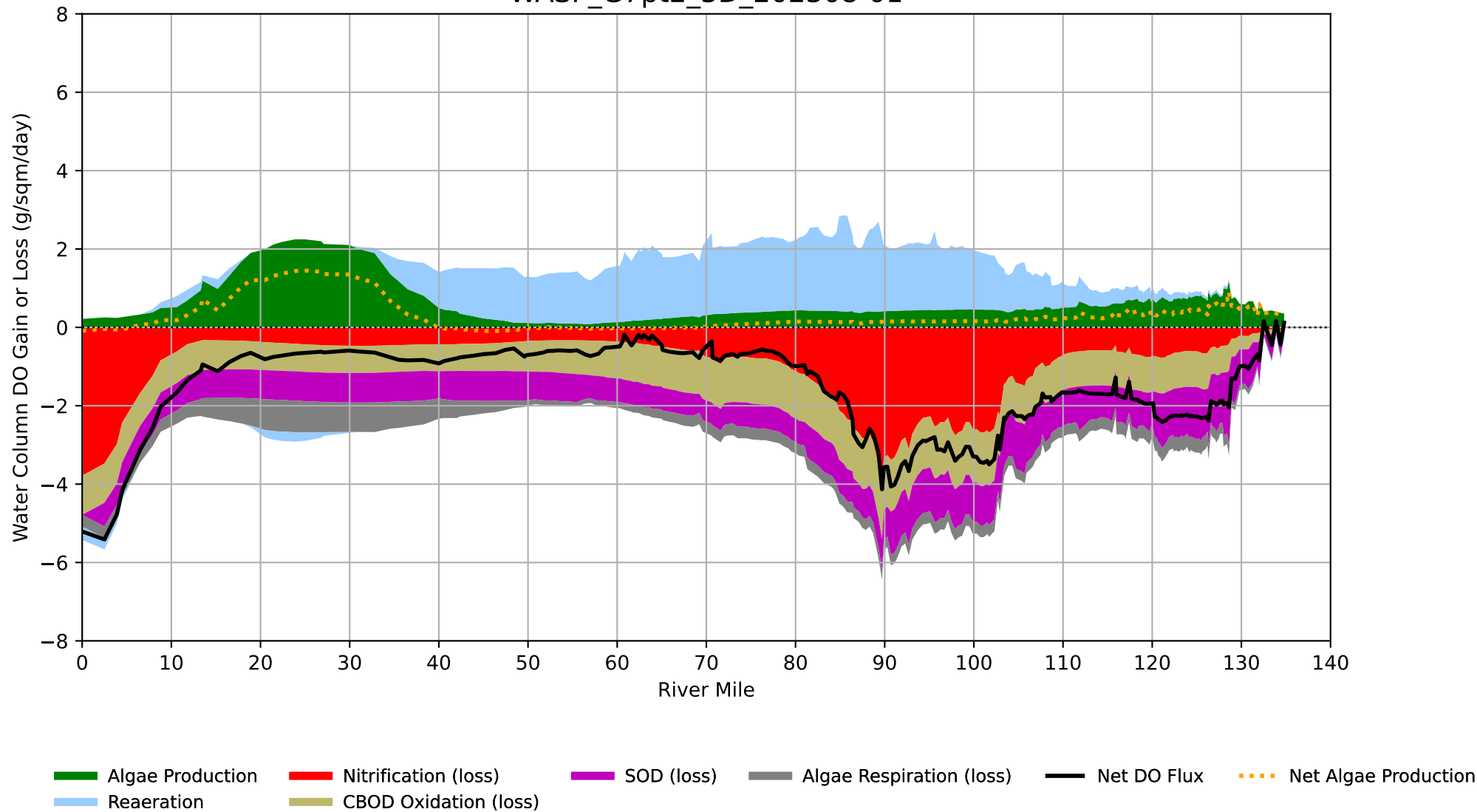


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 ⋯ Net Algae Production
 ■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, August 2018

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

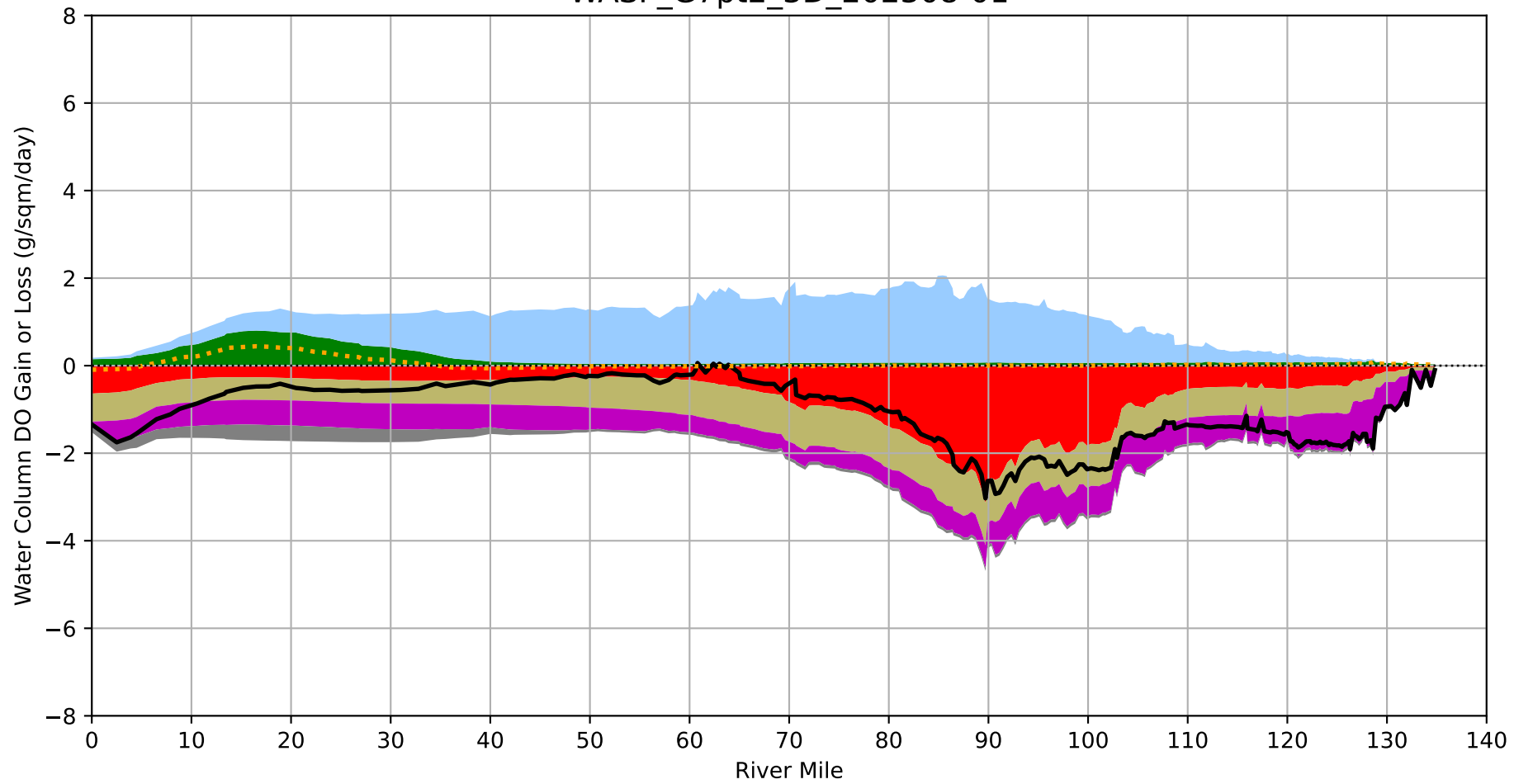
Simulated DO Gain (+) and Loss (-) from Different Processes, September 2018 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, September 2018

