Appendix D - Deterministic Model Results

The deterministic model is used to investigate individual spill events identified in the stochastic modeling that rank in the 95th percentile for surface oiling, shoreline oiling and entrained oiling. The maps of deterministic model results show the maximum surface oil thickness or maximum shoreline oil thickness for the entire spill period as contours or areas of color corresponding to oil thickness. Maps of entrained oil show areas in the water that are predicted to exceed the 10 ppb threshold at any time during the spill.

Figures 1 through 25 contain maps of individual spills from the blow-out scenarios. Figures 26 through 37 contain the maps of individual spills from the batch transfer scenarios. It should be noted that several of the individual spill simulations ranked as the 95th percentile for shoreline oiling do not reach the Newfoundland shoreline. No shoreline oiling maps were made for those scenarios.

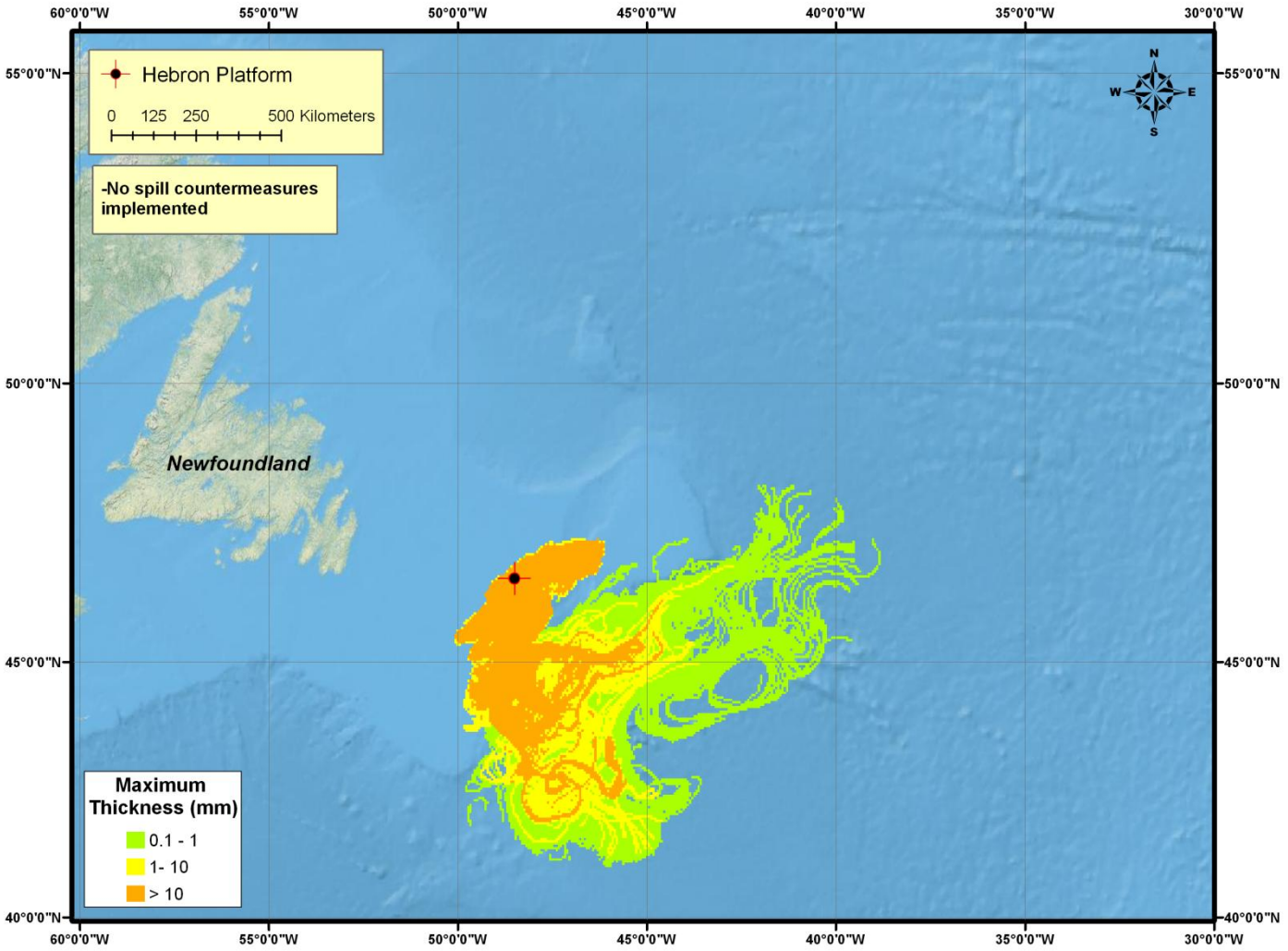


Figure 1. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a 30 day platform blow-out in the summer.

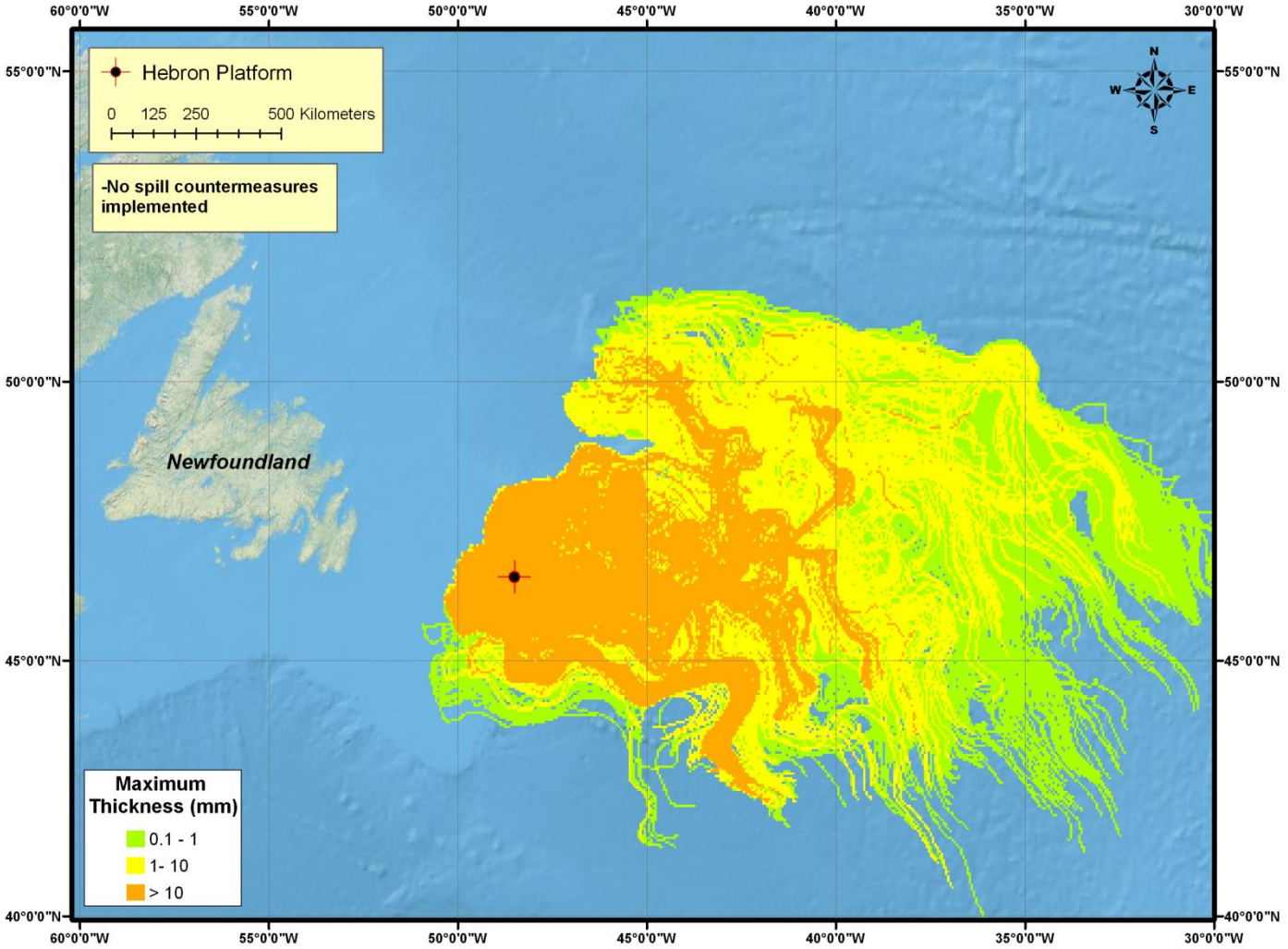


Figure 2. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a 30 day platform blow-out run for 60 days in the summer.

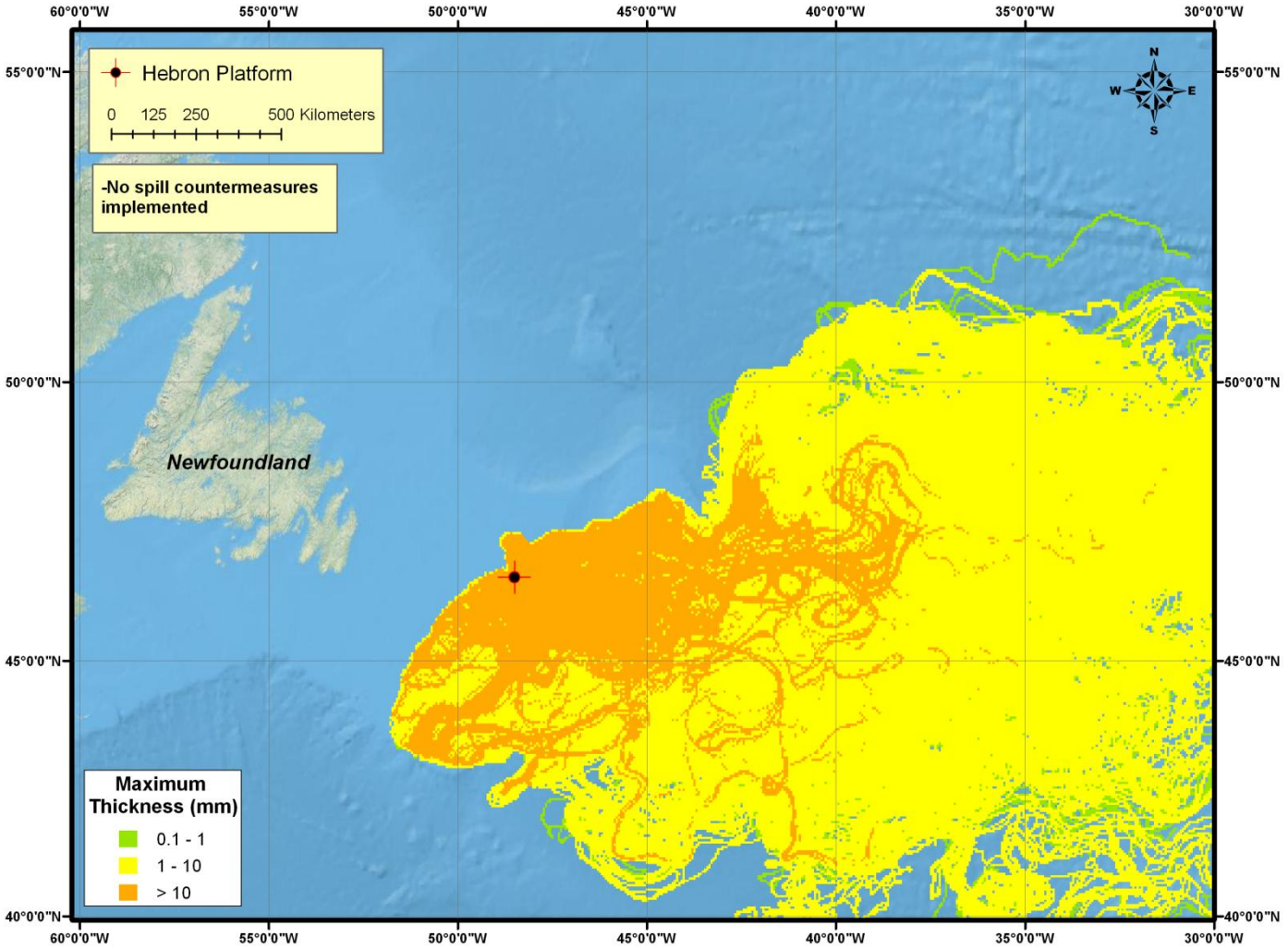


Figure 3. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a 100 day platform blow-out in the summer.

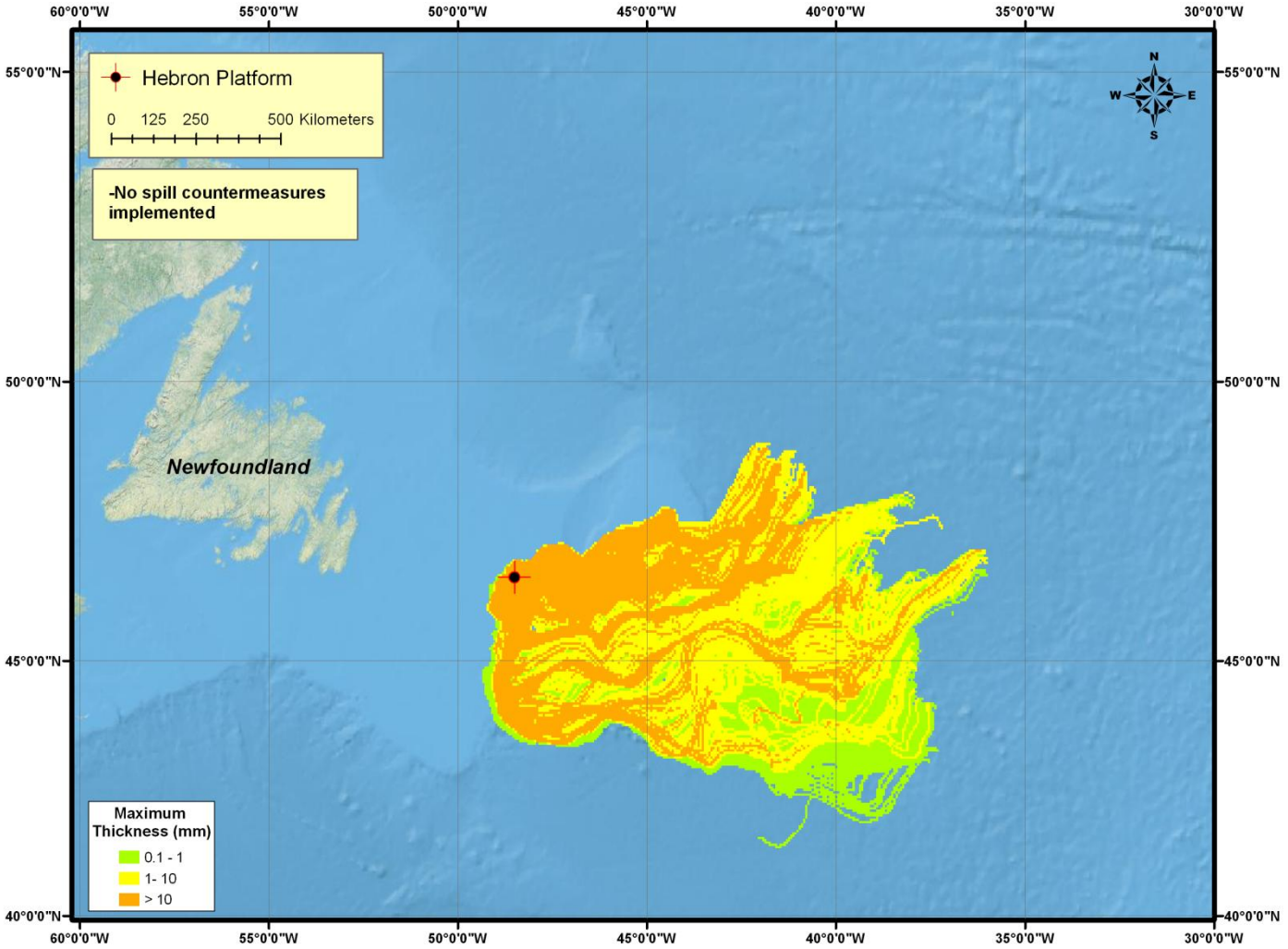


Figure 4. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a 30 day platform blow-out in the winter.

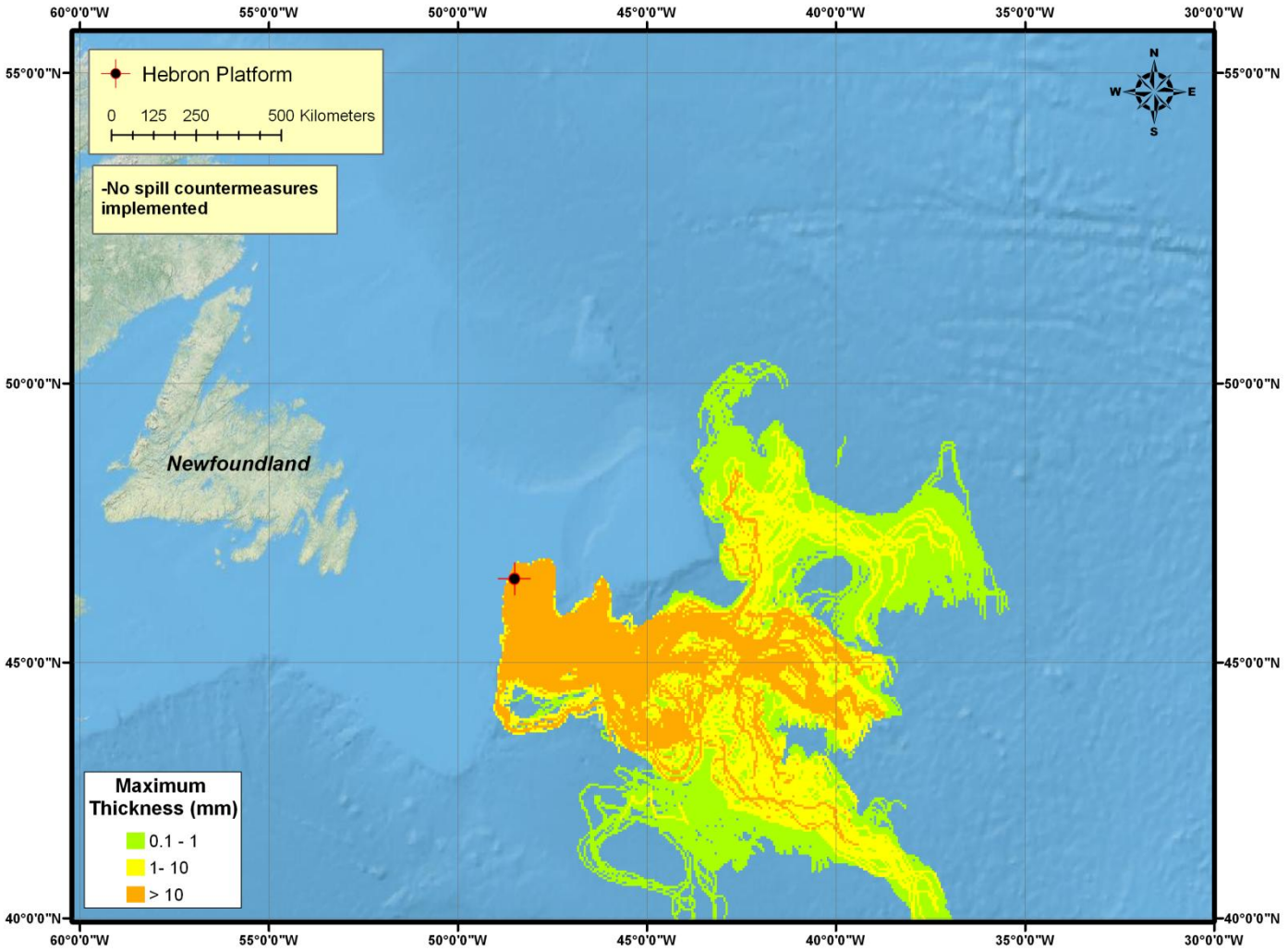


Figure 5. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a 30 day platform blow-out run in the winter with ice present.

