

Degree Heating Month Analysis

Vanessa

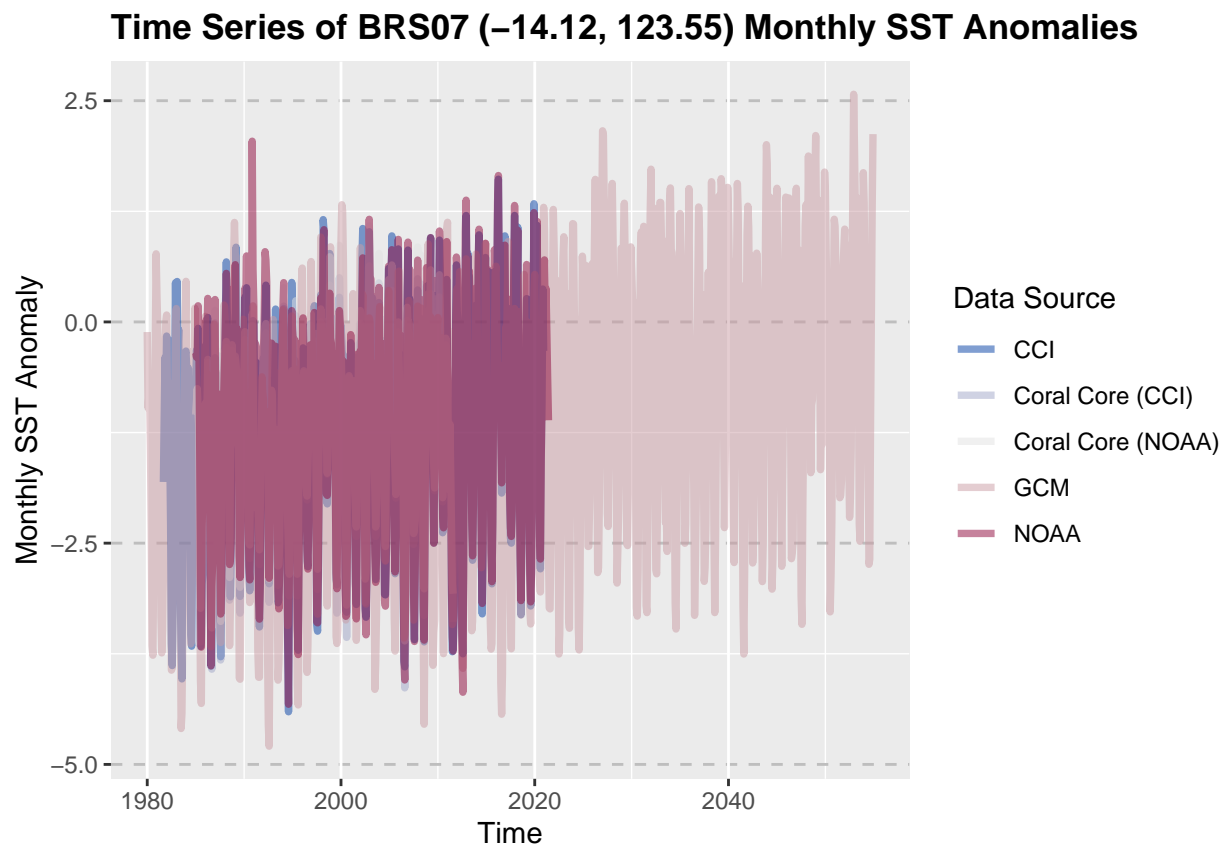
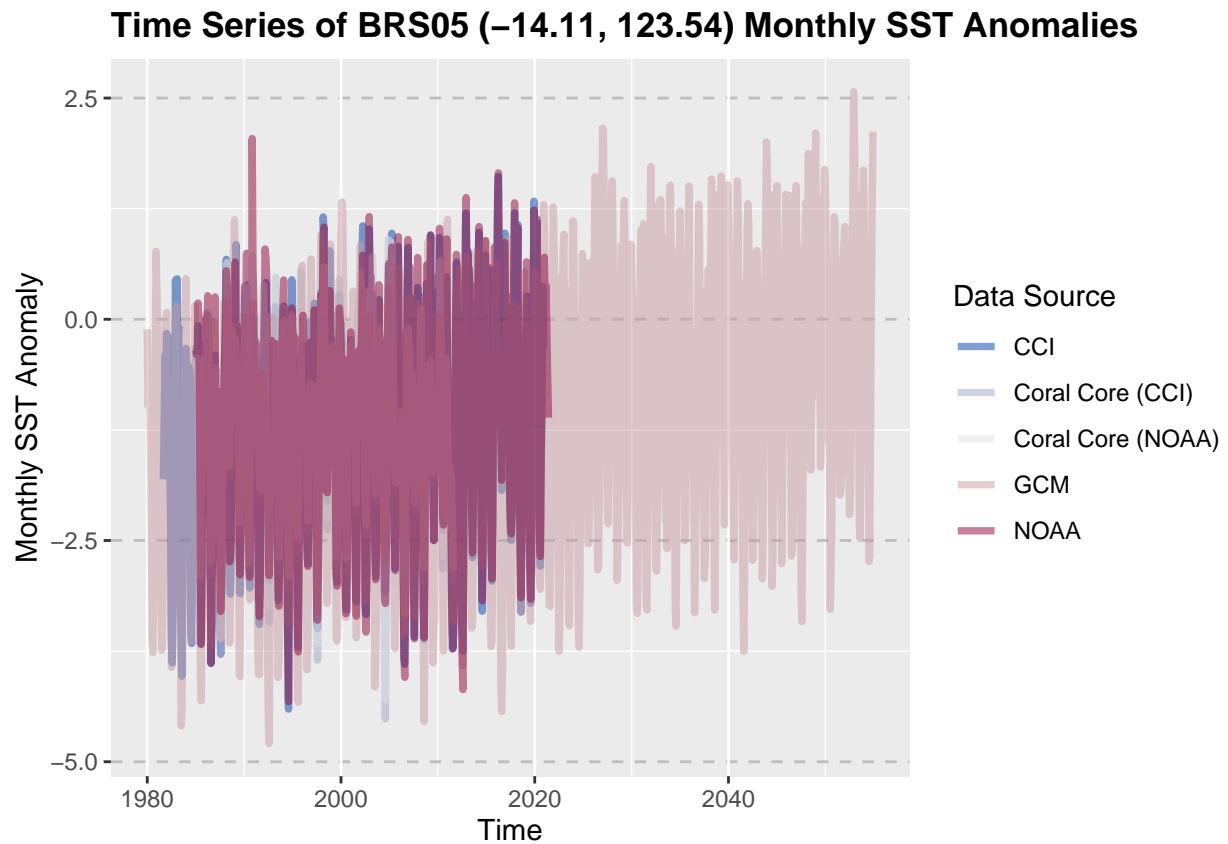
2022-09-01

Site	Start Year	End Year
BRS05	1985	2011
BRS07	1985	2011
DAR3	1985	2009
DARL	1985	2009
13TNT	2004	2013
08TNT	1996	2008
13BND	2005	2013
08BND	1998	2008

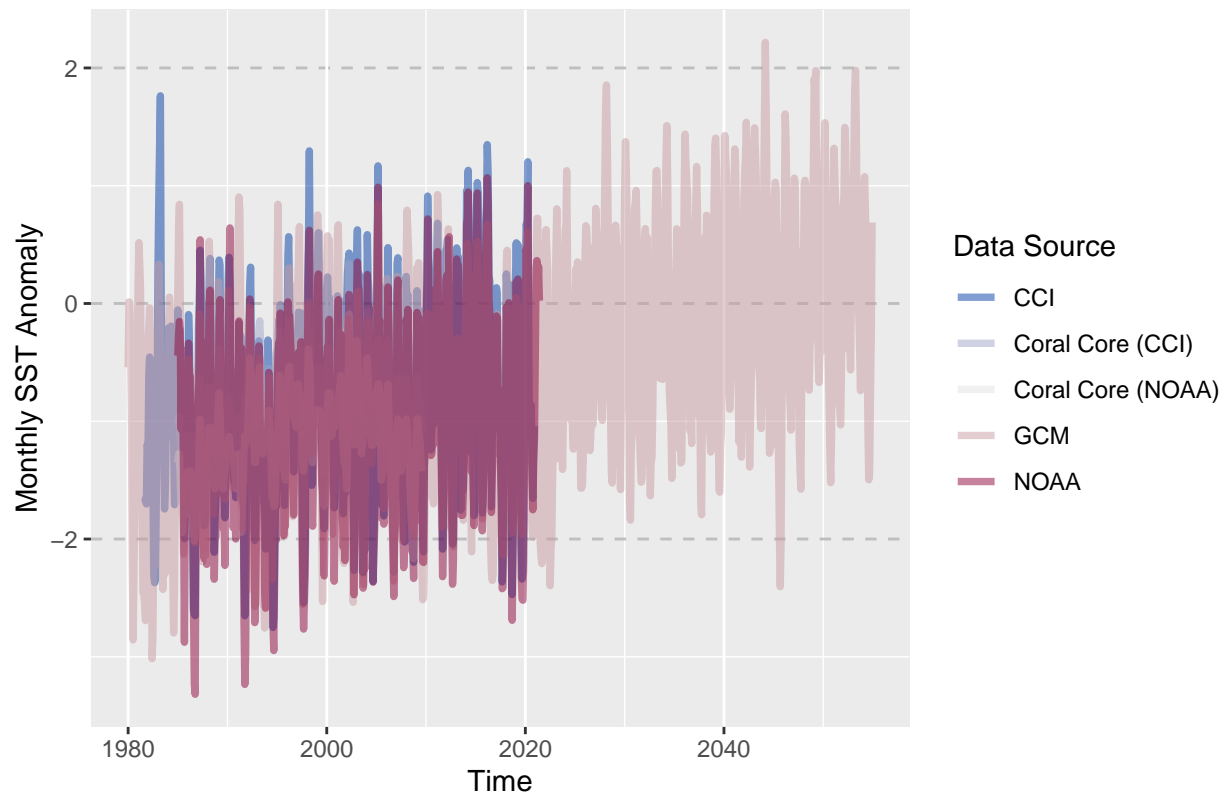
Site	Start Year	End Year
HAB05B	1798	2010
HAB10A	1848	2010
BUN05A	1961	2008
TNT07C	1952	2008

Date Range of Coral Cores

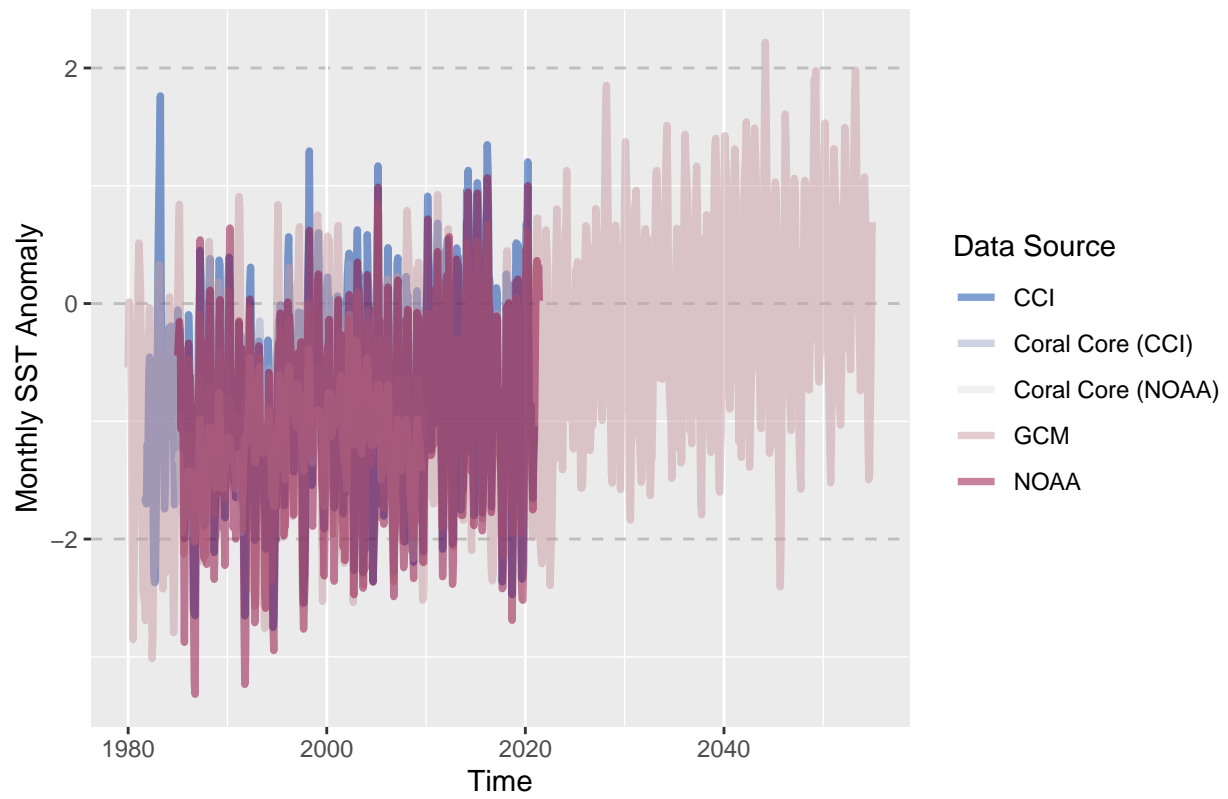
Degree Heating Month Anomaly Time Series Plots:



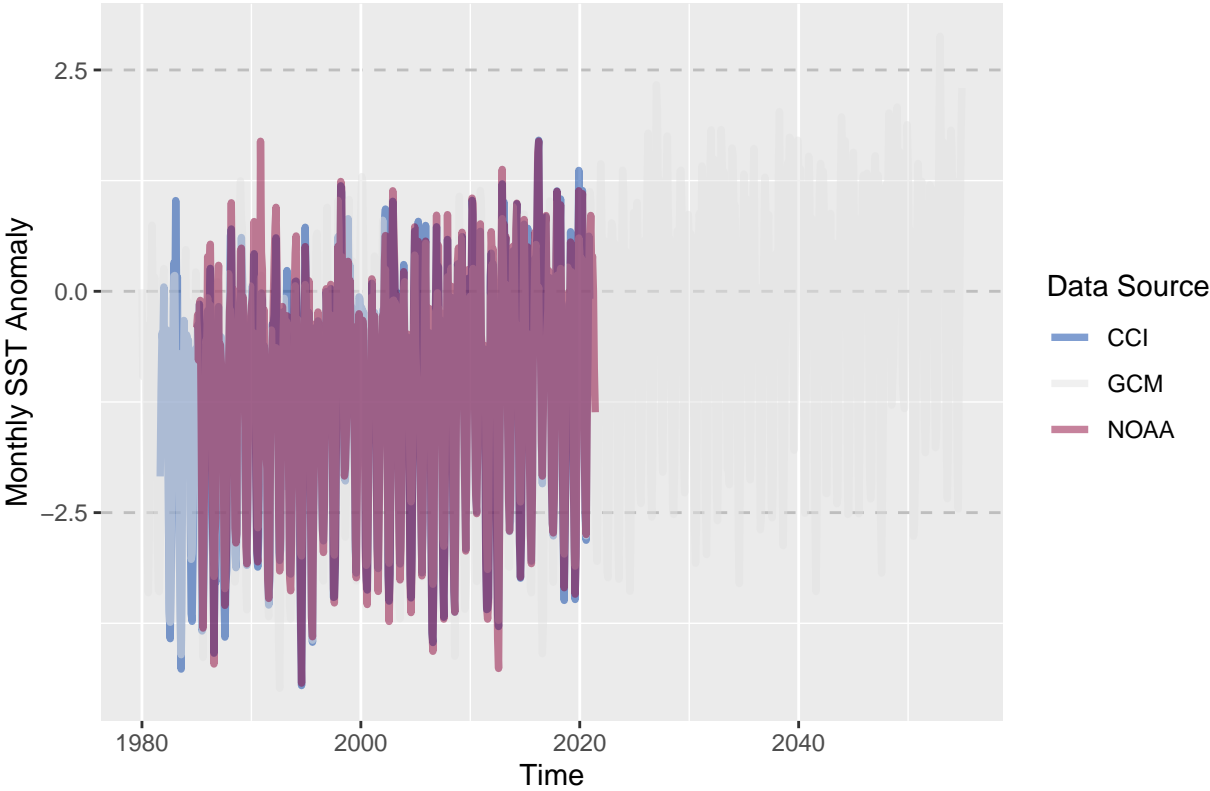
Time Series of DAR3 (–12.10, 96.88) Monthly SST anomalies



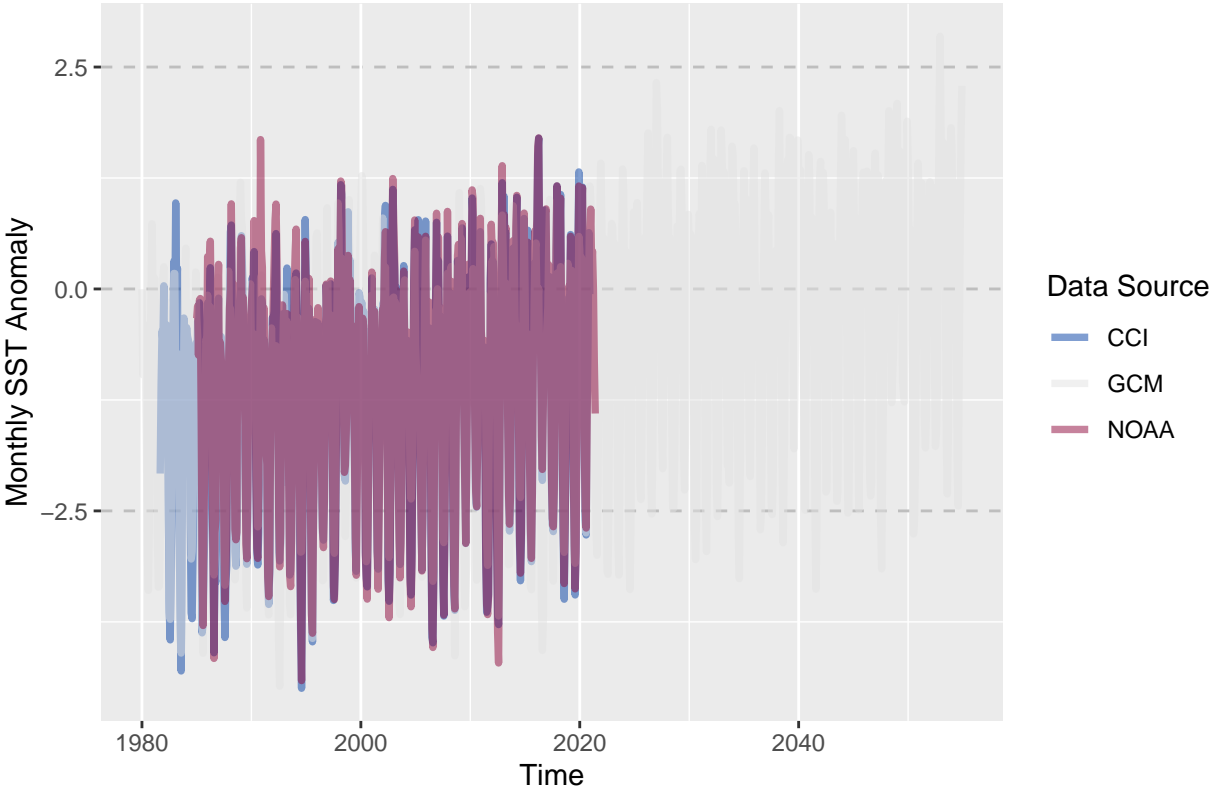
Time Series of DAR Long (−12.09, 96.88) Monthly SST Anomalies



