Appendix C: Large-scale copies of figures

E. Greenhalgh

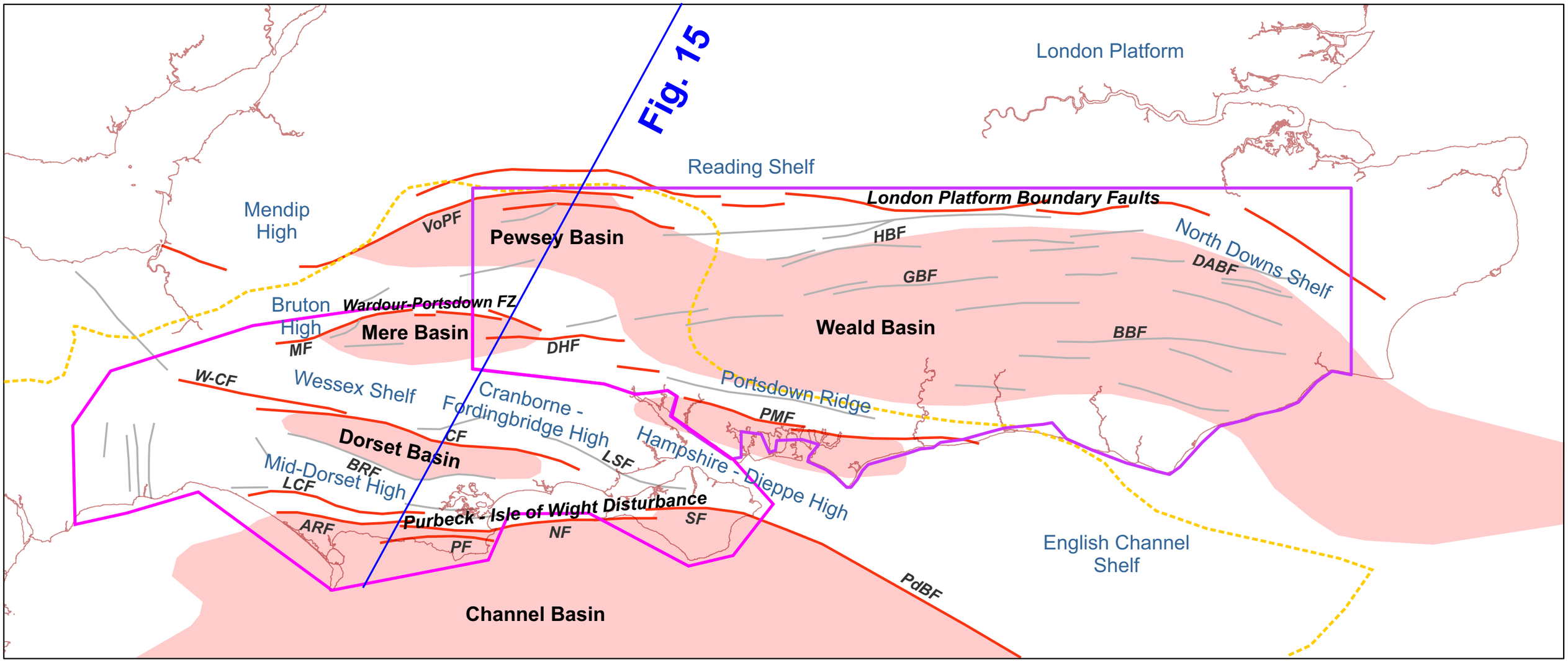
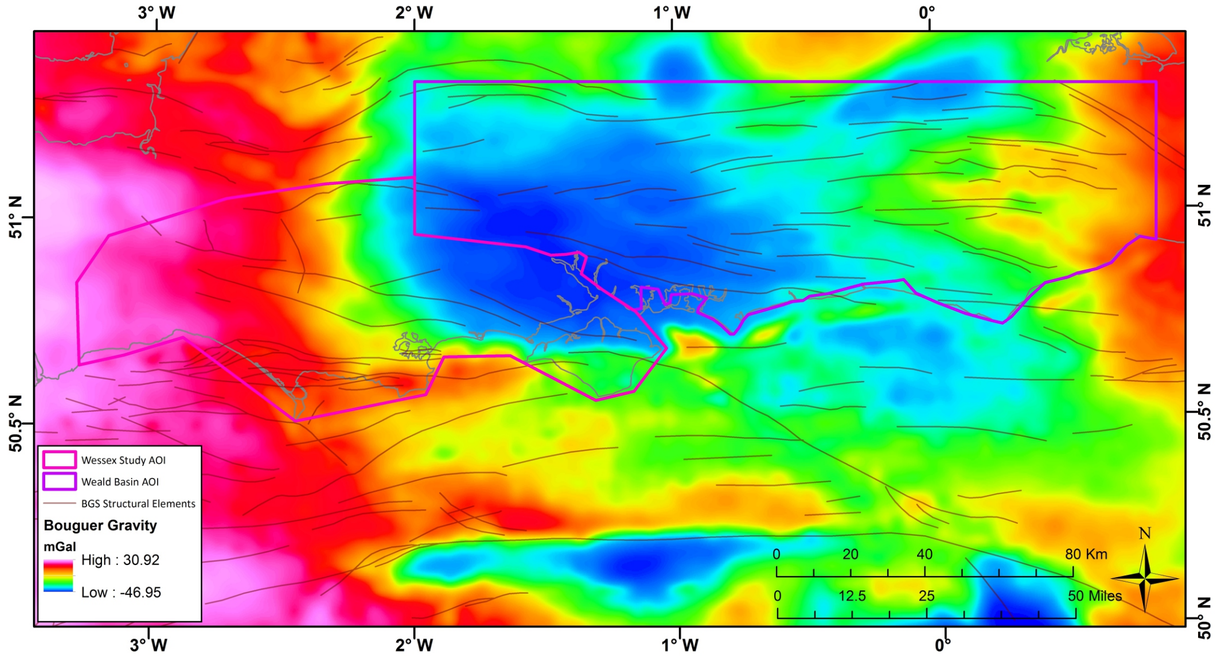
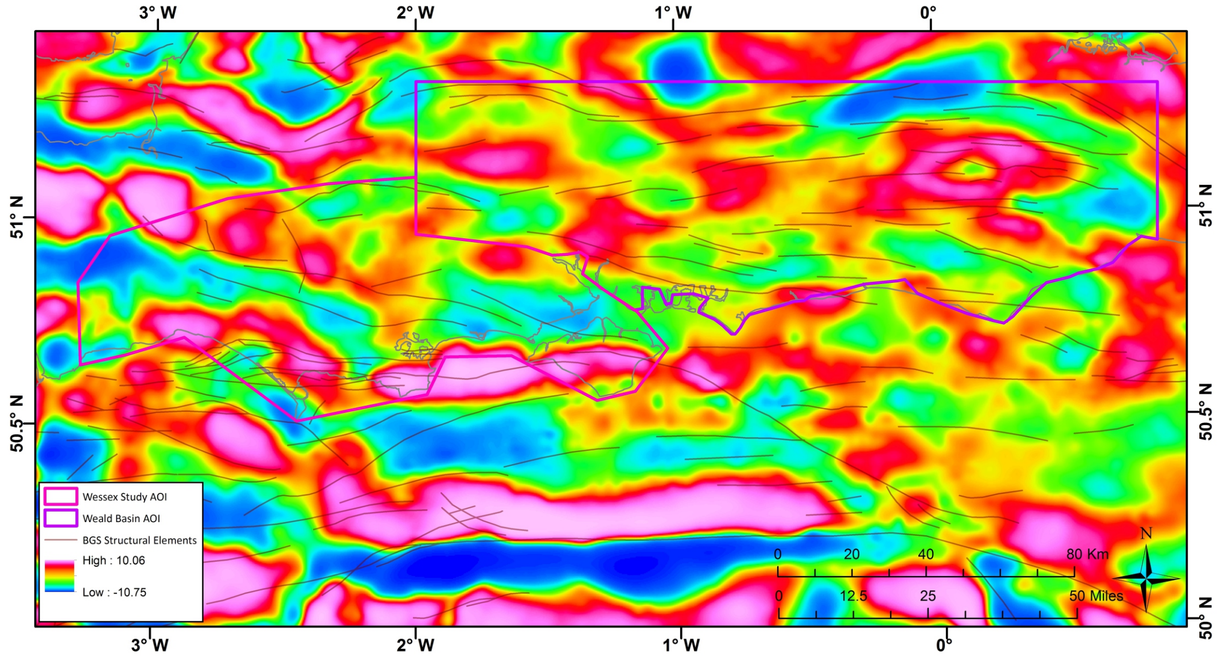
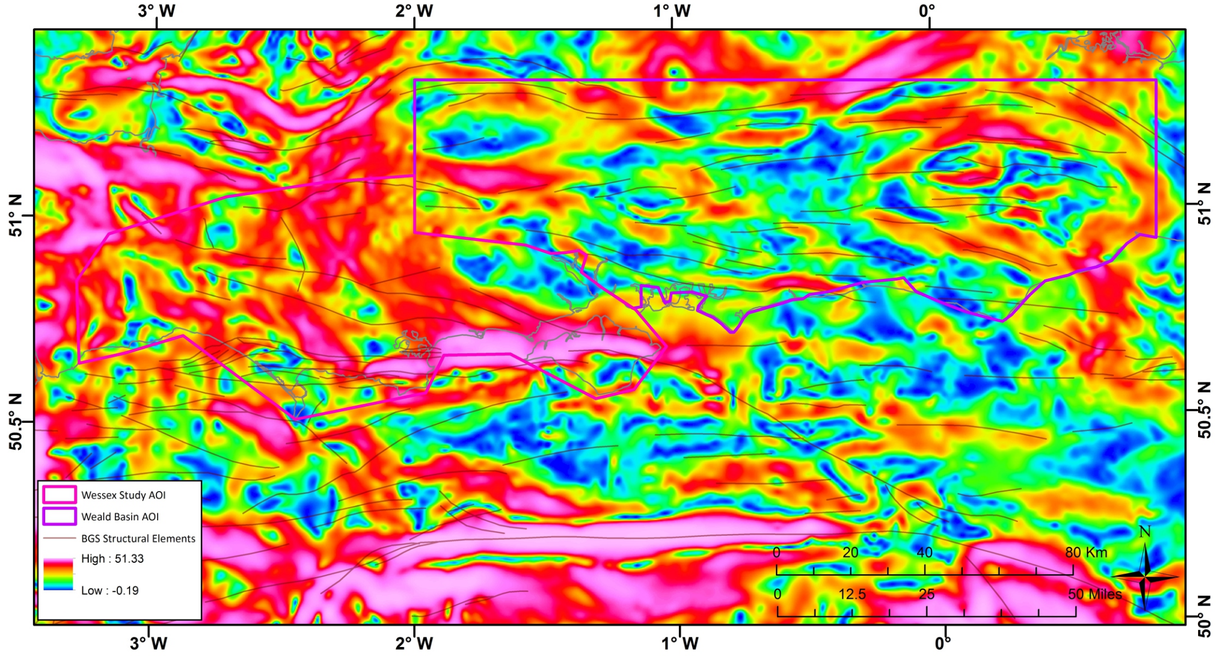


