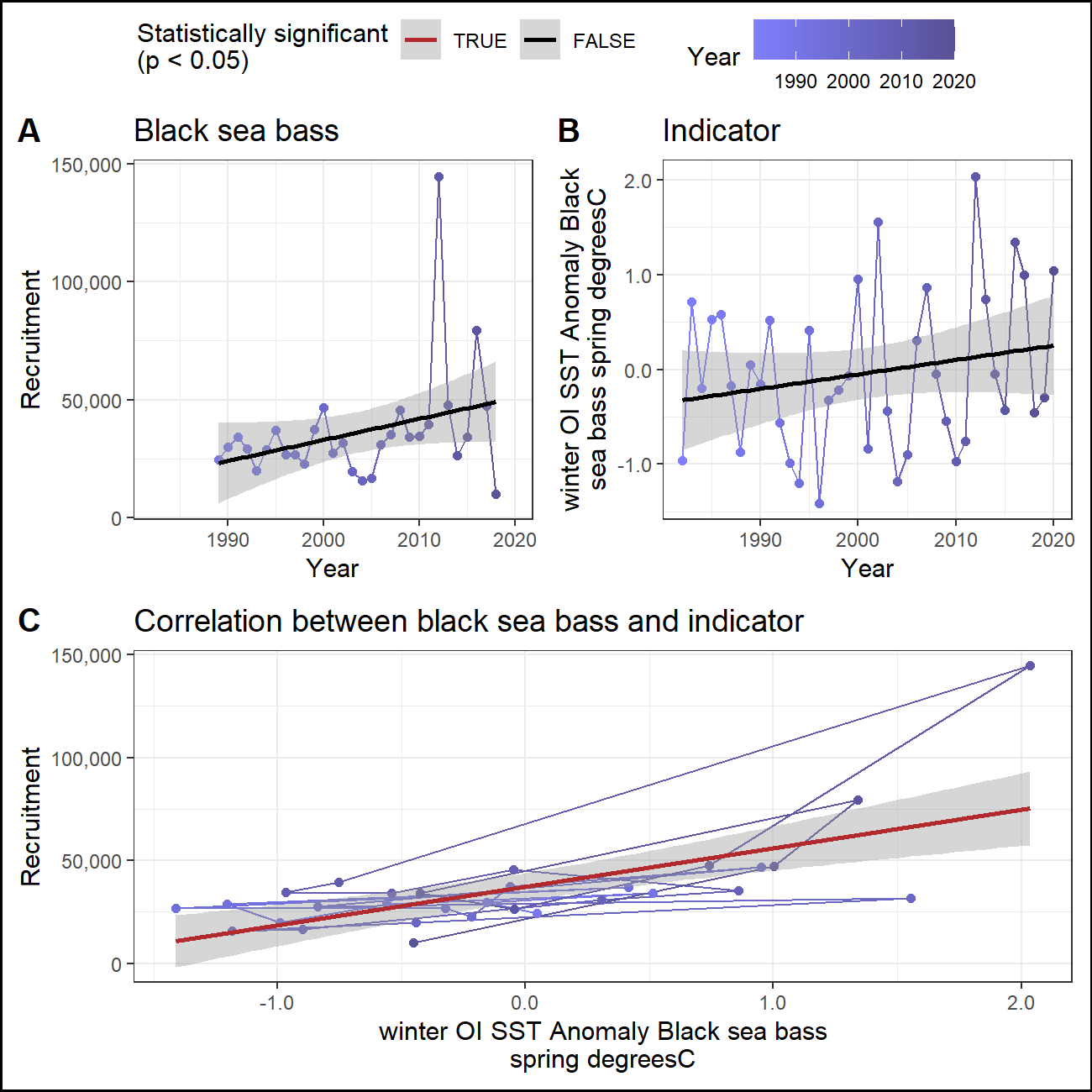
Black sea bass indicator analysis

Abigail Tyrell

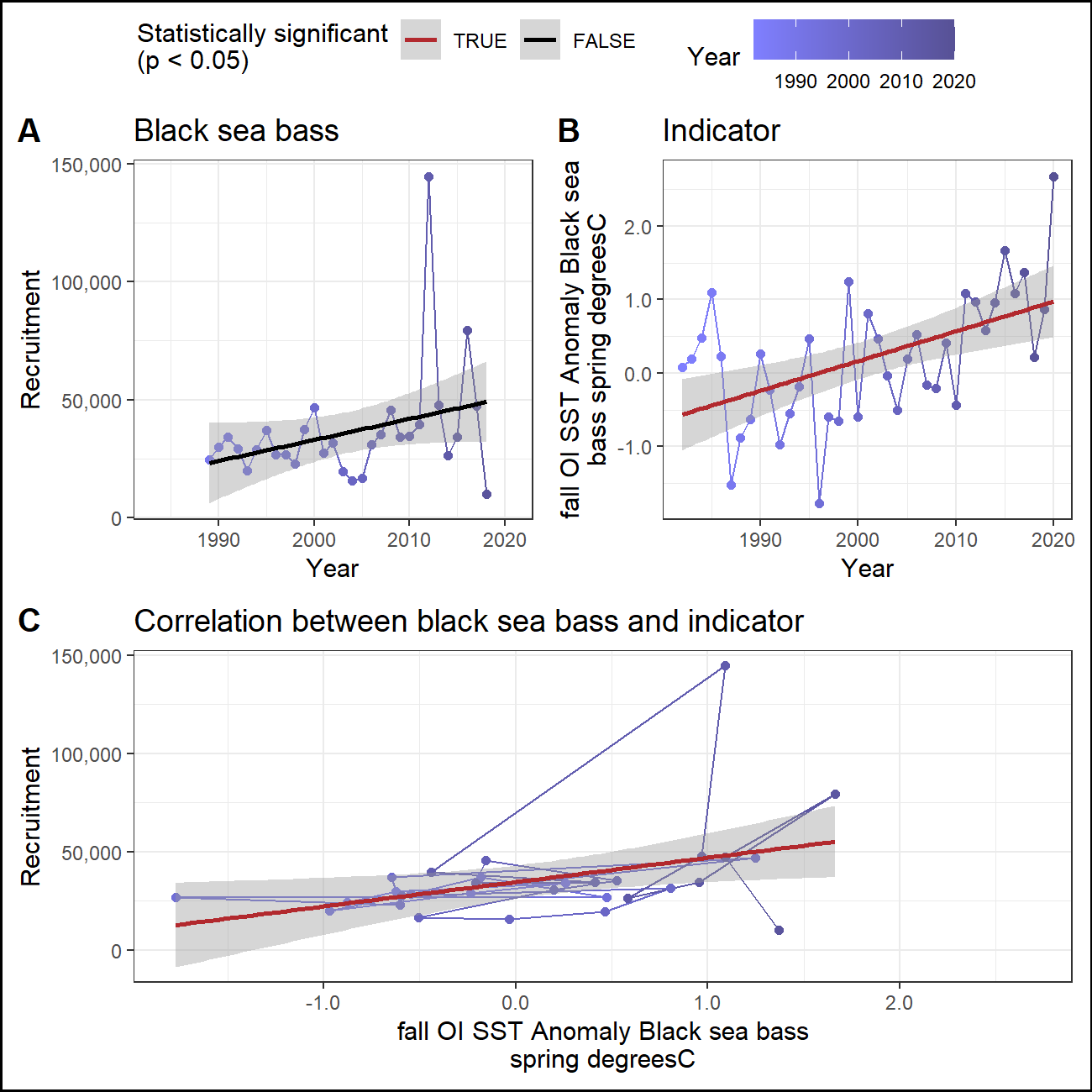
27 Apr 2021