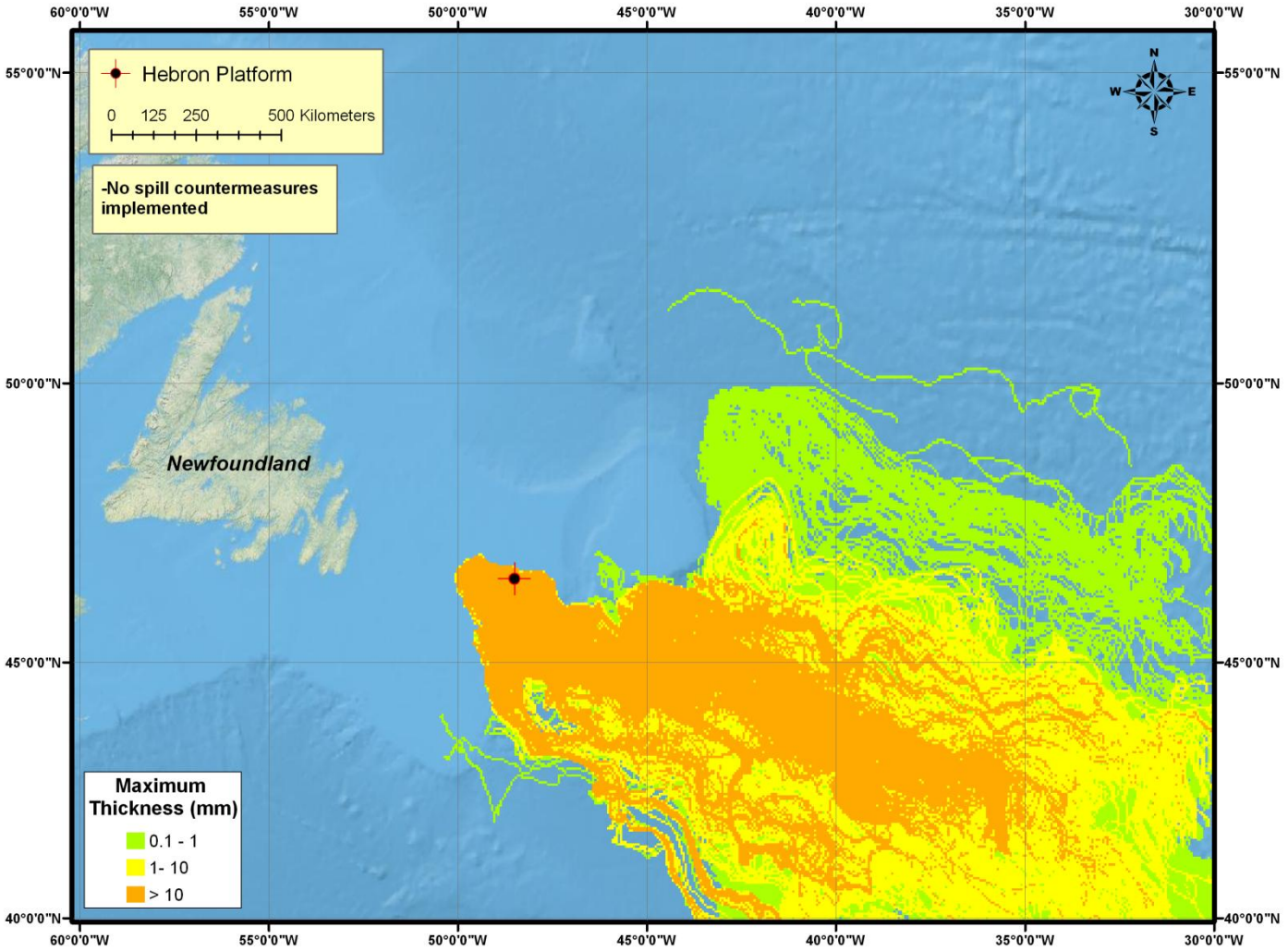


Figure 6. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a 30 day platform blow-out run for 60 days in the winter.

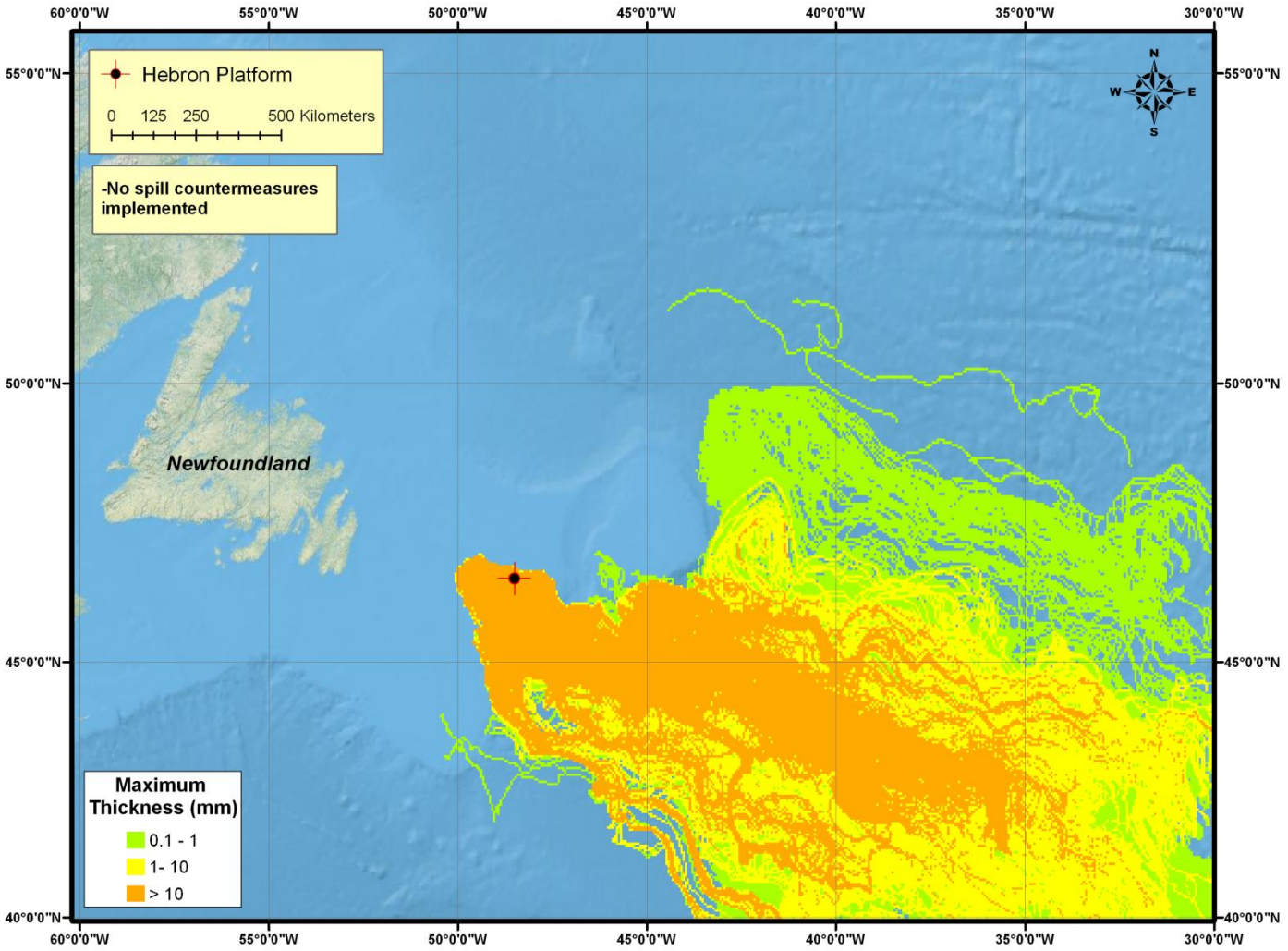


Figure 7. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a 30 day platform blow-out run for 60 days in the winter with ice present.

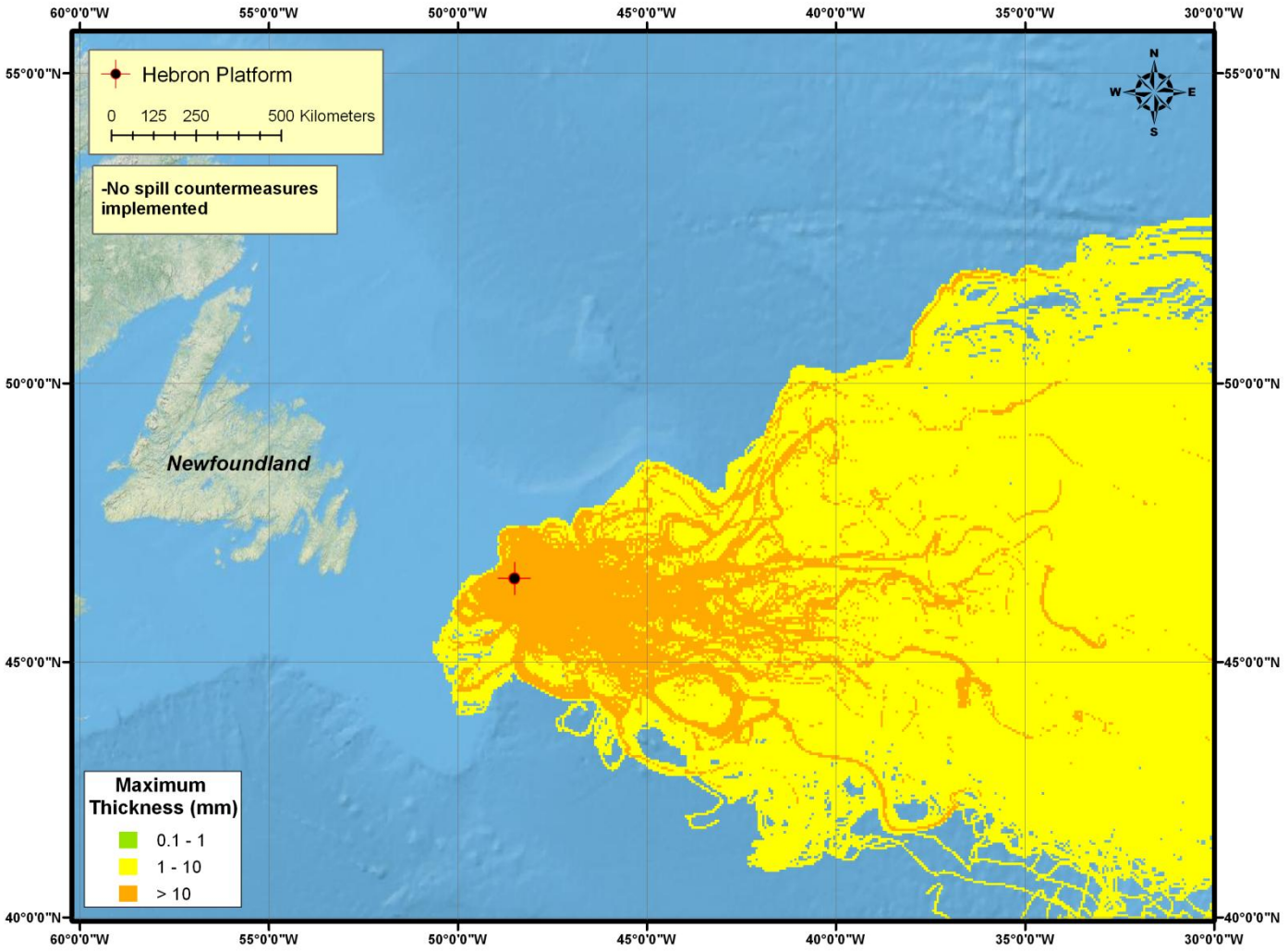


Figure 8. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a 120 day platform blow-out in the winter.

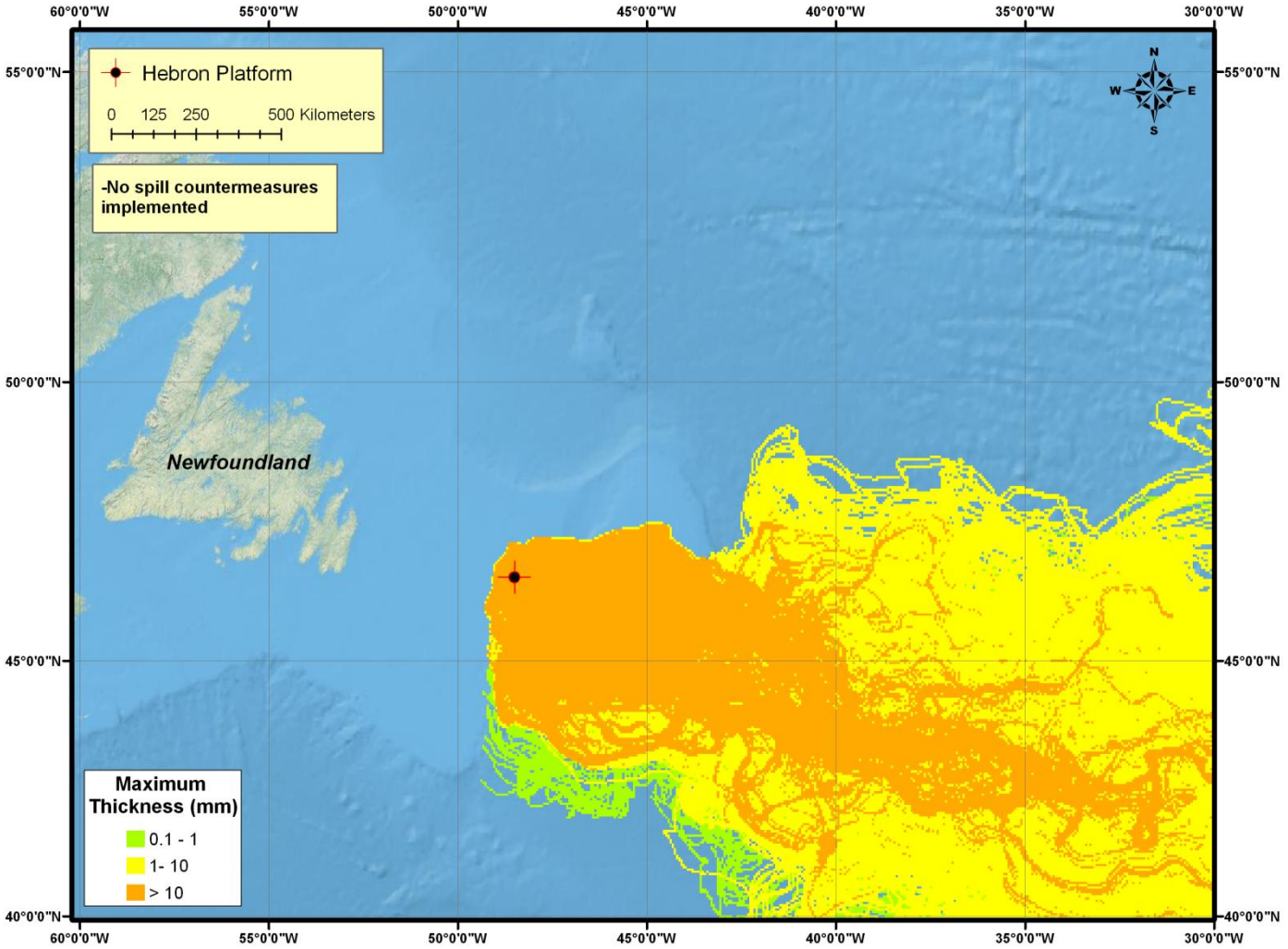


Figure 9. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a 120 day platform blow-out in the winter with ice present.