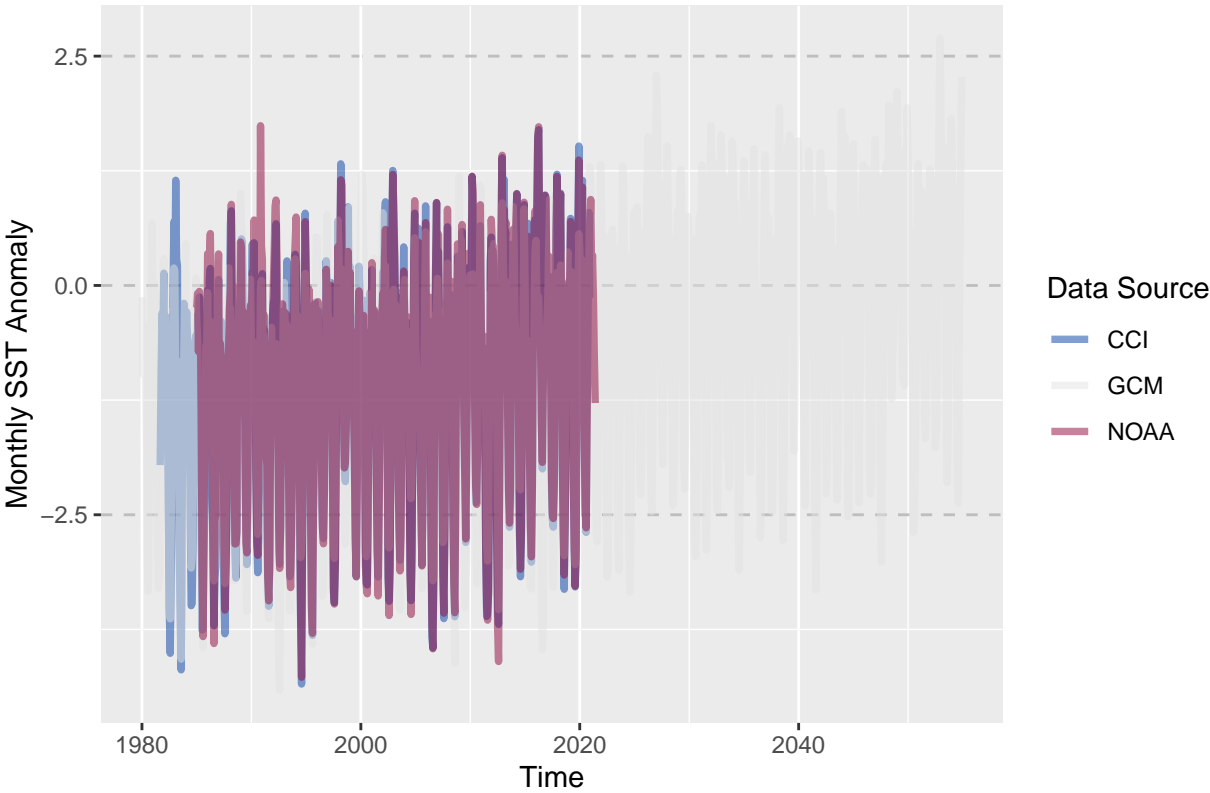
Time Series of SCOTT_RPO_1 (-14.06, 121.78) Monthly SST Anomalie



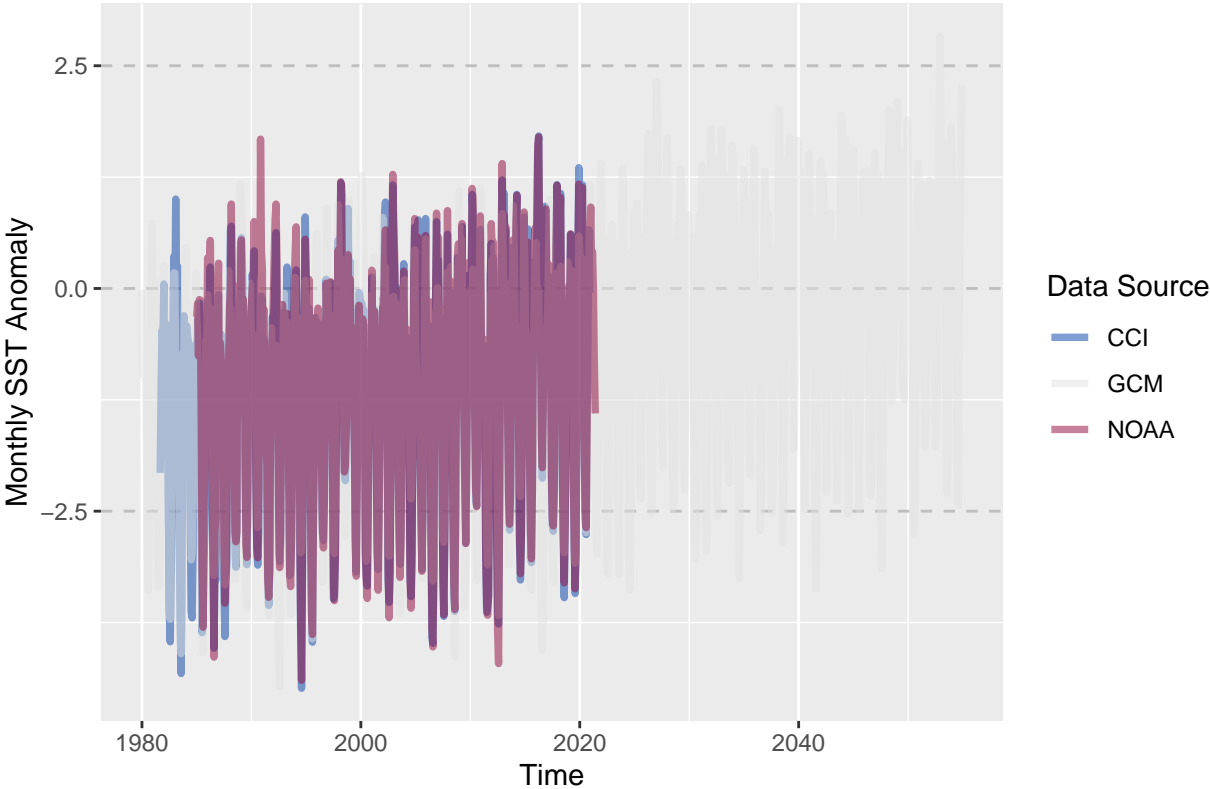
Time Series of SCOTT_SL4 (−14.02, 121.86) Monthly SST Anomalies



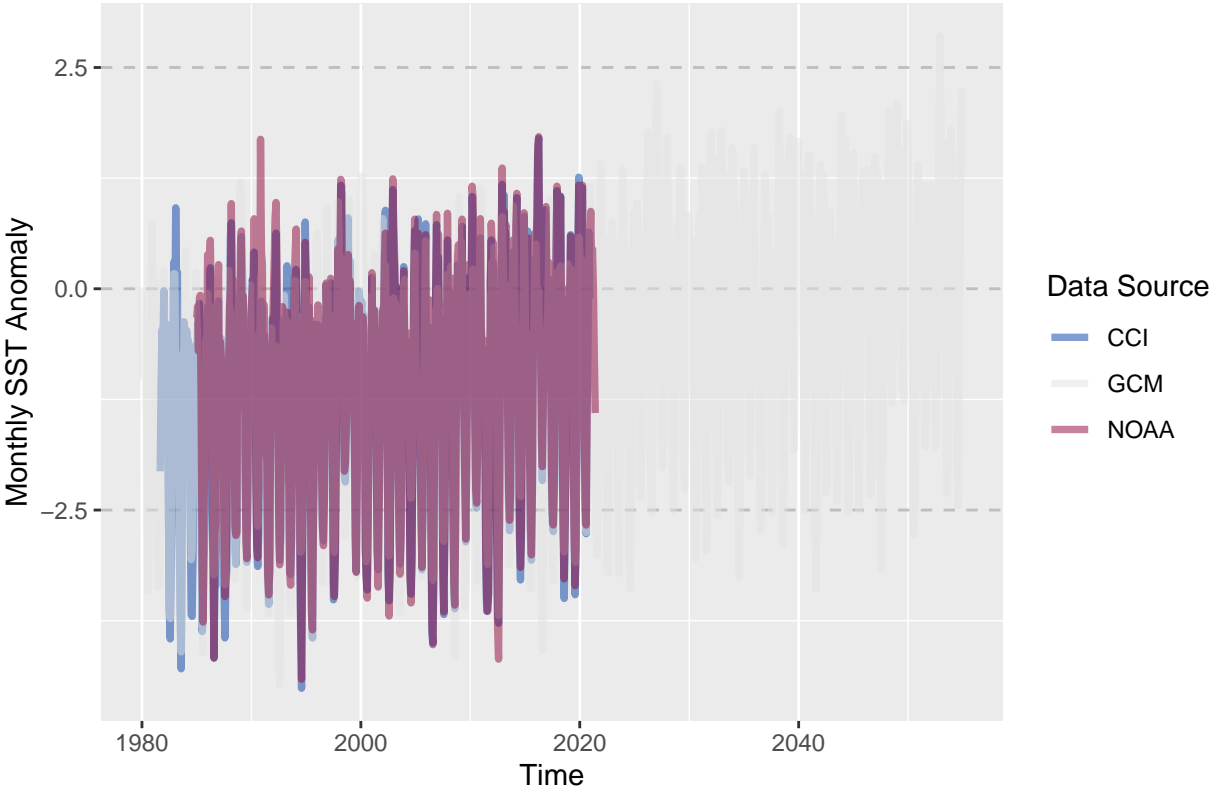
Time Series of SCOTT_SS3 (−13.64, 122.03) Monthly SST Anomalies



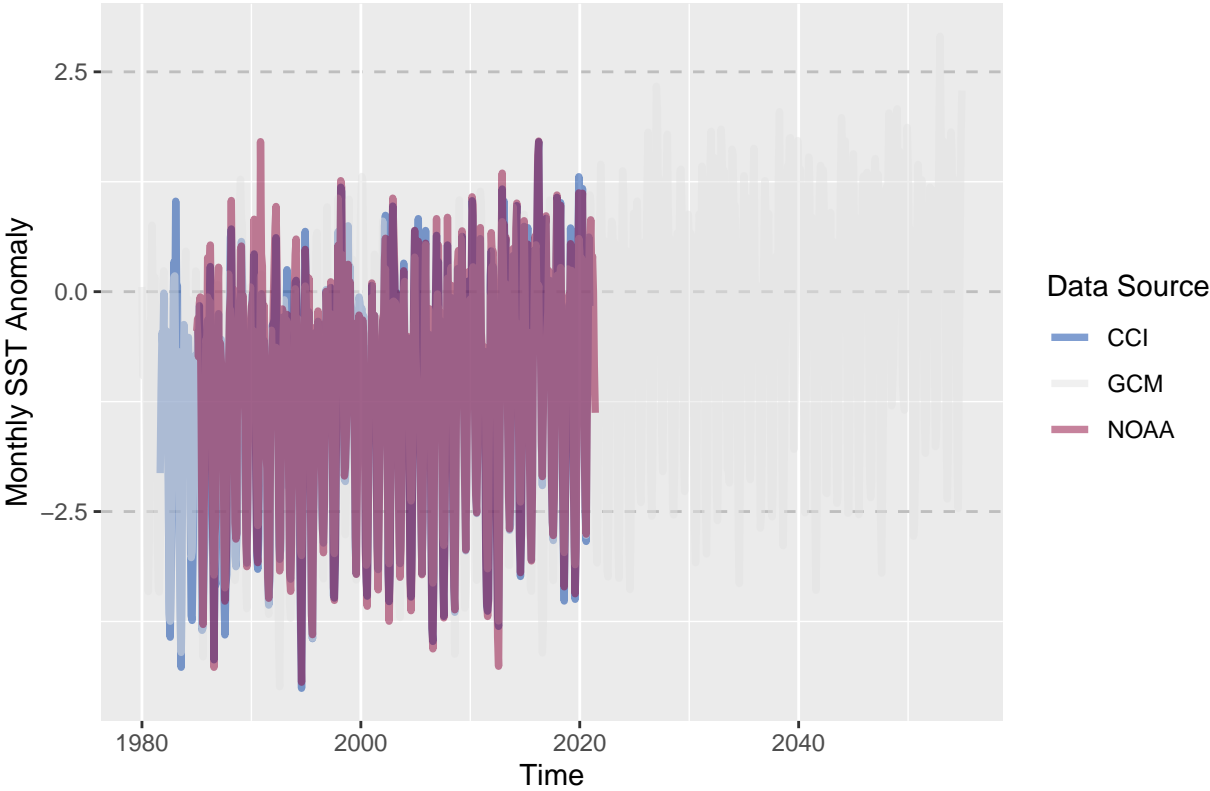
Time Series of SCOTTNR1 (−13.99, 121.88) Monthly SST Anomalies



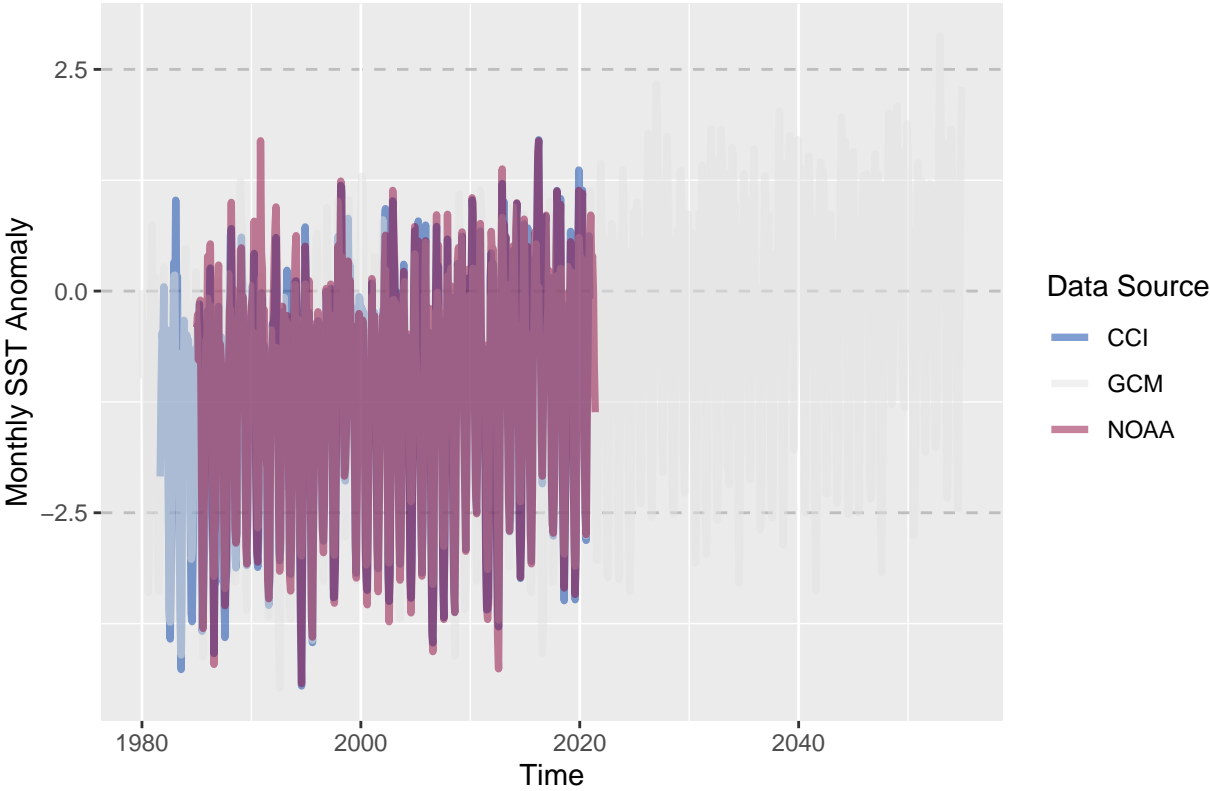
Time Series of SCOTTSL1 (−14.08, 121.95) Monthly SST Anomalies



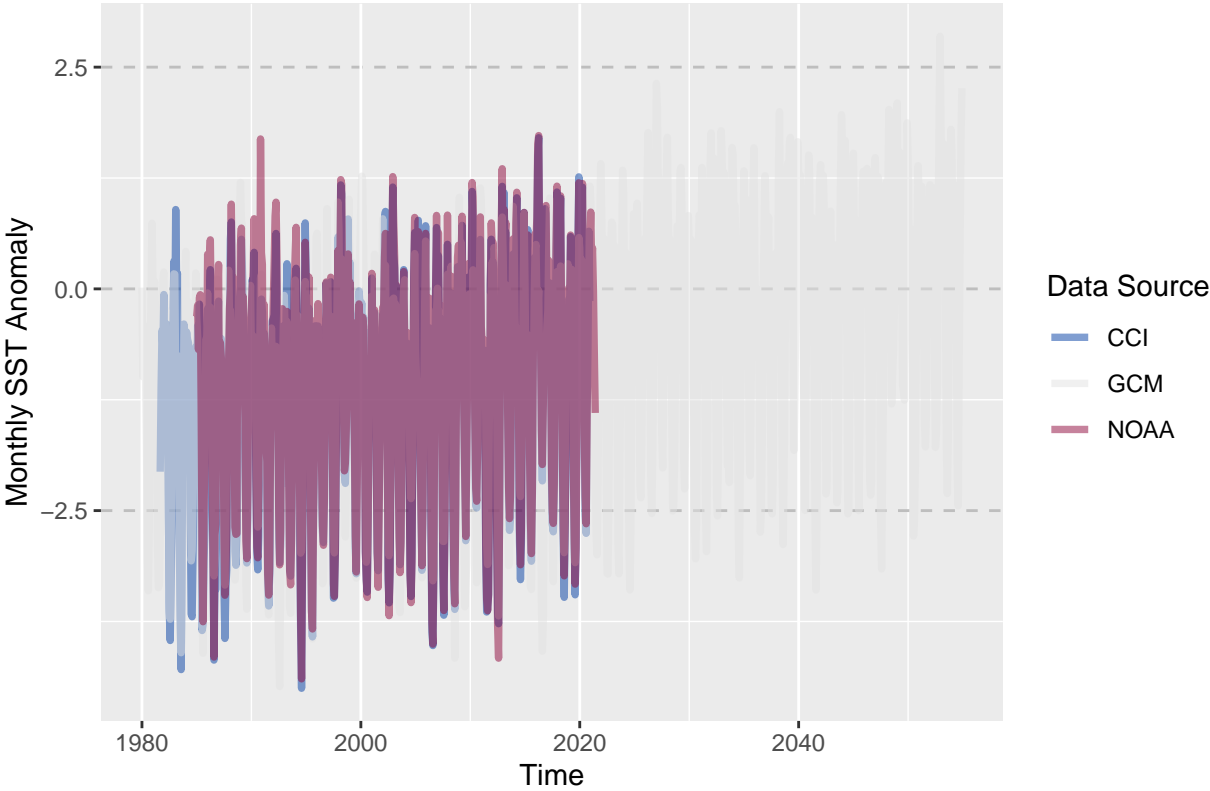
Time Series of SCOTTS2 (−14.19, 121.80) Monthly SST Anomalies