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

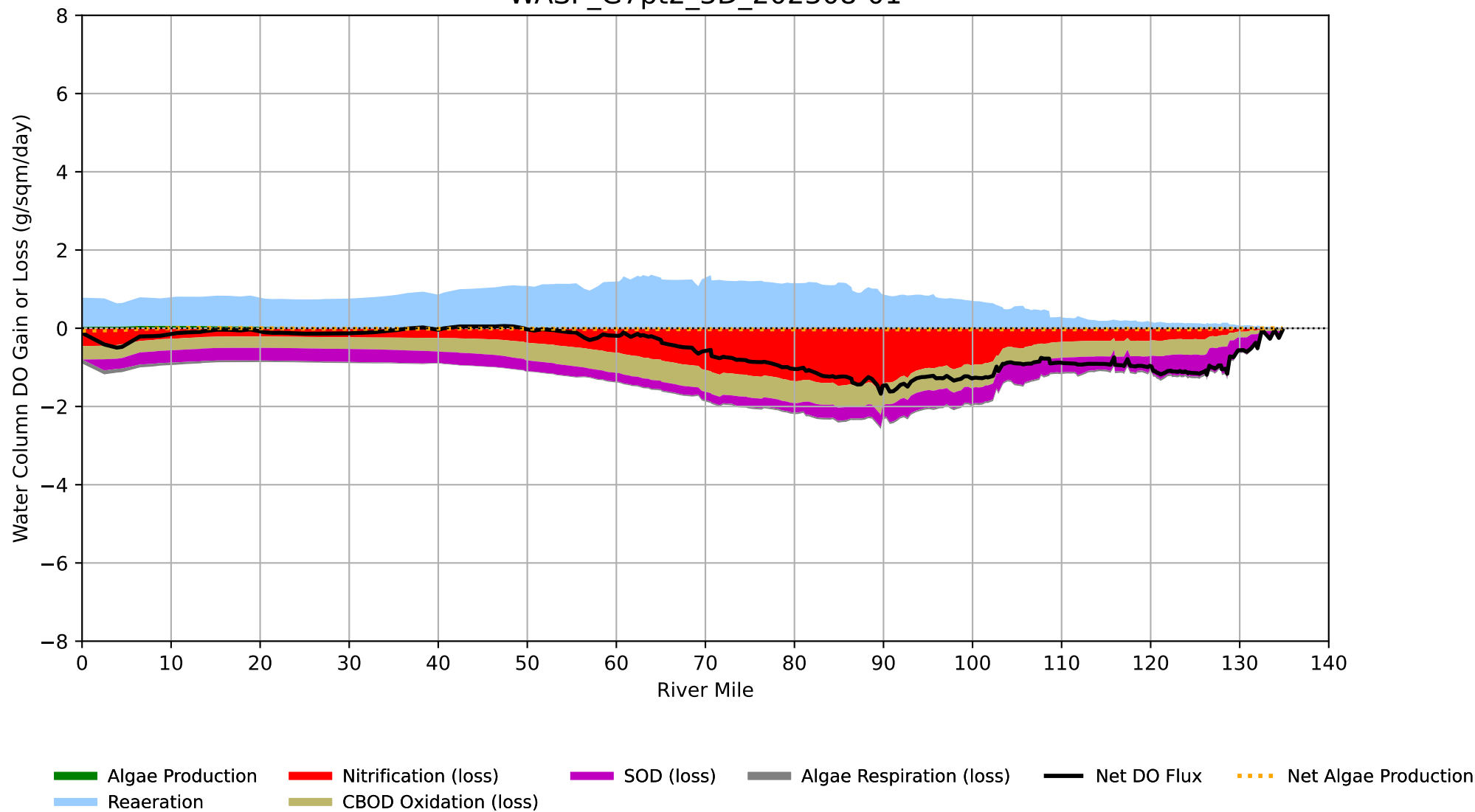
Simulated DO Gain (+) and Loss (-) from Different Processes, October 2018 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, October 2018

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

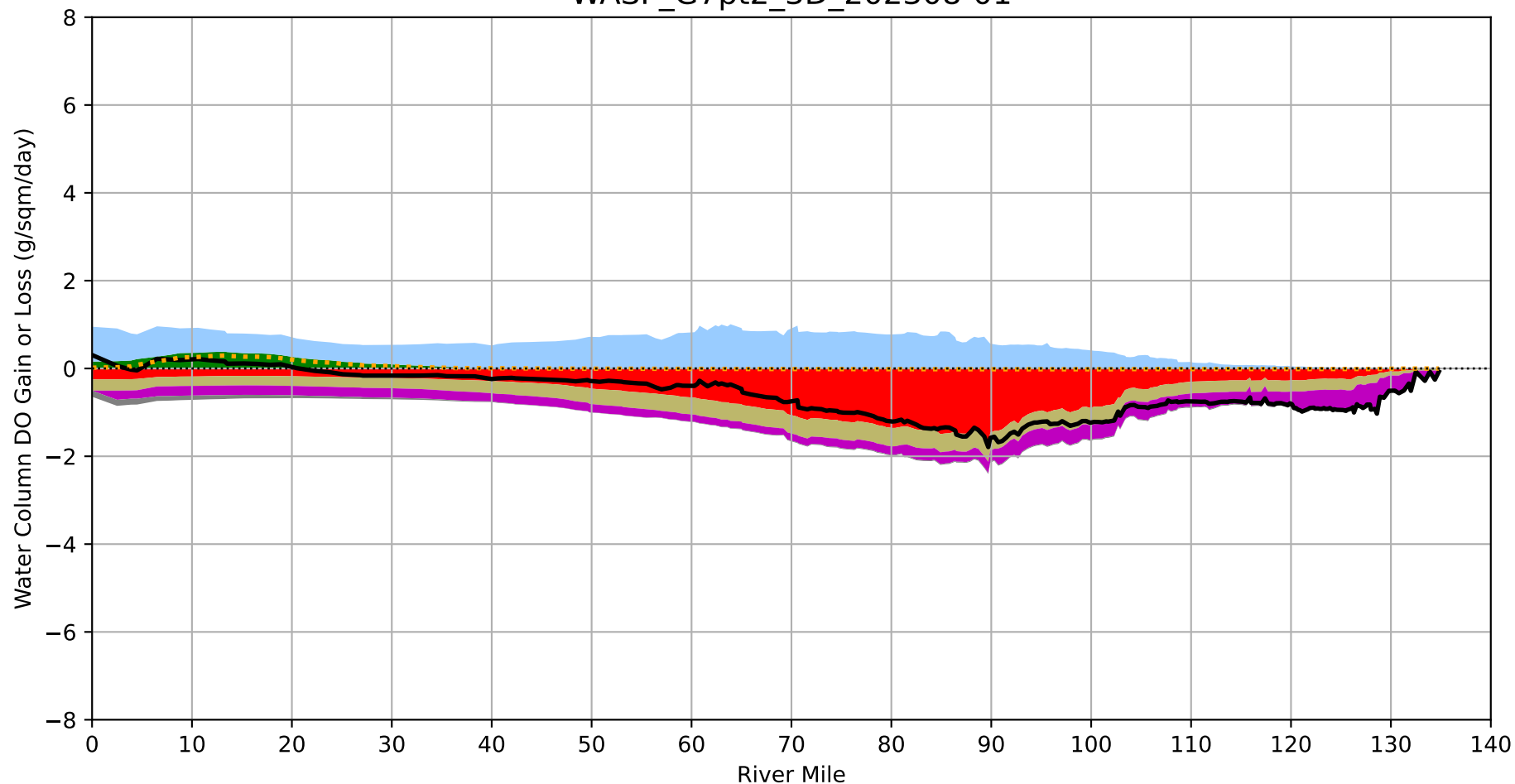
Simulated DO Gain (+) and Loss (-) from Different Processes, November 2018 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, November 2018

