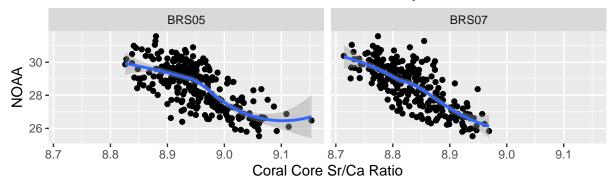
# Coral Core Calibration and Frequency Analysis

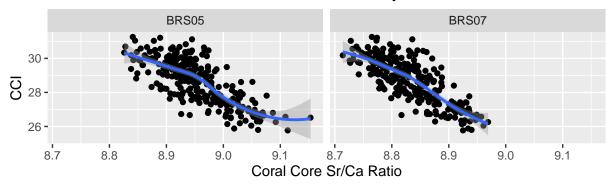
Vanessa Hui Fen Neo

2021-11-24

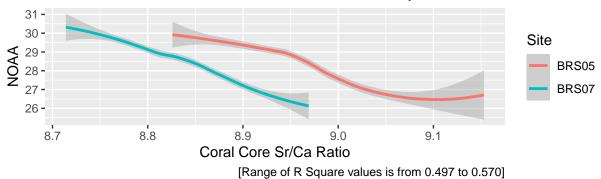
#### Browse Island NOAA SST and Coral Core Proxy



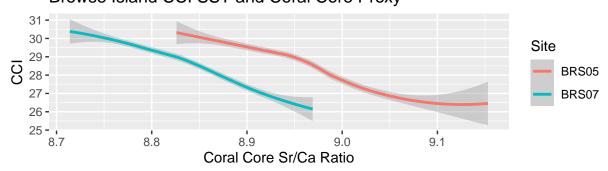
### Browse Island CCI SST and Coral Core Proxy



### Browse Island NOAA SST and Coral Core Proxy

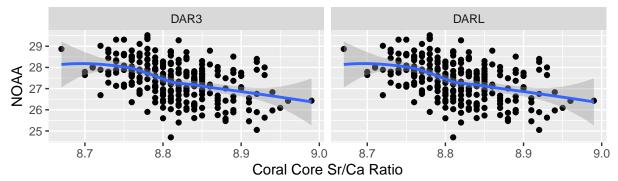


# Browse Island CCI SST and Coral Core Proxy

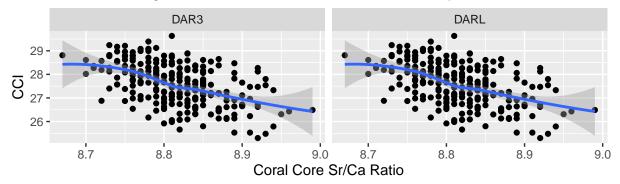


[Range of R Square values is from 0.568 to 0.622]

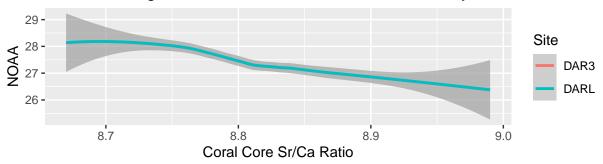
### Cocos Keeling Island NOAA SST and Coral Core Proxy



### Cocos Keeling Island CCI SST and Coral Core Proxy

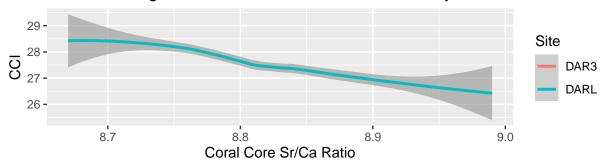


#### Cocos Keeling Island NOAA SST and Coral Core Proxy



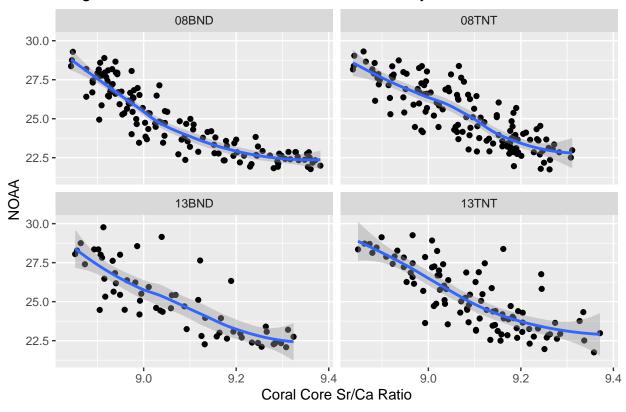
[R Square values for both sites are 0.188]

### Cocos Keeling Island CCI SST and Coral Core Proxy

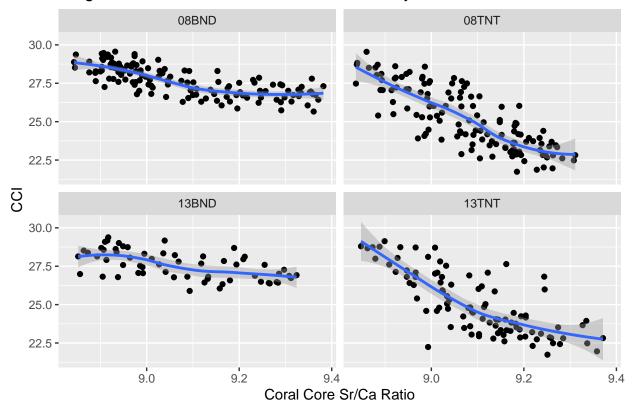


[R Square values for both sites are 0.244]

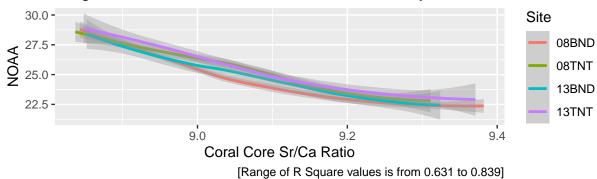
# Ningaloo Reef NOAA SST and Coral Core Proxy



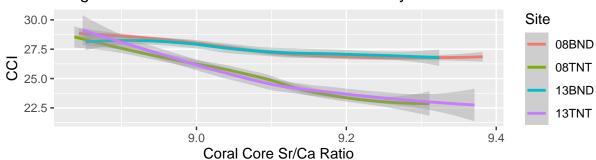
# Ningaloo Reef CCI SST and Coral Core Proxy



#### Ningaloo Reef NOAA SST and Coral Core Proxy



### Ningaloo Reef CCI SST and Coral Core Proxy



[Range of R Square values is from 0.320 to 0.668]

Table 1: NOAA								
	Browse		Cocos Keeling		Ningaloo			
_	BRS05	BRS07	DARL	DAR3	13TNT	08TNT	13BND	08BND
L_Browse	-15.892 (0.968)	-18.394 (0.967)						
L_Cocos	,	, ,	-7.413 (0.957)	-7.413 (0.957)				
L_Ningaloo			(0.001)	(0.000)	-344.021 (129.197)	-13.498 (0.762)	-12.655 (1.170)	-502.398 (68.200)
Q_Ningaloo					18.191 (7.096)	( )	( '-')	26.896 (3.741)
Num.Obs.	273	273	255	255	98	135	60	133
R2	0.499	0.572	0.192	0.192	0.639	0.702	0.668	0.842
R2 Adj.	0.497	0.570	0.188	0.188	0.631	0.700	0.663	0.839
AIC	748.8	705.7	632.0	632.0	321.9	406.1	204.6	338.5

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	Browse		Cocos Keeling		Ningaloo			
_	BRS05	BRS07	DARL	DAR3	13TNT	08TNT	13BND	08BND
L_Browse	-16.577 $(0.875)$	531.158 (247.970)						
Q_Browse	` ,	-31.095 $(14.024)$						
L_Cocos		, ,	-8.096 (0.890)	-8.096 (0.890)				
L_Ningaloo					$   \begin{array}{c}     -435.076 \\     (131.135)   \end{array} $	-13.400 (0.815)	-3.654 (0.682)	-185.807 $(49.633)$
Q_Ningaloo					23.210 $(7.203)$			9.946 $(2.723)$
Num.Obs.	273	273	255	255	98	135	60	133
R2	0.570	0.624	0.247	0.247	0.626	0.671	0.331	0.580
R2 Adj.	0.568	0.622	0.244	0.244	0.618	0.668	0.320	0.574
AIC	693.4	658.5	594.6	594.6	324.8	424.0	139.8	253.9

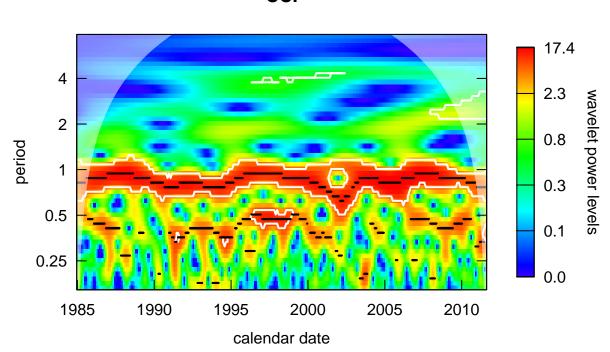
Frequency Analysis - Spectral Analysis of Time Series for  $\mathrm{Sr/Ca}$  Coral Proxy sites

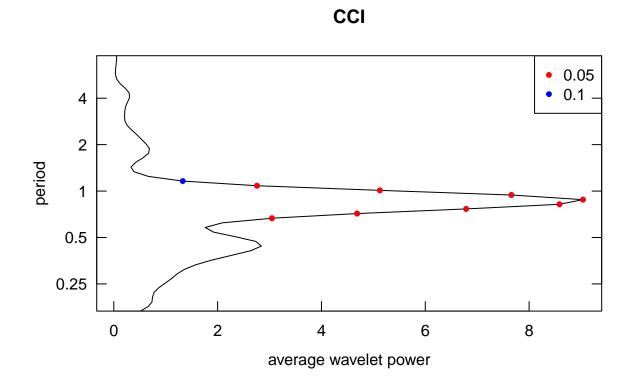
Monthly Coral Core Proxy Sites

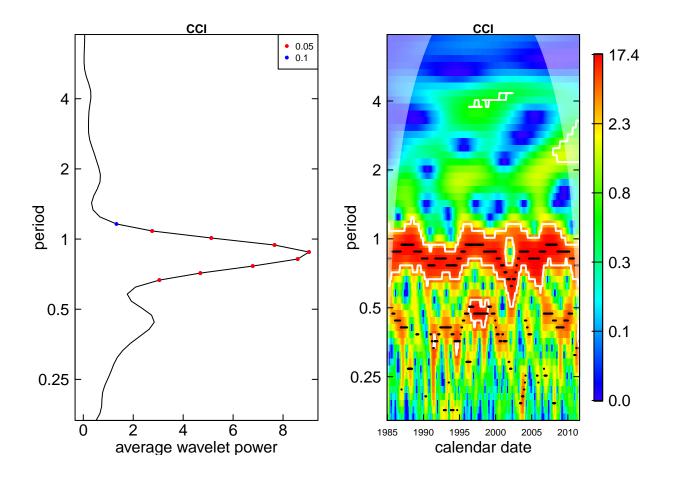
#### BRS05

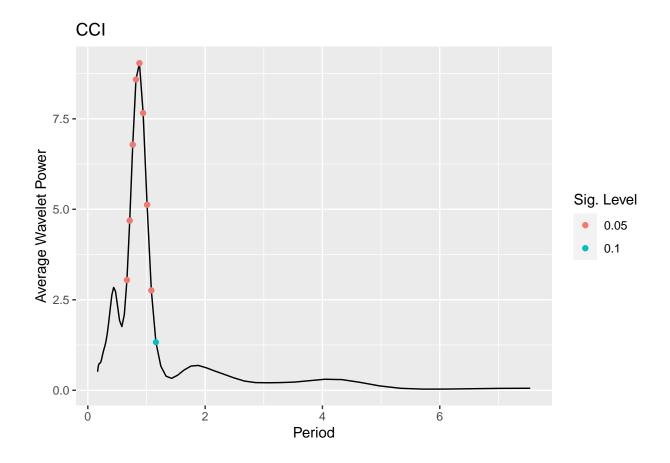
```
## Smoothing the time series...
## Starting wavelet transformation...
## ... and simulations...
## |
```

CCI

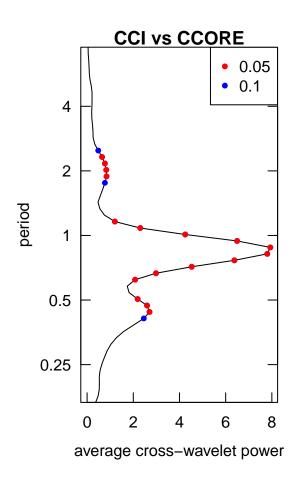


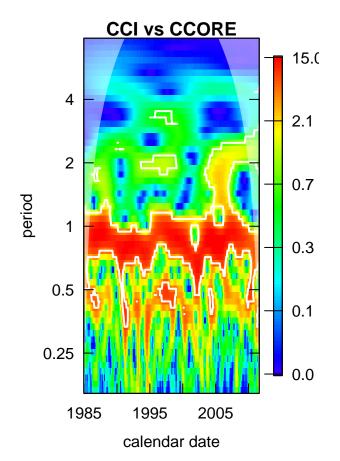


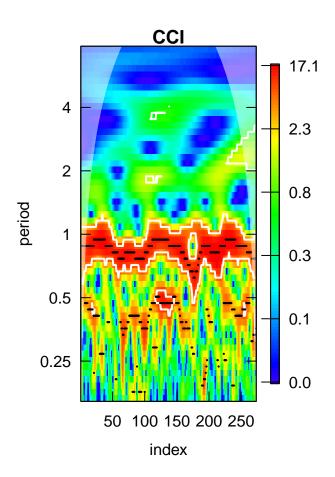


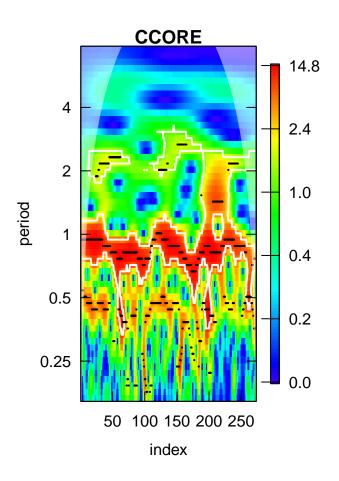


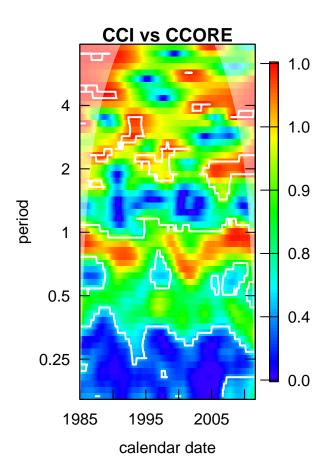
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

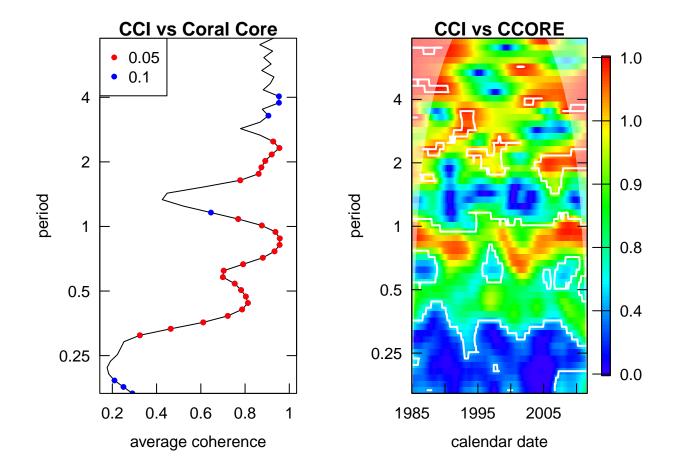




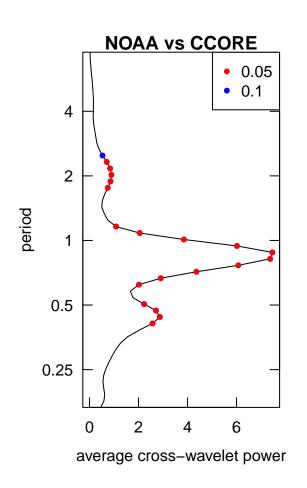


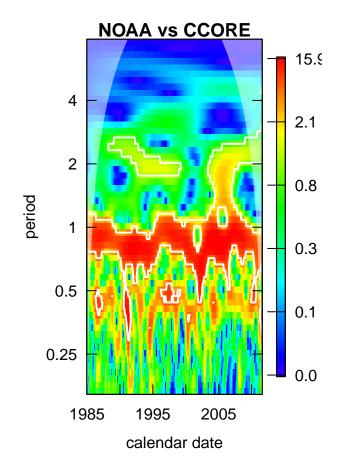


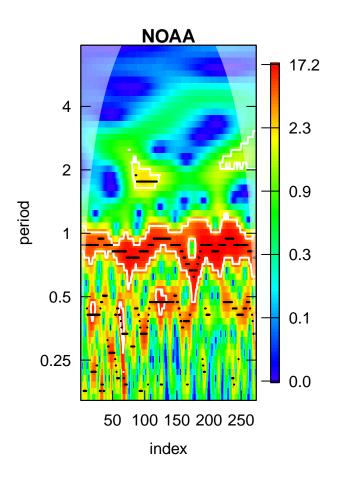


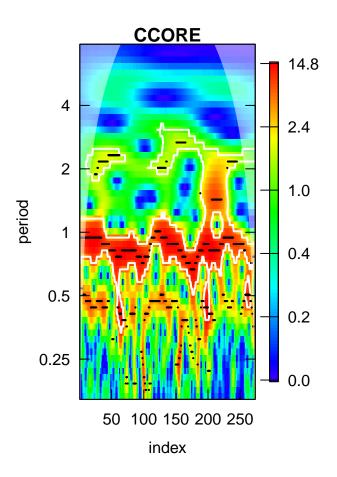


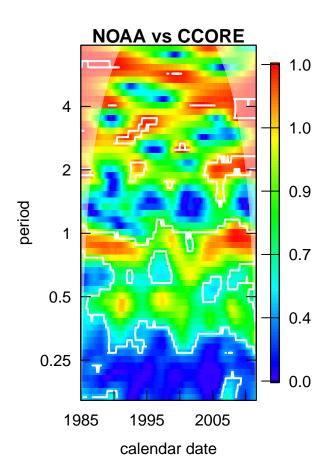
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