Figure 13. The major Mesozoic structural features of southern England. Adapted from Andrews (2014), and based on Stoneley (1982); Chadwick (1983); Lake (1985); Sellwood et al. (1985); Hancock & Mithen (1987); Butler & Pullan (1990); Butler (1998); Hawkes et al. (1998); Underhill & Stoneley (1998); Chadwick & Evans (2005). The Wessex Basin sensu Underhill & Stoneley (1998) lies southwest of the orange dashed line. Study area outlines in pink (Wessex) and purple (Weald). Abbreviations: ARF = Abbotsbury-Ridgeway Fault; LCF = Litton-Cheney Fault; PF = Purbeck Fault; NF = Needles Faults; SF = Sandhills Fault; PdBF = Pays de Bray Fault; BRF = Bere Regis Fault; W-CF = Watchet-Cothelstone Fault; CF = Cranborne Fault; LSF = Lymington-Sandhills Fault; MF = Mere Fault; DHF = Dean Hill Fault; PMF = Portsdown-Middleton Fault; VoPF = Vale of Pewsey Faults; HBF = Hog's Back Fault; GBF = Godley Bridge Fault; BBF = Brightling-Bolney Fault; DABF = Detention-Ashour-Bletchingley Fault; FZ = Fault Zone.







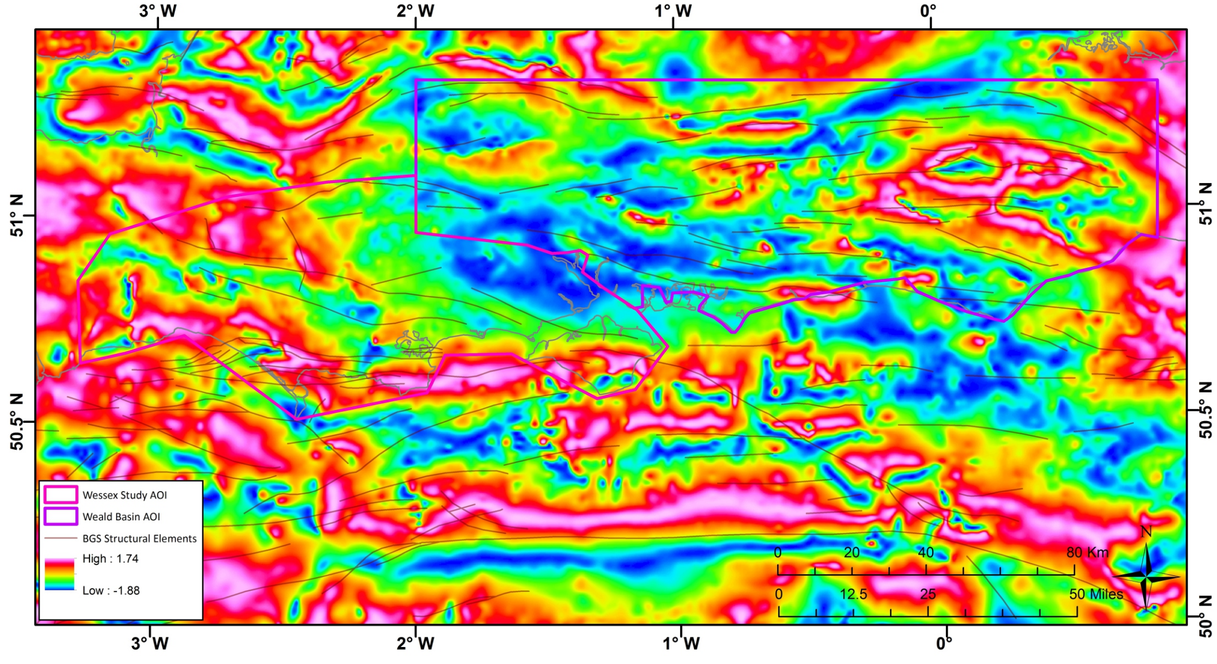


Figure 14. Bouguer gravity (mGal) (top left), 50 km high-pass filtered Bouguer gravity (top right), horizontal gradient of Bouguer gravity (bottom left) and tilt derivative (bottom right) of southern England. All images show the main BGS structural elements and Wessex (pink polygon) and Weald (purple polygon) study areas. Regional east-west and northwest-southeast trends are clearly visible. Gravity data from the BGS UKCS compilation, which is based on a compilation of BGS and open-file data.

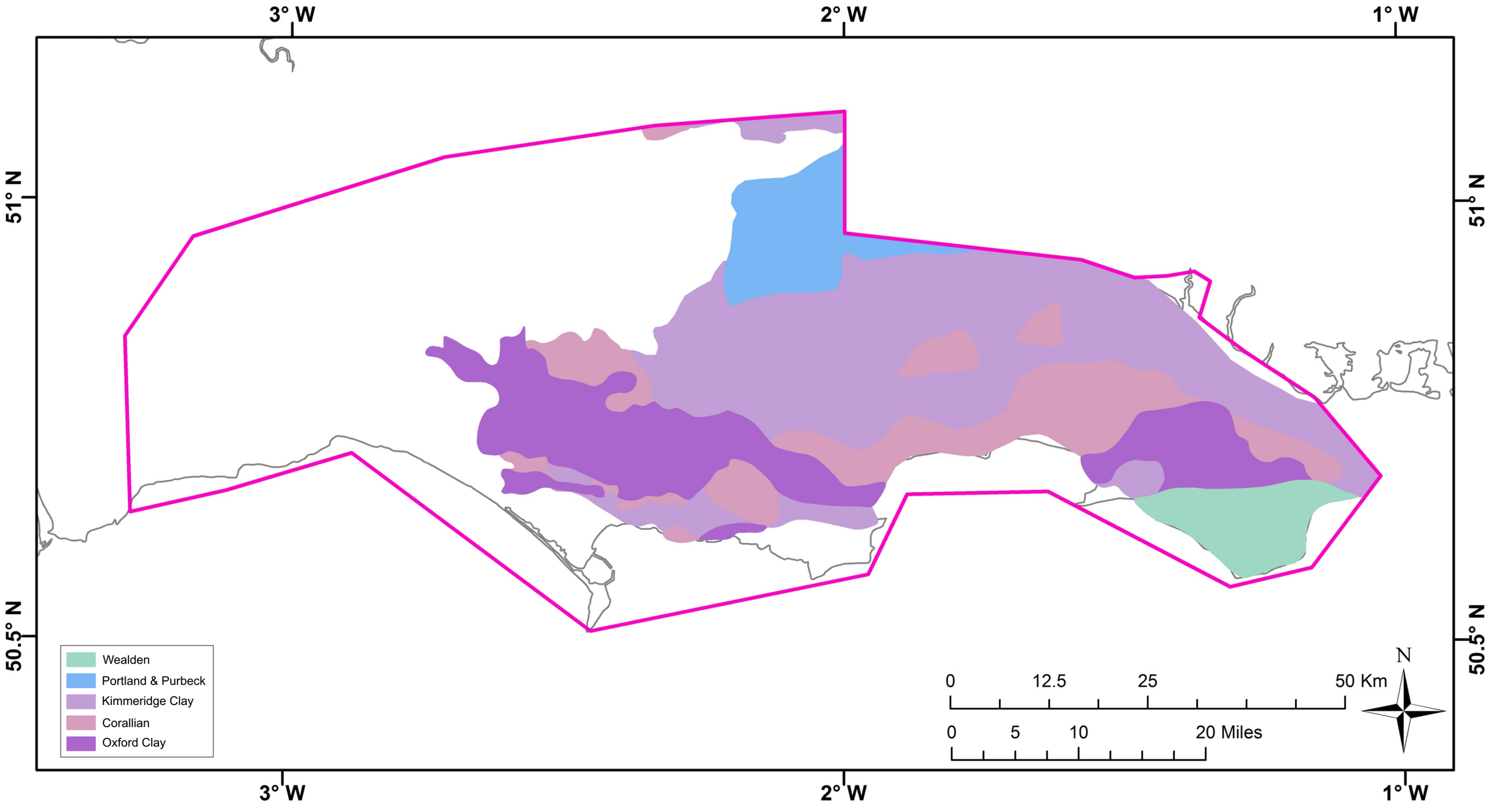


Figure 16. Generalised subcrop map beneath the Base Greensand Unconformity, determined from seismic and well data, and Whittaker (1985). Pink polygon outlines the Wessex study area.