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

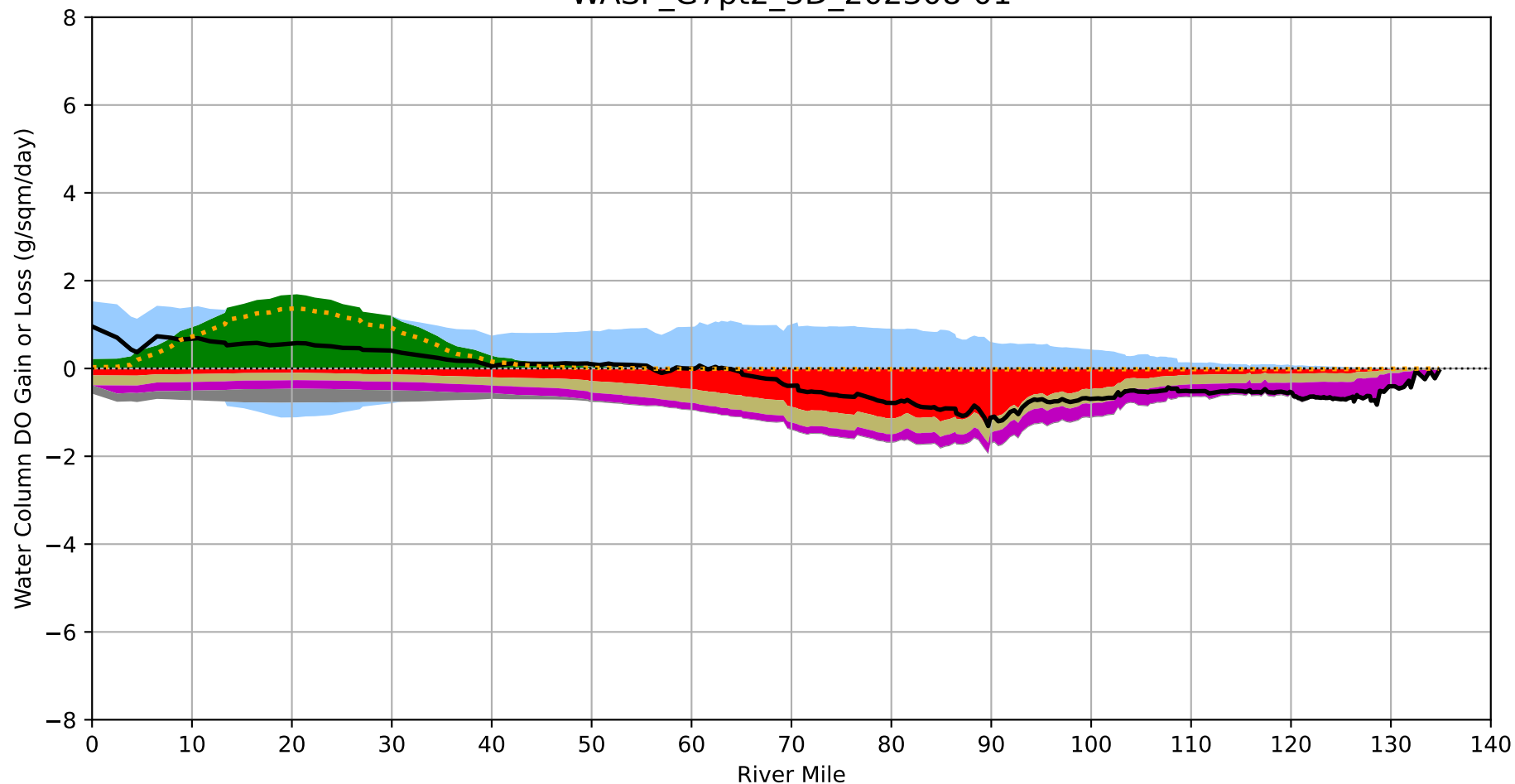
Simulated DO Gain (+) and Loss (-) from Different Processes, December 2018 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, December 2018

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, January 2019 WASP_G7pt2_3D_202308-01

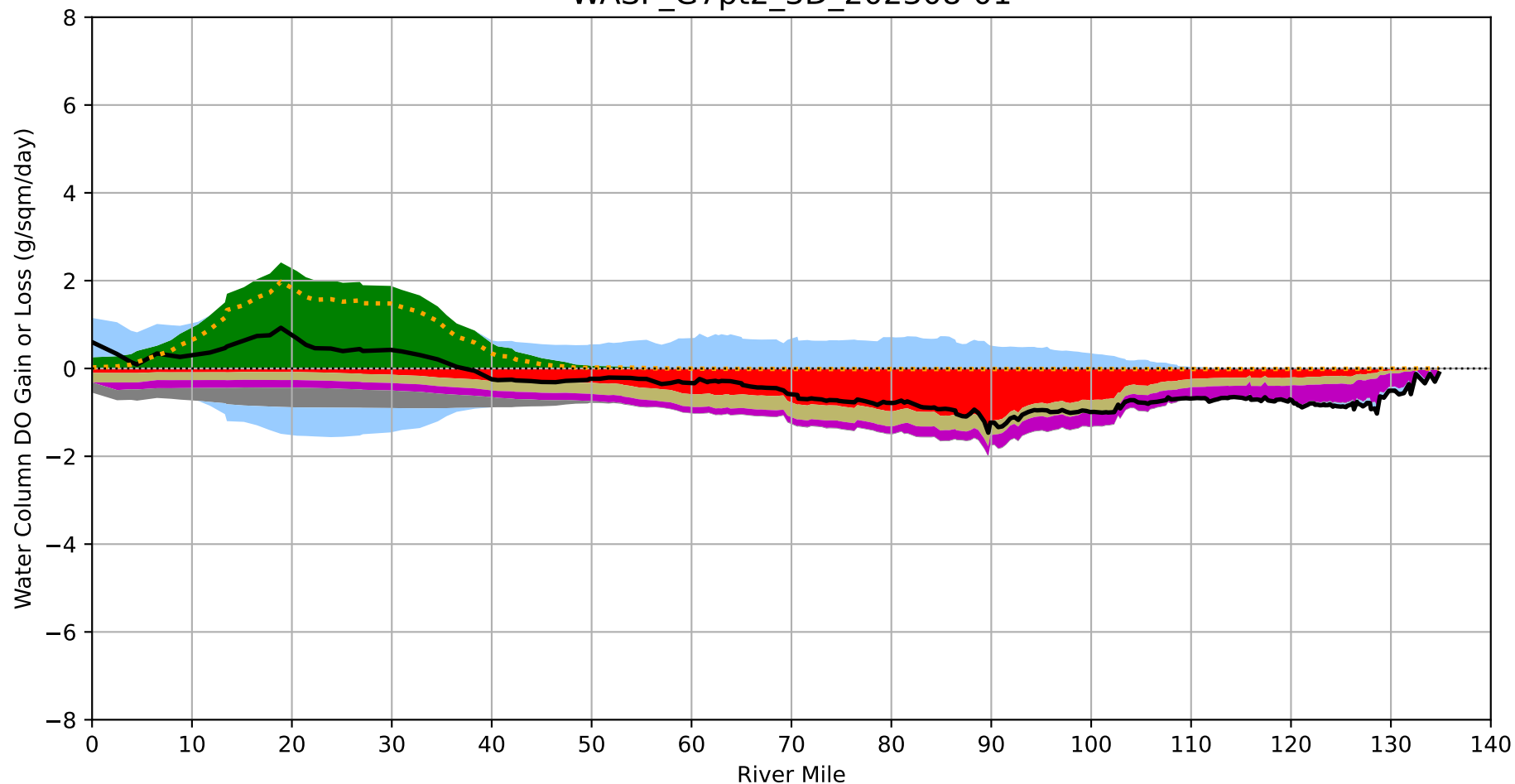


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 ⋯ Net Algae Production
 ■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, January 2019

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, February 2019 WASP_G7pt2_3D_202308-01