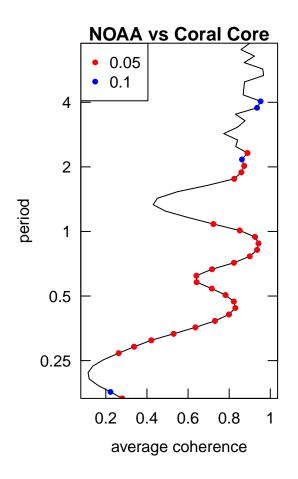


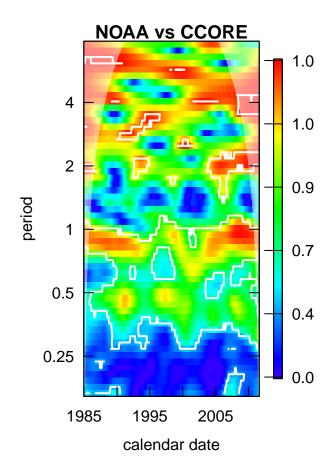


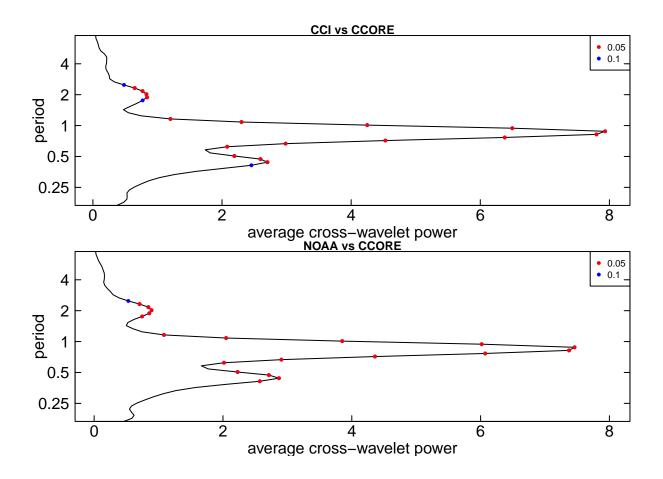


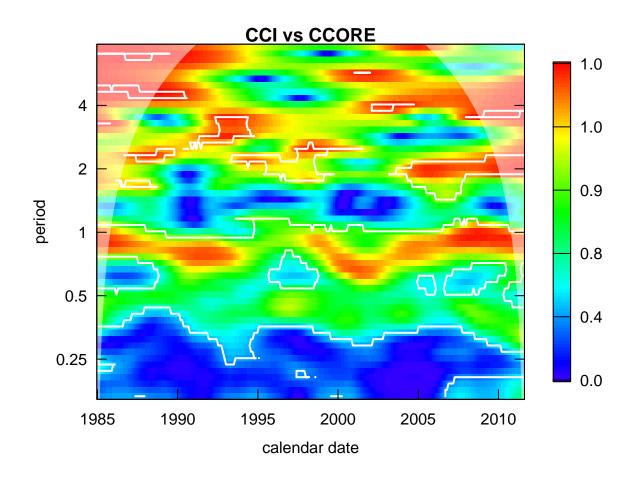


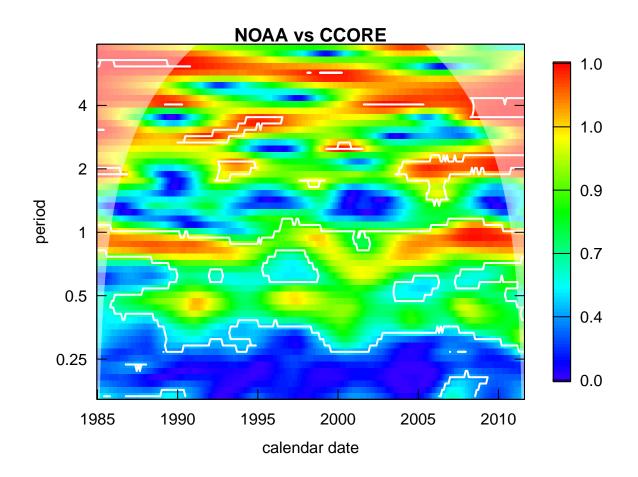








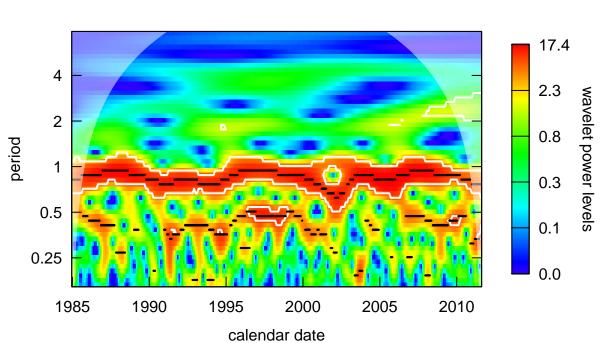


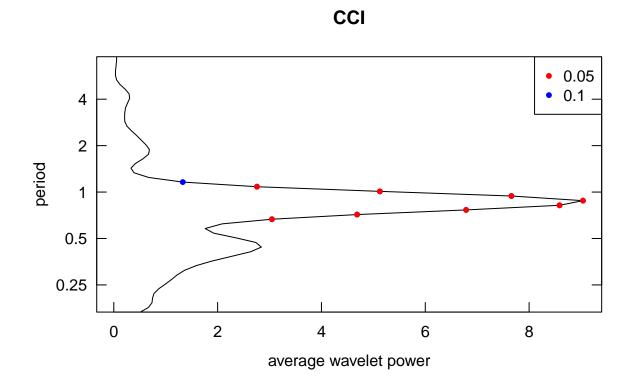


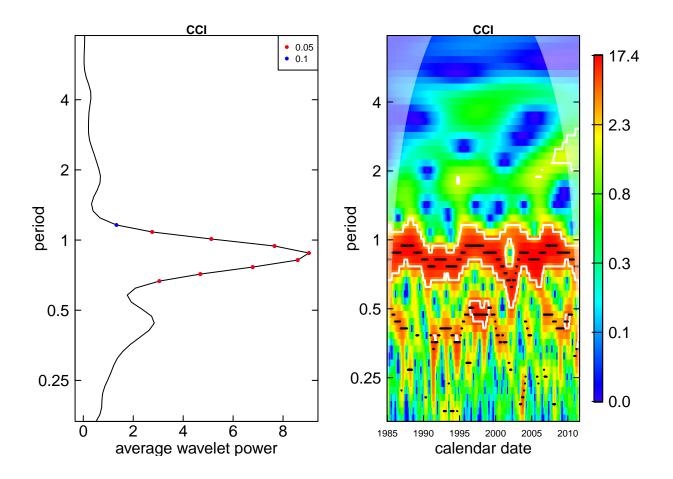
#### BRS07

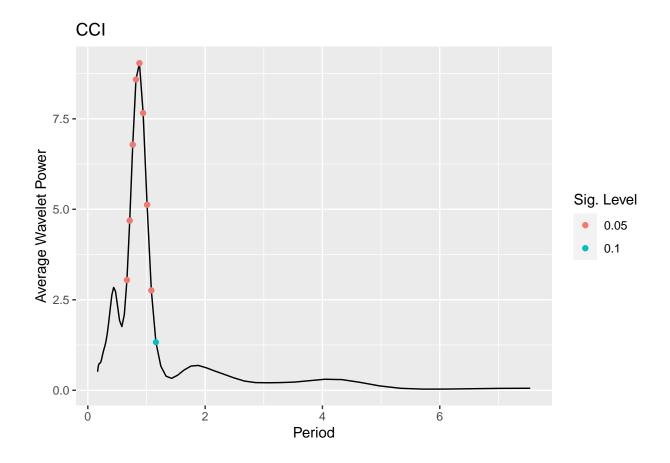
```
## Smoothing the time series...
## Starting wavelet transformation...
## ... and simulations...
## |
```

CCI

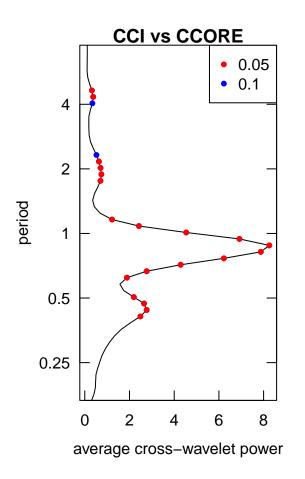


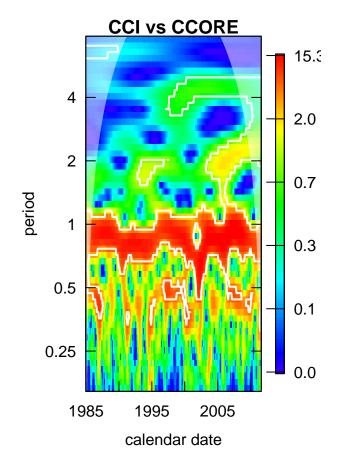


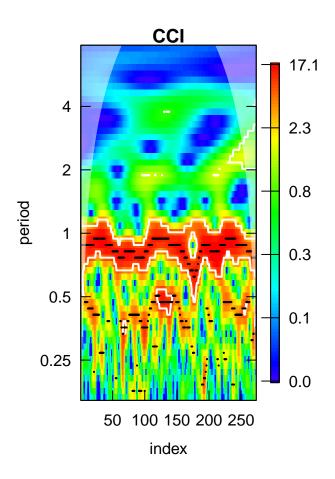


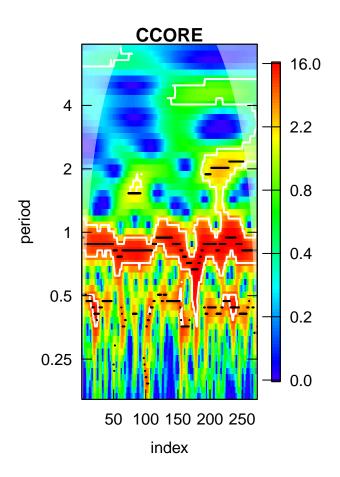


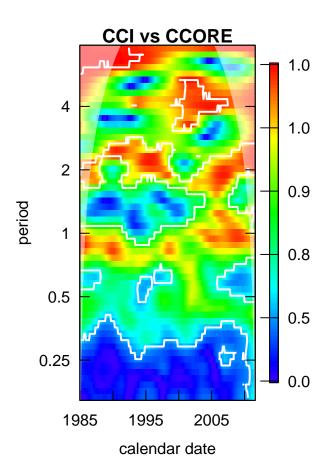
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

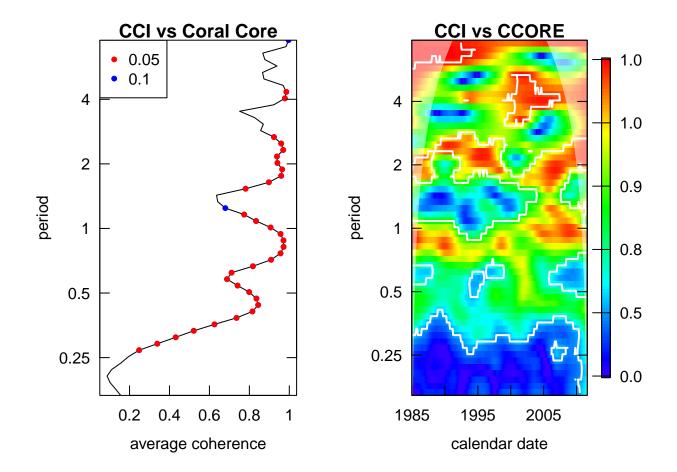




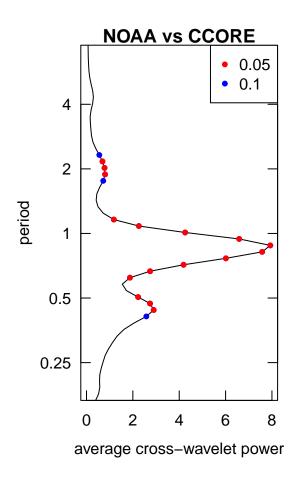


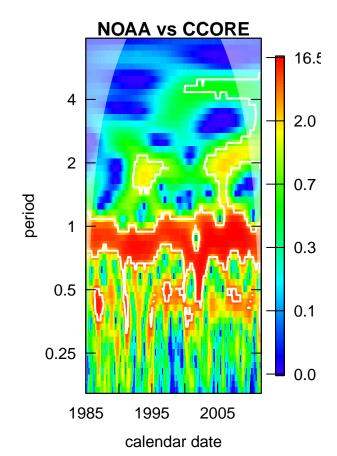


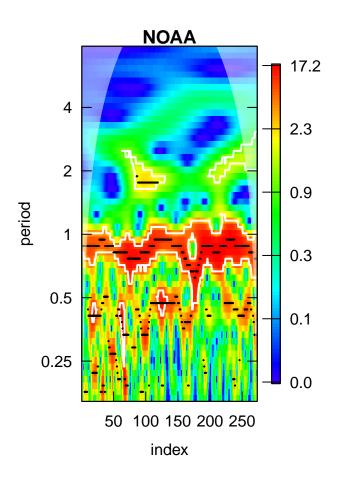


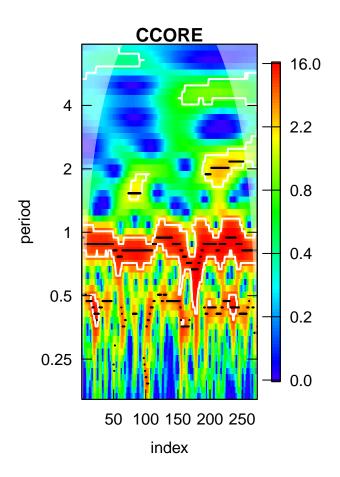


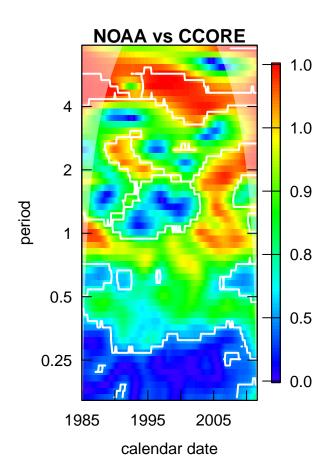
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