## Recruitment

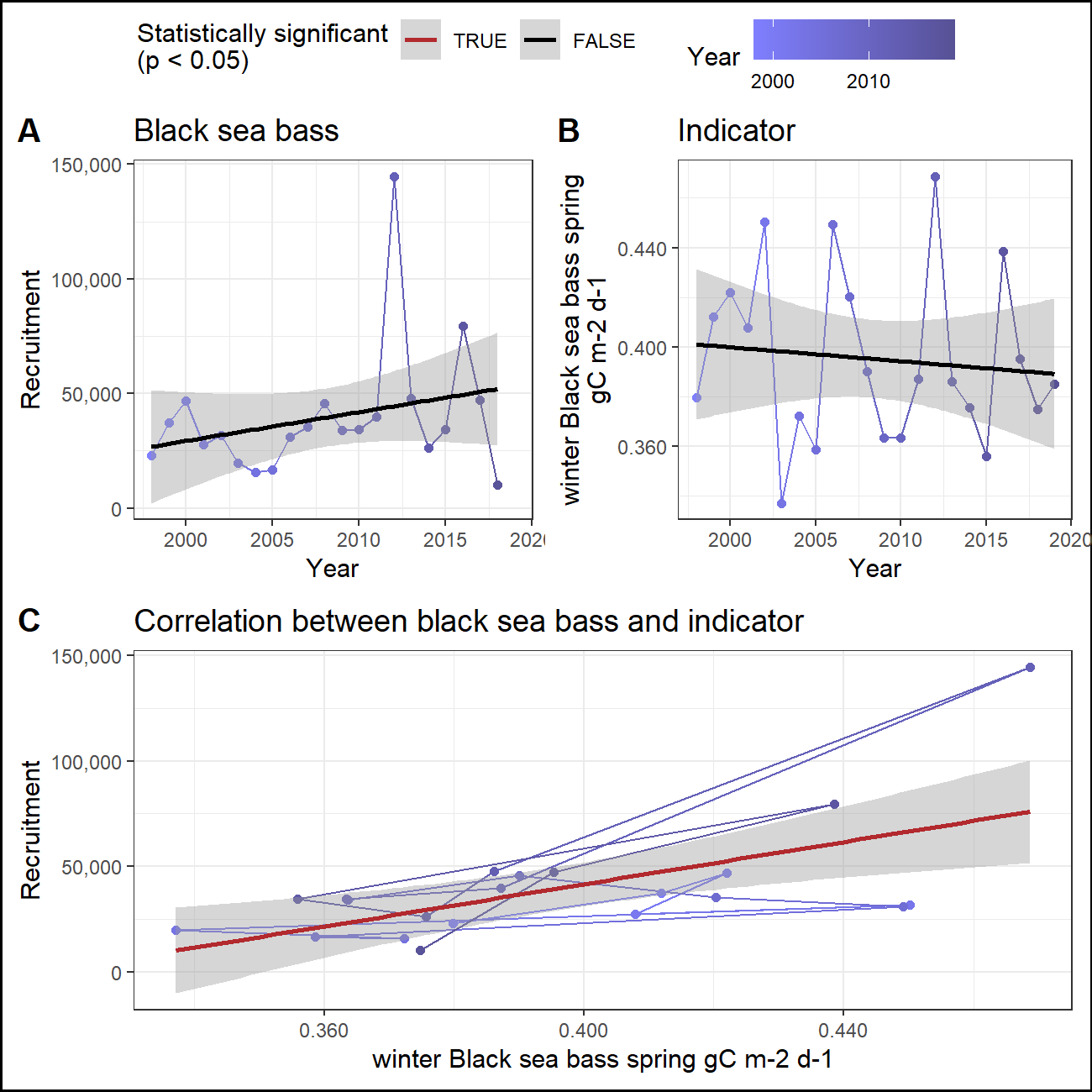
### Winter SST anomaly



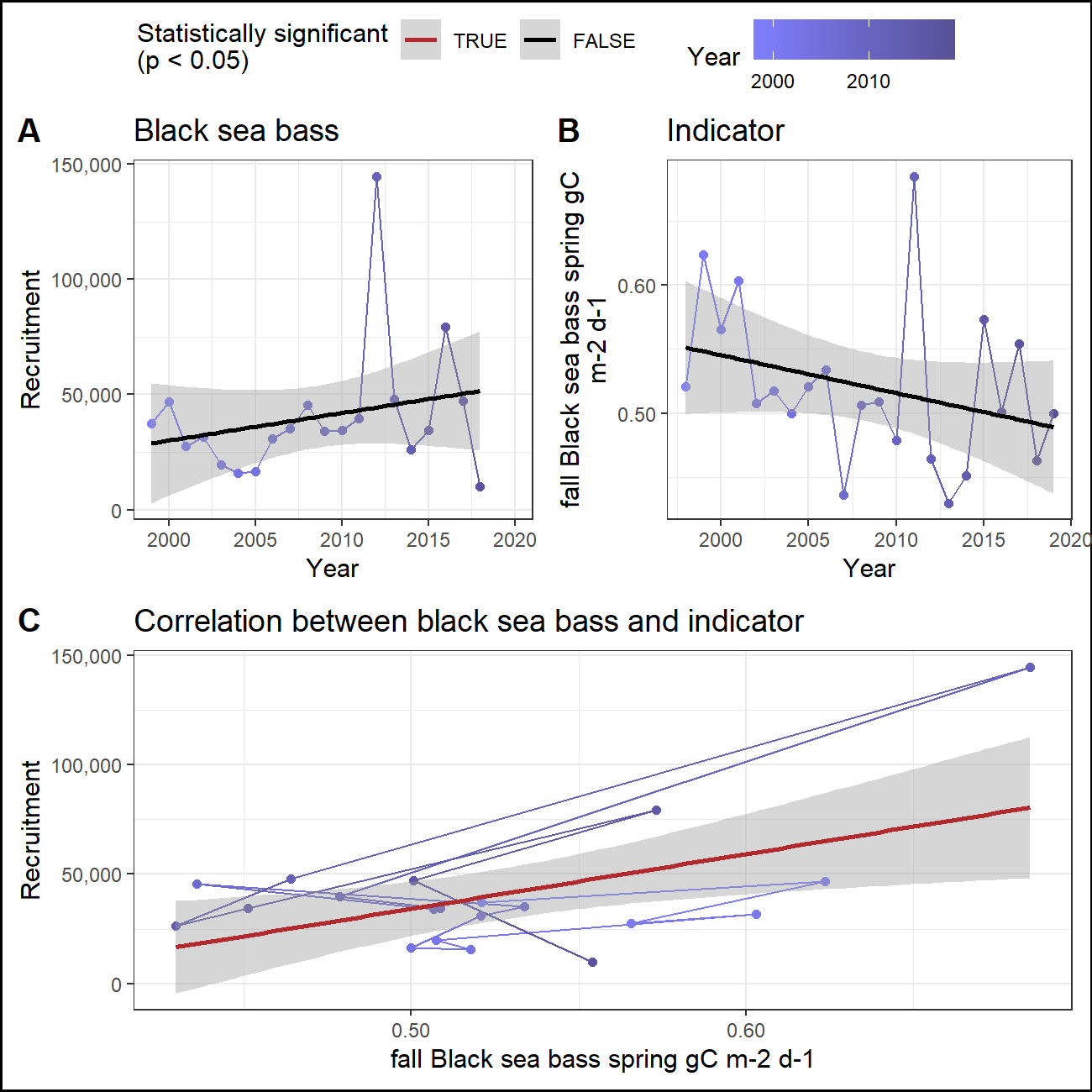
### Fall SST anomaly (prior year)