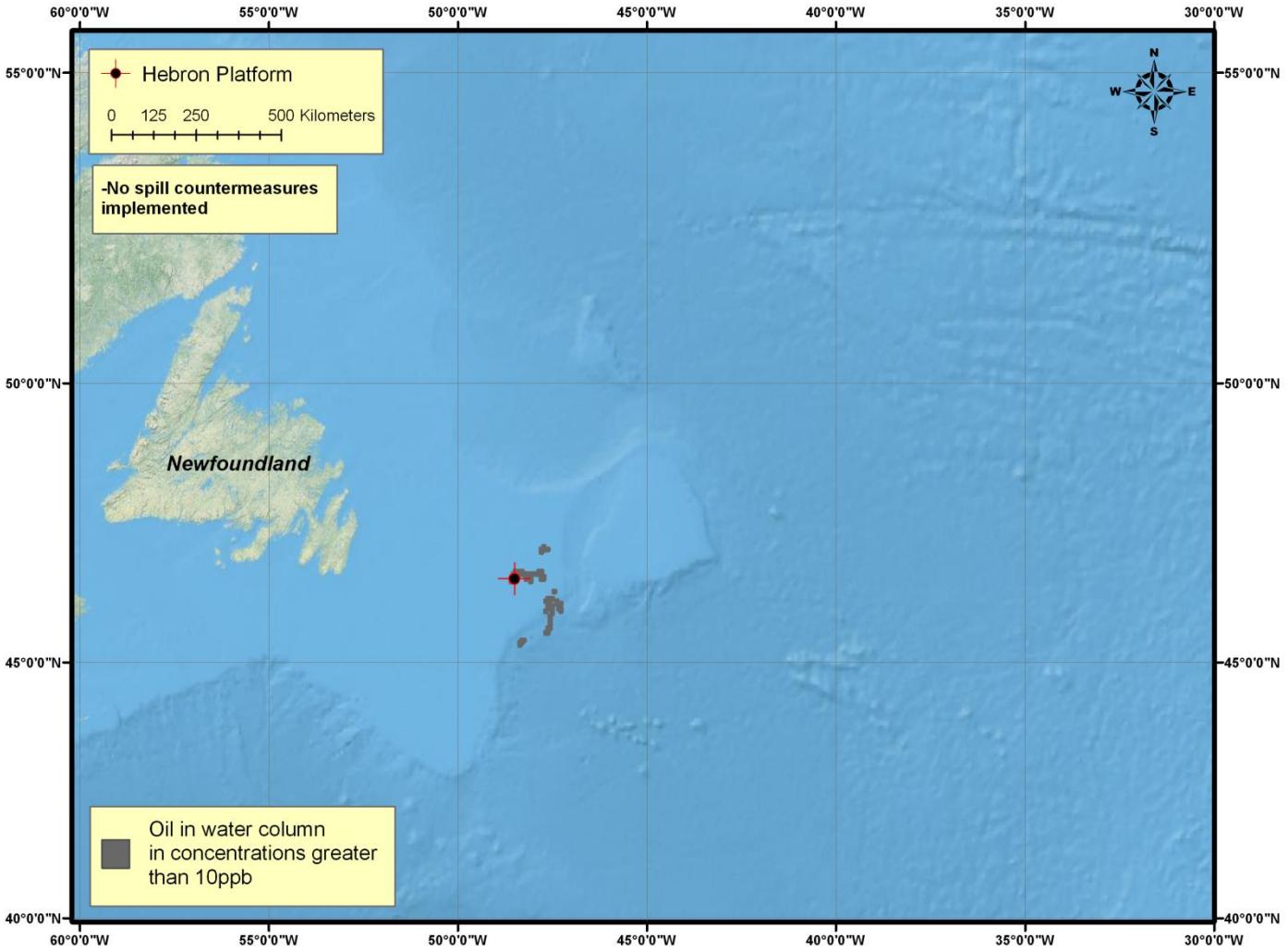


Figure 10. Area of entrained oil for the 95th percentile water column case based on the volume of oil entrained in the water column at the end of a 30 day platform blow-out during the summer.

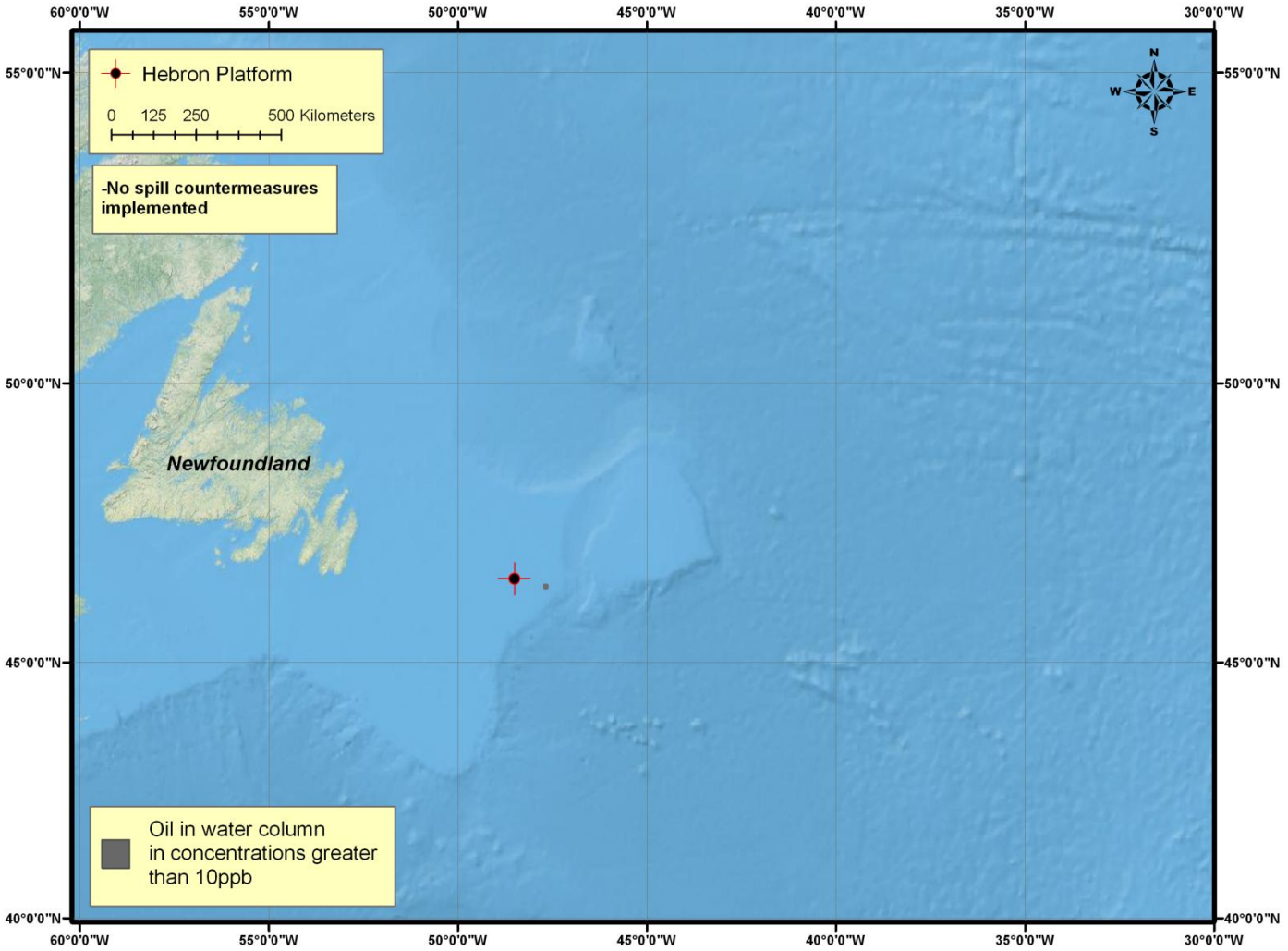


Figure 11. Area of entrained oil for the 95th percentile water column case based on the volume of oil entrained in the water column at the end of a 30 day platform blow-out run for 60 days during the summer.

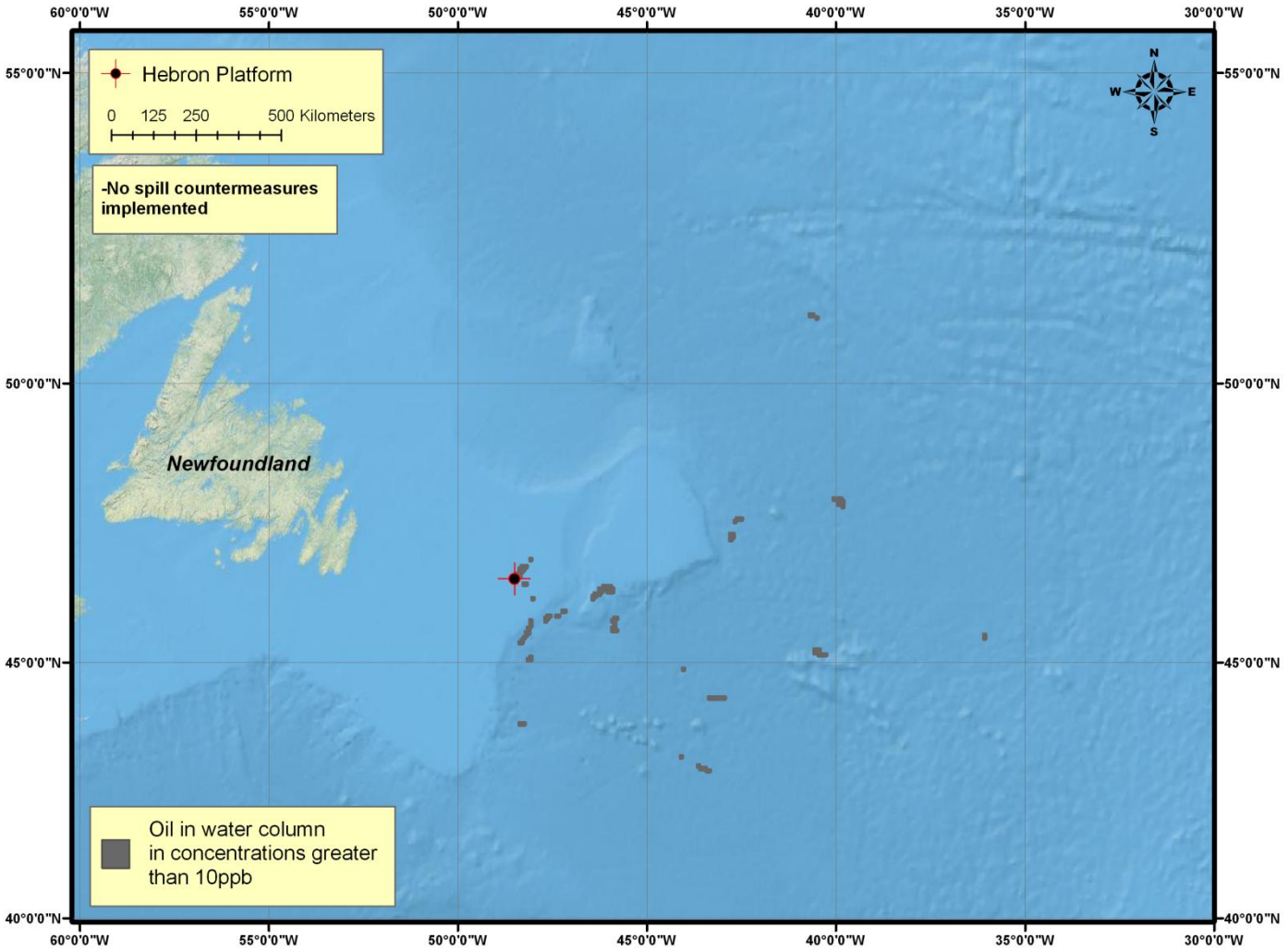


Figure 12. Area of entrained oil for the 95th percentile water column case based on the volume of oil entrained in the water column at the end of a 100 day platform blow-out during the summer.

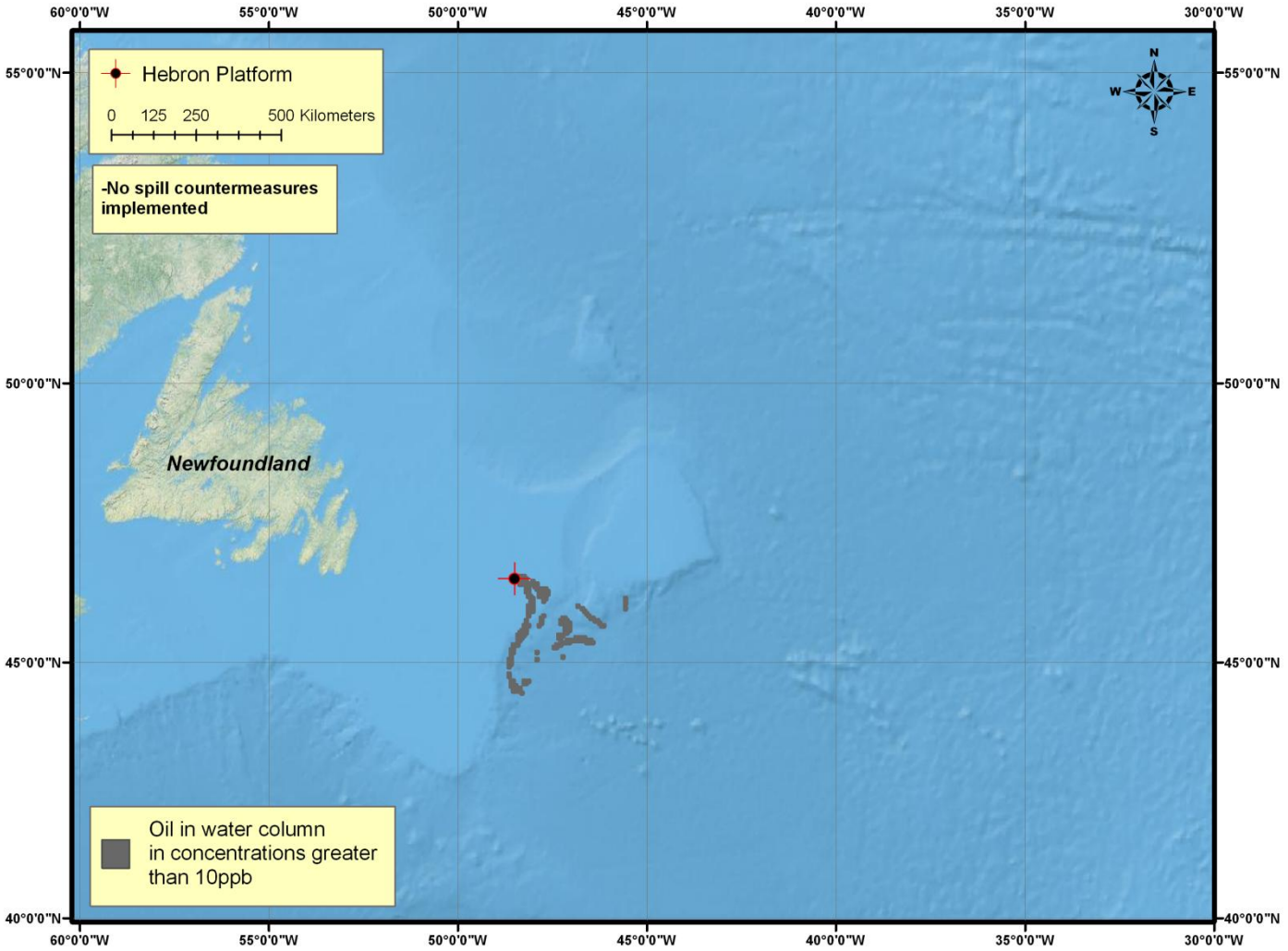


Figure 13. Area of entrained oil for the 95th percentile water column case based on the volume of oil entrained in the water column at the end of a 30 day platform blow-out during the winter.

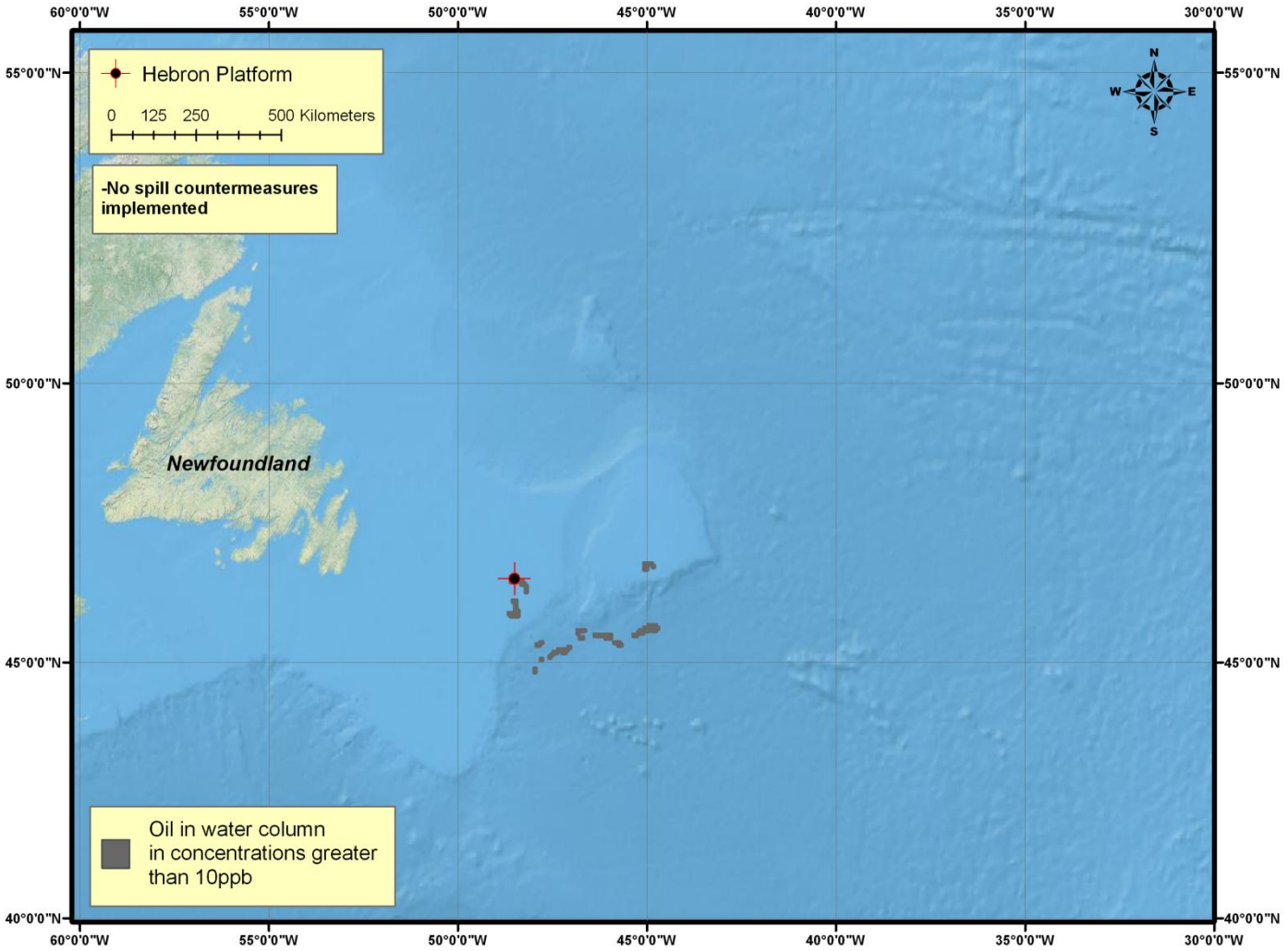


Figure 14. Area of entrained oil for the 95th percentile water column case based on the volume of oil entrained in the water column at the end of a 30 day platform blow-out during the winter with ice present.