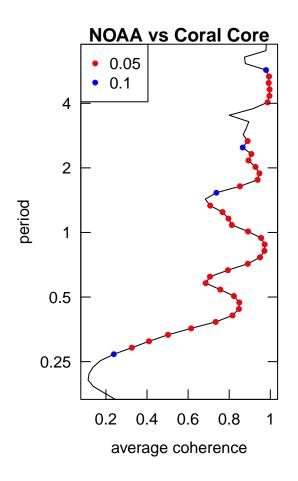


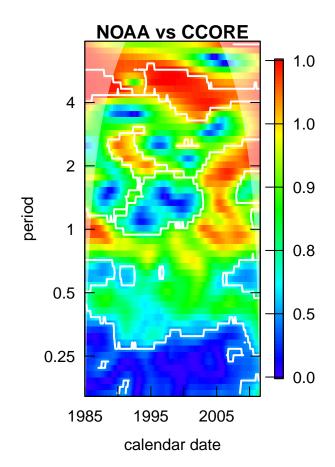


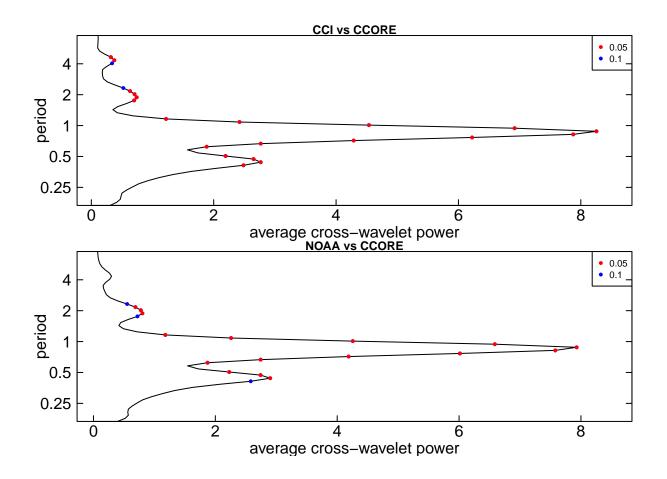


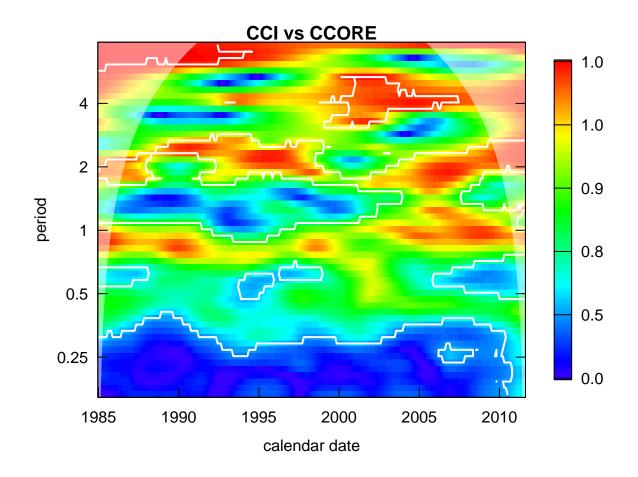


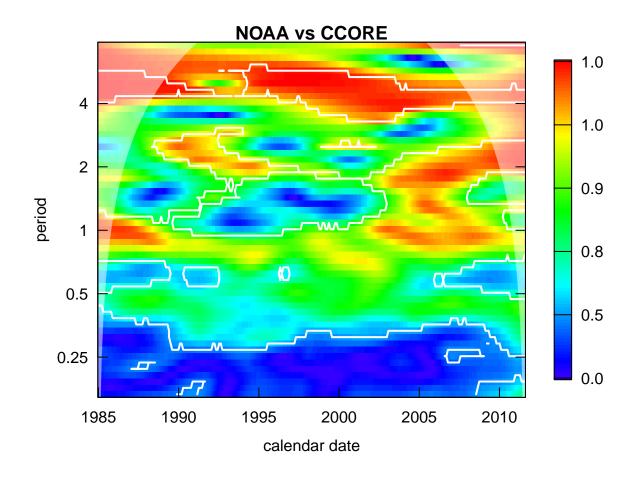






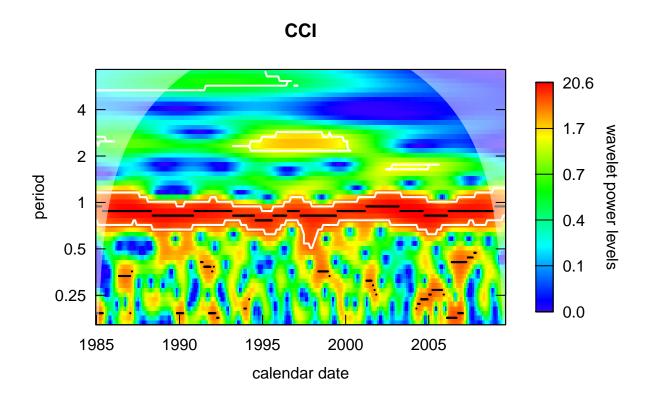


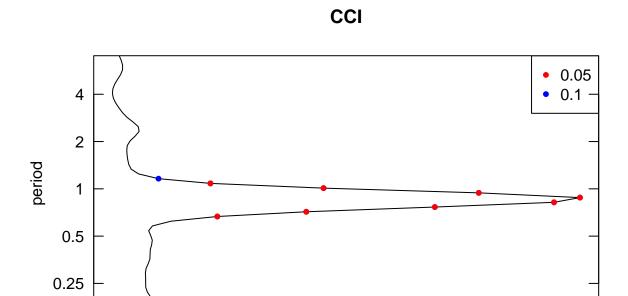




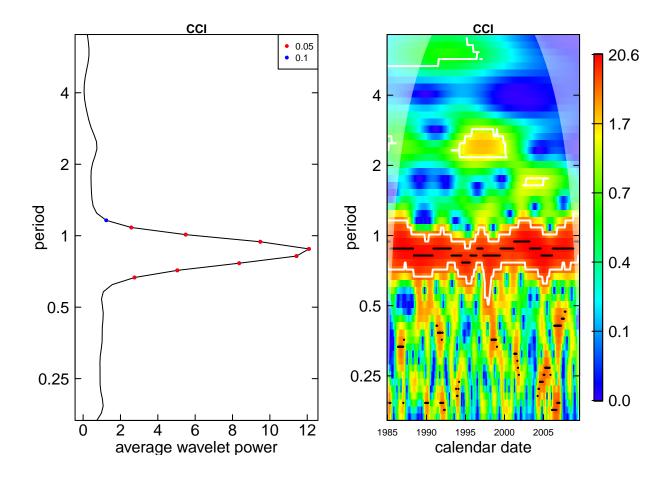
## DAR3

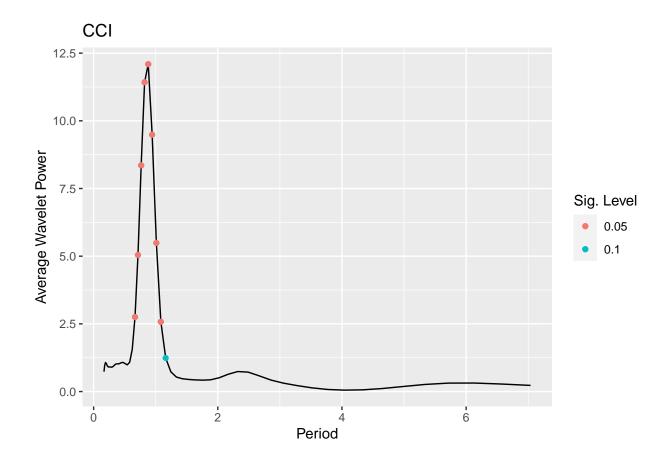
```
## Smoothing the time series...
## Starting wavelet transformation...
## ... and simulations...
## |
```



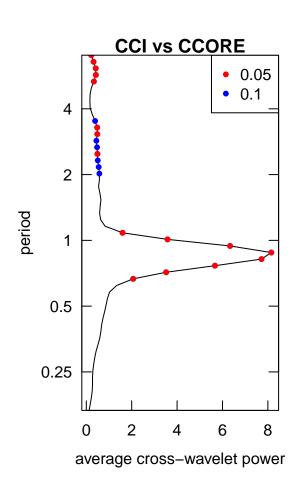


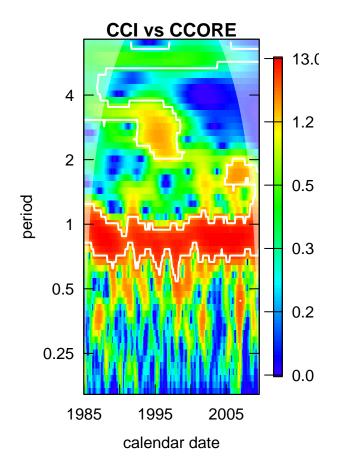
average wavelet power

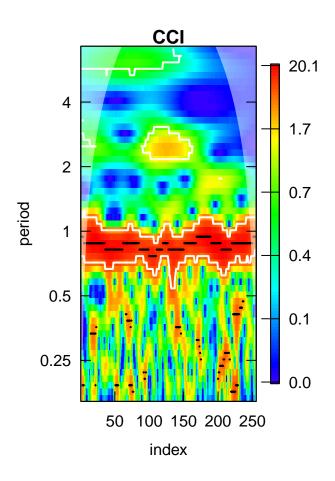


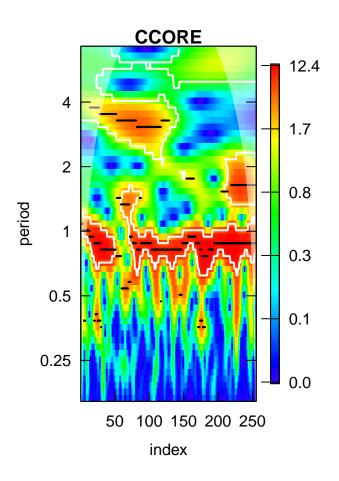


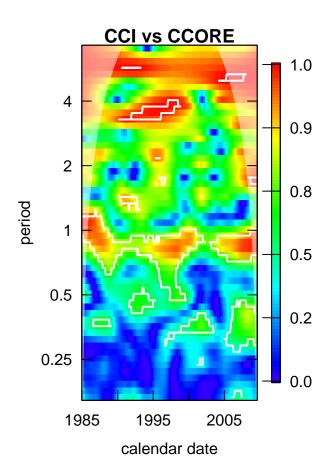
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

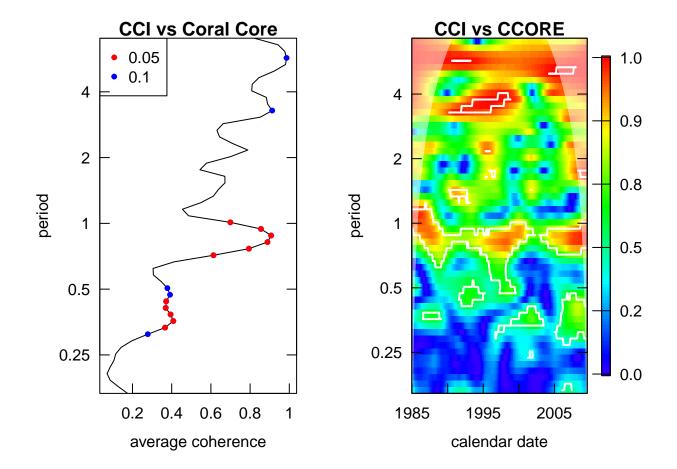




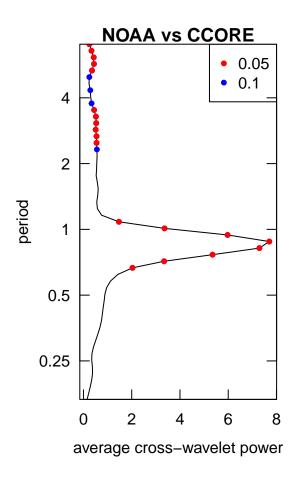


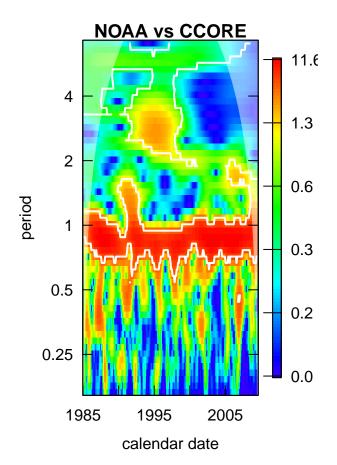


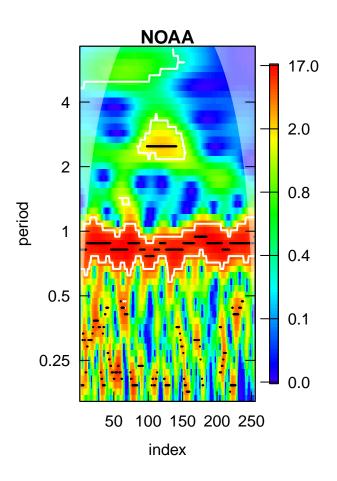


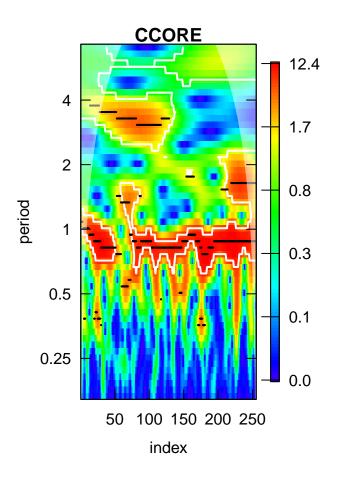


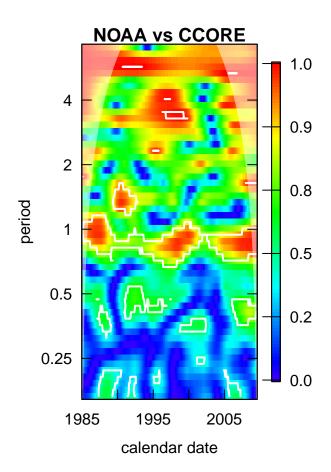
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

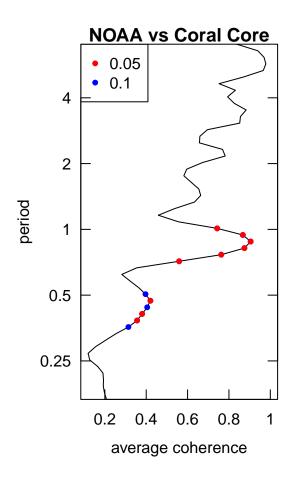


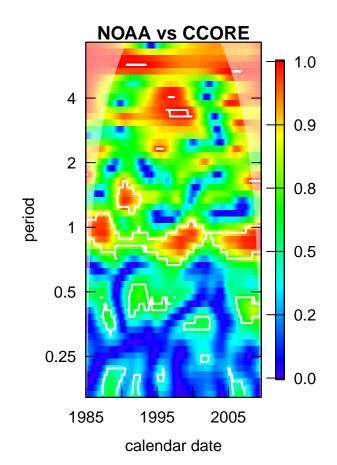


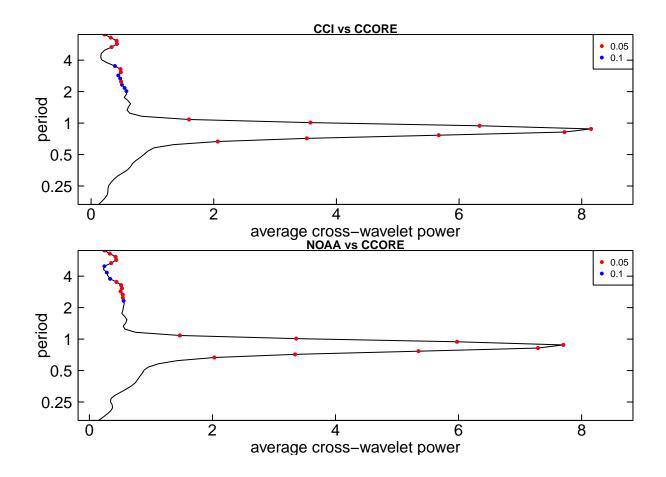


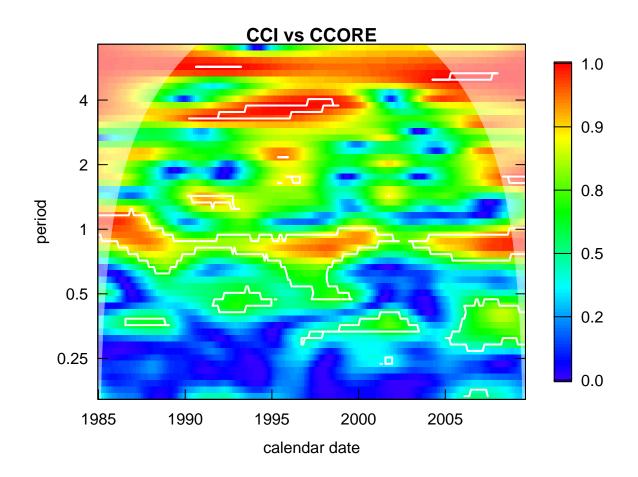


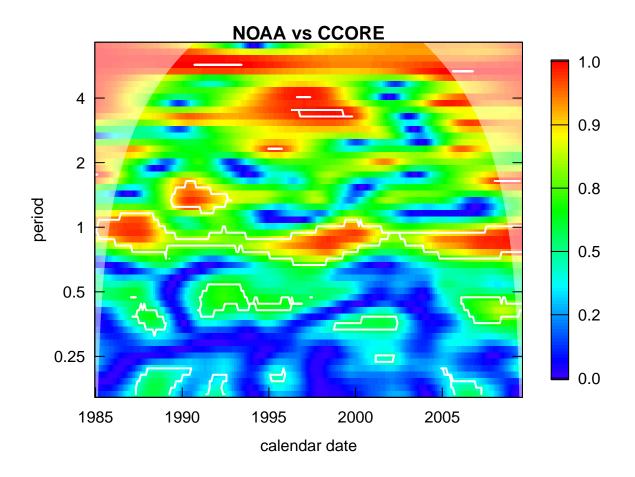






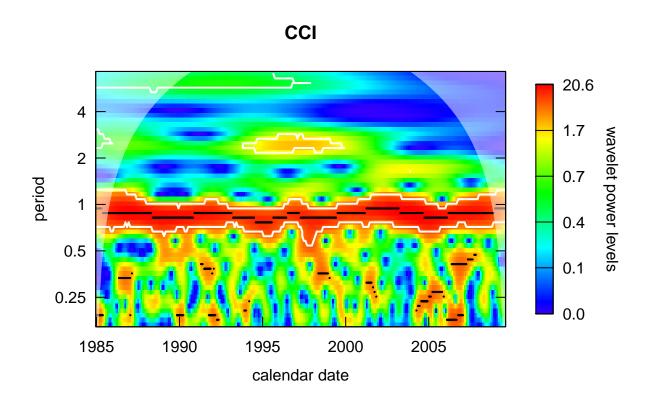


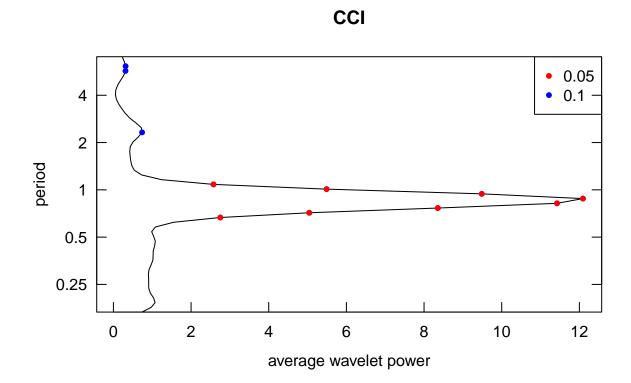


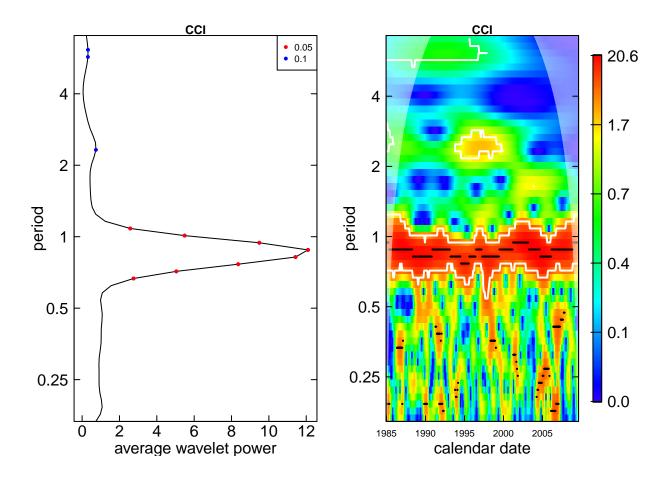


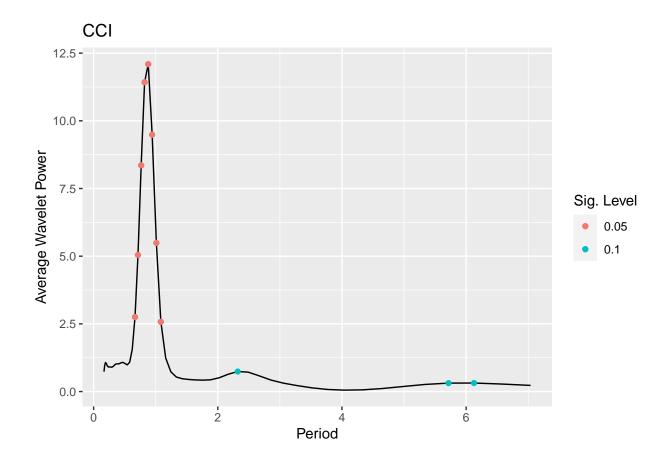
## DAR Long

```
## Smoothing the time series...
## Starting wavelet transformation...
## ... and simulations...
## |
```