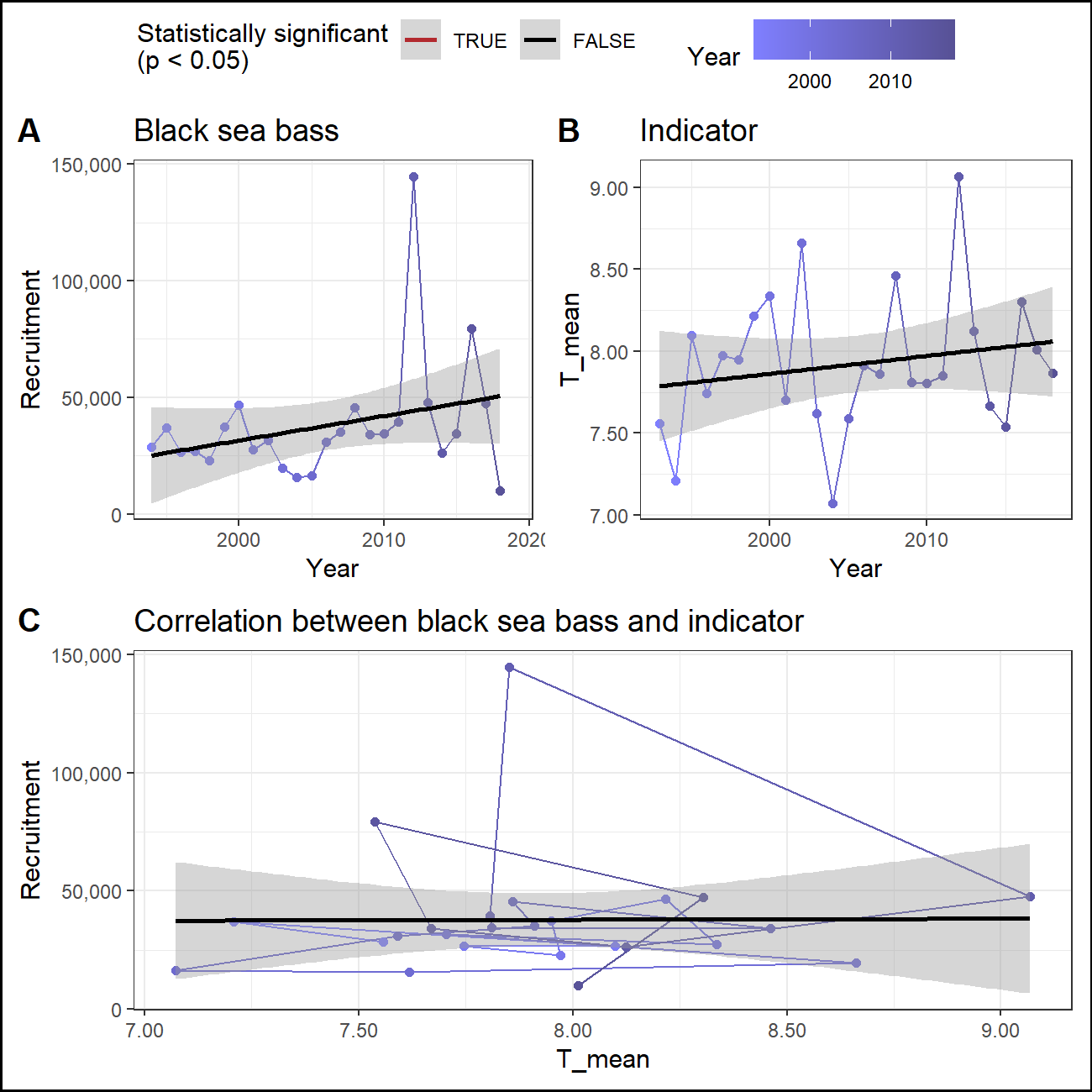
### Winter primary production

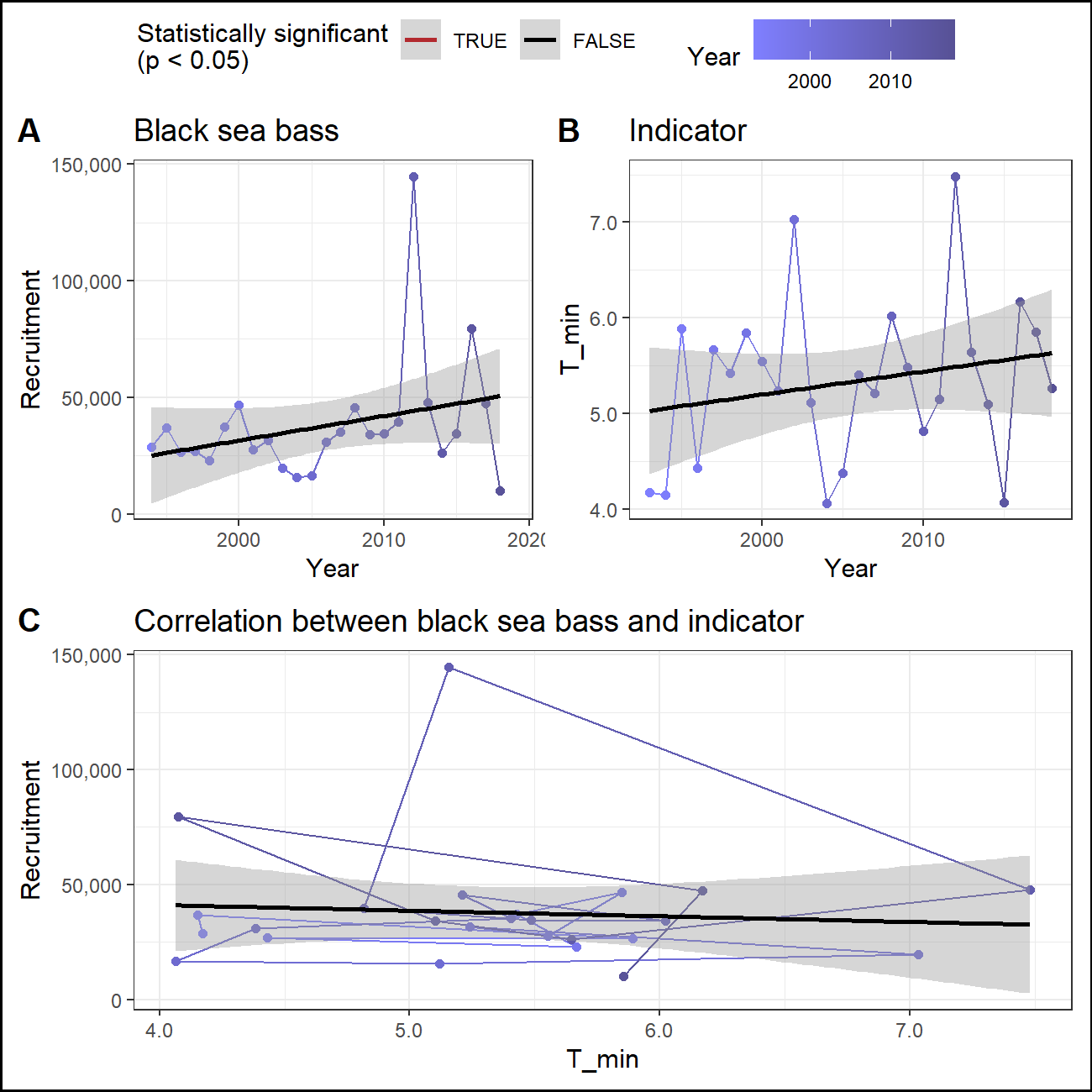