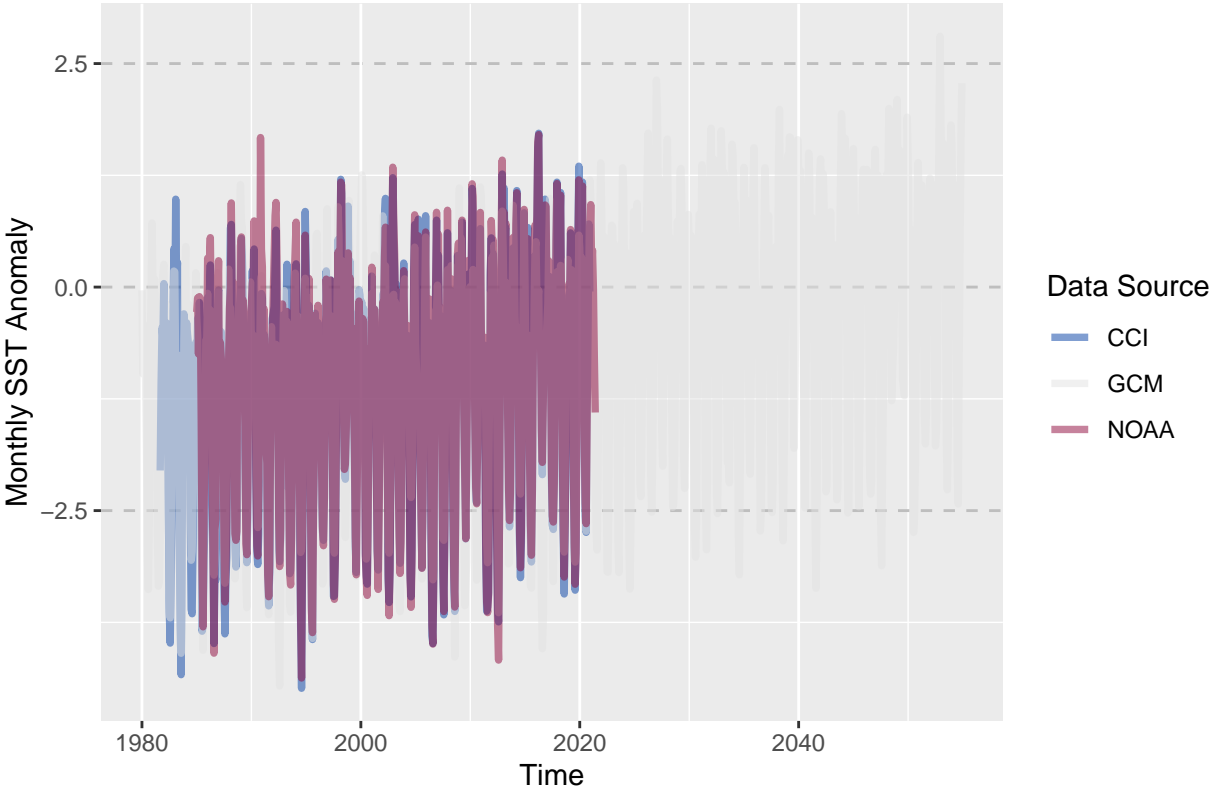
Time Series of SCOTTSL3 (−14.07, 121.78) Monthly SST Anomalies

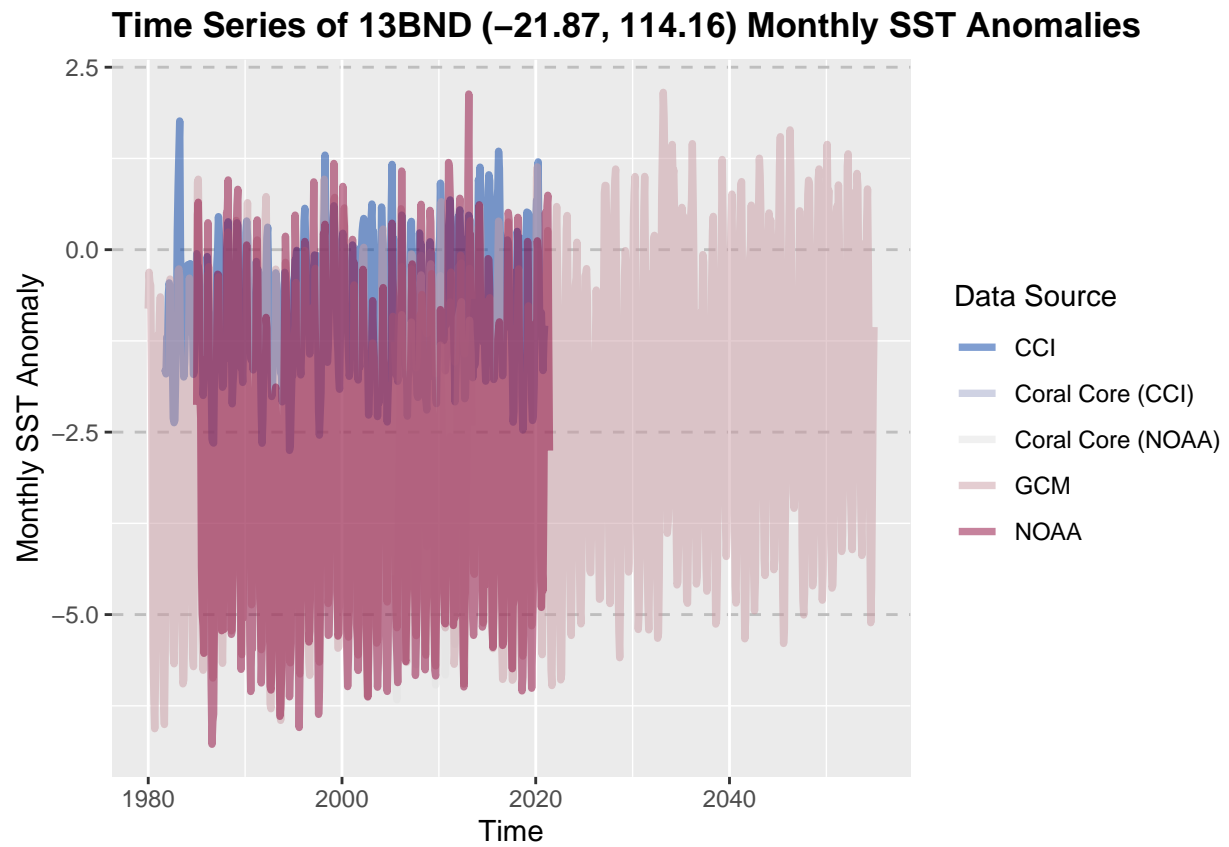


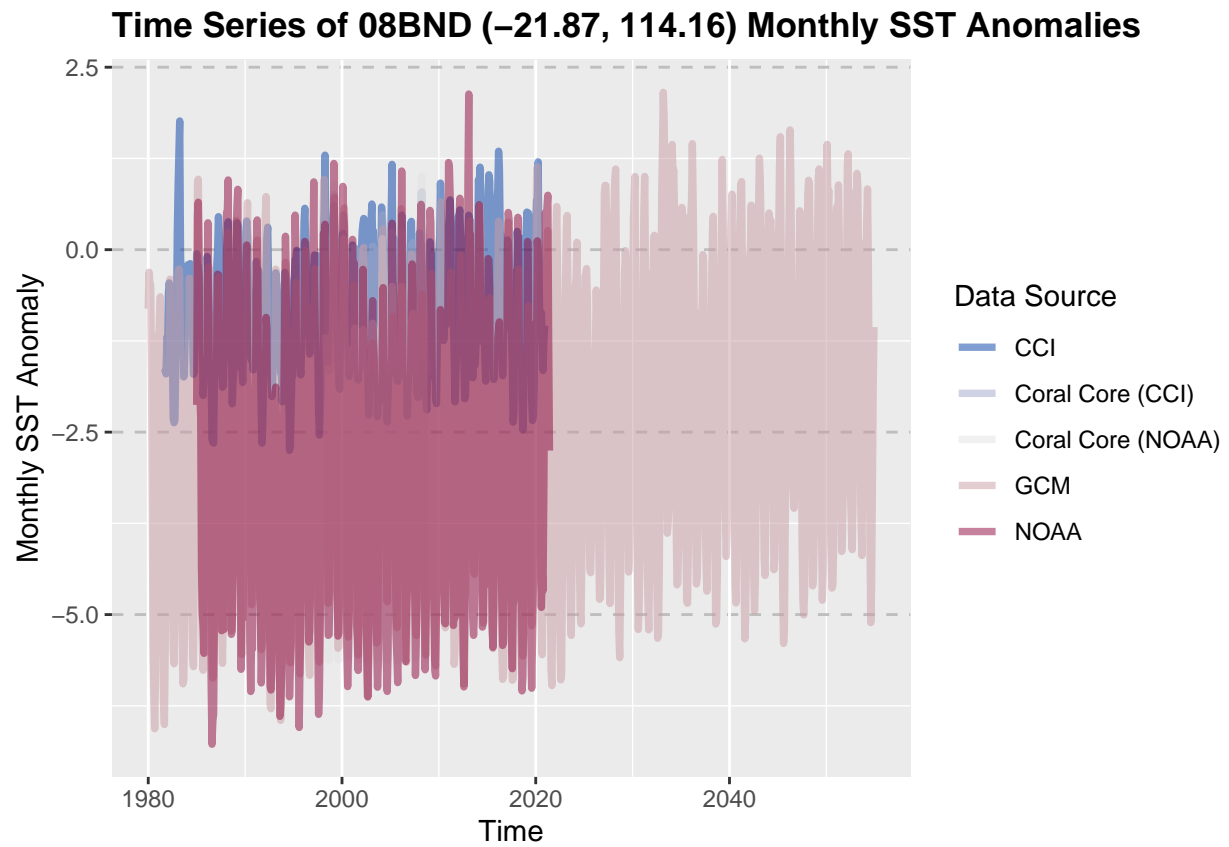
Time Series of SCOTTSS1 (−14.08, 121.98) Monthly SST Anomalies

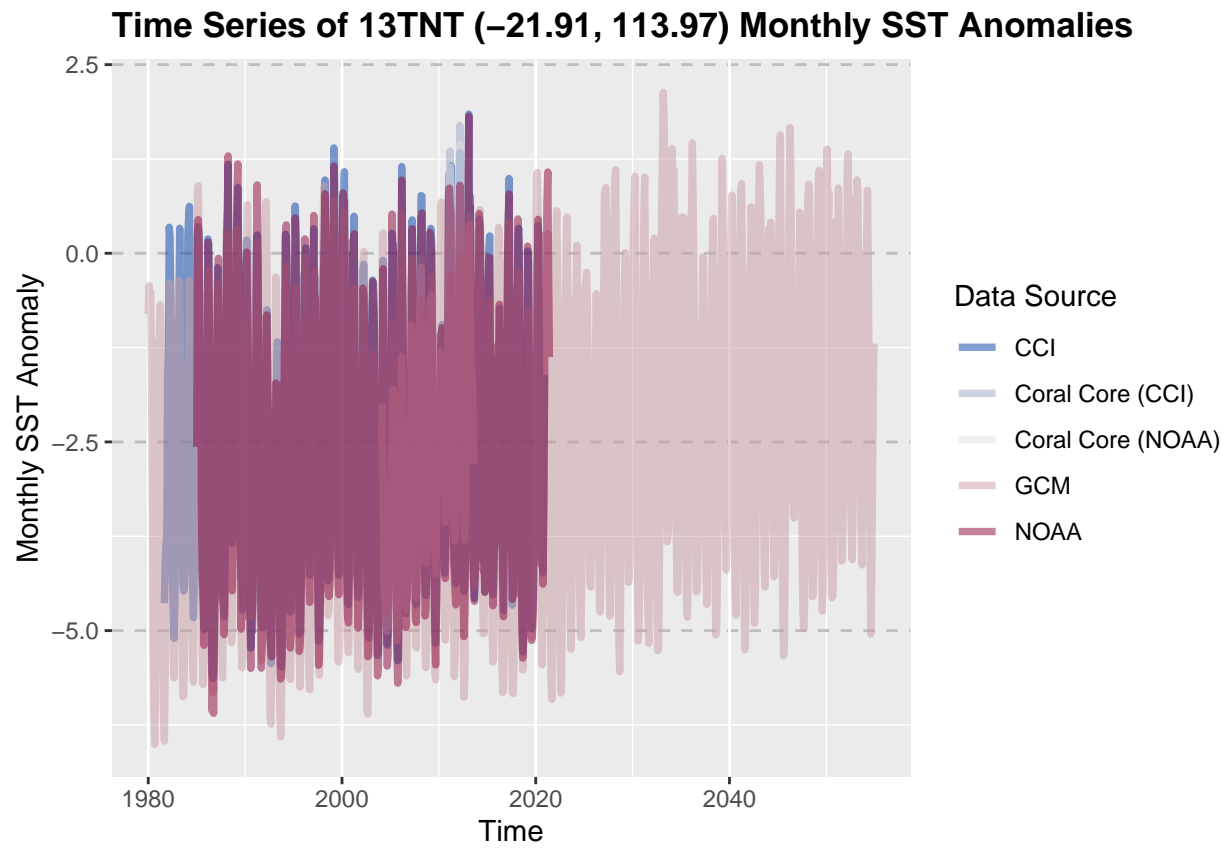


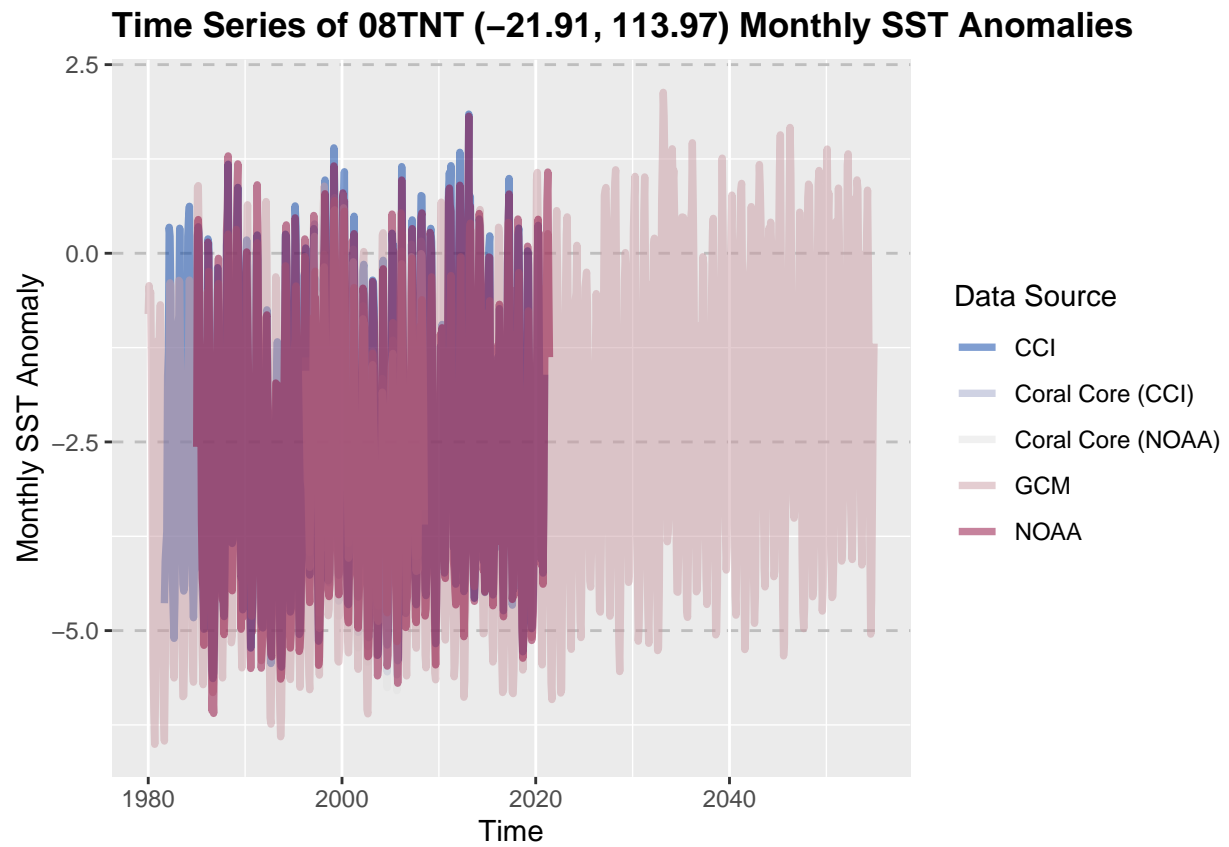
Time Series of SCOTTSS2 (−13.92, 121.92) Monthly SST Anomalies