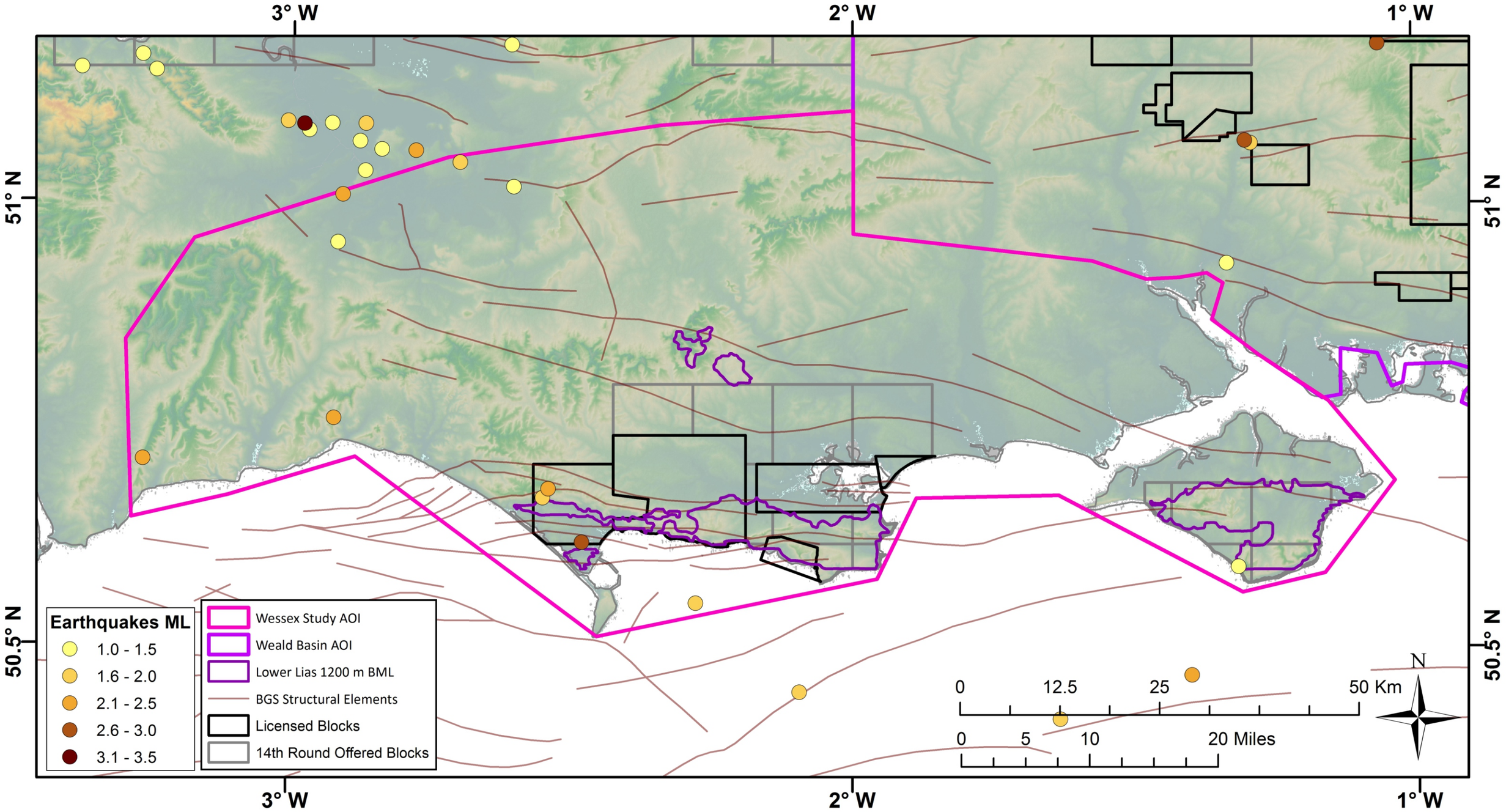


Figure 18. Earthquakes recorded by BGS from 1970 to 2016 for the Wessex area, coloured by magnitude. Also shown are the BGS structural elements and the area in which the Lower Lias is predicted to be mature with a 1200 m below ground-level cut-off. Background is hill-shaded topography. Contains Ordnance Survey data © Crown copyright and database right (2016). Contains British Geological Survey materials © NERC (2016). Earthquake database available from BGS at http://earthquakes.bgs.ac.uk/earthquakes/dataSearch.html

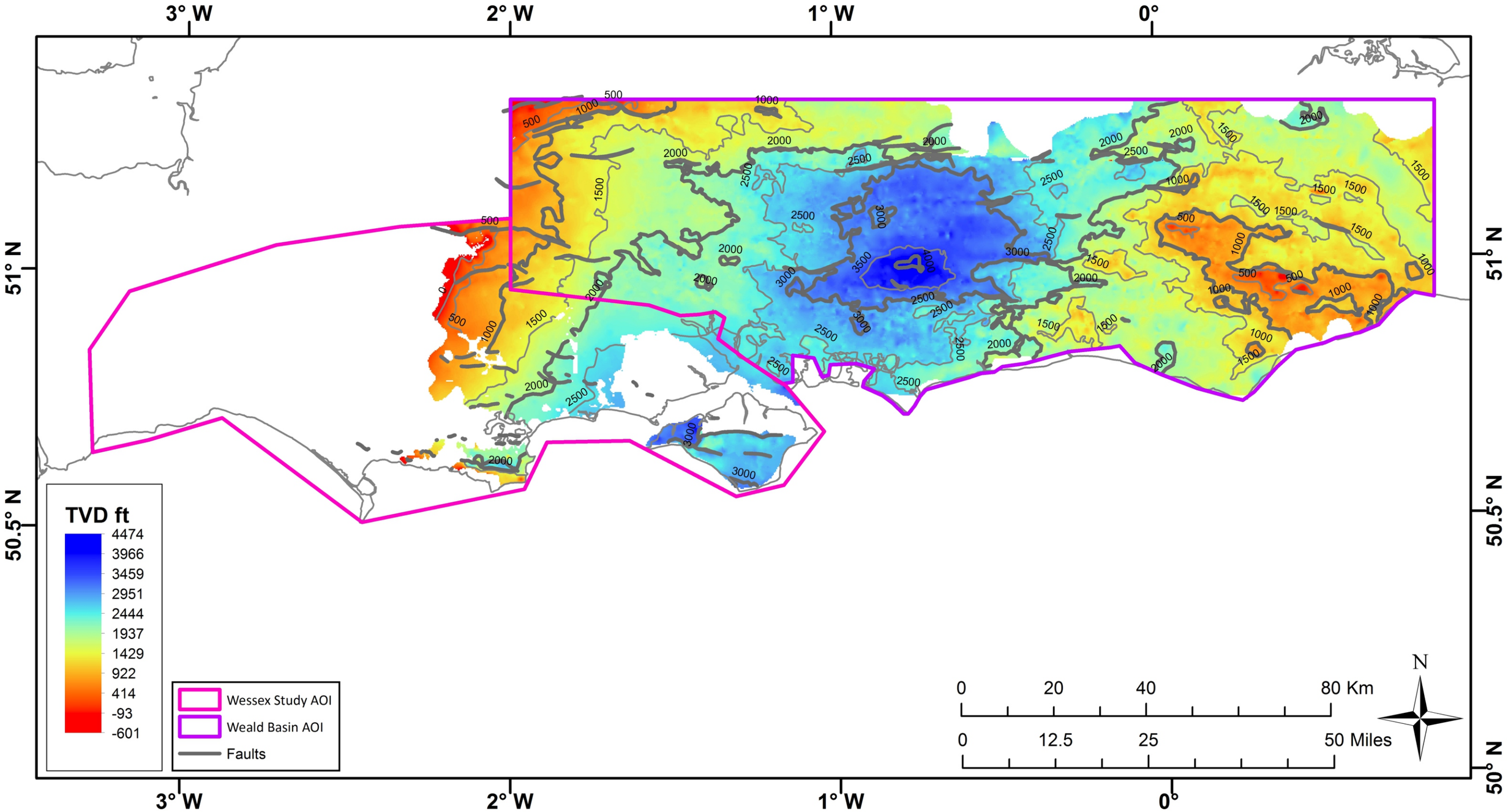


Figure 19. Depth to Top Kimmeridge Clay Fm, as mapped by this study for the Wessex area and by Andrews (2014) for the Weald Basin. Contour interval = 500 ft.

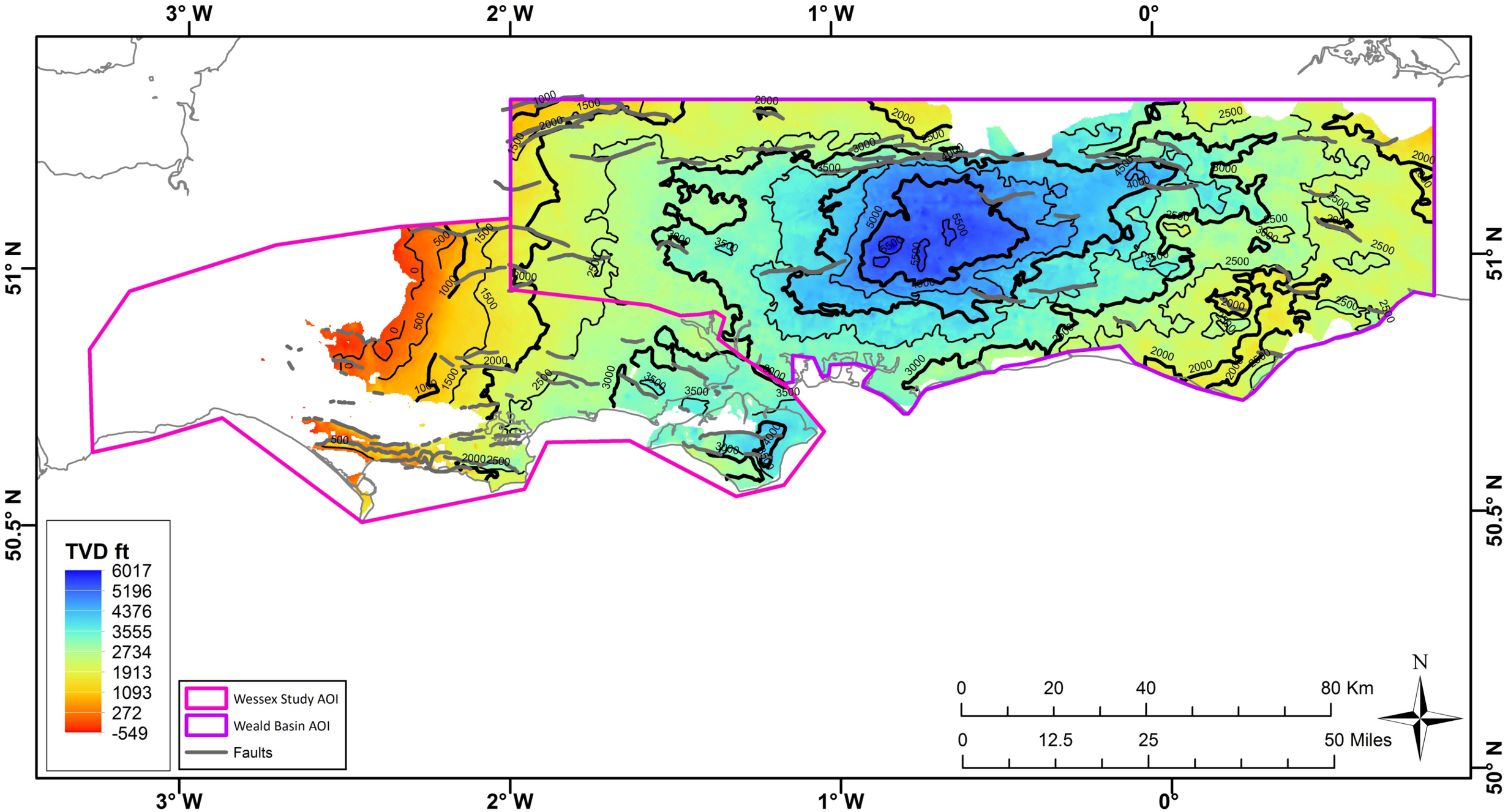


Figure 20. Depth to Top Oxford Clay Fm, as mapped by this study for the Wessex area and by Andrews (2014) for the Weald Basin. Contour interval = 500 ft.