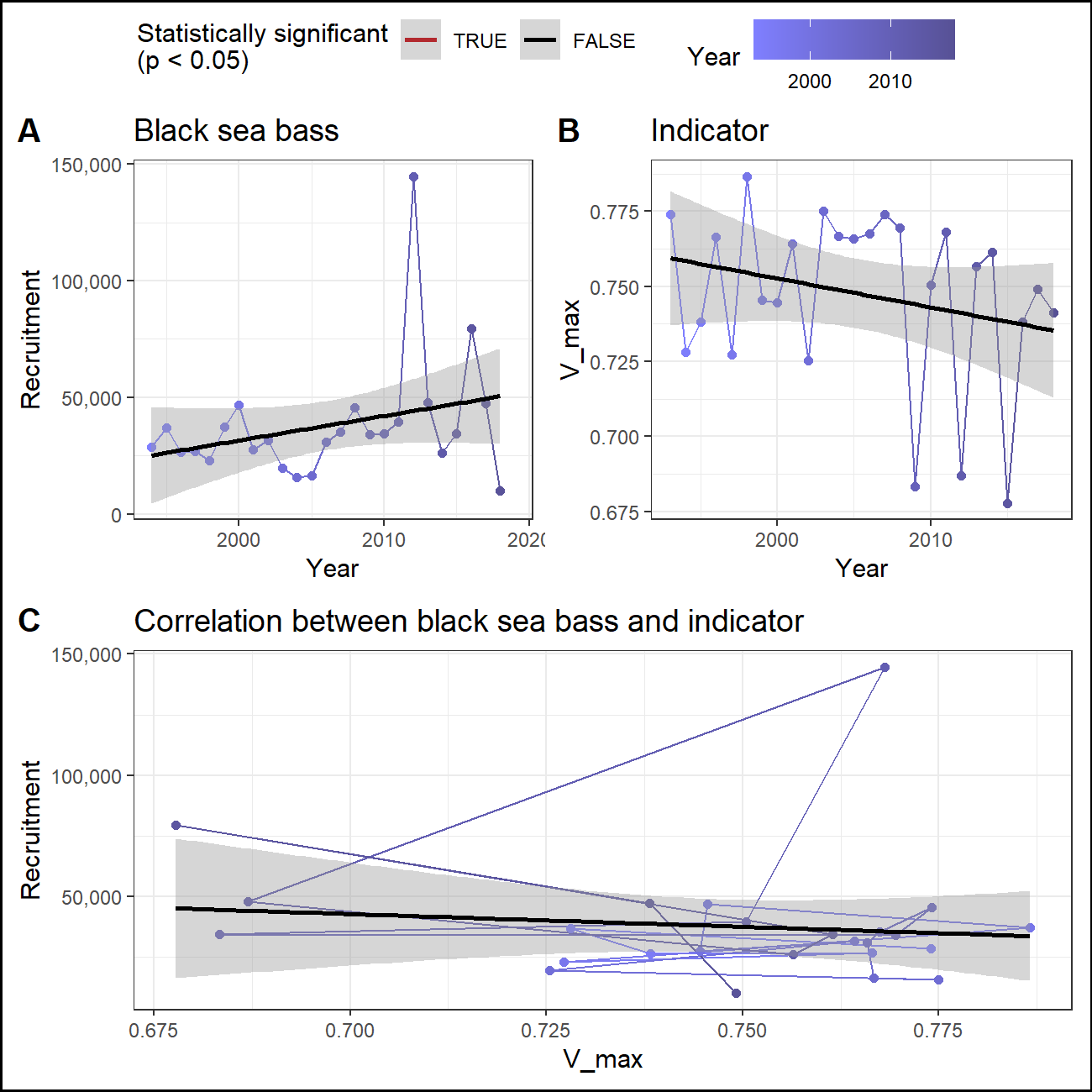
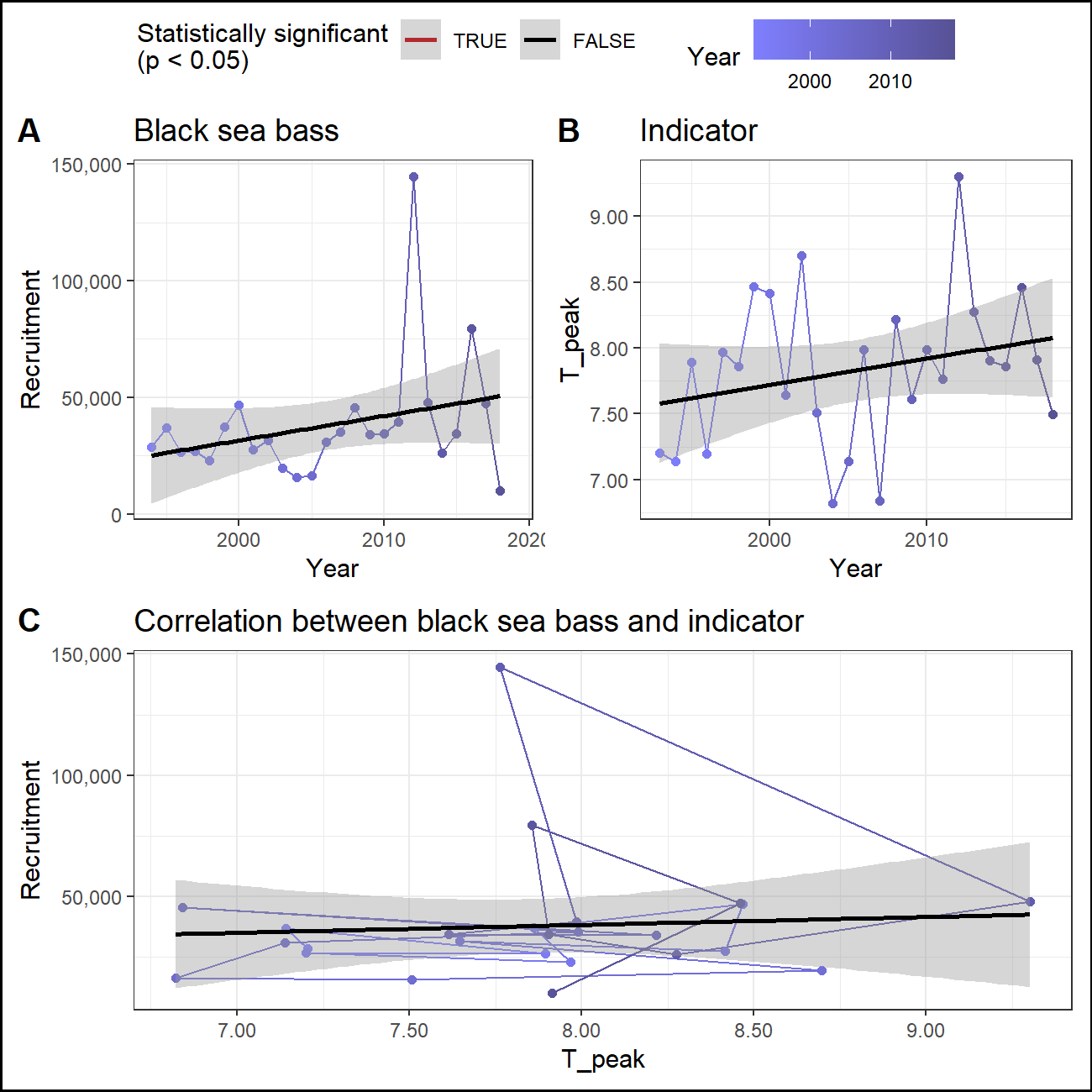
### Fall primary production (prior year)