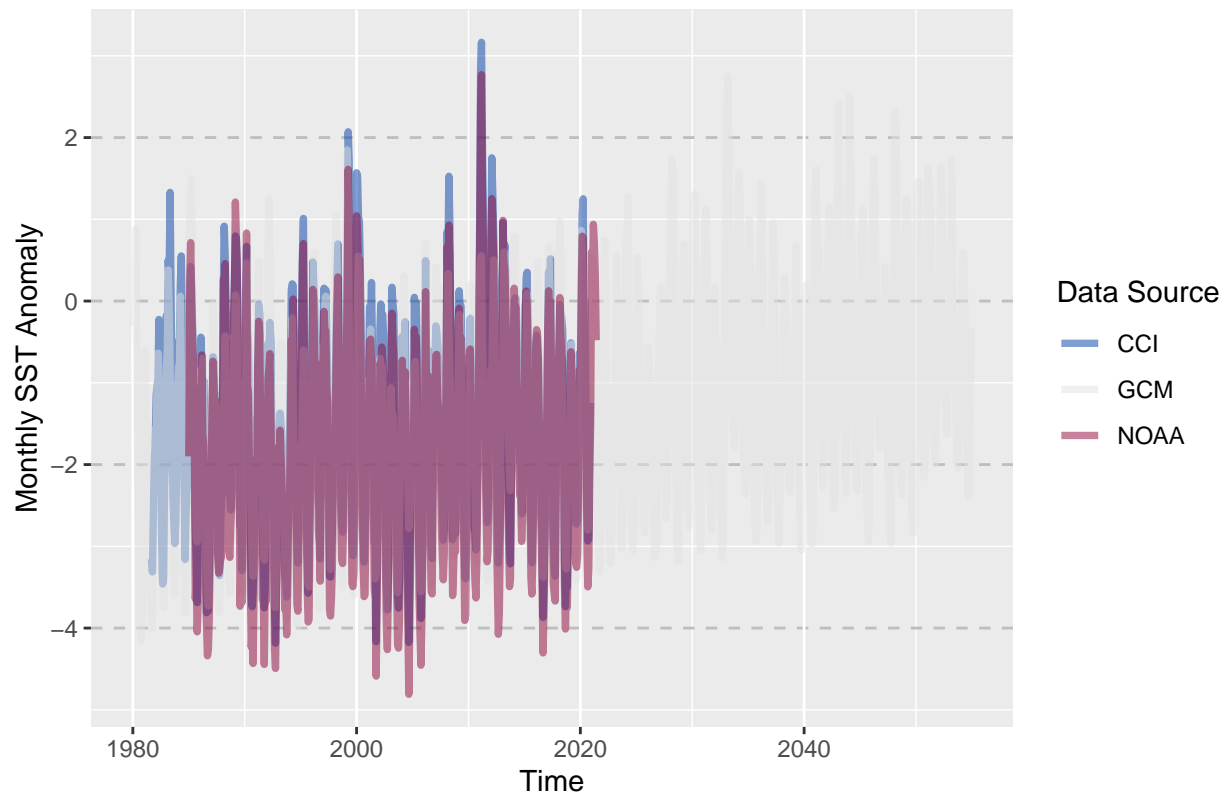




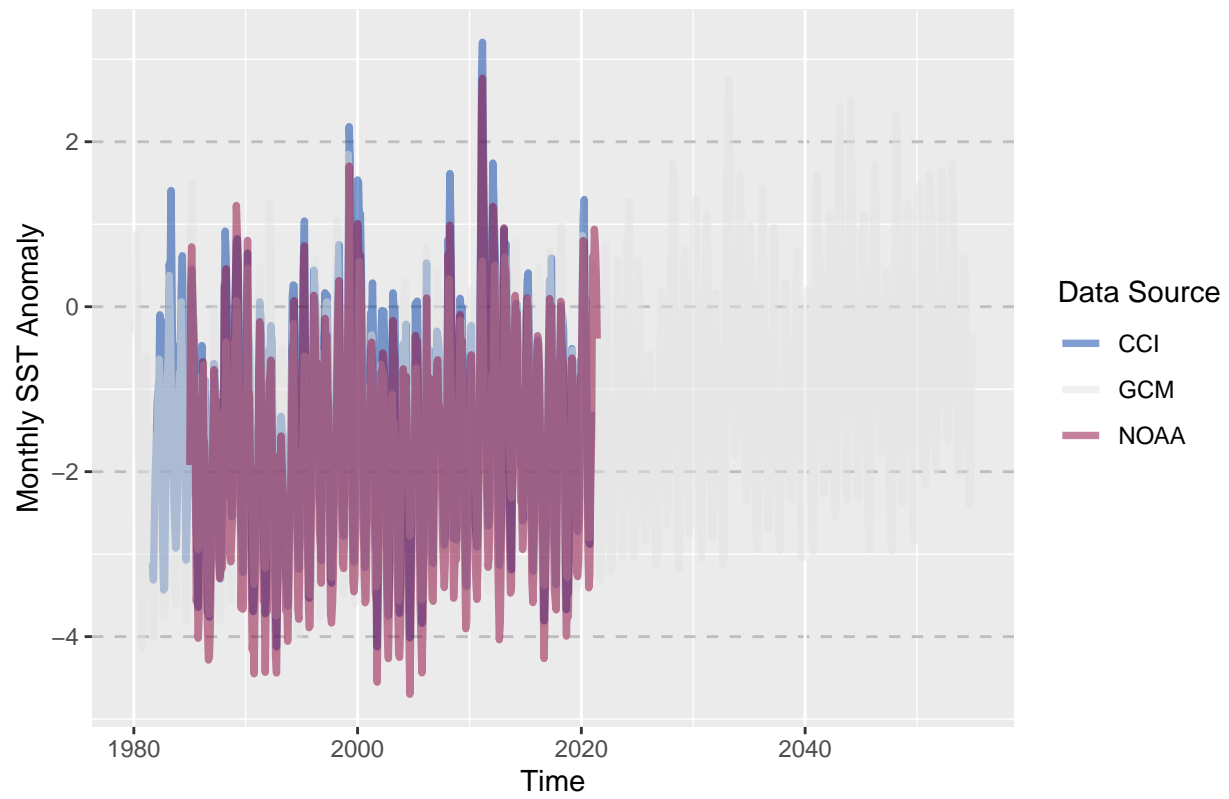




Time Series of HAB05B (−28.46, 113.77) Monthly SST Anomalies

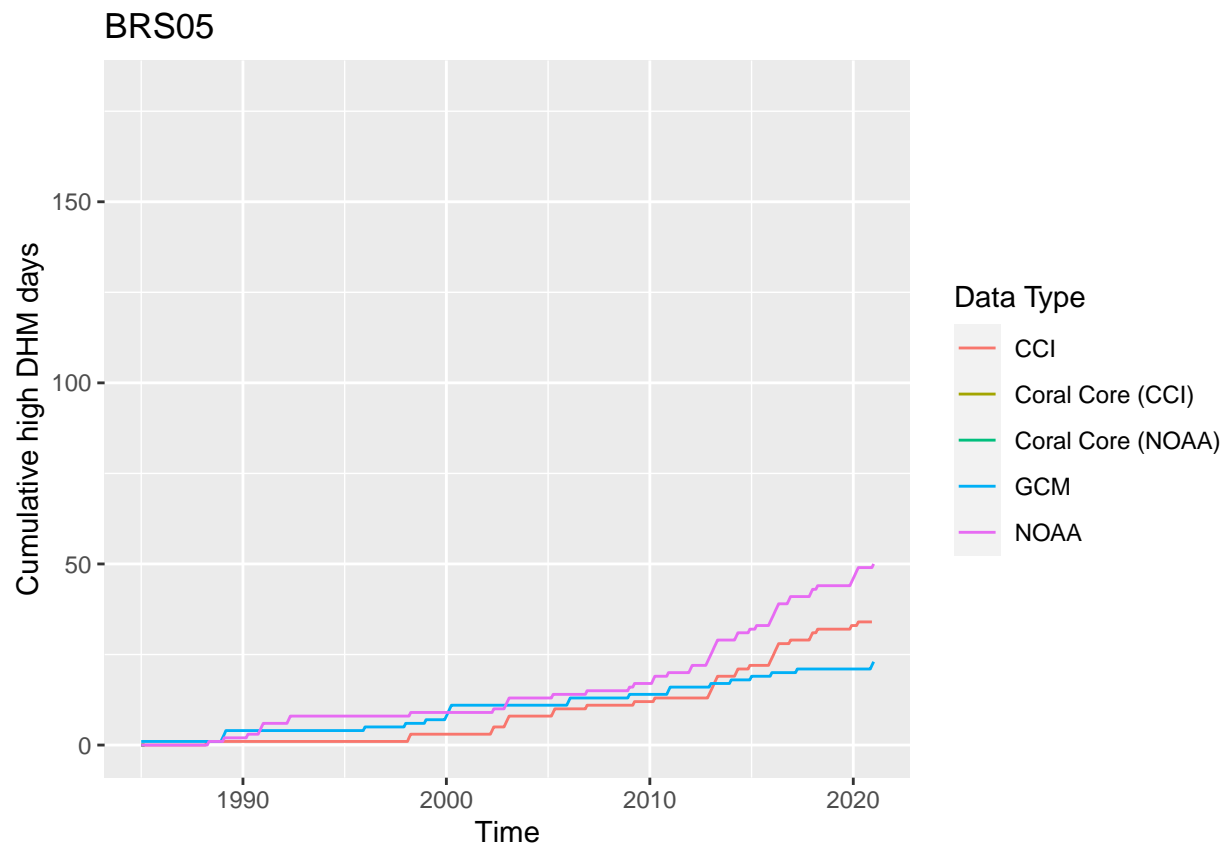


Time Series of HAB10A (−28.46, 113.75) Monthly SST Anomalies

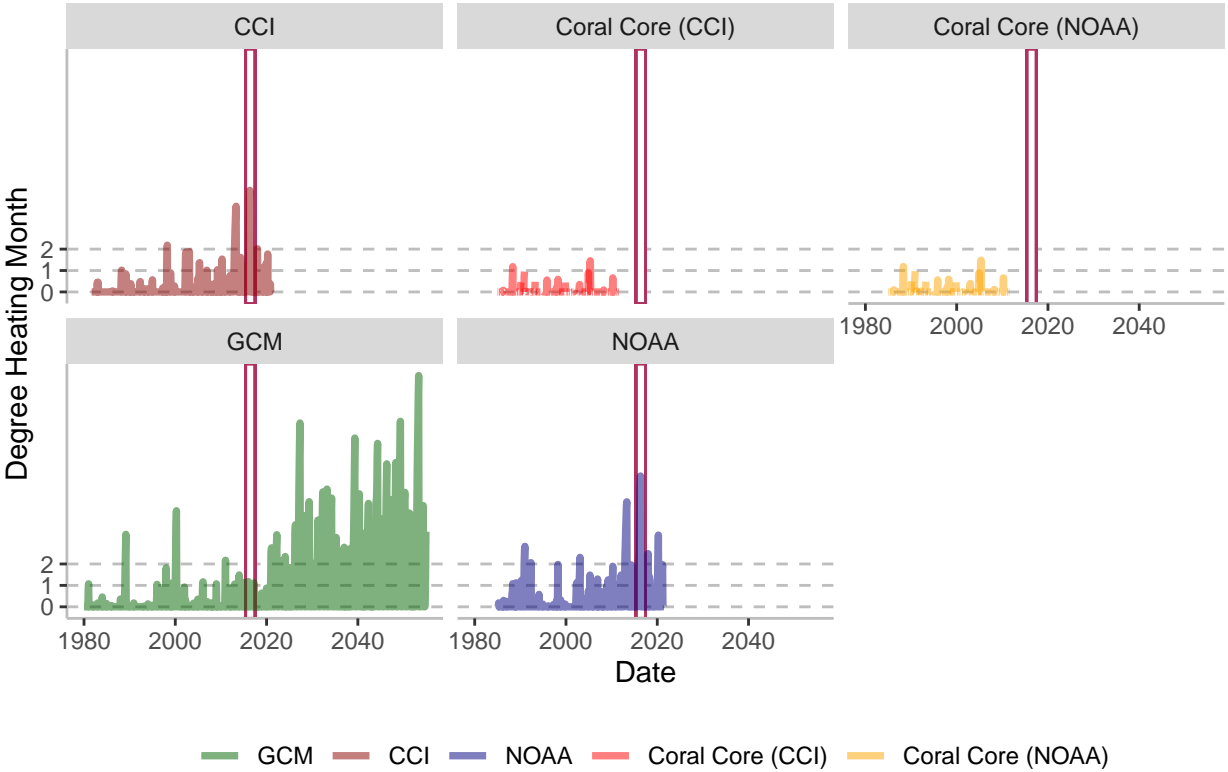


BRS05 Degree Heating Months Time Series

Warning: Removed 1146 row(s) containing missing values (geom_path).



BRS05 Degree Heating Month values time plot



BRS07 Degree Heating Months Time Series

```
## Warning: Removed 1146 rows containing non-finite values (stat_smooth).

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 5478.7

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 31.295

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 800.61

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : span too small. fewer
## data values than degrees of freedom.

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : pseudoinverse used at
## 5478.7

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : neighborhood radius
## 31.295

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : reciprocal condition
## number 0

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : There are other near
## singularities as well. 800.61

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 5478.7
```



```

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 31.295

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 800.61

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : span too small. fewer
## data values than degrees of freedom.

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : pseudoinverse used at
## 5478.7

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : neighborhood radius
## 31.295

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : reciprocal condition
## number 0

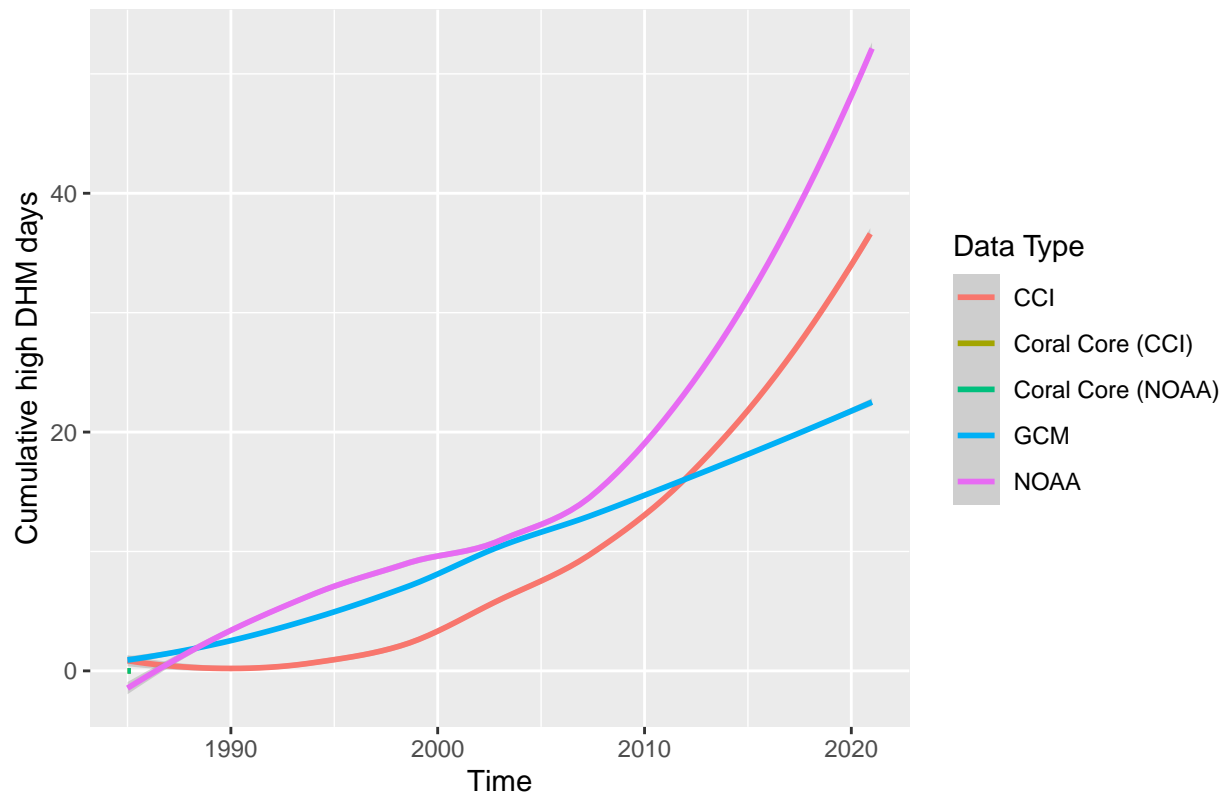
## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : There are other near
## singularities as well. 800.61

## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max; returning
## -Inf

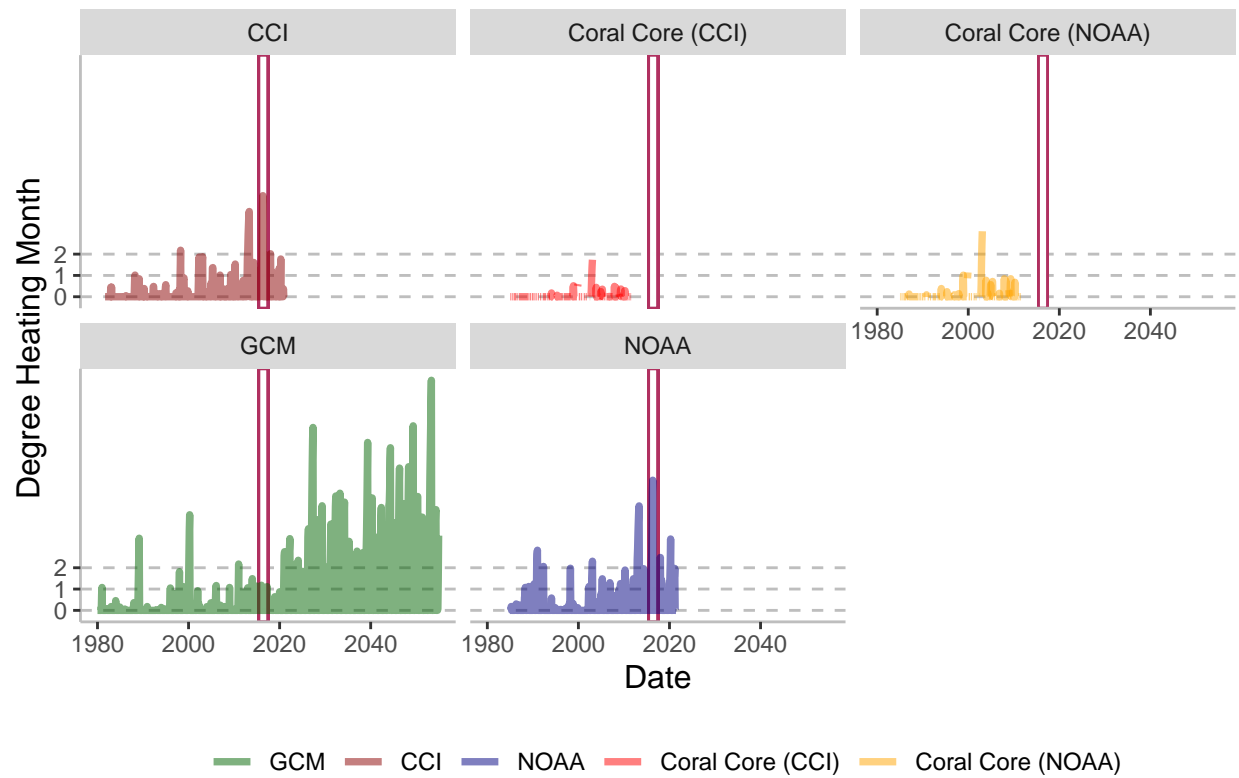
## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max; returning
## -Inf

