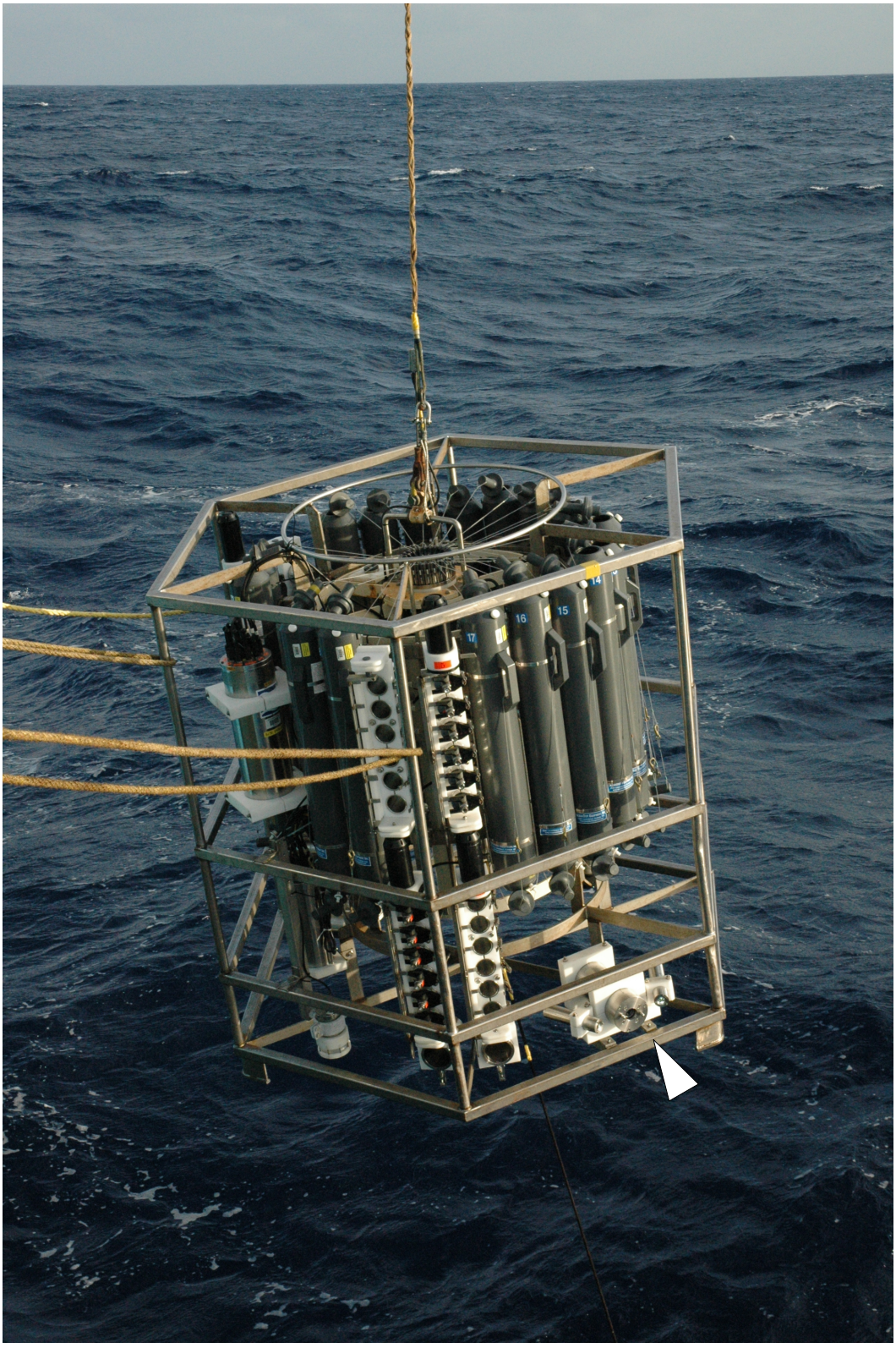
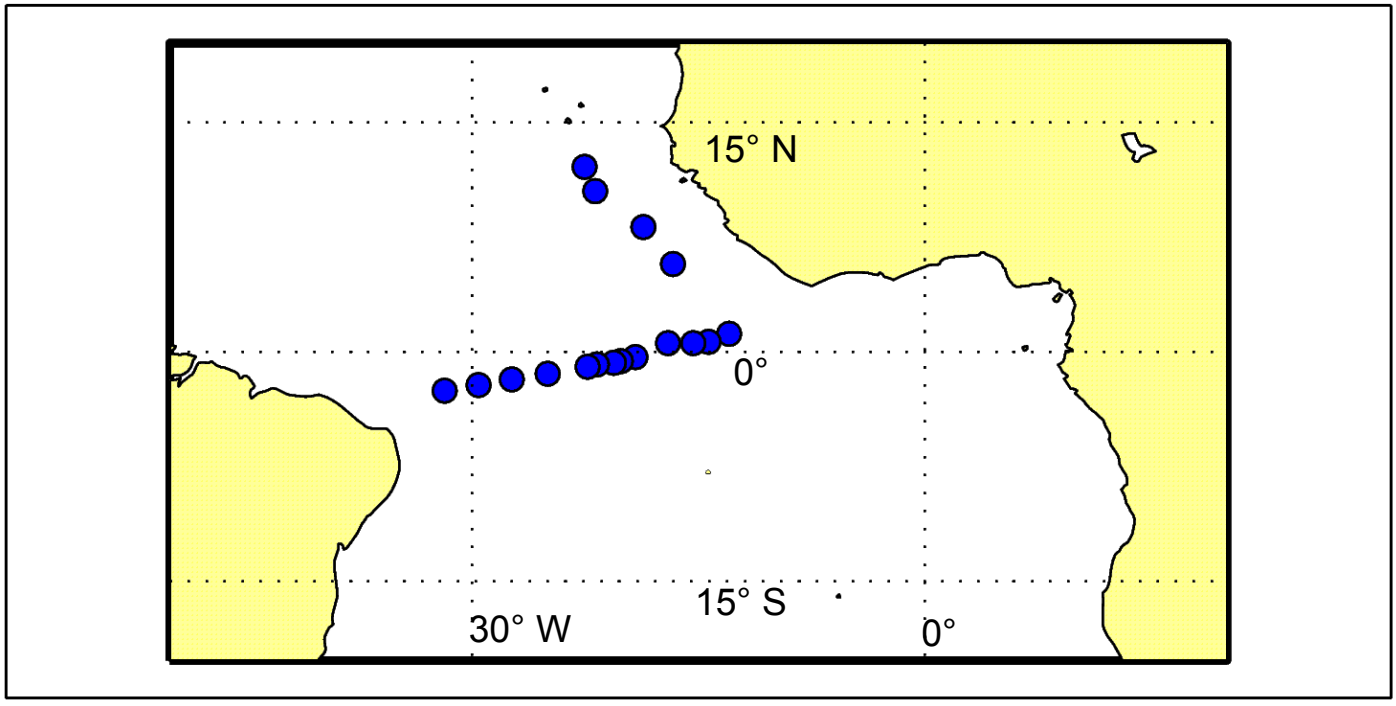
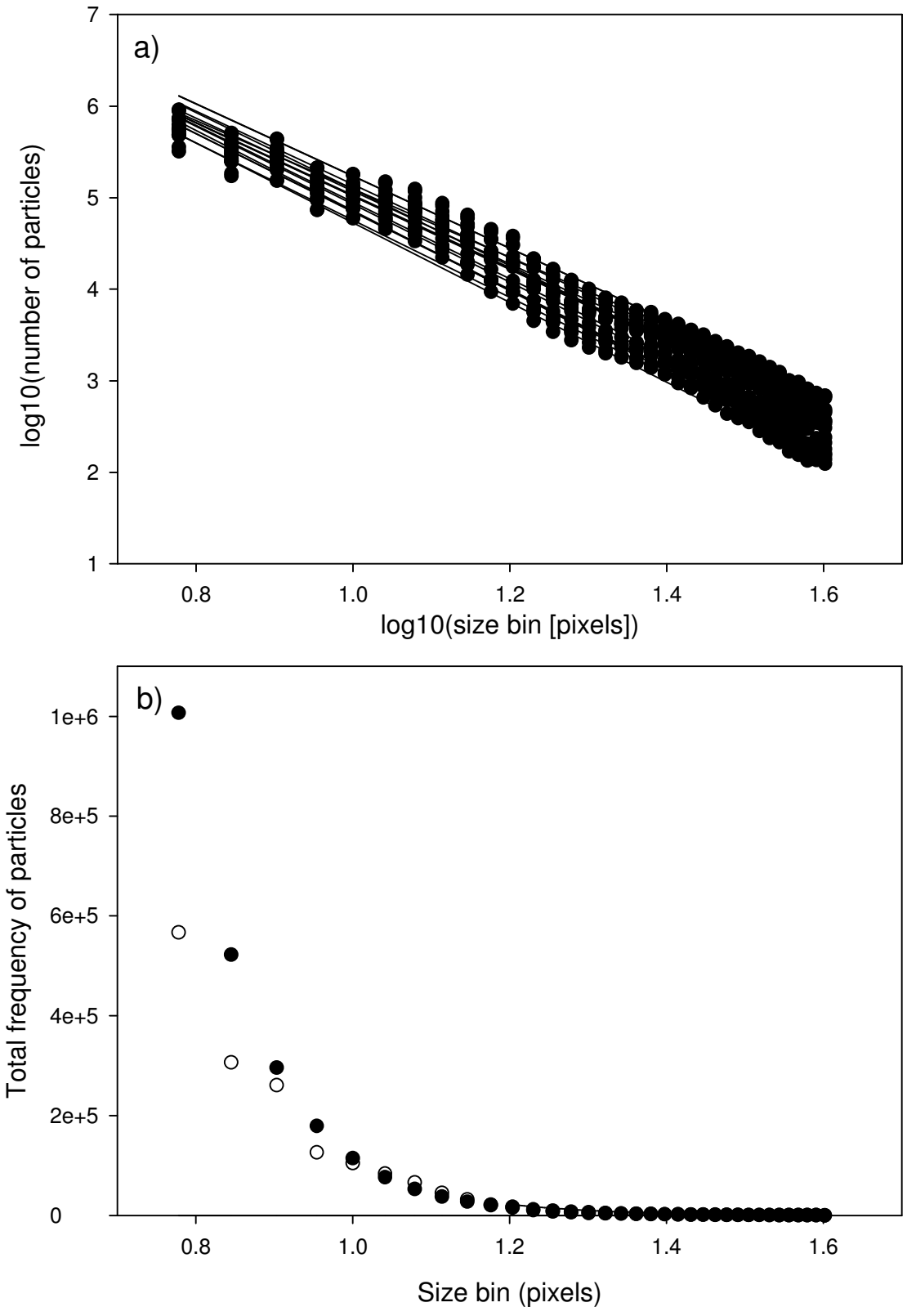


S1. The deep-sea camera system on the lowest position on the CTD frame (arrow). Bright LED light were angled from each side at 45° to provide maximum backscatter. Only data from downcasts were used in this study.



