

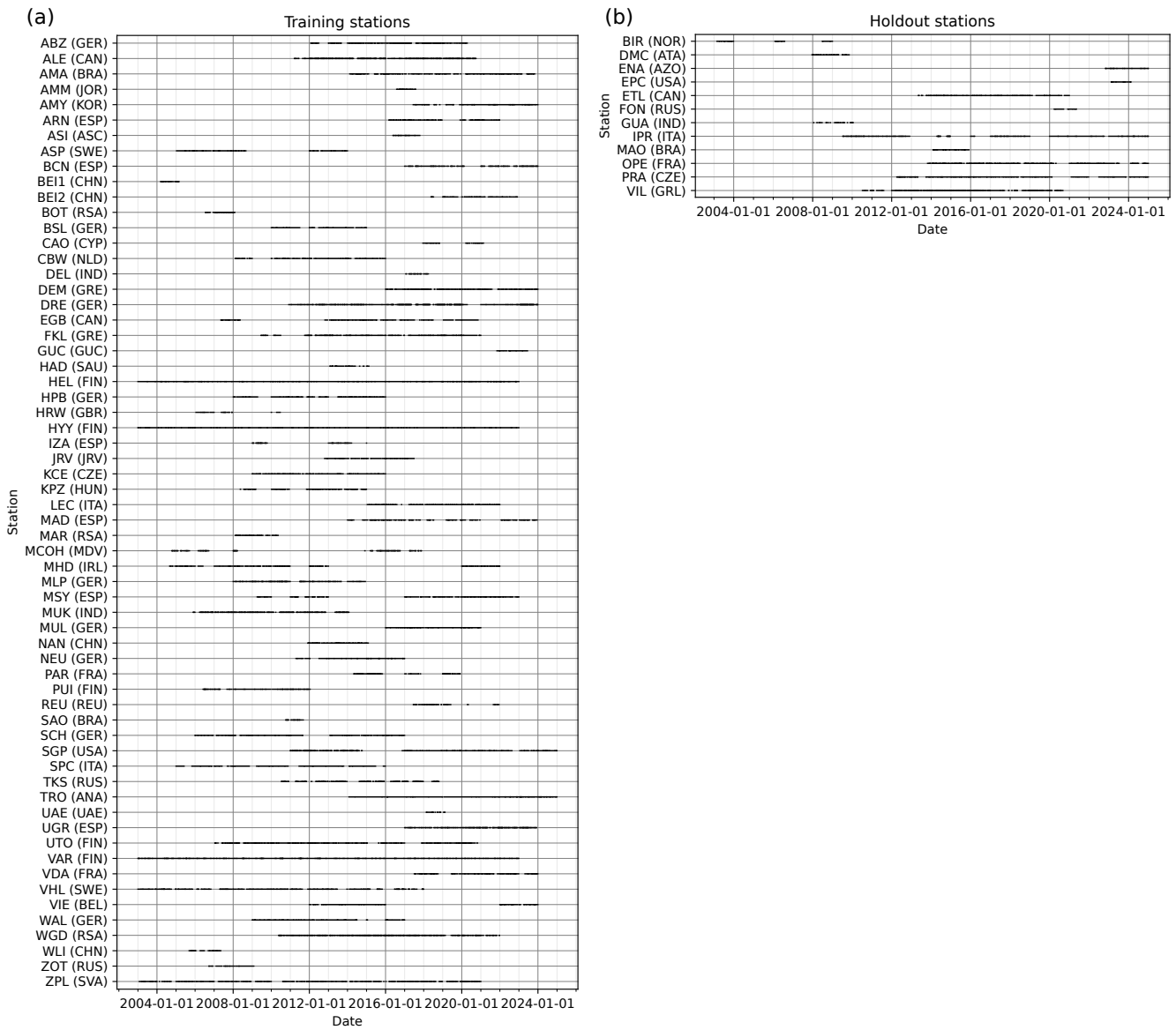


Figure S1. The data-availability of N_{100} and N_{50} measurements for (a) training stations and (b) holdout stations.