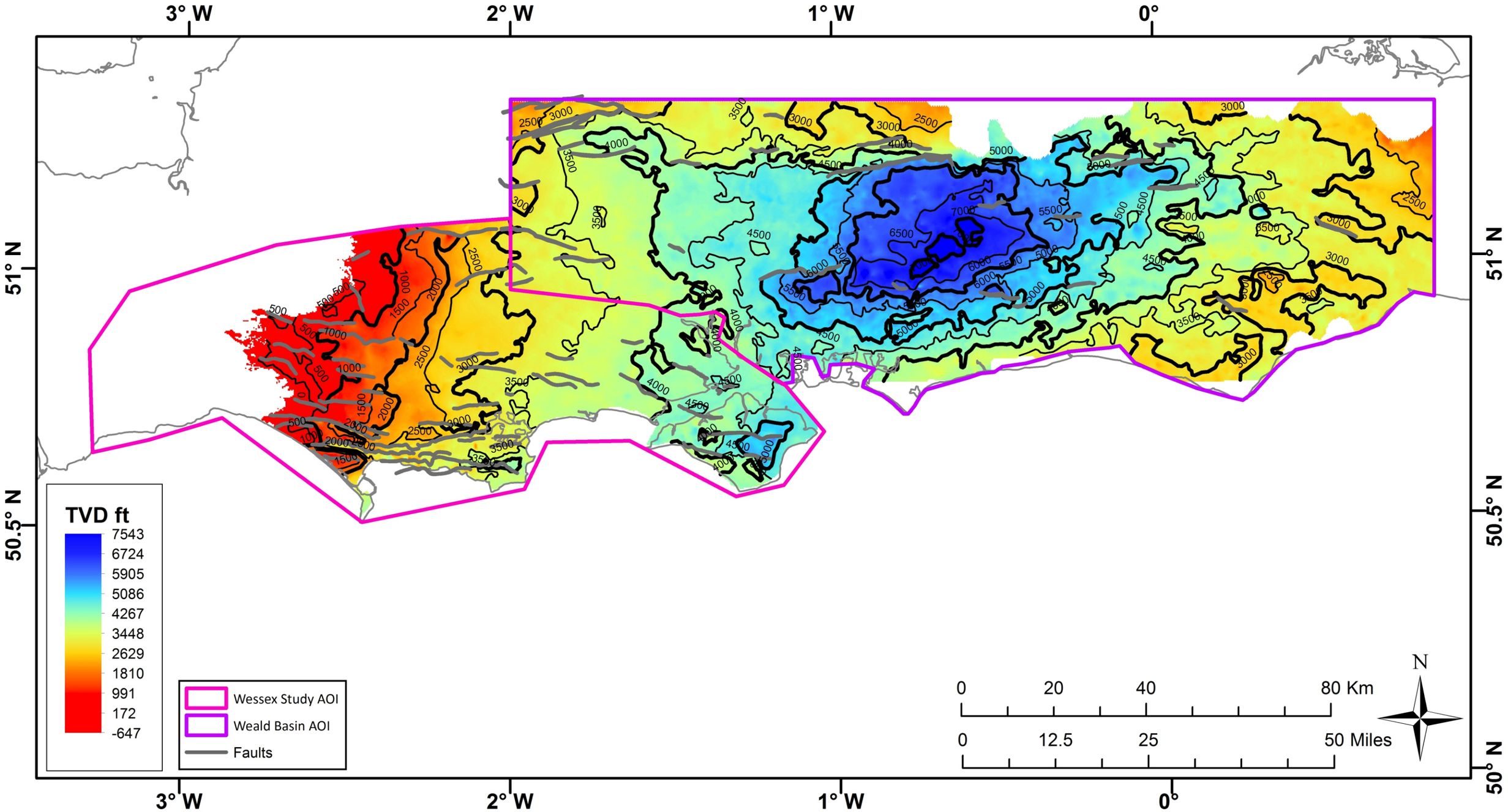


Figure 21. Depth to Top Upper Lias, as mapped by this study for the Wessex area and by Andrews (2014) for the Weald Basin. Contour interval = 500 ft.

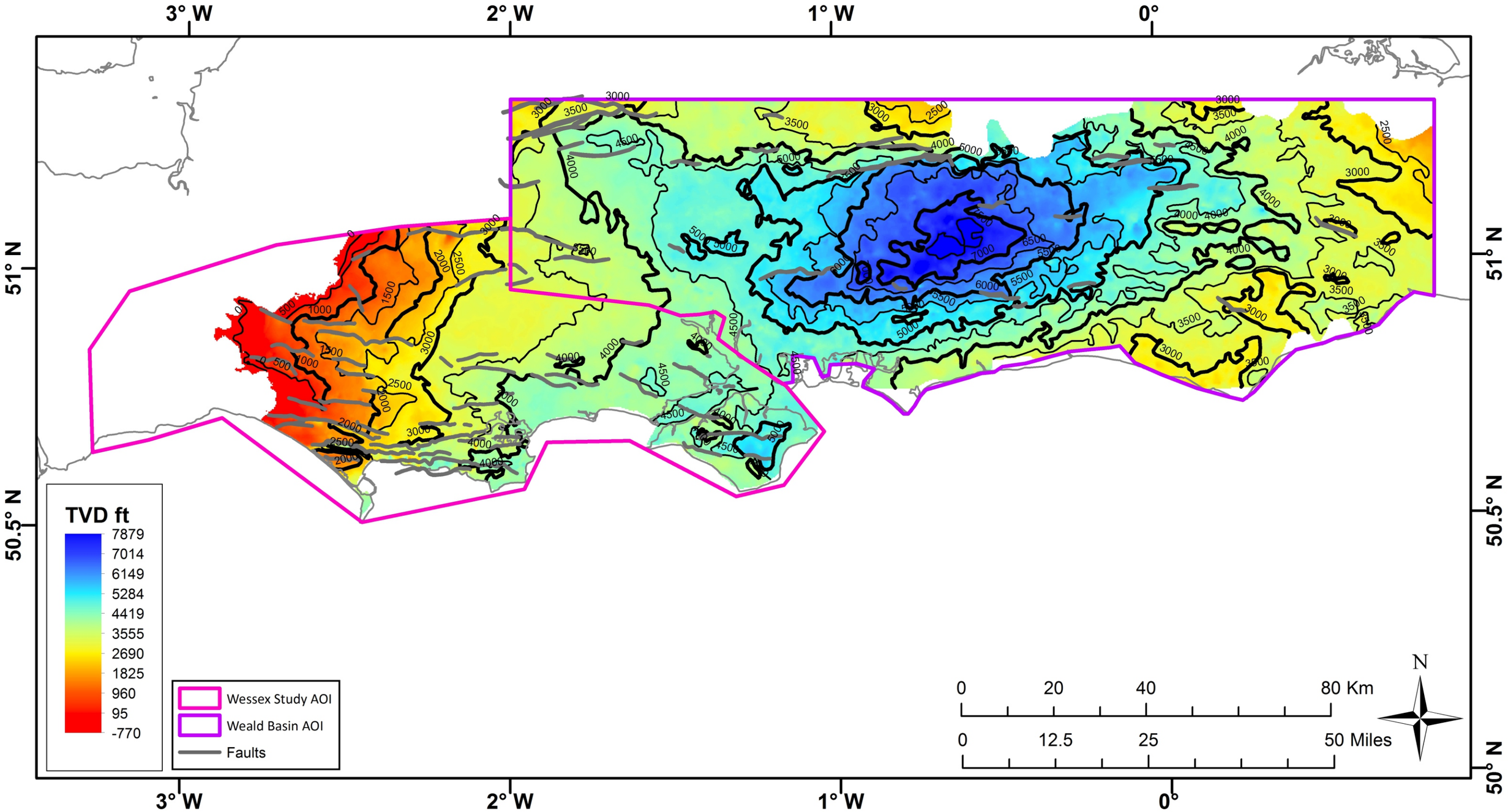


Figure 22. Depth to Top Middle Lias, as mapped by this study for the Wessex area and by Andrews (2014) for the Weald Basin. Contour interval = 500 ft.

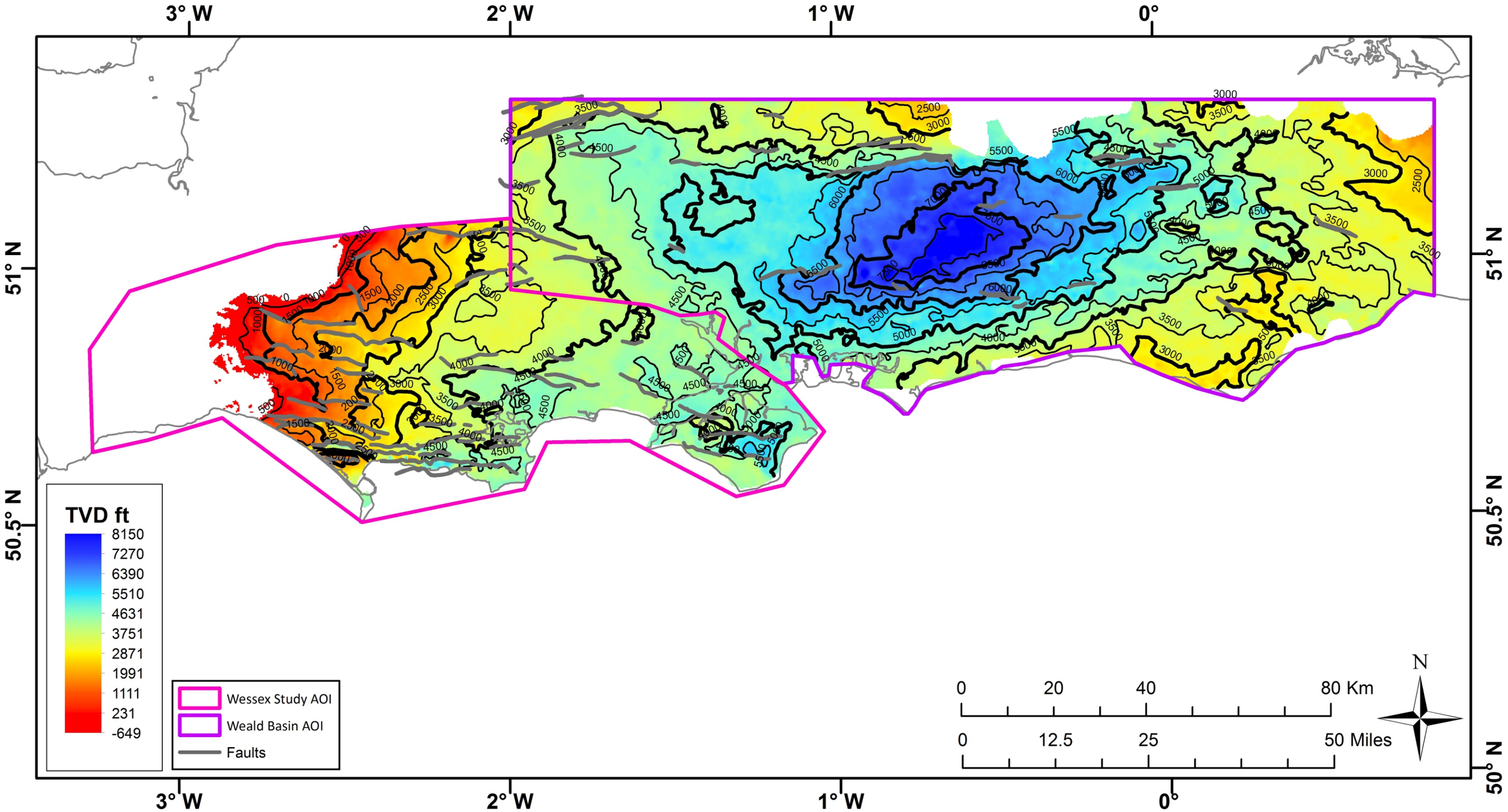


Figure 23. Depth to Top Lower Lias, as mapped by this study for the Wessex area and by Andrews (2014) for the Weald Basin. Contour interval = 500 ft.