S2. Stations at which video particle profiles were recorded during the
Archimedes III deep-sea expedition Dec 17, 2007 – Jan 17, 2008.



S3 (a) Frequency distributions of particles plotted against their size bins (pixel) in all 17 particle profiles. Linear regressions through double-log transformations were used to model the undersampling of particles in the smallest size classes. For each particle spectrum and each size bin, individual correction factors were calculated. (b) The correction factors were averaged across particle profiles to arrive at a correction factor for the underestimation of total particle numbers of 1.43 x. Reconstructed particle counts (filled circles) are shown against the original particle counts (open circles).

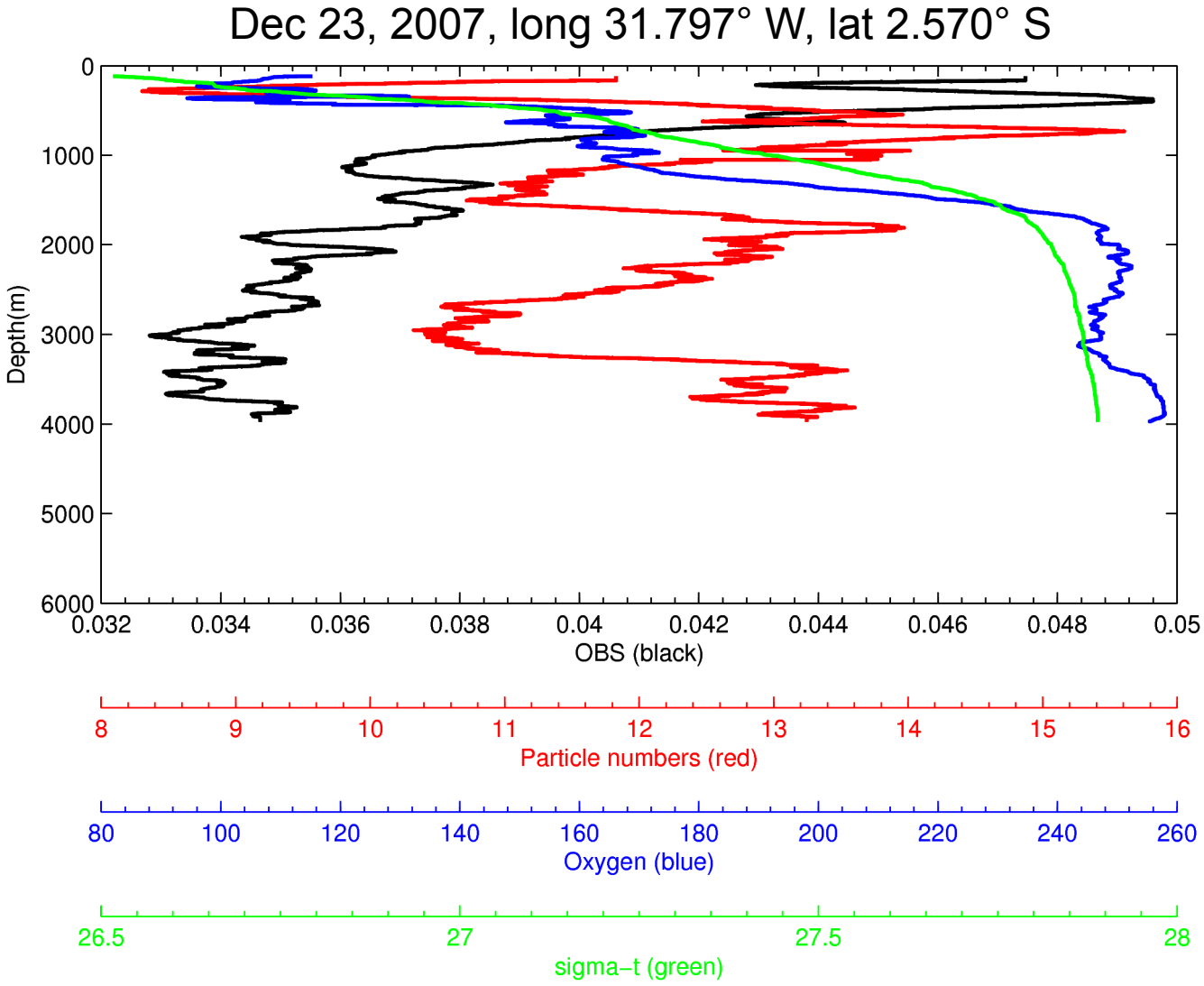


Fig. 4. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

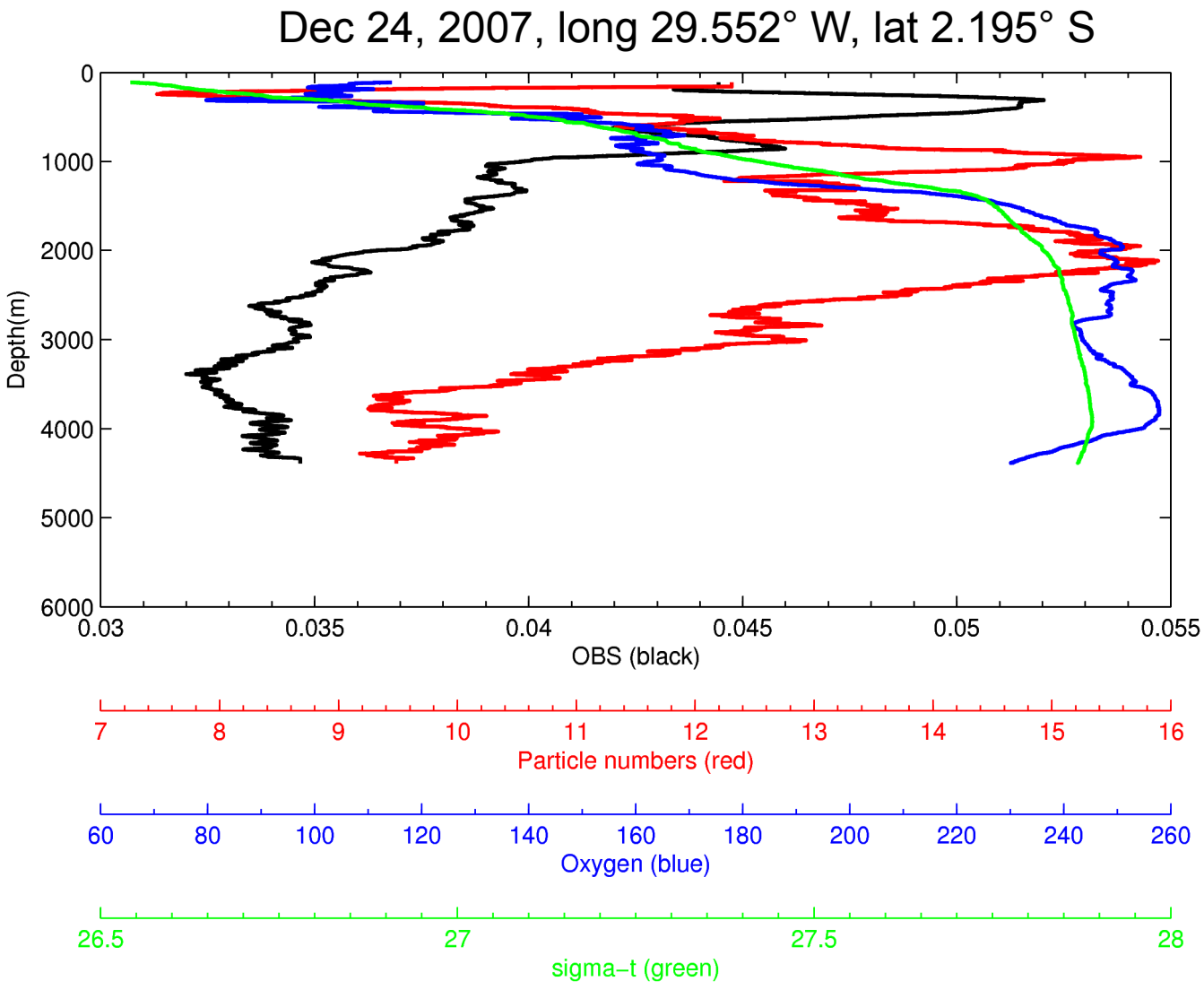


Fig. 5. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

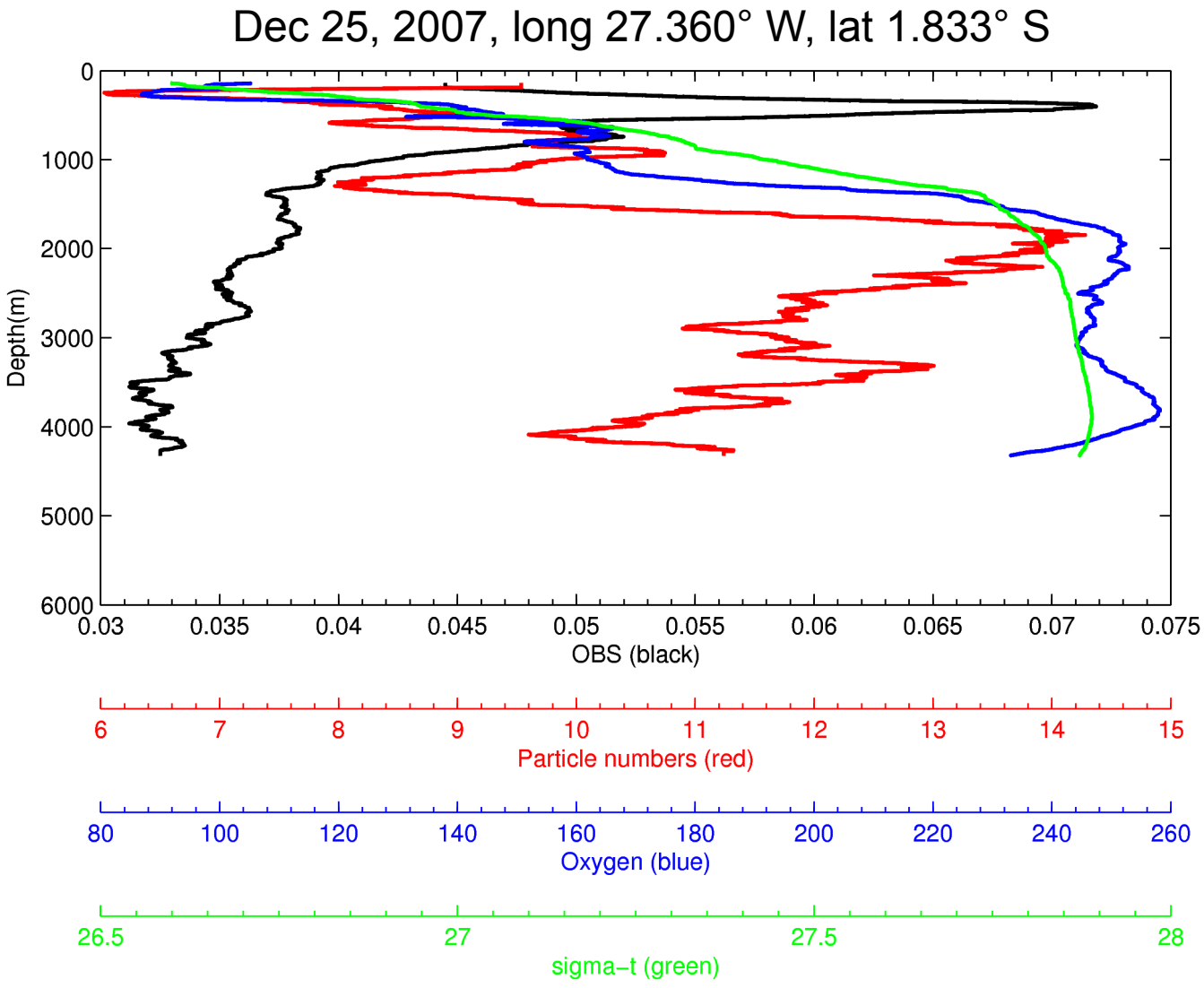


Fig. 6. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (µmol kg^{-1}), and sigma-t at the date and station shown above.