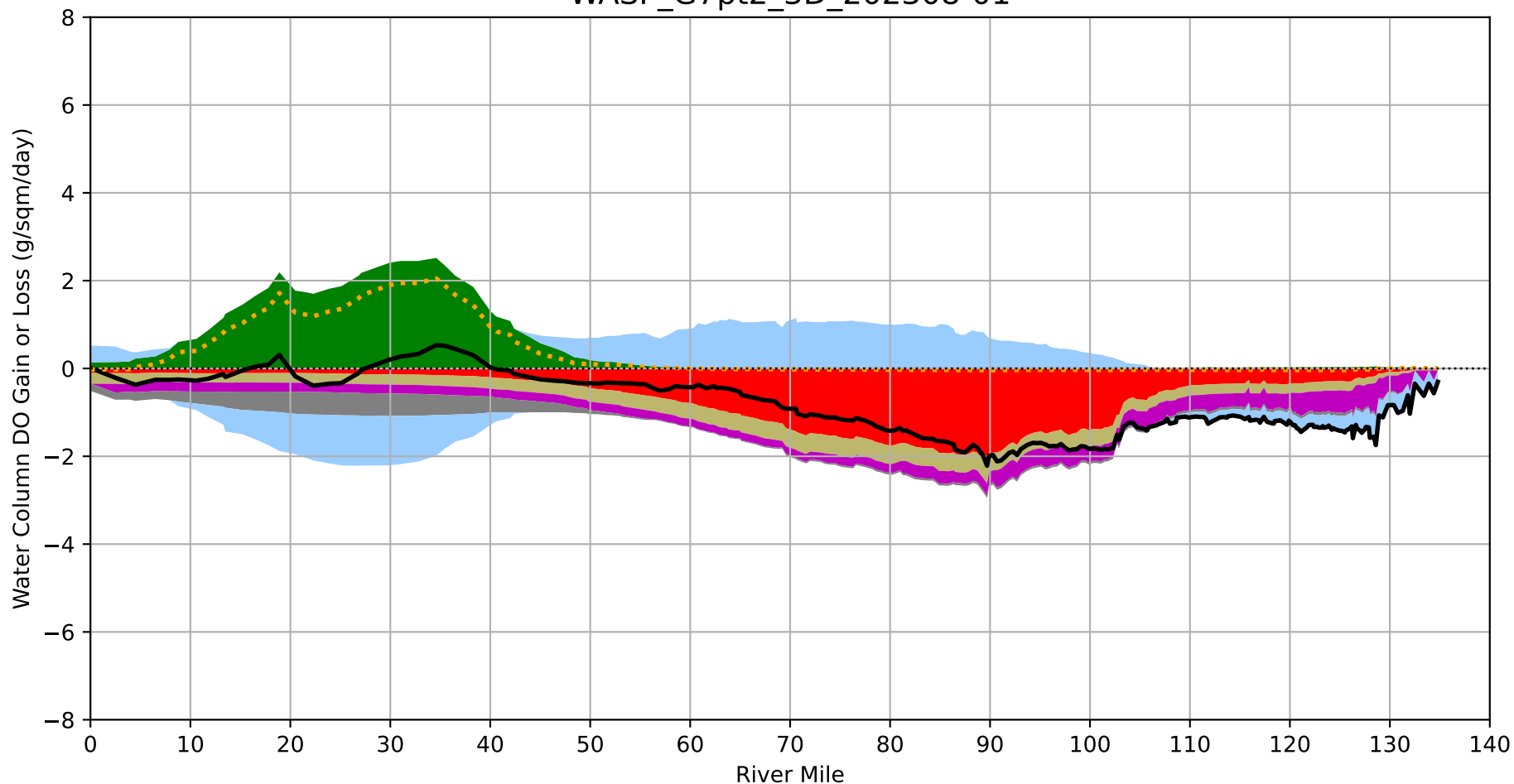


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 ⋯ Net Algae Production
 ■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, February 2019

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, March 2019 WASP_G7pt2_3D_202308-01

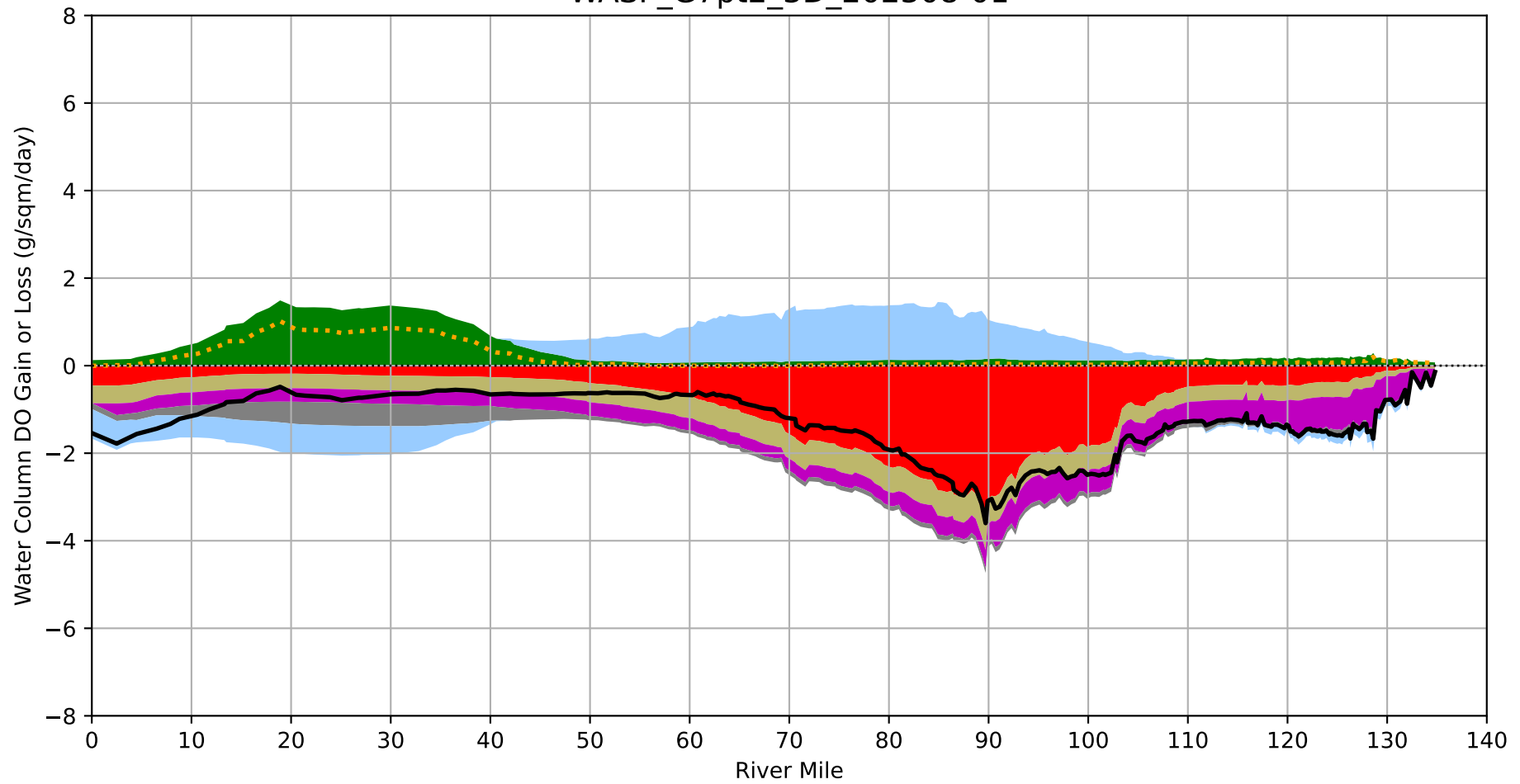


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 ⋯ Net Algae Production
■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, March 2019

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, April 2019 WASP_G7pt2_3D_202308-01

