

Supplementary Materials

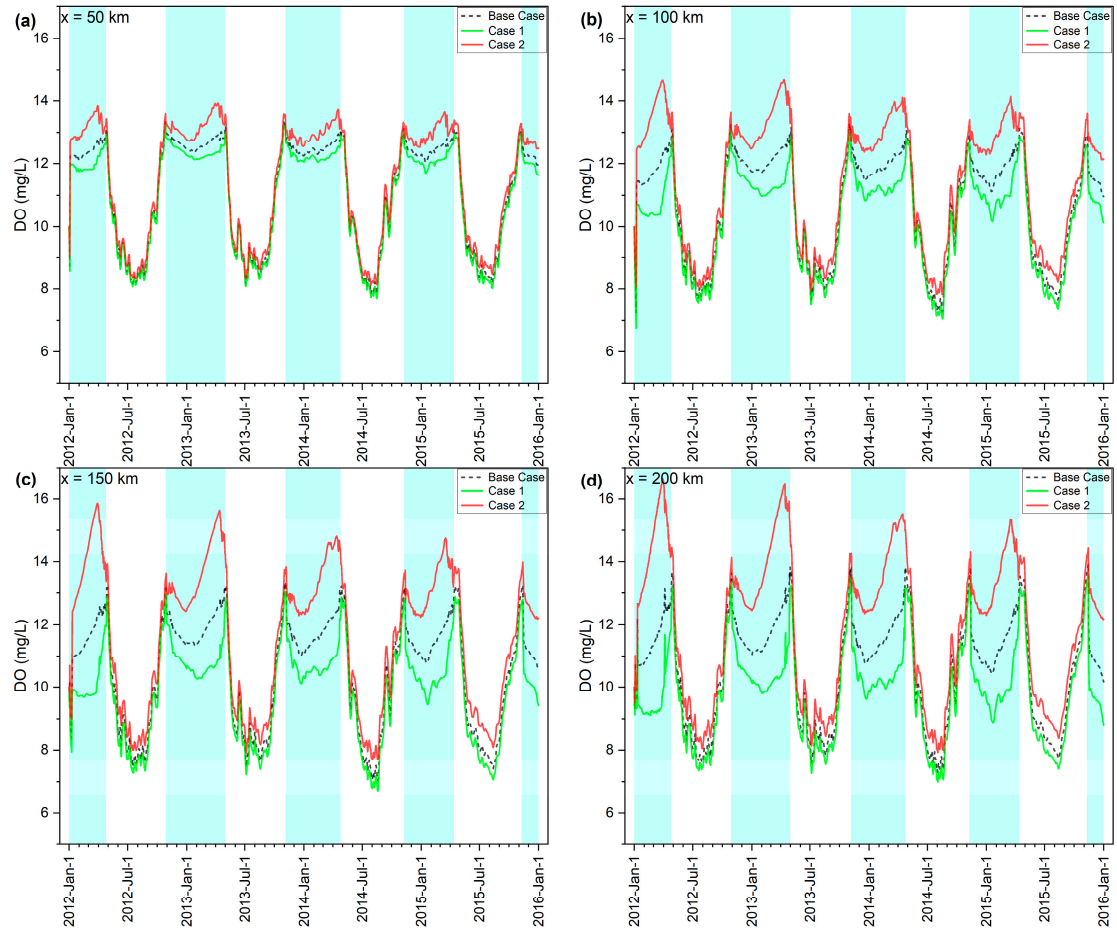


Figure S1. DO concentration results of the base case, case 1: $P_{max} = 1.75$ and case 2: $P_{max} = 7.00$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

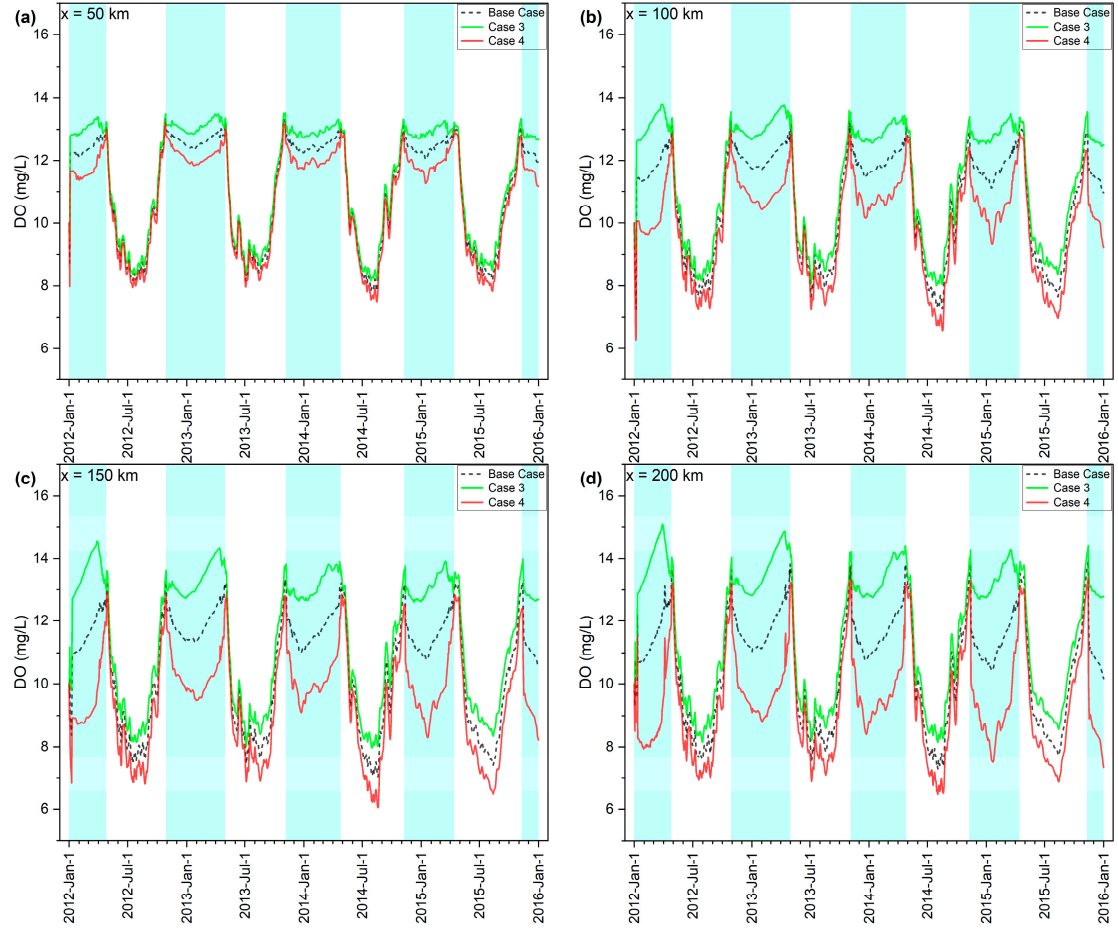


Figure S2. DO concentration results of the base case, case 3: $R_{20} = 1.0$ and case 4: $R_{20} = 5.0$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

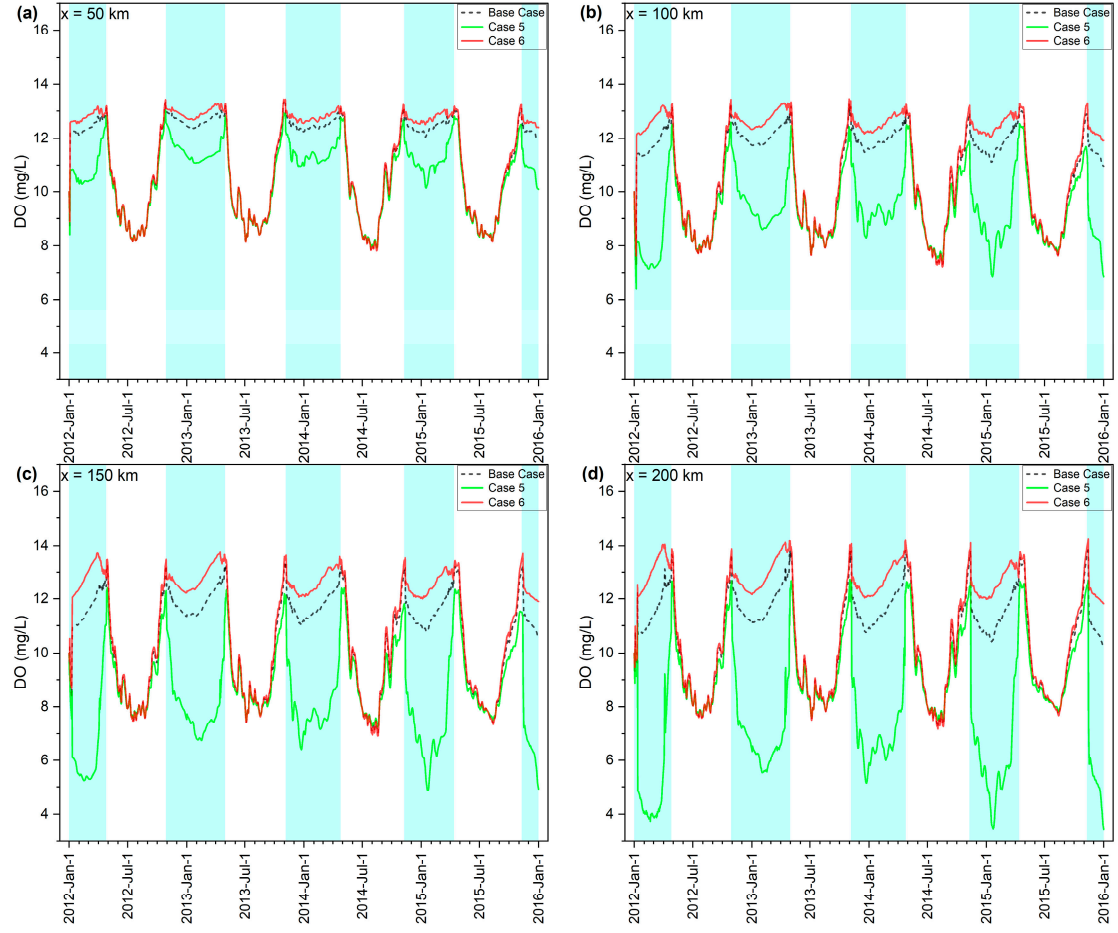


Figure S3. DO concentration results of the base case, case 5: $\Theta_2 = 1.00$ and case 6: $\Theta_2 = 1.08$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

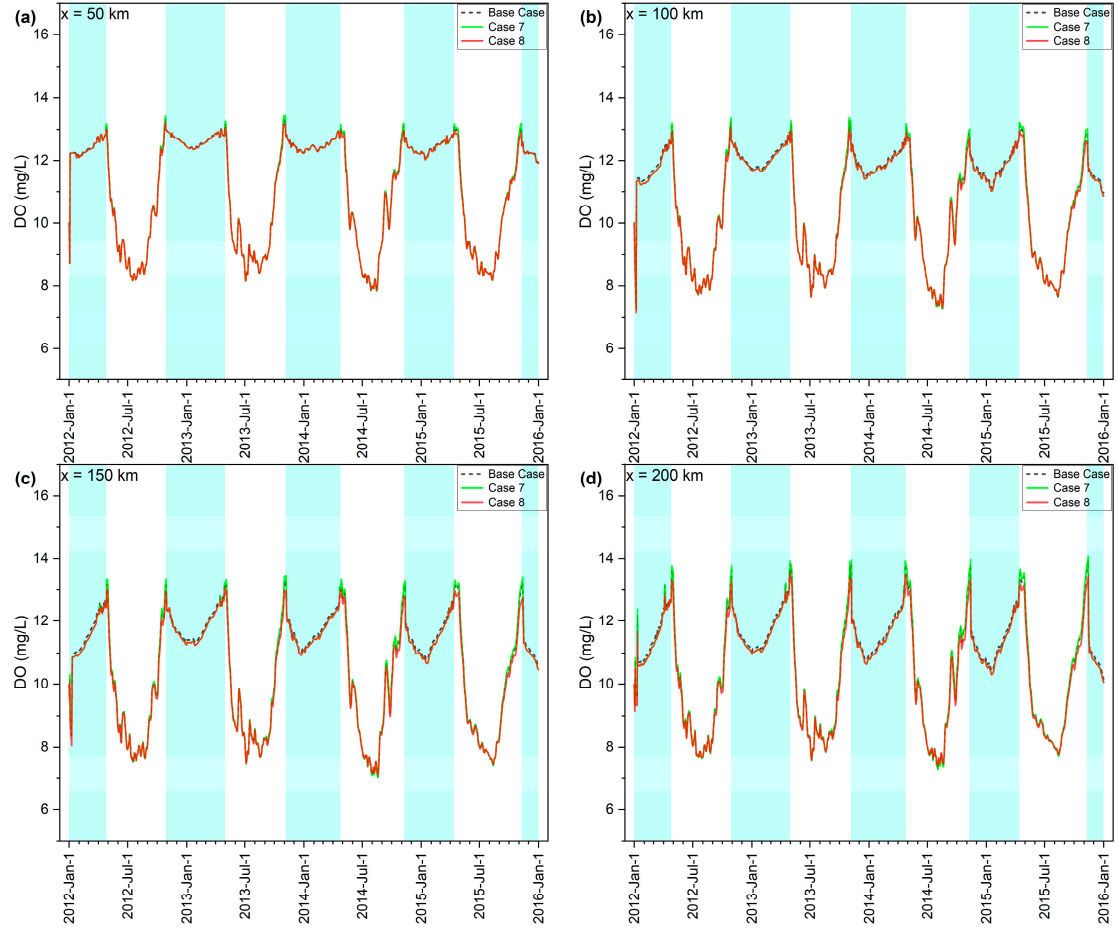


Figure S4. DO concentration results of the base case, case 7: $\theta_{rear} = 1.008$ and case 8: $\theta_{rear} = 1.047$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

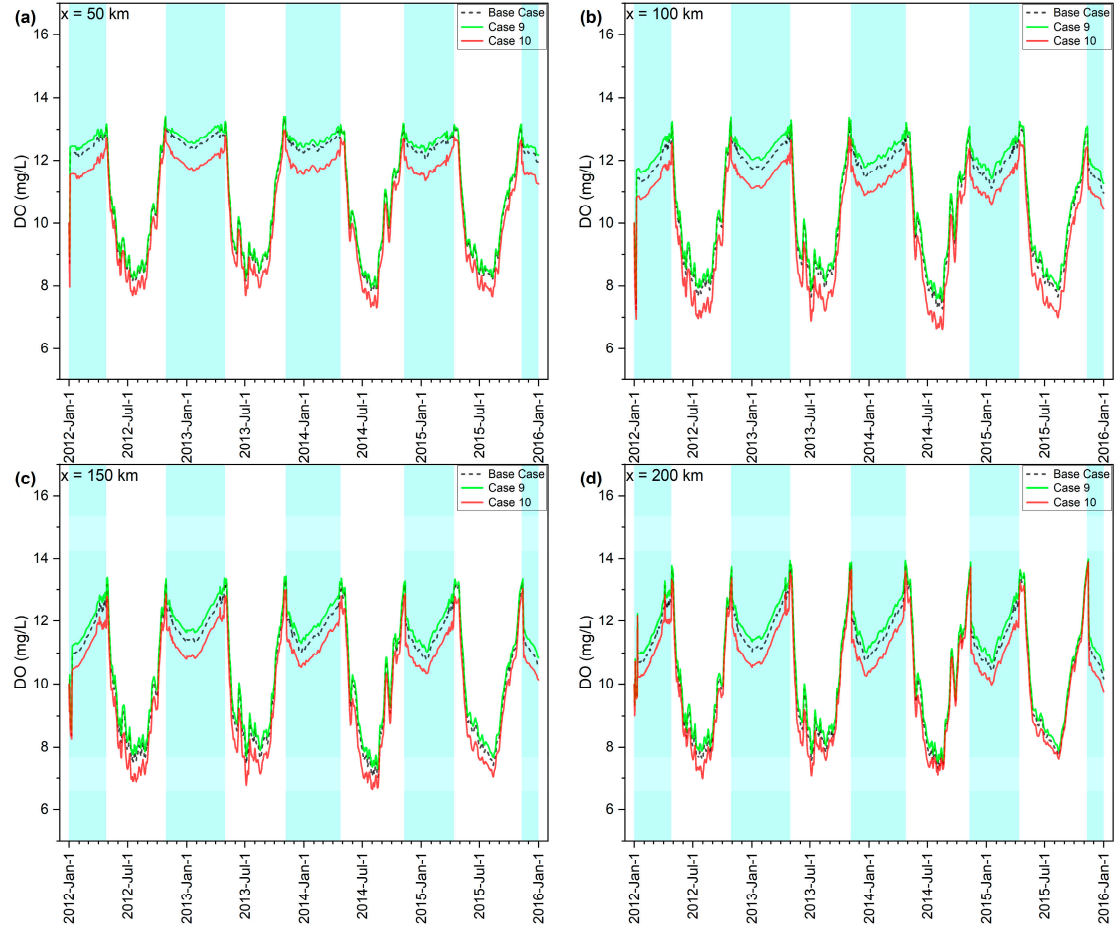


Figure S5. DO concentration results of the base case, case 9: $K_{d3} = 0.10$ and case 10: $K_{d3} = 1.50$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