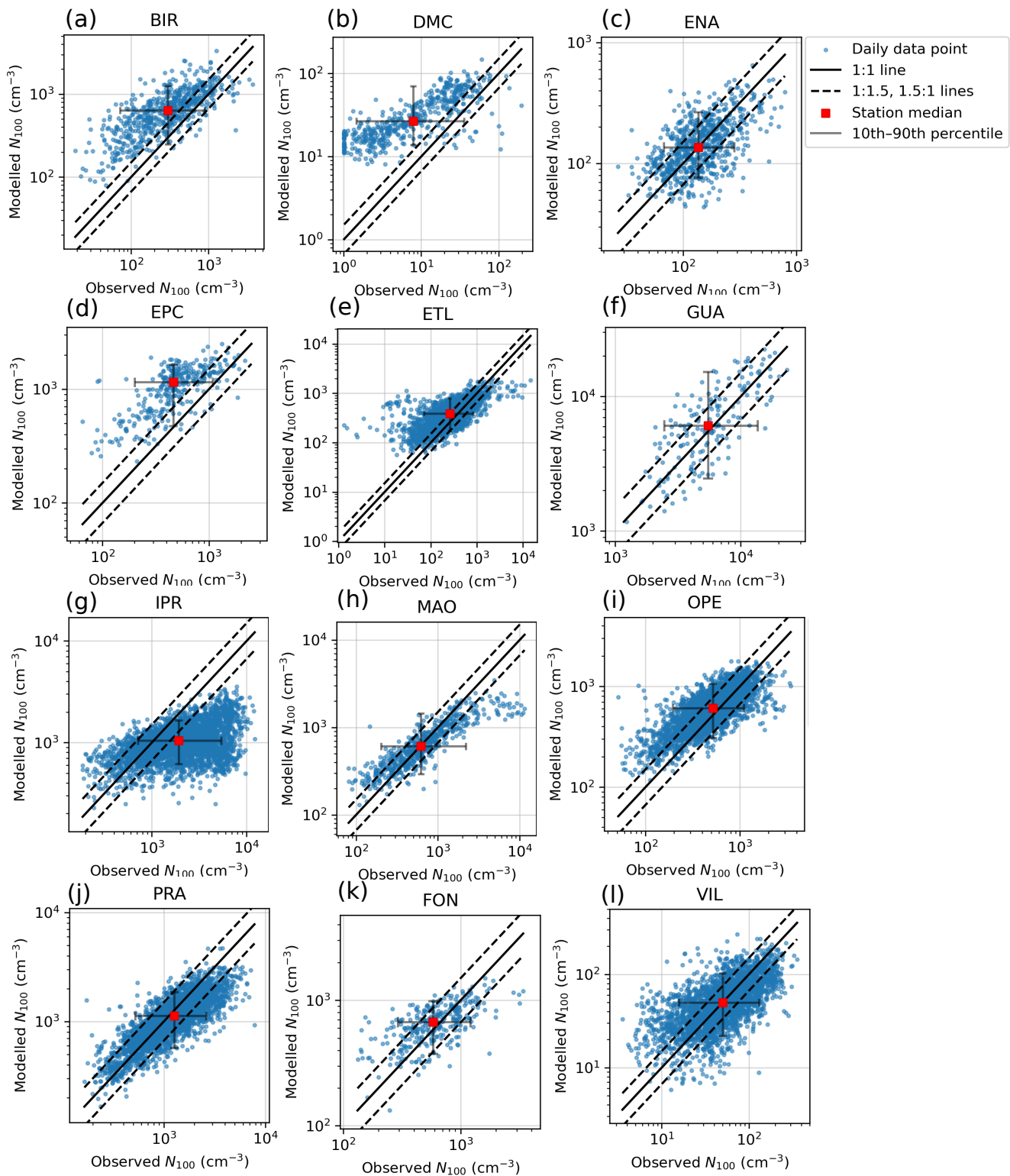


Figure S2. Daily modelled concentrations against observations at holdout stations. Station abbreviations are listed in Table 1. Station median and percentile whiskers are the same as in Figure 3.