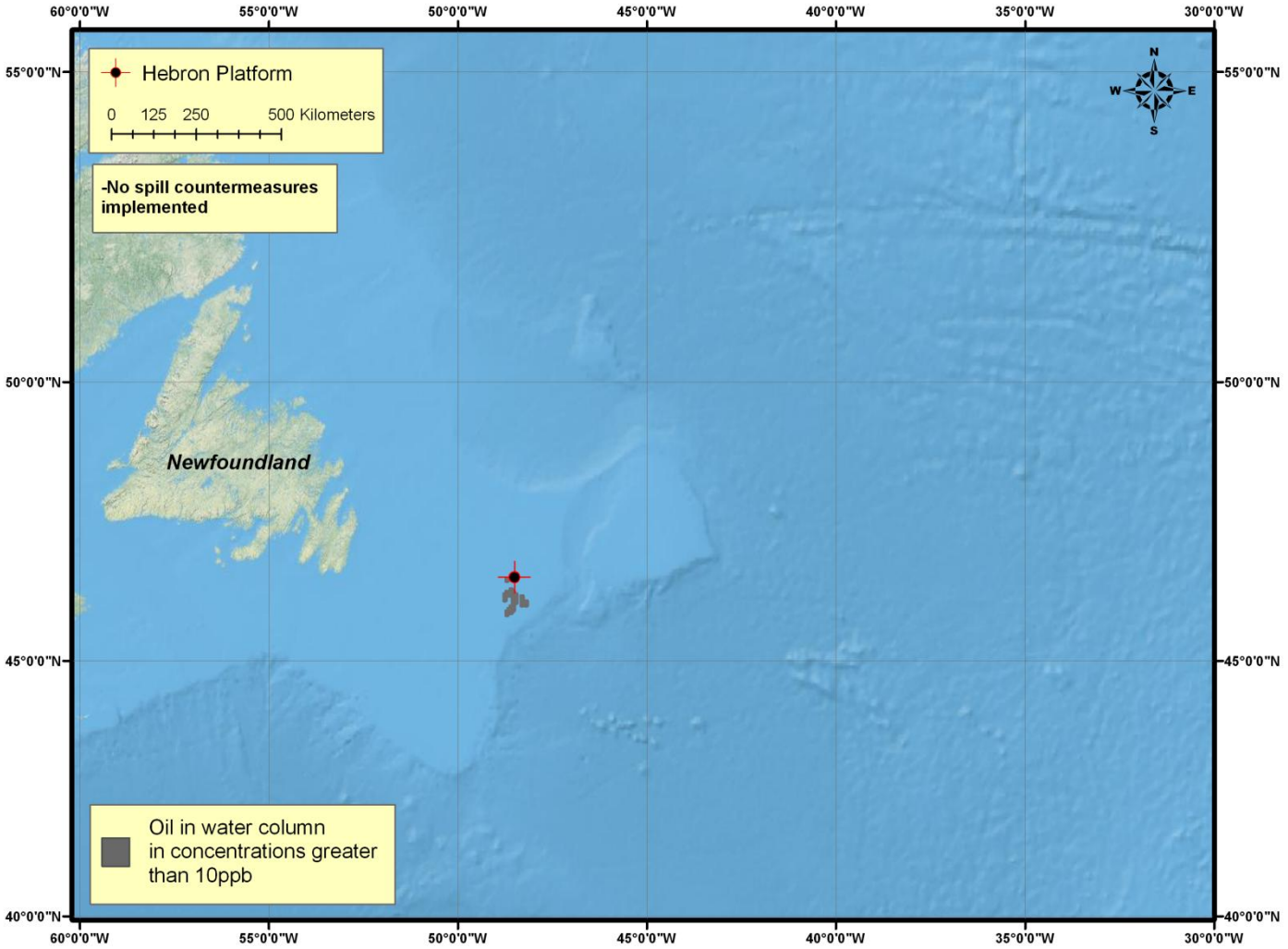


Figure 15. Area of entrained oil for the 95th percentile water column case based on the volume of oil entrained in the water column at the end of a 30 day platform blow-out run for 60 days during the winter.

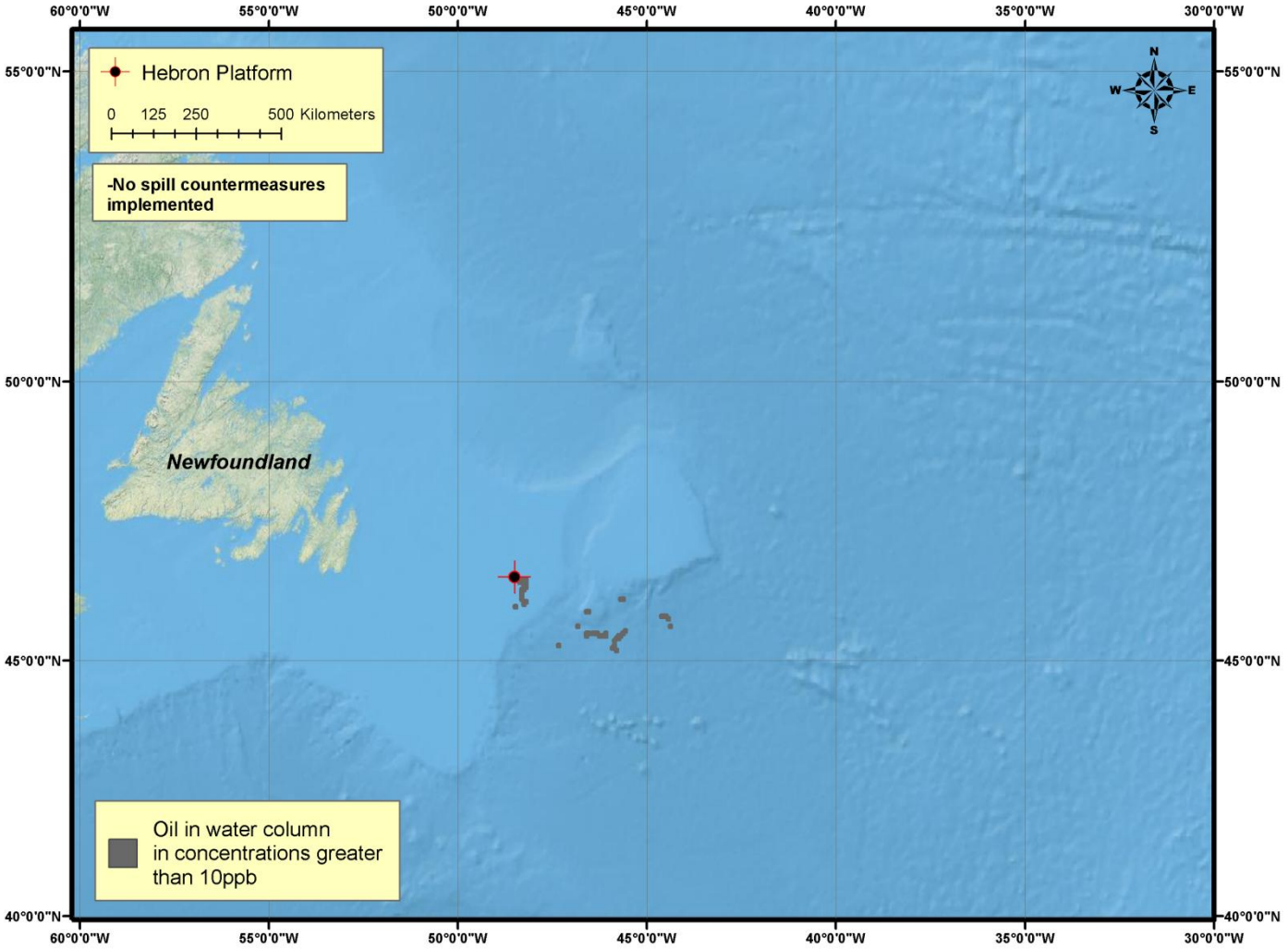


Figure 16. Area of entrained oil for the 95th percentile water column case based on the volume of oil entrained in the water column at the end of a 30 day platform blow-out run for 60 days during the winter with ice present.

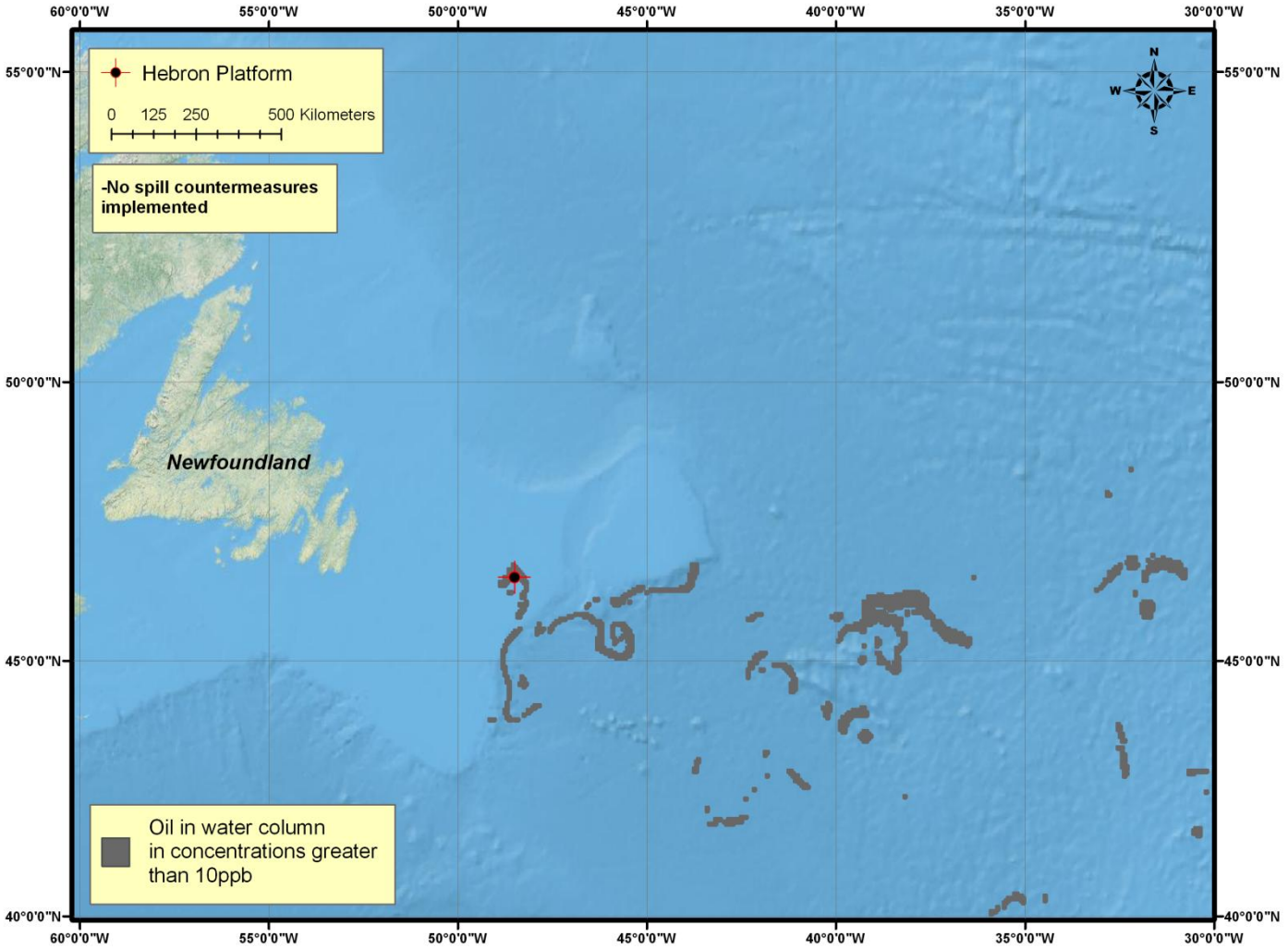


Figure 17. Area of entrained oil for the 95th percentile water column case based on the volume of oil entrained in the water column at the end of a 120 day platform blow-out during the winter.

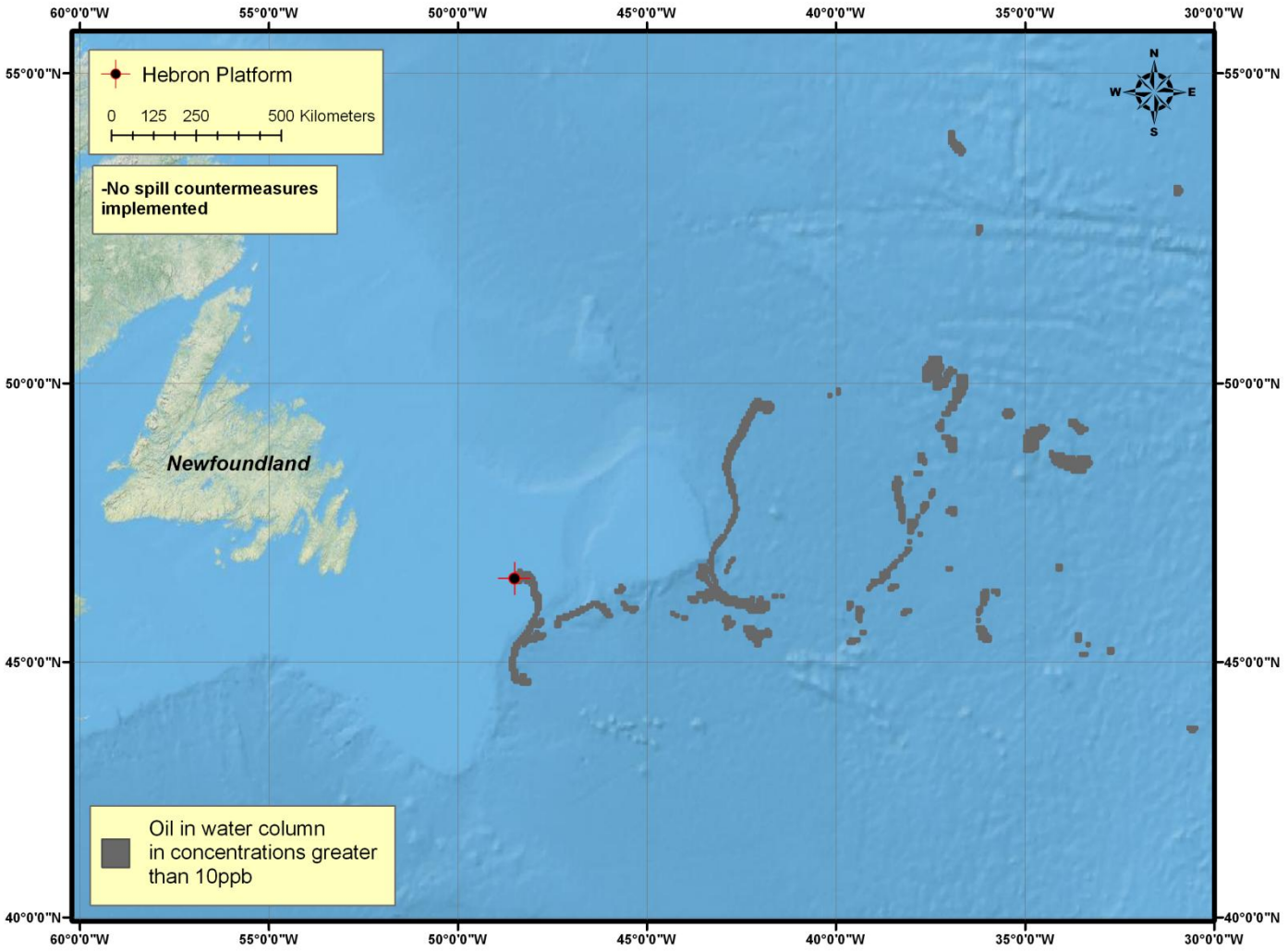


Figure 18. Area of entrained oil for the 95th percentile water column case based on the volume of oil entrained in the water column at the end of a 120 day platform blow-out during the winter with ice present.