```

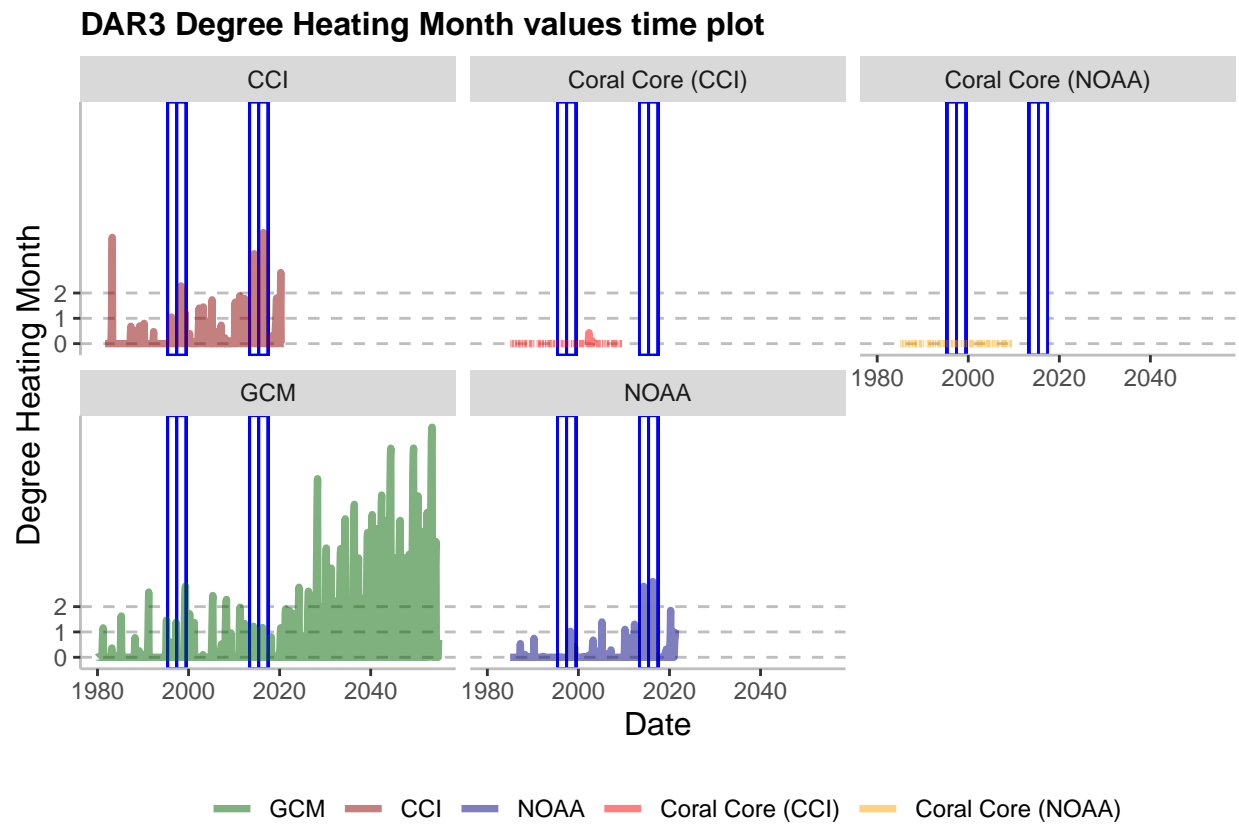
BRS07



BRS07 Degree Heating Month values time plot



DAR3 Degree Heating Months Time Series



DAR Long Degree Heating Months Time Series

```
## Warning: Removed 586 rows containing non-finite values (stat_smooth).

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 5478.7

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 31.295

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 800.61

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : span too small. fewer
## data values than degrees of freedom.

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : pseudoinverse used at
## 5478.7

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : neighborhood radius
## 31.295

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : reciprocal condition
## number 0

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : There are other near
## singularities as well. 800.61

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 5478.7
```

```

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 31.295

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 800.61

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : span too small. fewer
## data values than degrees of freedom.

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : pseudoinverse used at
## 5478.7

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : neighborhood radius
## 31.295

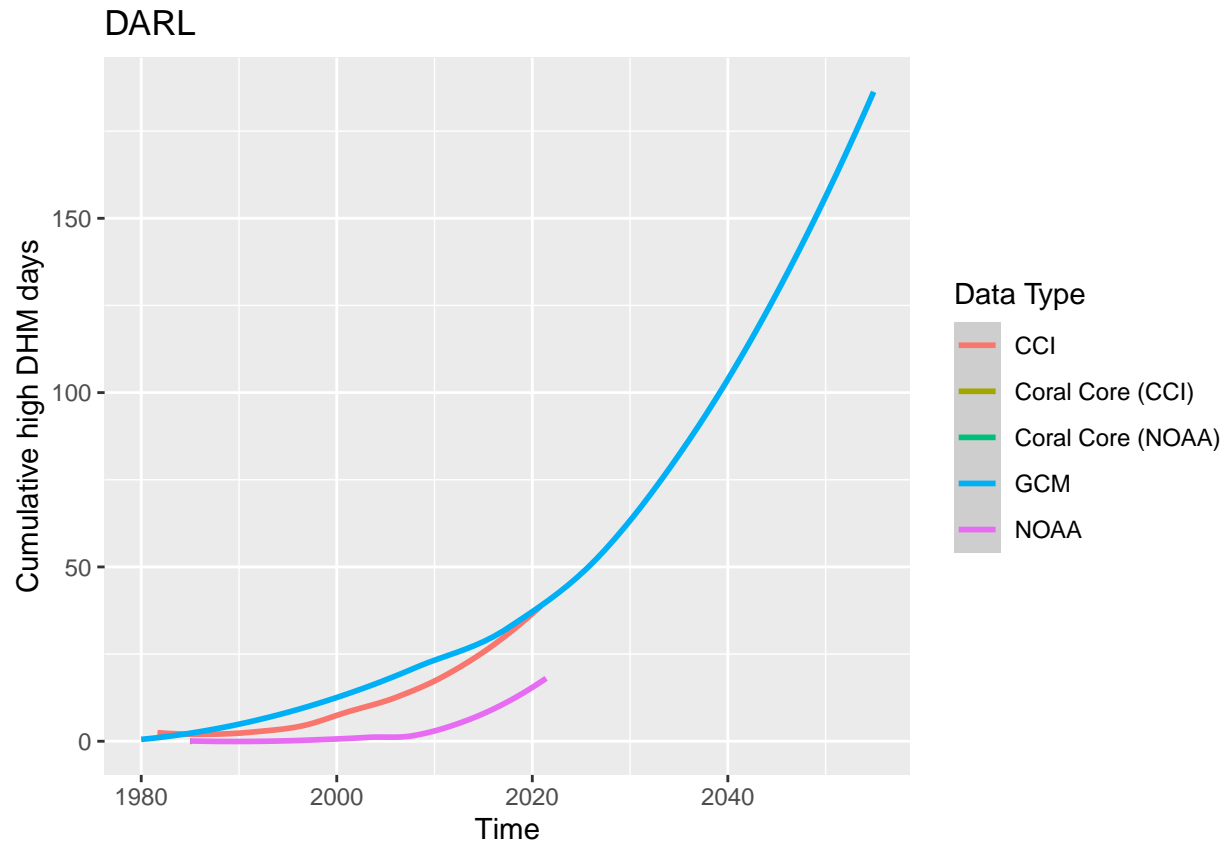
## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : reciprocal condition
## number 0

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : There are other near
## singularities as well. 800.61

## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max; returning
## -Inf

## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max; returning
## -Inf

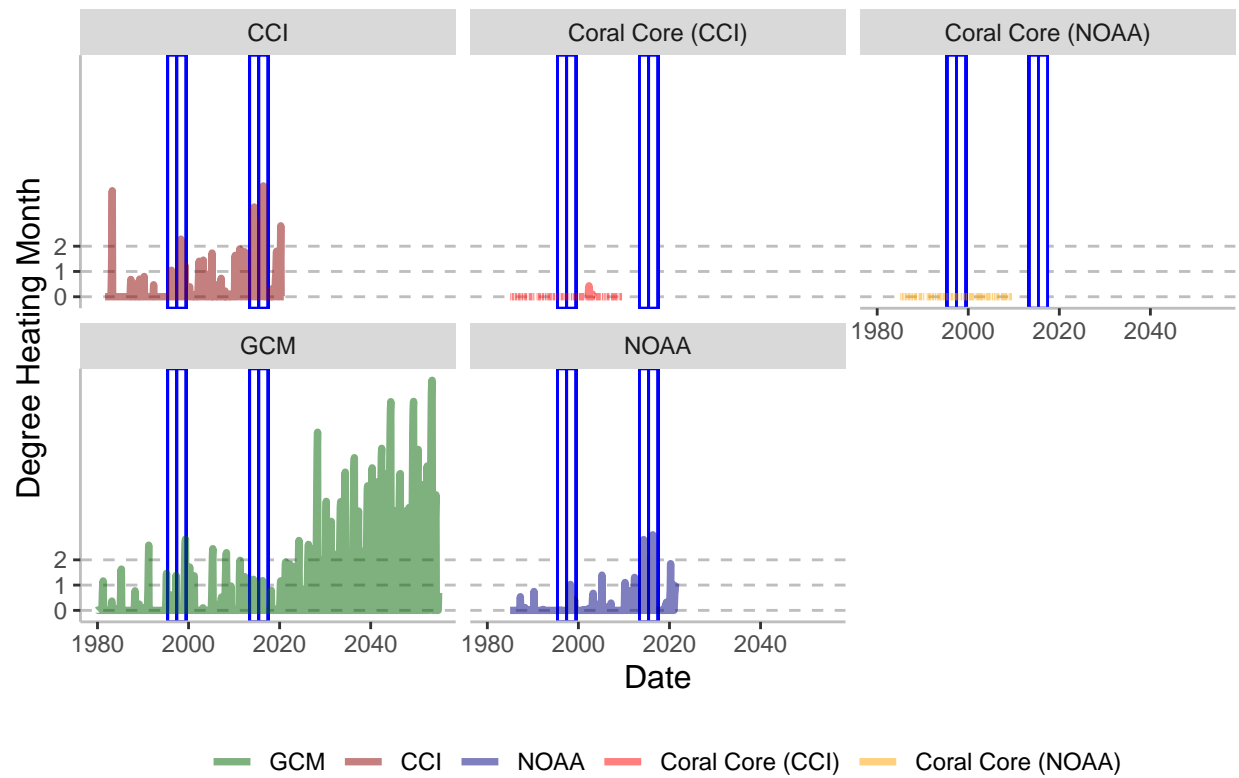
```



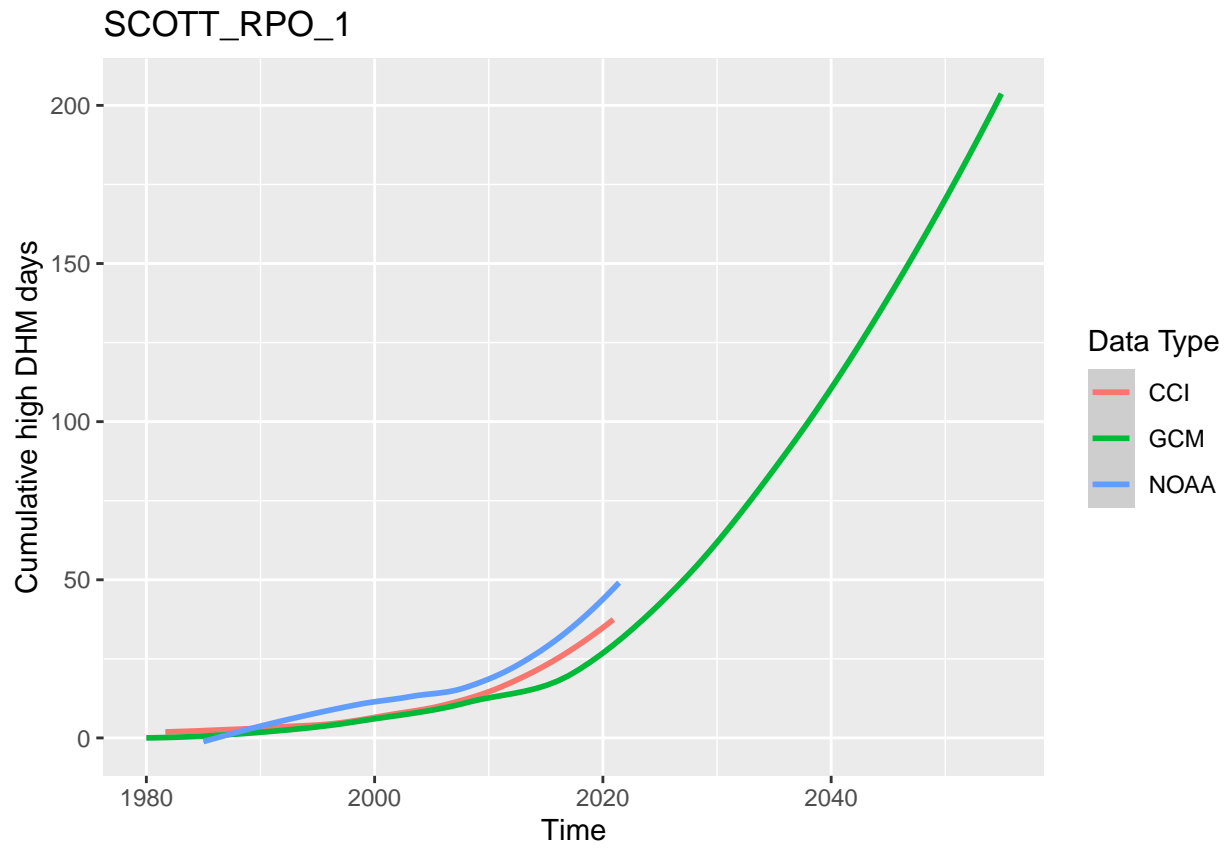
```
## Warning: Unknown or uninitialised column: 'Coral Core (CCI)'.
```

```
## Warning: Unknown or uninitialised column: 'Coral Core (NOAA)'.
```

DARL Degree Heating Month values time plot

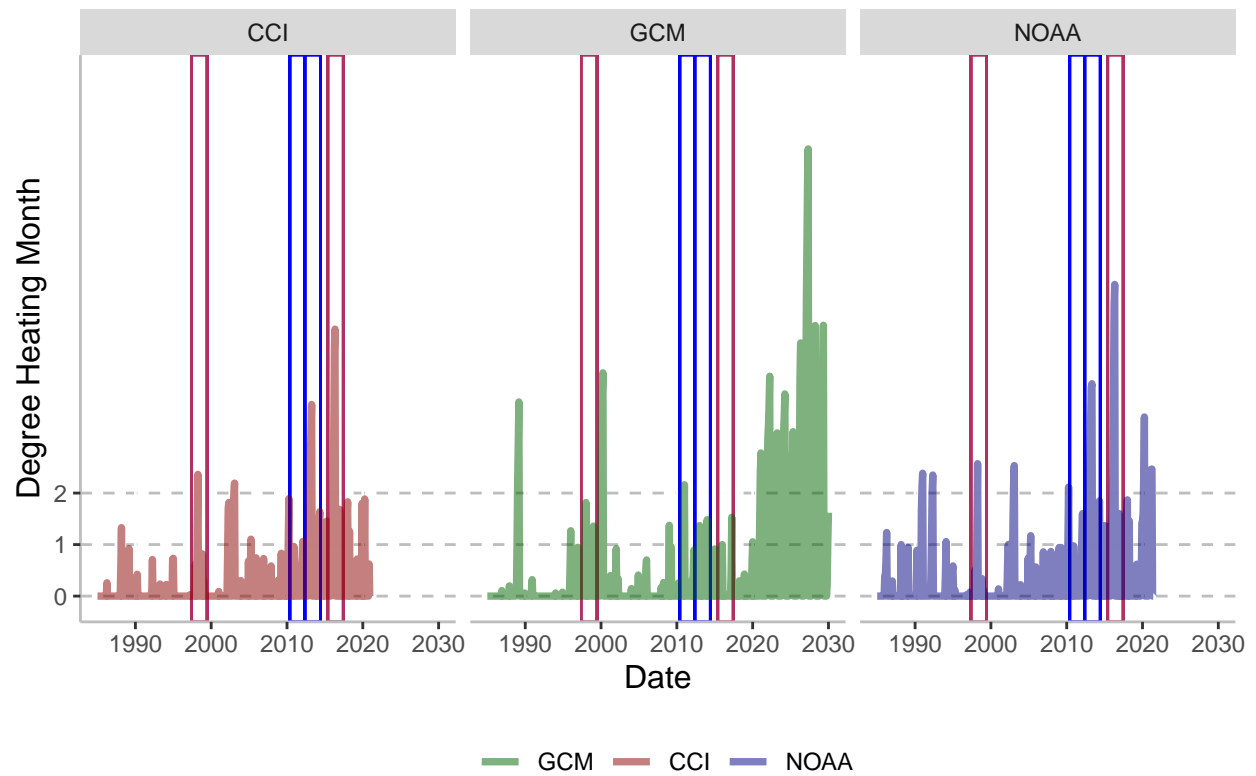


SCOTT_RPO_1 Degree Heating Months Time Series



Warning: Removed 399 row(s) containing missing values (geom_path).

SCOTT_RPO_1 Degree Heating Month values time plot



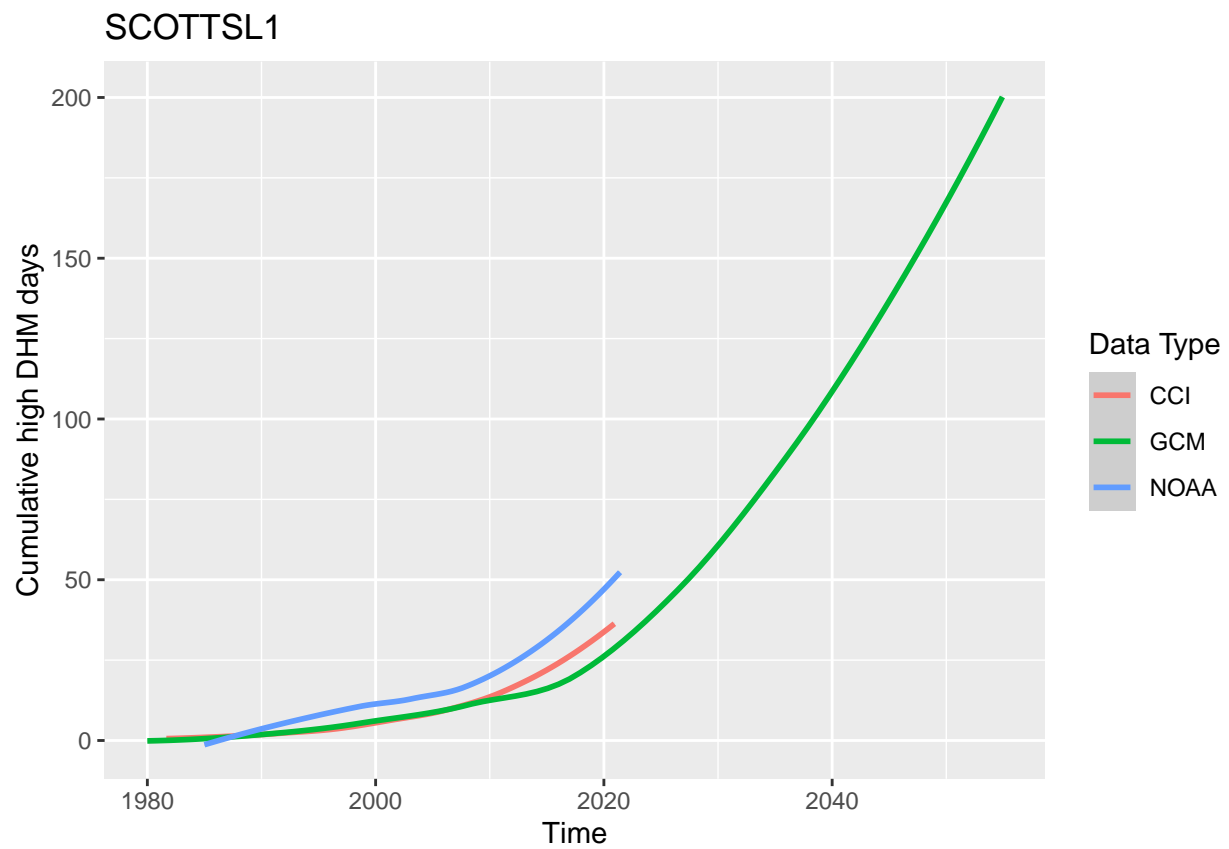
Warning: Removed 399 row(s) containing missing values (geom_path).

SCOTT_SL4 Degree Heating Months Time Series

SCOTT_SS3 Degree Heating Months Time Series

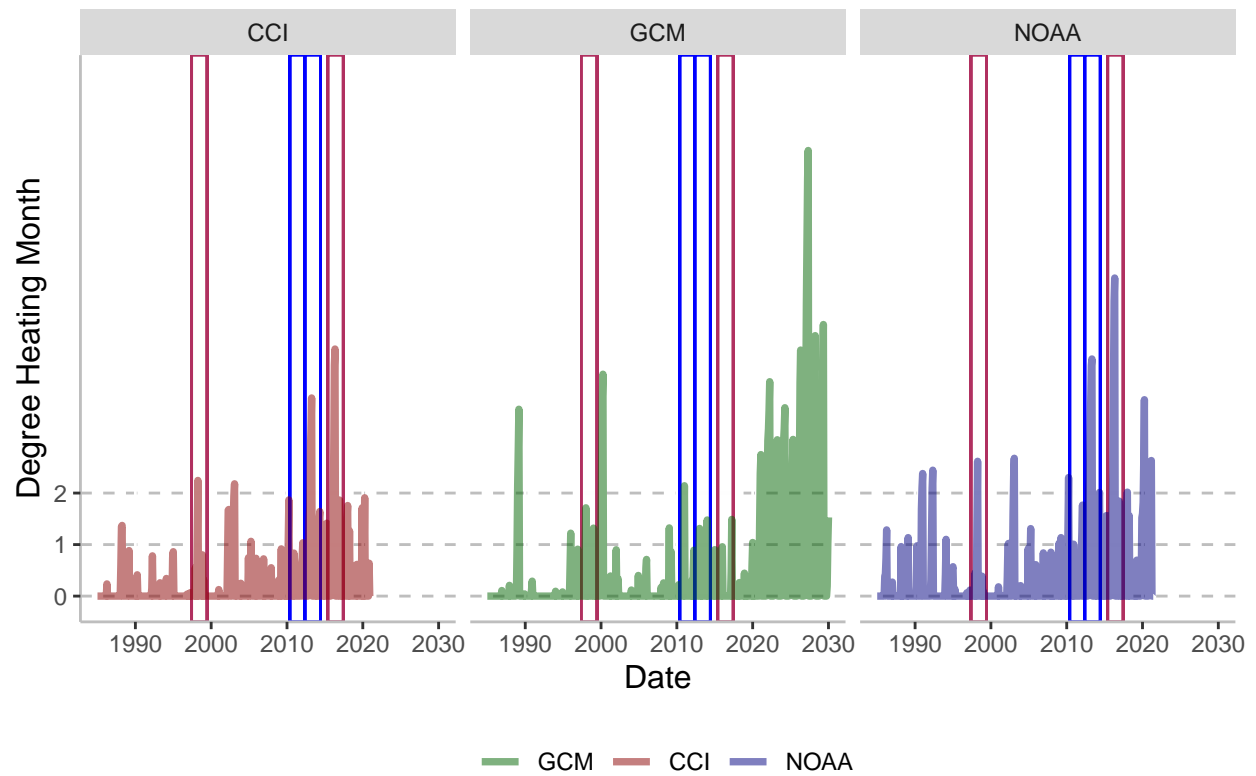
SCOTTNR1 Degree Heating Months Time Series

SCOTTSL1 Degree Heating Months Time Series



Warning: Removed 399 row(s) containing missing values (geom_path).