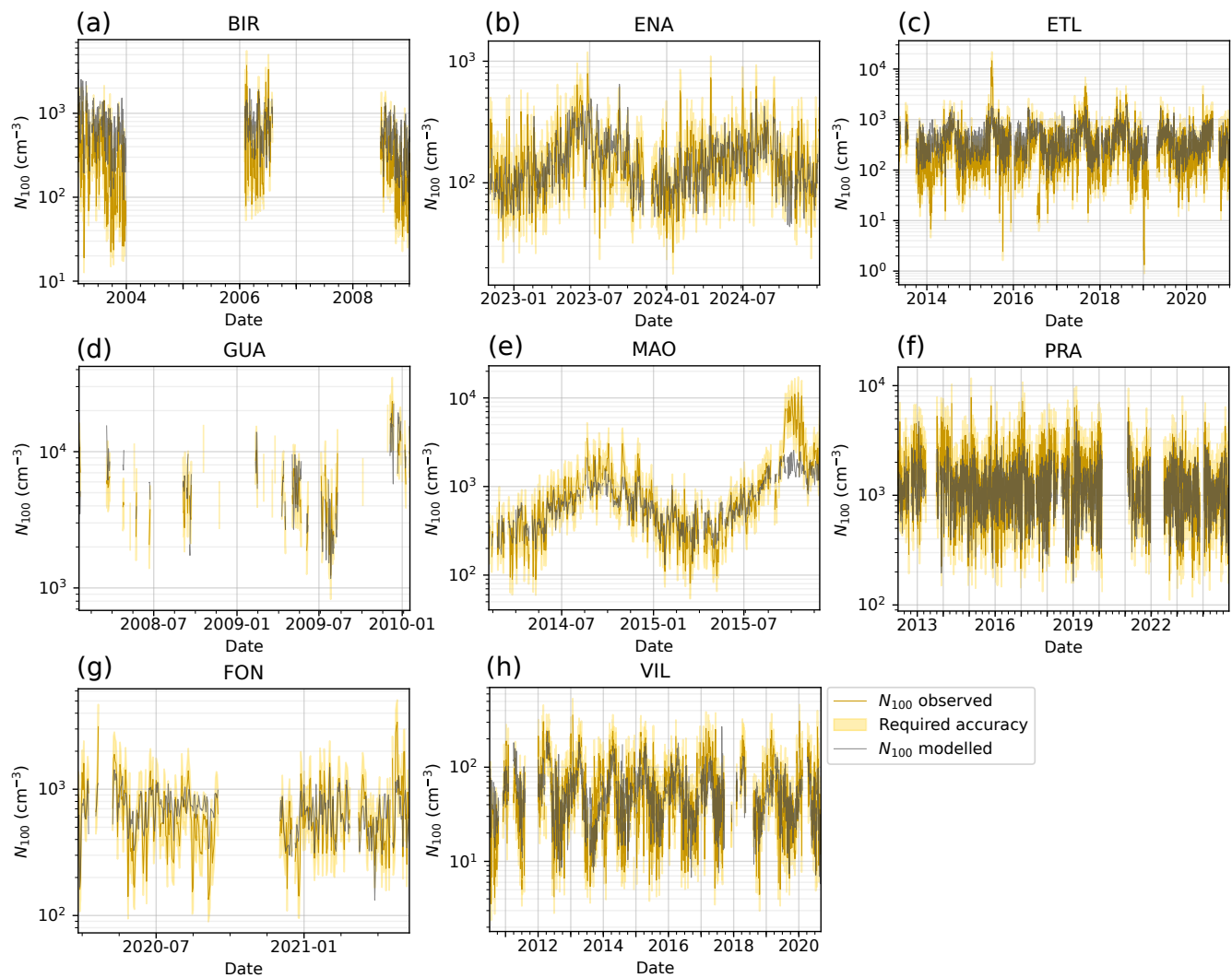


Figure S3. Time series of observed and model estimated N_{100} concentrations for holdout stations. Time series for another four holdout stations can be found from Figure 3.