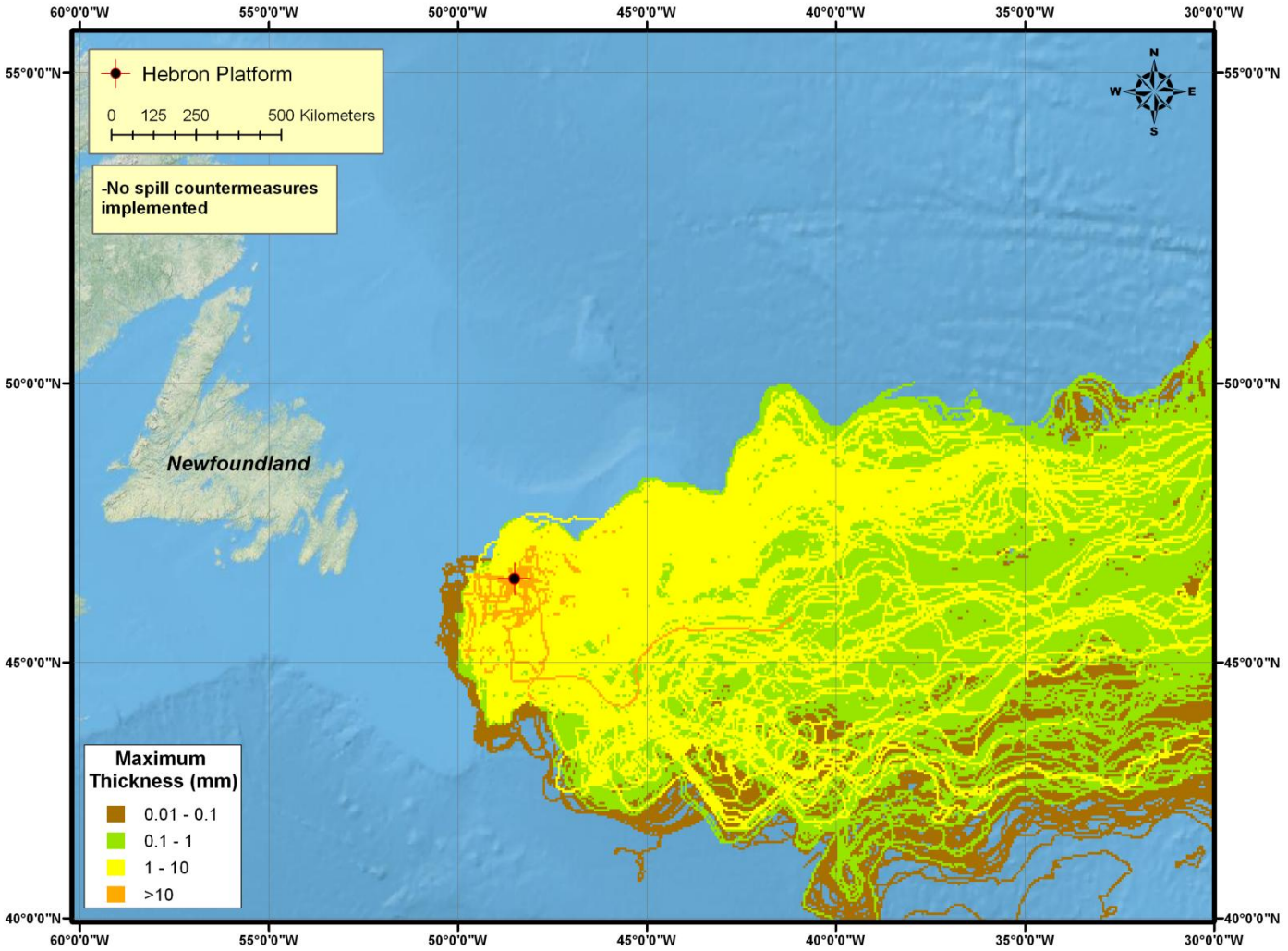


Figure 19. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a 100 day subsea blow-out in the summer.

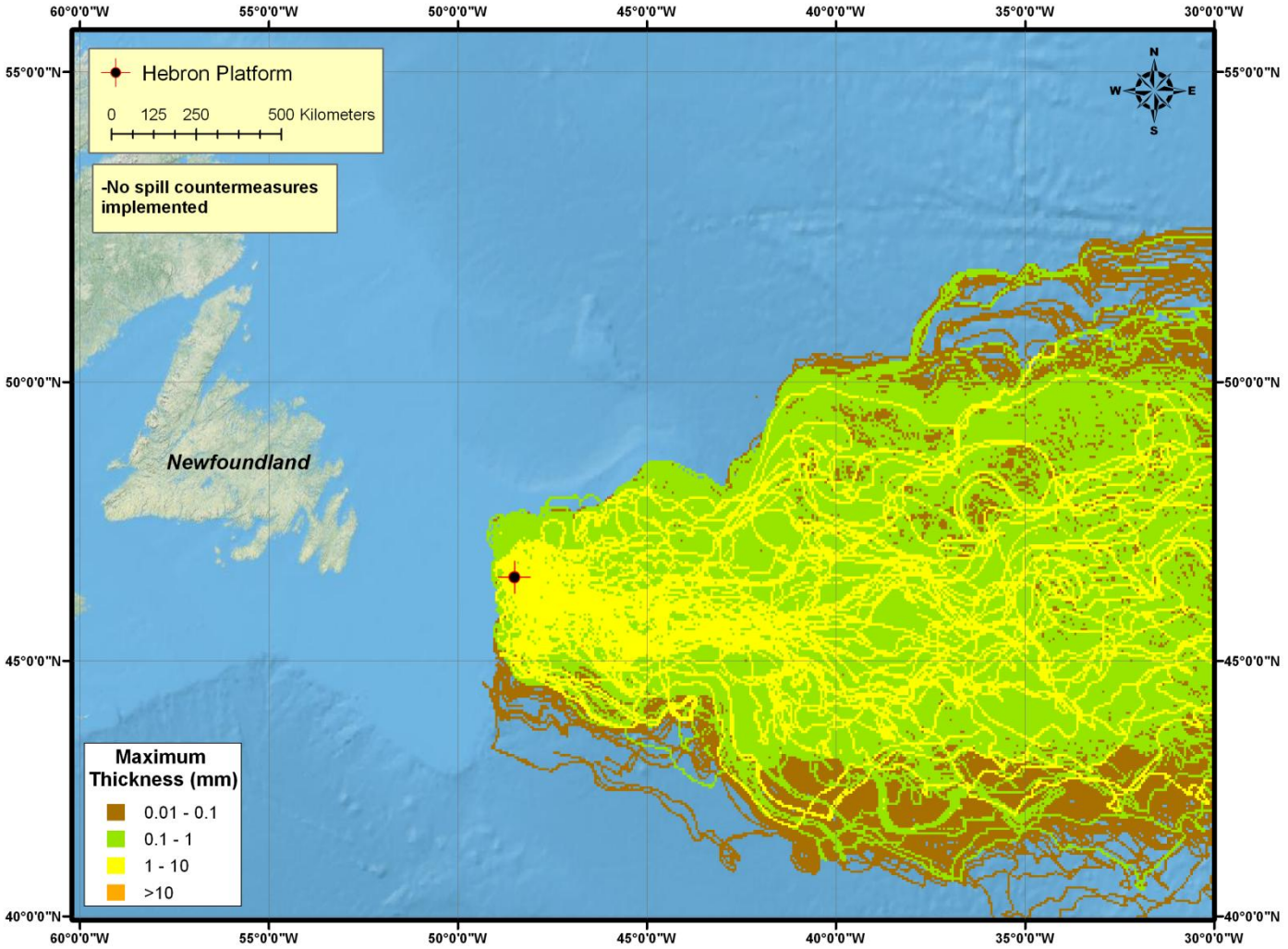


Figure 20. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a 120 day subsea blow-out in the winter.

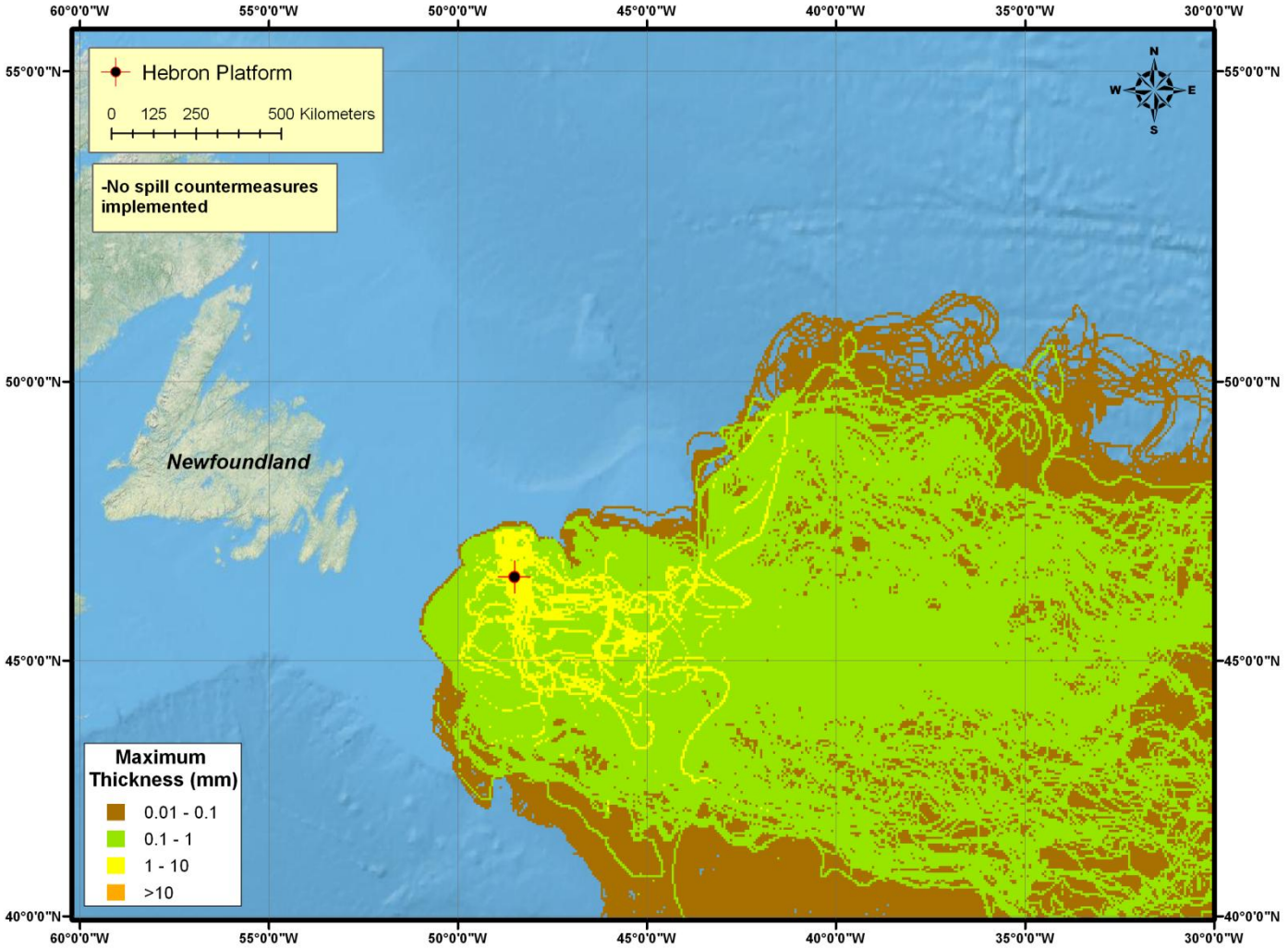


Figure 21. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a 120 day subsea blow-out in the winter with ice present.

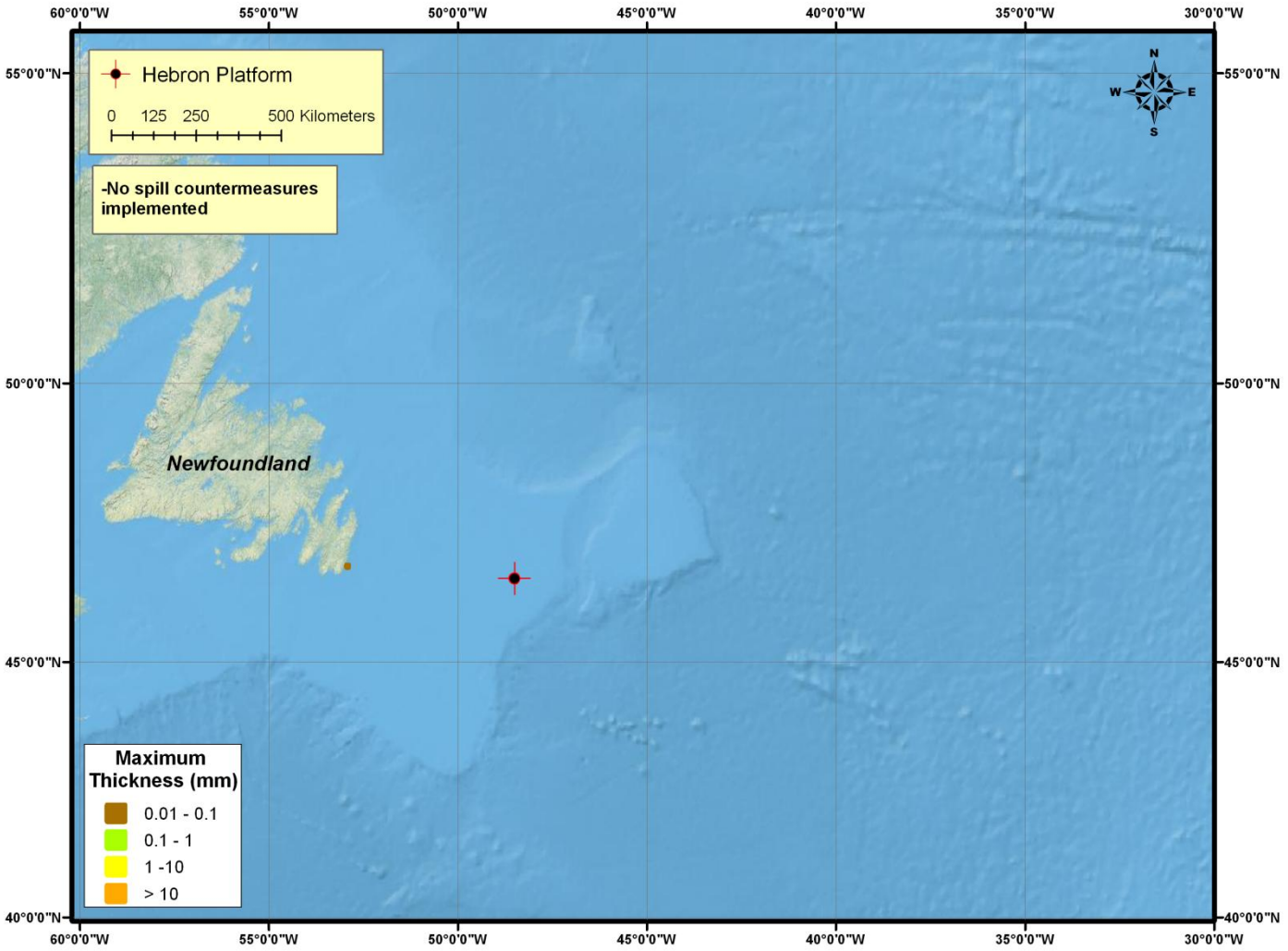


Figure 22. Maximum shoreline oil thickness for the 95th percentile shoreline oiling case based on the shoreline area oiled during a 100 day subsea blow-out in the summer.

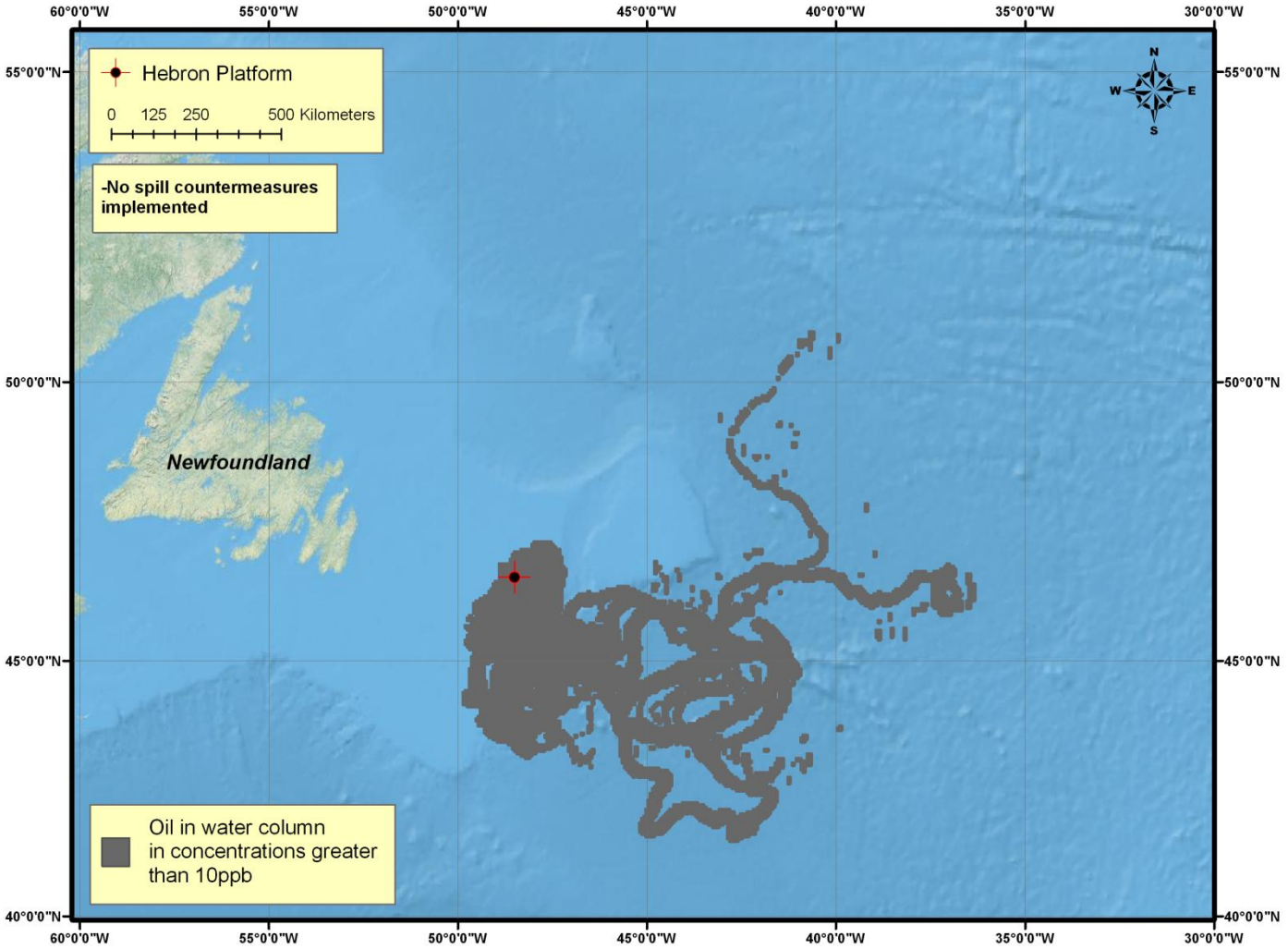


Figure 23. Area of entrained oil for the 95th percentile water column case based on the volume of oil entrained in the water column at the end of a 100 day platform blow-out during the summer.