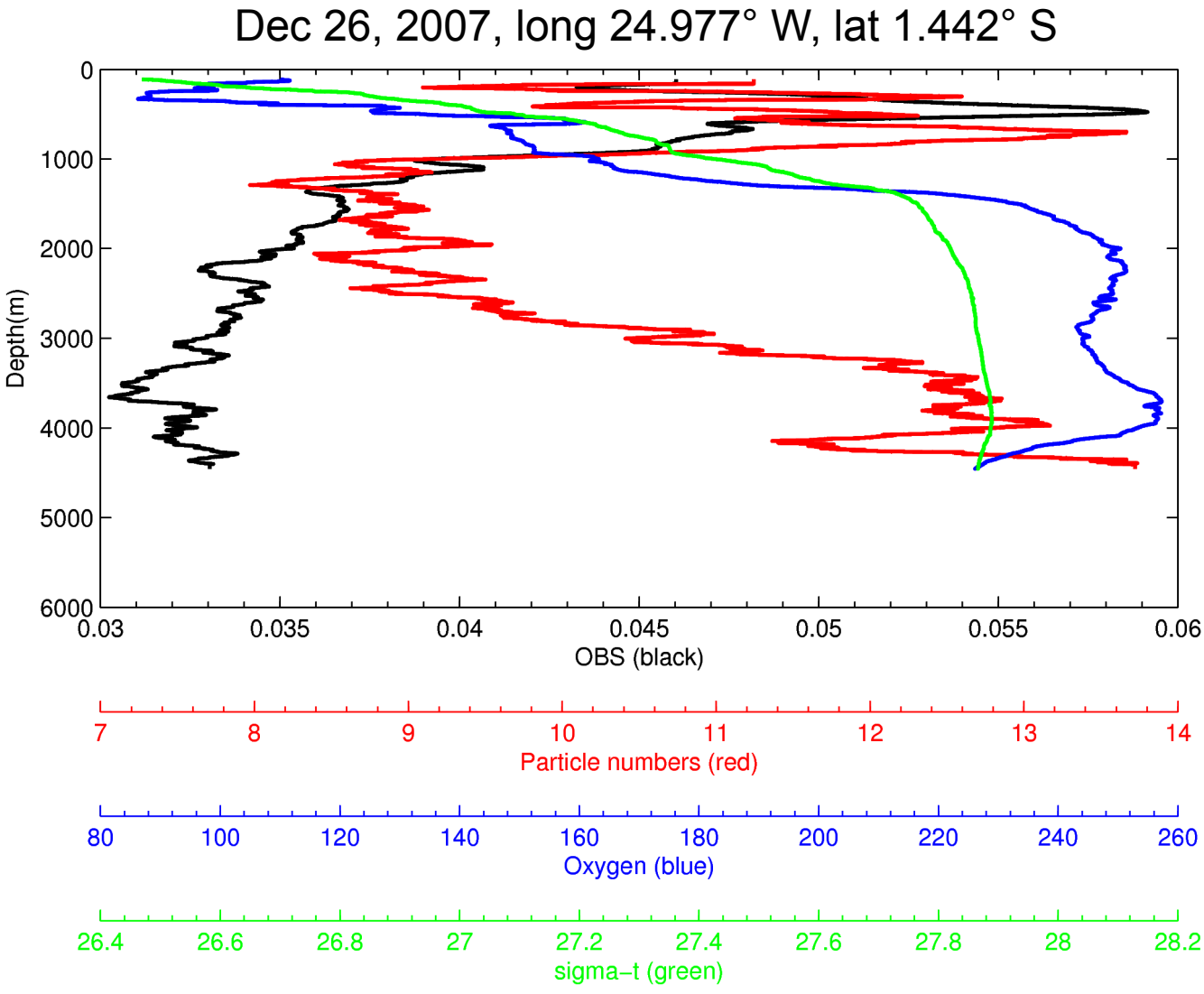


Fig. 7. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

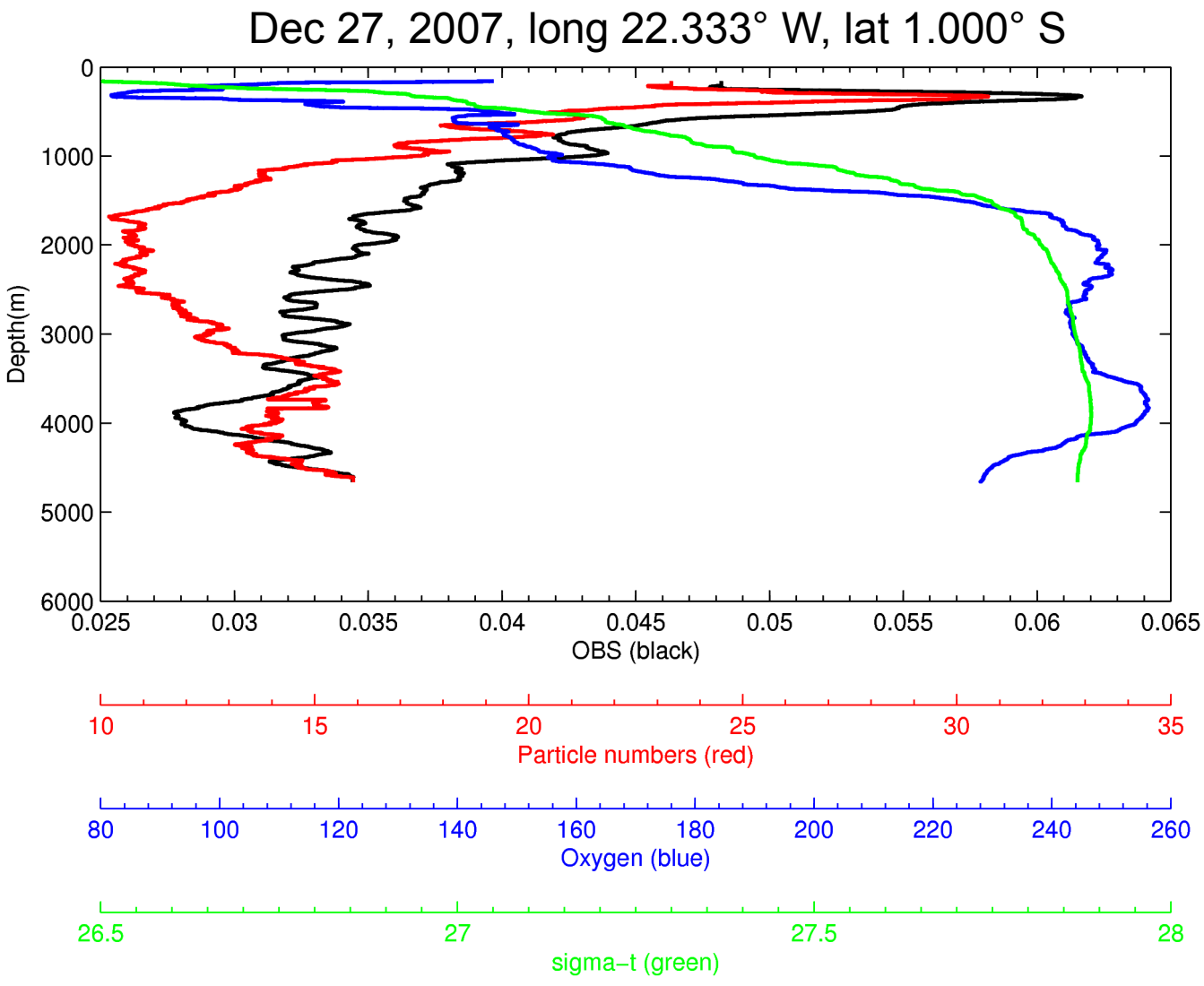


Fig. 8. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

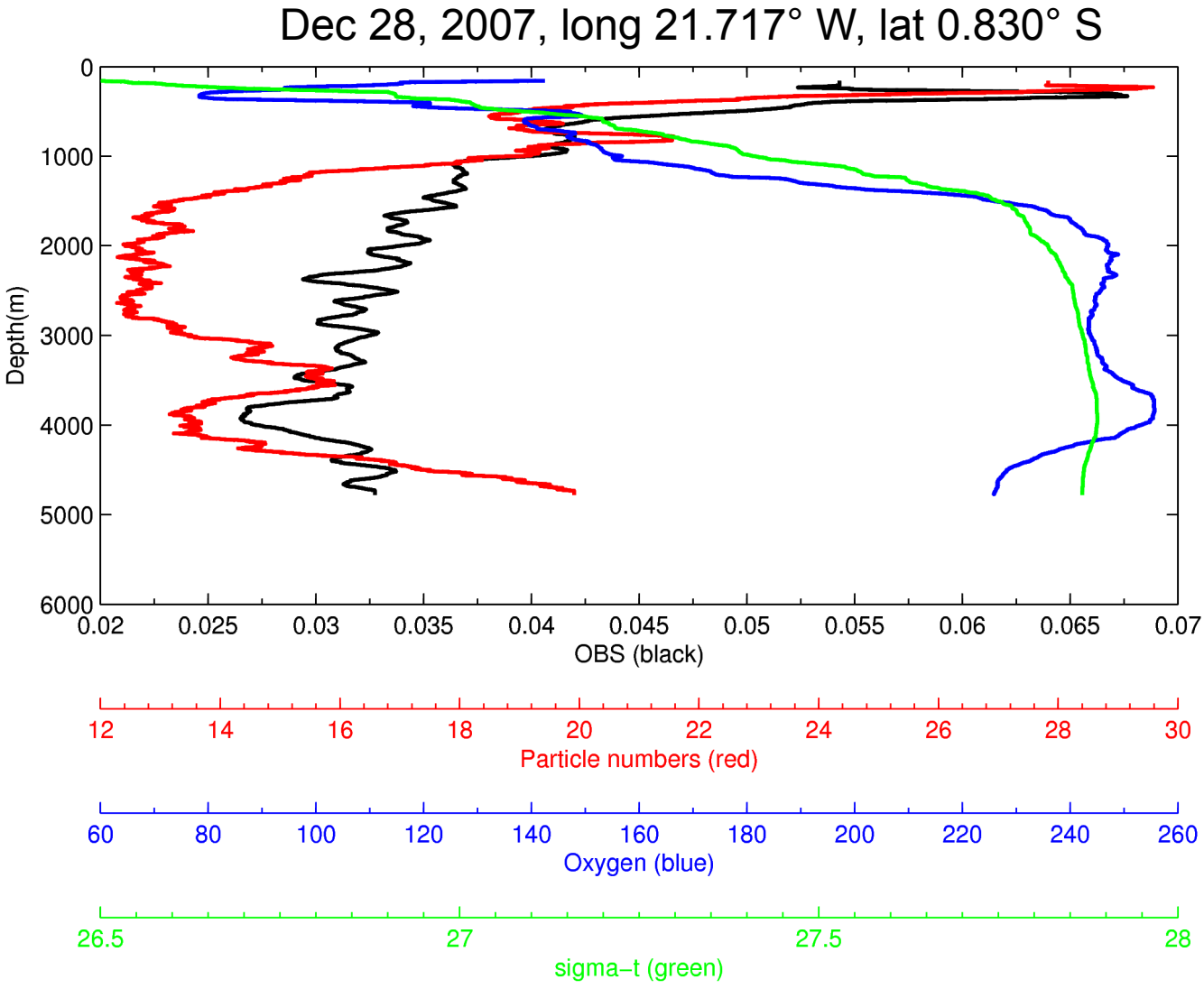


Fig. 9. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (µmol kg^{-1}), and sigma-t at the date and station shown above.