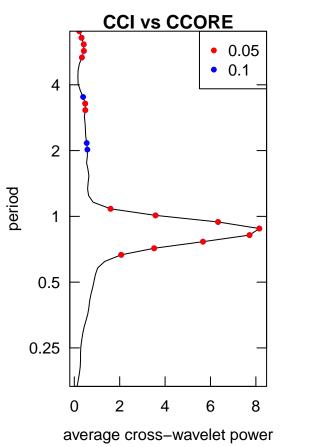


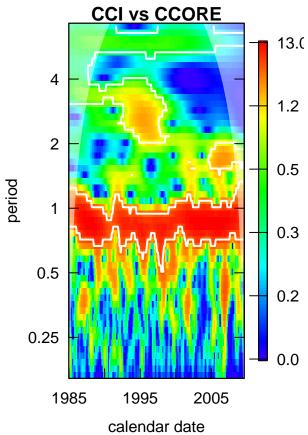


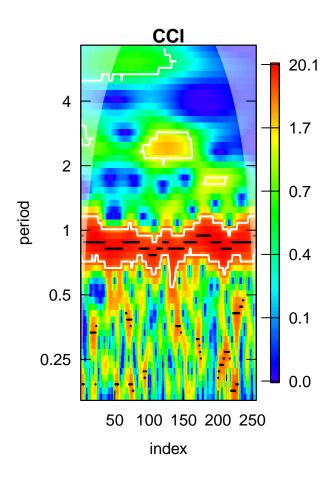


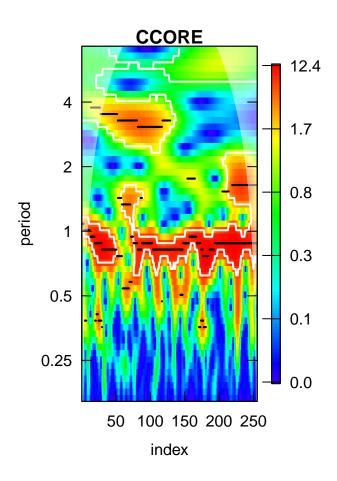


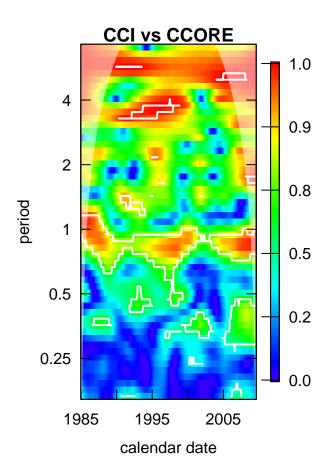
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

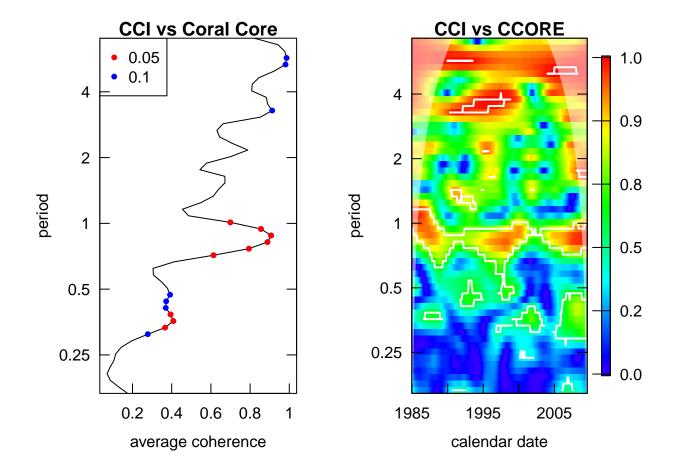




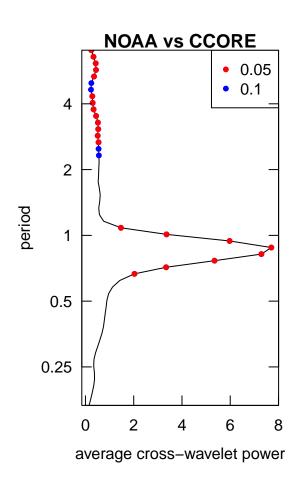


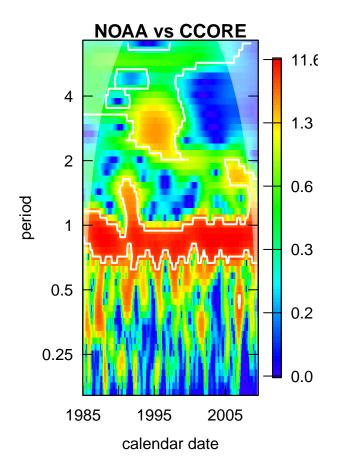


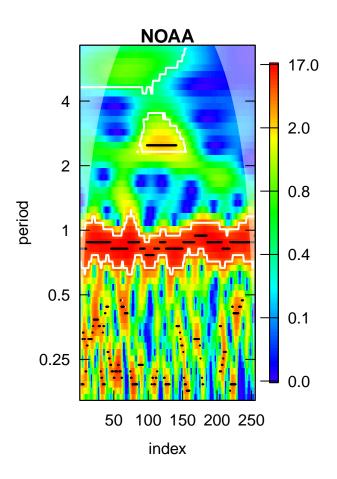


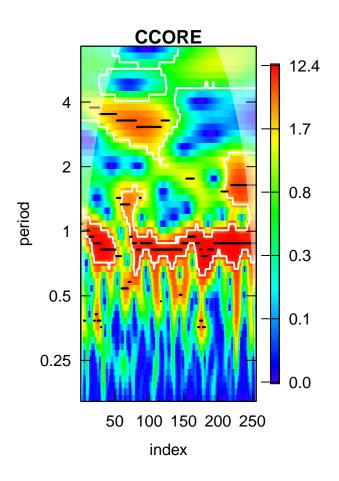


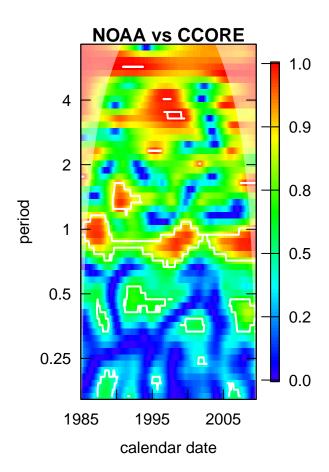
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

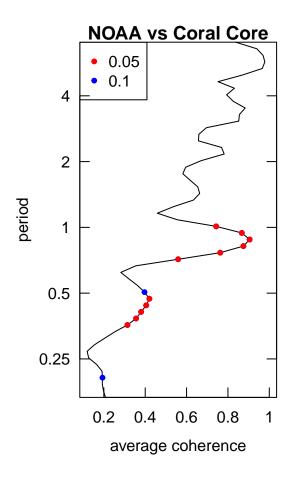


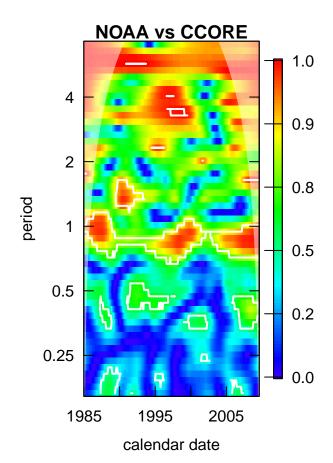


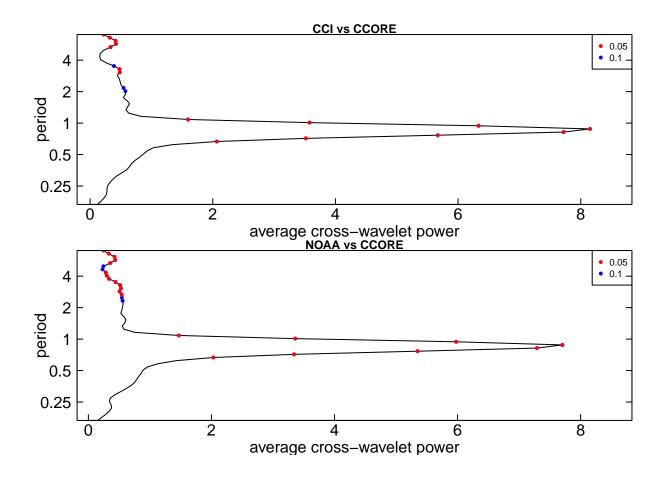


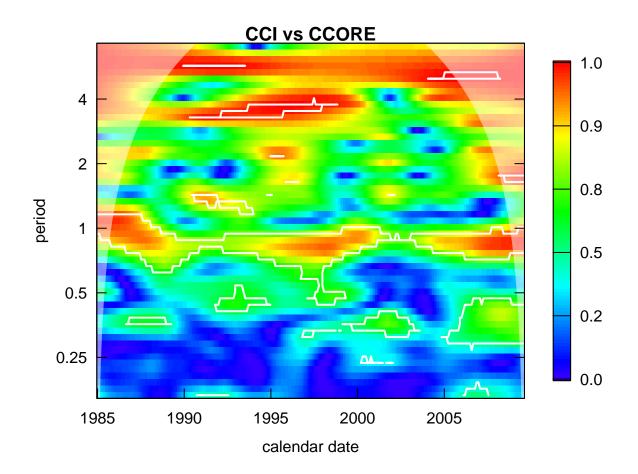


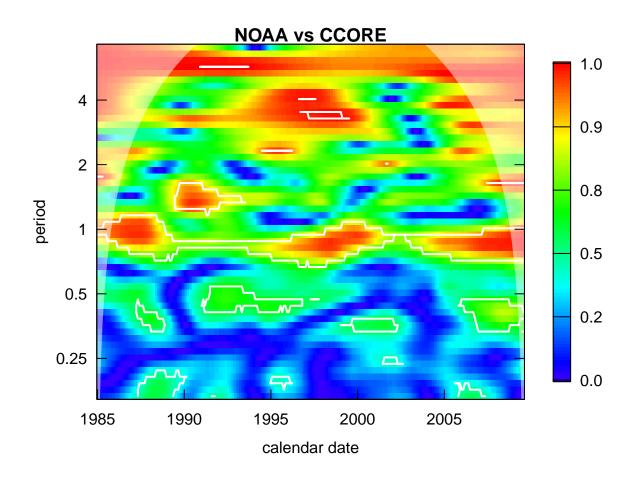






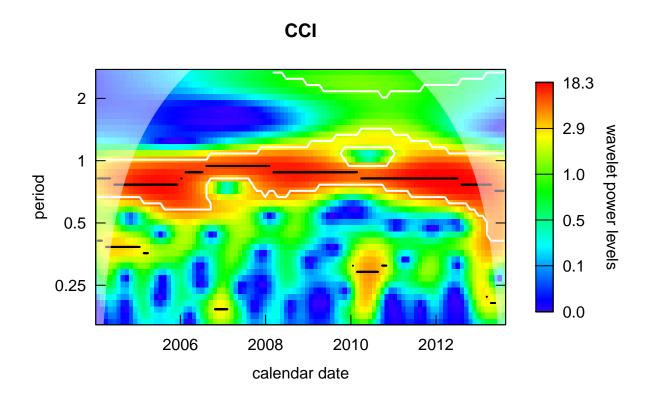


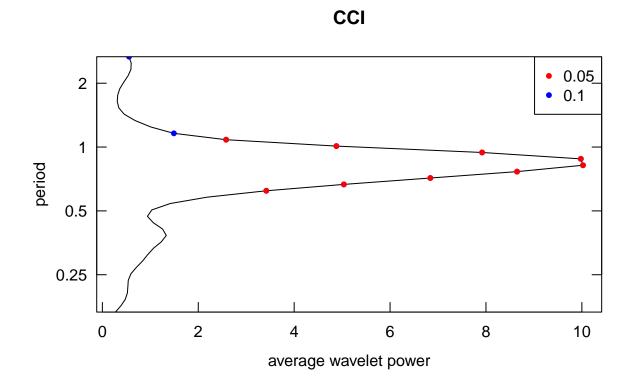


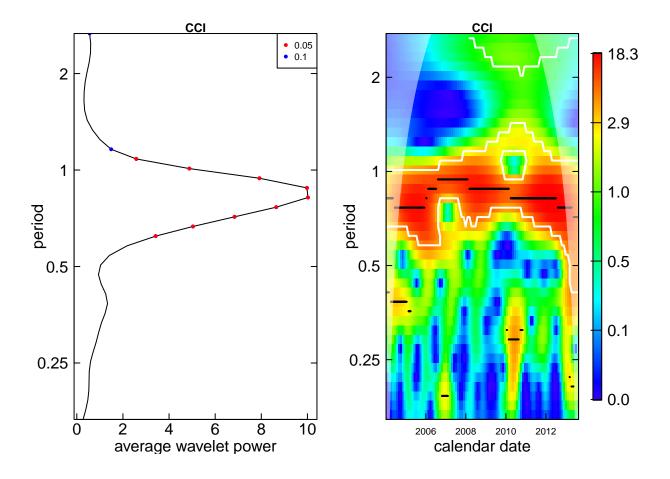


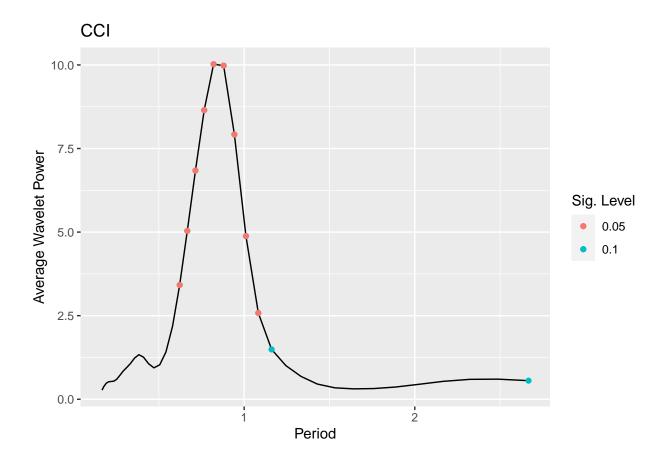
## Tantabiddi 13TNT

```
## Smoothing the time series...
## Starting wavelet transformation...
## ... and simulations...
## |
```

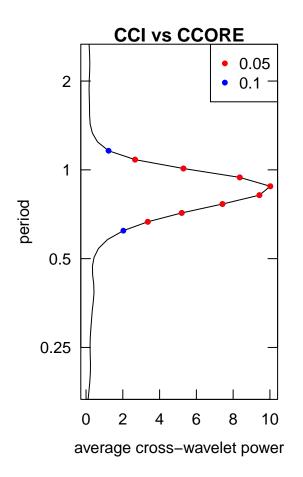


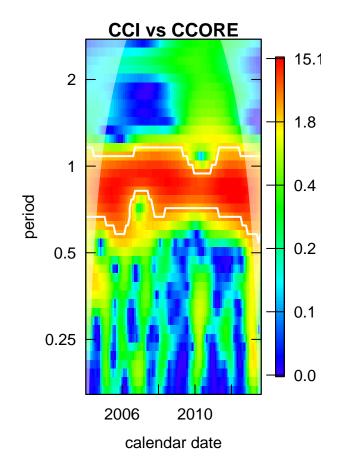


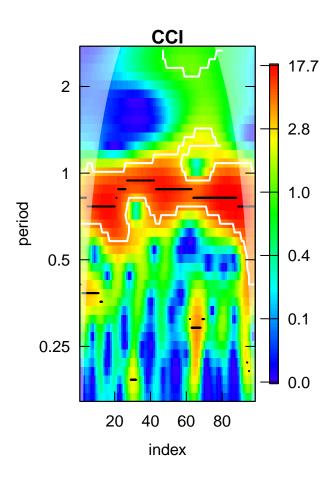


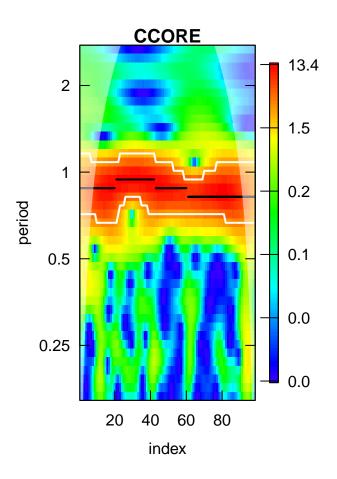


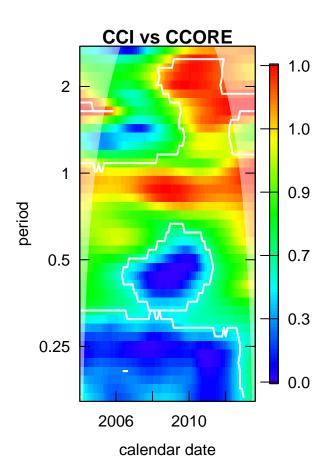
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