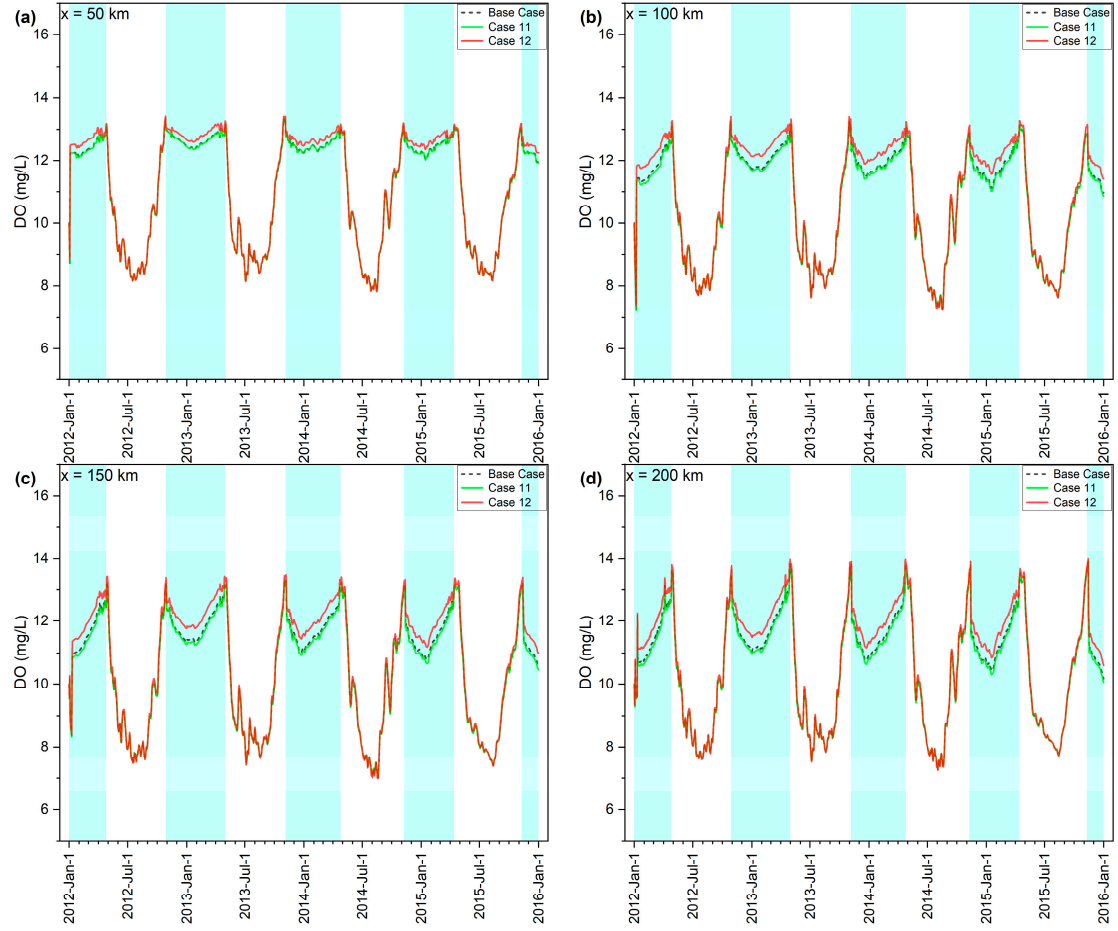


Figure S6. DO concentration results of the base case, case 11: $\Theta_{d3} = 1.00$ and case 12: $\Theta_{d3} = 1.09$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

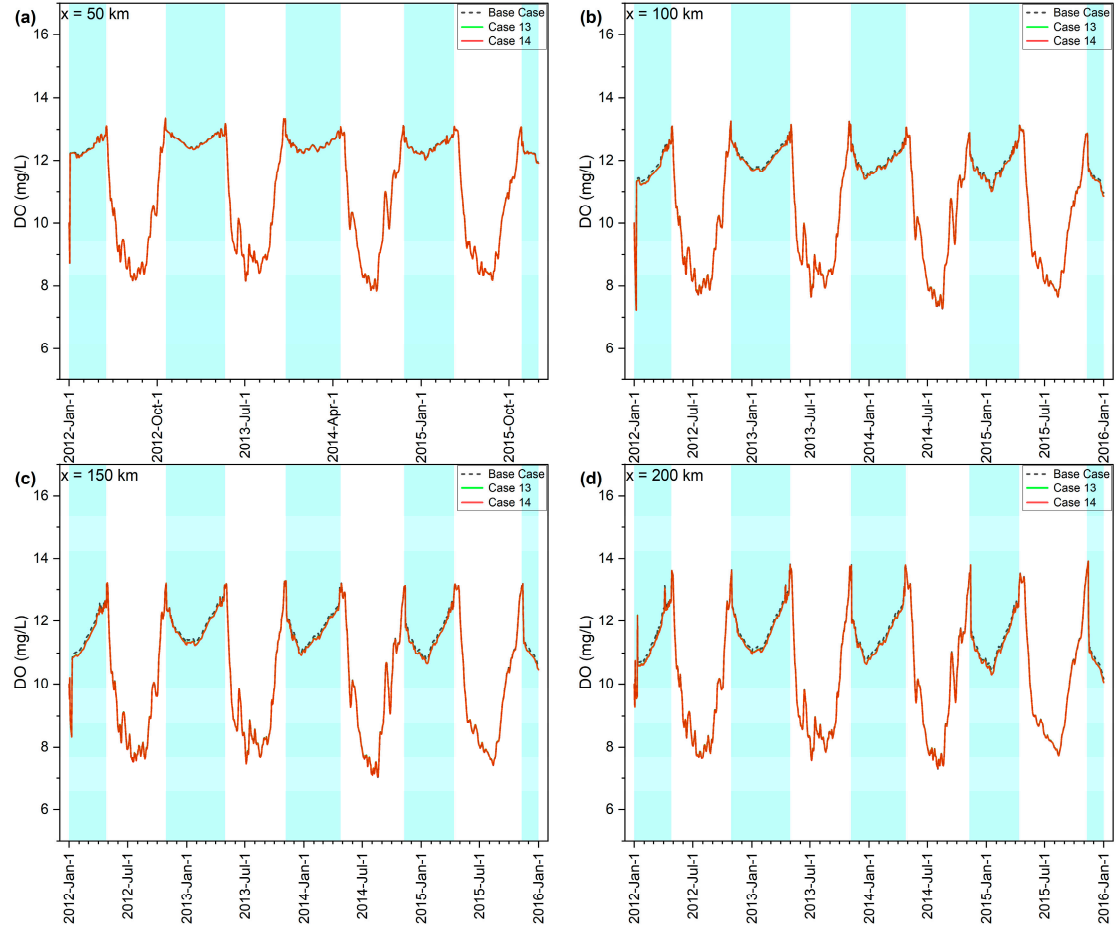


Figure S7. DO concentration results of the base case, case 13: $Y_1 = 4.40$ and case 14: $Y_1 = 4.54$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

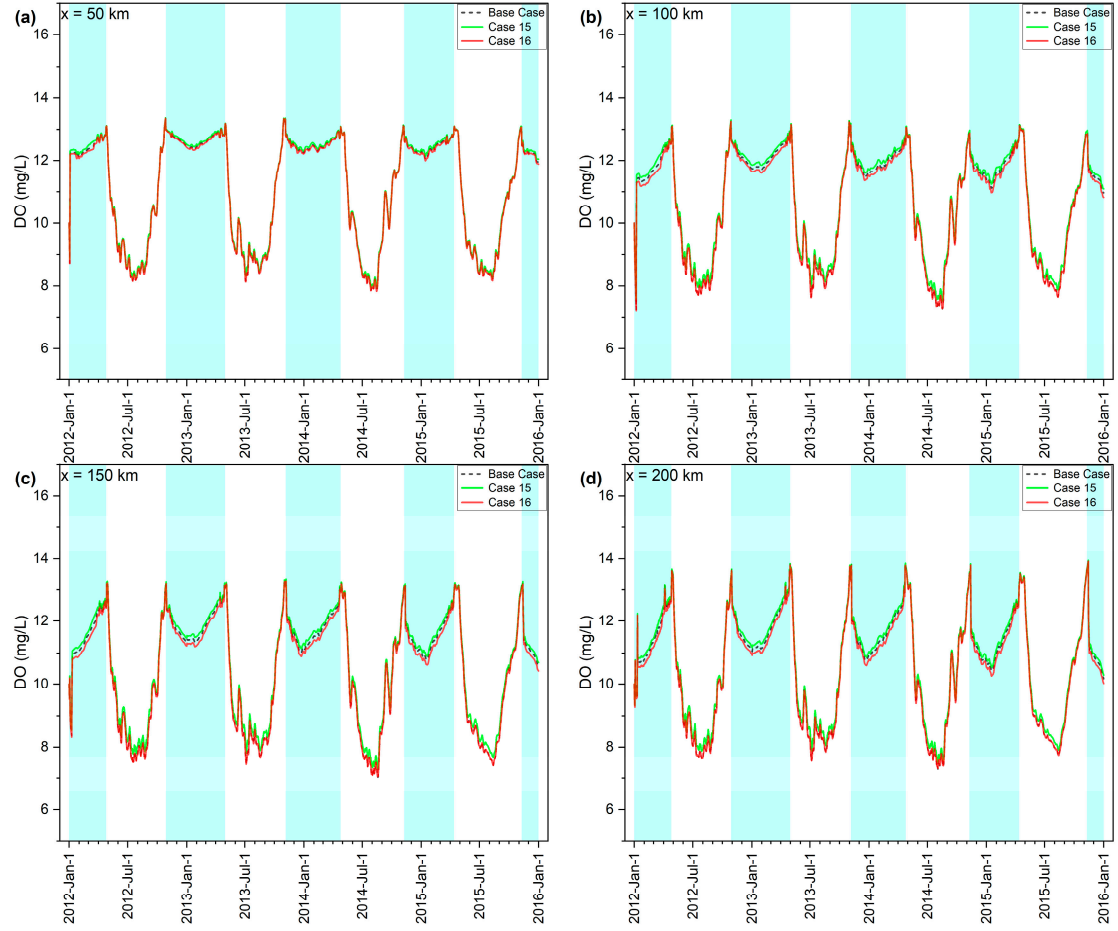


Figure S8. DO concentration results of the base case, case 15: $K_4 = 0$ and case 16: $K_4 = 2.00$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

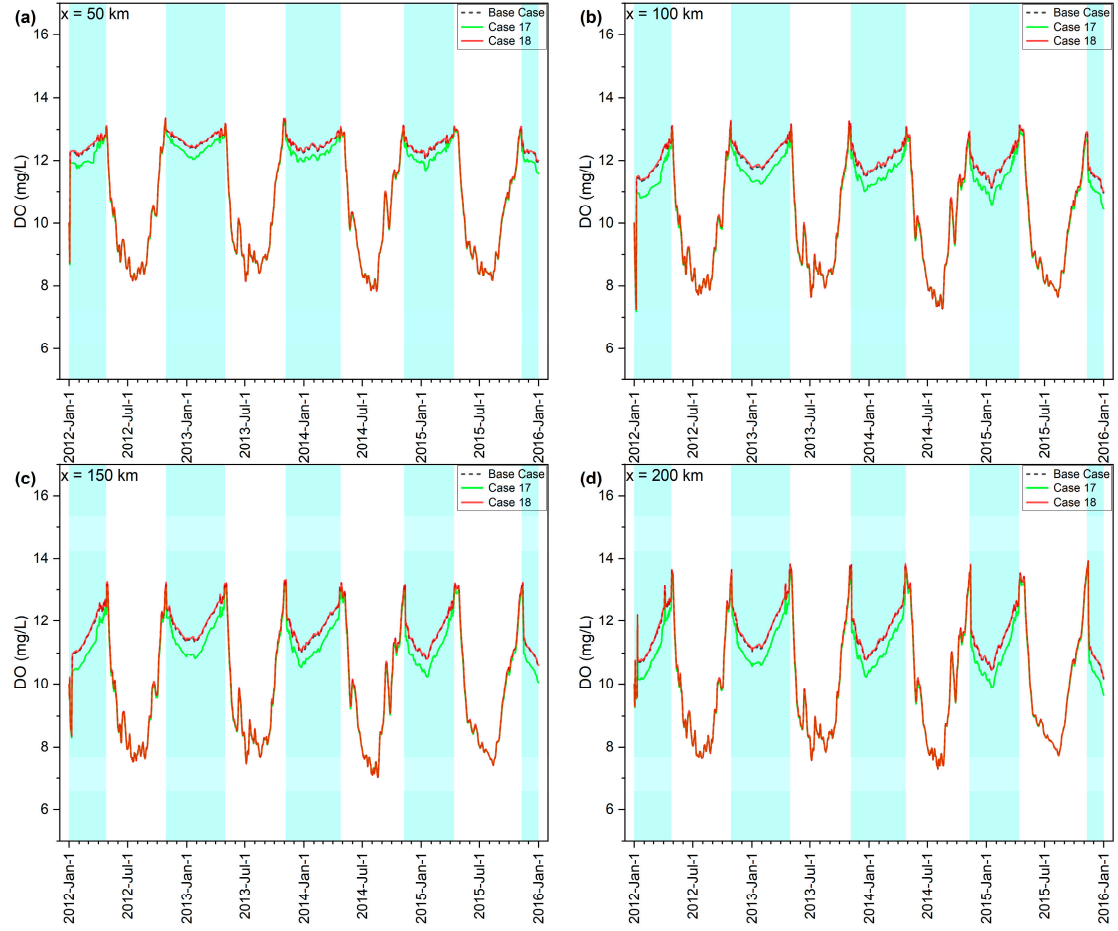


Figure S9. DO concentration results of the base case, case 17: $\Theta_4 = 1.00$ and case 18: $\Theta_4 = 1.20$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

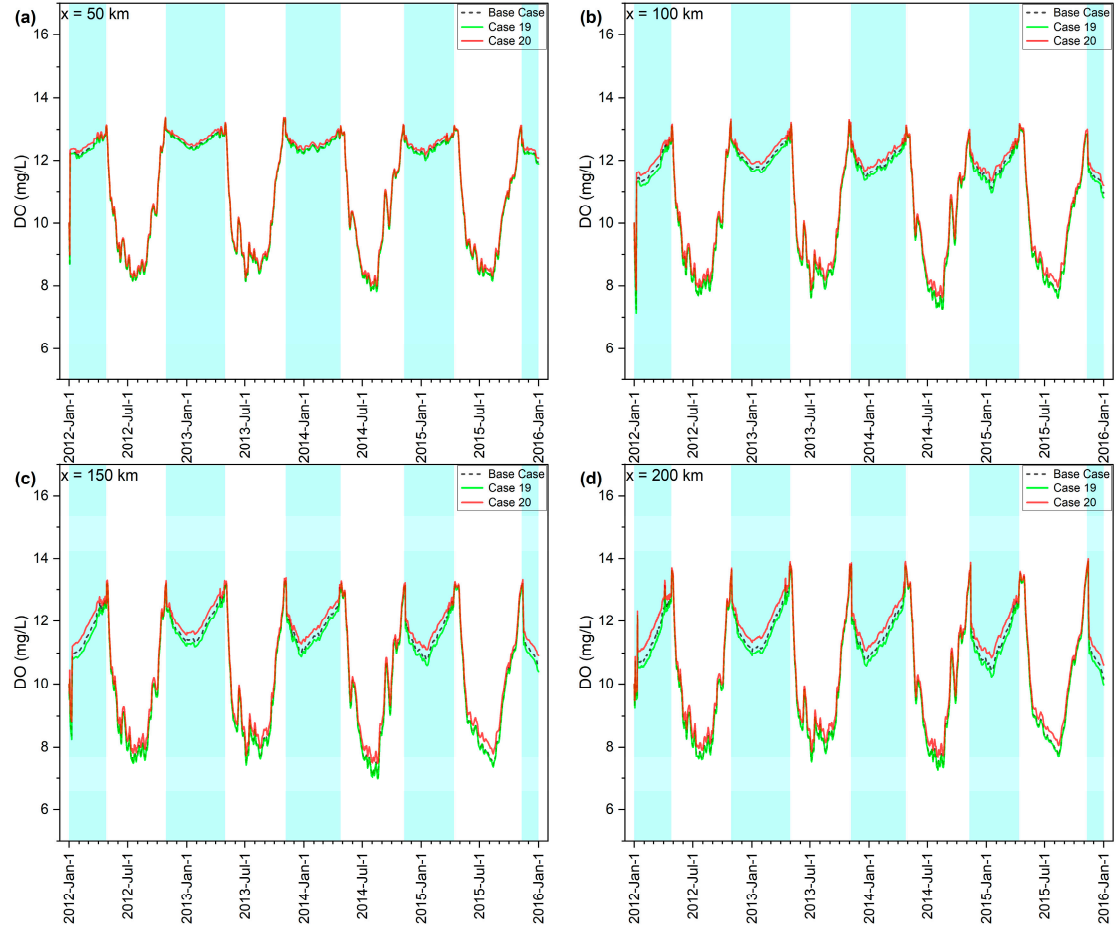


Figure S10. DO concentration results of the base case, case 19: $K_s = 0$ and case 20: $K_s = 20$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

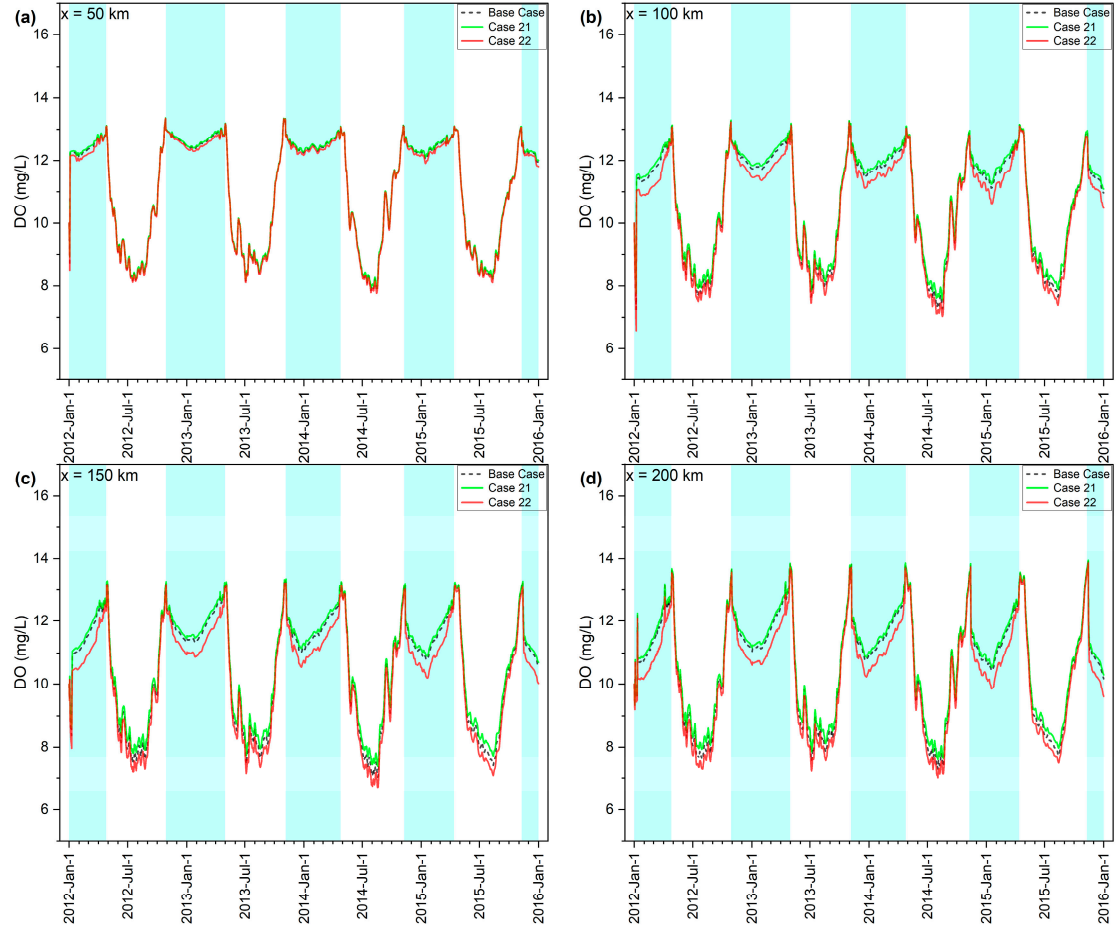


Figure S11. DO concentration results of the base case, case 21: $Y_d = 0.01$ and case 22: $Y_d = 0.60$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