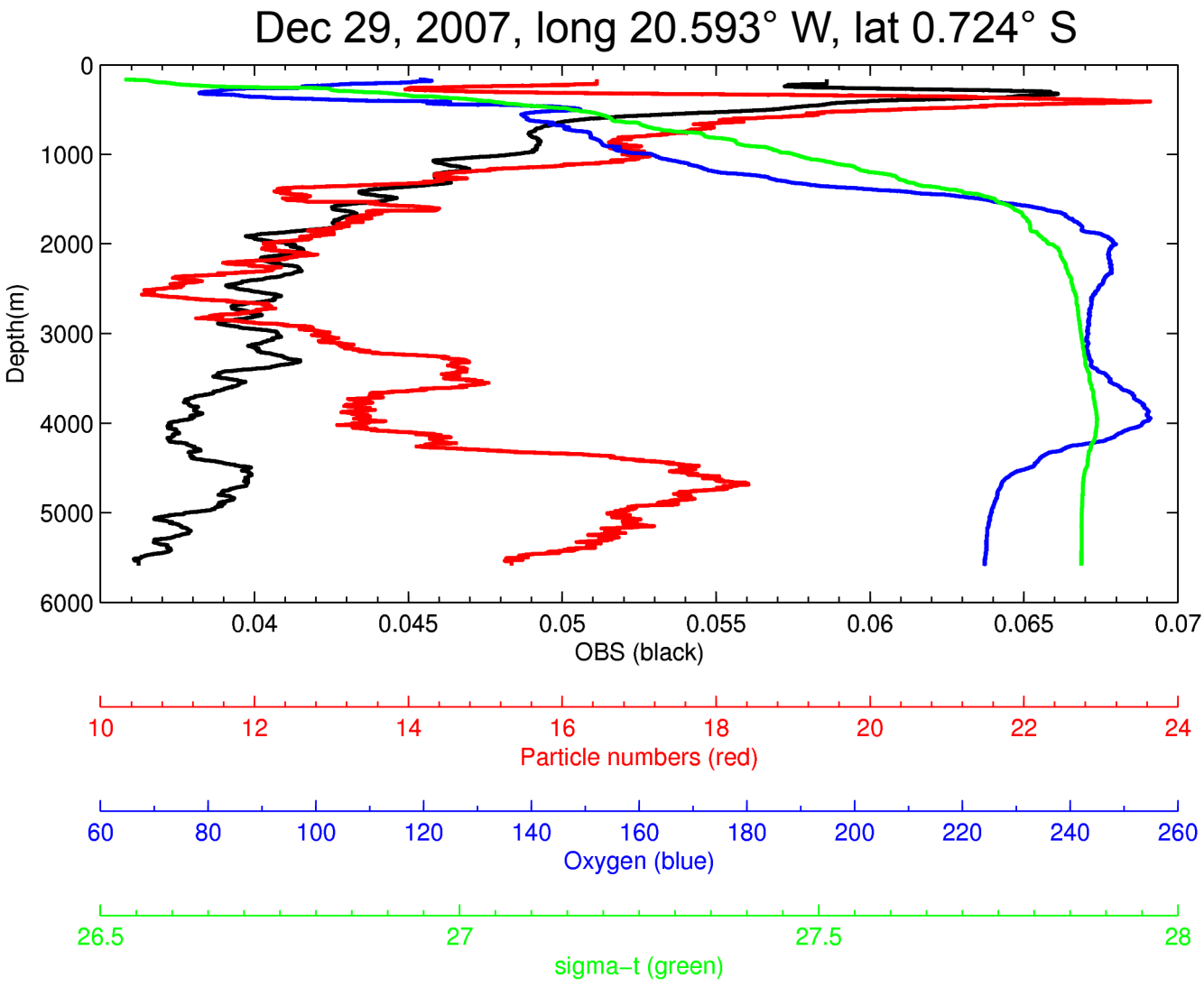


Fig. 10. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

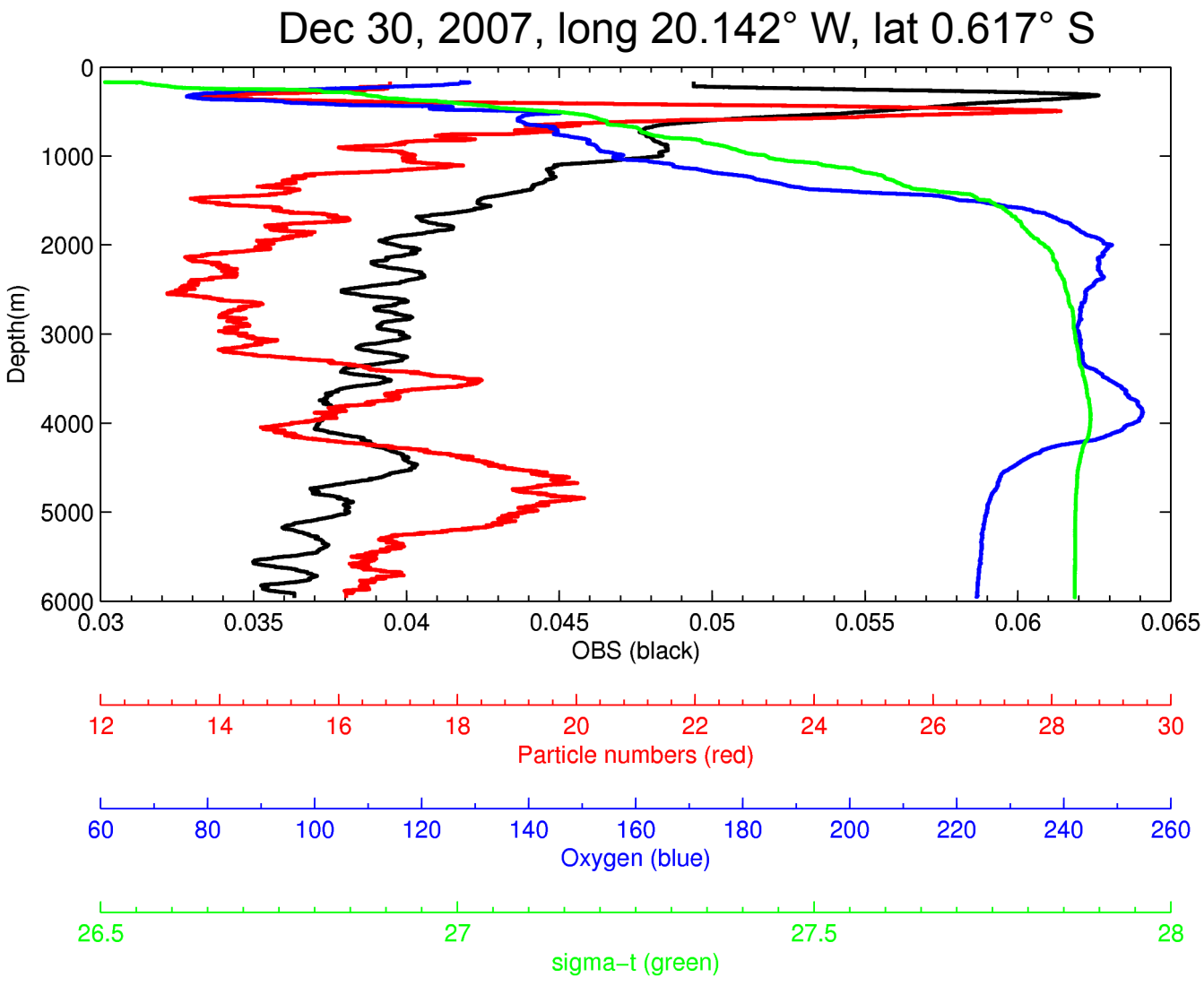


Fig. 11. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

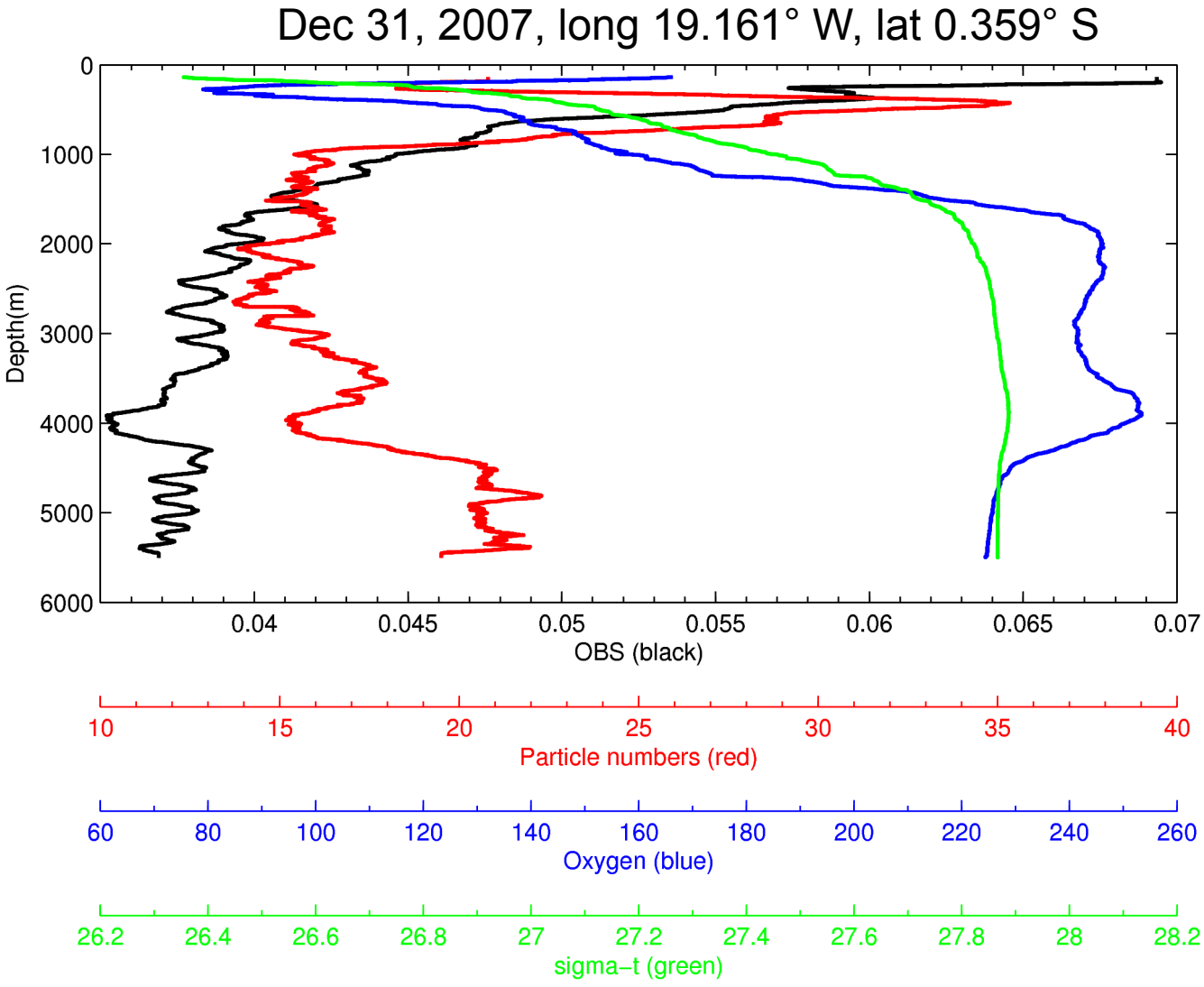