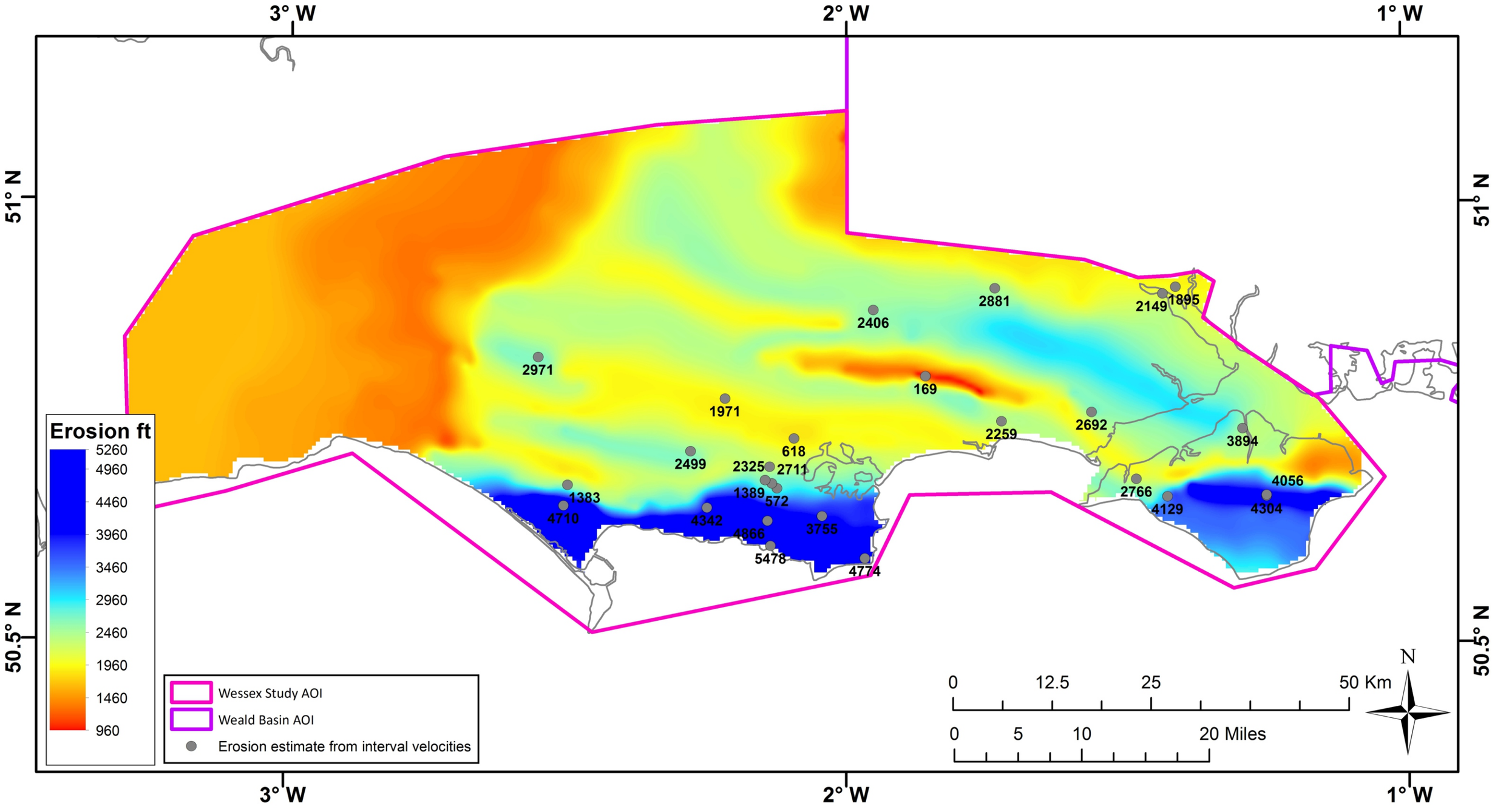


Figure 28. Total erosion for the Wessex area estimated in this study from interval velocity analysis and stratigraphic restoration. Plotted values are those estimated using the NCT (determined in Figure 27) for individual wells.

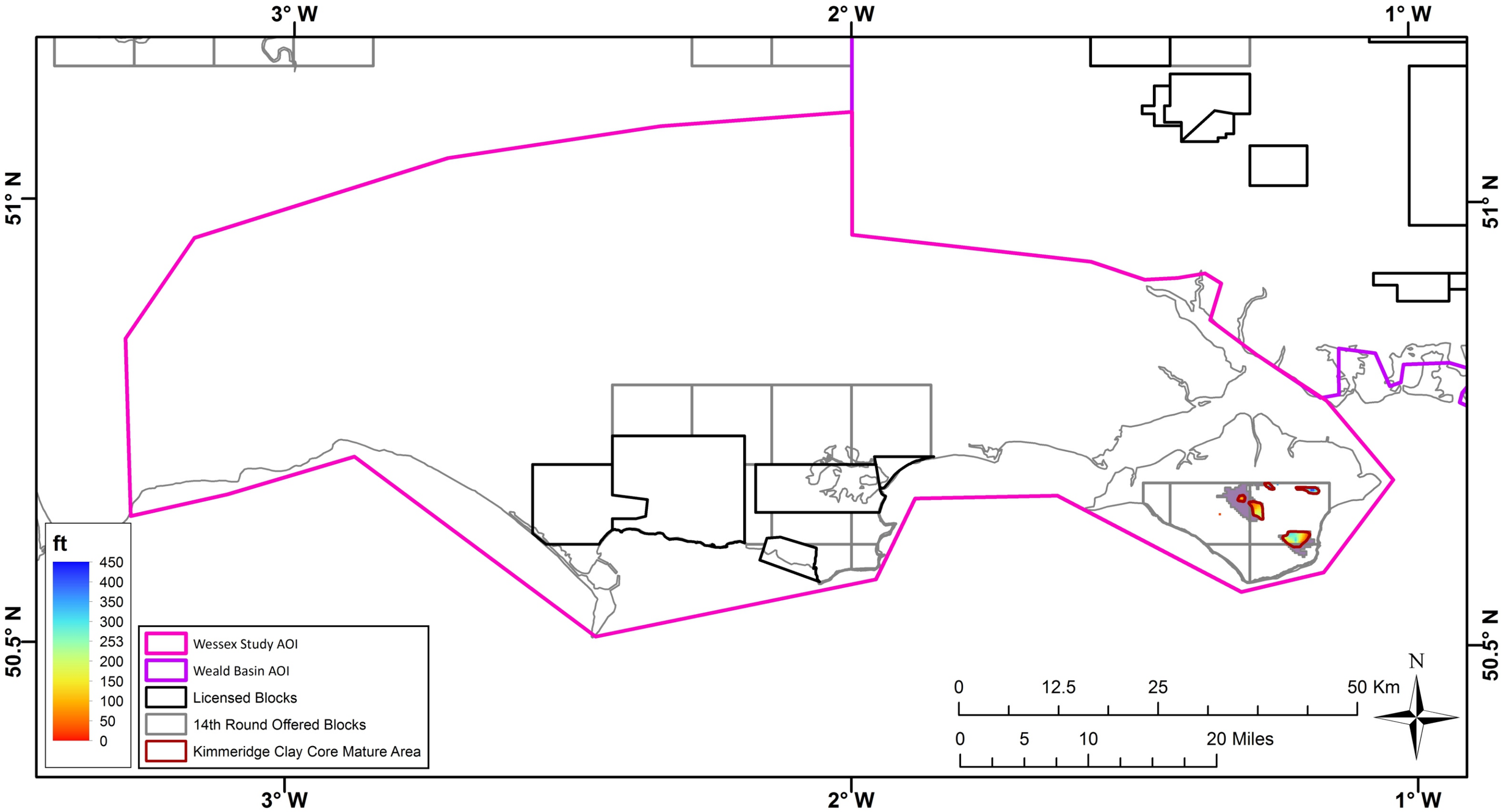


Figure 30. Gross thickness of the Kimmeridge Clay Formation within the area it has been predicted to have reached oil maturity, and below a present-day burial depth of c. 3950 ft (1200 m). No part of the predicted mature section is presently at depths of c. 5000 ft (1500 m) or greater below the surface. The P50 estimate for the proportion of organic-rich shale is 0.35. Shaded region is the area of mature Kimmeridge Clay, with no top-down truncation applied.