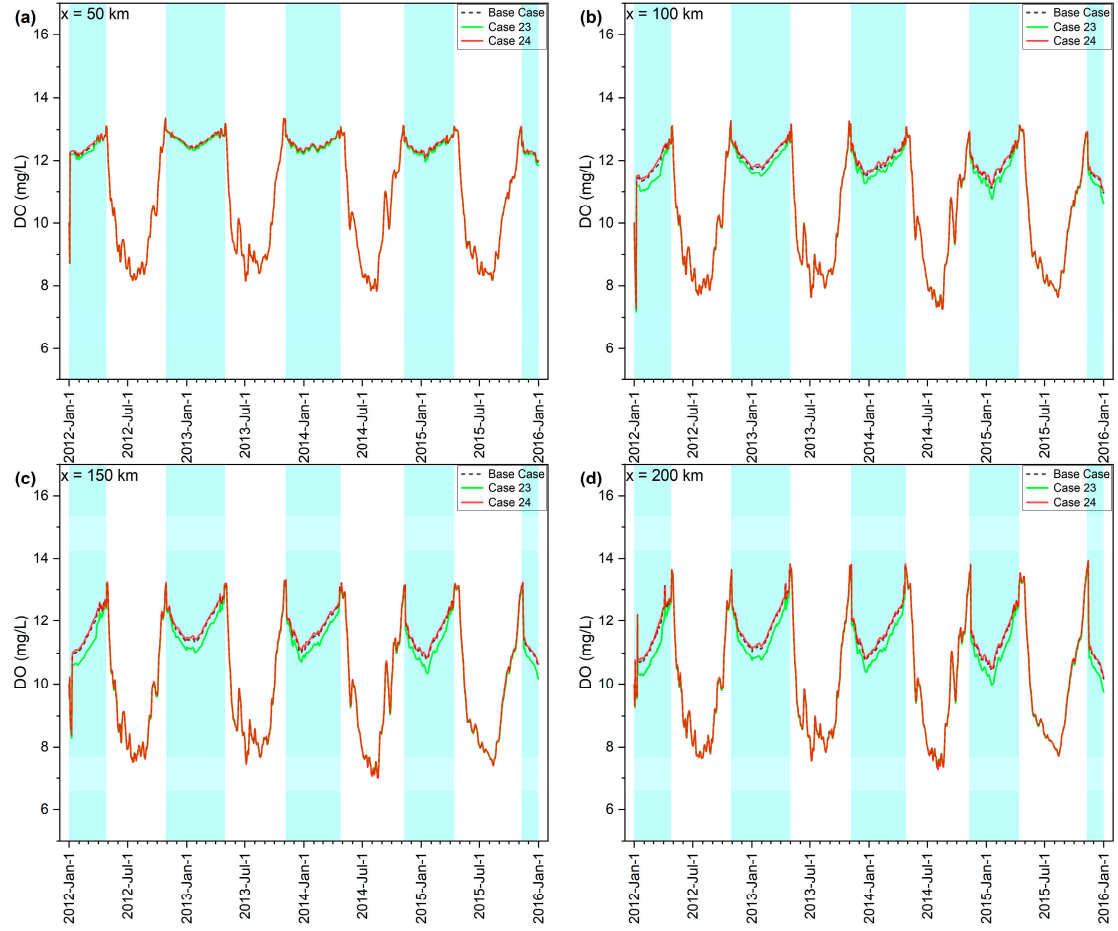


Figure S12. DO concentration results of the base case, case 23: $U_n = 0$ and case 24: $U_n = 0.250$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

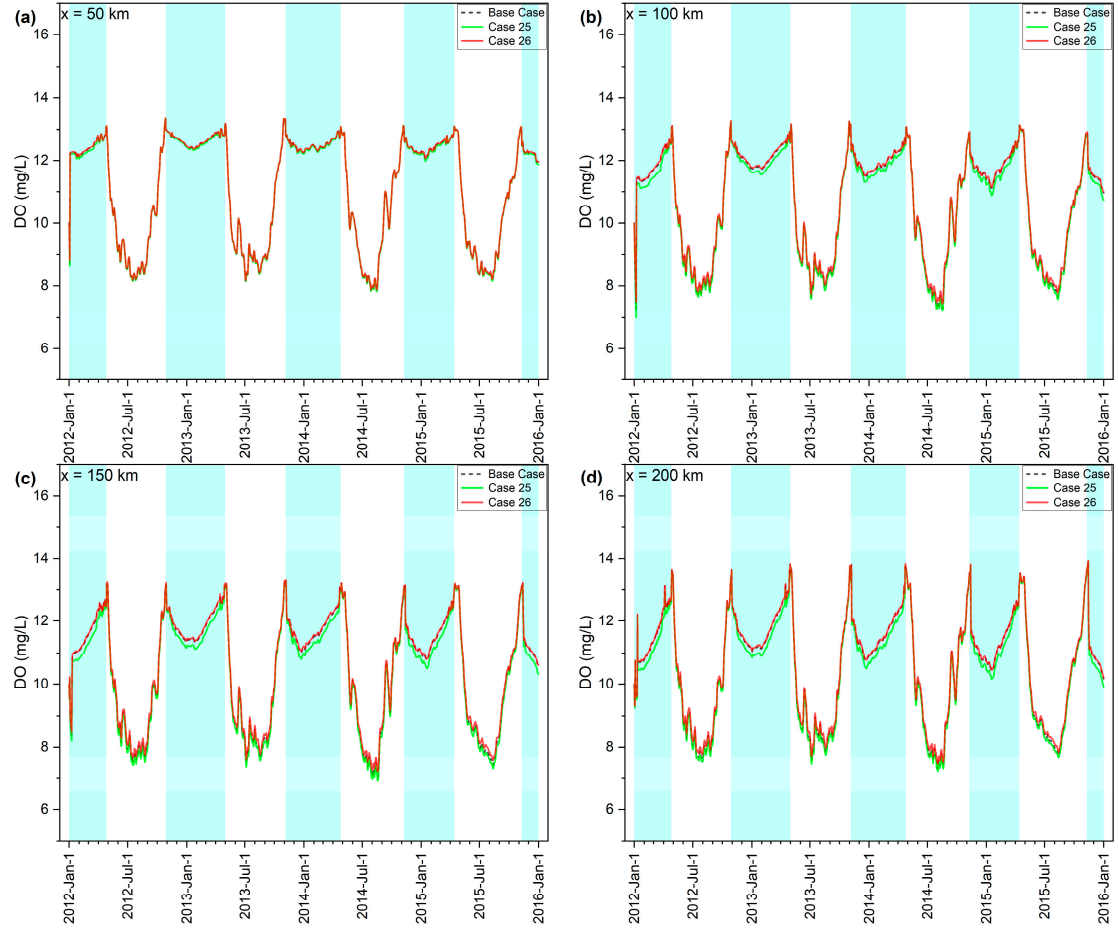


Figure S13. DO concentration results of the base case, case 25: $U_b = 0$ and case 26: $U_b = 0.250$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

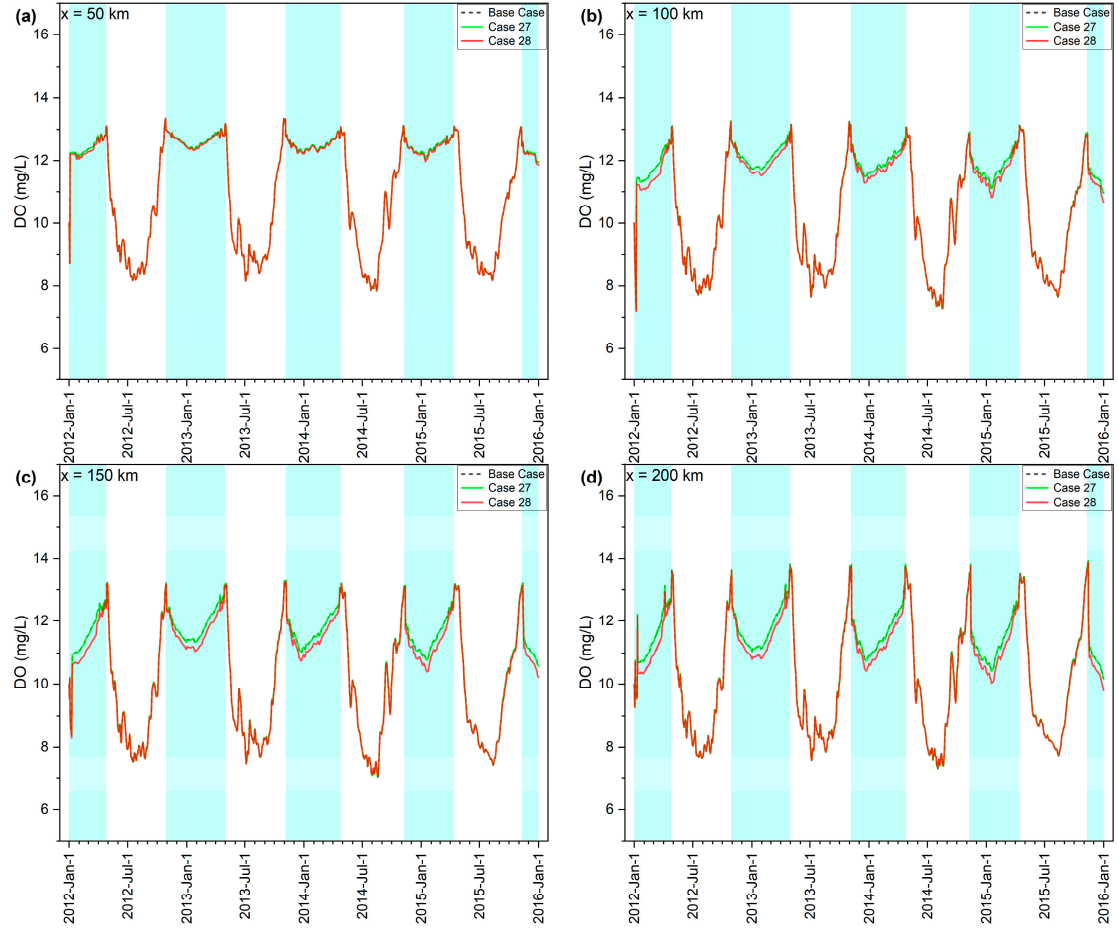


Figure S14. DO concentration results of the base case, case 27: $K_{sn} = 0$ and case 28: $K_{sn} = 1.00$ at cross sections (a) $x = 50$ km; (b) 100 km; (c) 150 km and (d) 200 km from 2012-2016.

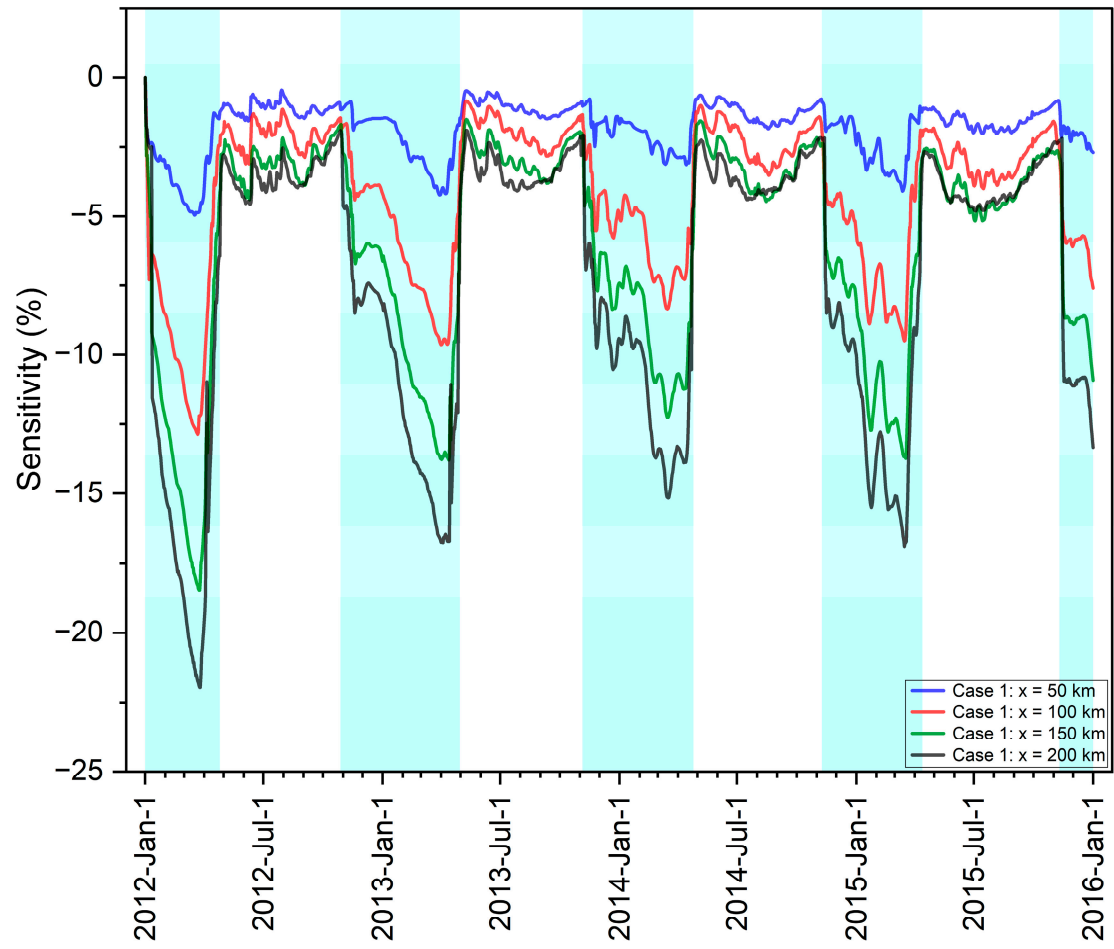


Figure S15. Sensitivity of case 1: $P_{max} = 1.75$ at $x = 50$ km, 100 km, 150 km and 200 km.

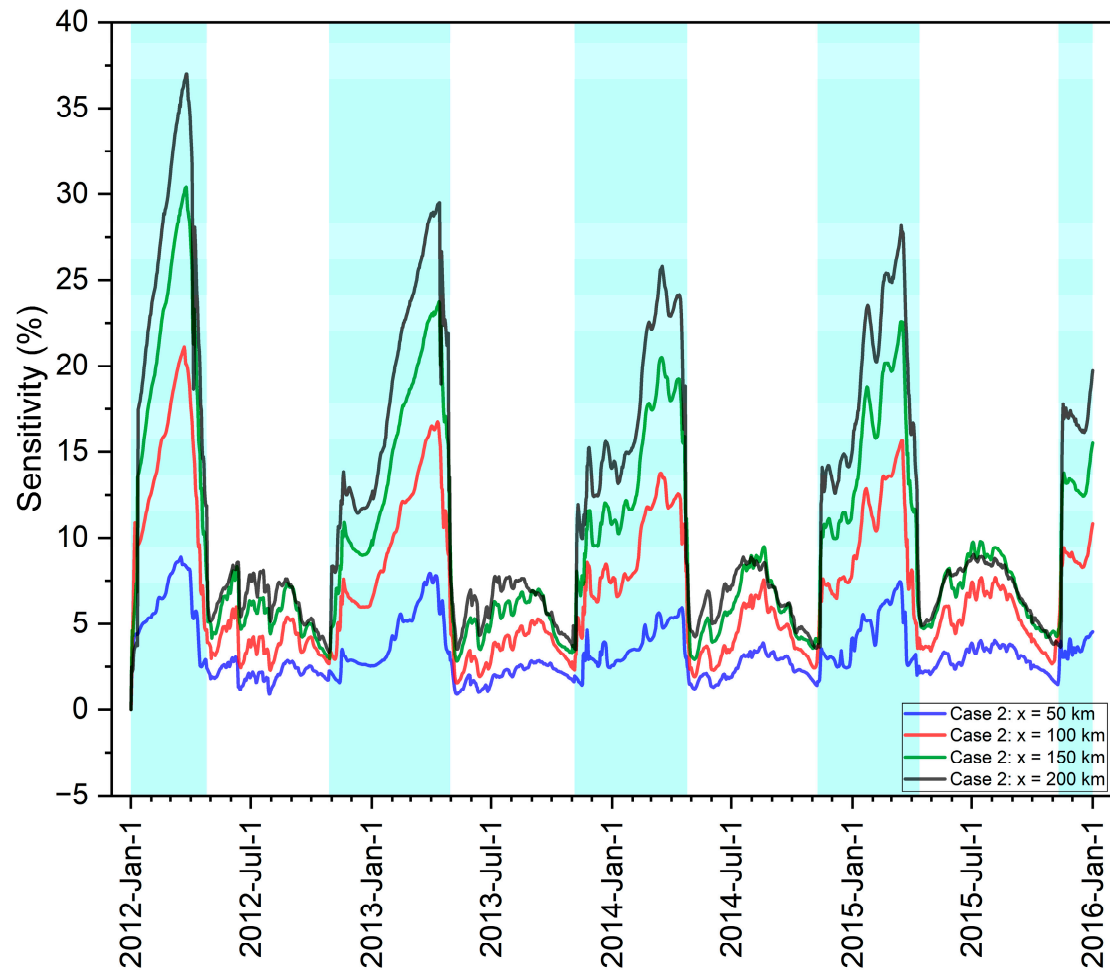


Figure S16. Sensitivity of case 2: $P_{max} = 7.00$ at $x = 50$ km, 100 km, 150 km and 200 km.