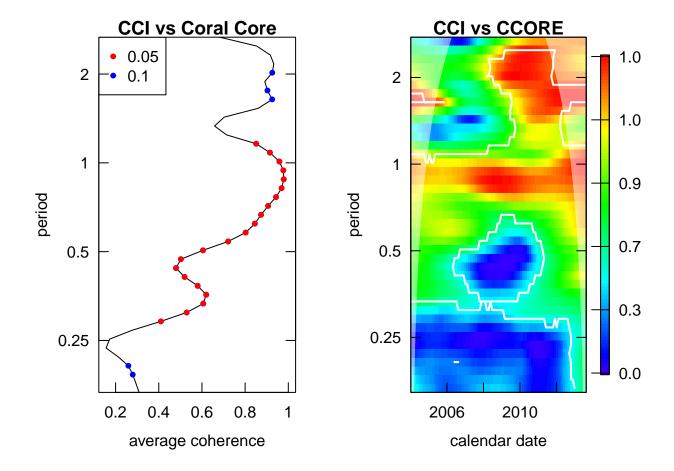




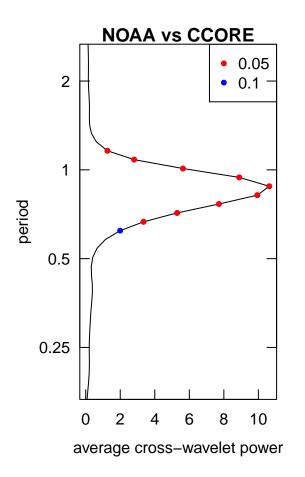


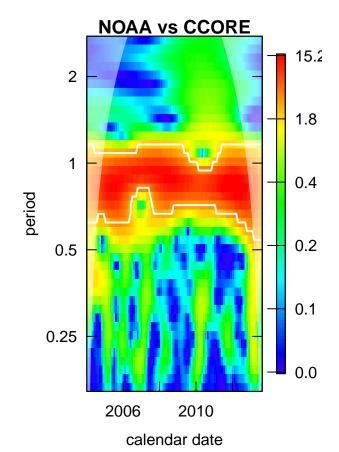


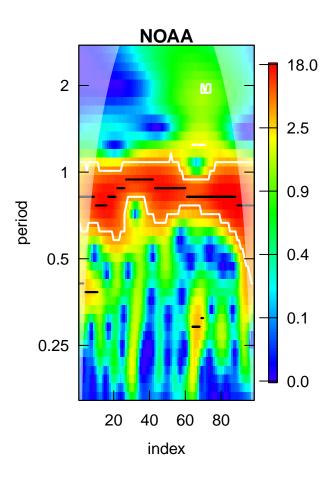


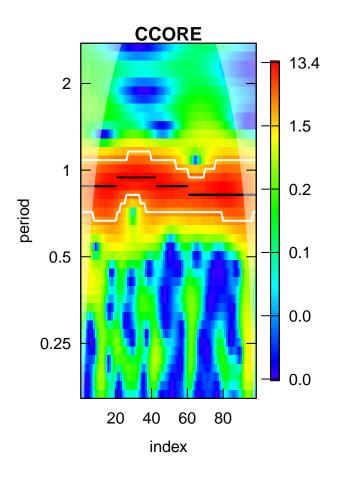


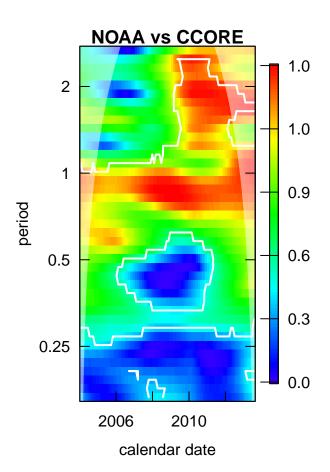
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

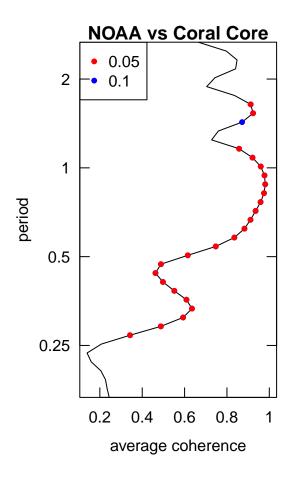


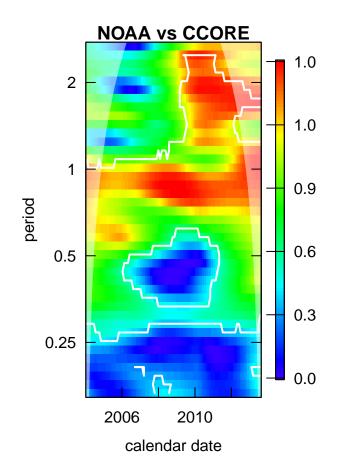


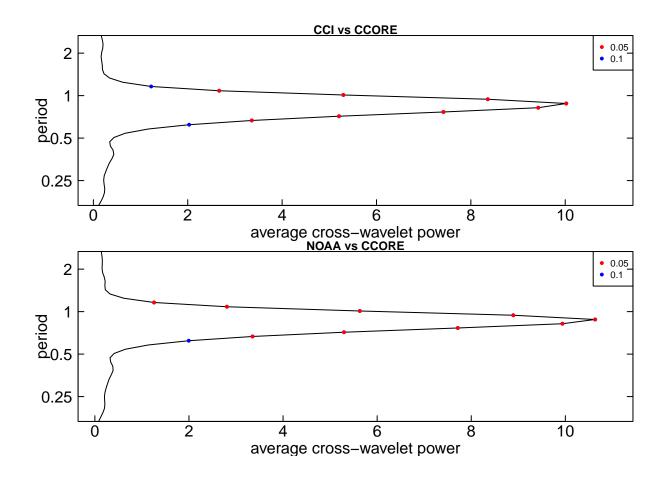


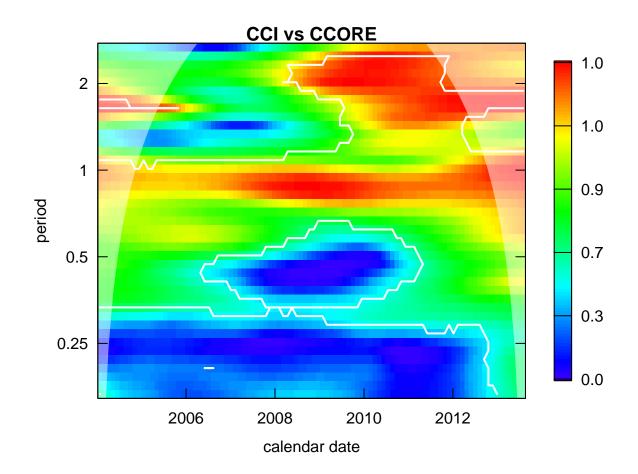


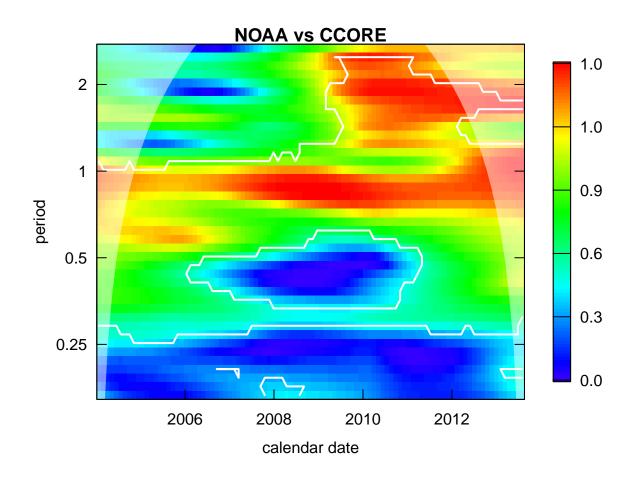






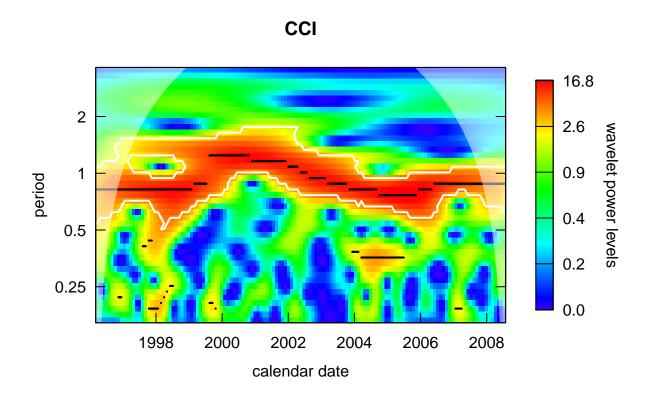


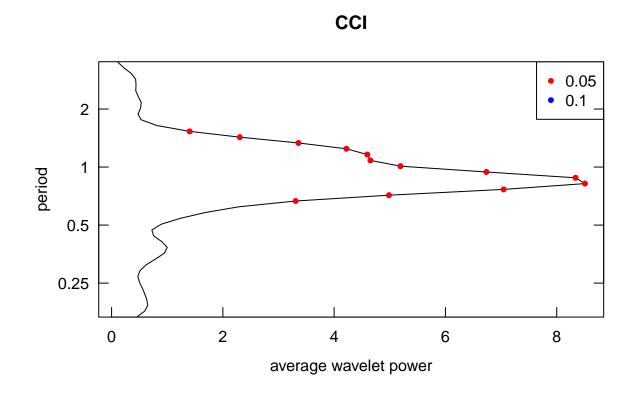


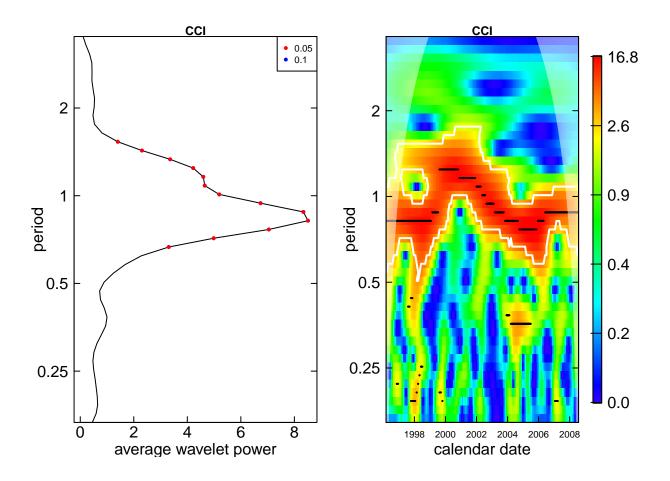


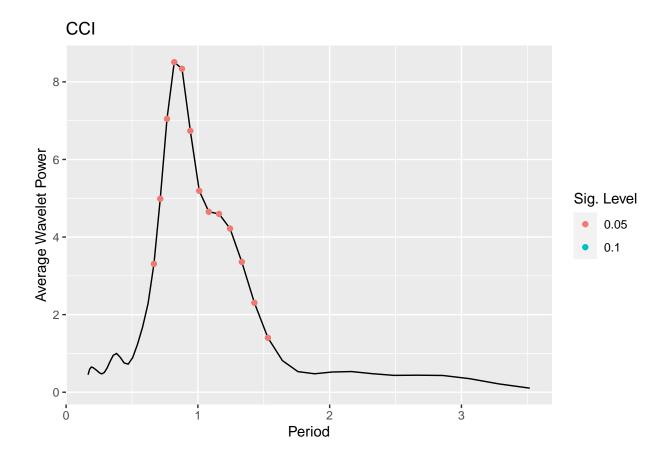
## Tantabiddi 08TNT

```
## Smoothing the time series...
## Starting wavelet transformation...
## ... and simulations...
## |
```

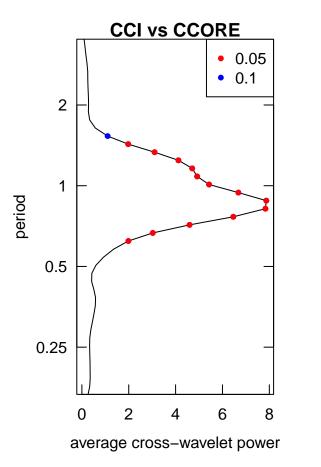


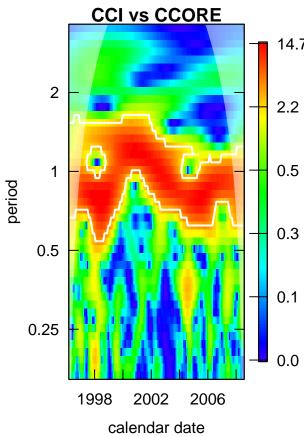


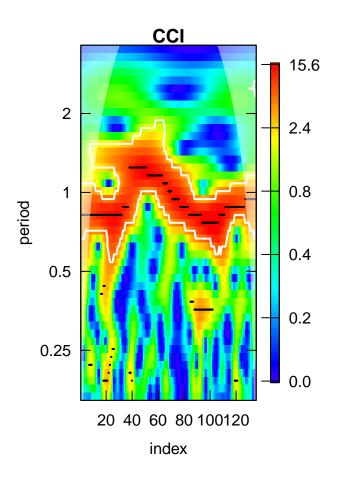


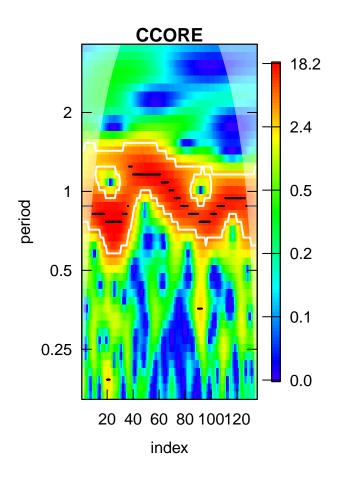


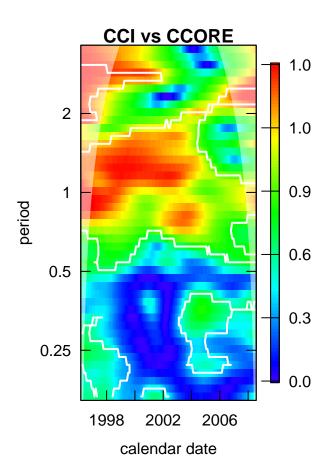
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

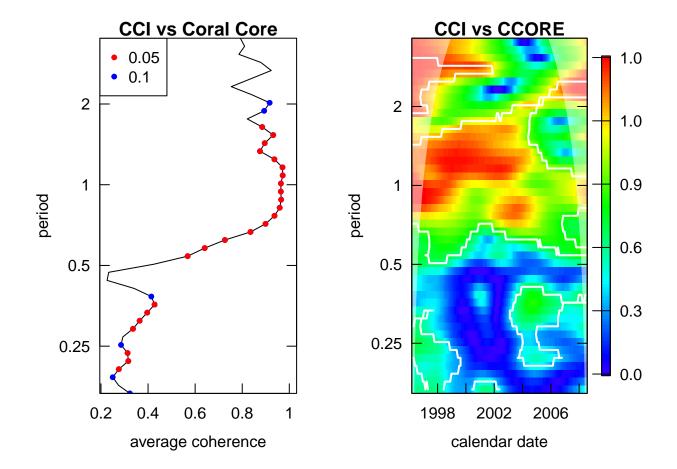




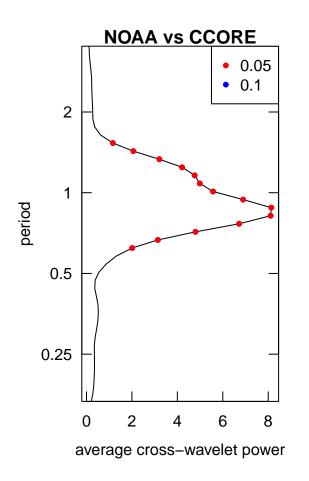


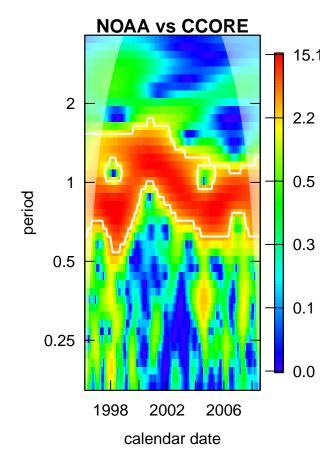


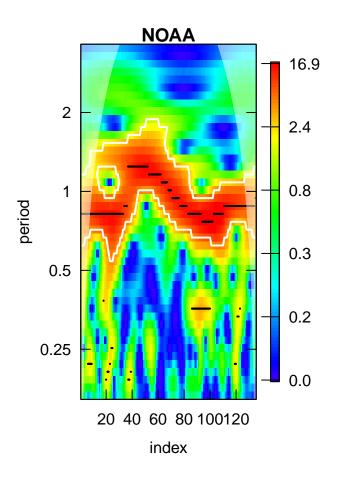


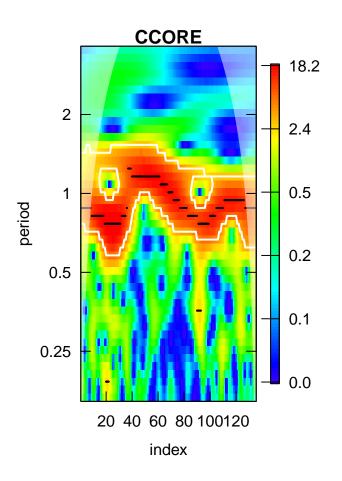


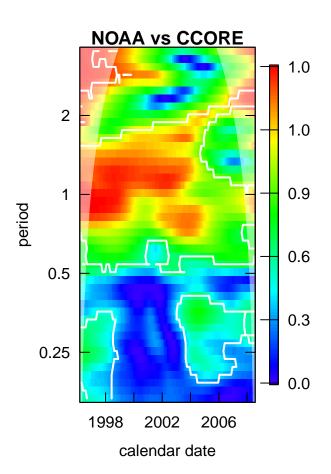
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