### Cold pool index (prior year)





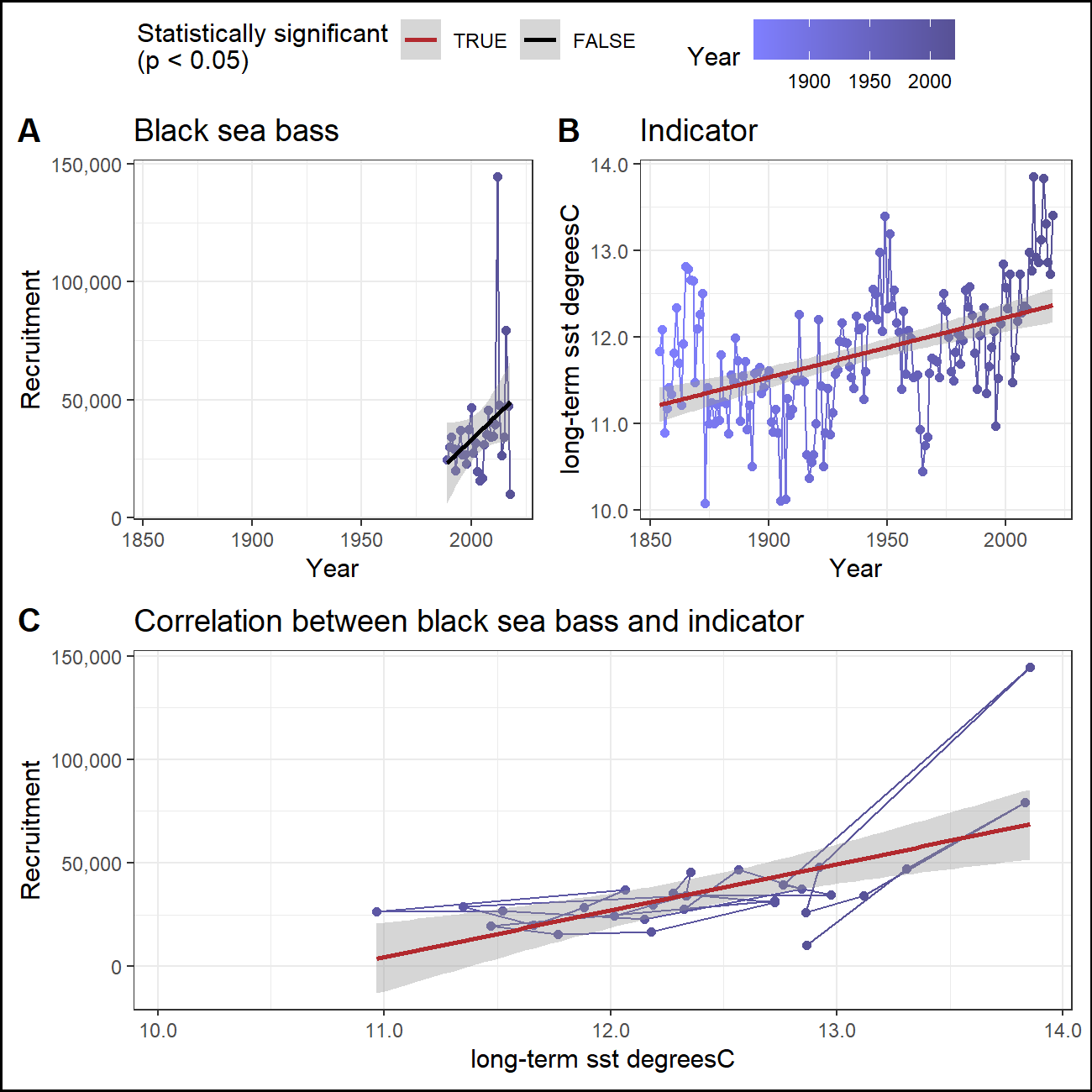


### Predator abundance

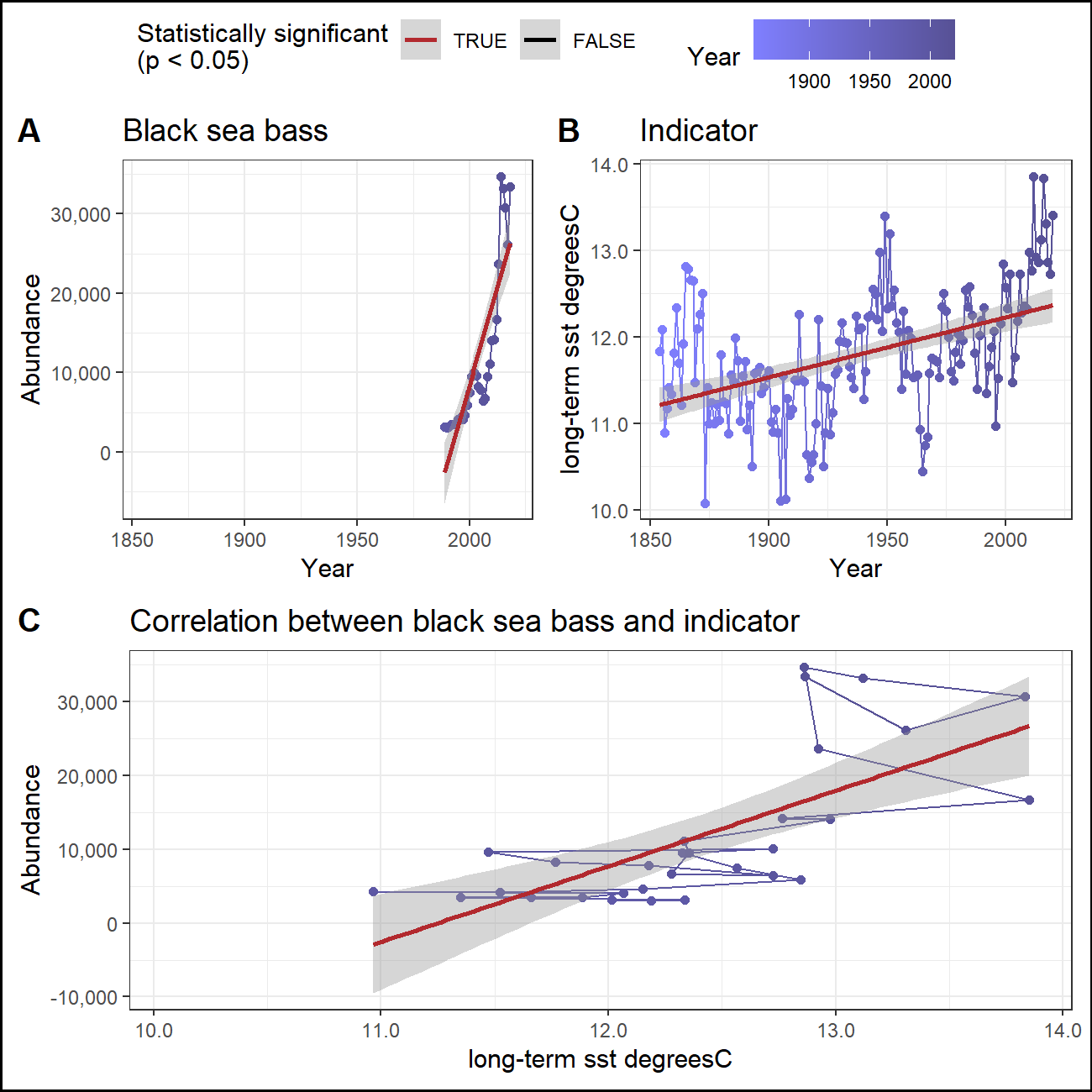