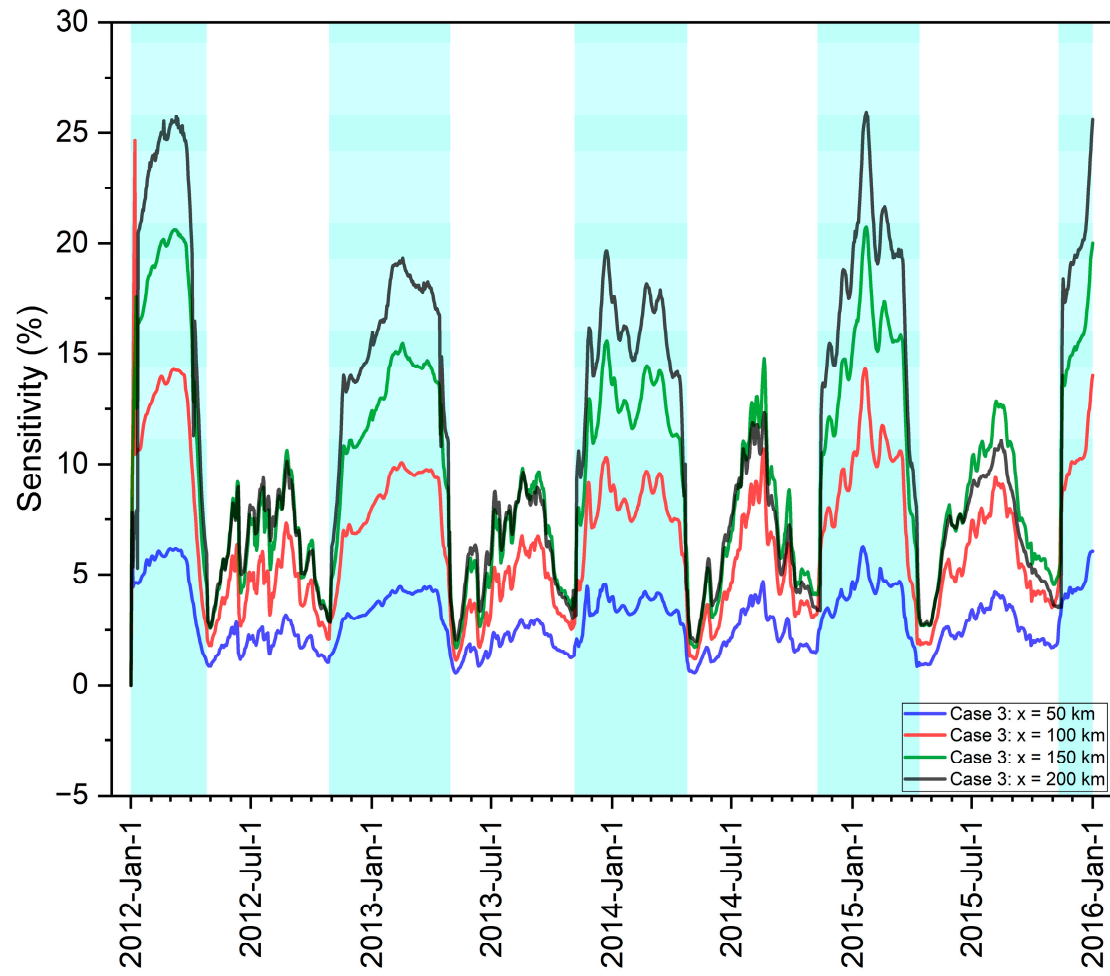


Figure S17. Sensitivity of case 3: $R_{20} = 1.0$ at $x = 50$ km, 100 km, 150 km and 200 km.

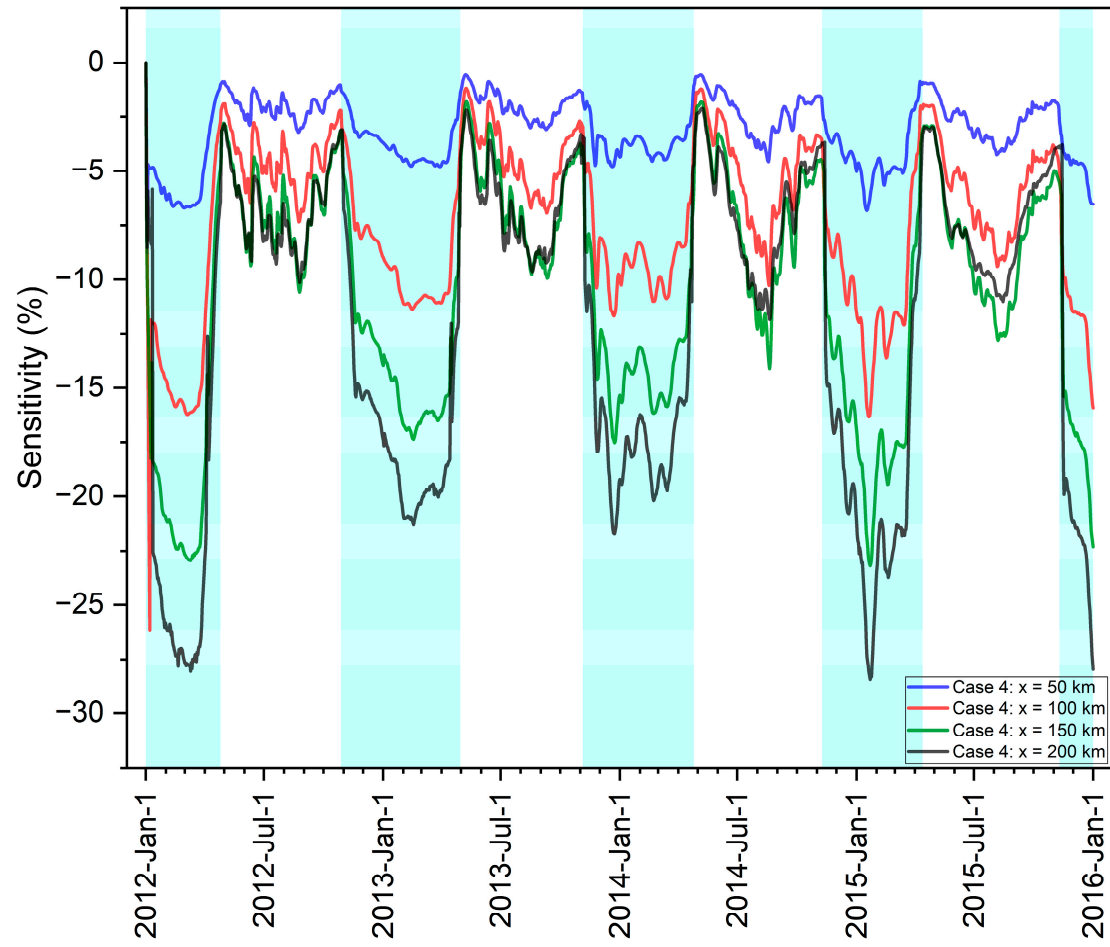


Figure S18. Sensitivity of case 4: $R_{20} = 5.0$ at $x = 50$ km, 100 km, 150 km and 200 km.

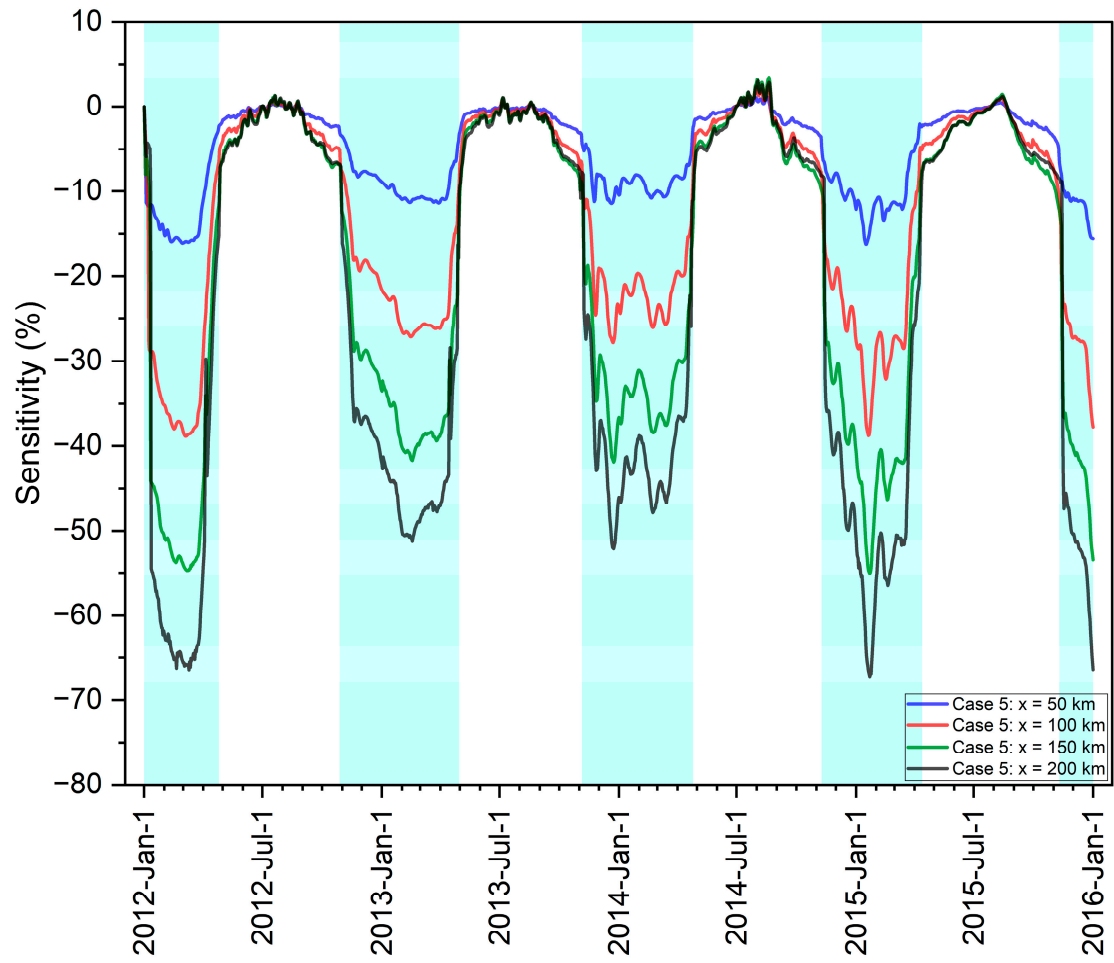


Figure S19. Sensitivity of case 5: $\Theta_2 = 1.00$ at $x = 50$ km, 100 km, 150 km and 200 km.

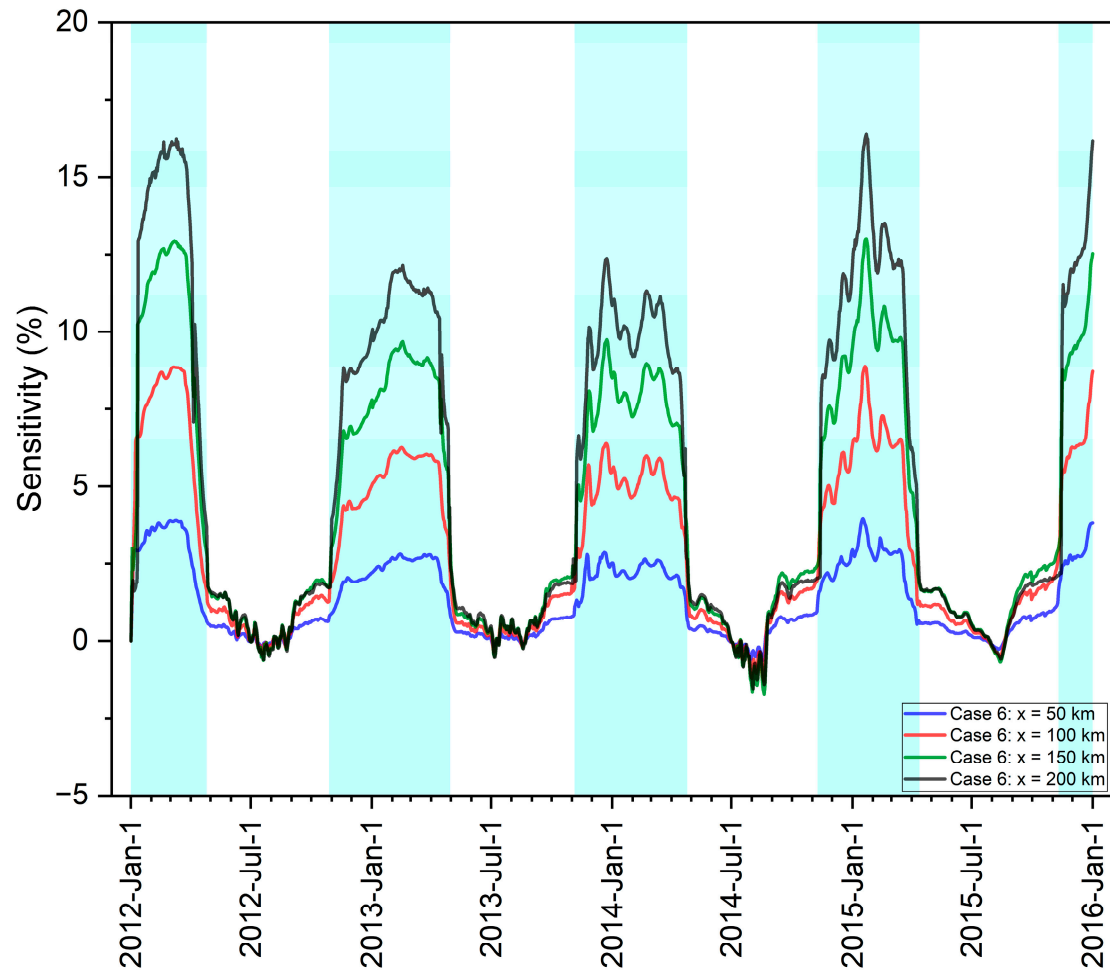


Figure S20. Sensitivity of case 6: $\theta_2 = 1.08$ at $x = 50$ km, 100 km, 150 km and 200 km.

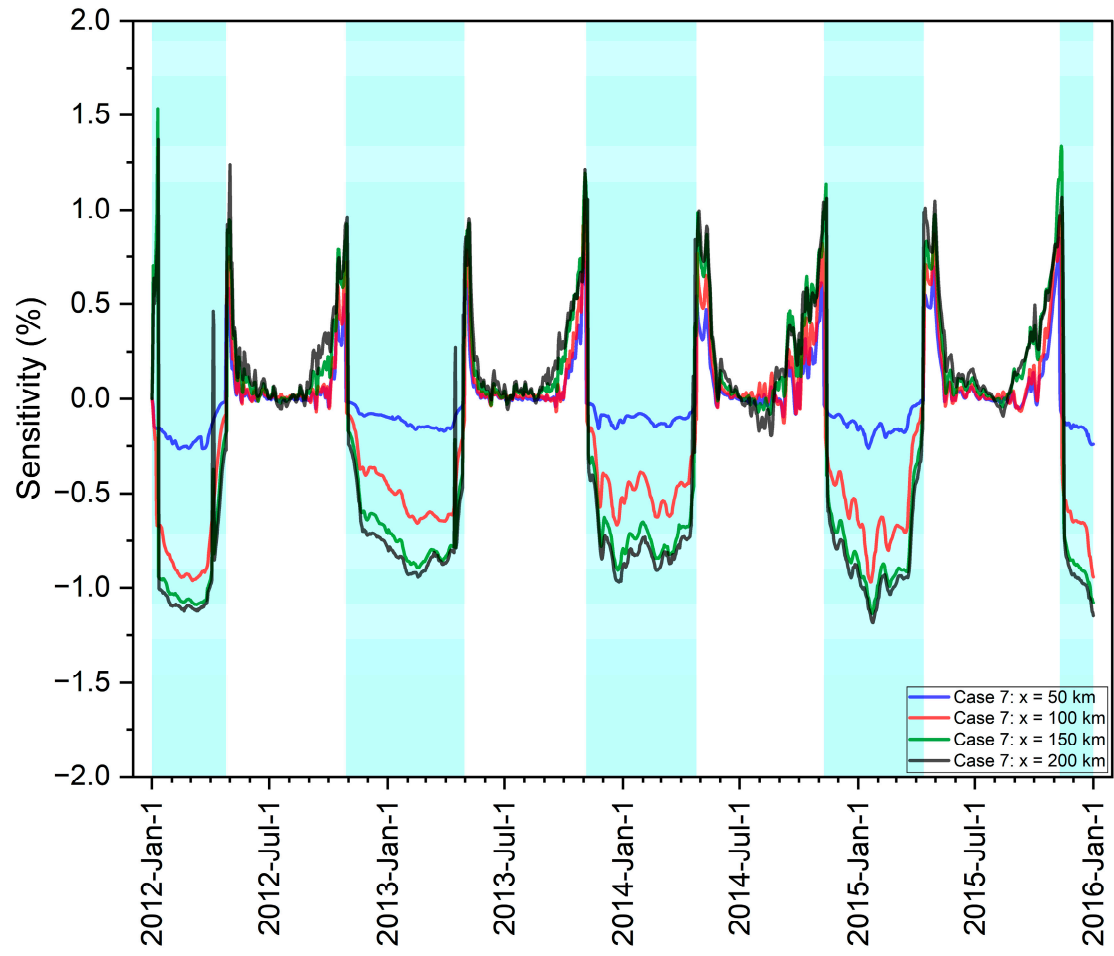


Figure S21. Sensitivity of case 7: $\Theta_{rear} = 1.008$ at $x = 50$ km, 100 km, 150 km and 200 km.