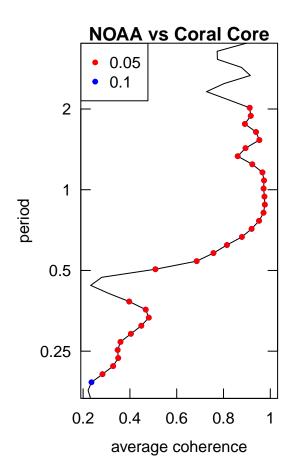


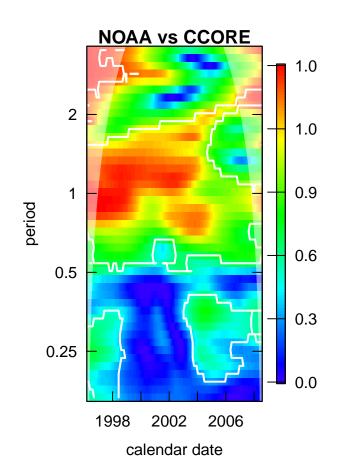


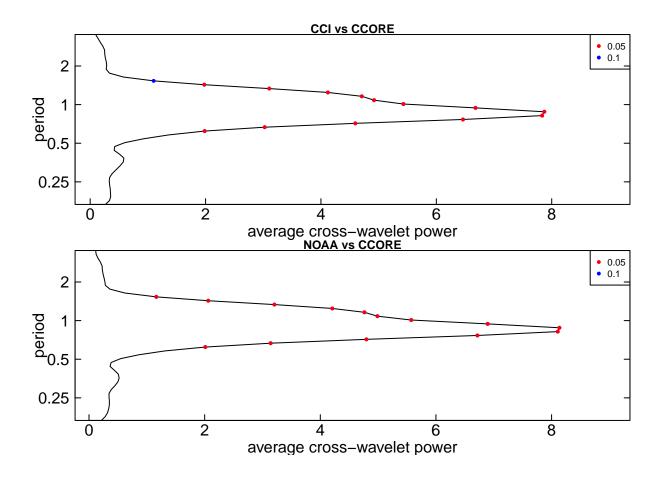


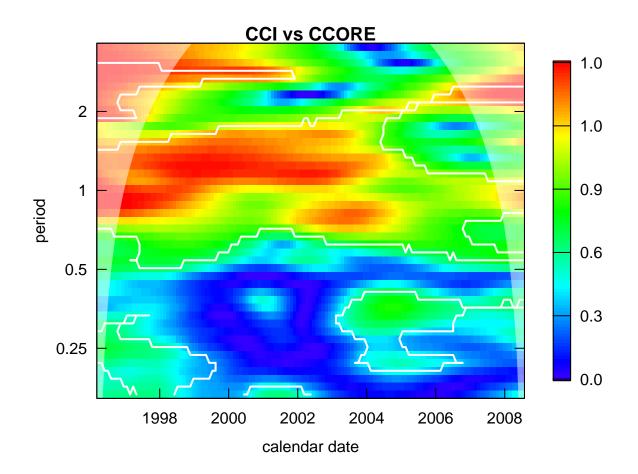


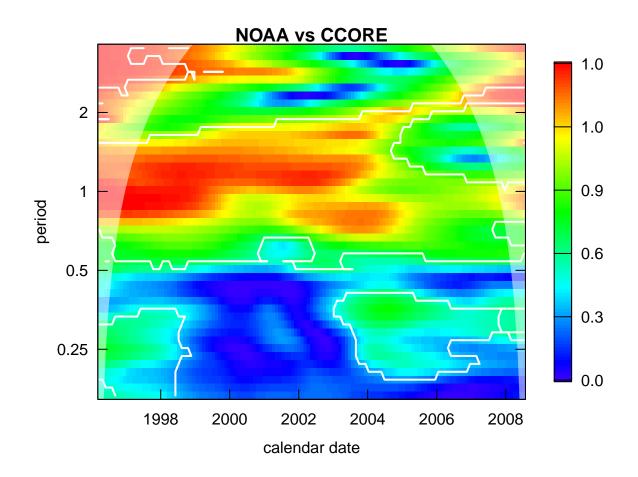










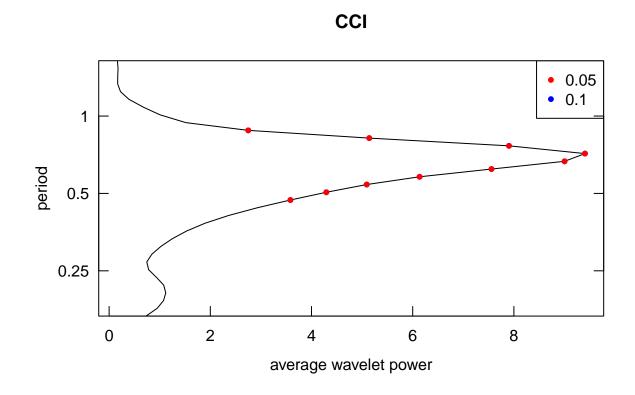


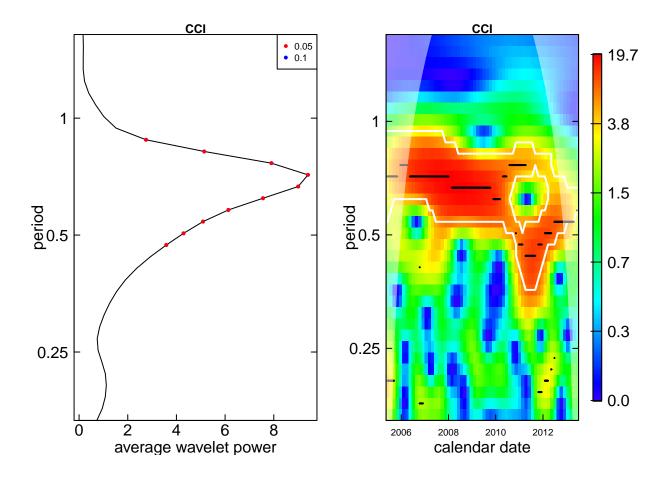
## Bundegi 13BND

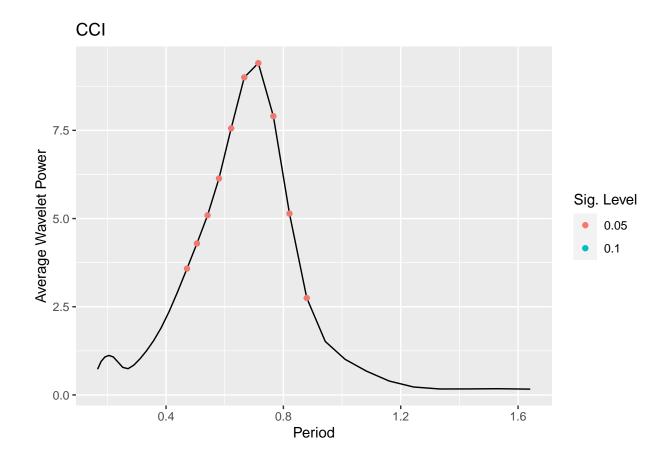
```
## Smoothing the time series...
## Starting wavelet transformation...
## ... and simulations...
## |
```

CCI 19.7 1 3.8 wavelet power levels 1.5 period 0.5 0.7 0.3 0.25 0.0 2008 2006 2010 2012

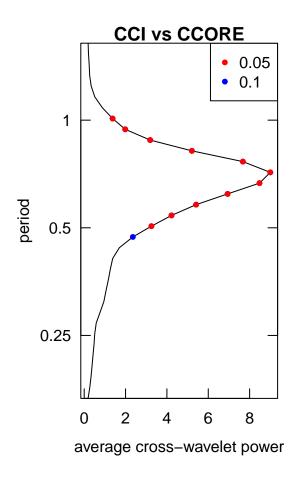
calendar date

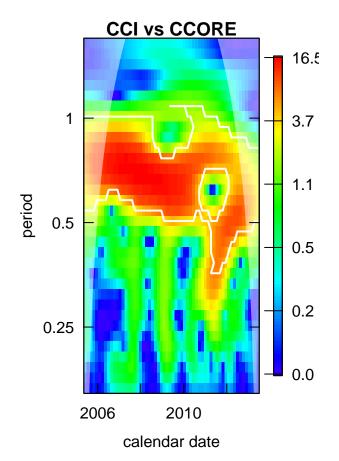


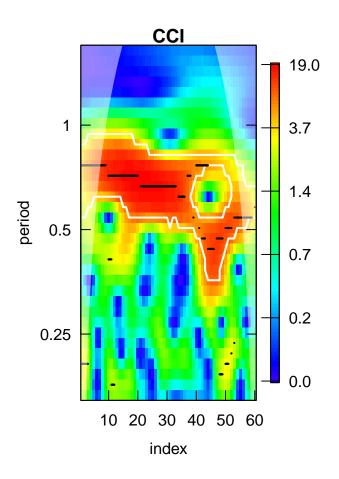


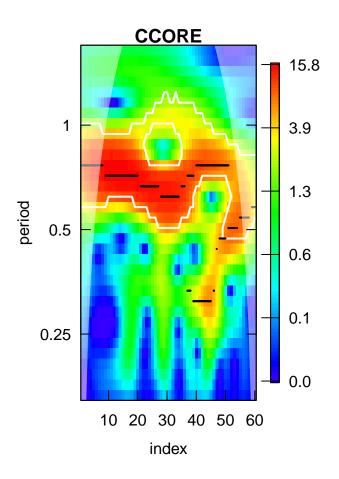


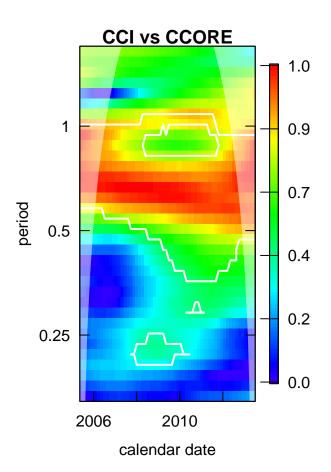
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

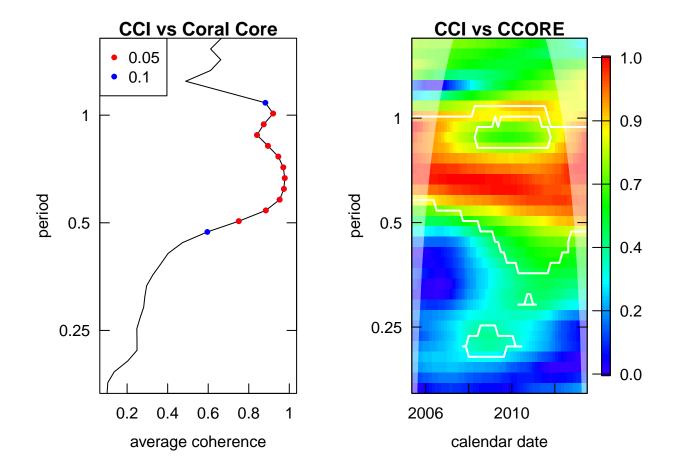




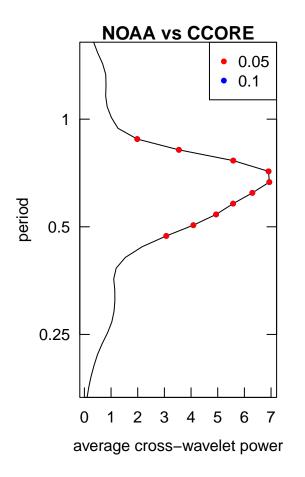


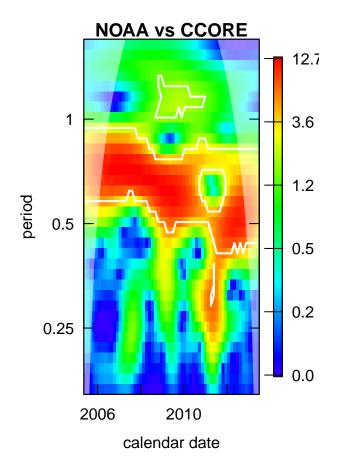


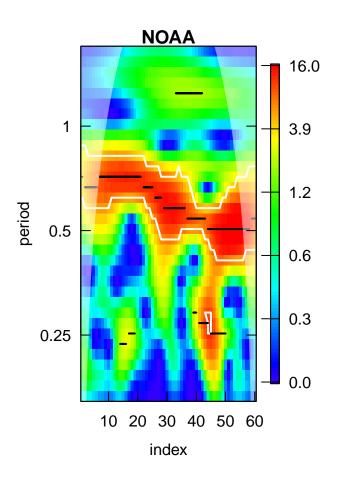


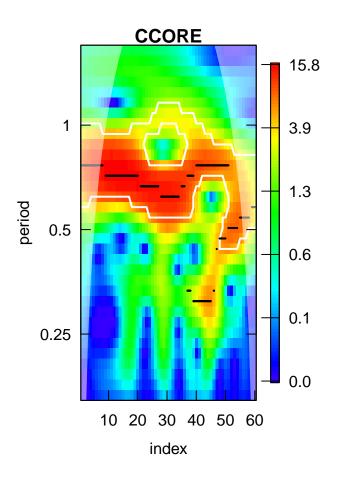


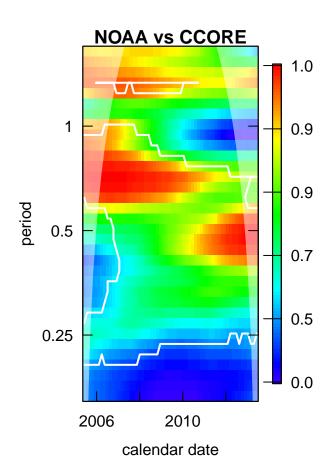
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