Fig. 12. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

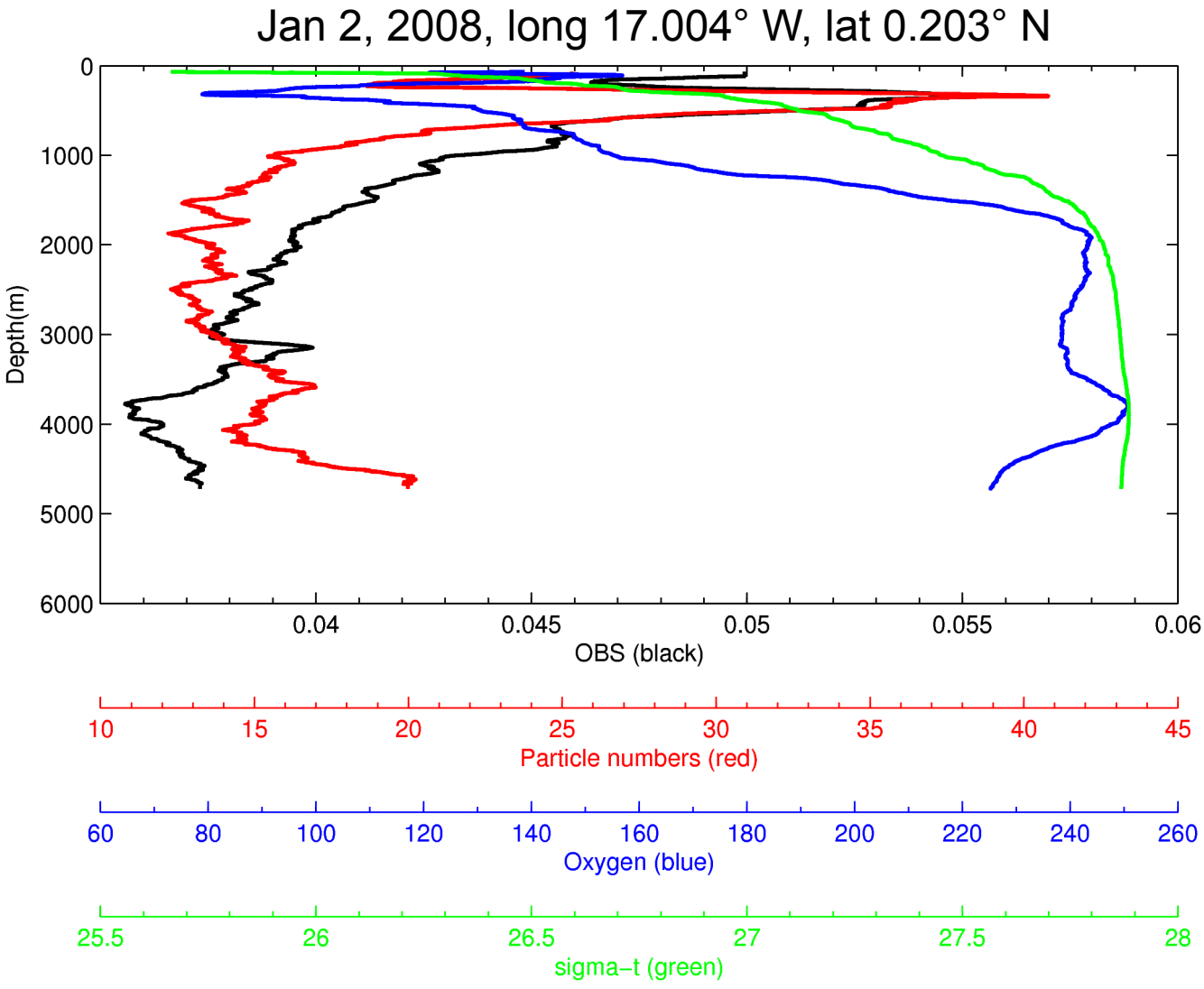


Fig. 13. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

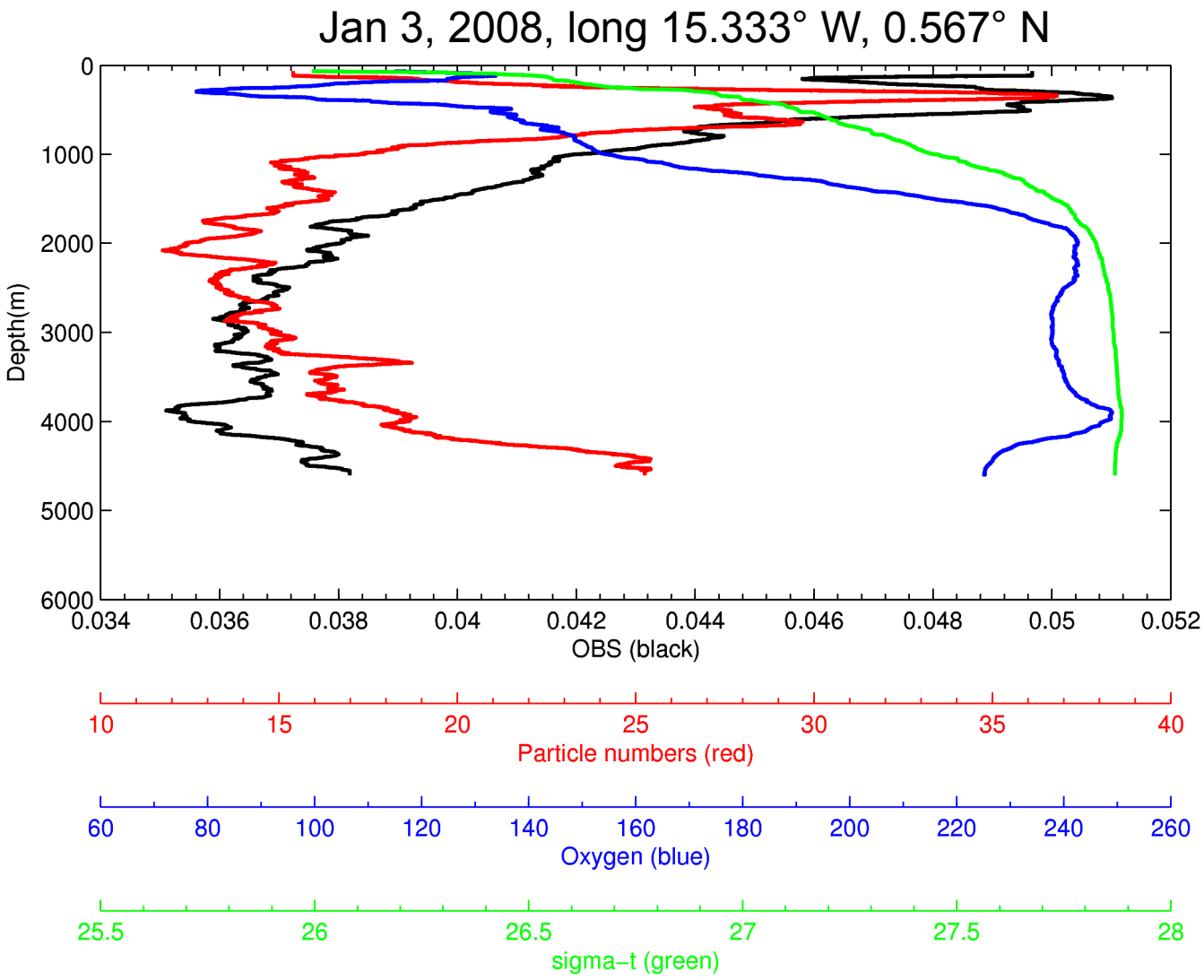


Fig. 14. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

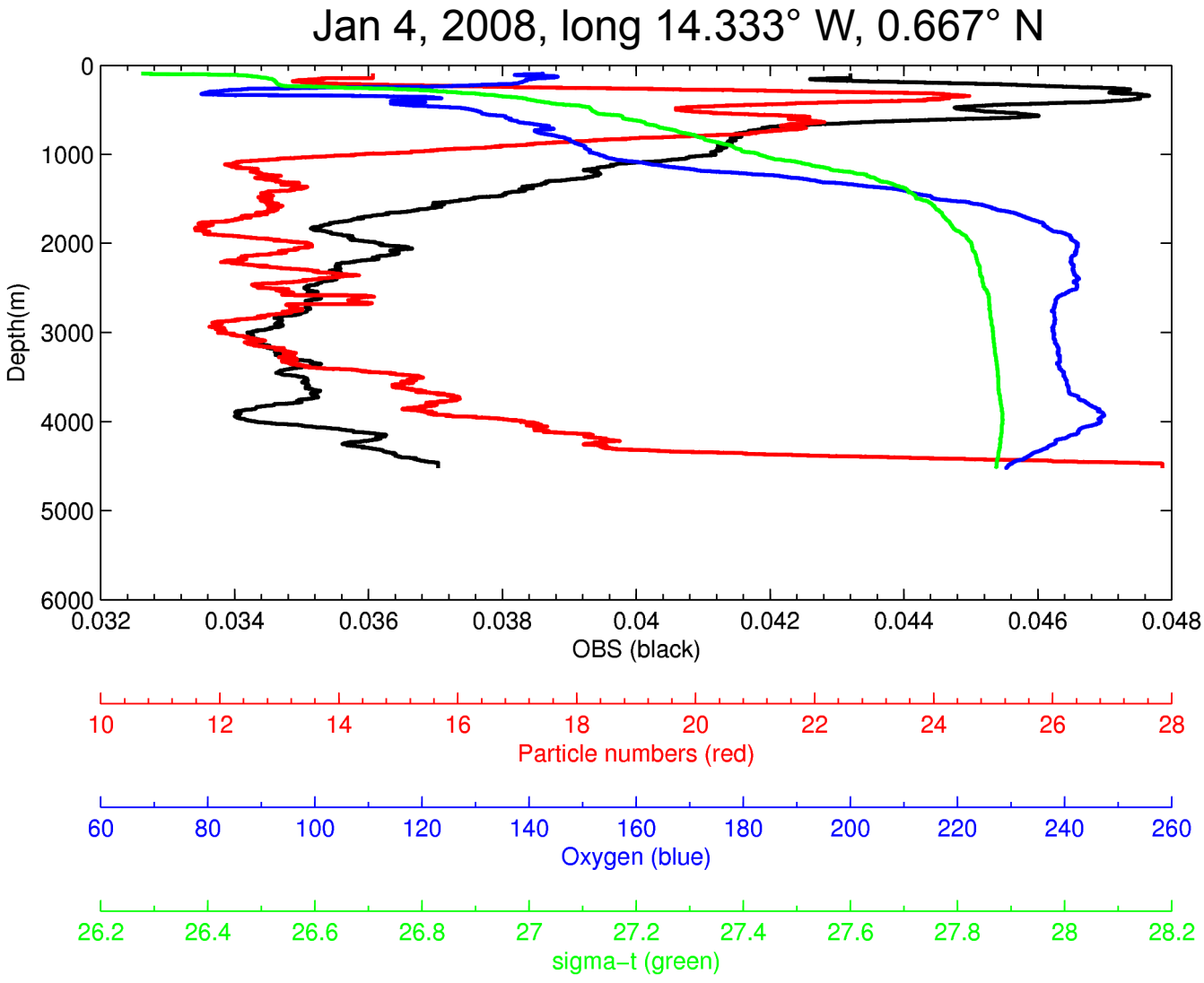