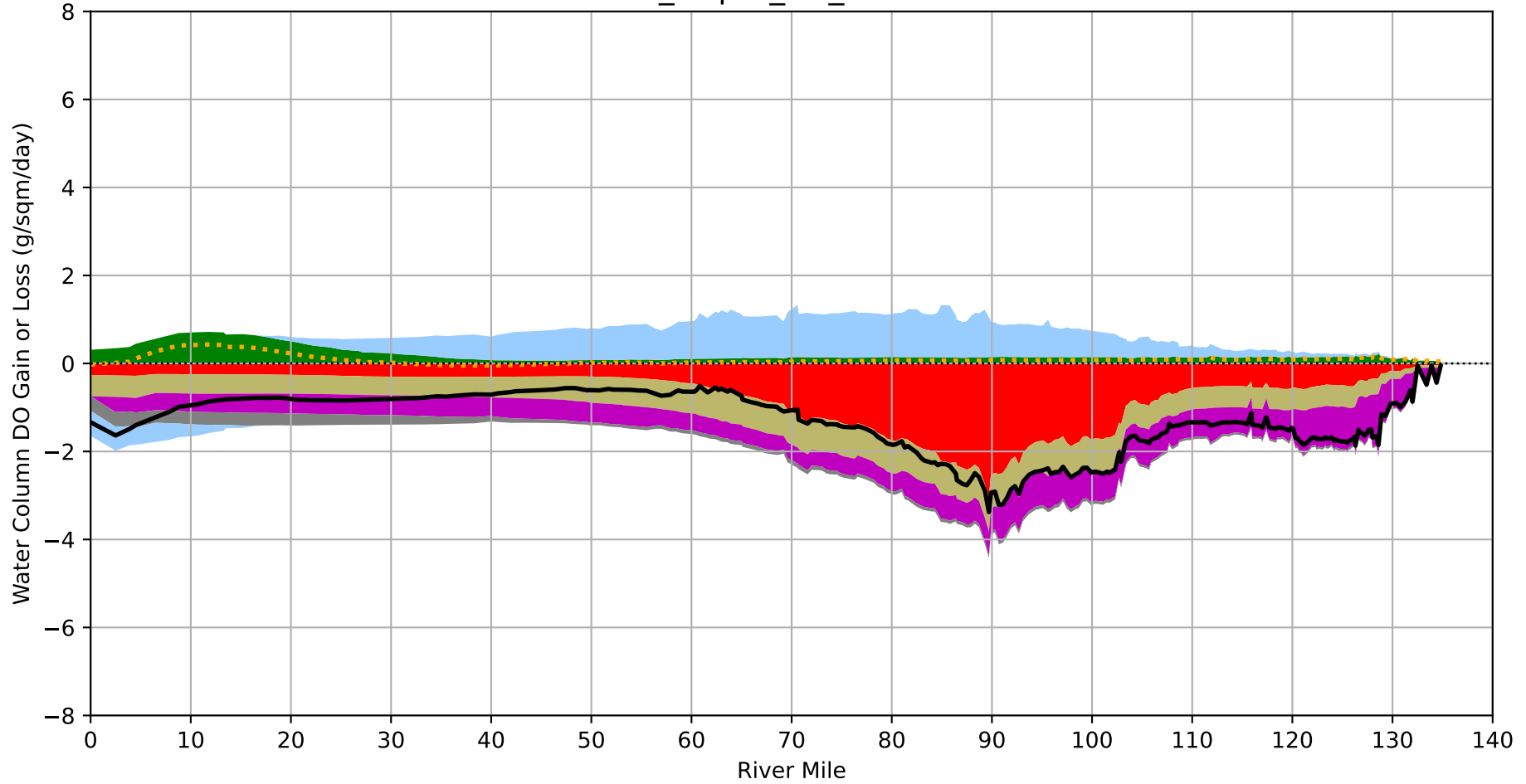


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 - - - Net Algae Production
 ■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, April 2019

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, May 2019 WASP_G7pt2_3D_202308-01

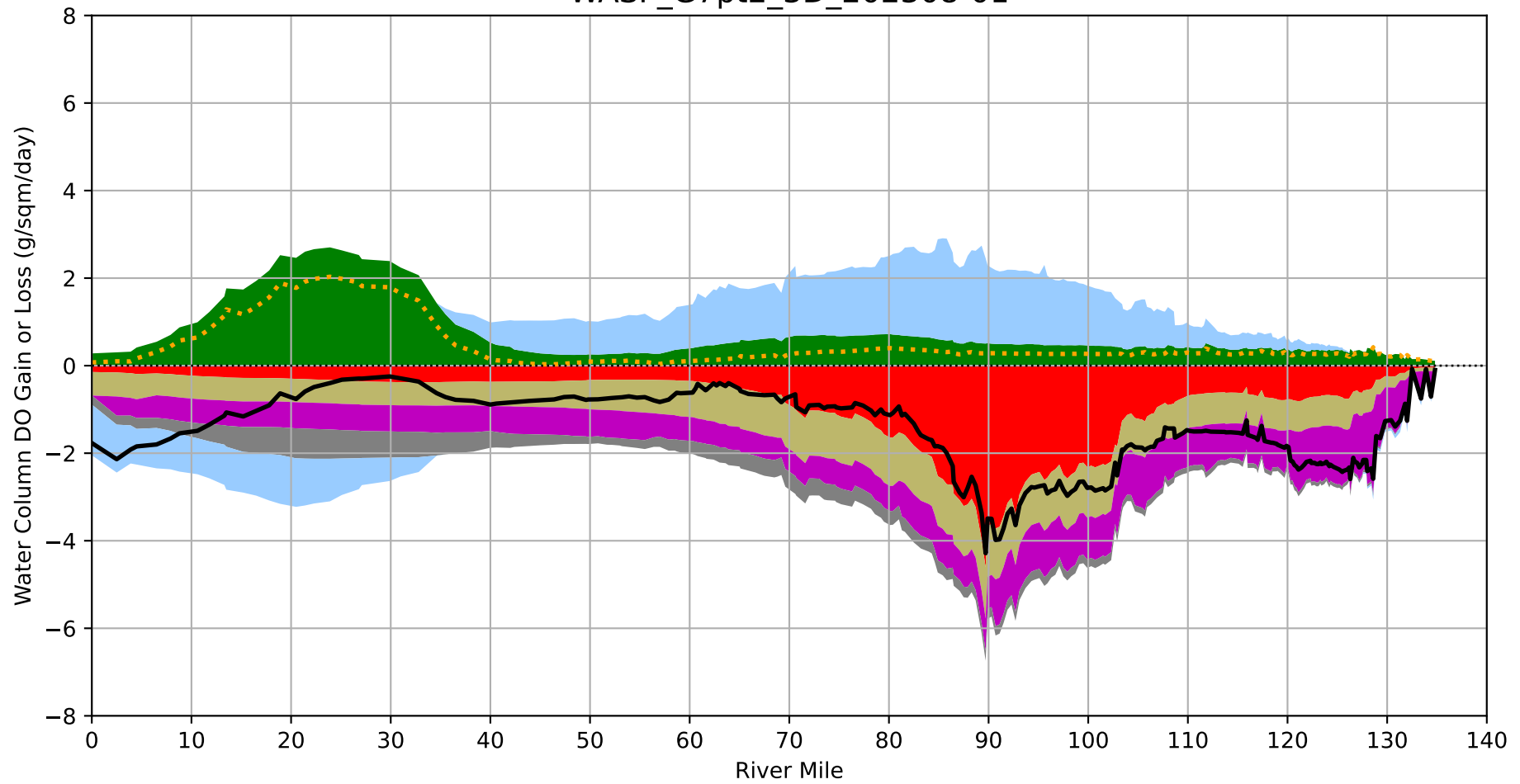


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 ⋯ Net Algae Production
 ■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, May 2019