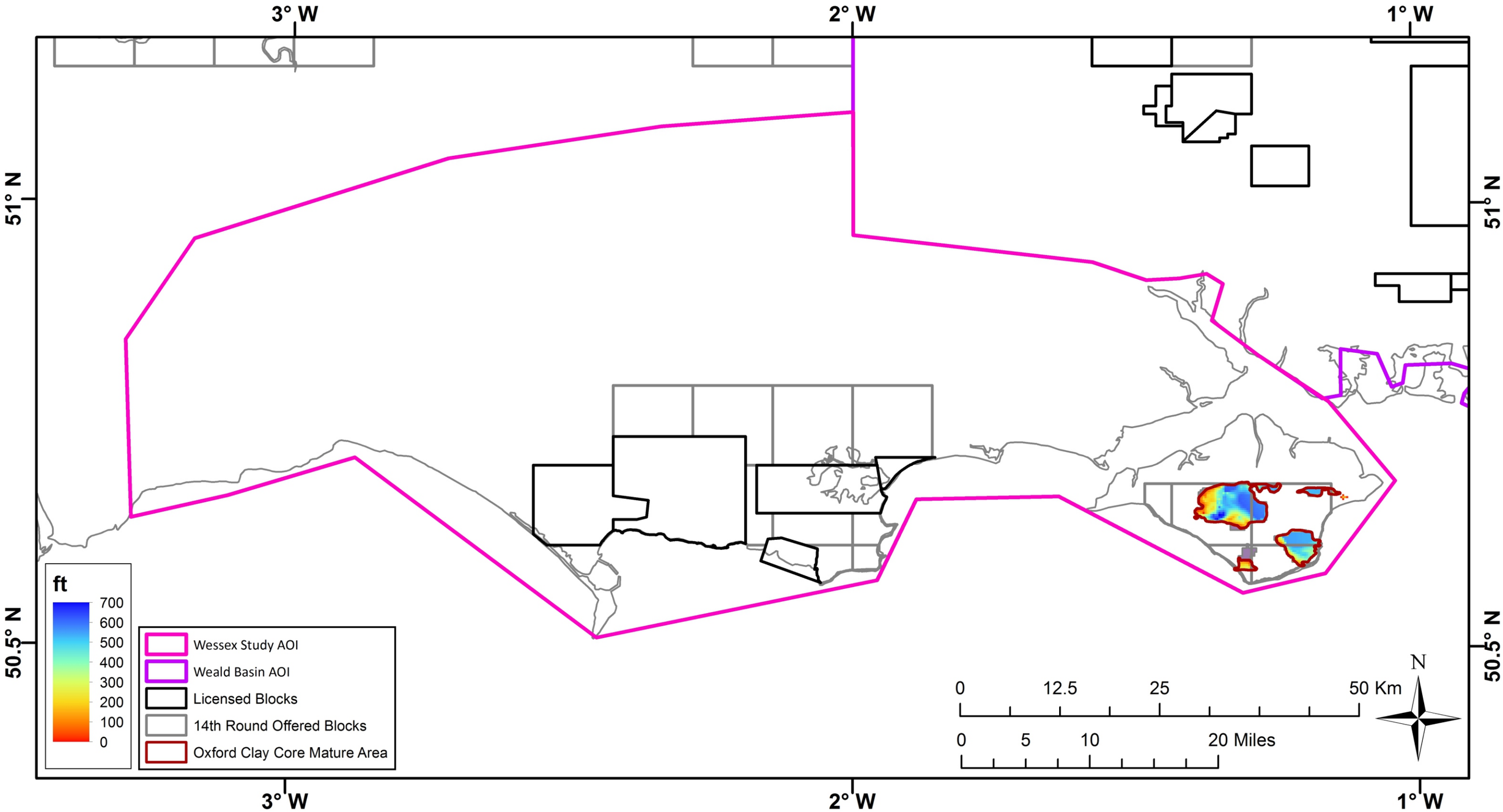


Figure 32. Gross thickness of the Oxford Clay Formation within the area it has been predicted to have reached oil maturity, and below a present-day burial depth of c. 3950 ft (1200 m). Only a very minor volume of the predicted mature section is below a present-day burial depth of c. 5000 ft (1500 m) (contour not shown). The P50 estimate for the proportion of organic-rich shale is 0.28. Shaded region is the area of mature Oxford Clay, with no top-down truncation applied.

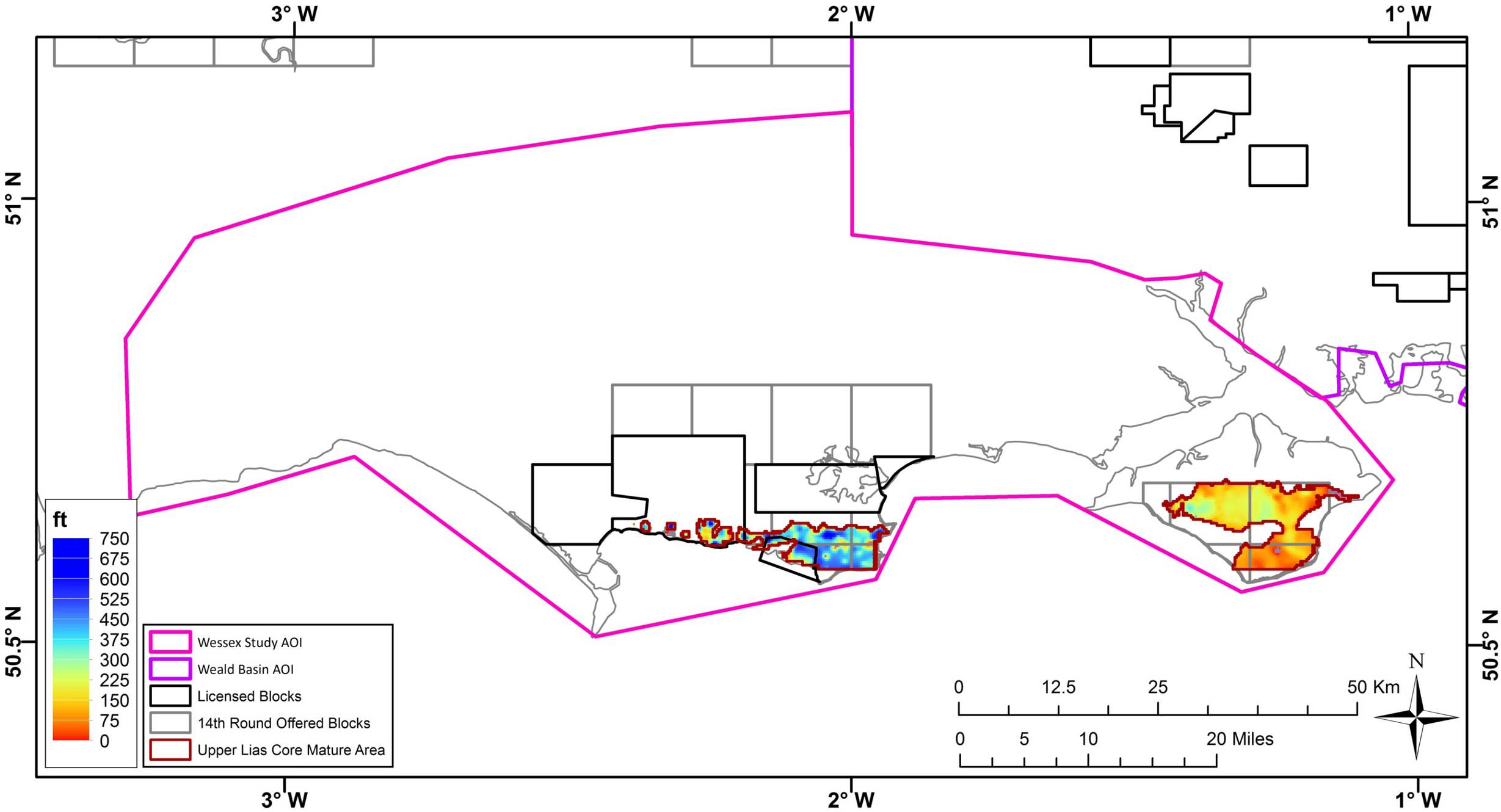


Figure 35. Gross thickness of the Upper Lias within the area it has been predicted to have reached oil maturity, and below a present-day burial depth of c. 3950 ft (1200 m). Dashed line is the extent of the predicted mature area below a present-day burial depth of c. 5000 ft (1500 m).

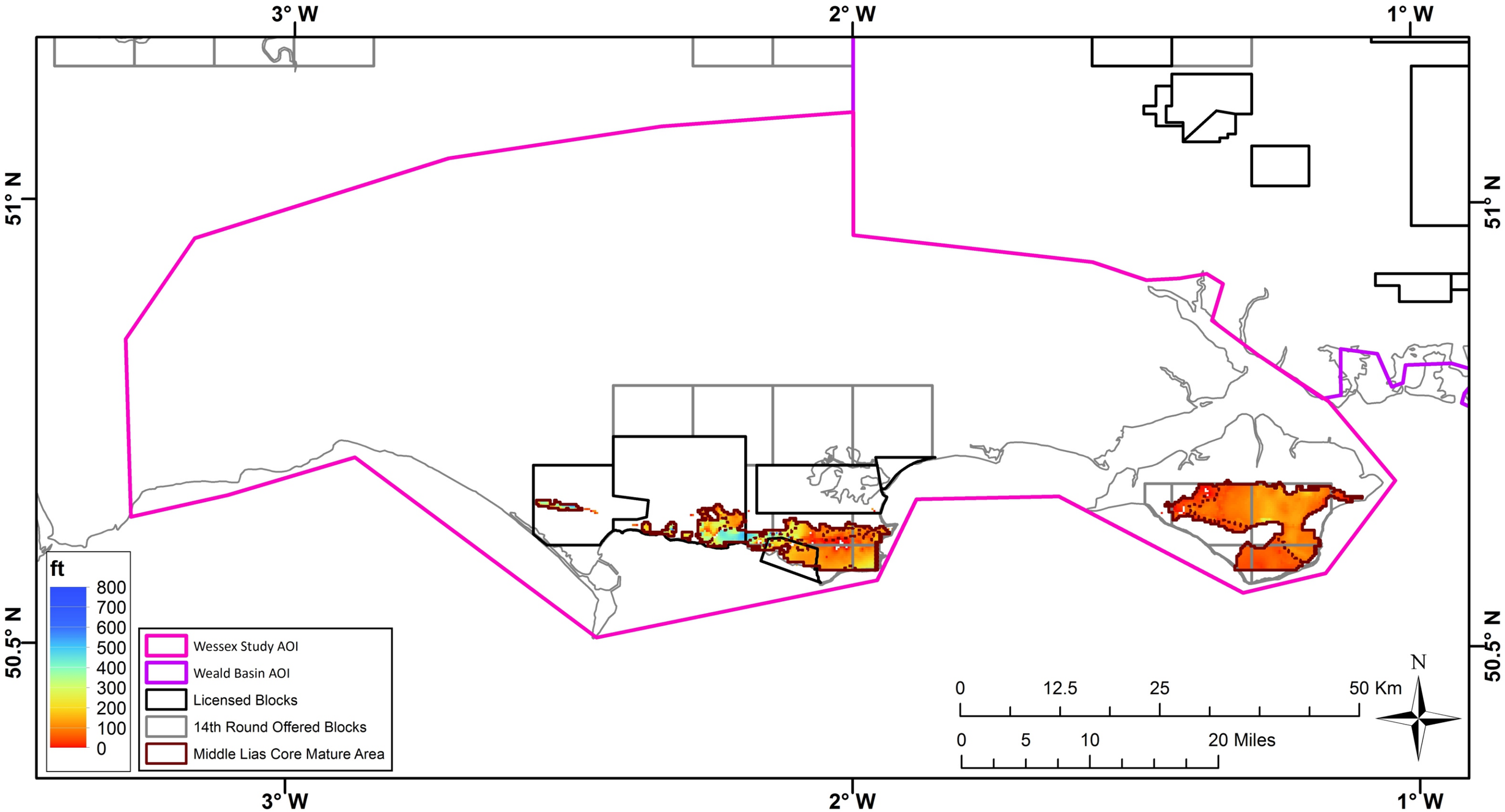


Figure 37. Gross thickness of the Middle Lias within the area it has been predicted to have reached oil maturity, and below a present-day burial depth of c. 3950 ft (1200 m). Dashed line is the extent of the predicted mature area below a present-day burial depth of c. 5000 ft (1500 m). Removing the top-down truncation does not alter the predicted mature area or gross rock volume significantly.