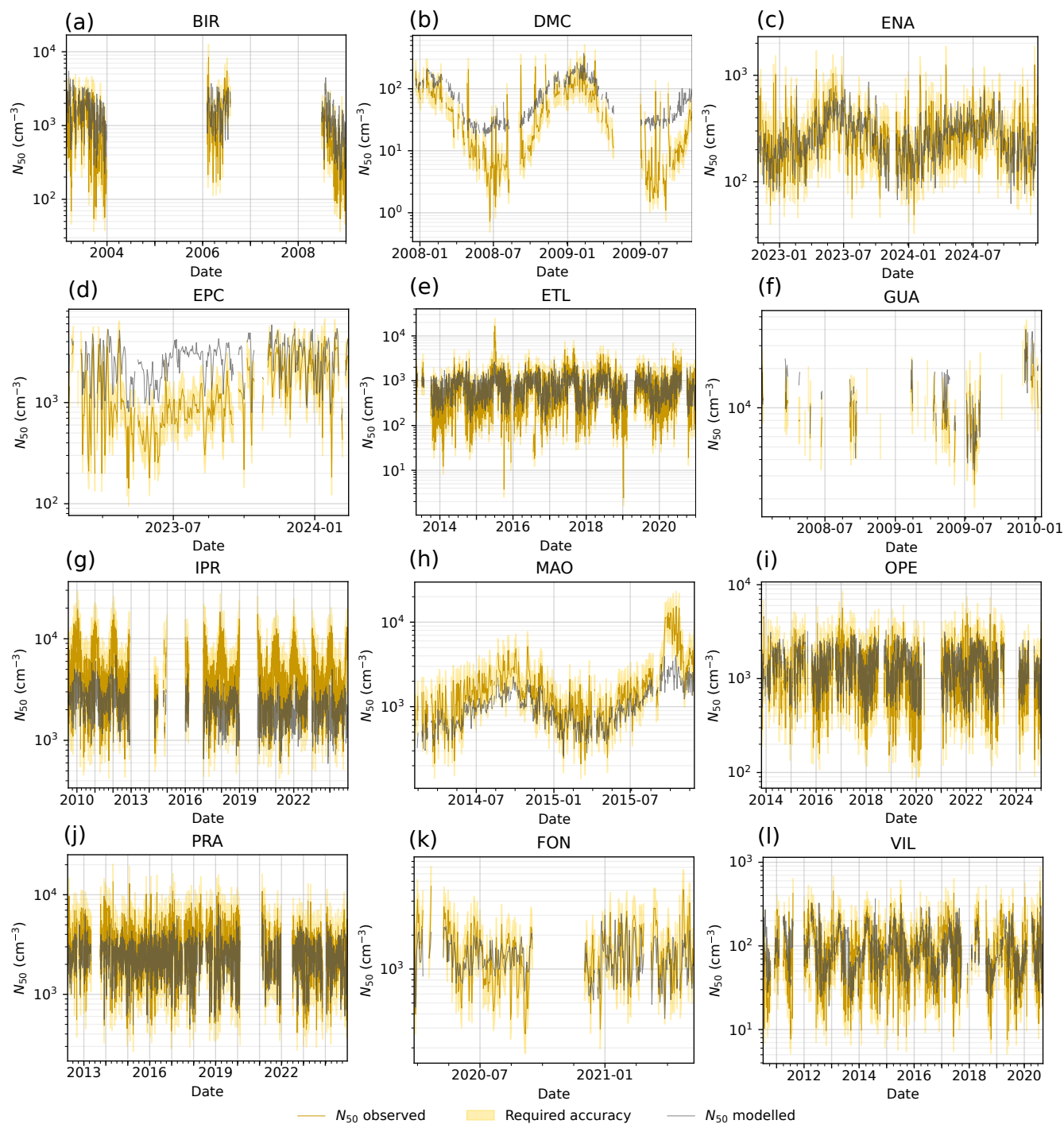


Figure S4. Time series of observed and model estimated N_{50} concentrations for holdout stations.