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

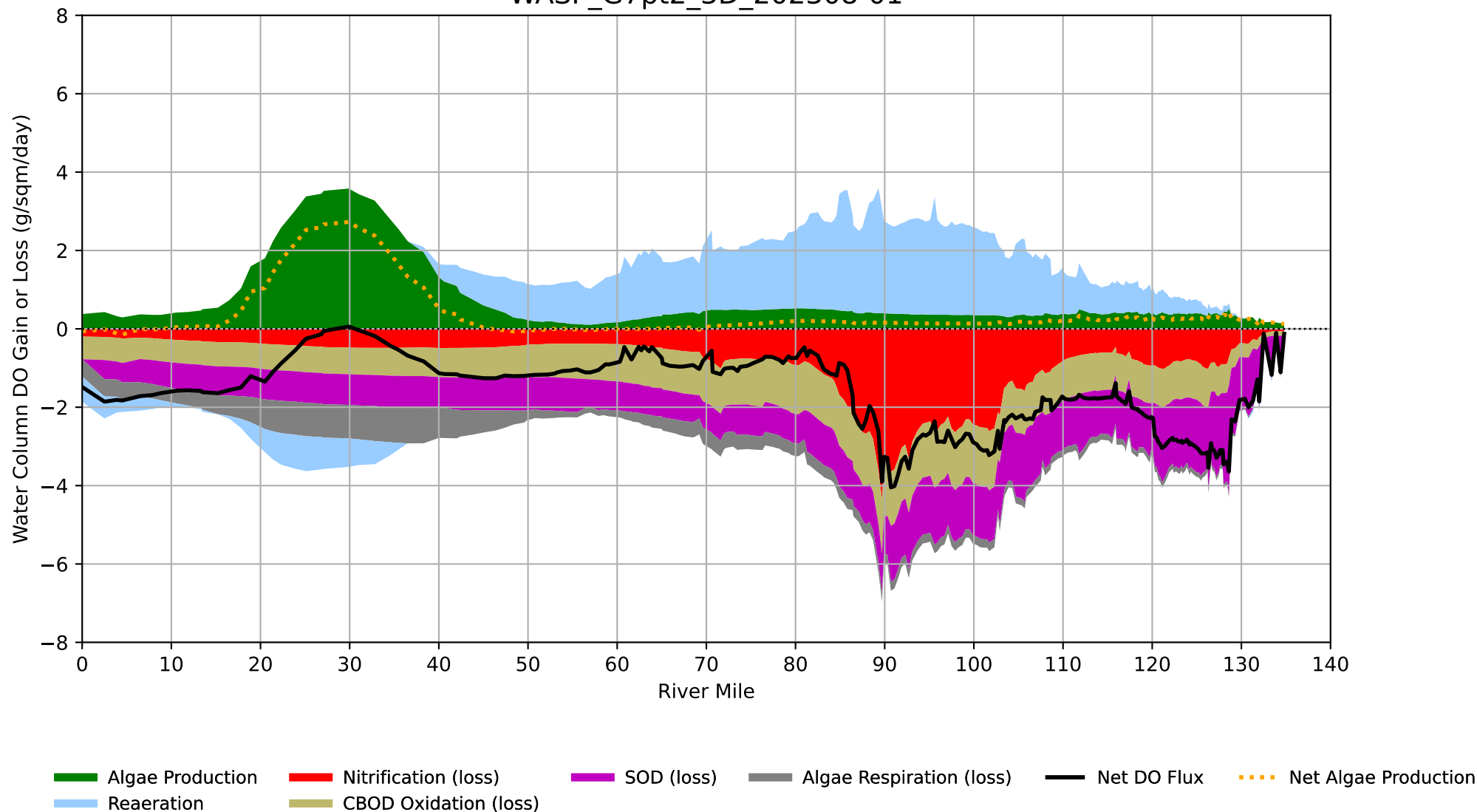
Simulated DO Gain (+) and Loss (-) from Different Processes, June 2019 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, June 2019

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

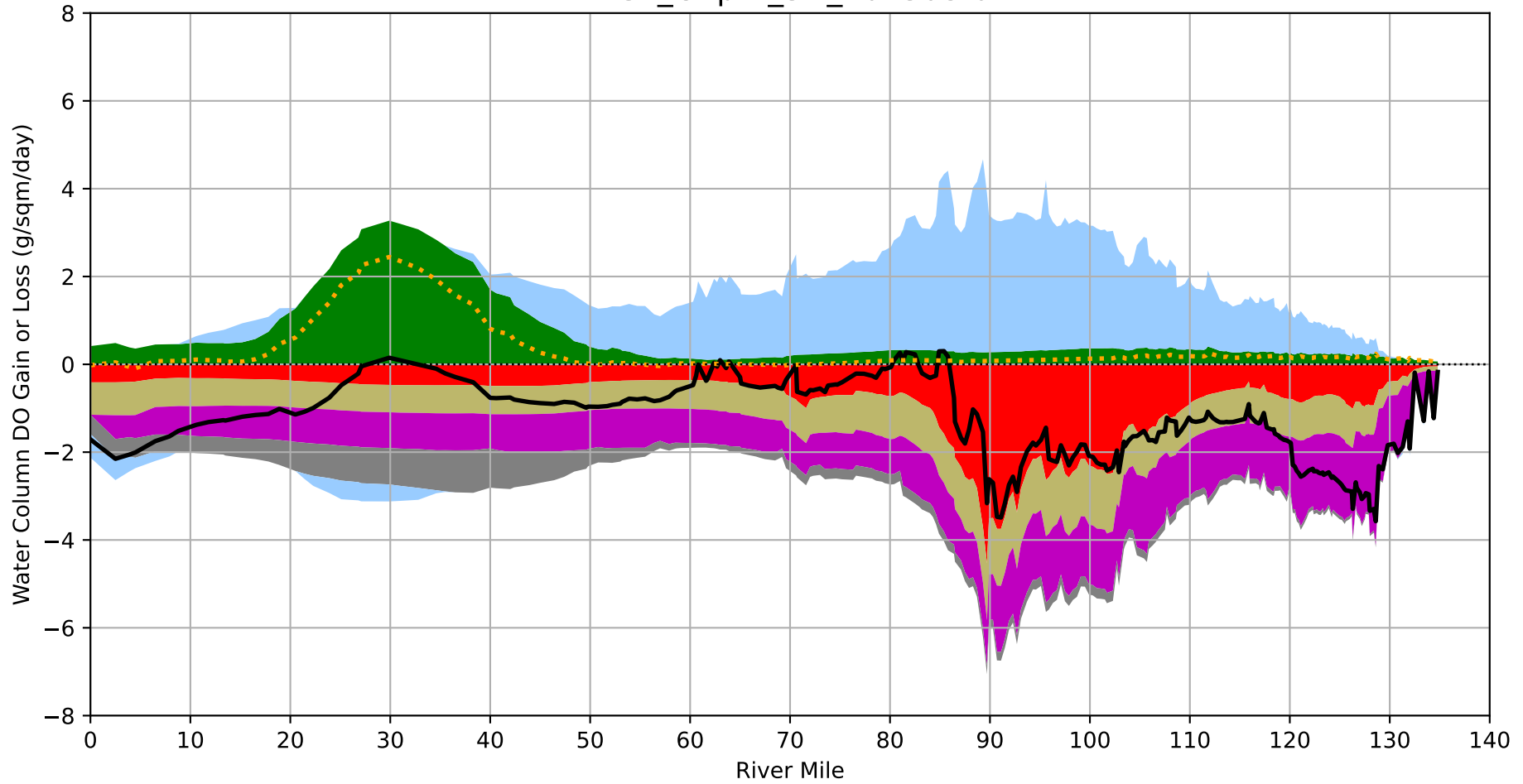
Simulated DO Gain (+) and Loss (-) from Different Processes, July 2019 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, July 2019

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, August 2019 WASP_G7pt2_3D_202308-01