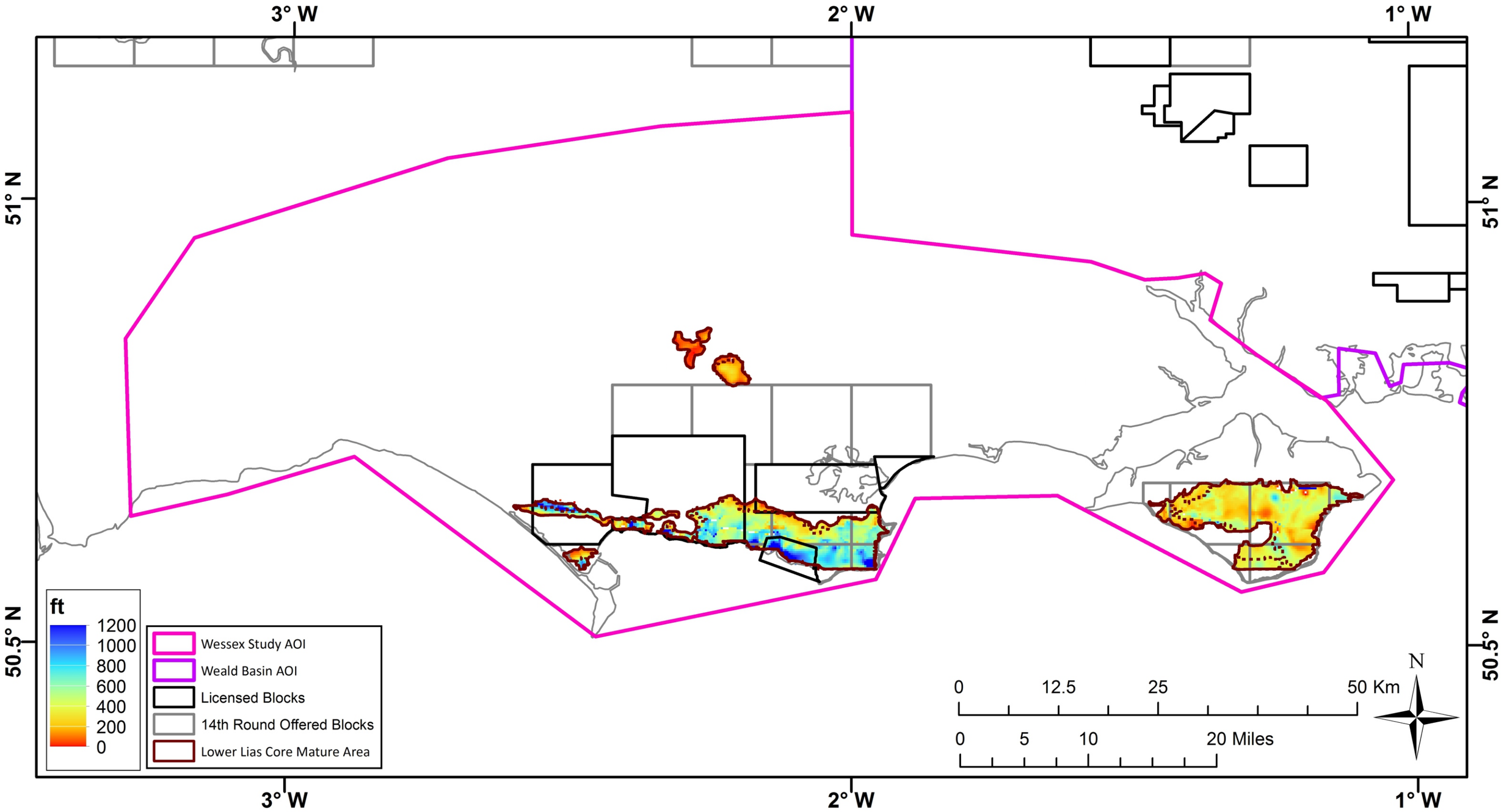


Figure 39. Gross thickness of the Lower Lias within the area it has been predicted to have reached oil maturity, and below a present-day burial depth of c. 3950 ft (1200 m). Dashed line is the extent of the predicted mature area below a present-day burial depth of c. 5000 ft (1500 m). Removing the top-down truncation does not alter the predicted mature area or gross rock volume significantly.

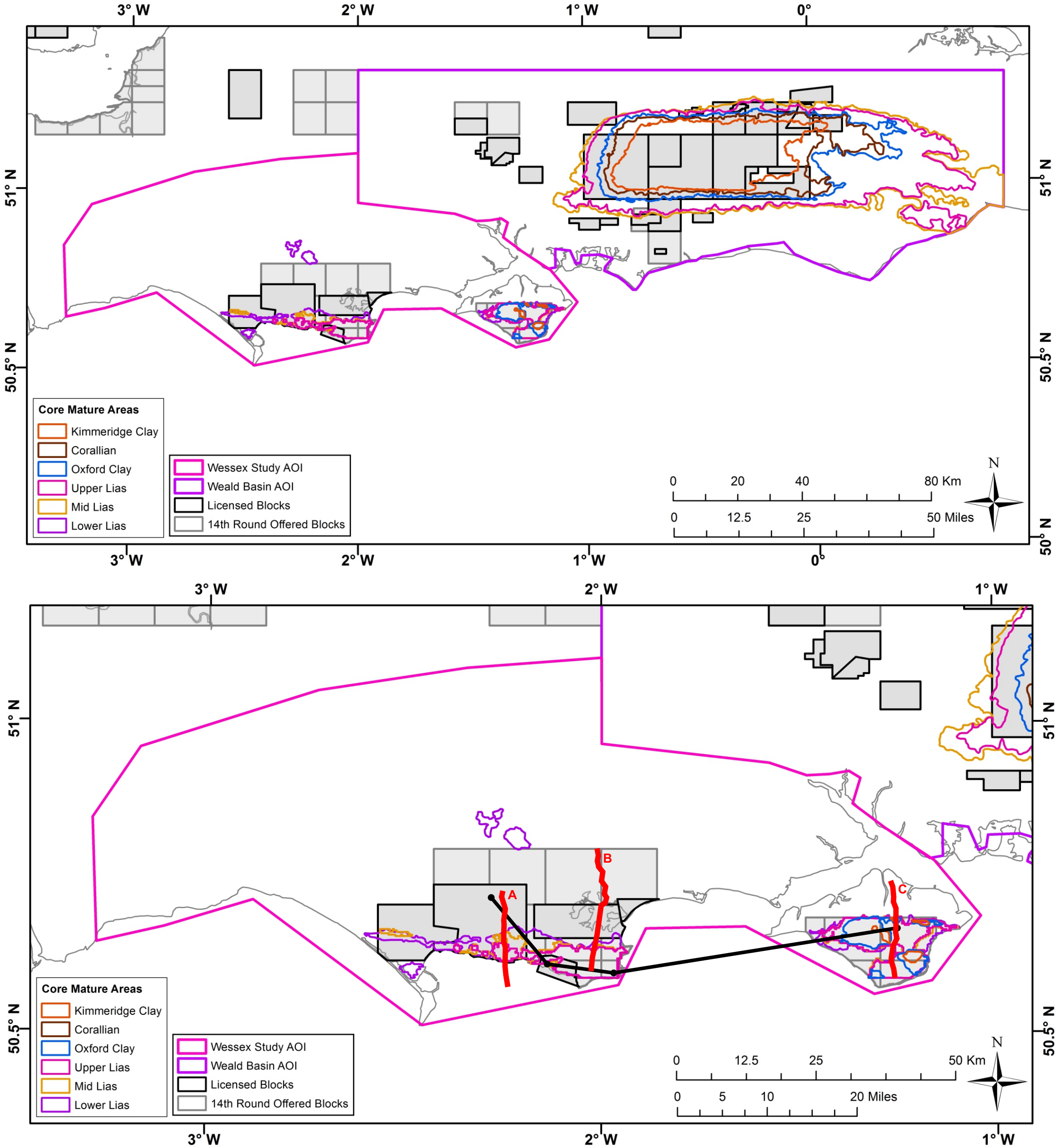


Figure 45. (Top) Core mature areas for the Jurassic shale intervals of the Weald and Wessex areas. (Bottom) Zoom-in of Wessex area. Location of the seismic sections in Figure 46 (red lines) and the well correlation panel in Figure 47 (black line) also shown.