SCOTTSL1 Degree Heating Month values time plot



Warning: Removed 399 row(s) containing missing values (geom_path).

SCOTTSL2 Degree Heating Months Time Series

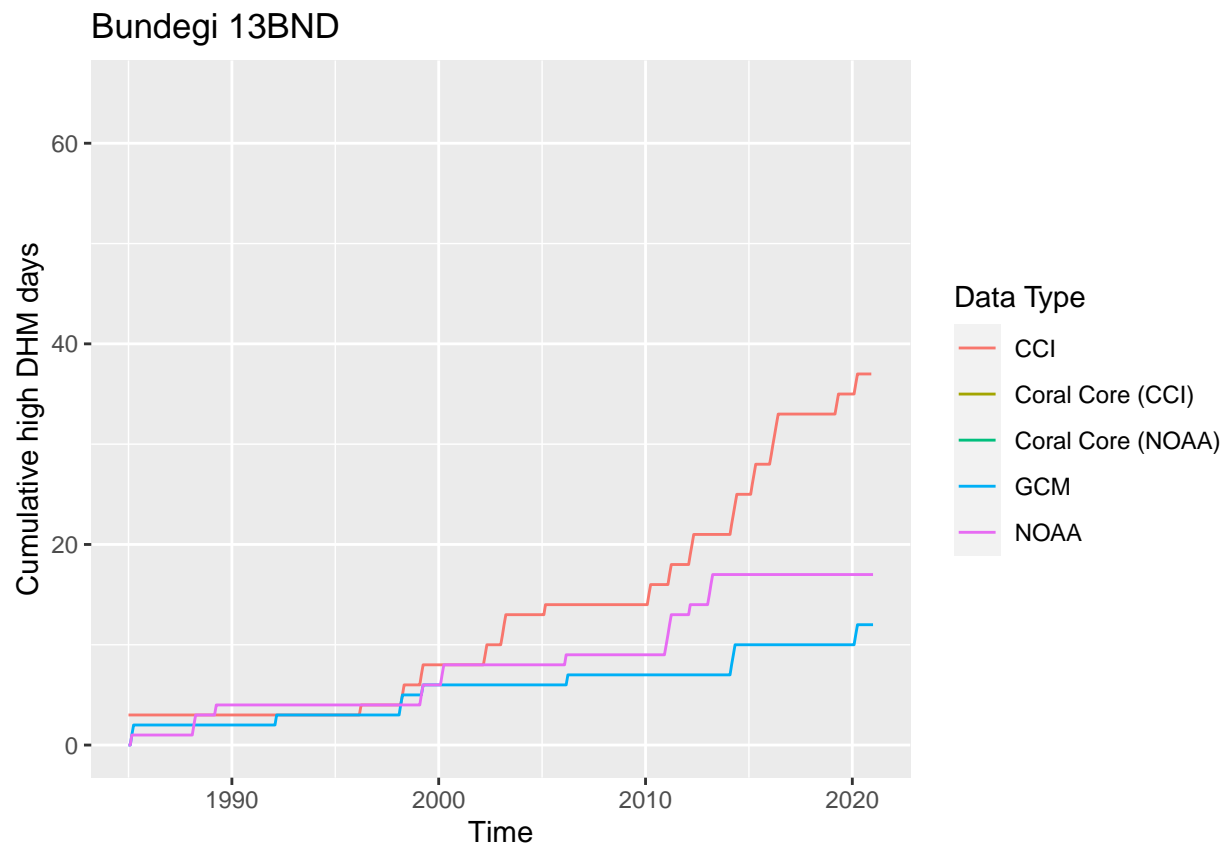
SCOTTSL3 Degree Heating Months Time Series

SCOTTSS1 Degree Heating Months Time Series

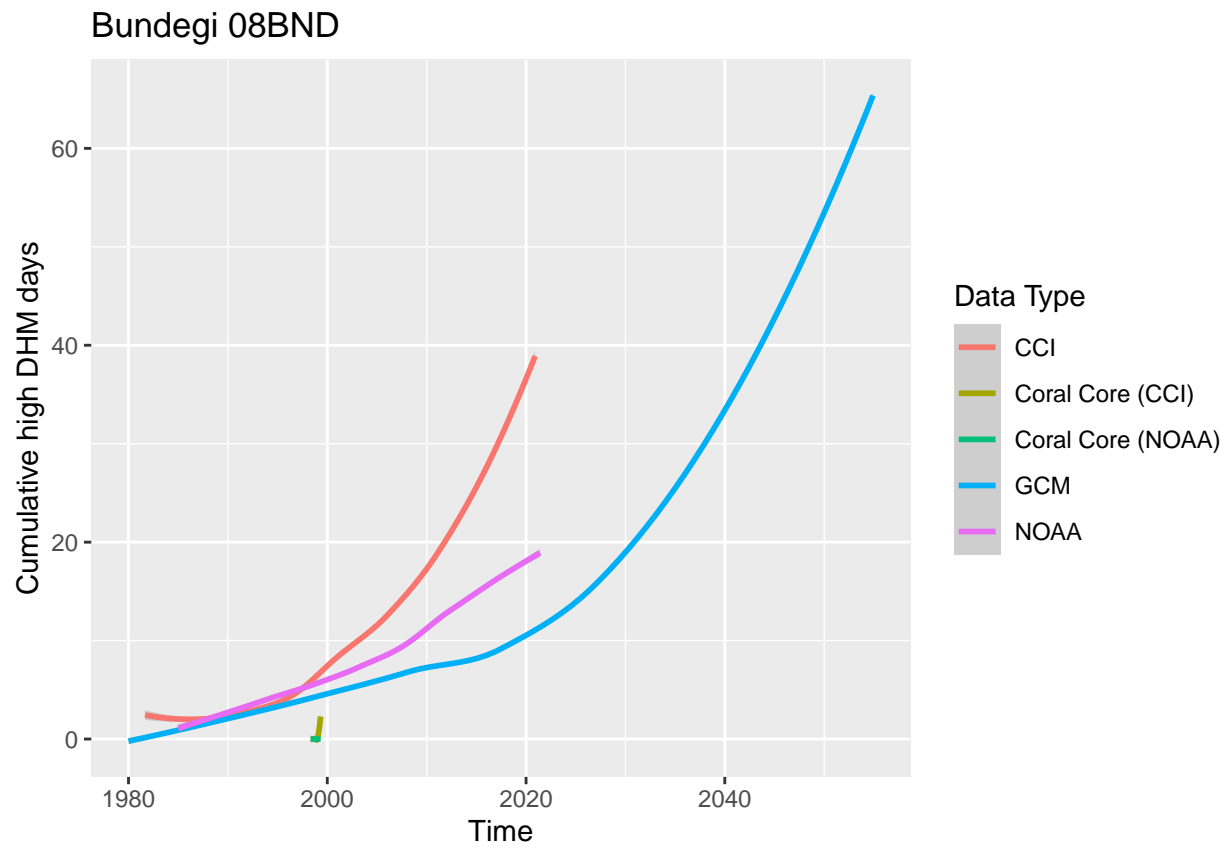
SCOTTSS2 Degree Heating Months Time Series

Bundegi Degree Heating Months Time Series

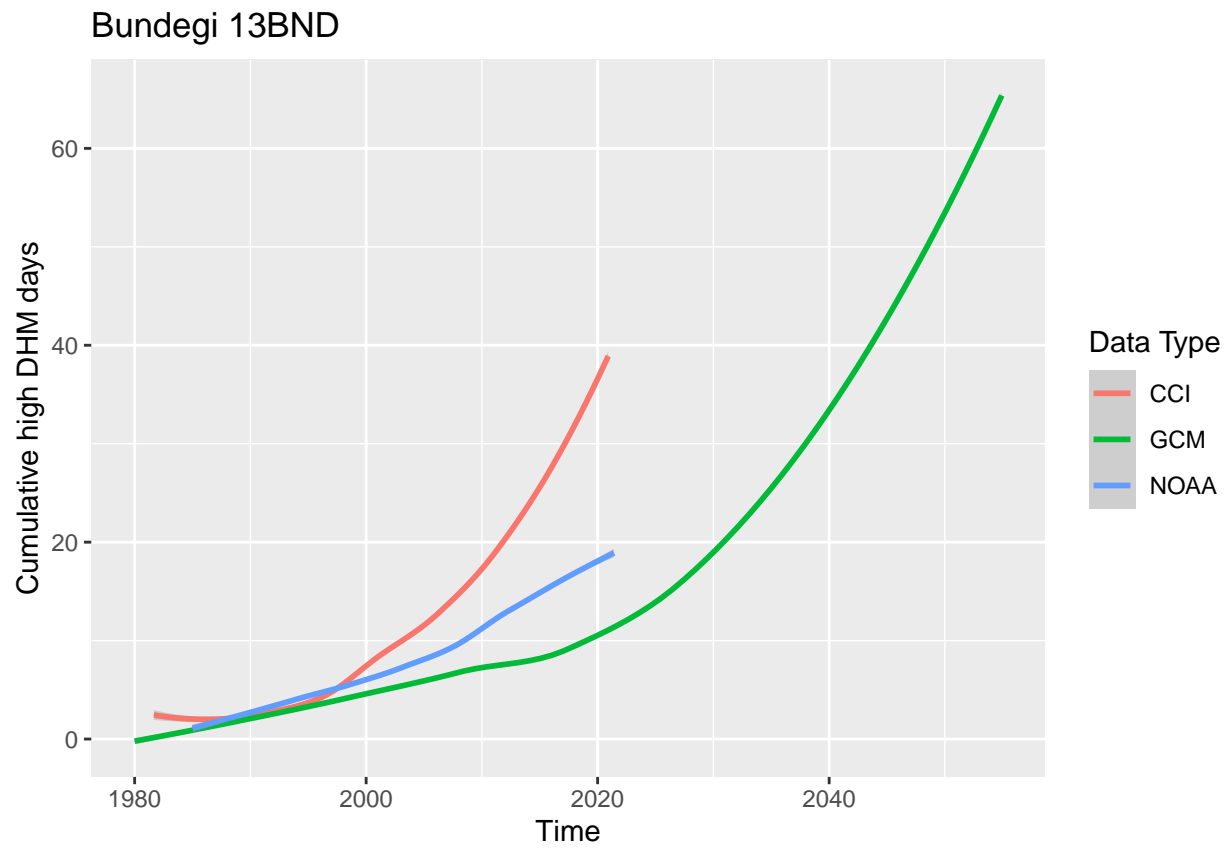
Warning: Removed 704 row(s) containing missing values (geom_path).



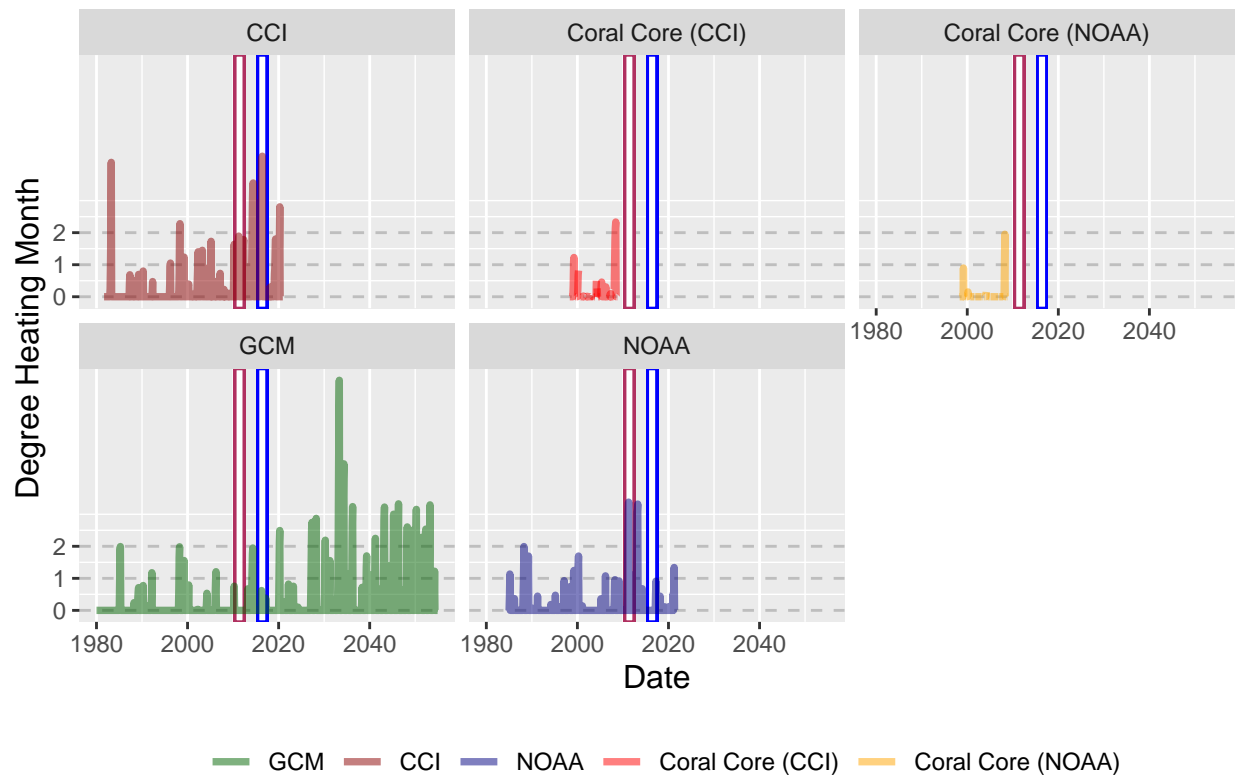
Warning: Removed 228 rows containing non-finite values (stat_smooth).



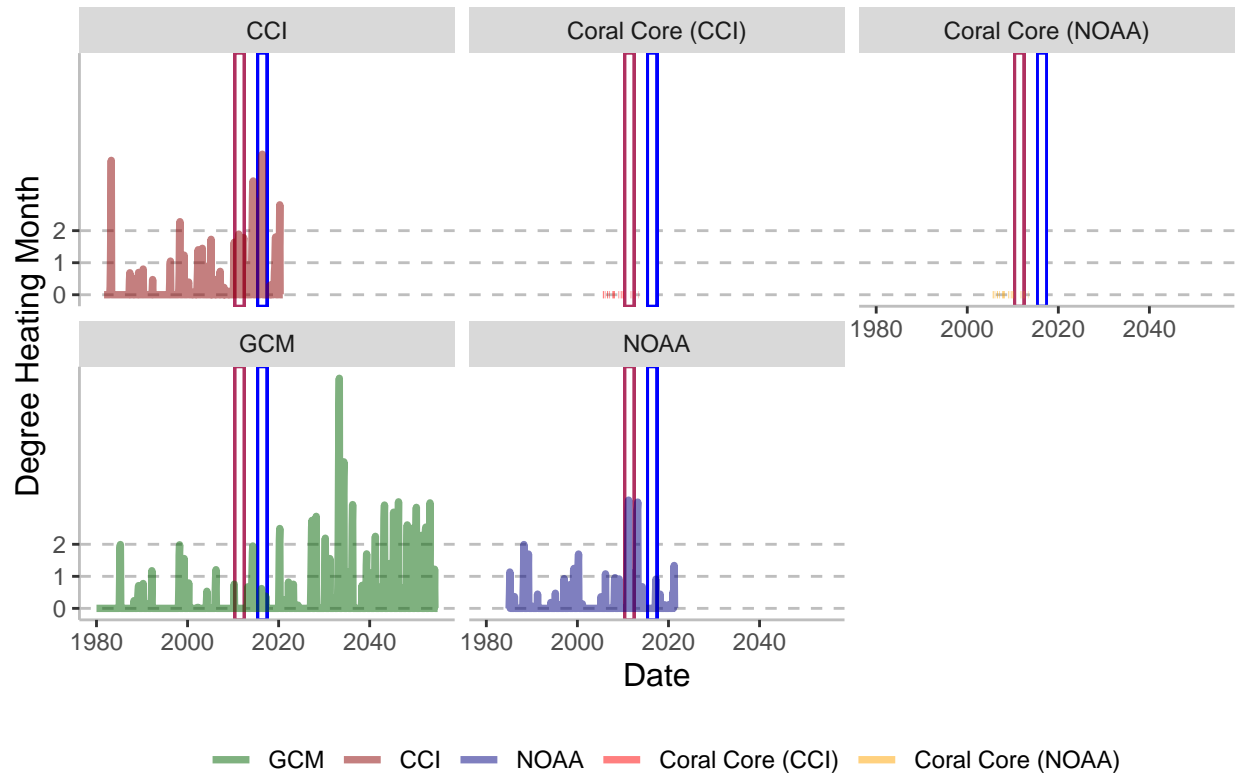
```
## Warning: Removed 192 rows containing non-finite values (stat_smooth).
```