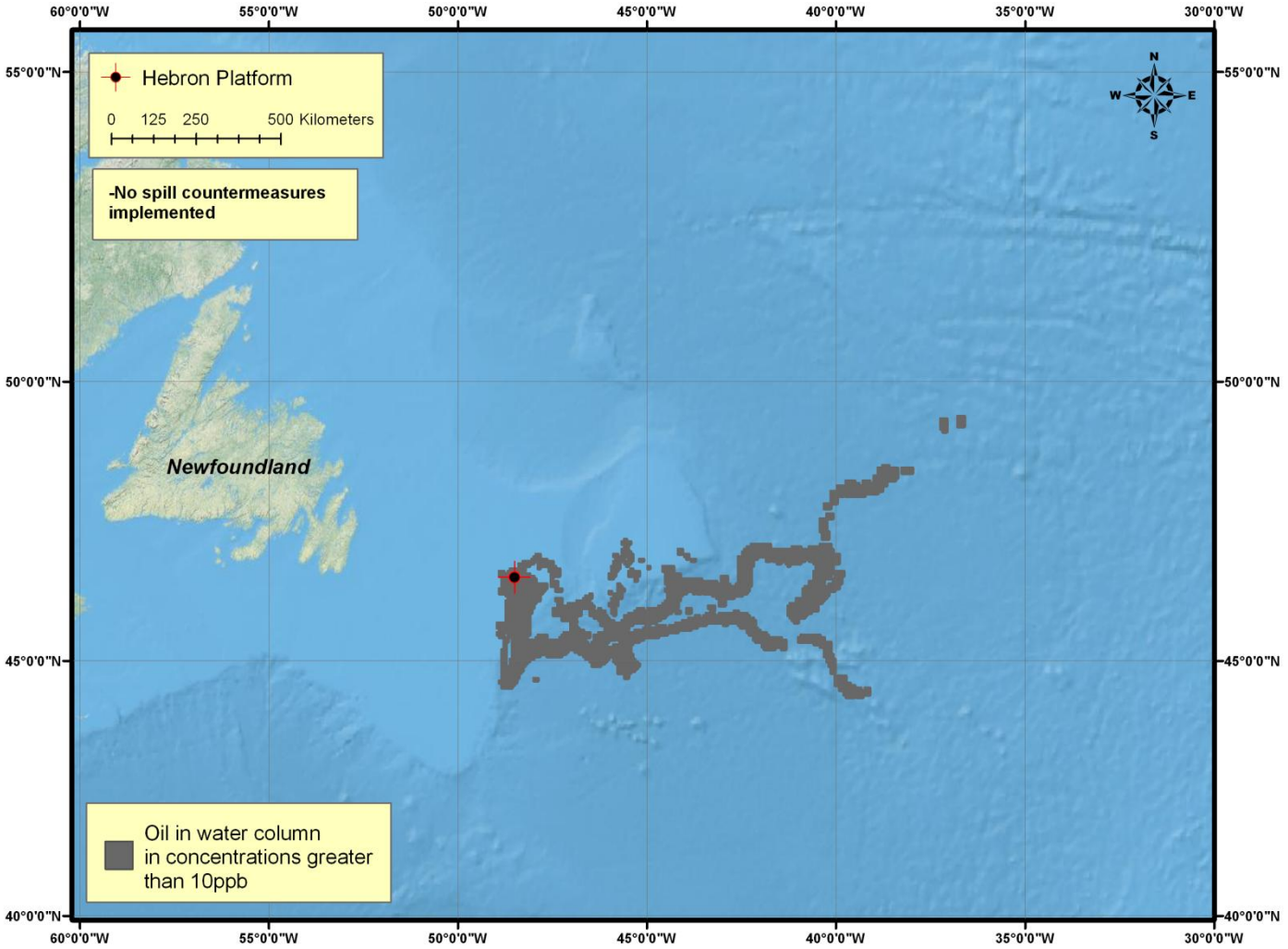


Figure 24. Area of entrained oil for the 95th percentile water column case based on the volume of oil entrained in the water column at the end of a 120 day subsea blow-out during the winter.

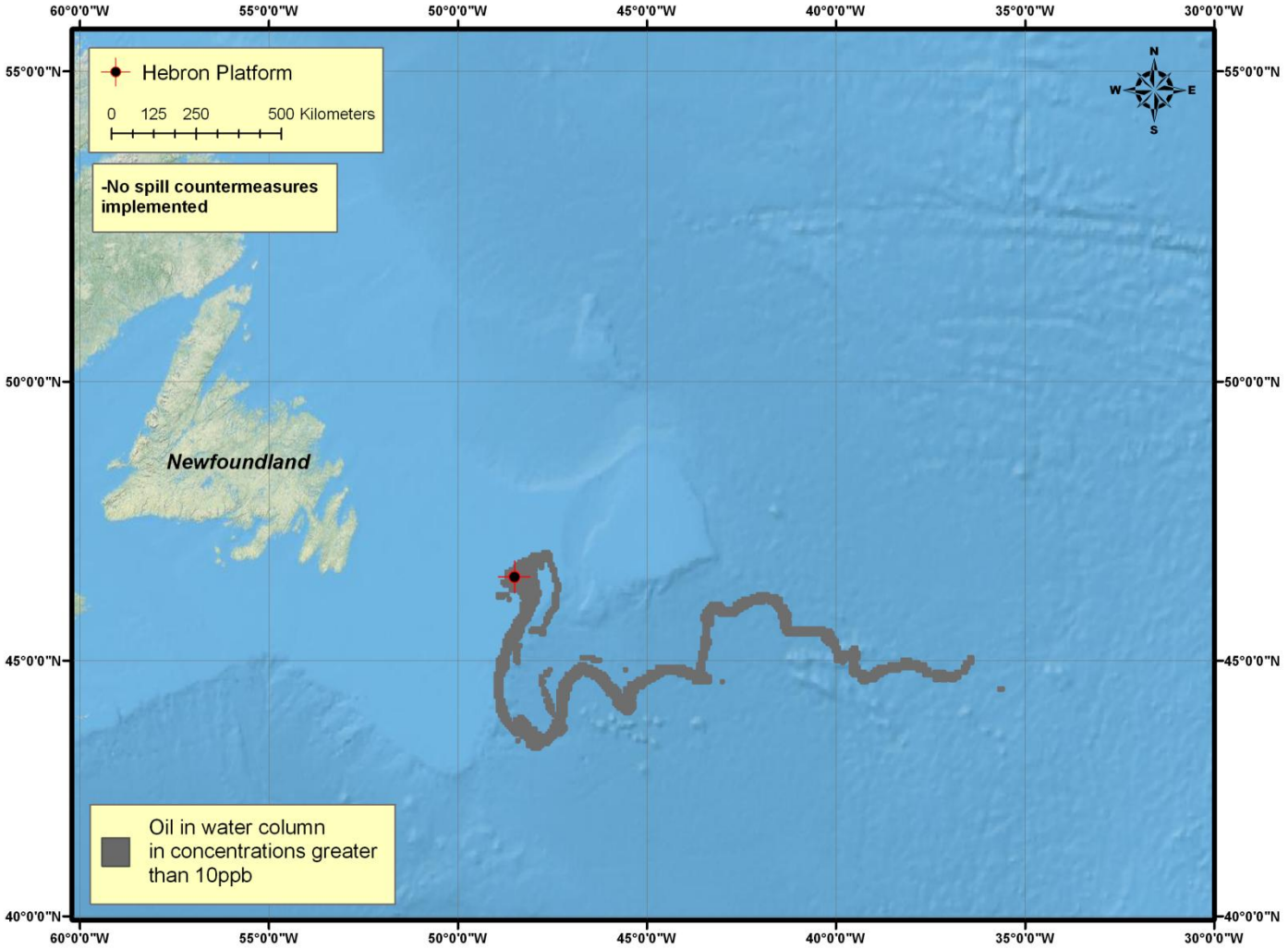


Figure 25. Area of entrained oil for the 95th percentile water column case based on the volume of oil entrained in the water column at the end of a 120 day subsea blow-out during the winter with ice present.

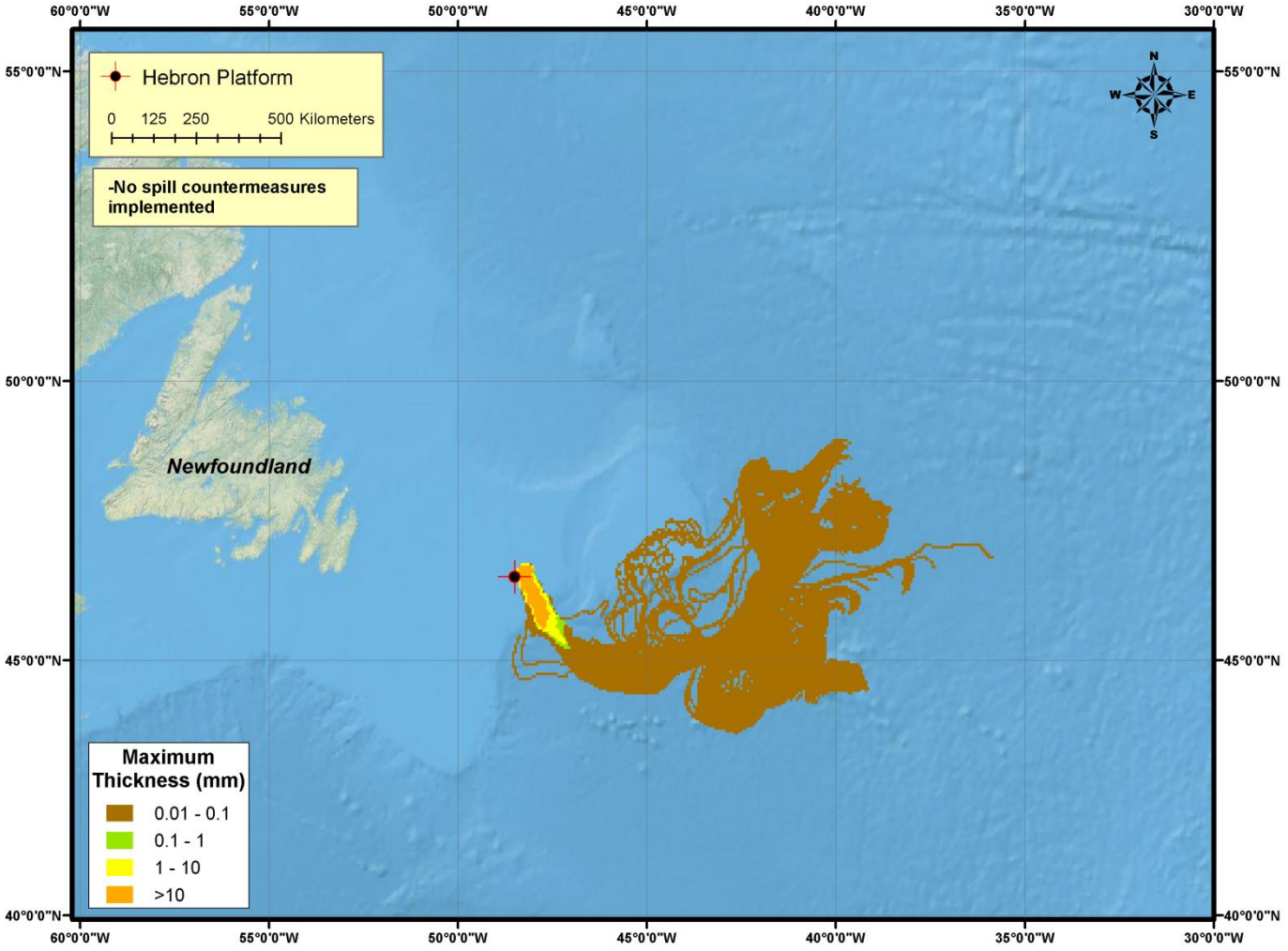


Figure 26. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during an instantaneous release of marine diesel in the summer.

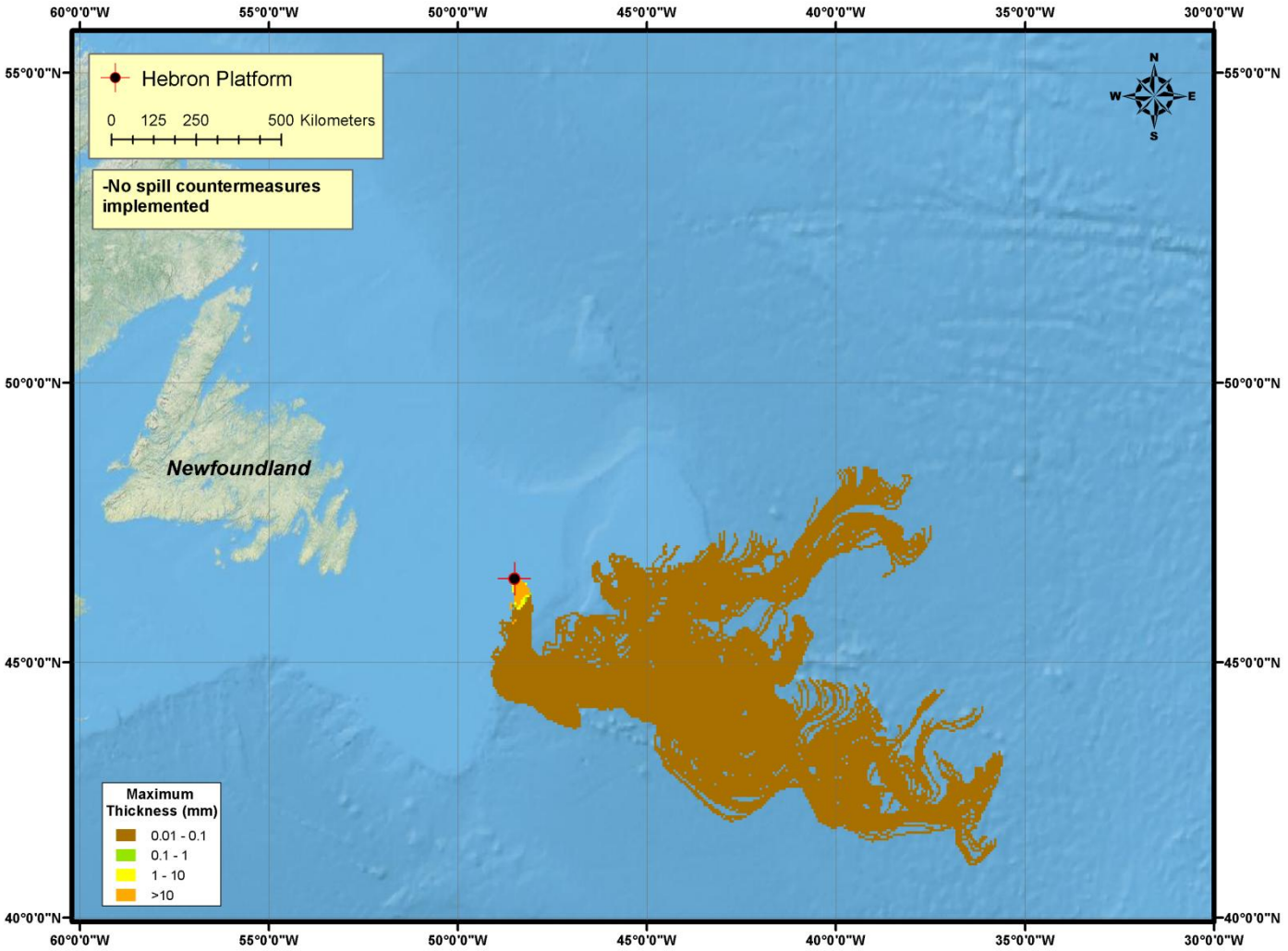


Figure 27. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during an instantaneous release of marine diesel in the winter.

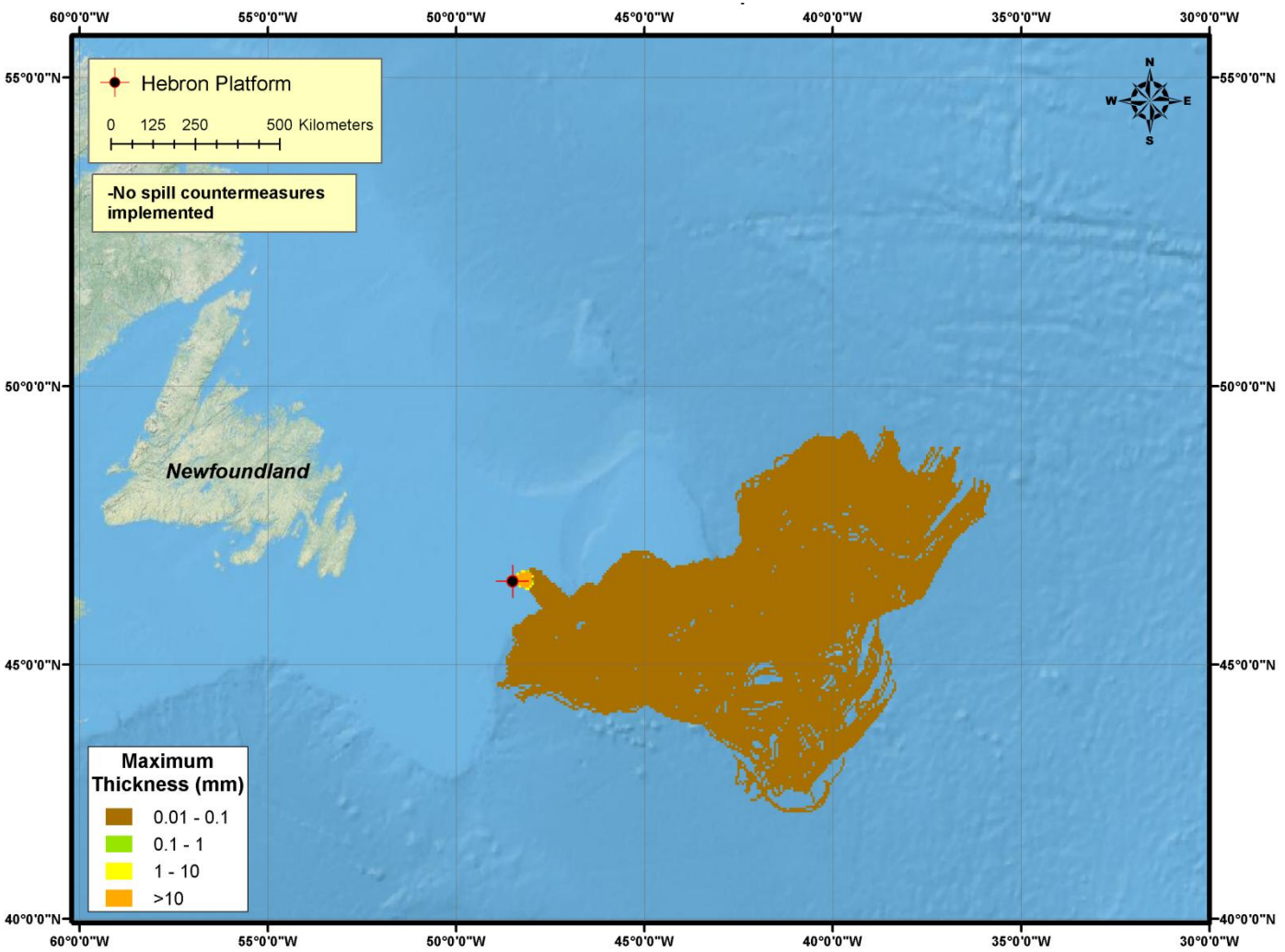


Figure 28. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during an instantaneous release of marine diesel in the winter with ice present.