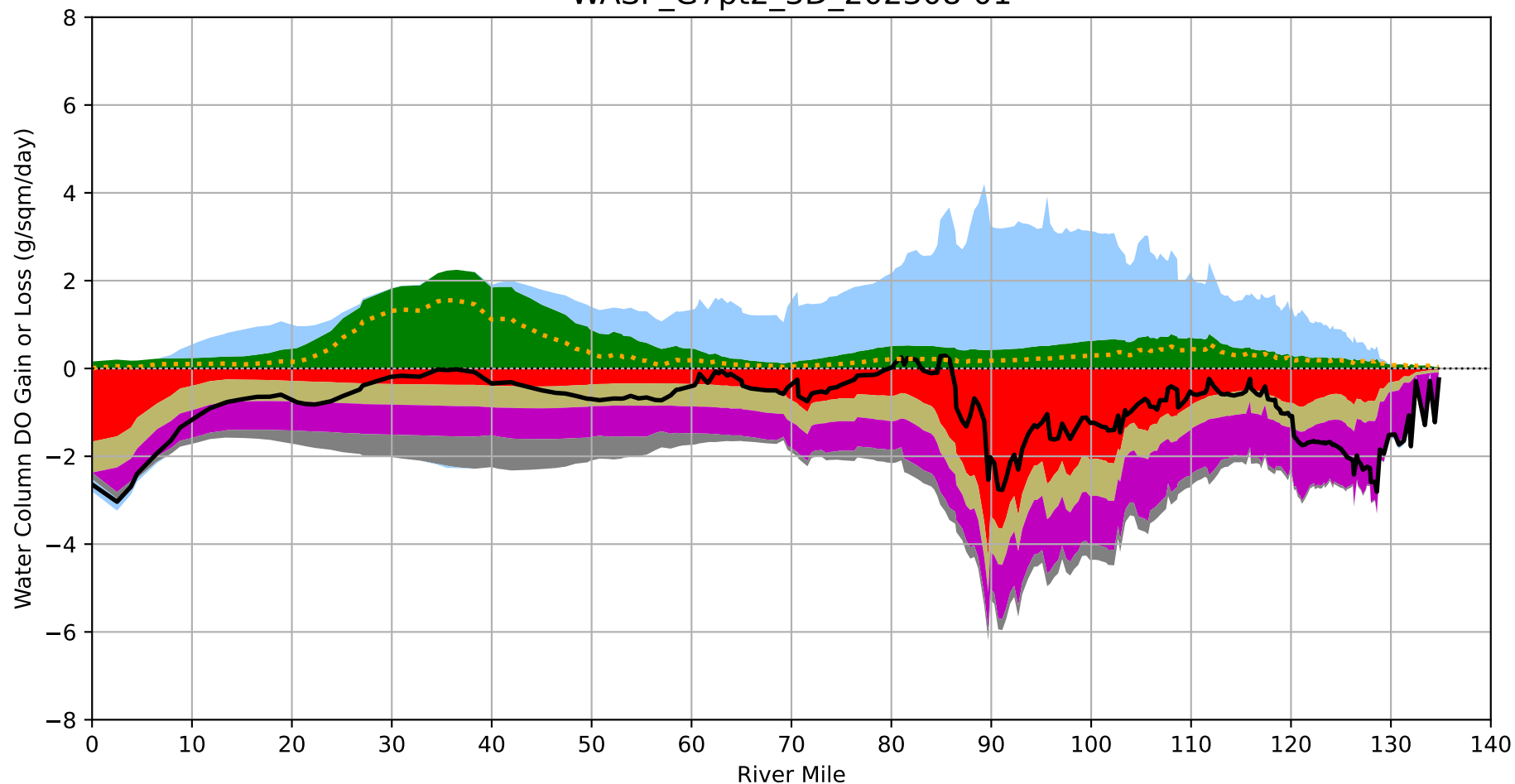


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 ⋯ Net Algae Production
 ■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, August 2019

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, September 2019 WASP_G7pt2_3D_202308-01

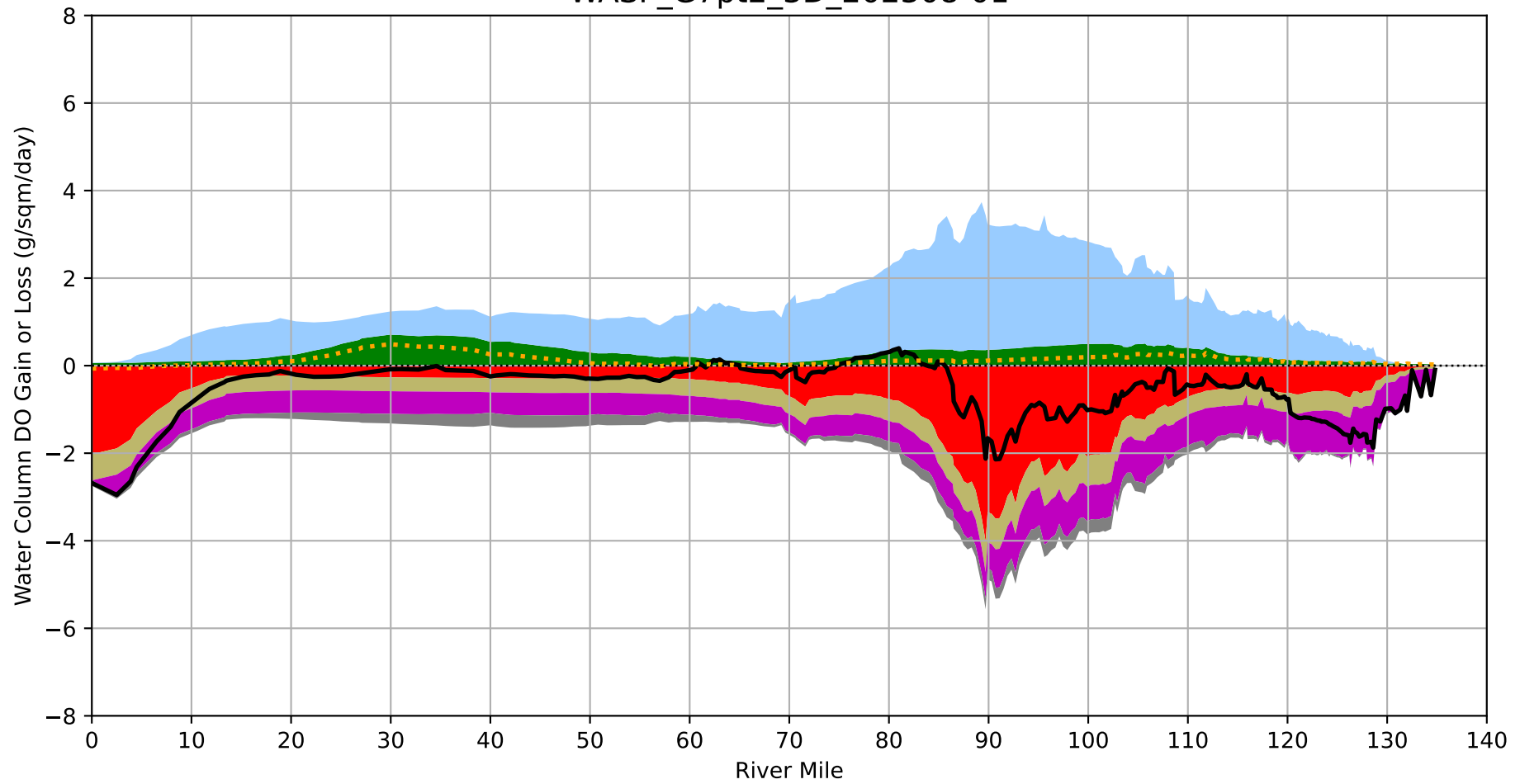


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 ⋯ Net Algae Production
 ■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, September 2019

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, October 2019 WASP_G7pt2_3D_202308-01