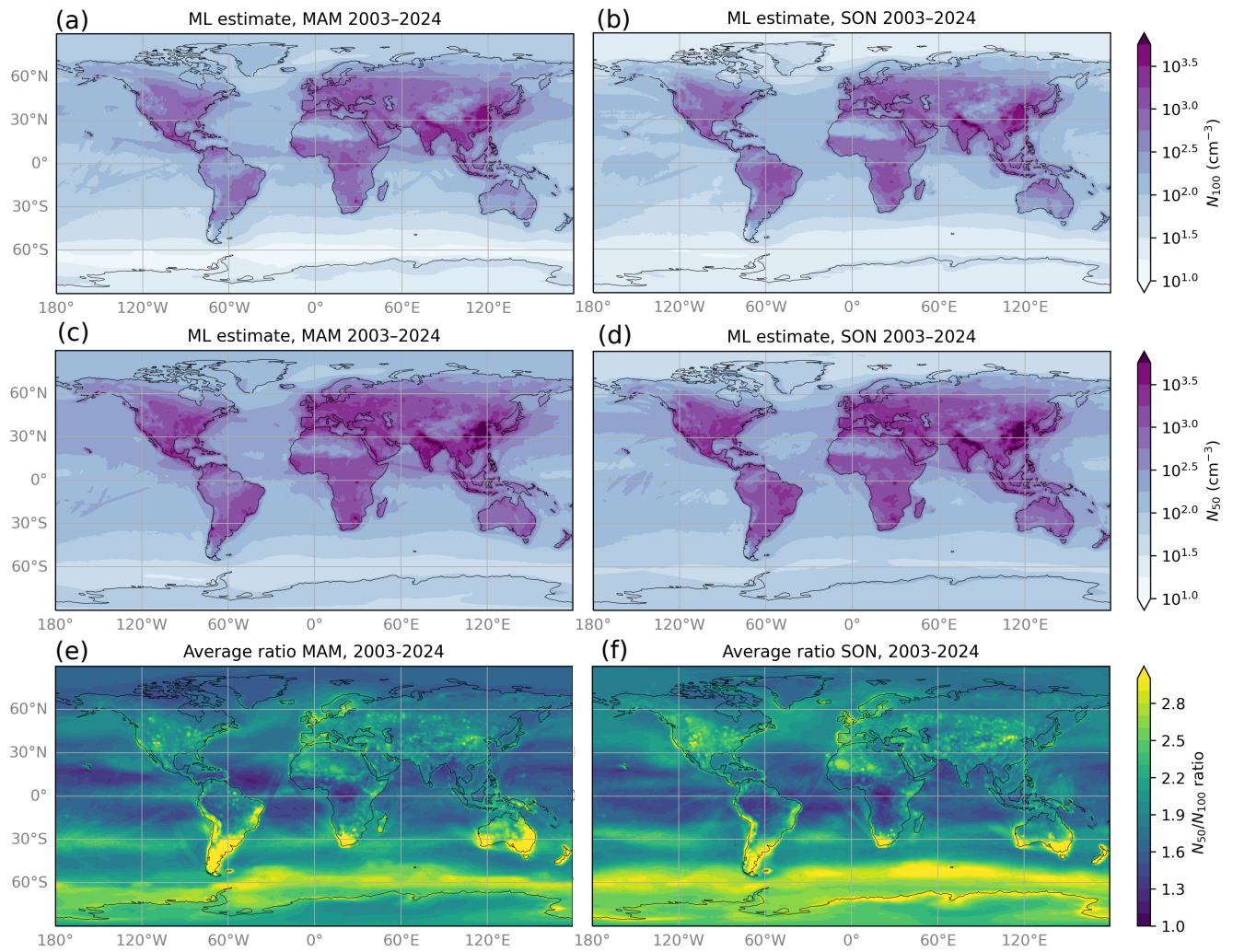


Figure S5. The global average spatial distributions of N_{100} and N_{50} as well as N_{50} to N_{100} ratio by season for 2003-2024. Panels a), c) and e) contain March-April-May result and panels b), d), f) September-October-November

