**Supplementary Table 1:** Numbers of significantly predicted stations for salinity, temperature, and Shannon indices of diversity. Predictions were made with s-map using either a single station, composite library of correlated stations, or composite library of co-predicted stations. MASE values came from time series that had a maximum gap of three years. MASE values from unfiltered time series shown in parentheses.

|  | Single station | Correlated composite | Co-predicted composite |
|---|---|---|---|
| **Salinity** | 25 (27) | 28 (28) | 58 (60) |
| **Temperature** | 34 (36) | 34 (36) | 59 (60) |
| **Shannon Index** | 31 (33) | 39 (42) | 70 (72) |