## Ecosystem

### Sea surface temperature

#### Recruitment

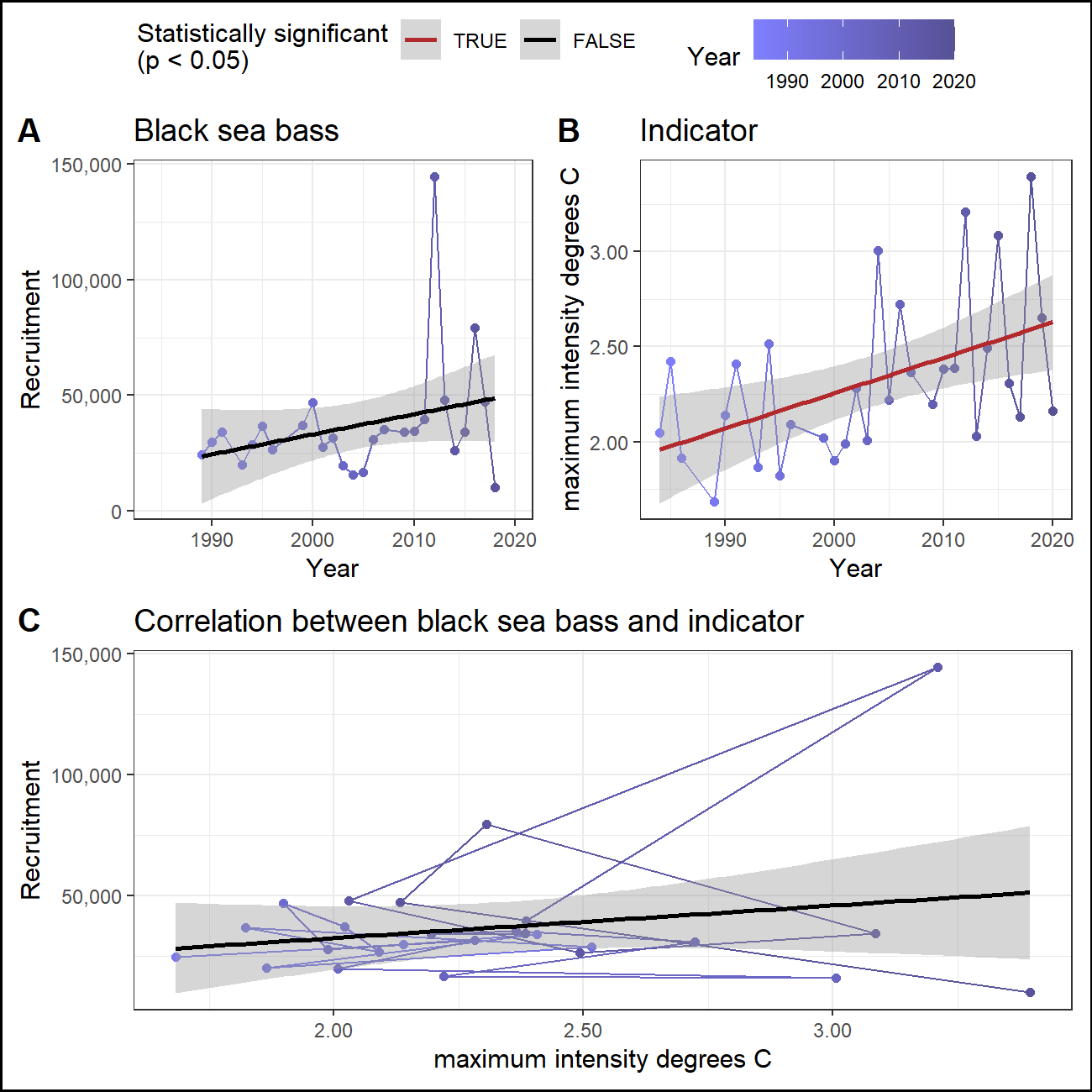
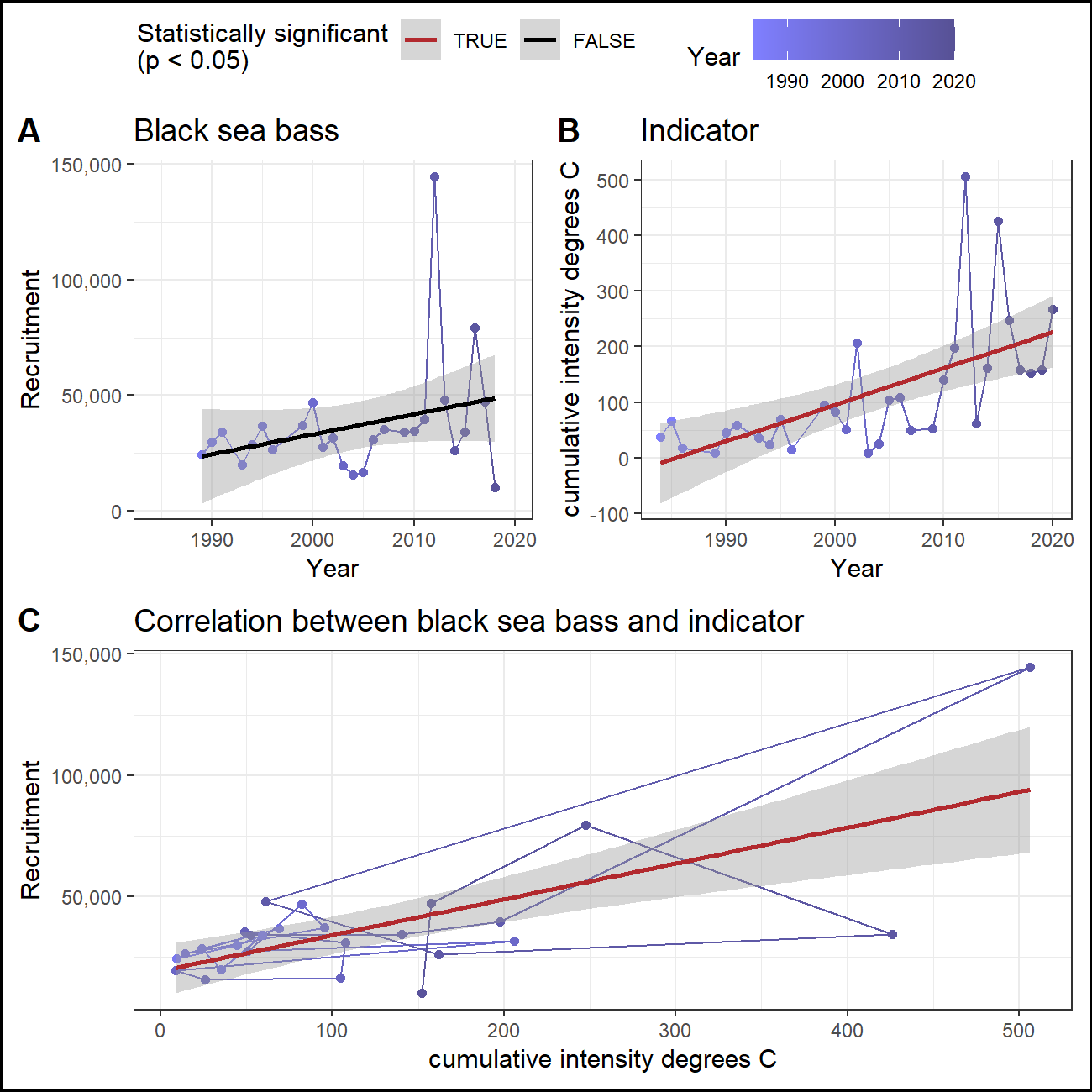