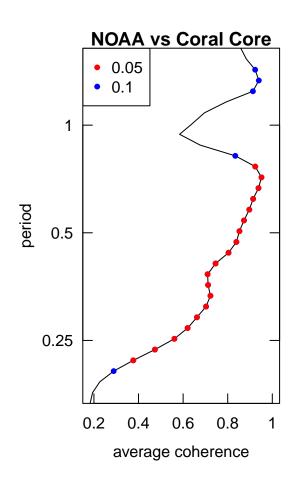


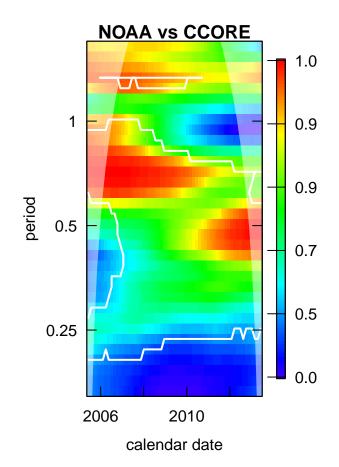


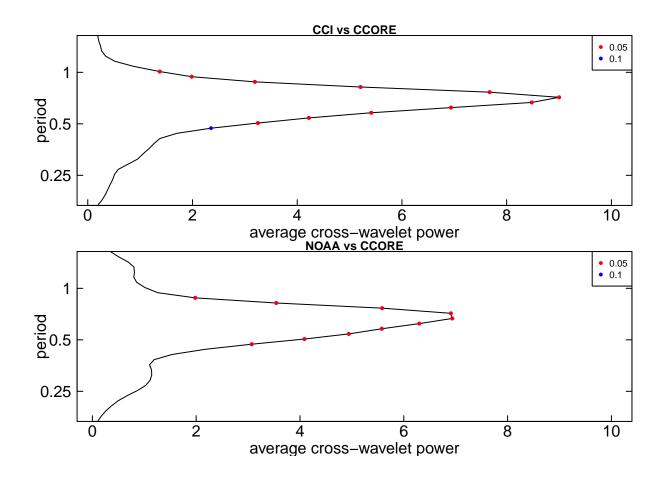


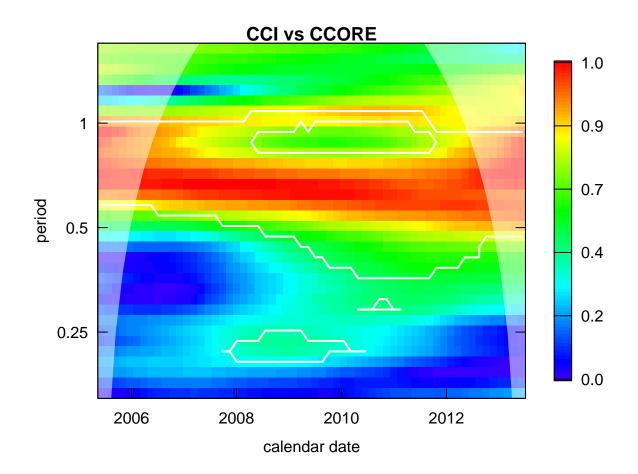


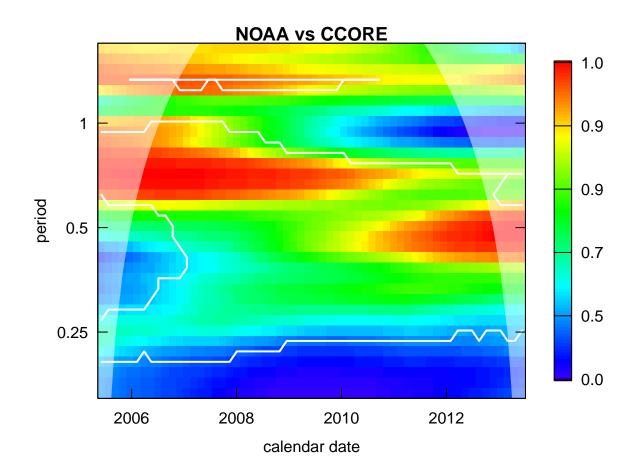






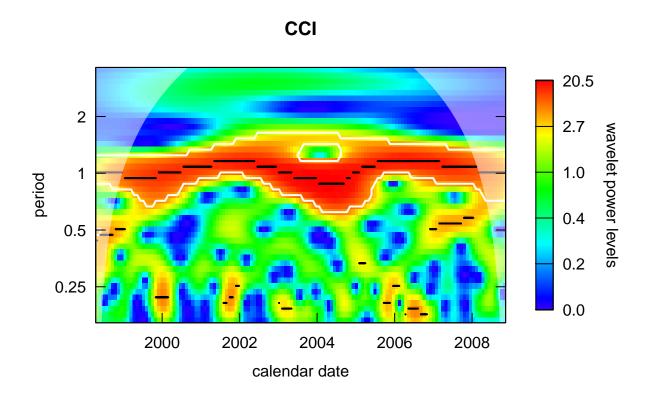


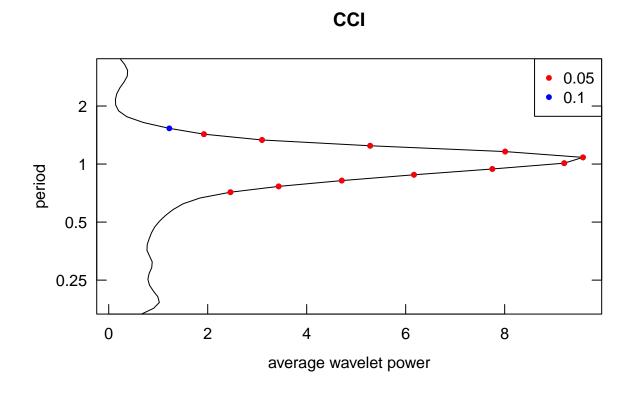


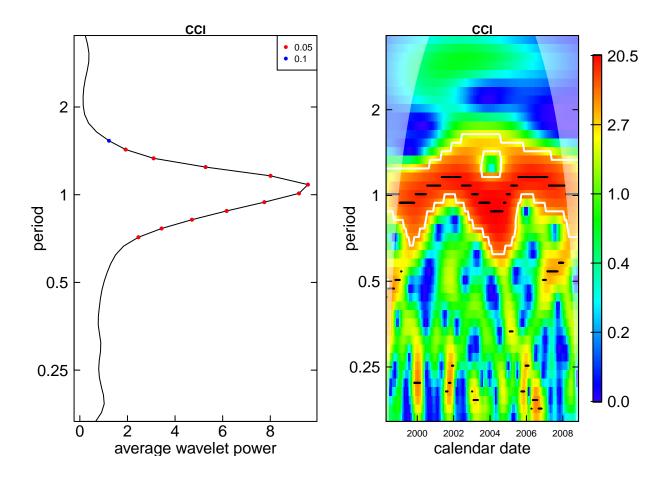


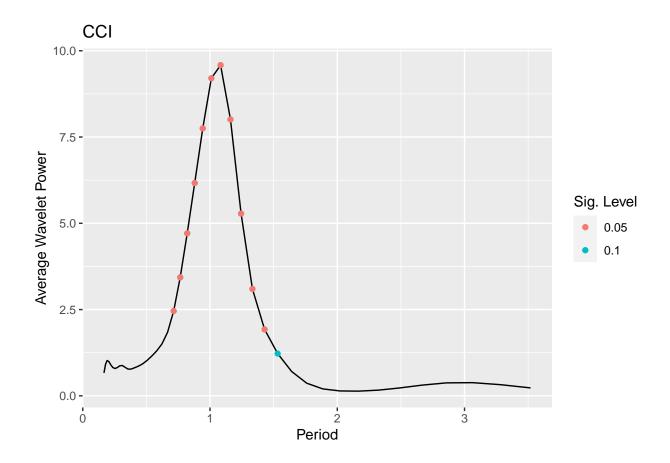
## Bundegi 08BND

```
## Smoothing the time series...
## Starting wavelet transformation...
## ... and simulations...
## |
```

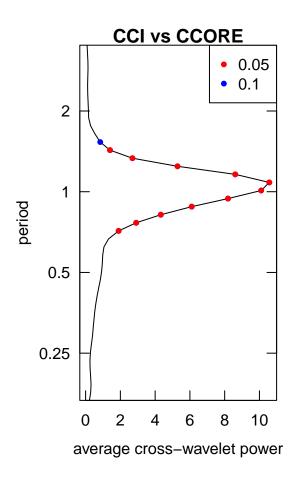


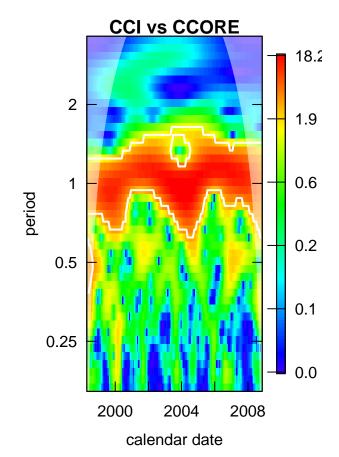


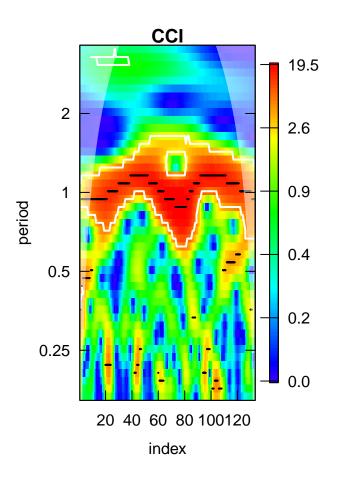


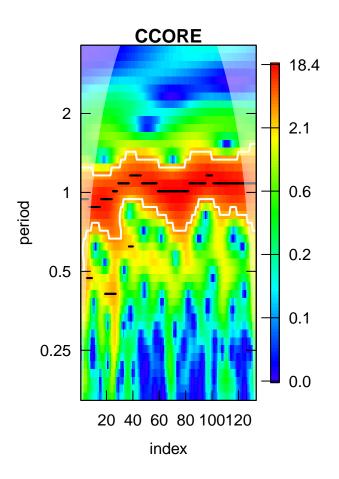


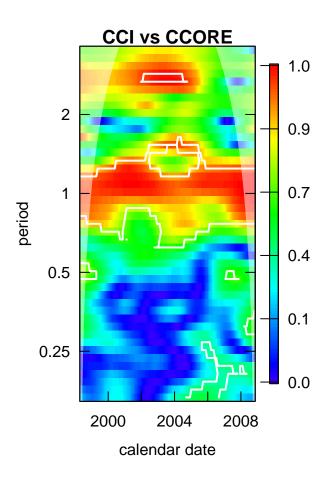
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

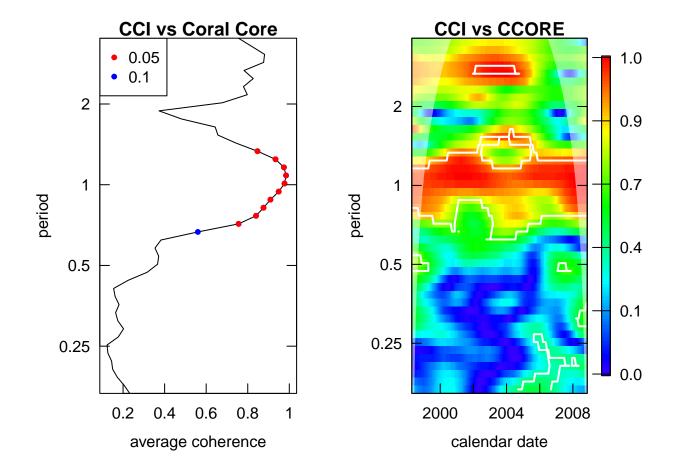




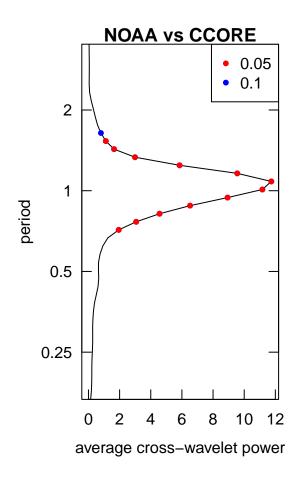


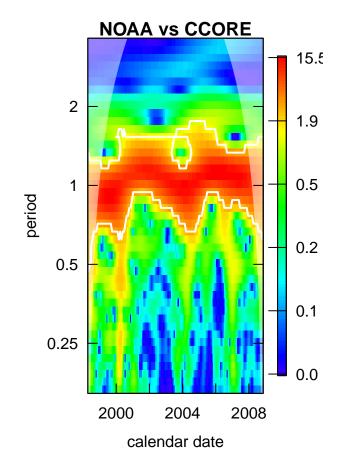


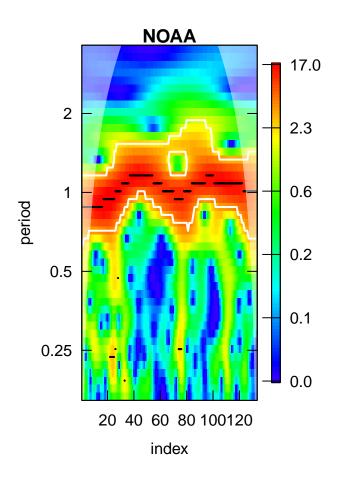


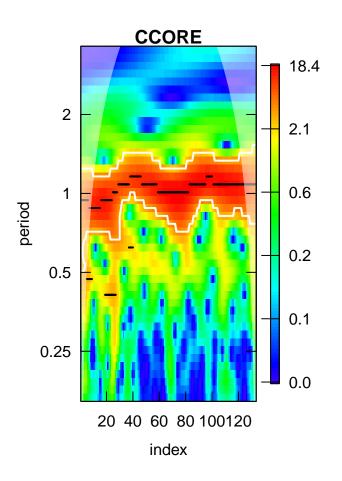


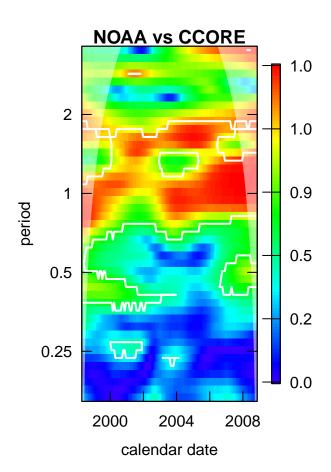
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

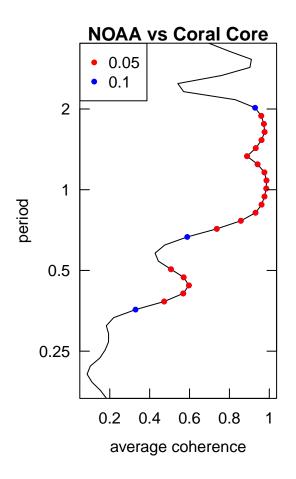


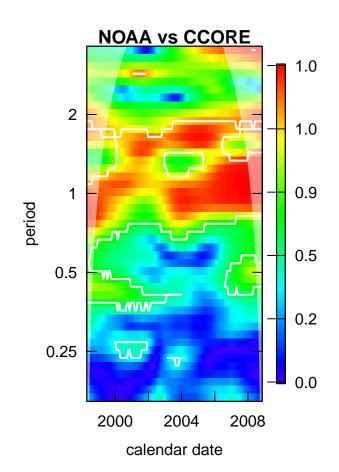


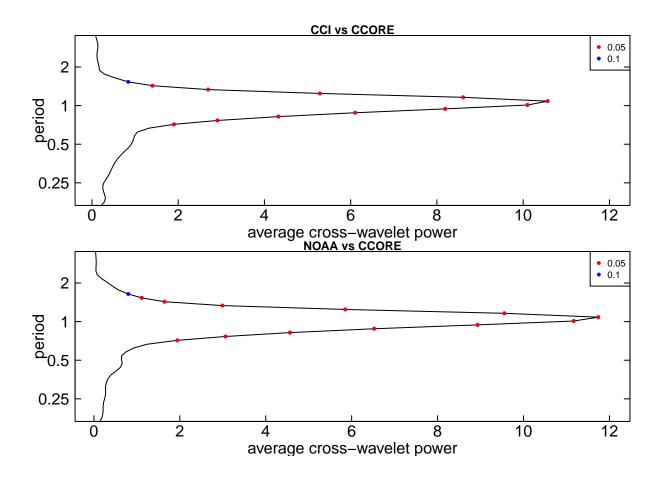


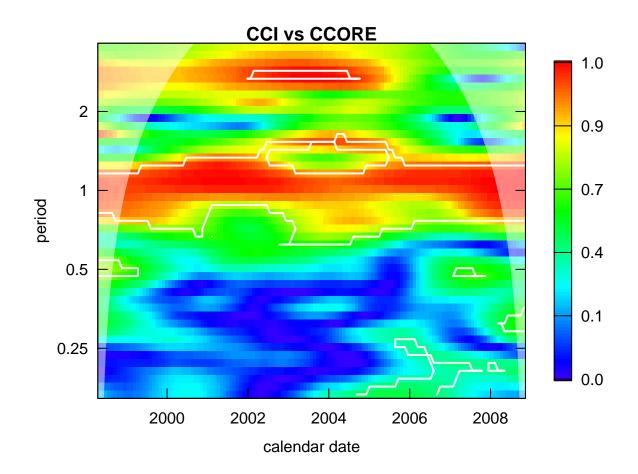


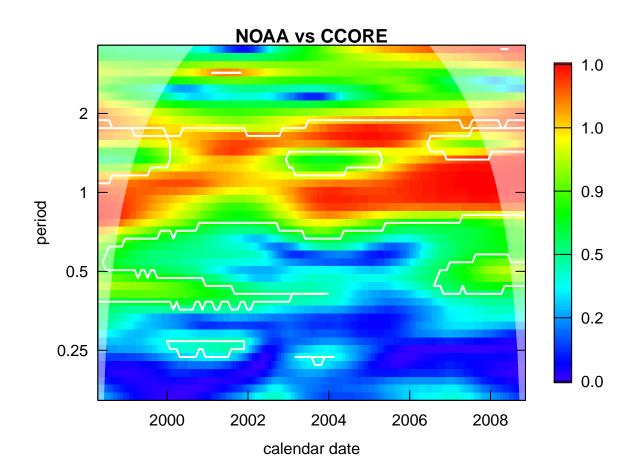












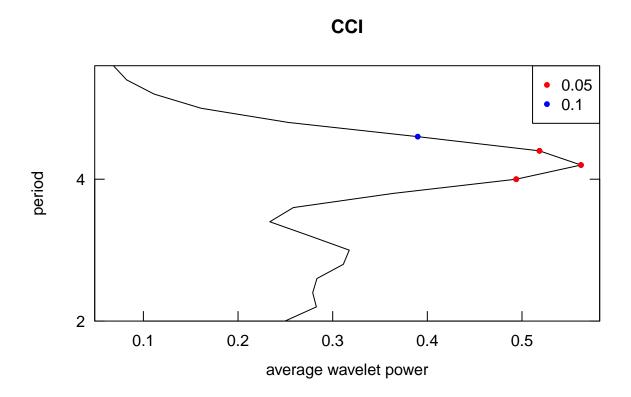
## Annual Coral Core Proxy Sites

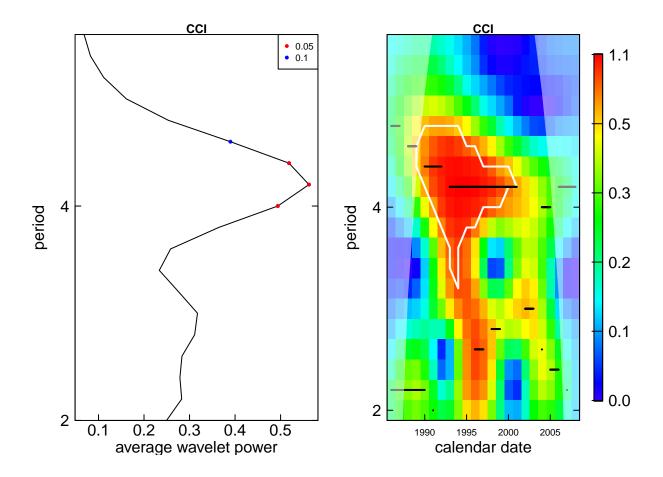
## TNT07C

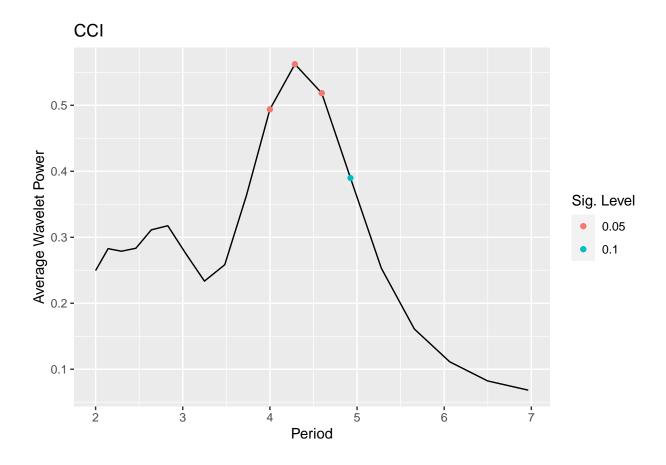
```
## Smoothing the time series...
## Starting wavelet transformation...
## ... and simulations...
## |
```