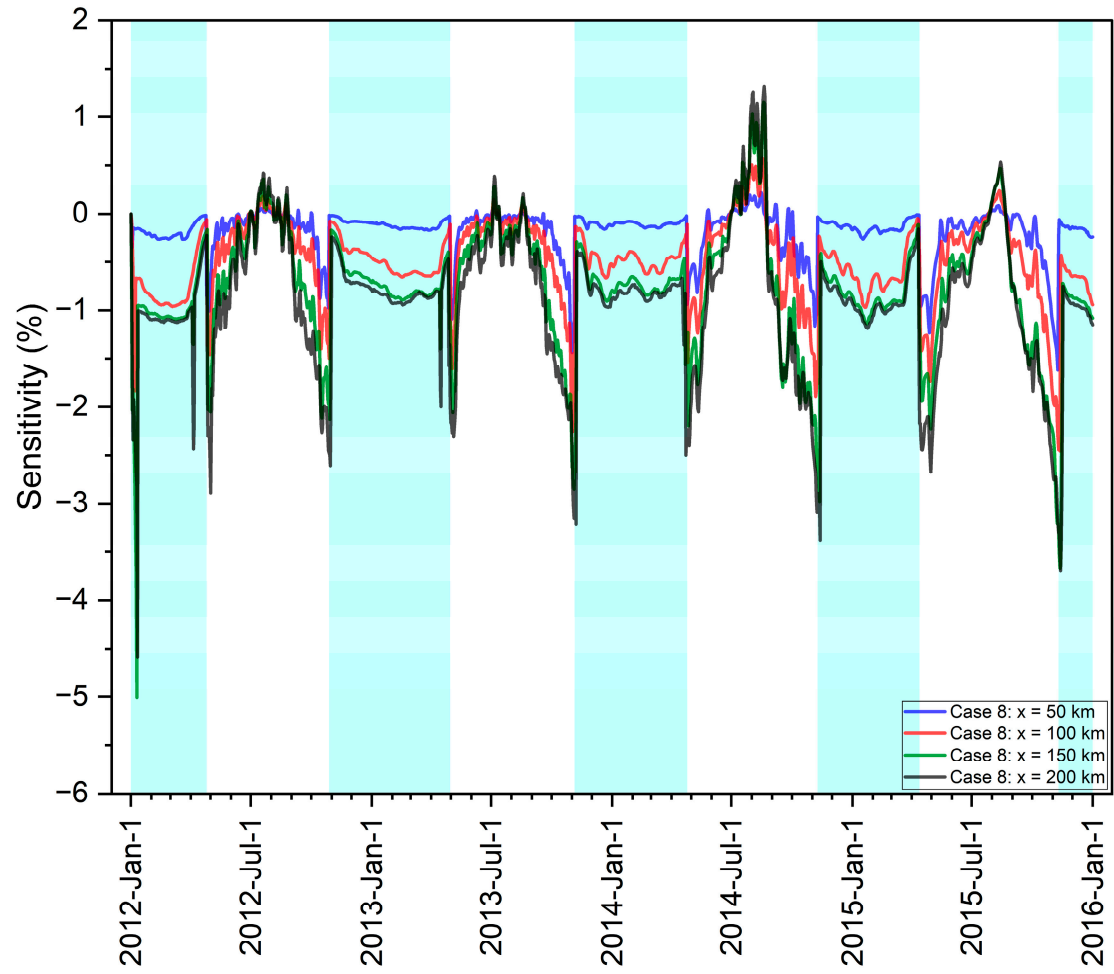


Figure S22. Sensitivity of case 8: $\Theta_{rear} = 1.047$ at $x = 50$ km, 100 km, 150 km and 200 km.

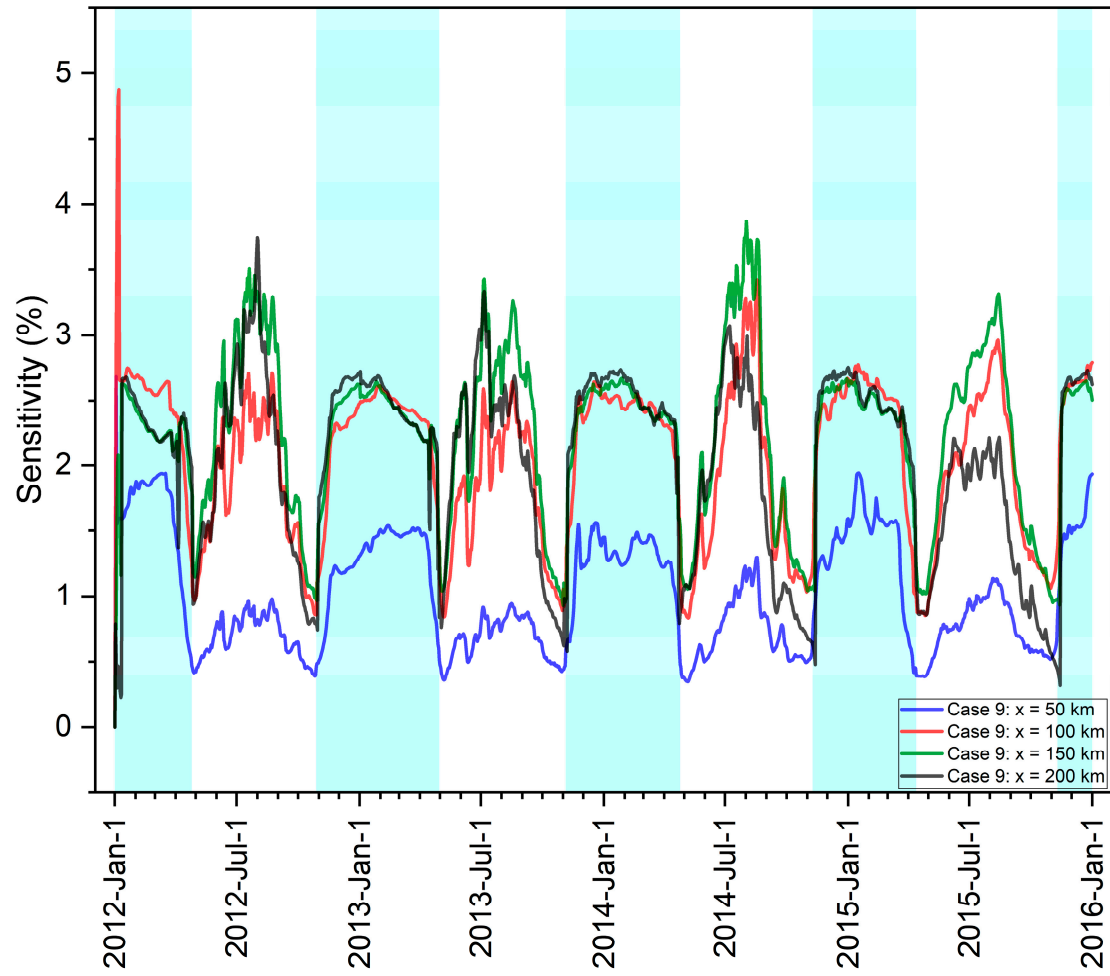


Figure S23. Sensitivity of case 9: $K_{d3} = 0.10$ at $x = 50$ km, 100 km, 150 km and 200 km.

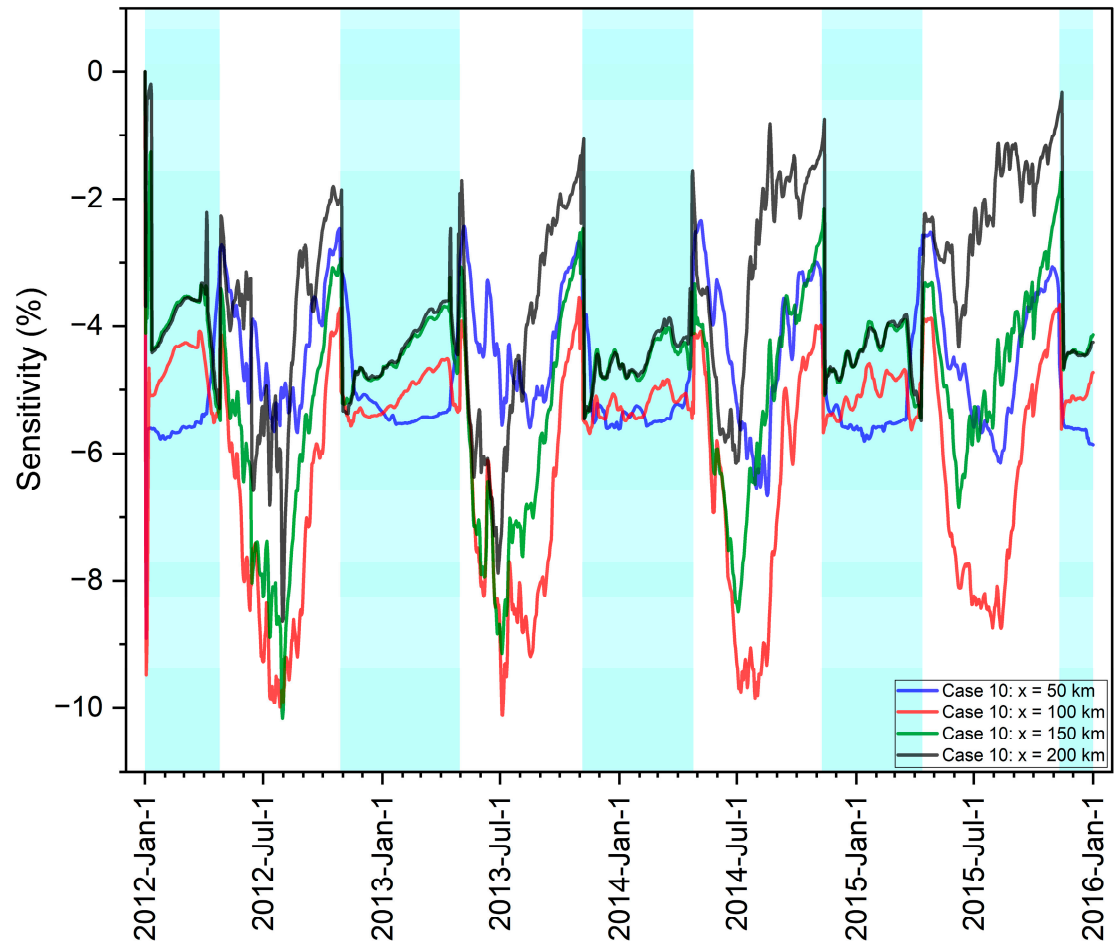


Figure S24. Sensitivity of case 10: $K_{d3} = 1.50$ at $x = 50$ km, 100 km, 150 km and 200 km.

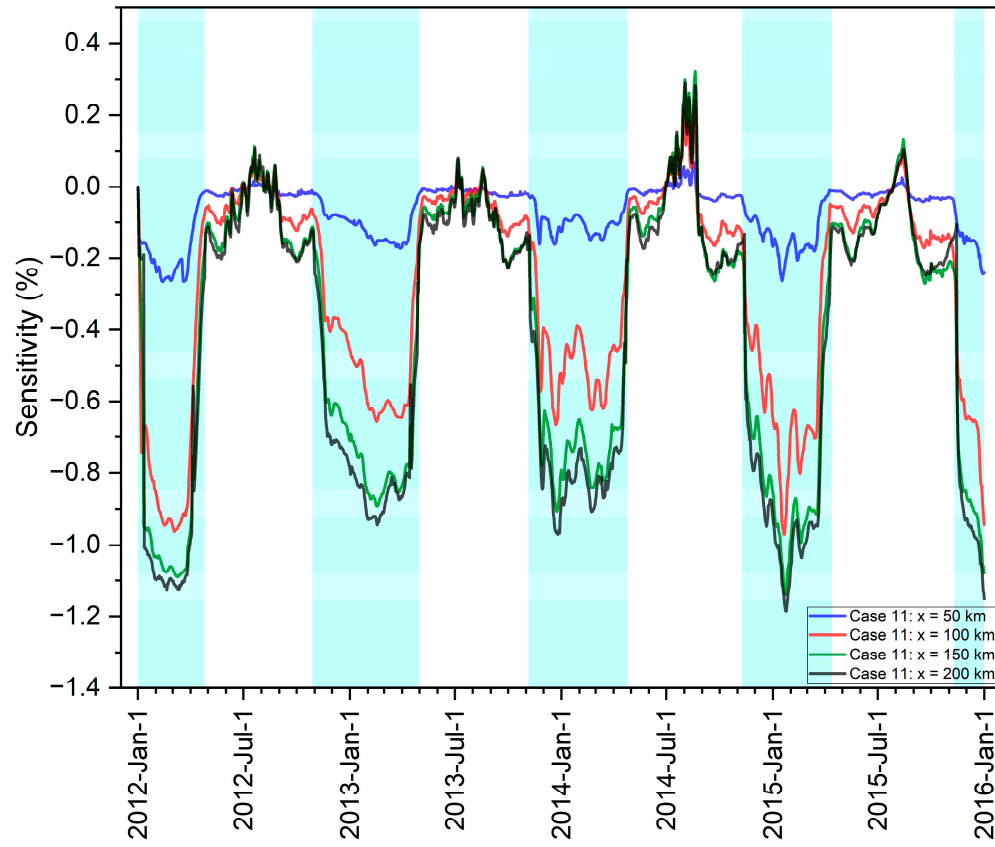


Figure S25. Sensitivity of case 11: $\Theta_{d3} = 1.00$ at $x = 50$ km, 100 km, 150 km and 200 km.

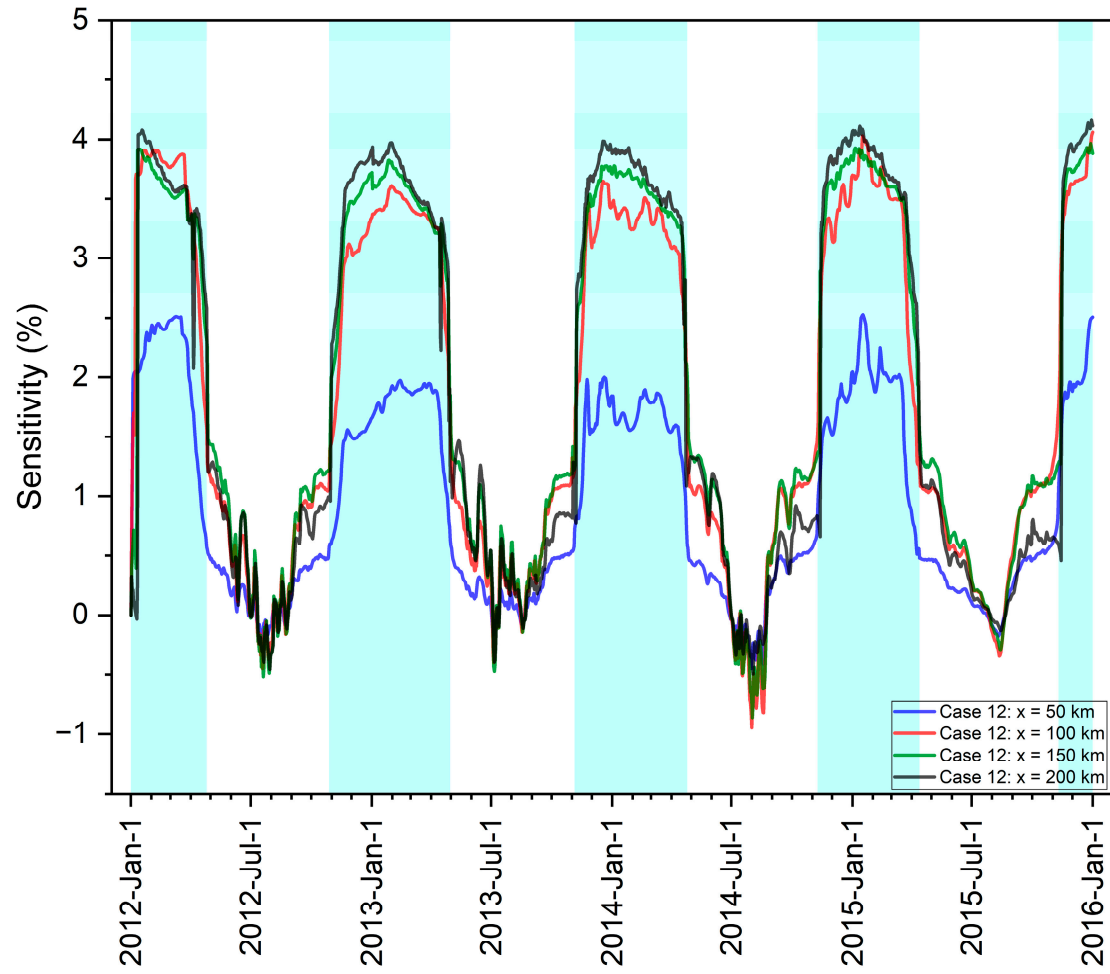


Figure S26. Sensitivity of case 12: $\Theta_{d3} = 1.09$ at $x = 50$ km, 100 km, 150 km and 200 km.