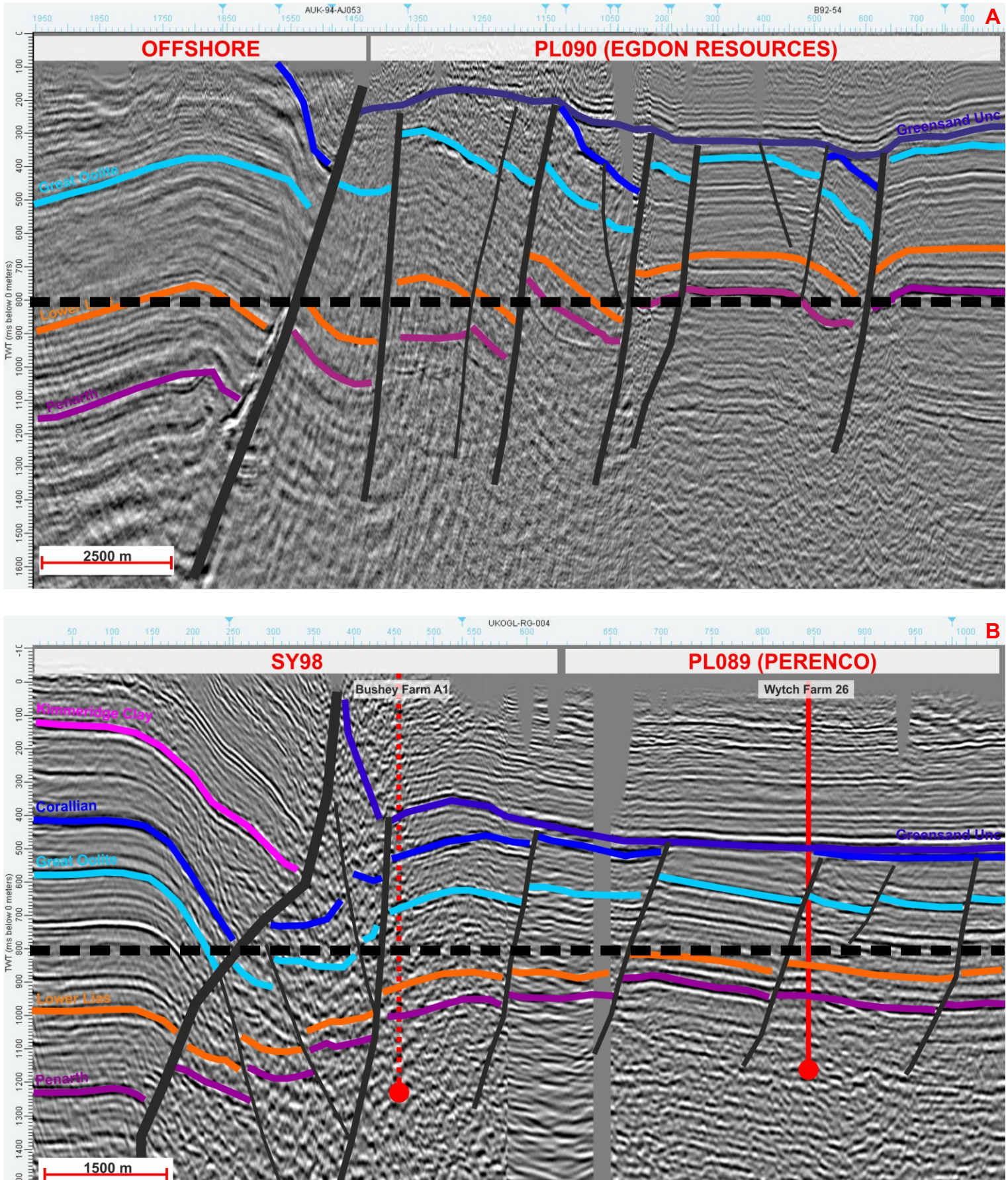


Figure 46. Interpretation of three north-south seismic lines with horizons mapped in this study. (A) Line AUK-94-AJ053 & B92-54, (B) UKOGL-RG-004, (C) BP-353 1 & BP-353 2. Dashed black line is approximately 1200 m (c. 3950 ft) below surface.
Seismic data provided by UKOGL. Location of lines shown in Figure 45.

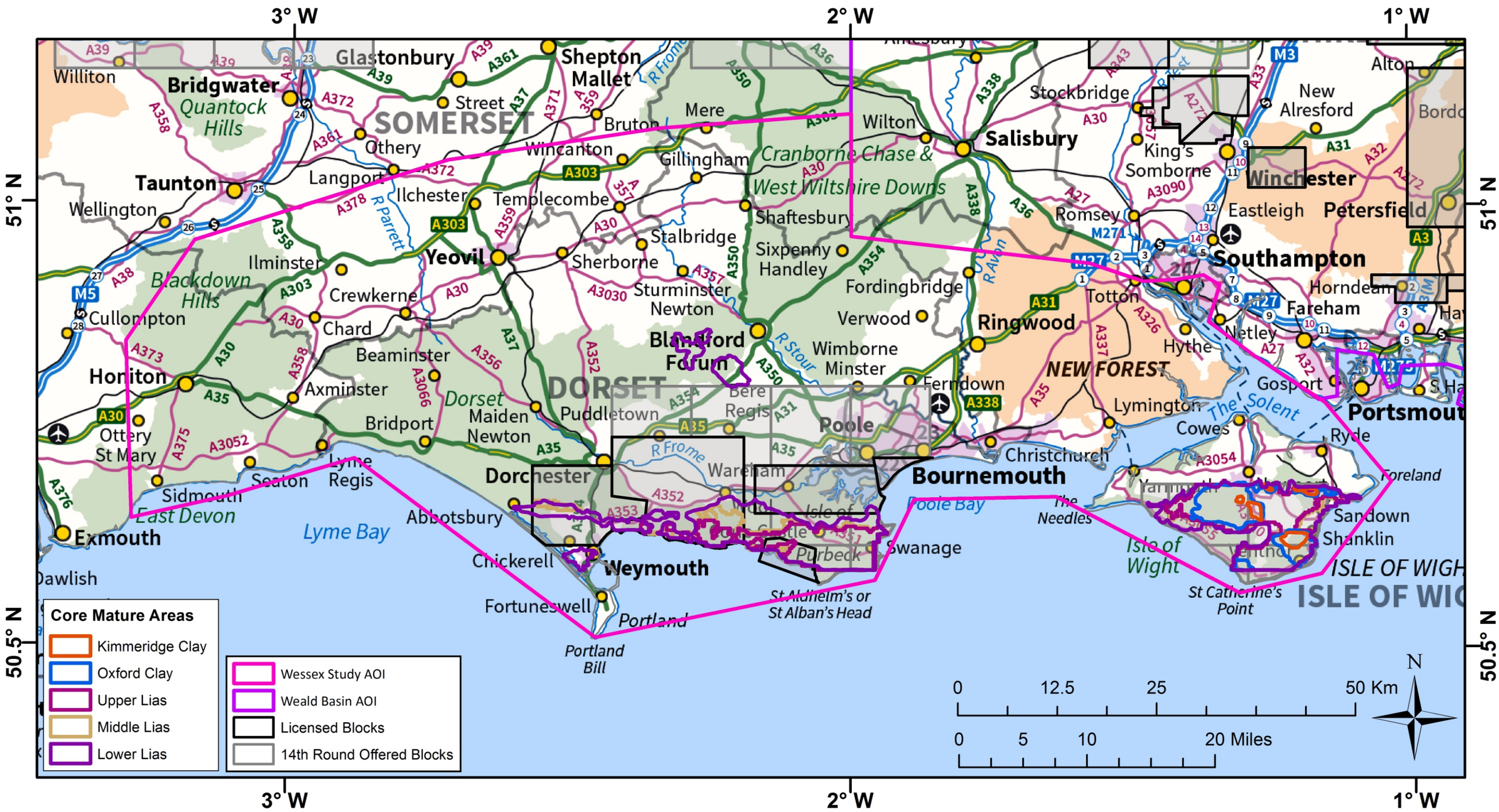


Figure 49. Core mature areas with a 1200 m (c. 3950 ft) below ground level cut-off applied for each shale interval evaluated in this study. Contains Ordnance Survey data © Crown copyright and database right (2016).

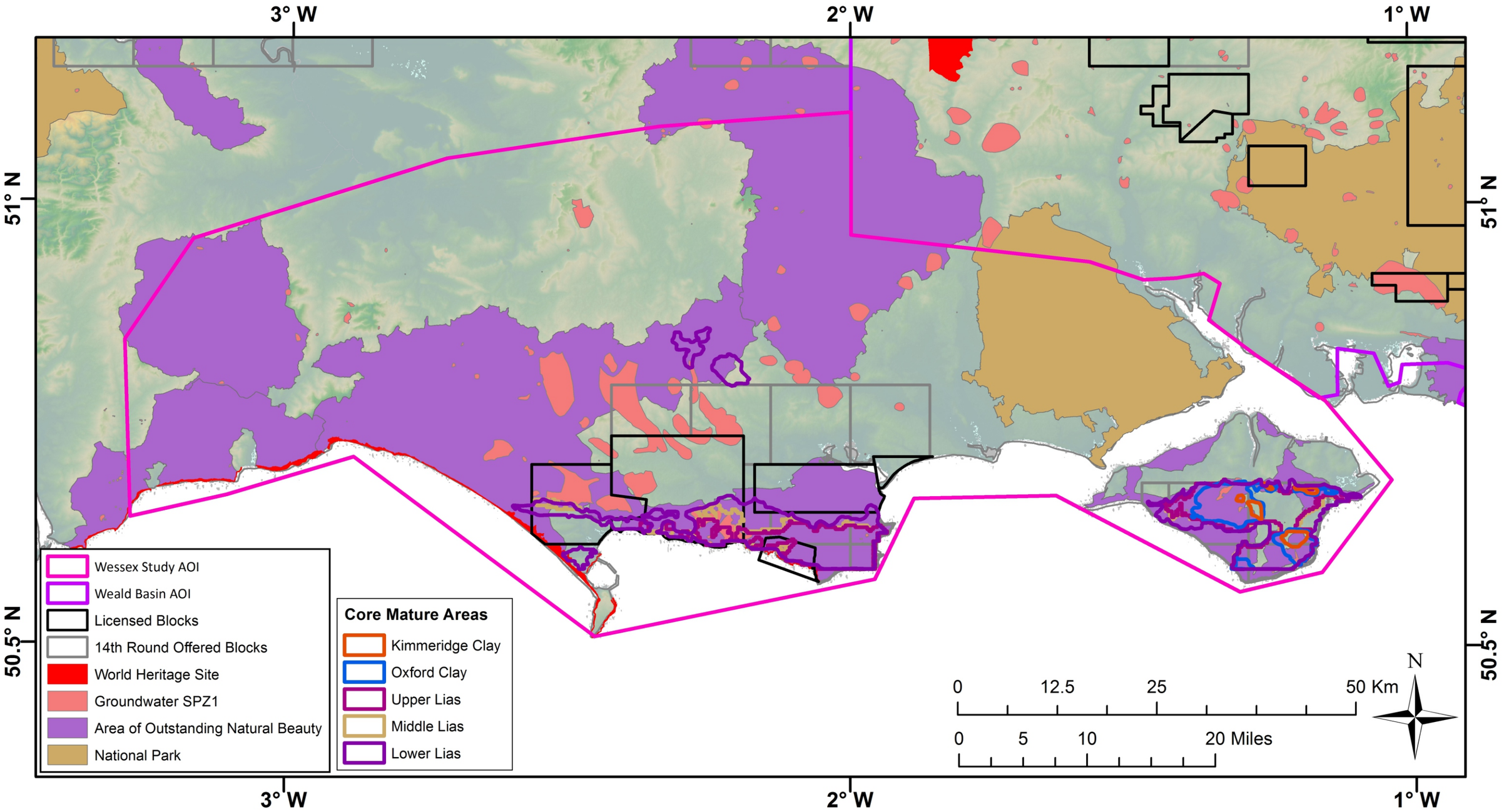


Figure 50. Core mature areas with a 1200 m (c. 3950 ft) below ground level cut-off applied for each shale interval evaluated in this study with protected areas as defined in the Infrastructure Act 2015. Background is hill-shaded topography.