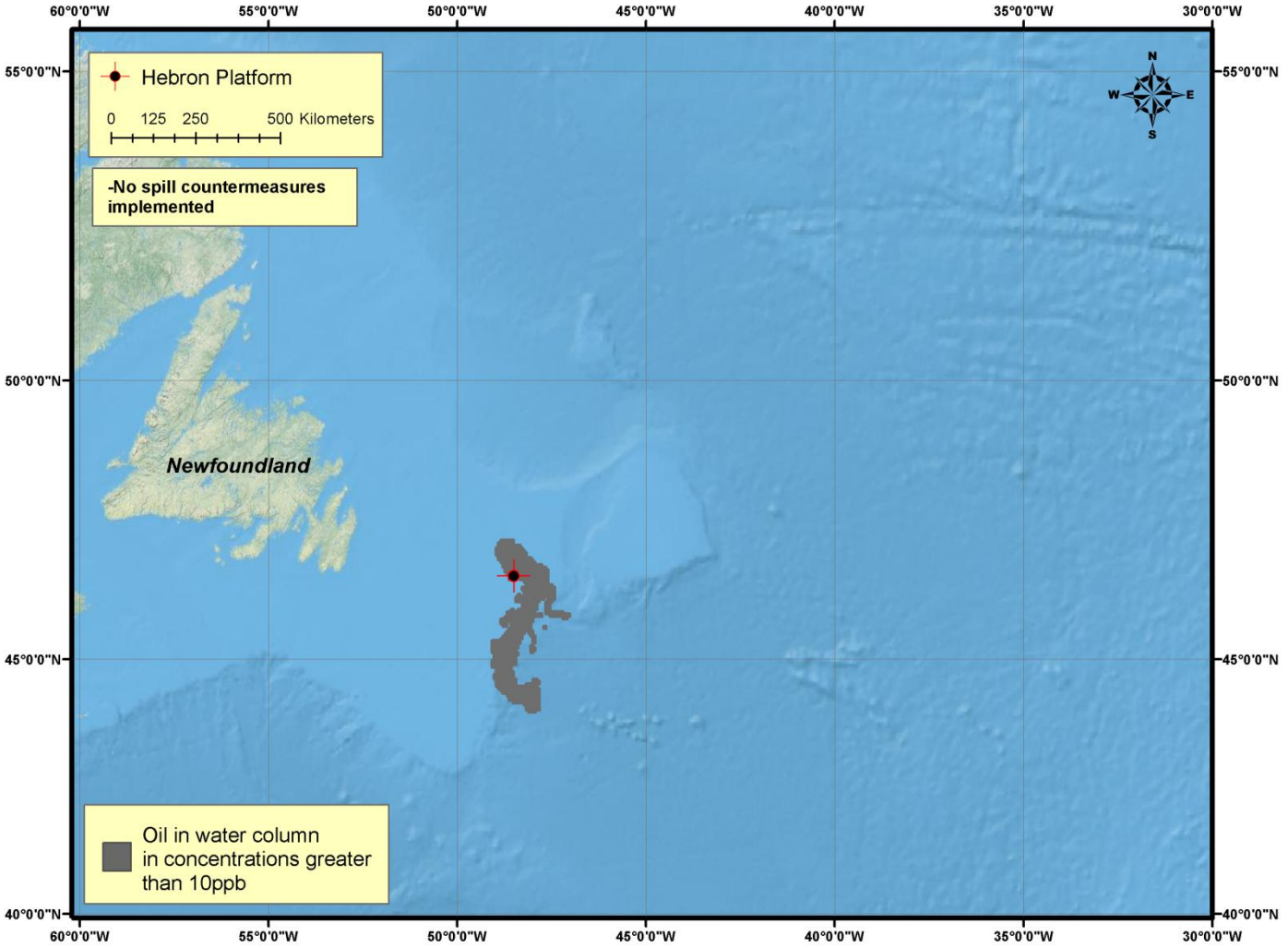


Figure 29. Area of entrained oil for the 95th percentile water column case based on the volume of marine diesel oil entrained in the water column at the end of a 30 day simulation during the summer.

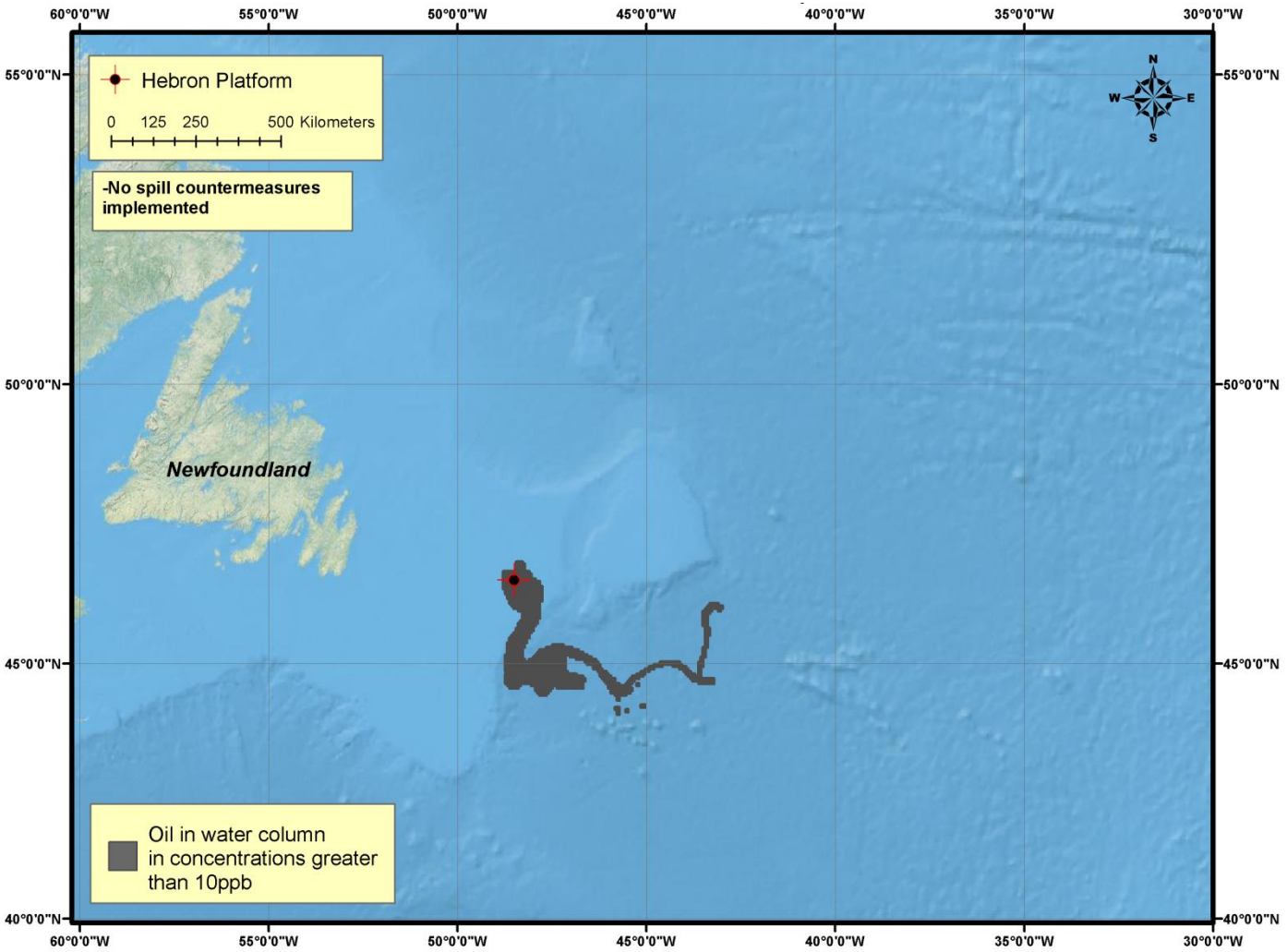


Figure 30. Area of entrained oil for the 95th percentile water column case based on the volume of marine diesel oil entrained in the water column at the end of a 30 day simulation during the winter.

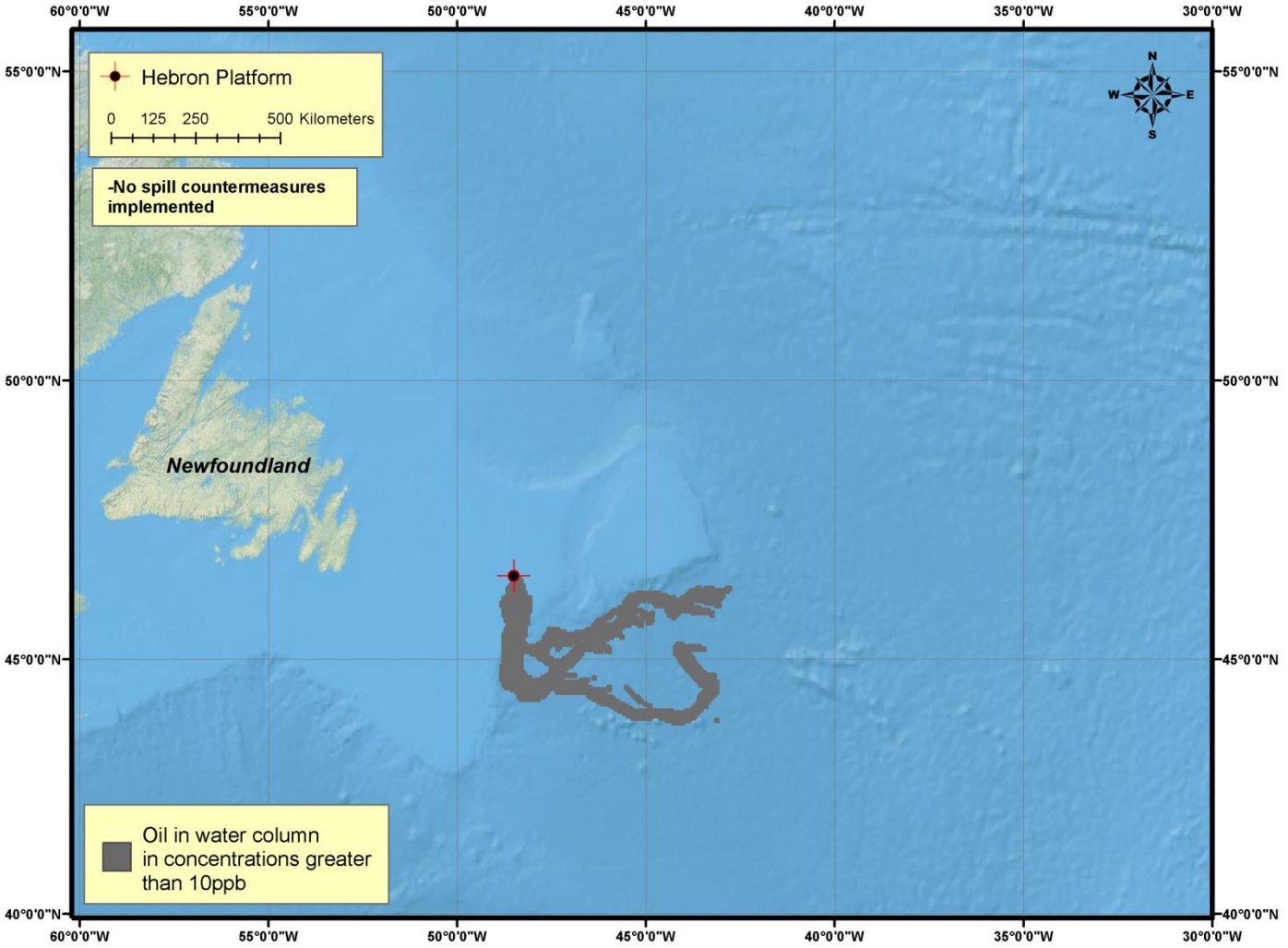


Figure 31. Area of entrained oil for the 95th percentile water column case based on the volume of marine diesel oil entrained in the water column at the end of a 30 day simulation during the winter with ice present.

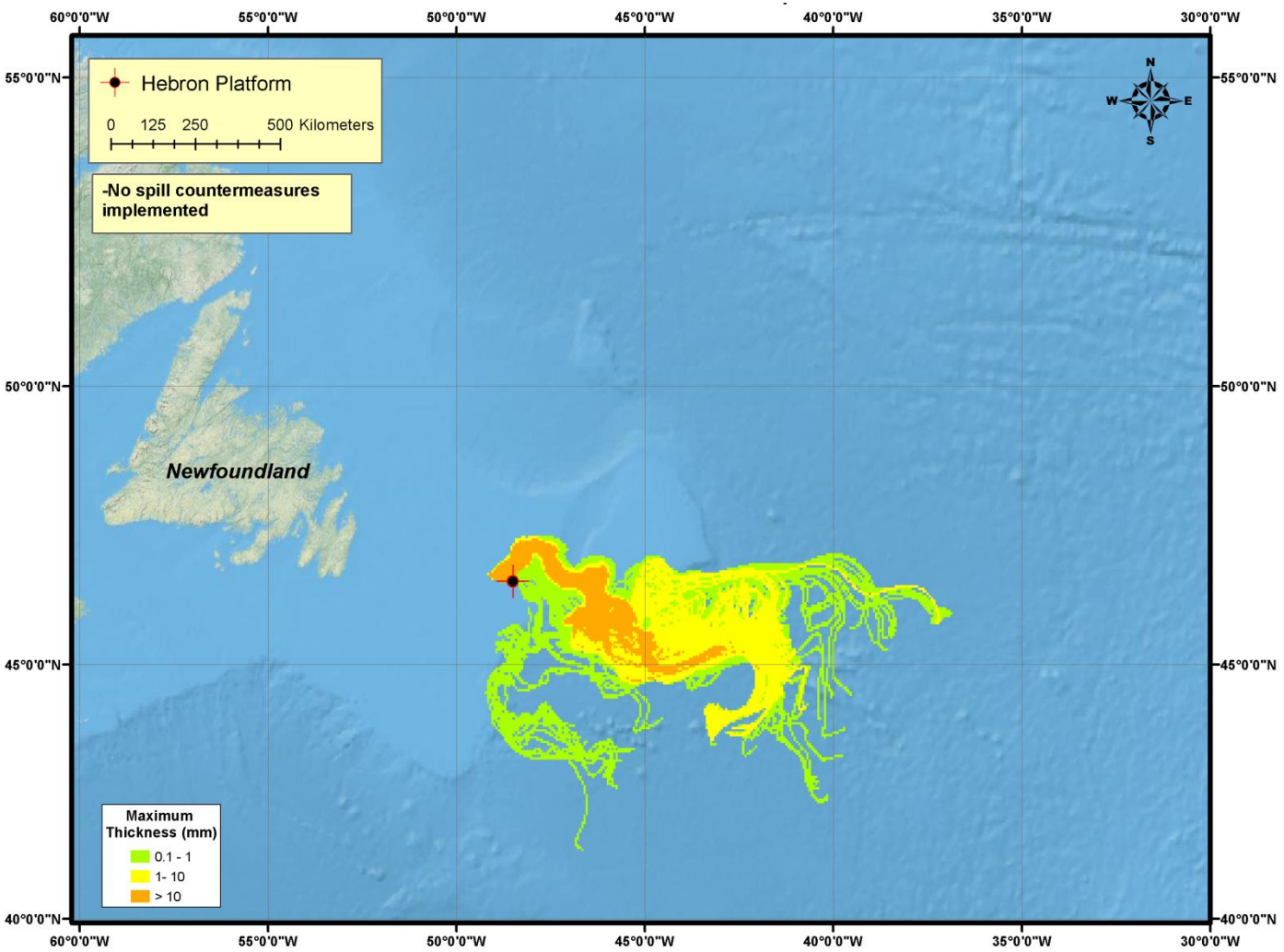


Figure 32. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a batch OLS transfer release of crude in the summer.