Fig. 15. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

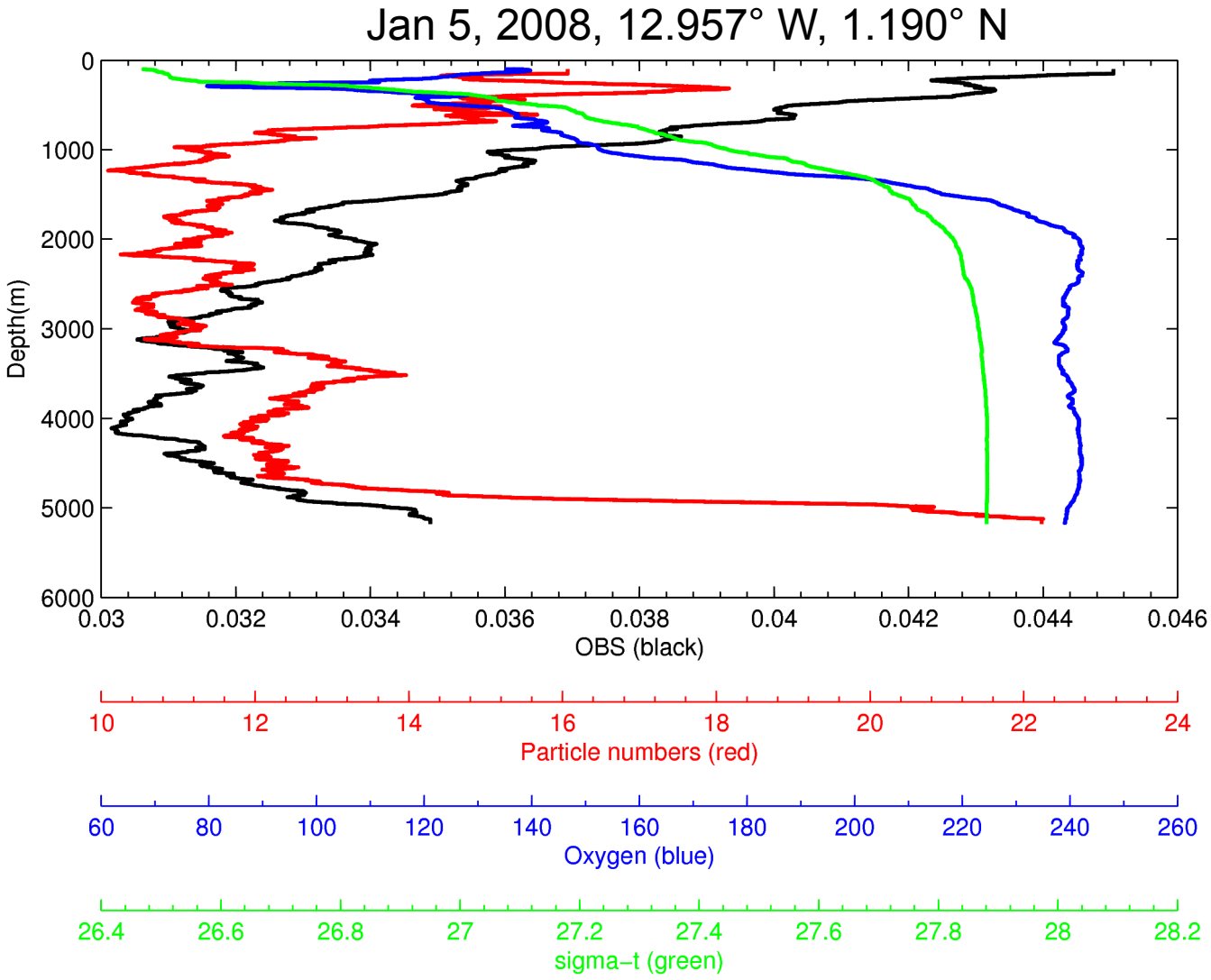


Fig. 16. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

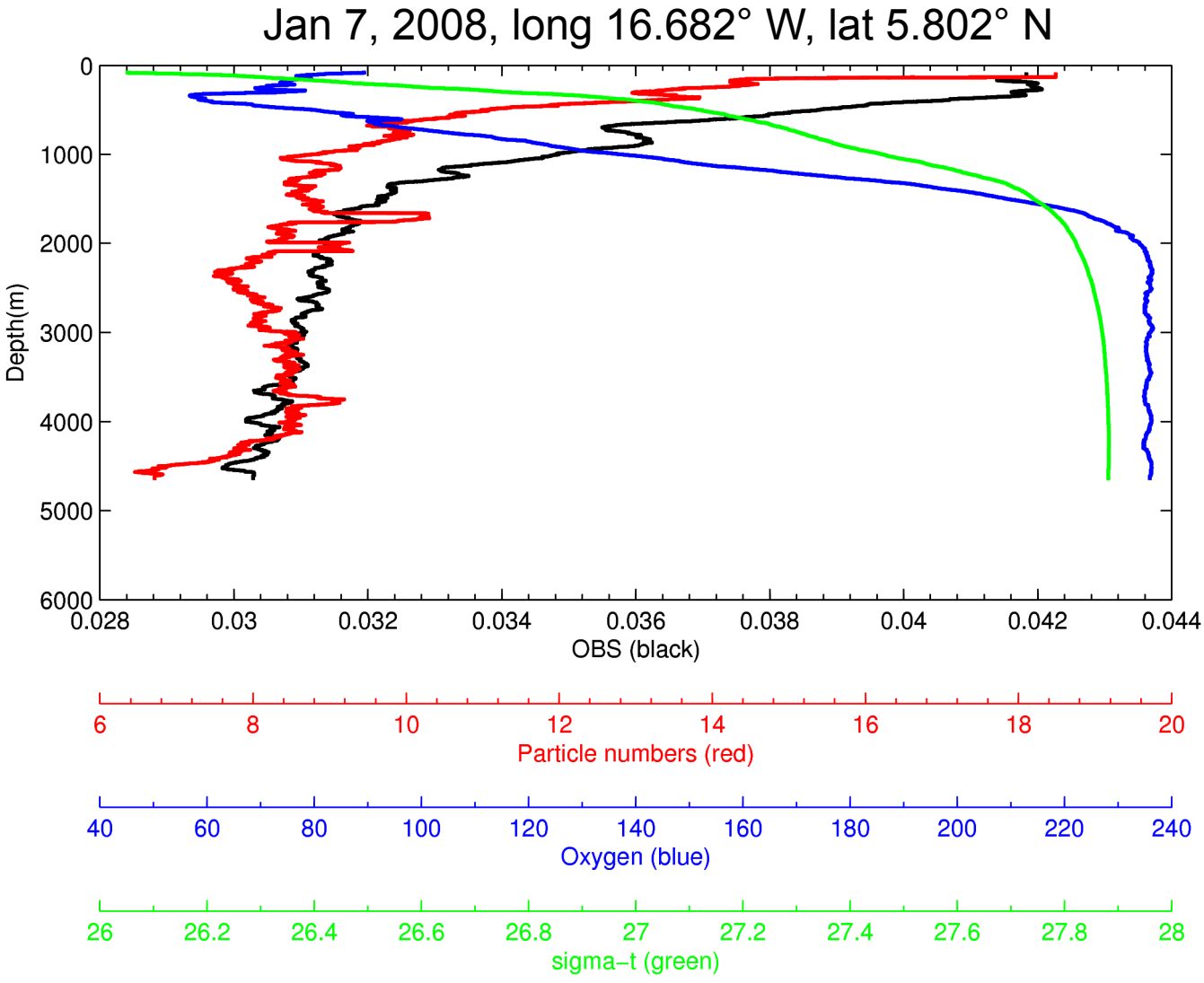


Fig. 17. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