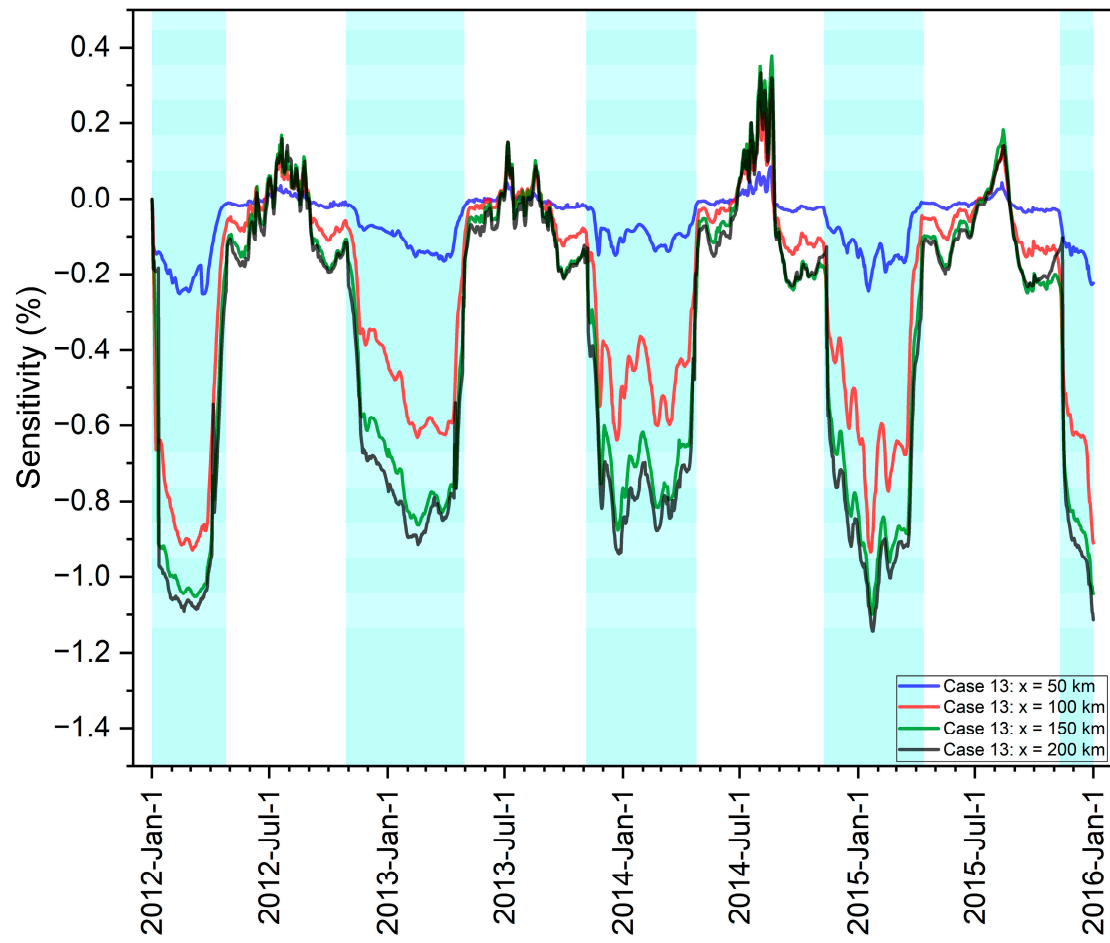


Figure S27. Sensitivity of case 13: $Y_1 = 4.40$ at $x = 50$ km, 100 km, 150 km and 200 km.

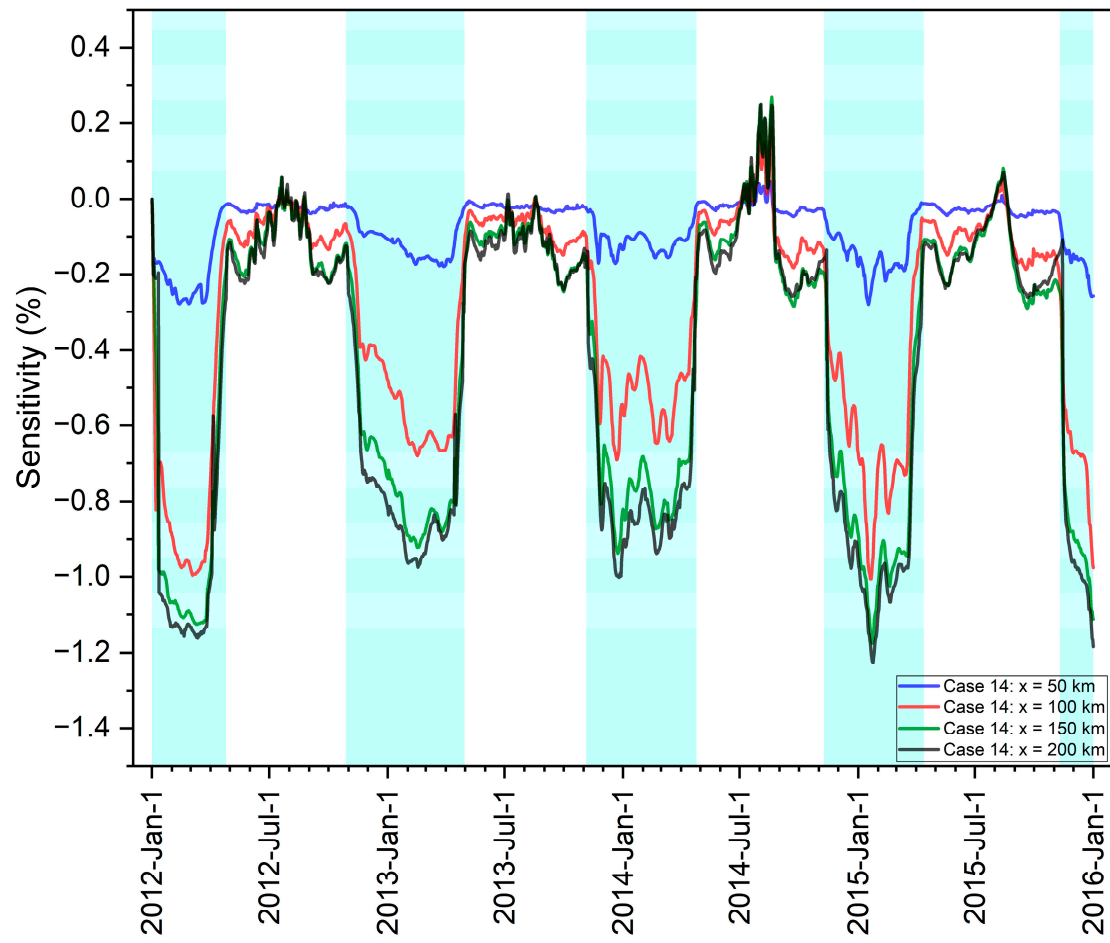


Figure S28. Sensitivity of case 14: $Y_1 = 4.54$ at $x = 50$ km, 100 km, 150 km and 200 km.

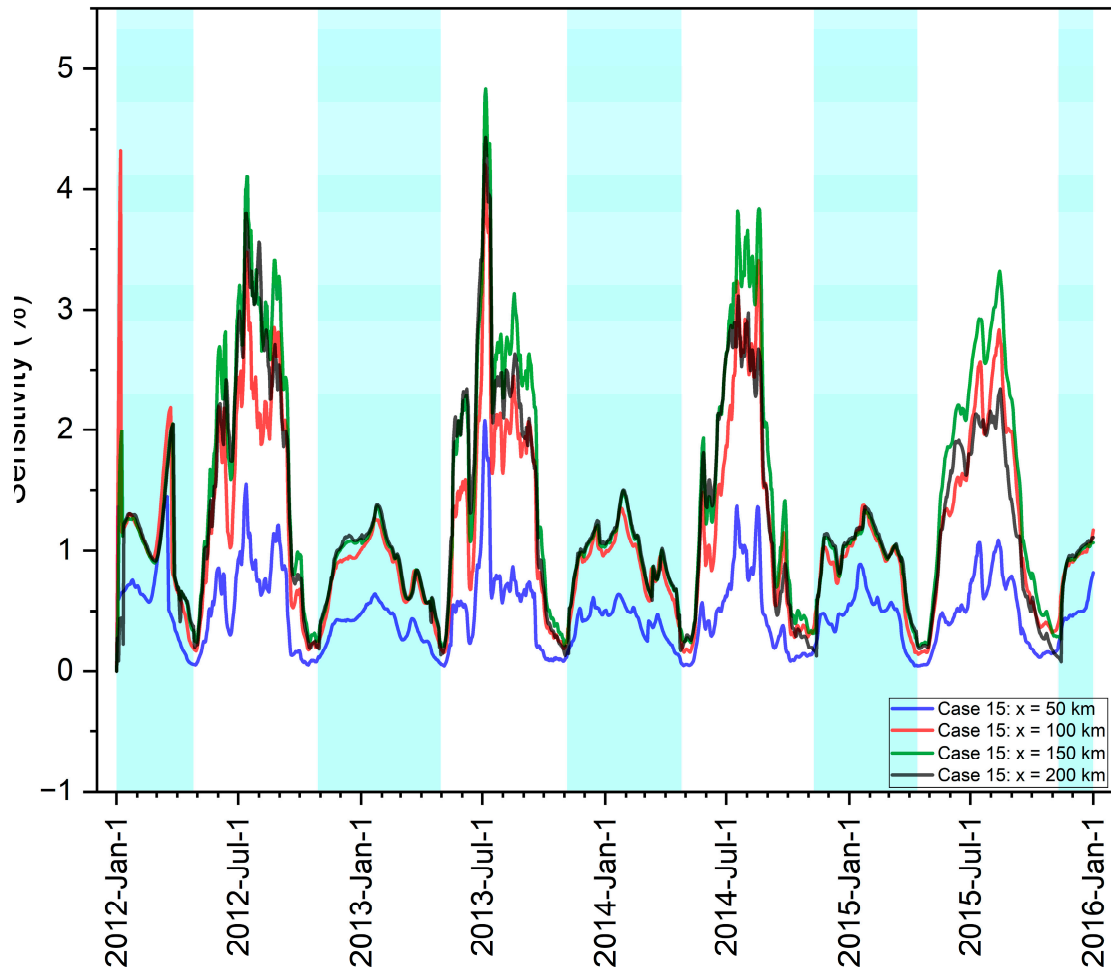


Figure S29. Sensitivity of case 15: $K_4 = 0$ at $x = 50$ km, 100 km, 150 km and 200 km.

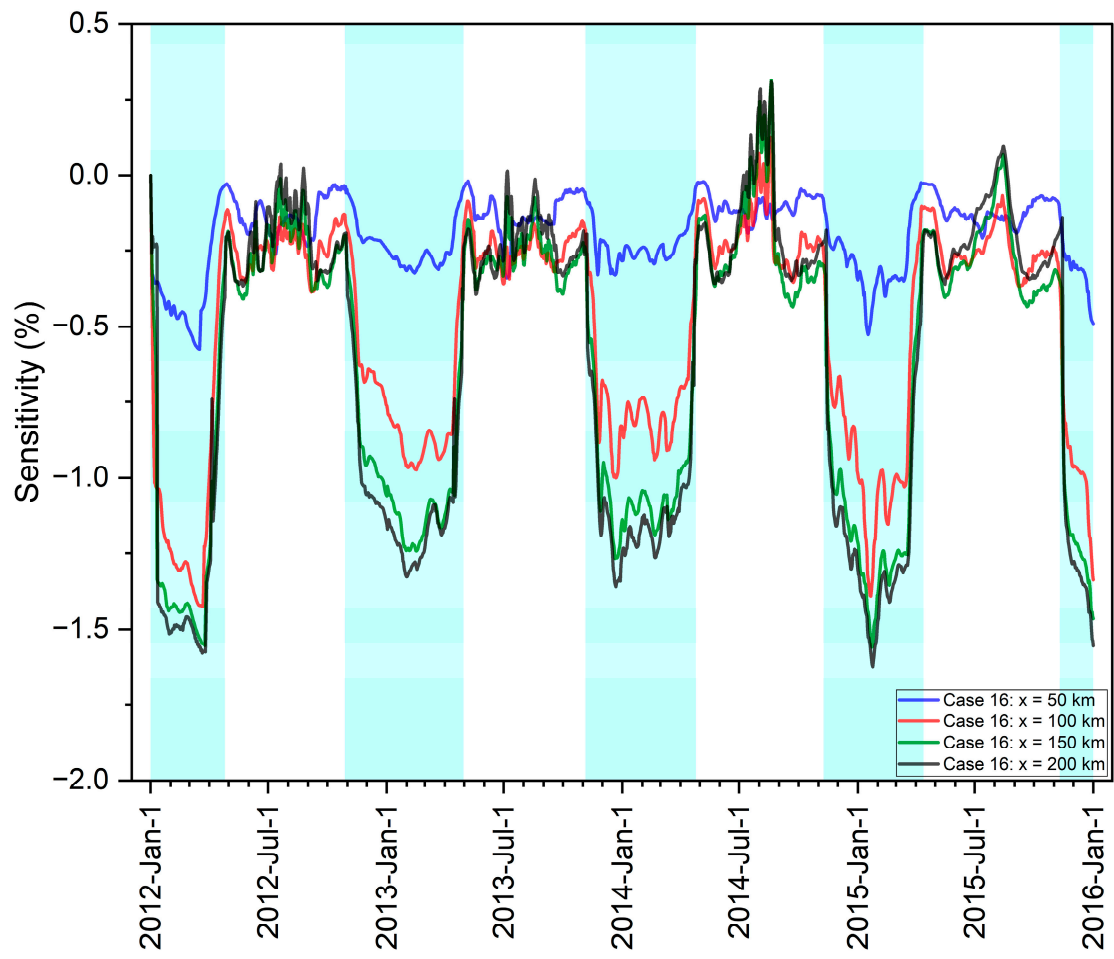


Figure S30. Sensitivity of case 16: $K_4 = 2.00$ at $x = 50$ km, 100 km, 150 km and 200 km.

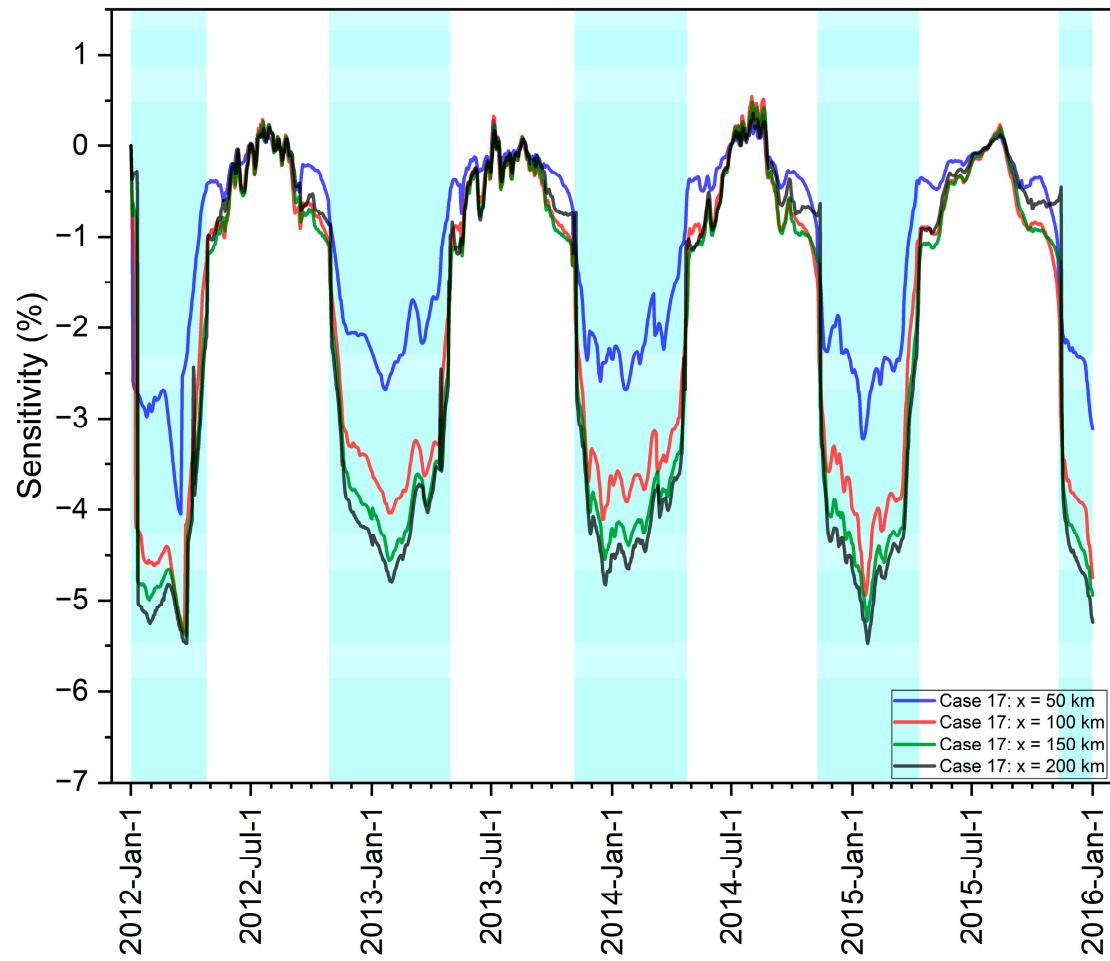


Figure S31. Sensitivity of case 17: $\Theta_4 = 1.00$ at $x = 50$ km, 100 km, 150 km and 200 km.

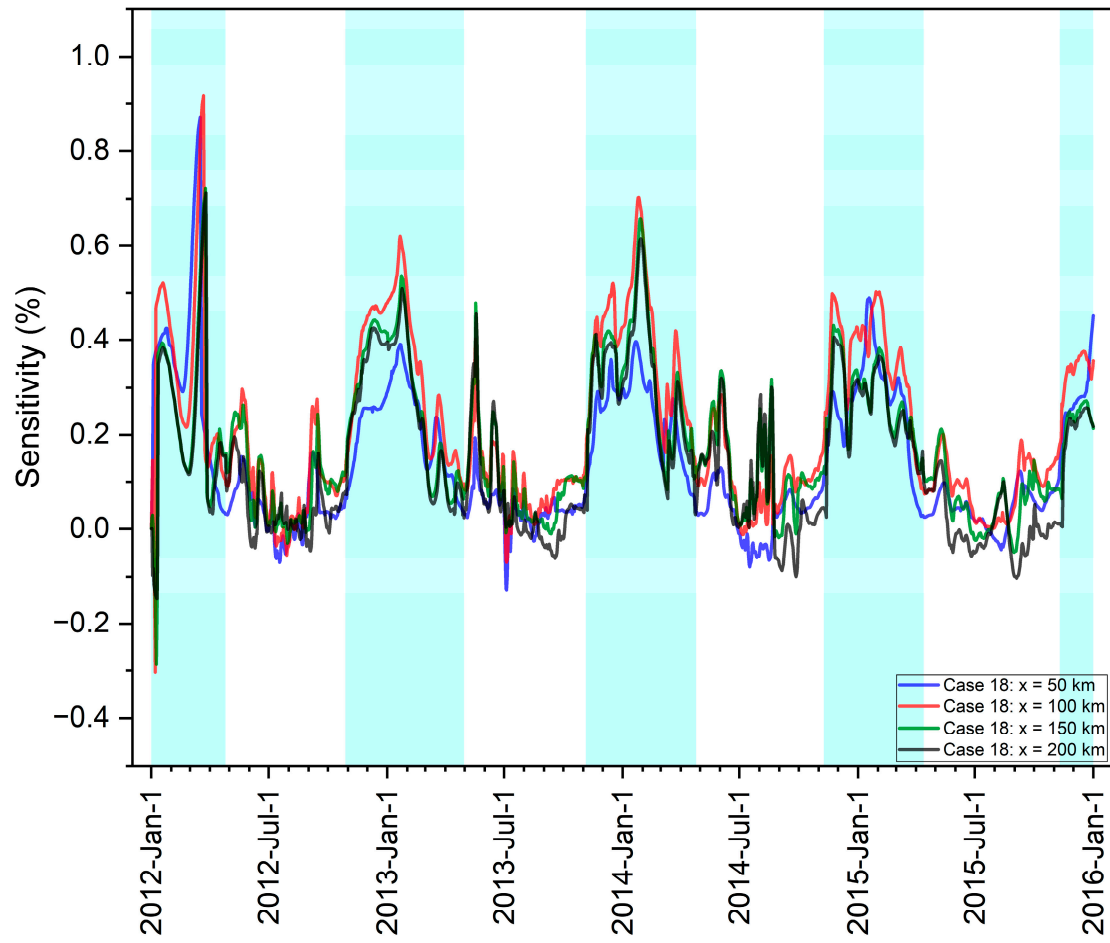


Figure S32. Sensitivity of case 18: $\Theta_4 = 1.20$ at $x = 50$ km, 100 km, 150 km and 200 km.