#### Abundance

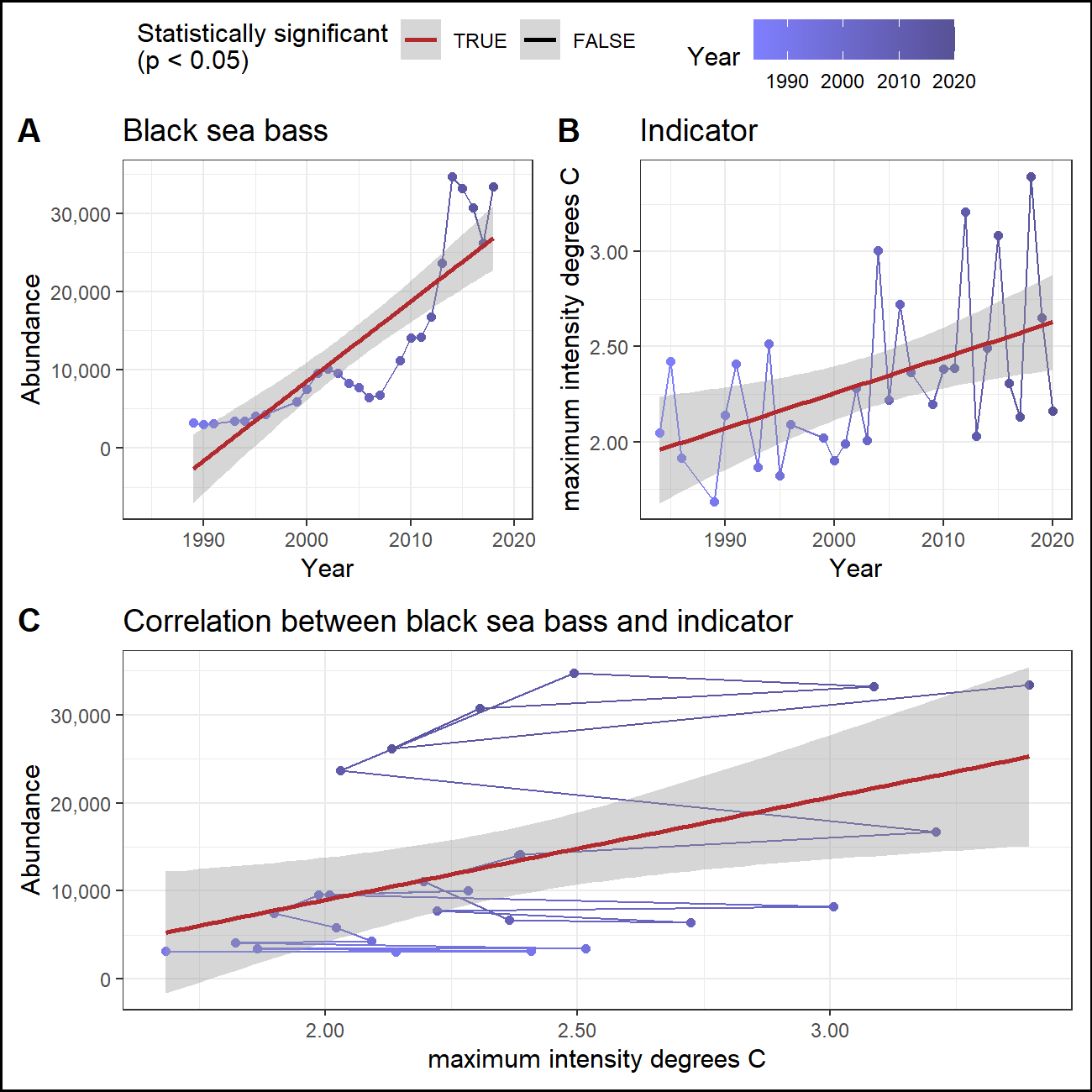
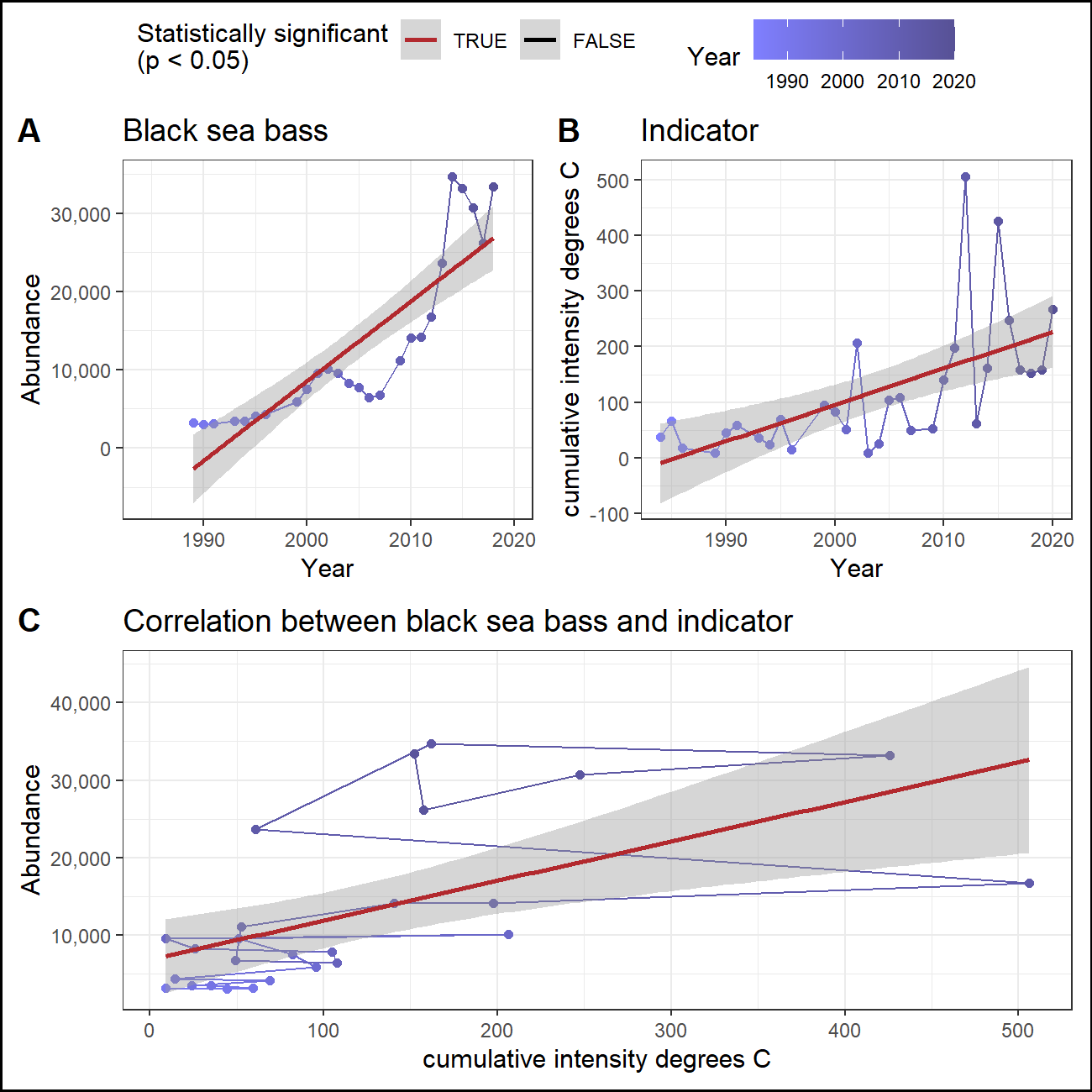