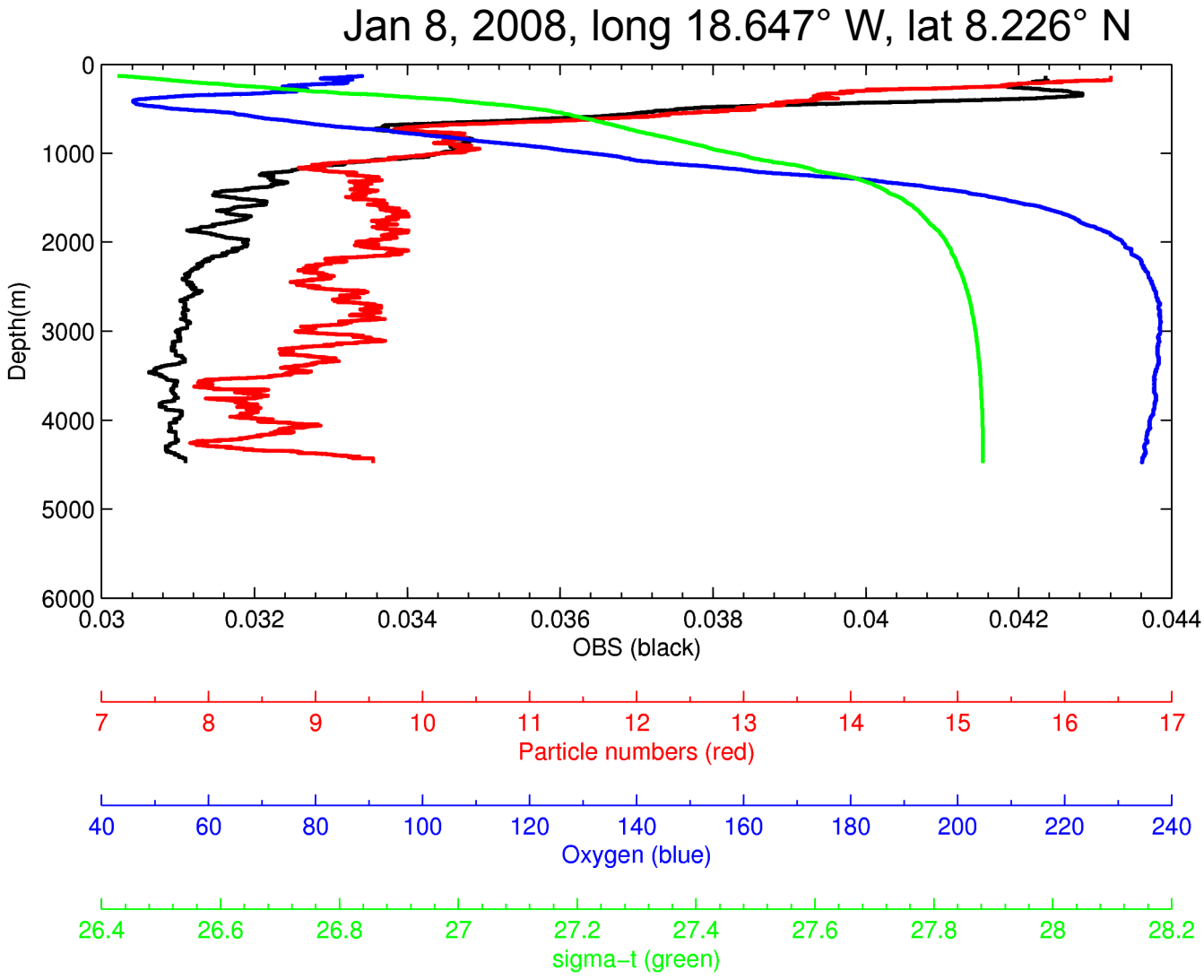


Fig. 18. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

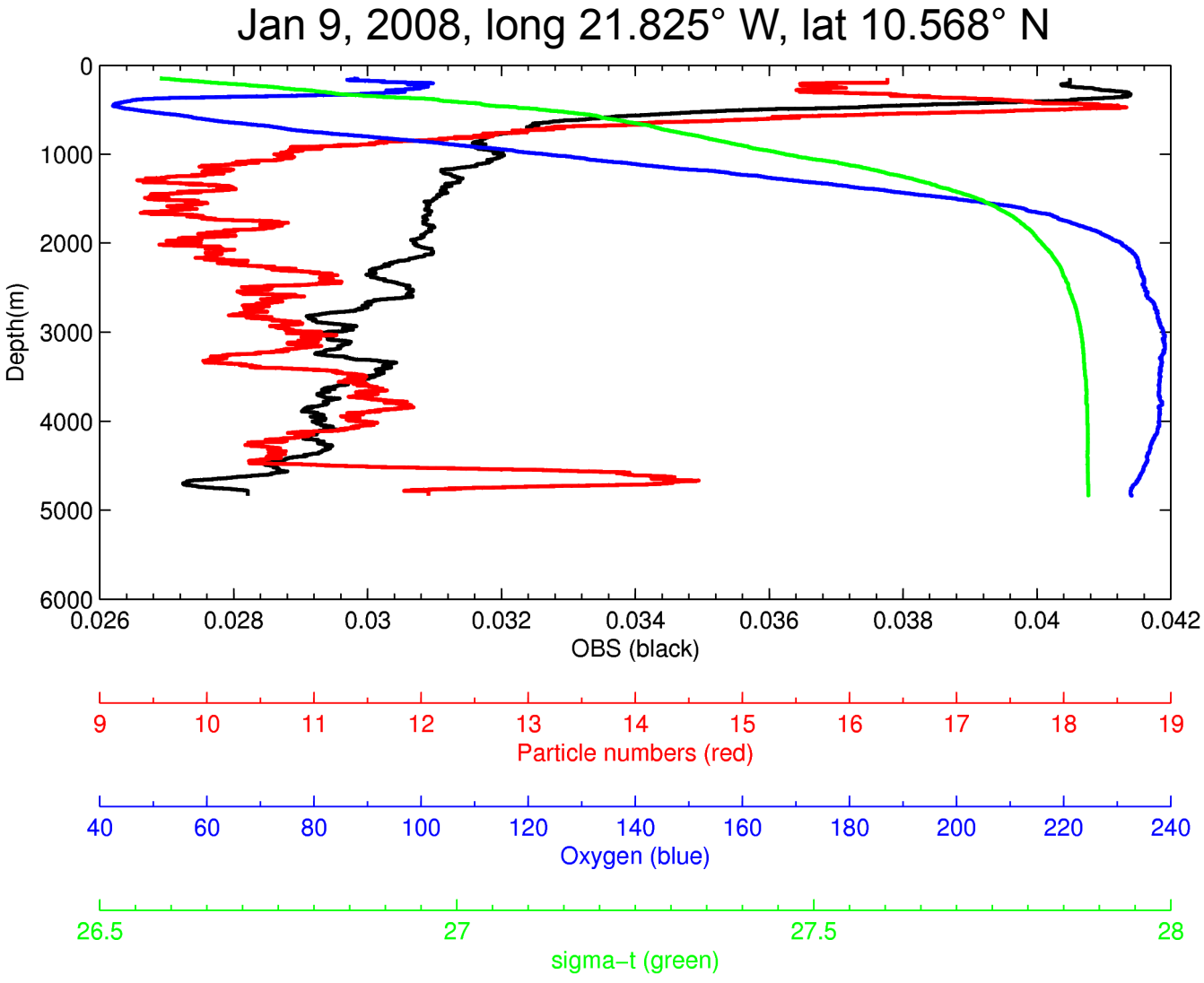


Fig. 19. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (μmol kg^{-1}), and sigma-t at the date and station shown above.