08BND Degree Heating Month values time plot

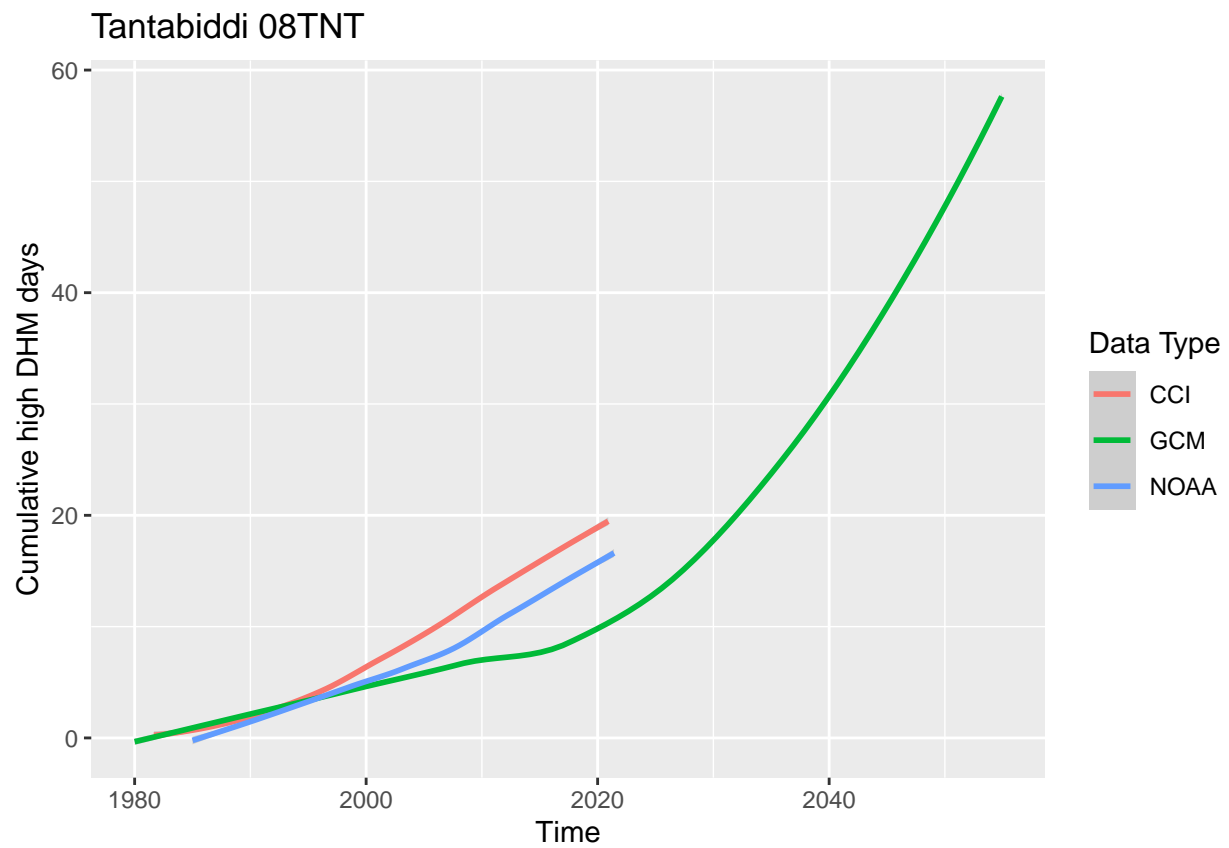


13BND Degree Heating Month values time plot

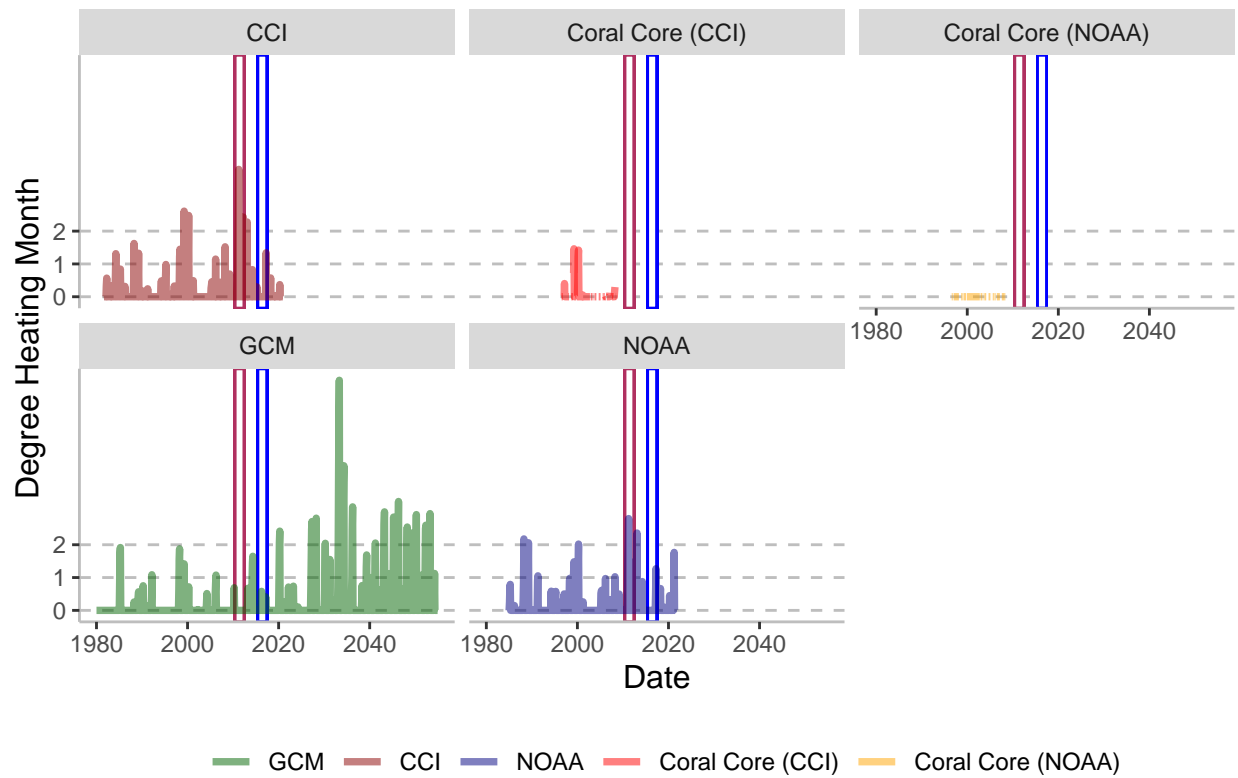


Tantabiddi 08TNT Degree Heating Months Time Series

Warning: Removed 294 rows containing non-finite values (stat_smooth).



08TNT Degree Heating Month values time plot



Tantabiddi 13TNT Degree Heating Months Time Series

```
## Warning: Removed 222 rows containing non-finite values (stat_smooth).

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 12449

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 60.45

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 3776.1

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : span too small. fewer
## data values than degrees of freedom.

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : pseudoinverse used at
## 12449

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : neighborhood radius
## 60.45

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : reciprocal condition
## number 0

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : There are other near
## singularities as well. 3776.1

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : span too small. fewer data values than degrees of freedom.

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 12449
```

```

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 60.45

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 3776.1

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : span too small. fewer
## data values than degrees of freedom.

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : pseudoinverse used at
## 12449

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : neighborhood radius
## 60.45

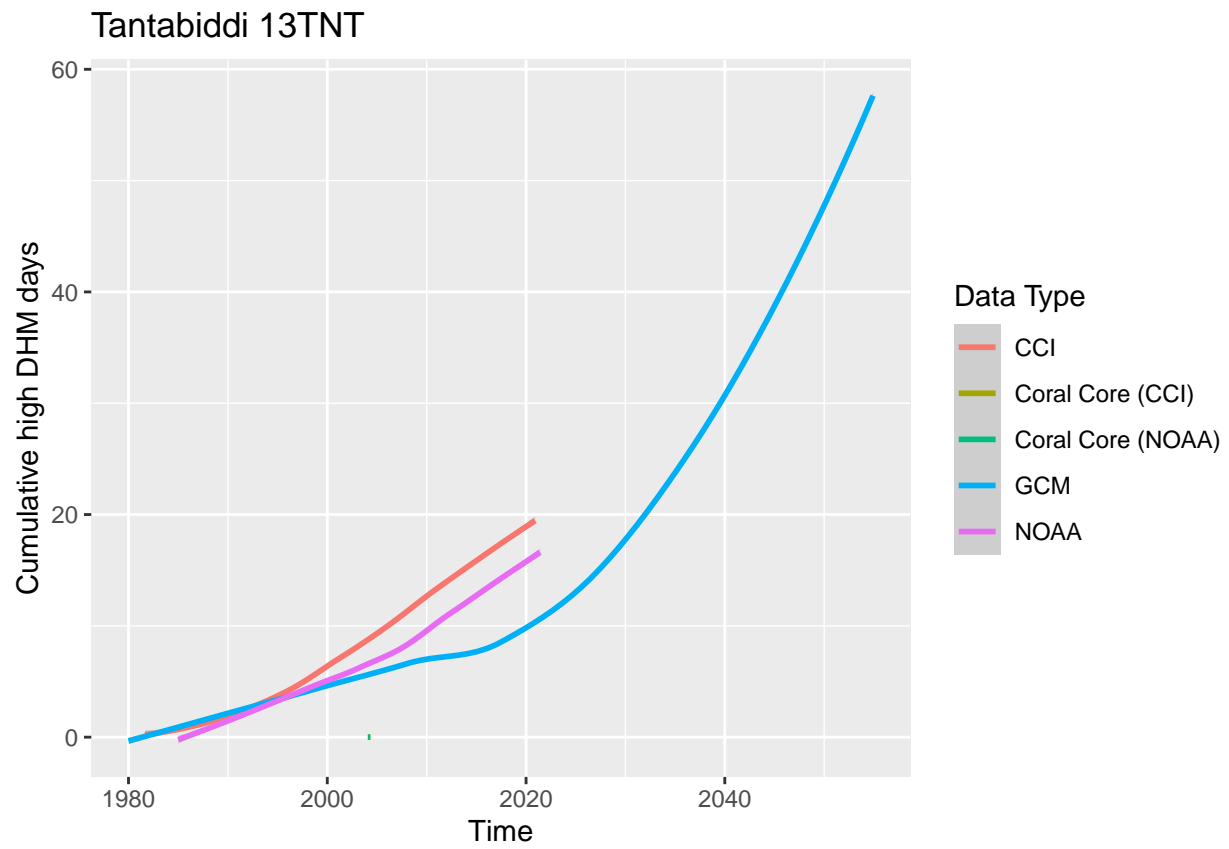
## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : reciprocal condition
## number 0

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object))), : There are other near
## singularities as well. 3776.1

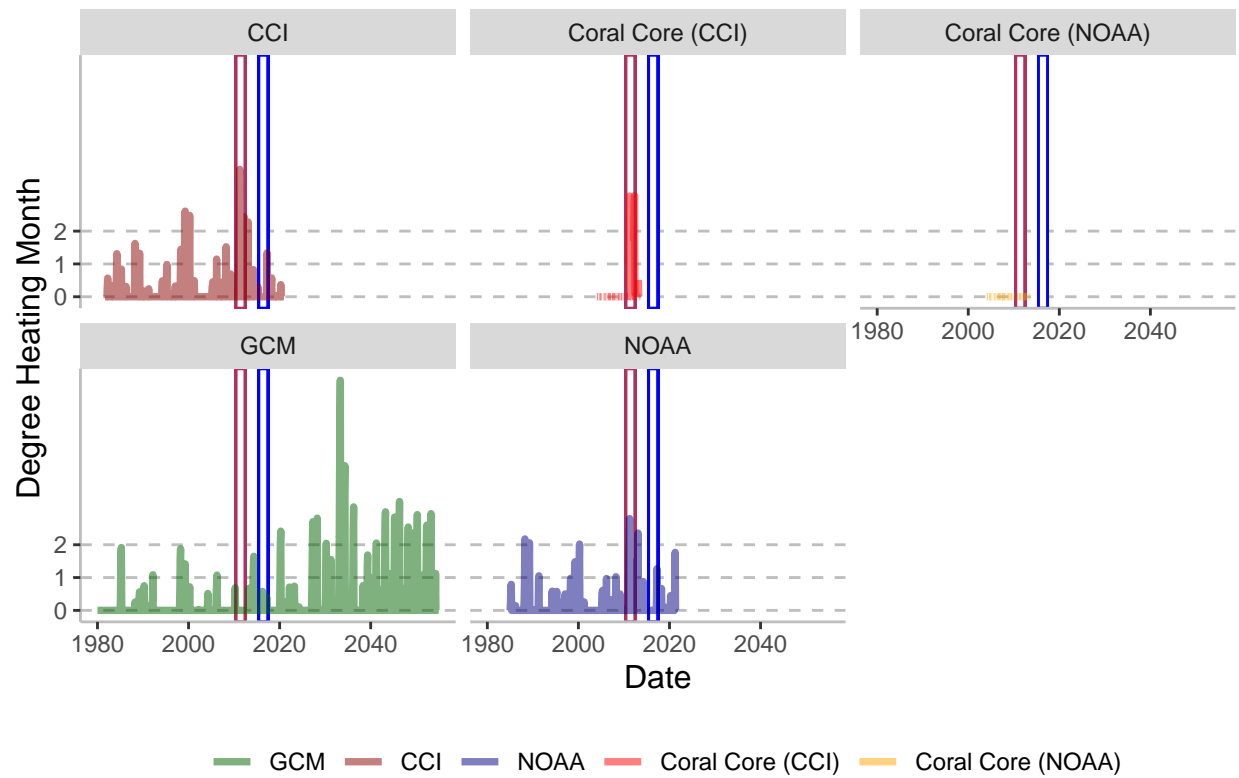
## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max; returning
## -Inf

## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max; returning
## -Inf

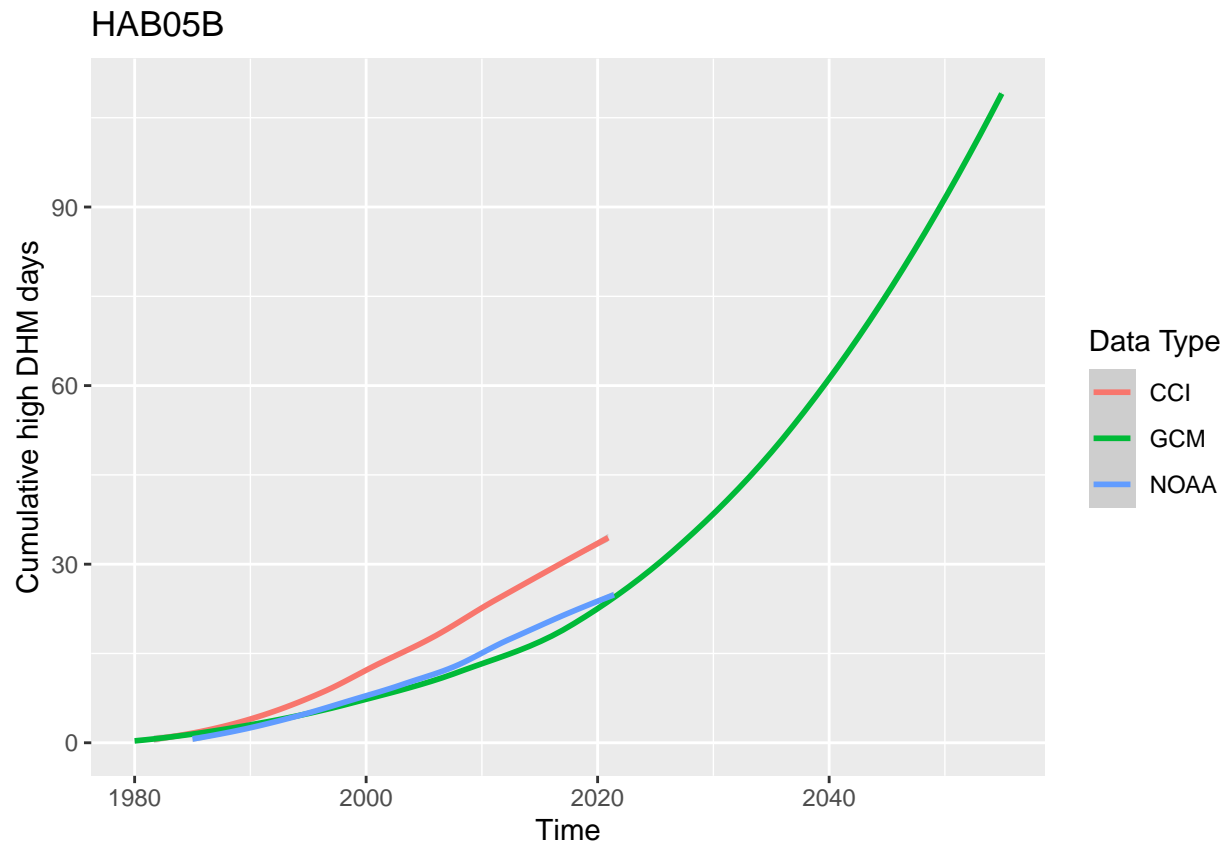
```



13TNT Degree Heating Month values time plot

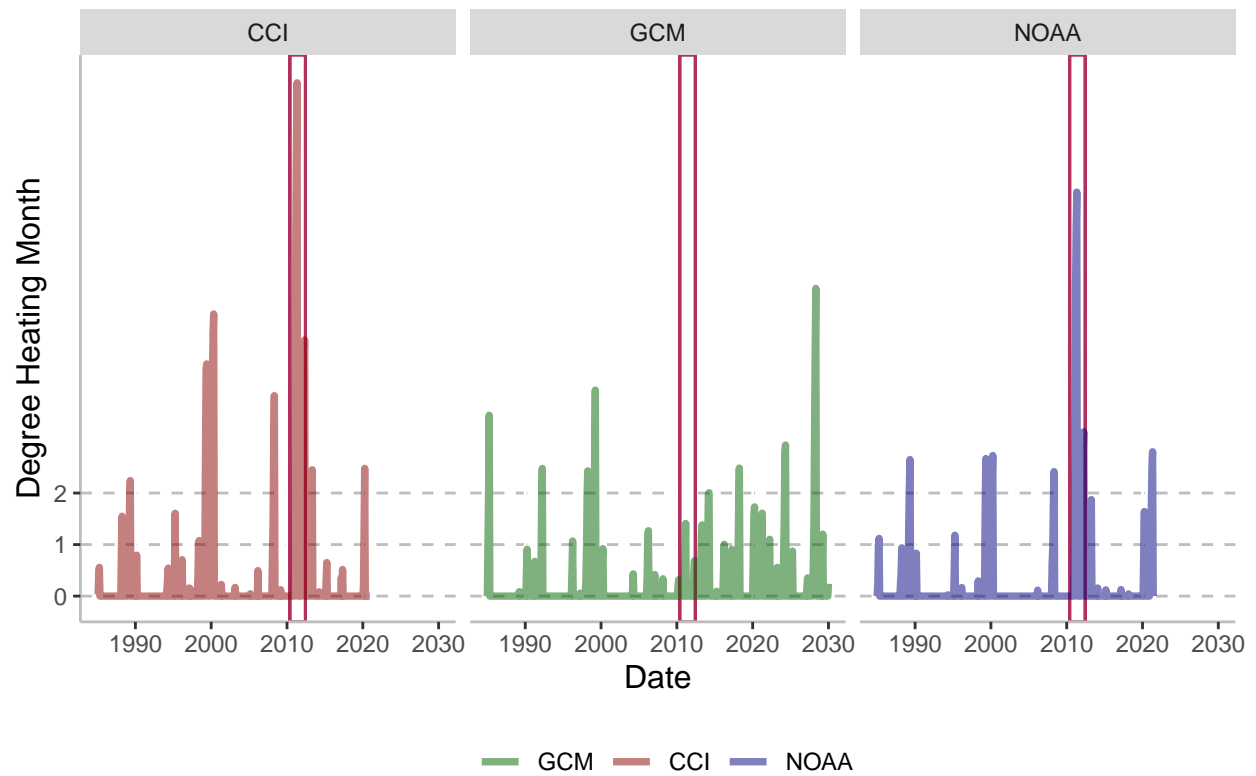


Houtman Abrolhos HAB05B Degree Heating Months Time Series



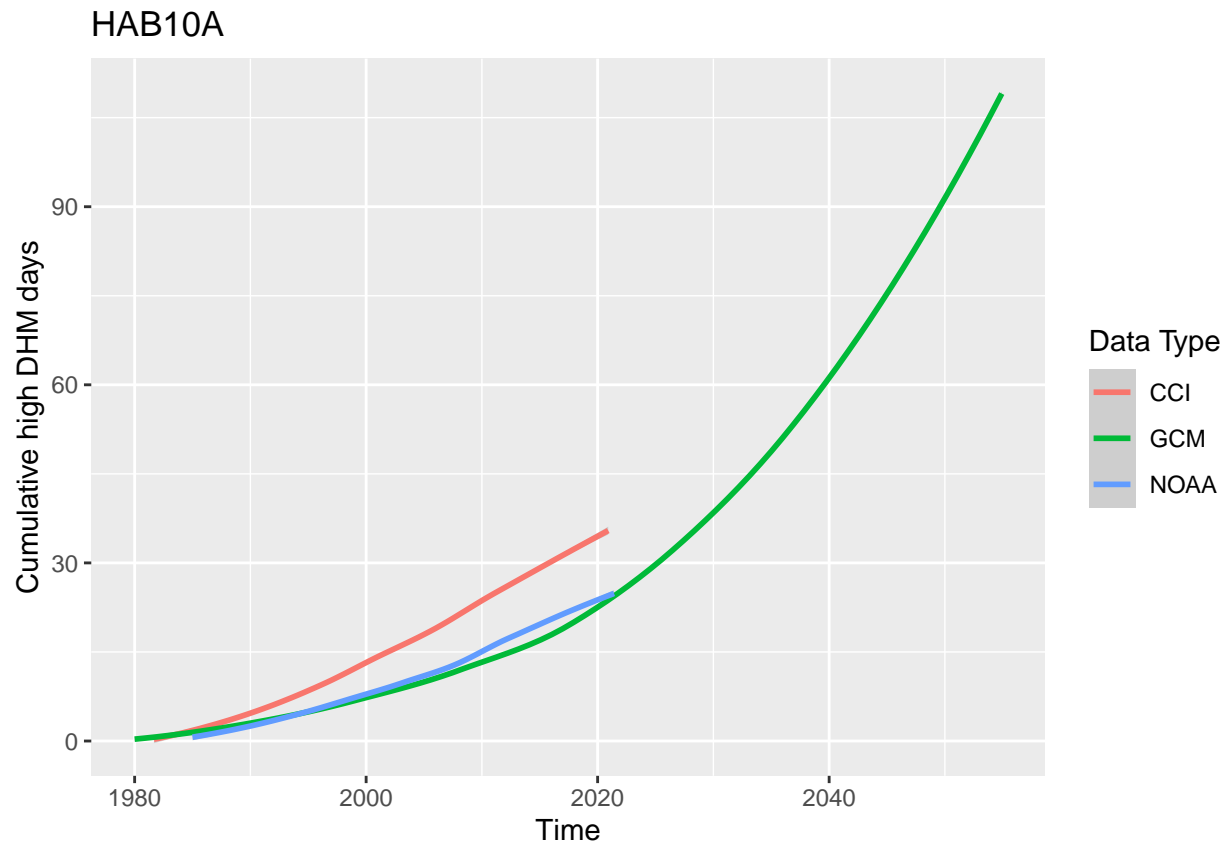
Warning: Removed 399 row(s) containing missing values (geom_path).