### Marine heatwaves

#### Recruitment

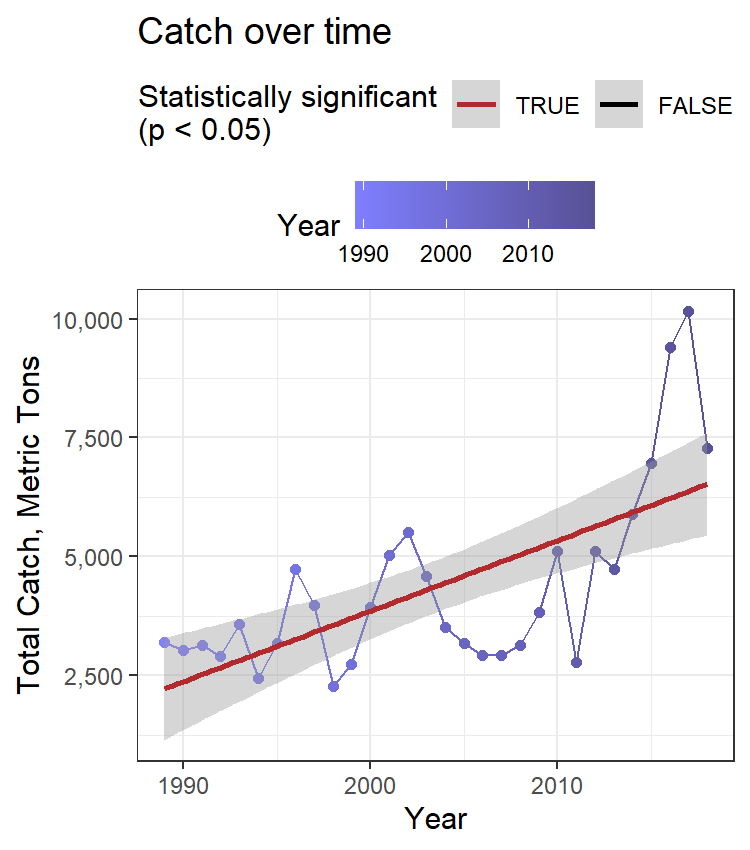


#### Abundance



## Management

### Total catch



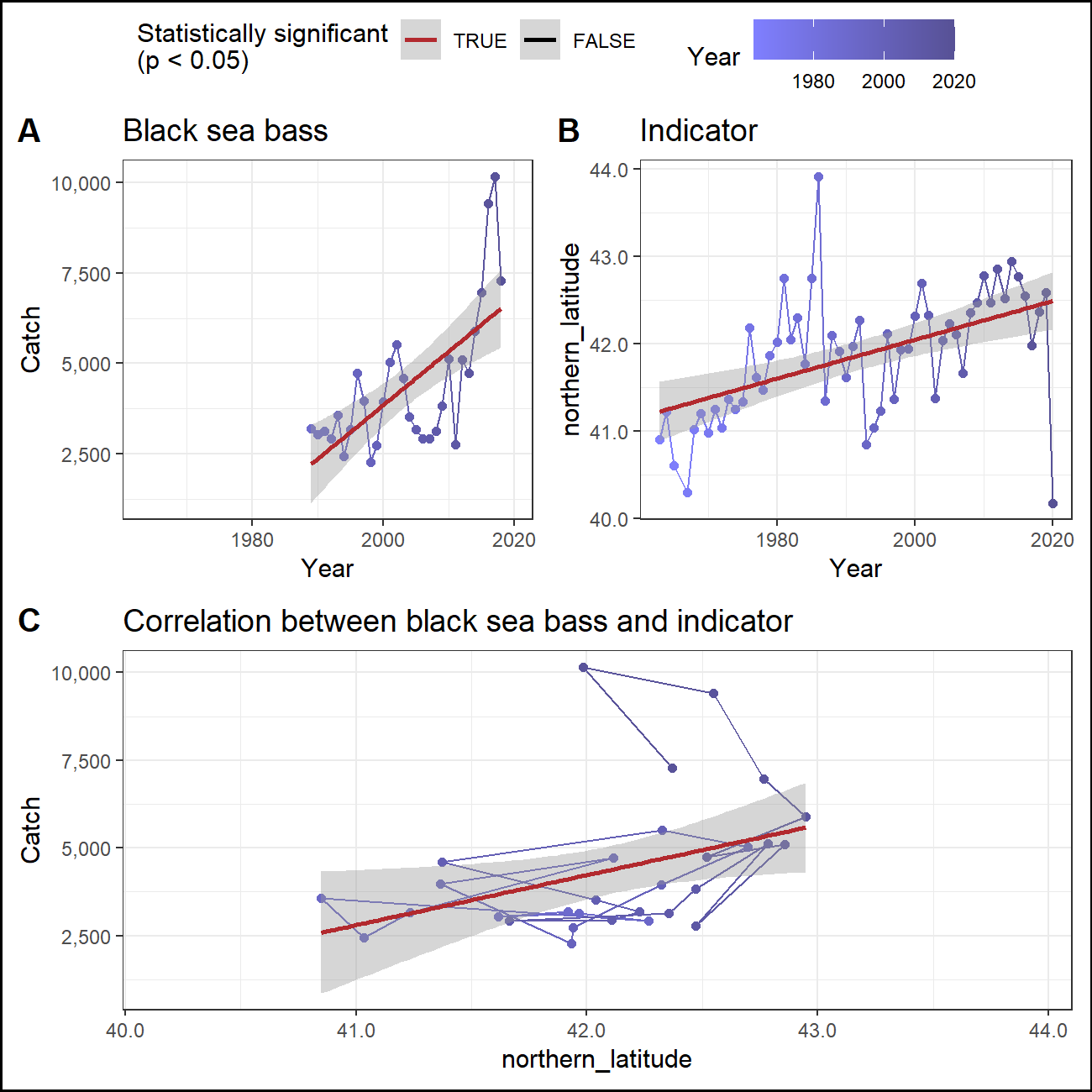
### CPUE

### Catch vs TAC

### Stock range

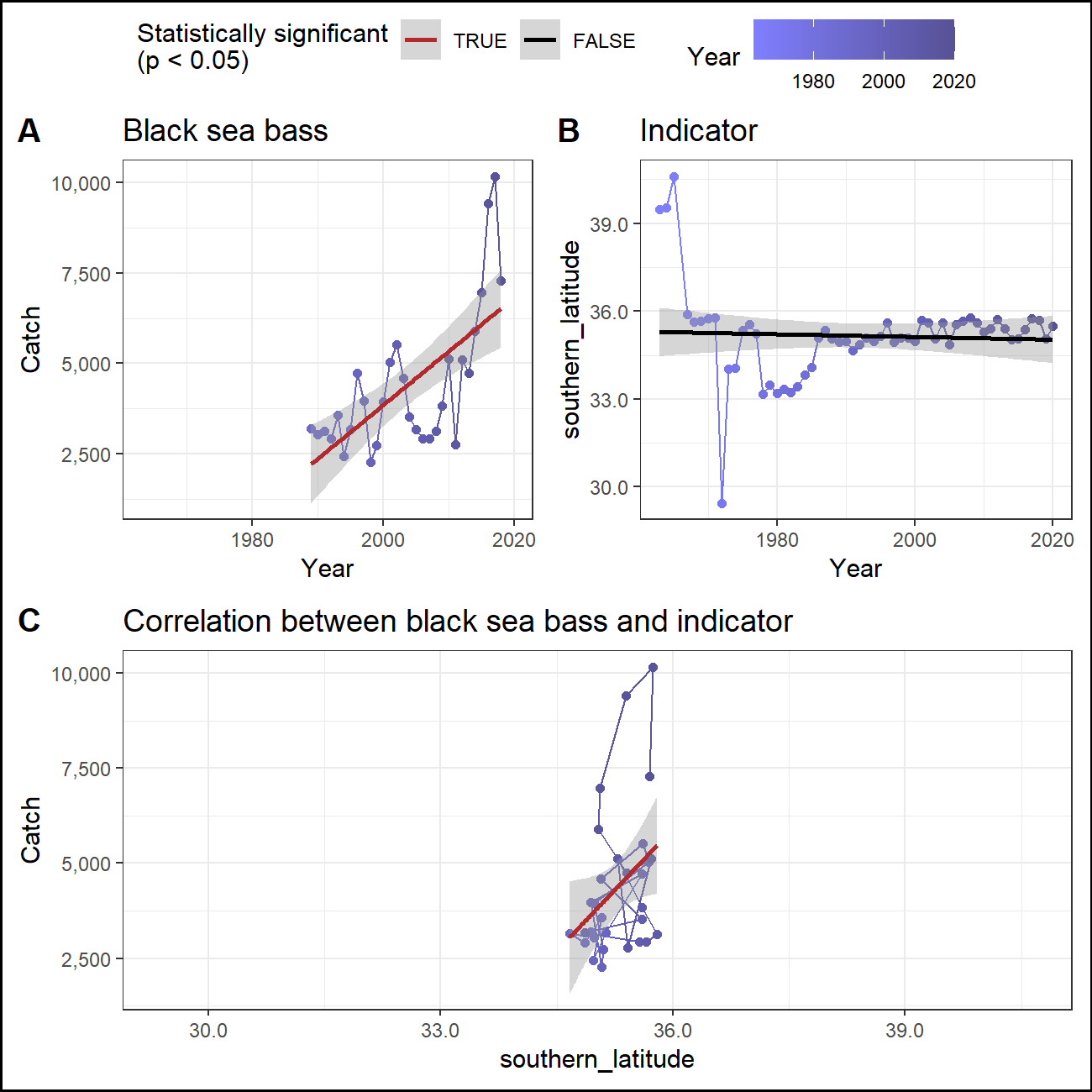
#### Northern range

Northernmost survey observation in each year.



#### Southern range

Southernmost survey observation in each year.



### Center of mass

## Report card

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Time | SST\_winter | SST\_fall | PP\_winter | PP\_fall | T\_mean | T\_min | T\_peak | V\_max | SST\_annual | cumulative intensity degrees C | maximum intensity degrees C | northern\_range | southern\_range |
| 2016 | 1.34, high | 1.09, neutral | 0.44, high | 0.5, neutral | 8.3, neutral | 6.17, neutral | 8.46, high | 0.74, neutral | 13.83, high | 247.47, high | 2.31, neutral | 42.55, neutral | 35.39, neutral |
| 2017 | 1, high | 1.37, high | 0.4, neutral | 0.55, neutral | 8.01, neutral | 5.86, neutral | 7.91, neutral | 0.75, neutral | 13.31, high | 157.72, neutral | 2.13, neutral | 41.99, neutral | 35.74, neutral |
| 2018 | -0.45, neutral | 0.21, neutral | 0.37, neutral | 0.46, neutral | 7.87, neutral | 5.27, neutral | 7.49, neutral | 0.74, neutral | 12.87, high | 152.03, neutral | 3.39, high | 42.37, neutral | 35.7, neutral |
| 2019 | -0.3, neutral | 0.87, neutral | 0.39, neutral | 0.5, neutral | NA | NA | NA | NA | 12.73, high | 157.86, neutral | 2.65, neutral | 42.59, neutral | 35.05, neutral |
| 2020 | 1.04, high | 2.68, high | NA | NA | NA | NA | NA | NA | 13.41, high | 267.46, high | 2.16, neutral | 40.17, low | 35.5, neutral |
| 5-year mean | 0.53 ± 0.83 | 1.24 ± 0.91 | 0.4 ± 0.03 | 0.5 ± 0.04 | 8.06 ± 0.22 | 5.76 ± 0.46 | 7.96 ± 0.48 | 0.74 ± 0.01 | 13.23 ± 0.44 | 196.51 ± 56.14 | 2.53 ± 0.53 | 41.93 ± 1.01 | 35.48 ± 0.28 |
| long-term mean | -0.04 ± 0.83 | 0.21 ± 0.89 | 0.4 ± 0.03 | 0.52 ± 0.06 | 7.92 ± 0.43 | 5.33 ± 0.85 | 7.83 ± 0.58 | 0.75 ± 0.03 | 11.79 ± 0.72 | 117.35 ± 117.33 | 2.32 ± 0.42 | 41.87 ± 0.73 | 35.16 ± 1.53 |