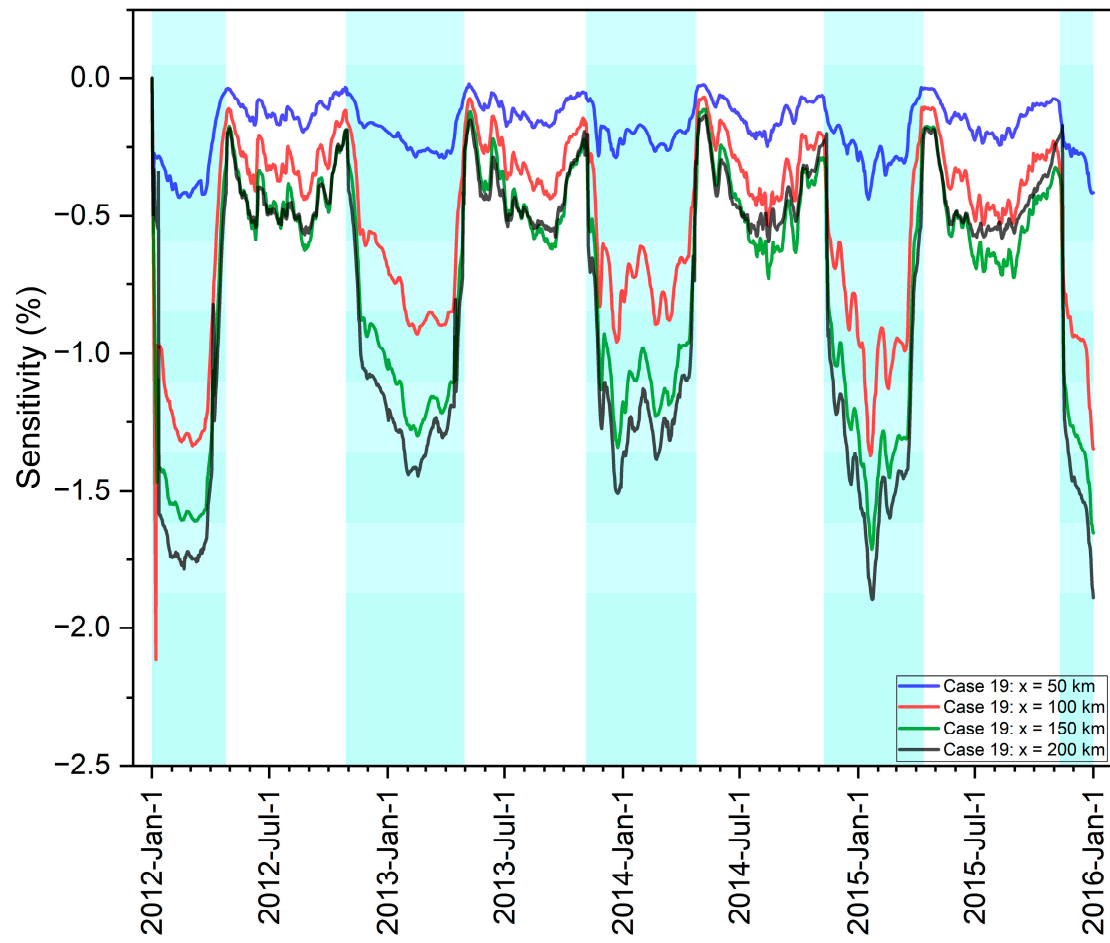


Figure S33. Sensitivity of case 19: $K_s = 0$ at $x = 50$ km, 100 km, 150 km and 200 km.

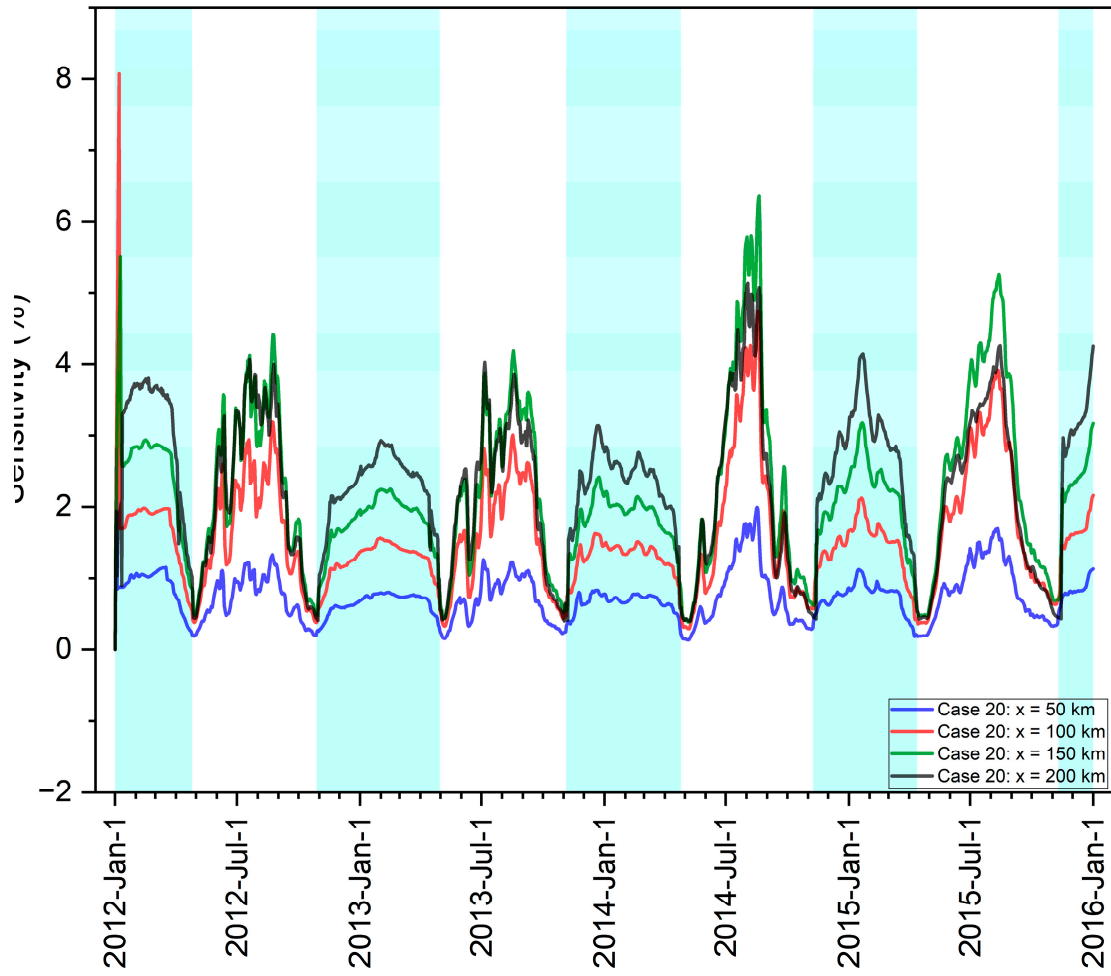


Figure S34. Sensitivity of case 20: $K_s = 20$ at $x = 50$ km, 100 km, 150 km and 200 km.

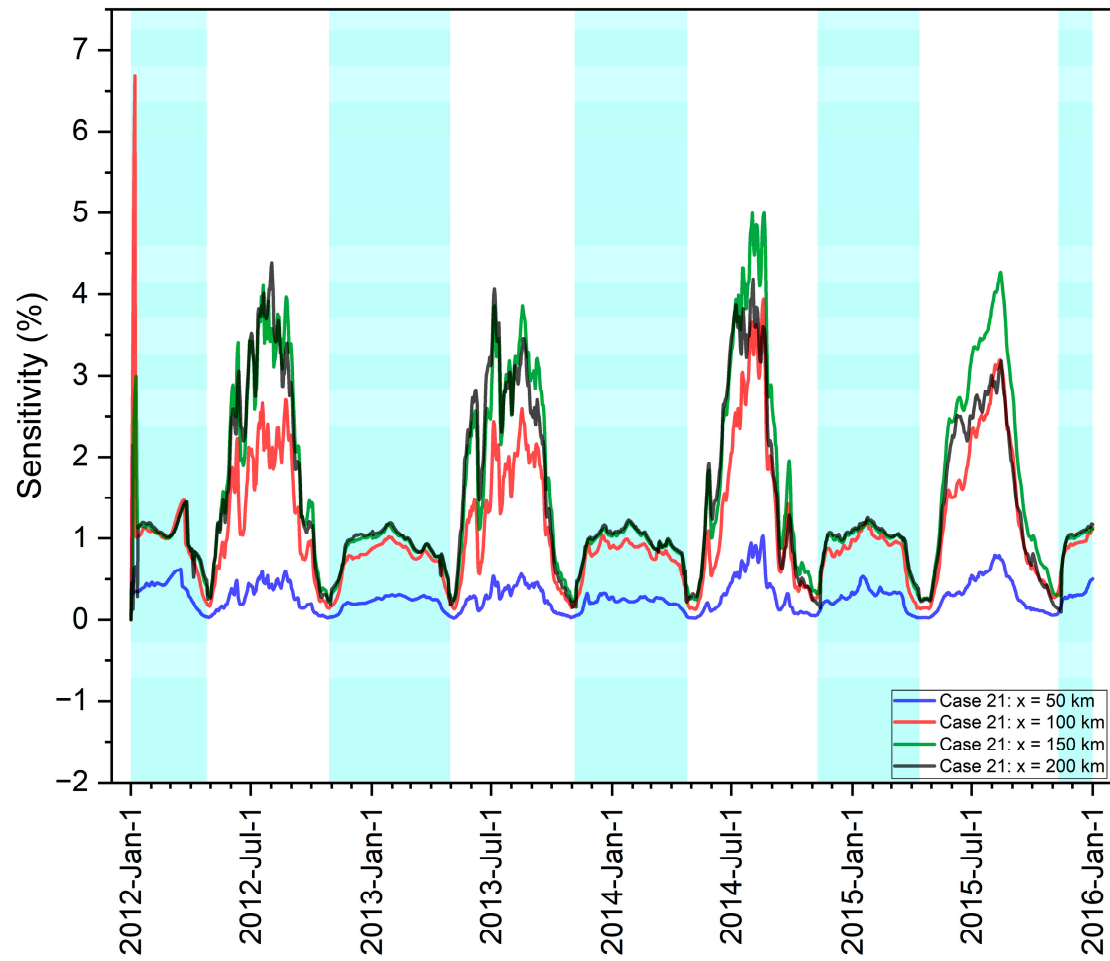


Figure S35. Sensitivity of case 21: $Y_d = 0.01$ at $x = 50$ km, 100 km, 150 km and 200 km.

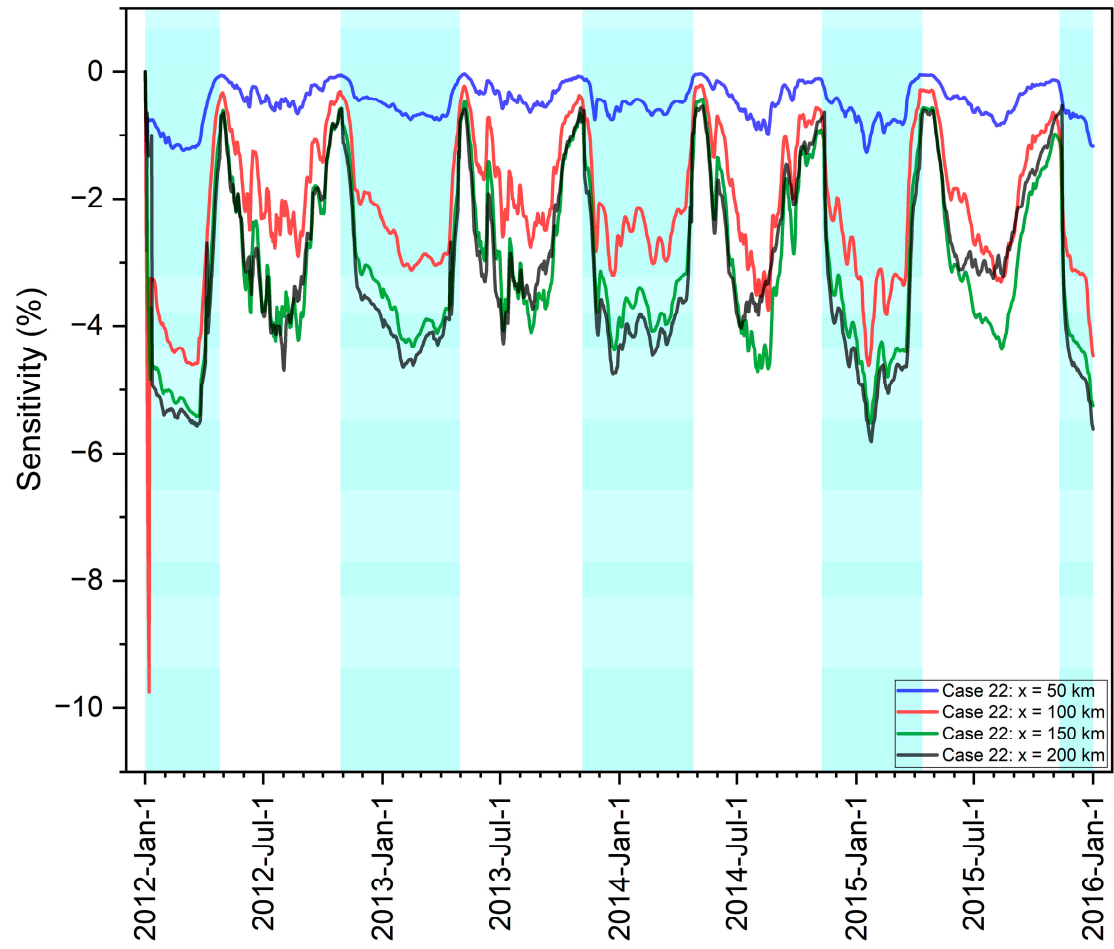


Figure S36. Sensitivity of case 22: $Y_d = 0.60$ at $x = 50$ km, 100 km, 150 km and 200 km.

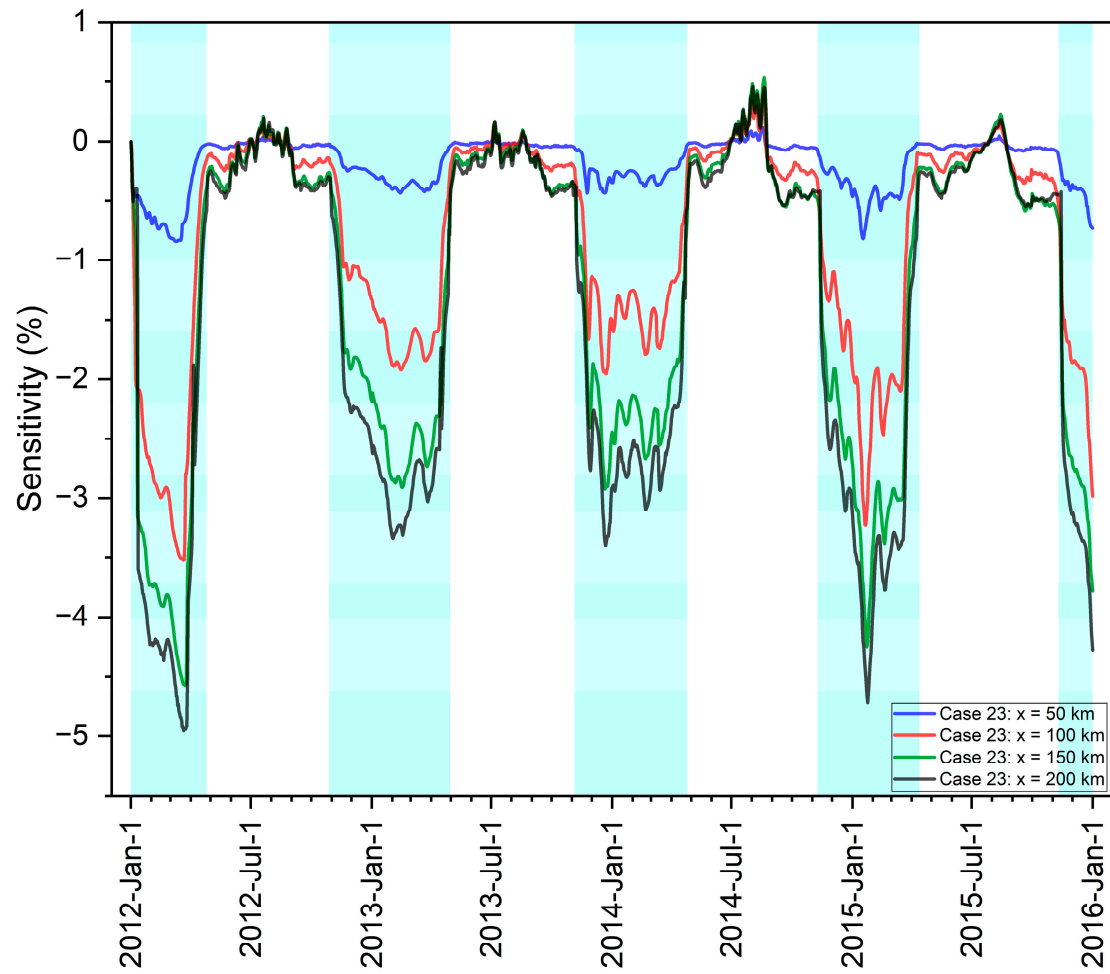


Figure S37. Sensitivity of case 23: $U_n = 0$ at $x = 50$ km, 100 km, 150 km and 200 km.