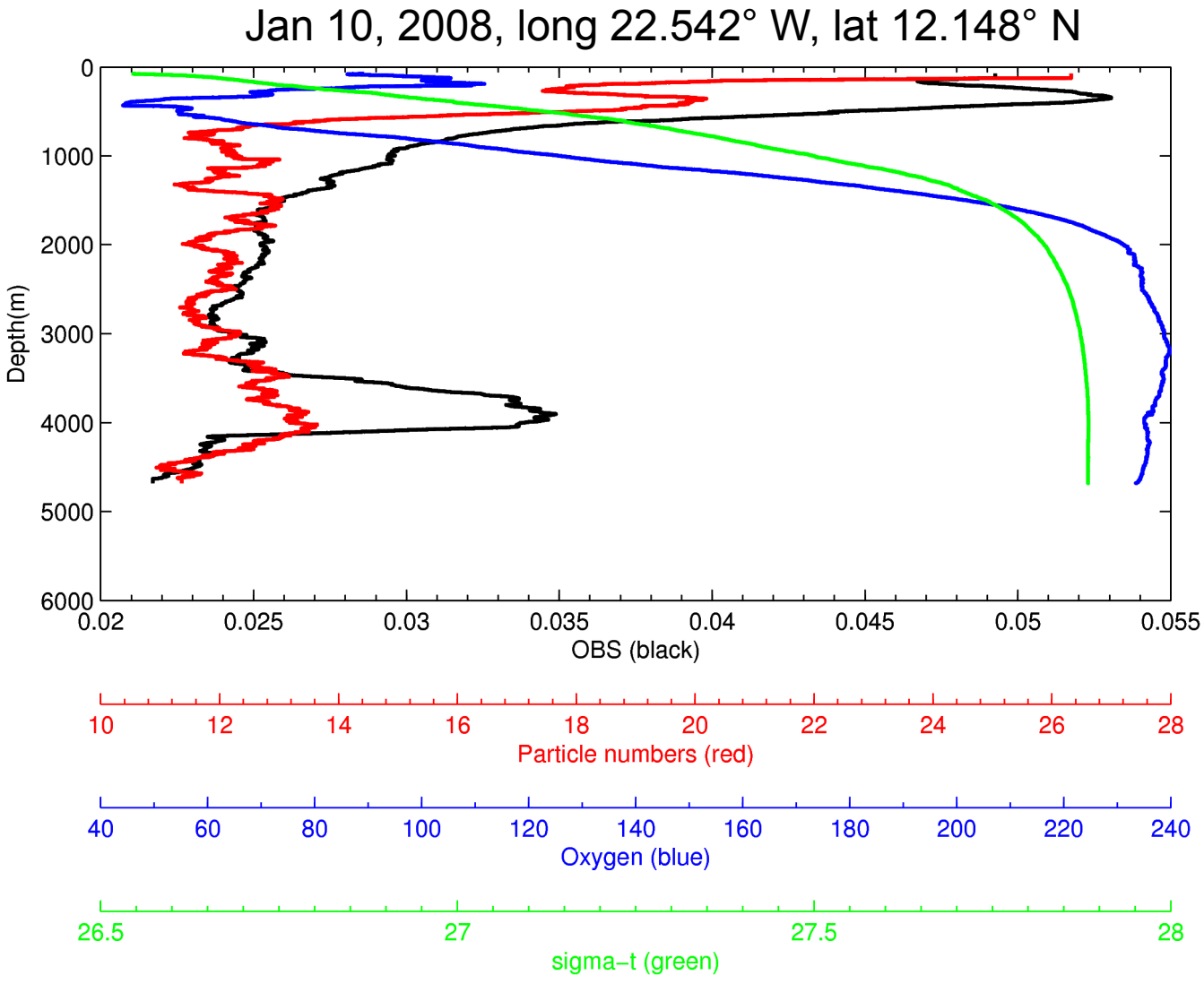


Fig. 20. Profiles of optical backscatter (obs, 100 m moving average), particle numbers per frame as determined by video (100 m moving average), oxygen concentration (µmol kg^{-1}), and sigma-t at the date and station shown above.