HAB05B Degree Heating Month values time plot



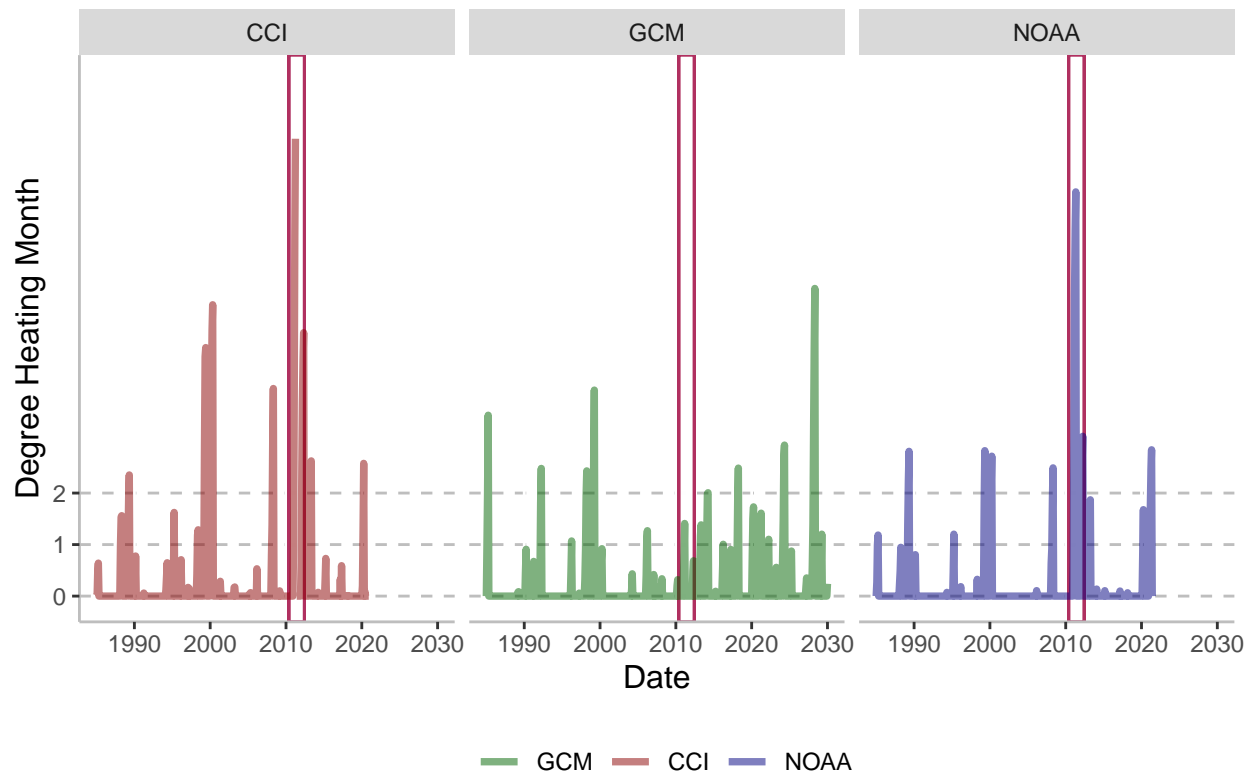
Warning: Removed 399 row(s) containing missing values (geom_path).

Houtman Abrolhos HAB10A Degree Heating Months Time Series



Warning: Removed 399 row(s) containing missing values (geom_path).

HAB10A Degree Heating Month values time plot

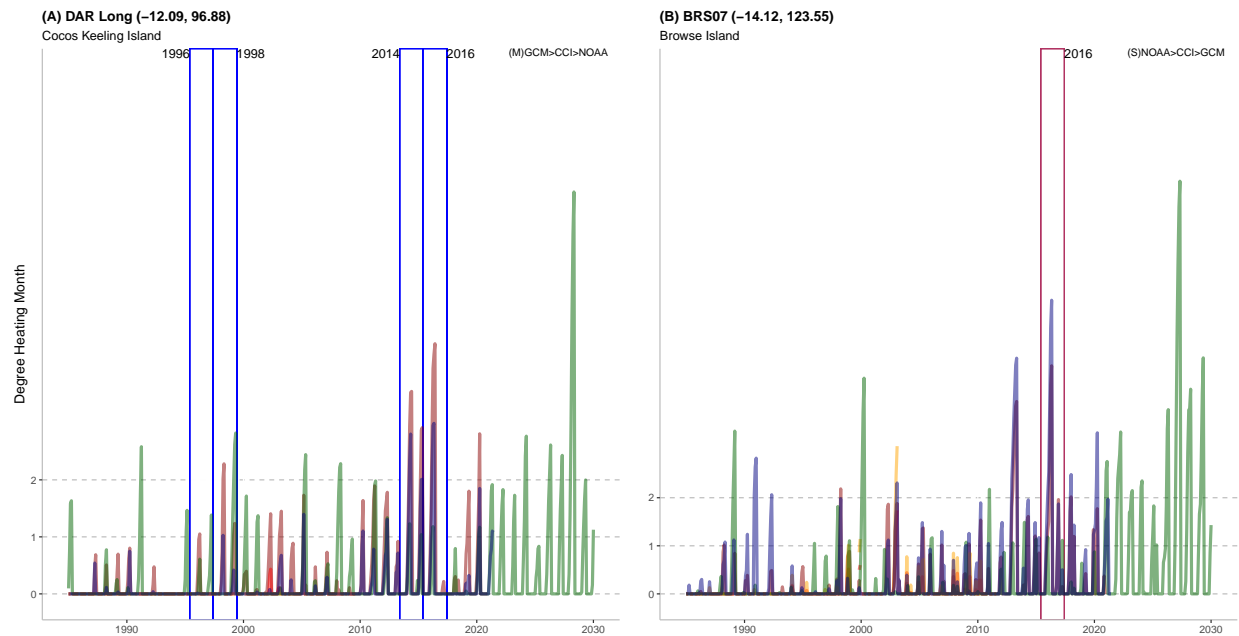


Warning: Removed 399 row(s) containing missing values (geom_path).

Combined Plots with Coral Core Data

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```



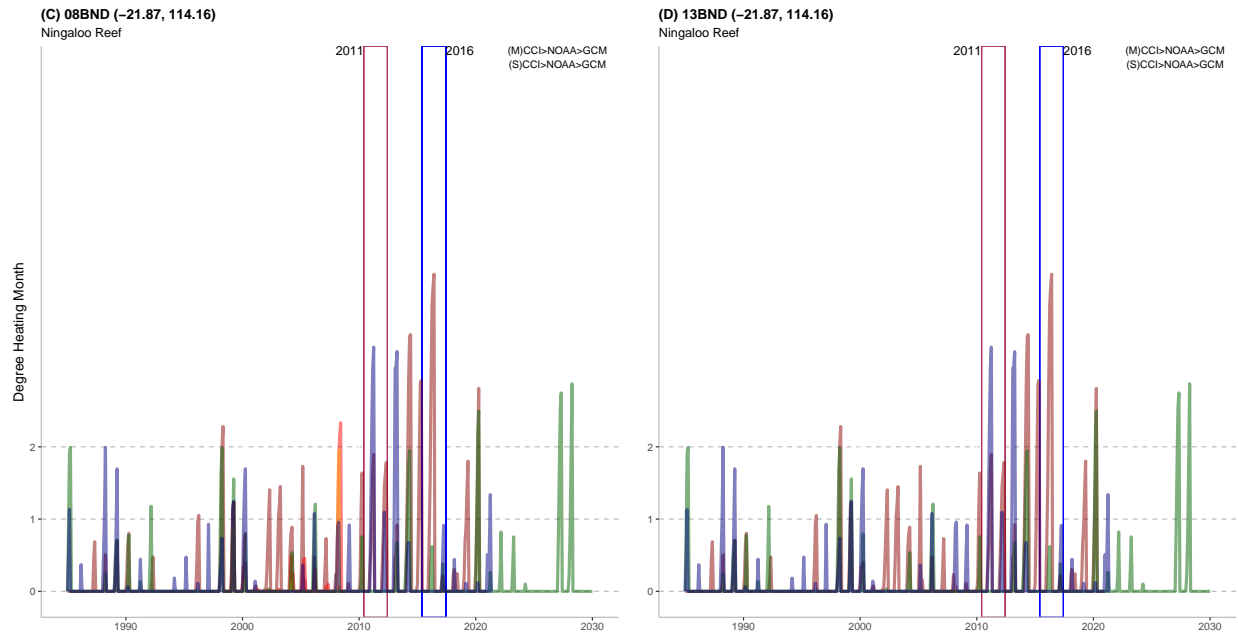
```
## Saving 45 x 24 in image
```

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
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## Warning: Removed 399 row(s) containing missing values (geom_path).
```



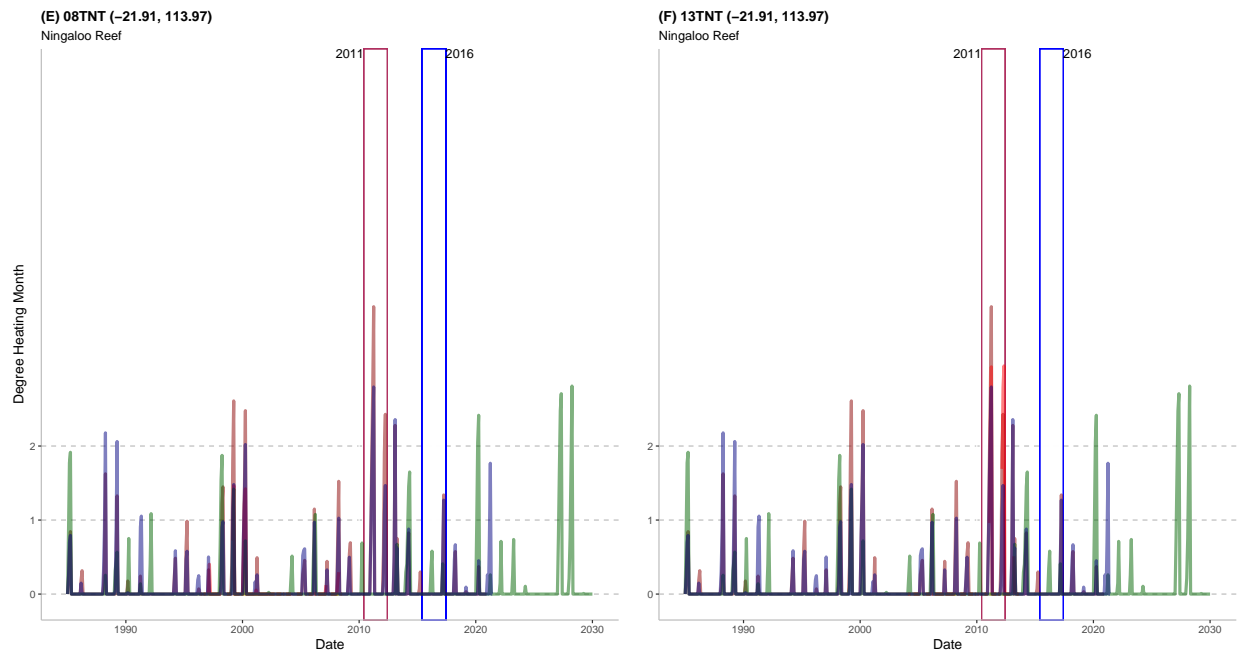
Saving 45 x 24 in image

Warning: Removed 399 row(s) containing missing values (geom_path).

Warning: Removed 399 row(s) containing missing values (geom_path).

Warning: Removed 399 row(s) containing missing values (geom_path).

Warning: Removed 399 row(s) containing missing values (geom_path).



```
## Saving 45 x 24 in image
```

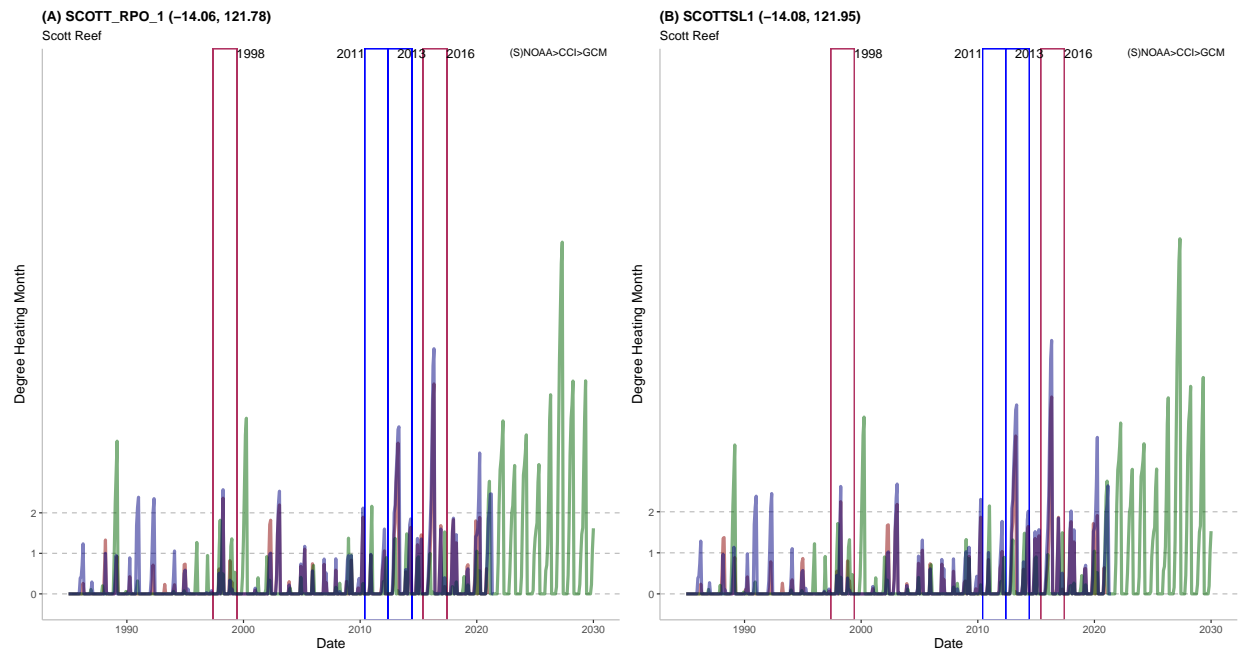
```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```

Combined Plots without Coral Core Data

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```



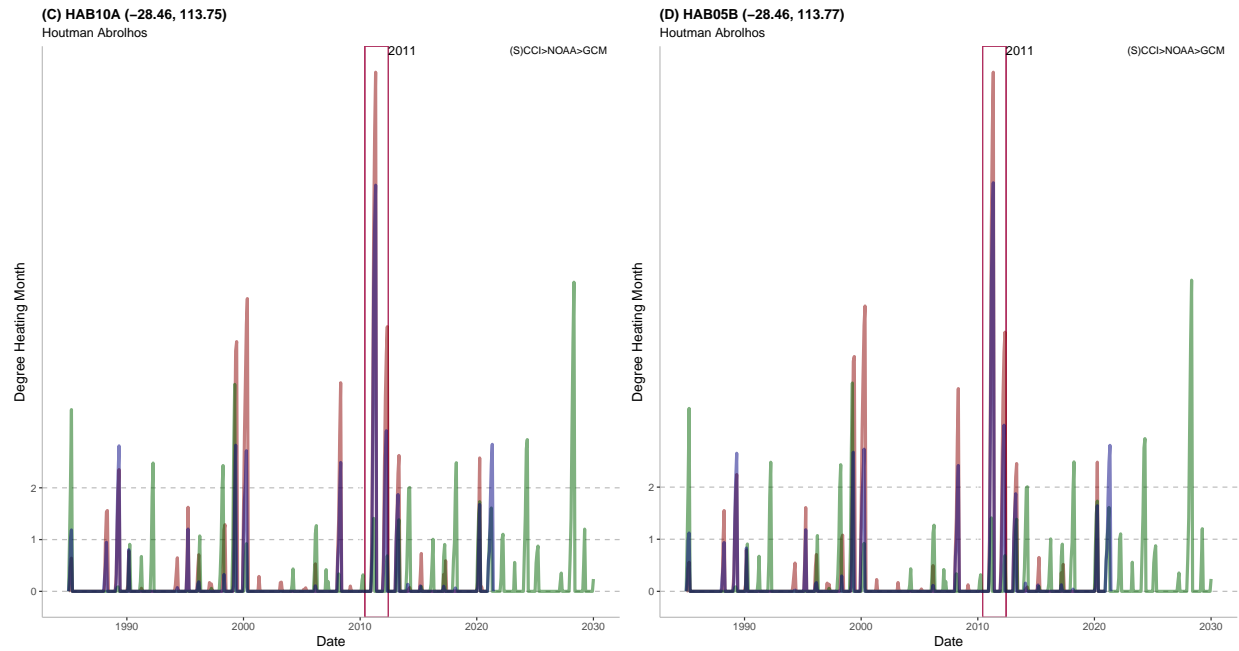
```
## Saving 45 x 24 in image
```

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```



```
## Saving 45 x 24 in image
```

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```

```
## Warning: Removed 399 row(s) containing missing values (geom_path).
```