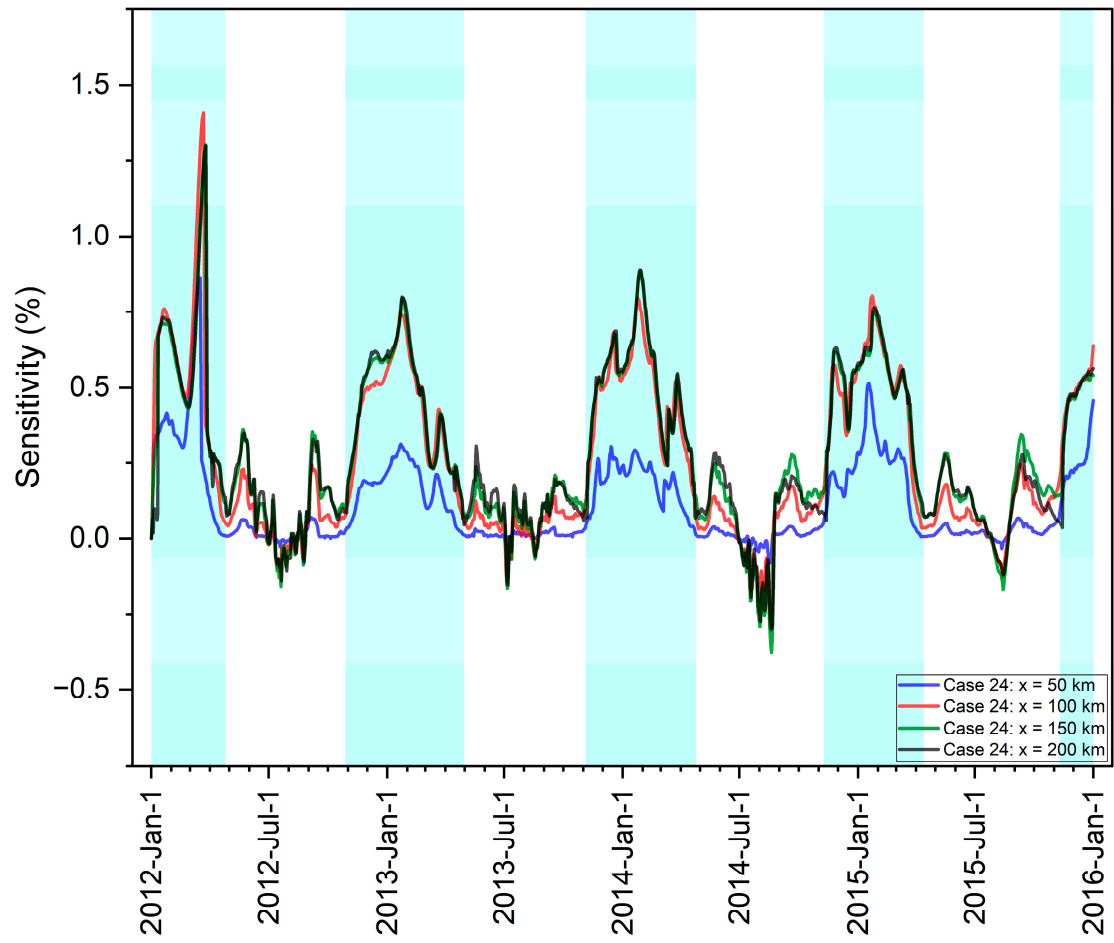


Figure S38. Sensitivity of case 24: $U_n = 0.250$ at $x = 50$ km, 100 km, 150 km and 200 km.

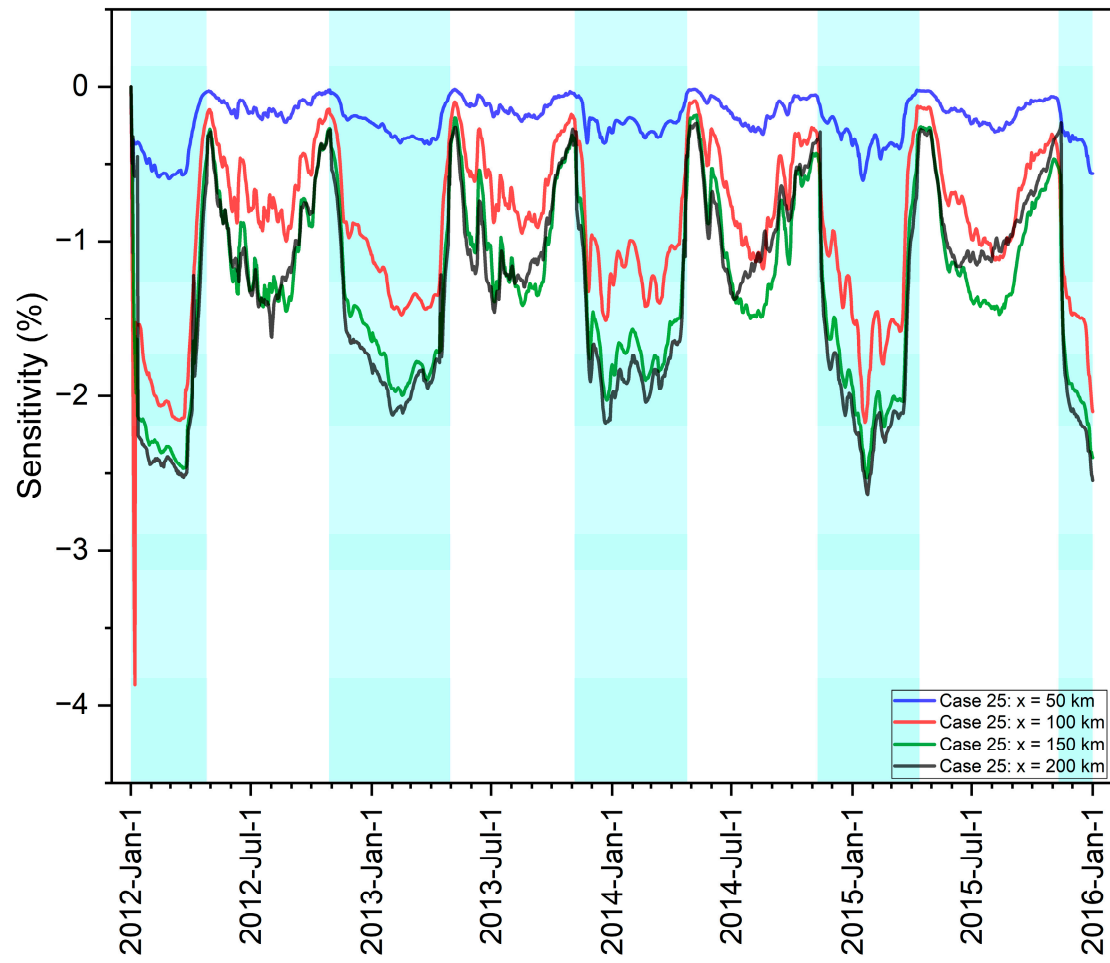


Figure S39. Sensitivity of case 25: $U_b = 0$ at $x = 50$ km, 100 km, 150 km and 200 km.

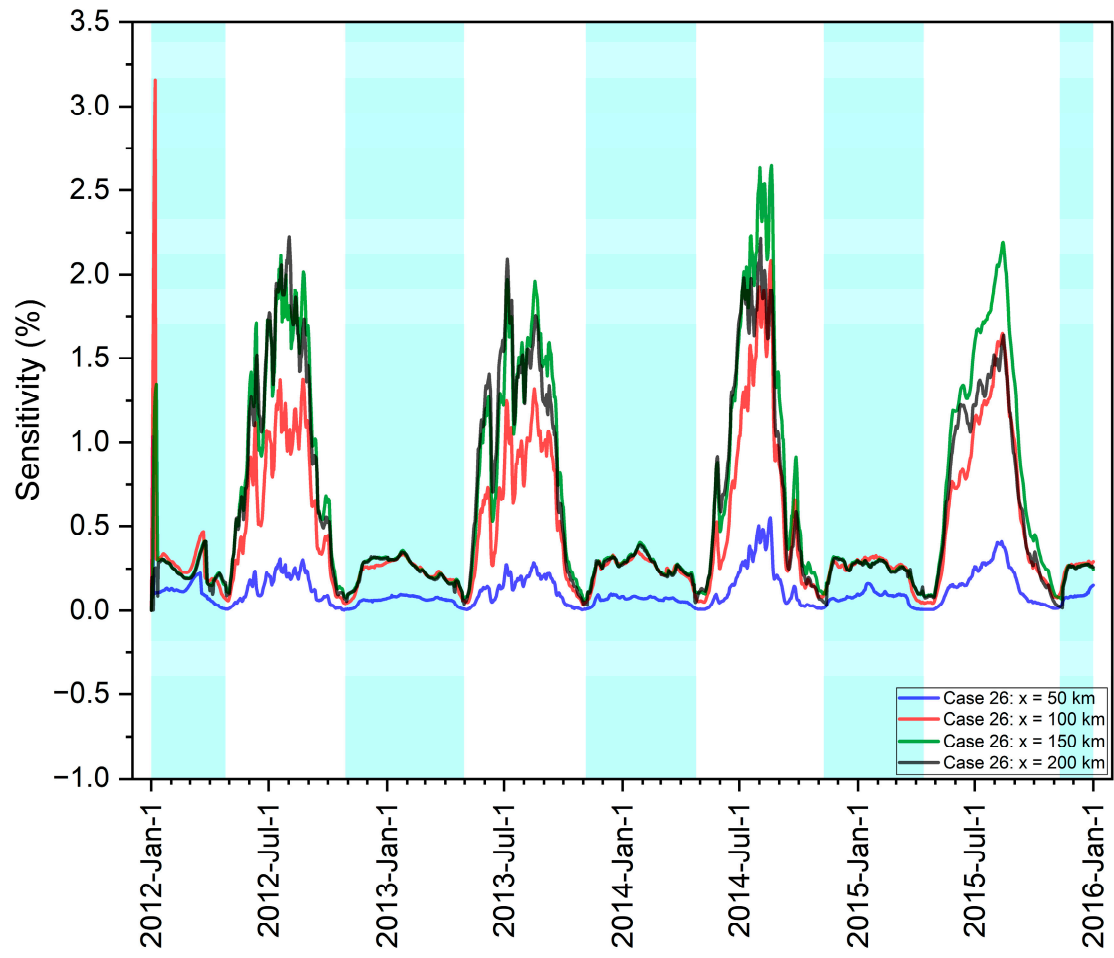


Figure S40. Sensitivity of case 26: $U_b = 0.250$ at $x = 50$ km, 100 km, 150 km and 200 km.

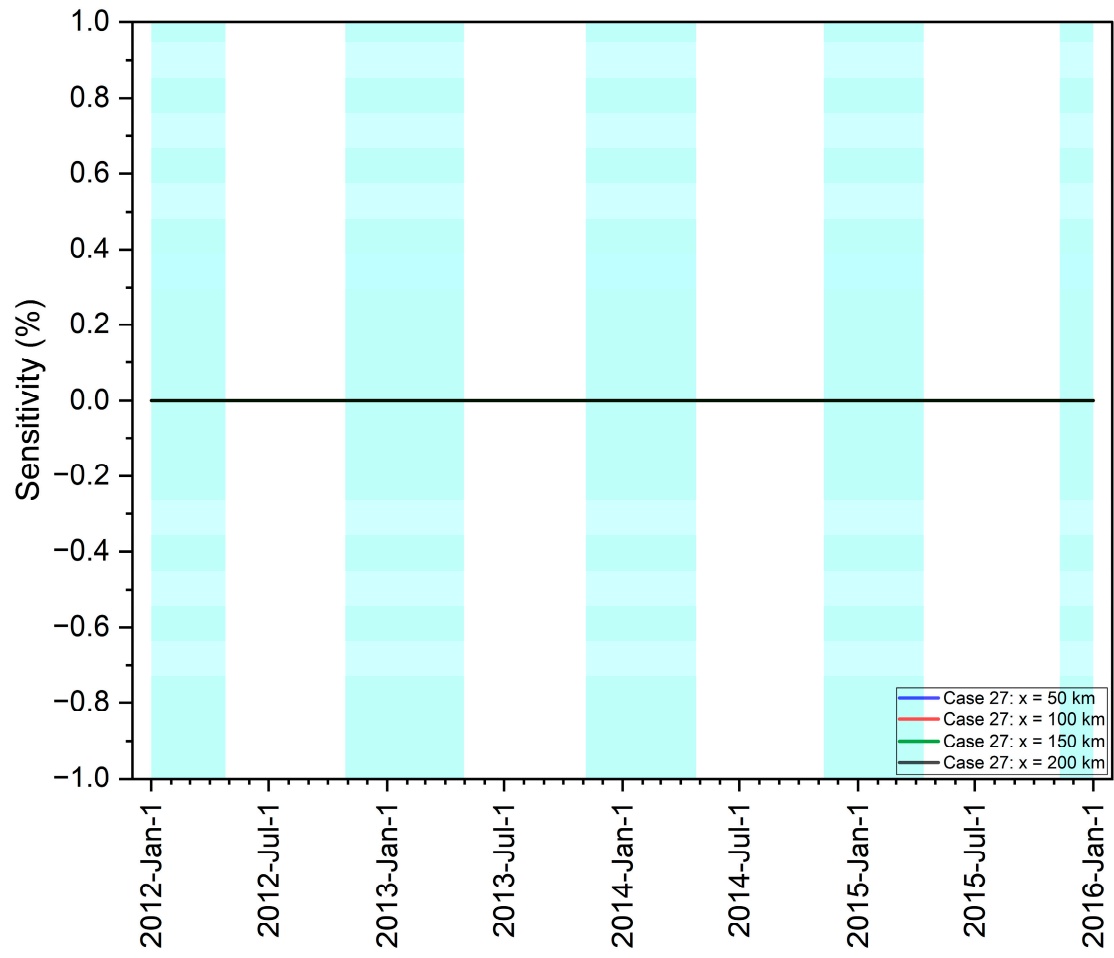


Figure S41. Sensitivity of case 27: $K_{sn} = 0$ at $x = 50$ km, 100 km, 150 km and 200 km.

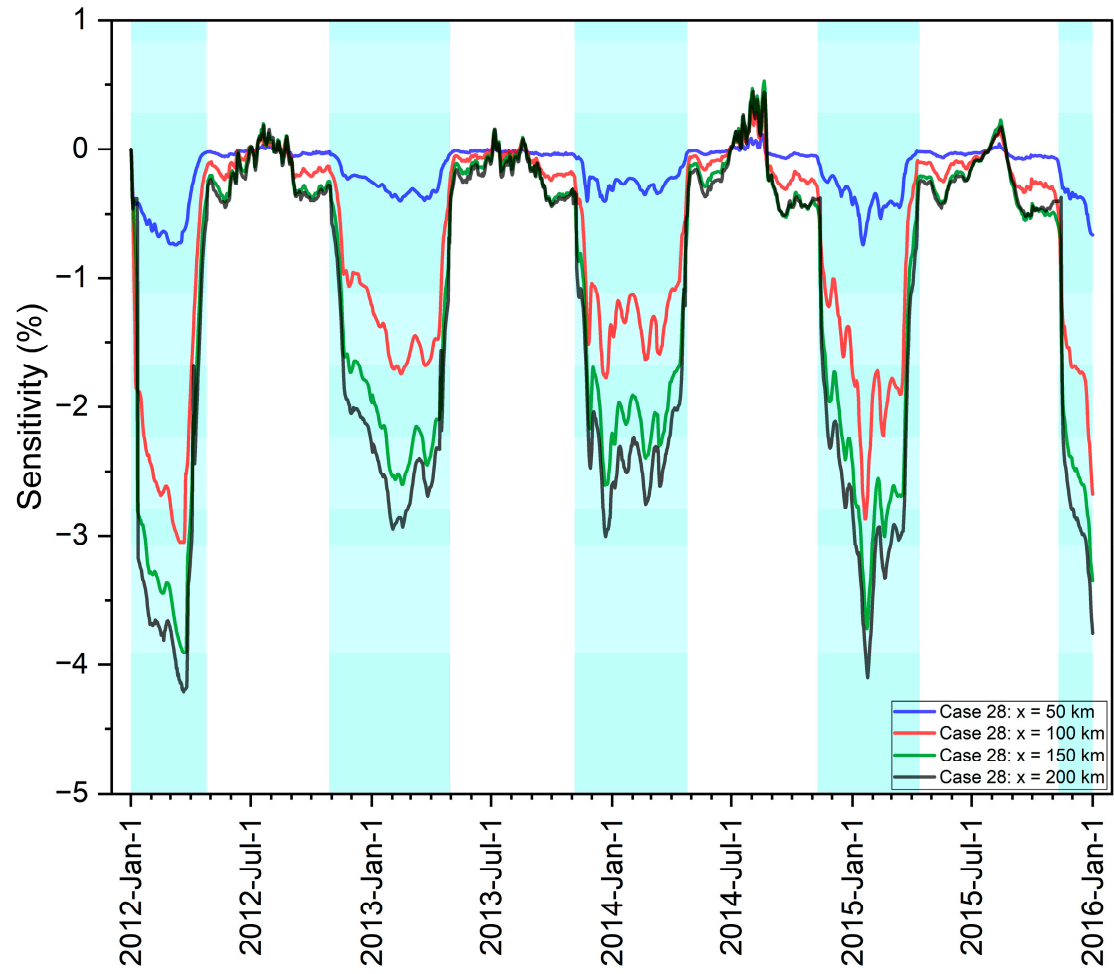


Figure S42. Sensitivity of case 28: $K_{sn} = 1.00$ at $x = 50$ km, 100 km, 150 km and 200 km.