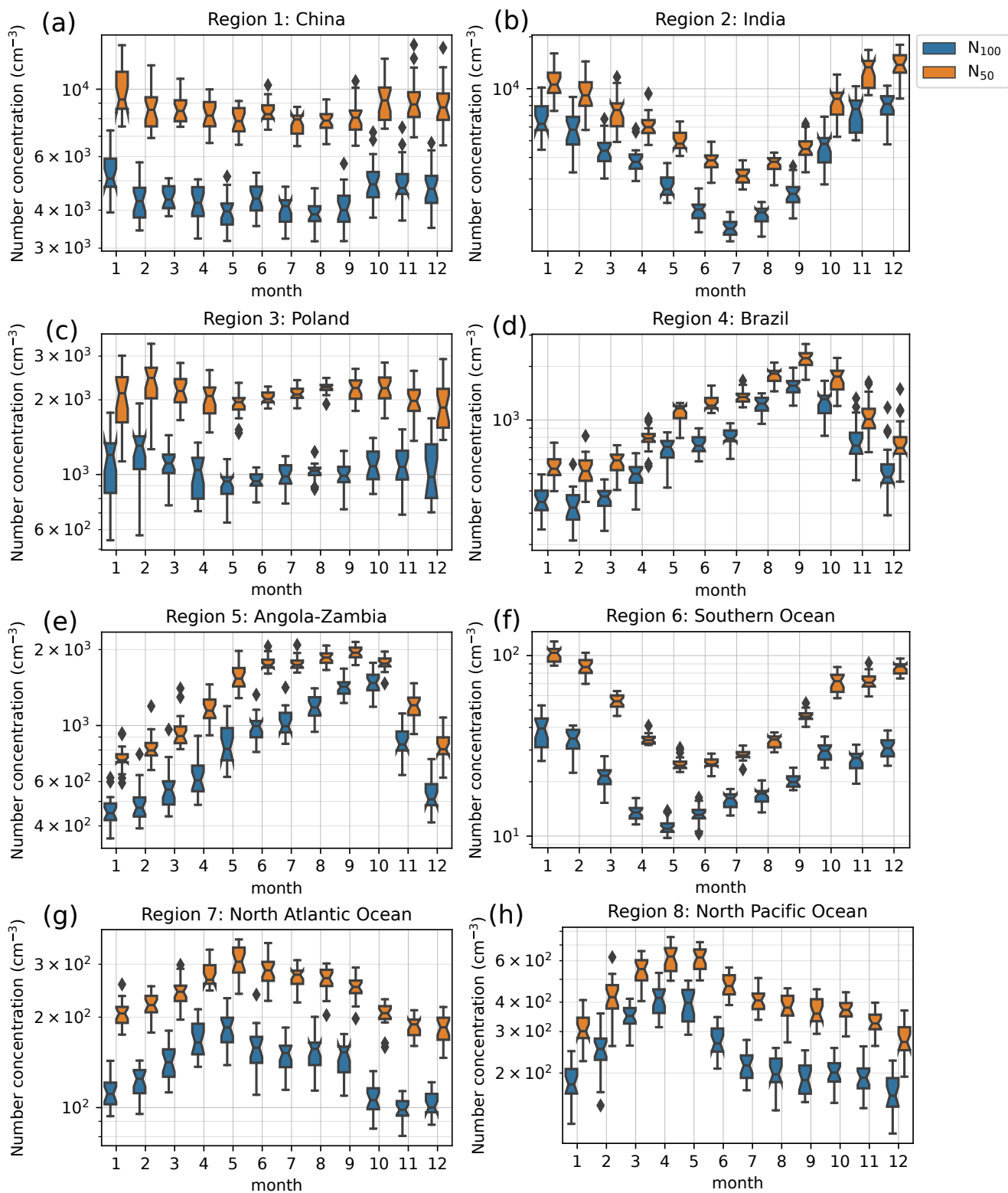


Figure S6. Average seasonal cycles for N_{100} and N_{50} during 2003-2024 at selected regions calculated from monthly averages.