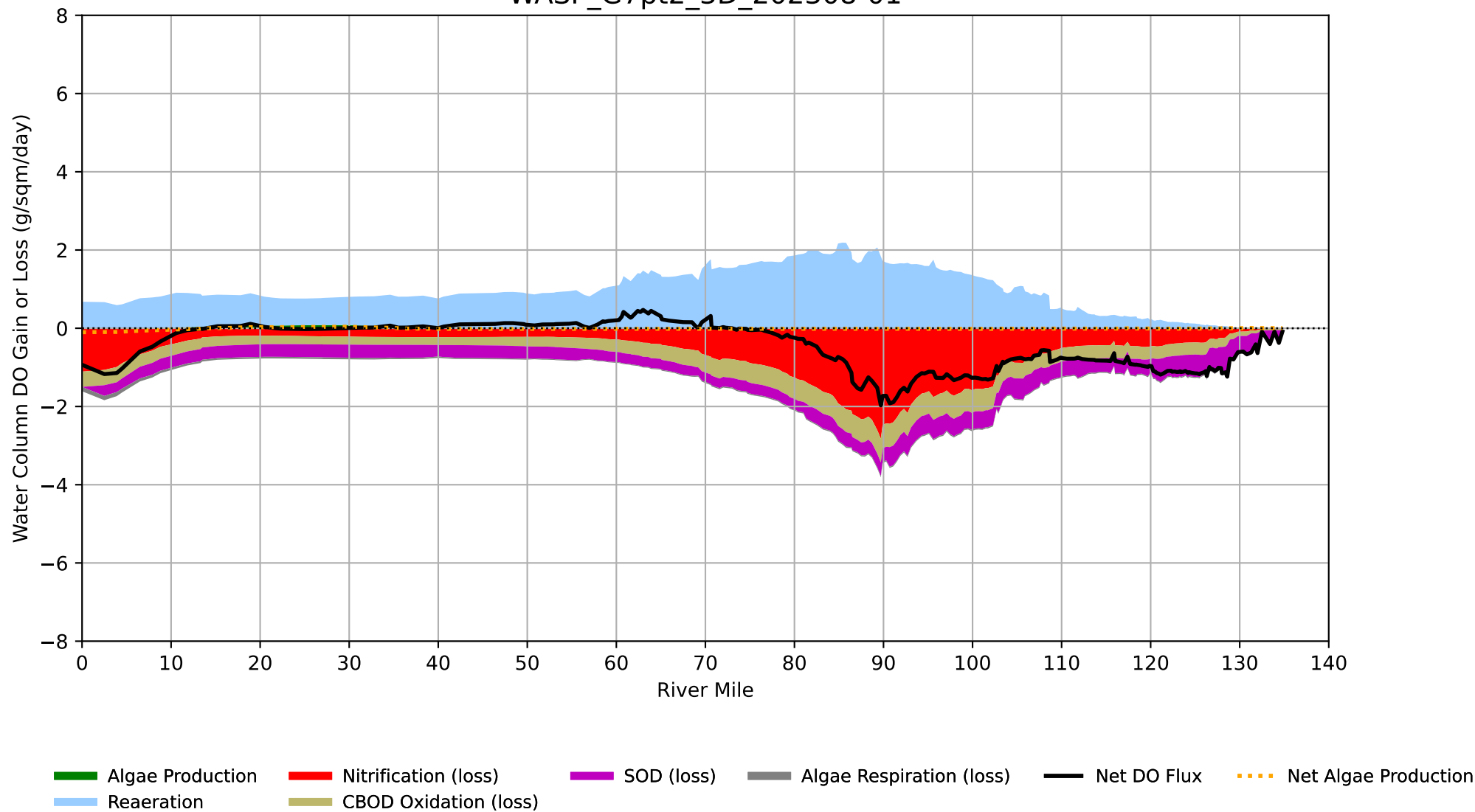


■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 ⋯ Net Algae Production
 ■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, October 2019

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

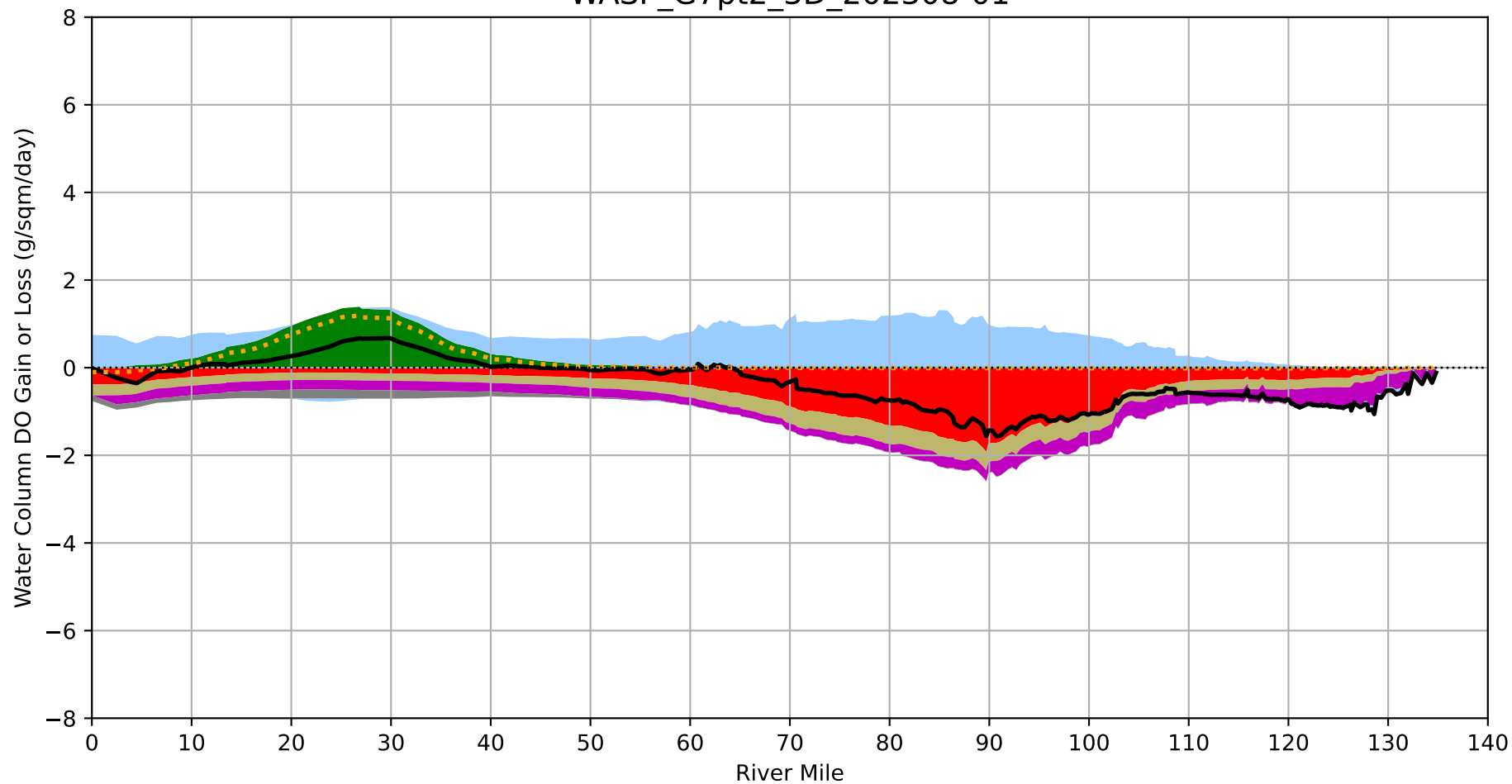
Simulated DO Gain (+) and Loss (-) from Different Processes, November 2019 WASP_G7pt2_3D_202308-01



Longitudinal Profile of DO Gain/Loss along Navigation Channel, November 2019

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*

Simulated DO Gain (+) and Loss (-) from Different Processes, December 2019 WASP_G7pt2_3D_202308-01



■ Algae Production
 ■ Nitrification (loss)
 ■ SOD (loss)
 ■ Algae Respiration (loss)
 — Net DO Flux
 ⋯ Net Algae Production
■ Reaeration
 ■ CBOD Oxidation (loss)

Longitudinal Profile of DO Gain/Loss along Navigation Channel, December 2019

*Note: Total DO gain or loss over entire water column was calculated.
model results were averaged over the entire month. Gain or Loss rates were stacked.*