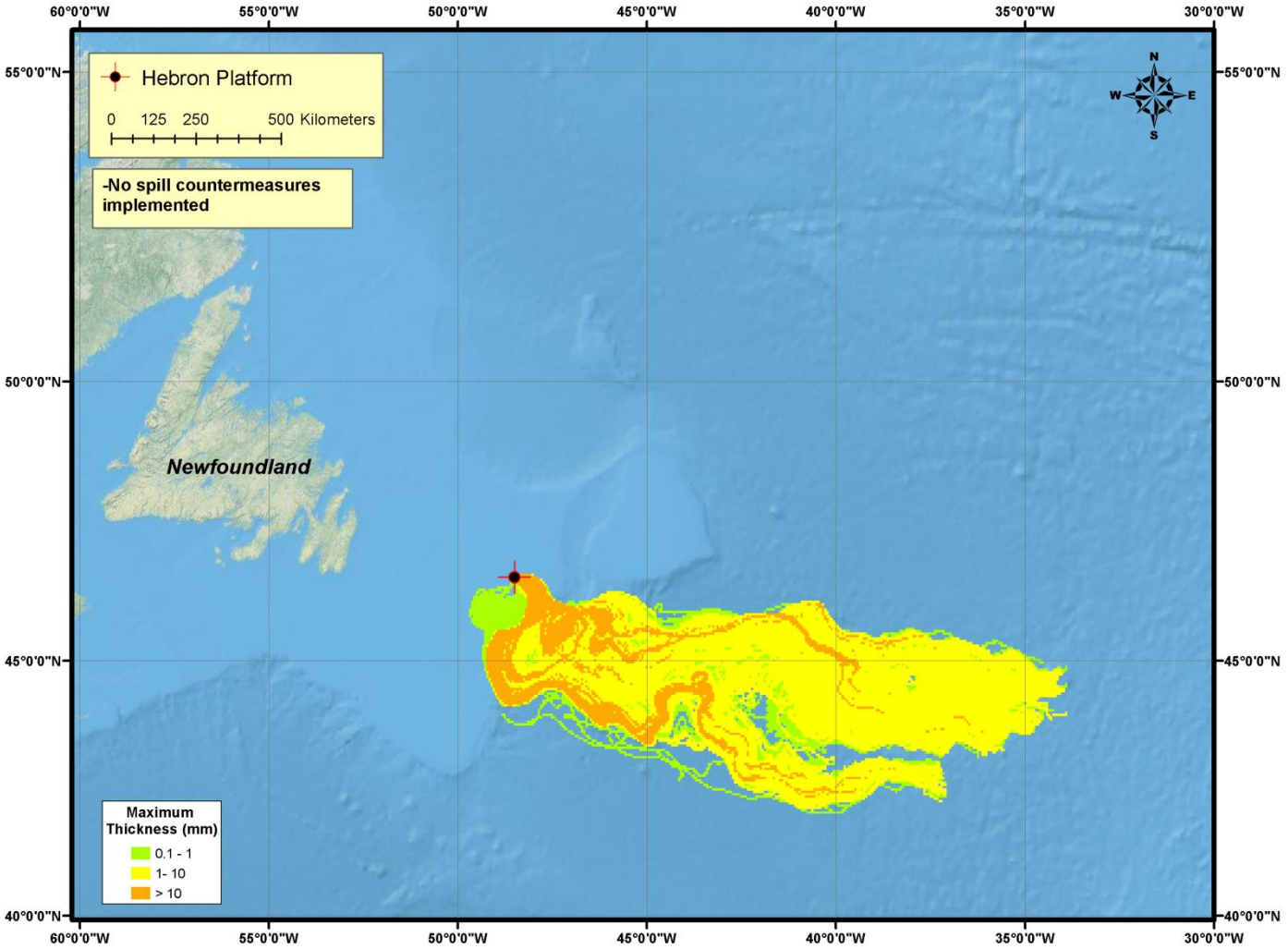


Figure 33. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a batch OLS transfer release of crude in the winter.

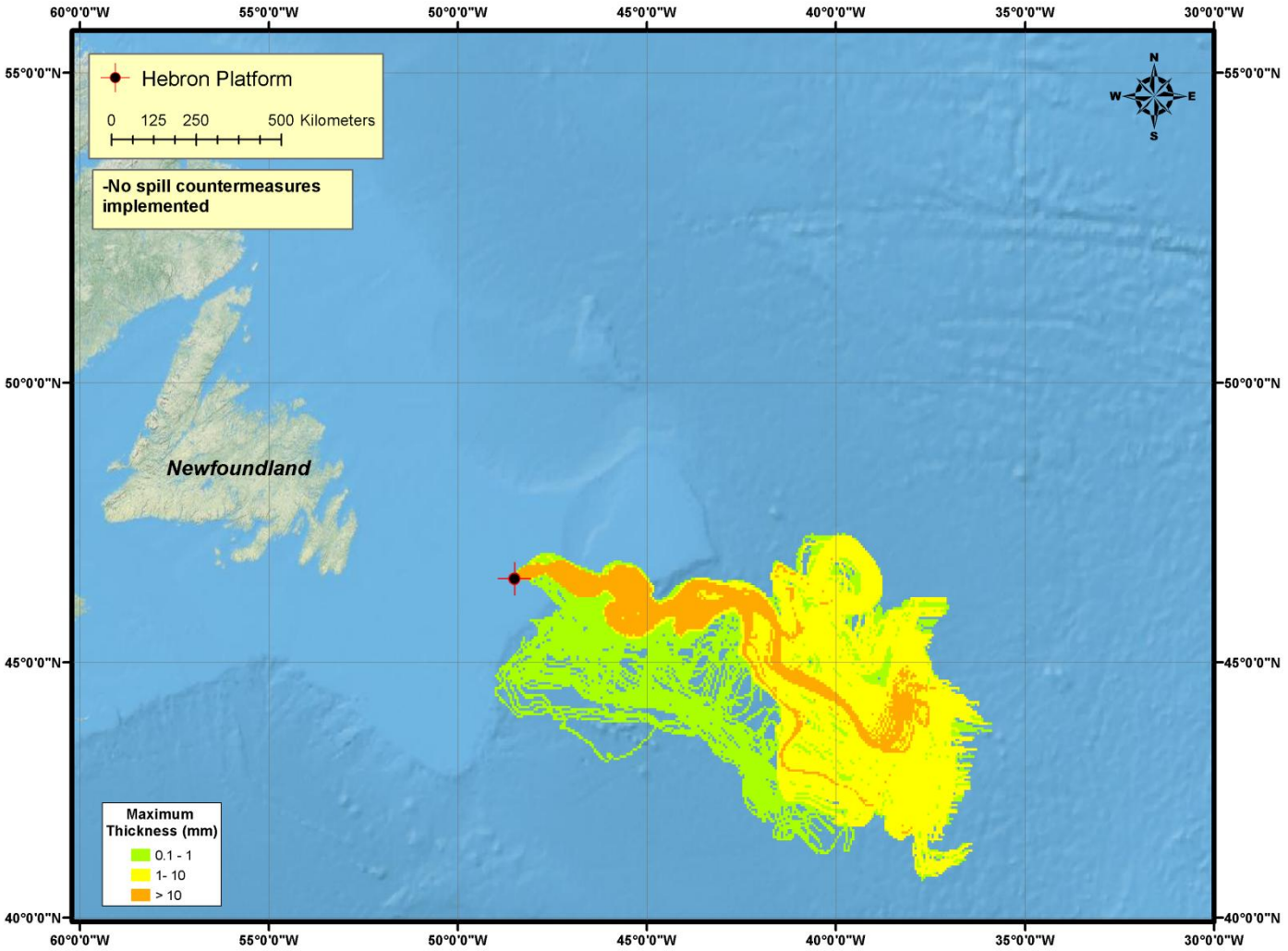


Figure 34. Maximum surface oil thickness for the 95th percentile surface oiling case based on the sea surface area oiled during a batch OLS transfer release of crude in the winter with ice present.

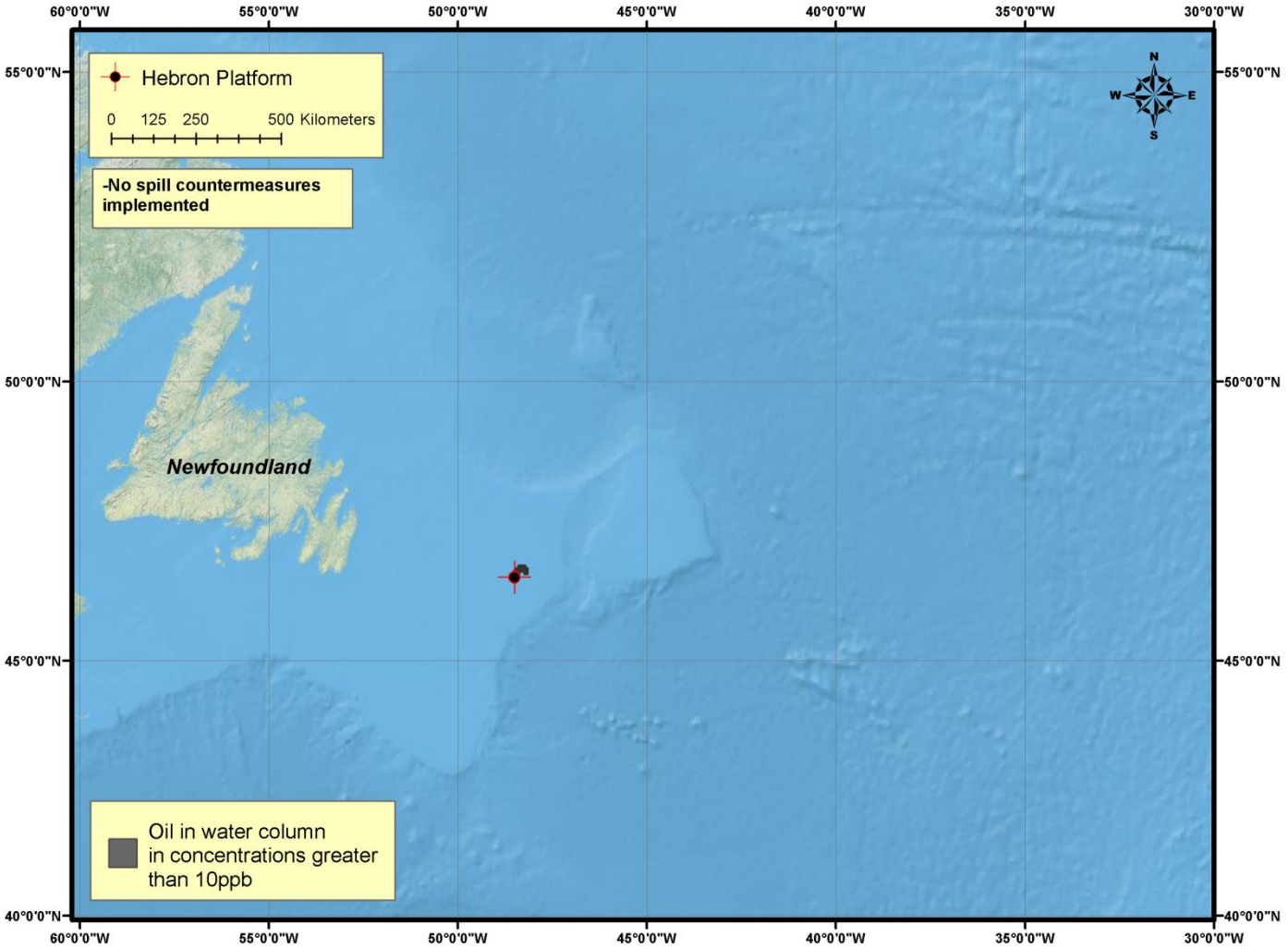


Figure 35. Area of entrained oil for the 95th percentile water column case based on the volume of crude oil entrained in the water column at the end of a 30 day simulation during the summer.

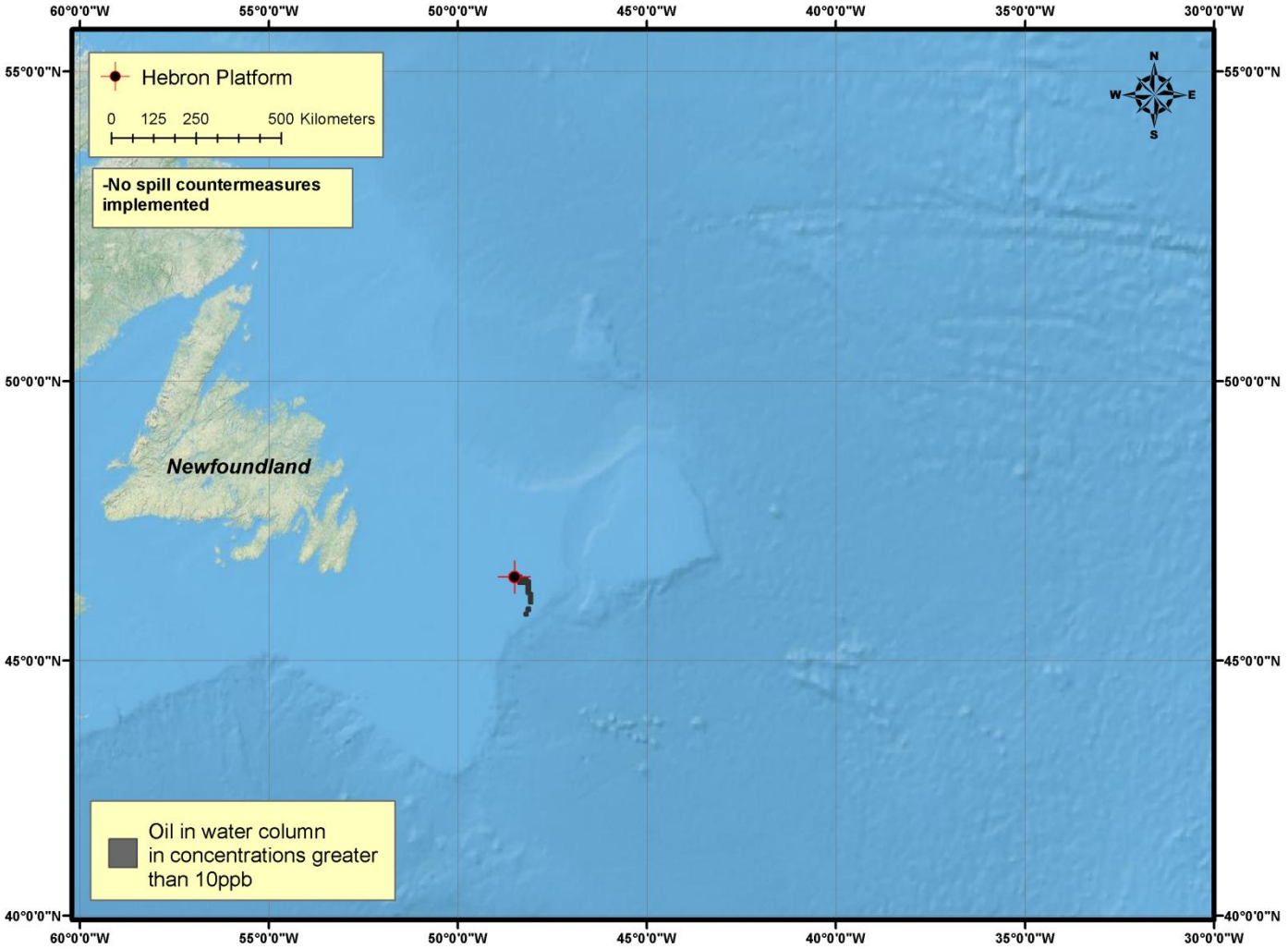


Figure 36. Area of entrained oil for the 95th percentile water column case based on the volume of crude oil entrained in the water column at the end of a 30 day simulation during the winter.

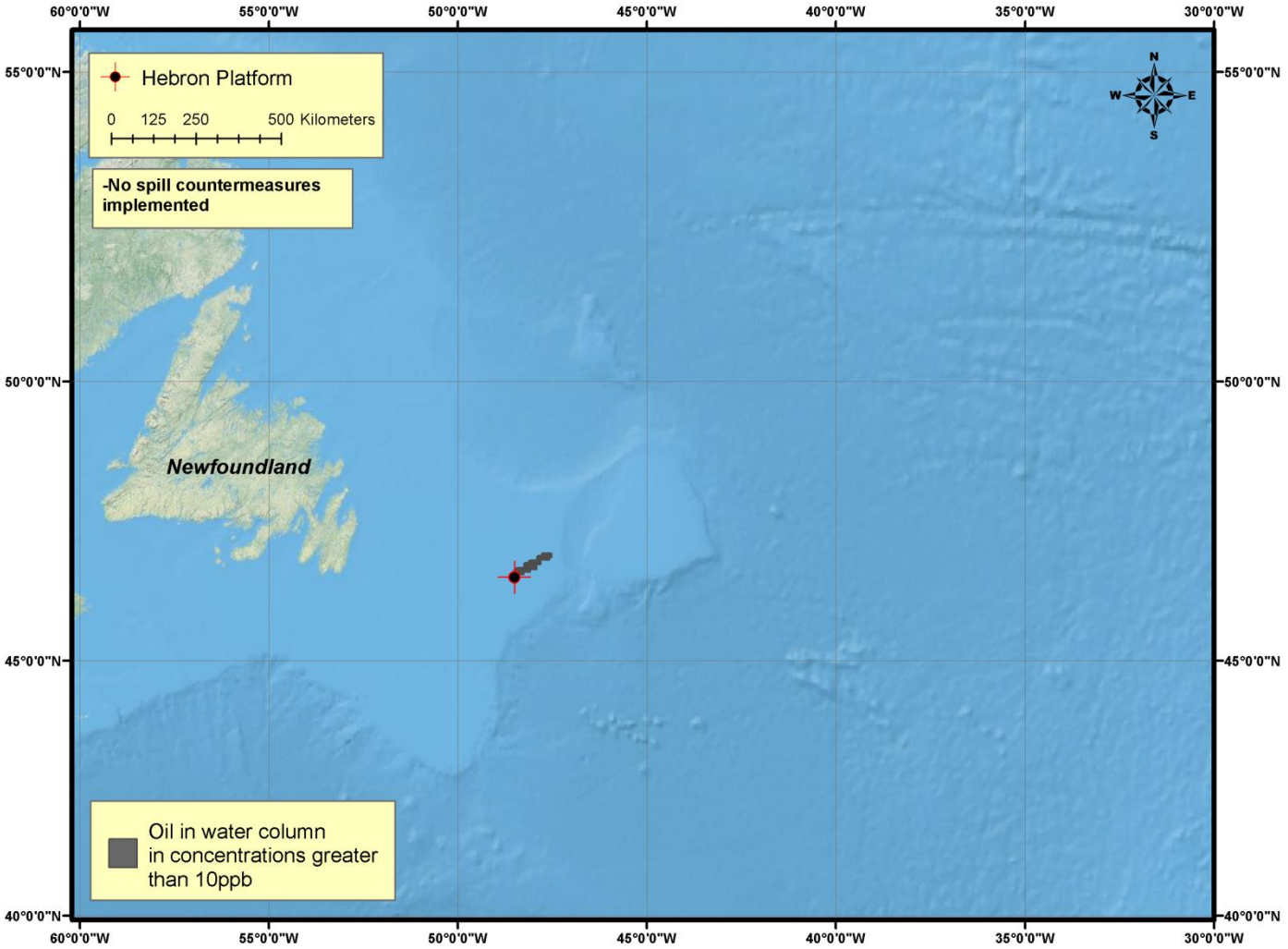


Figure 37. Area of entrained oil for the 95th percentile water column case based on the volume of crude oil entrained in the water column at the end of a 30 day simulation during the winter with ice present.