CCI

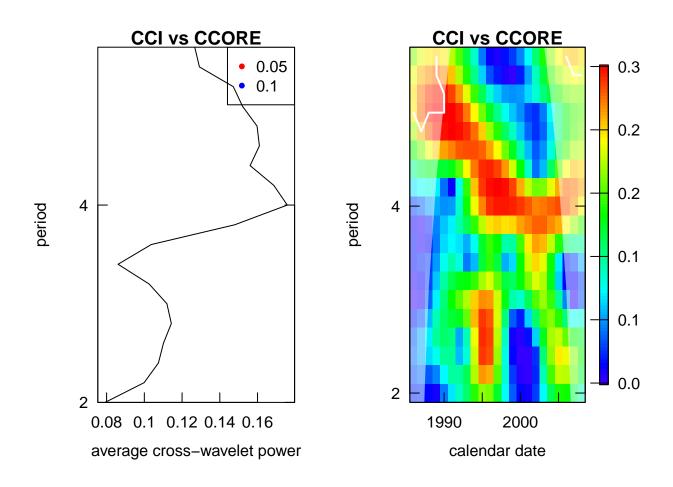
| Variet power levels | 0.1 | 0.5 | 0.3 | 0.2 | 0.2 | 0.1 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0

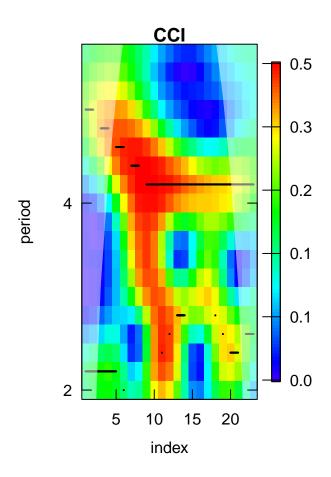


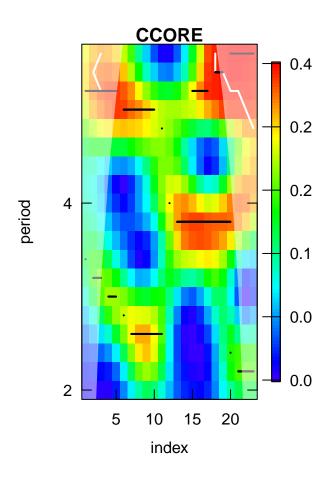


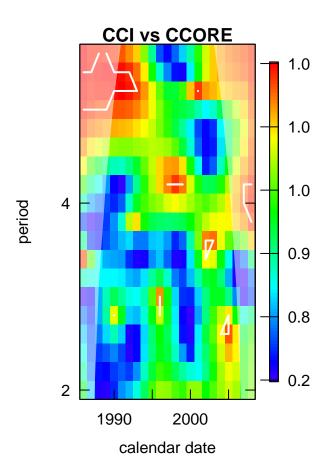


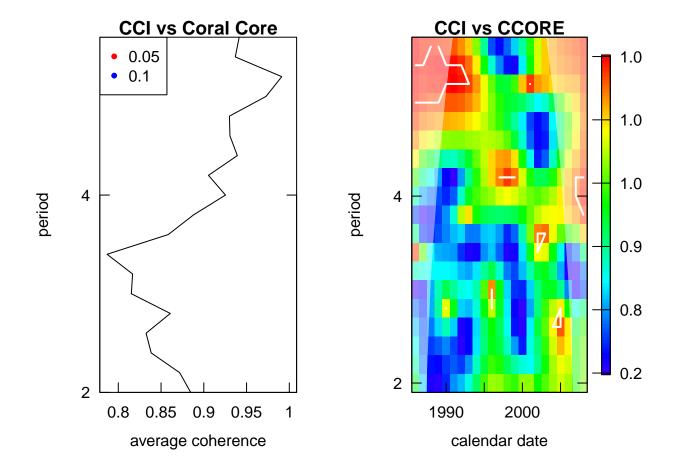
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```



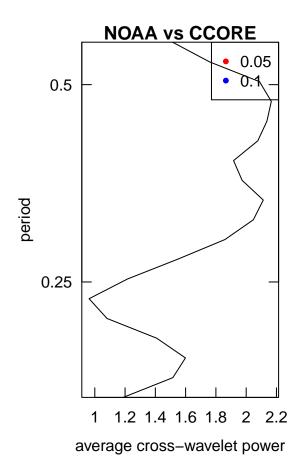


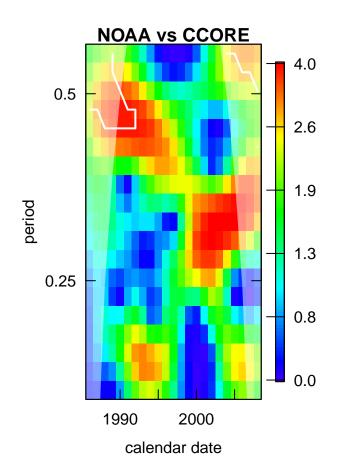


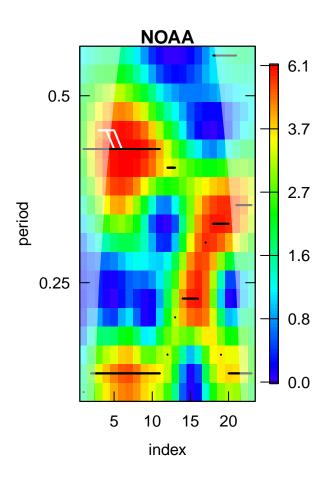


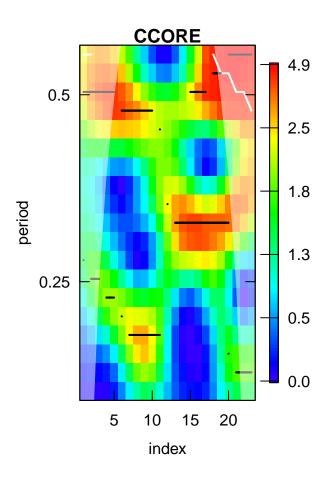


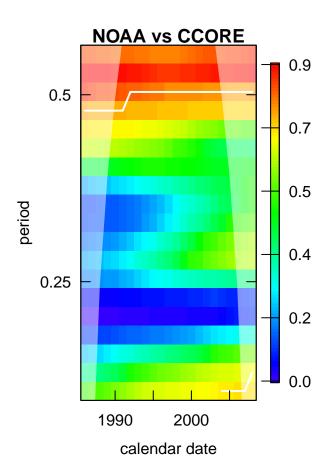
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

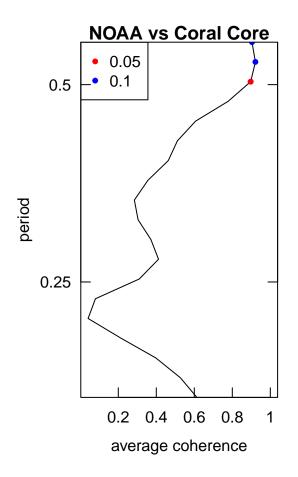


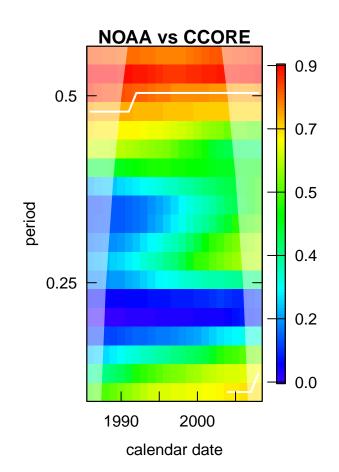


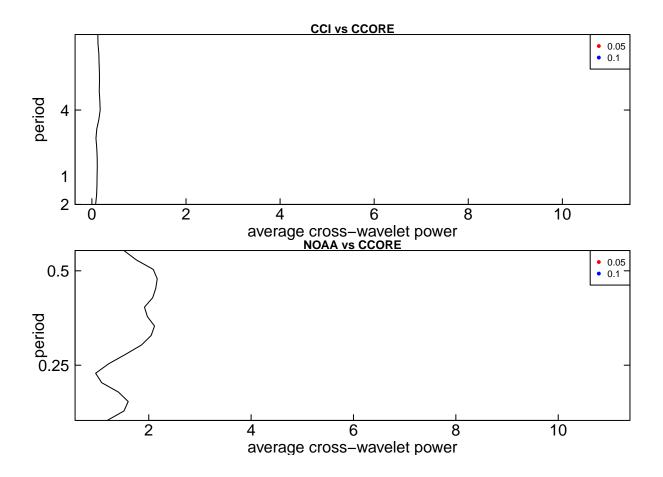


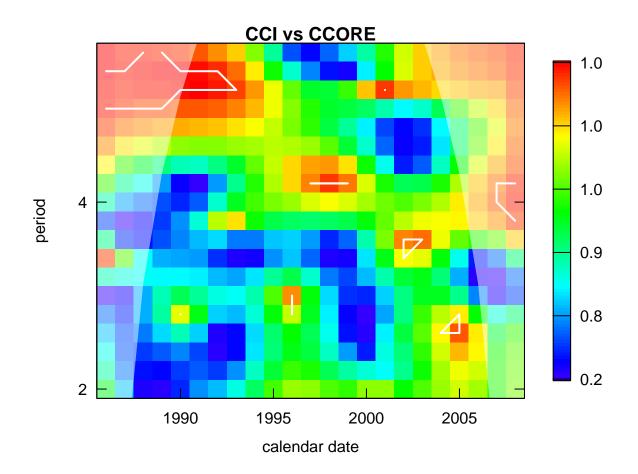


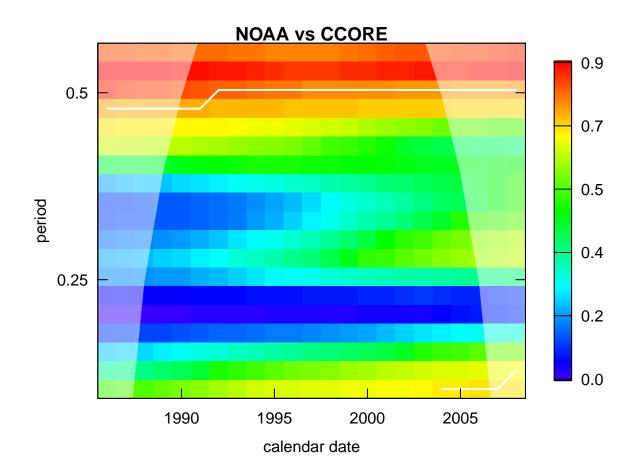






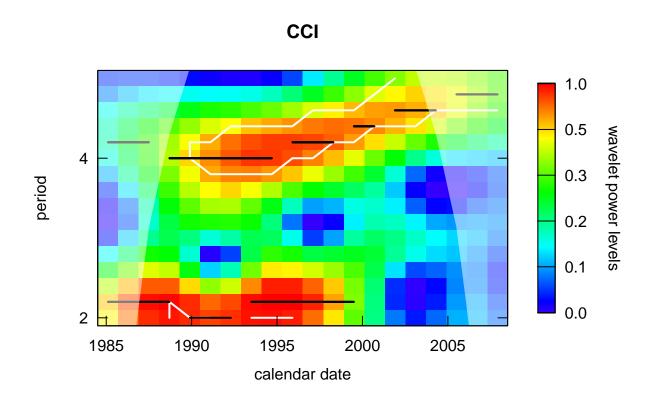


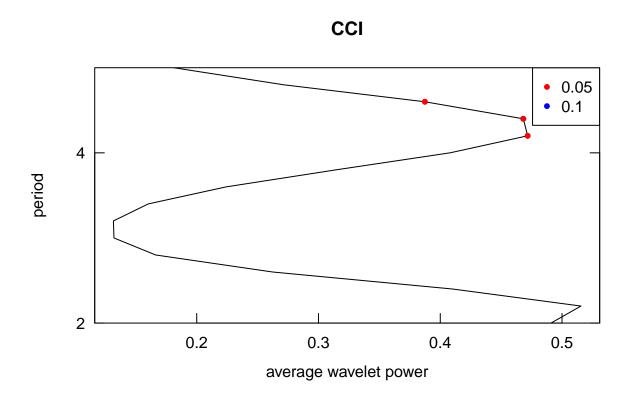


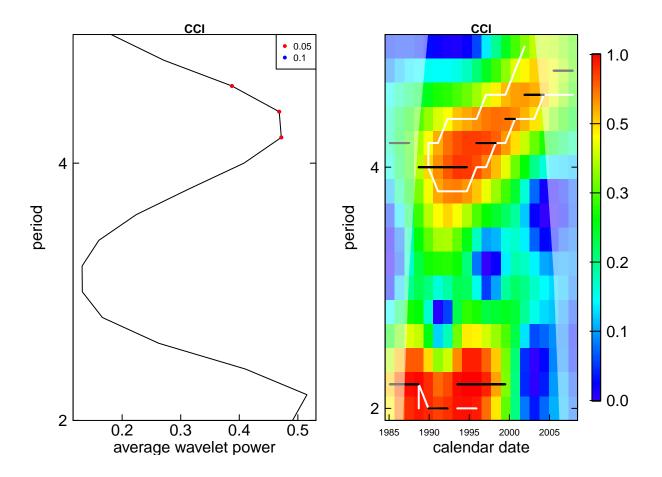


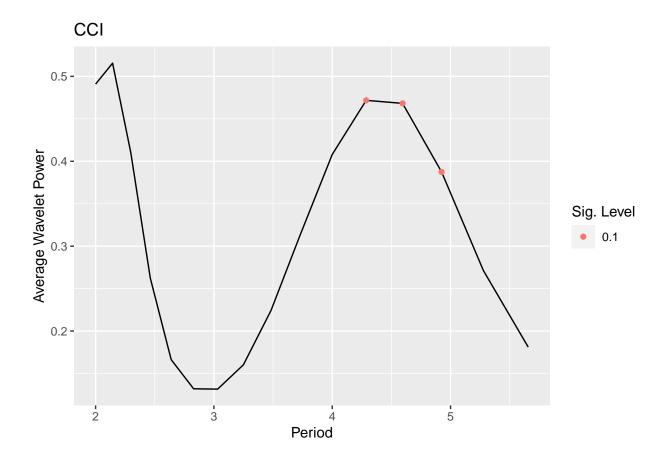
## BUN05A

```
## Smoothing the time series...
## Starting wavelet transformation...
## ... and simulations...
## |
```

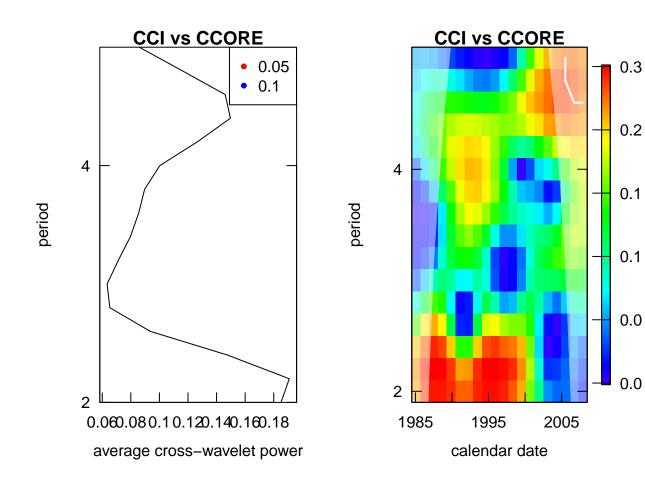


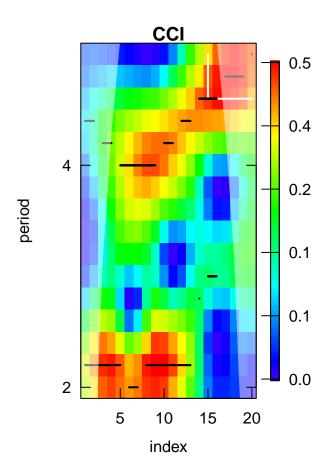


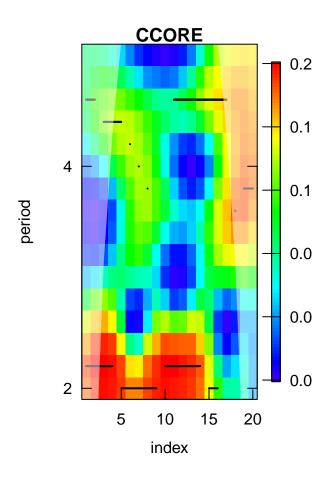


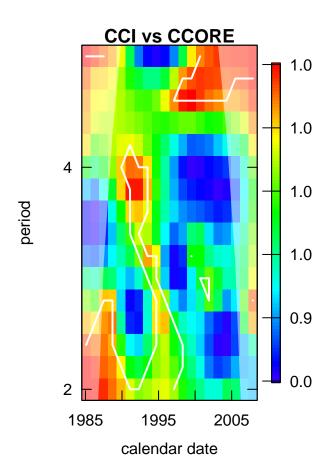


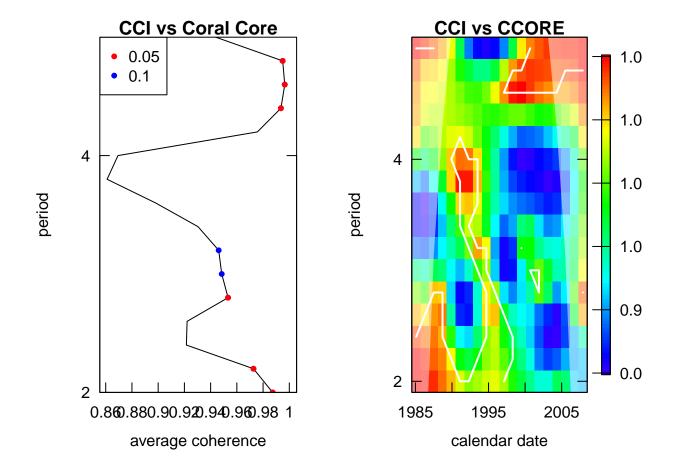
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```



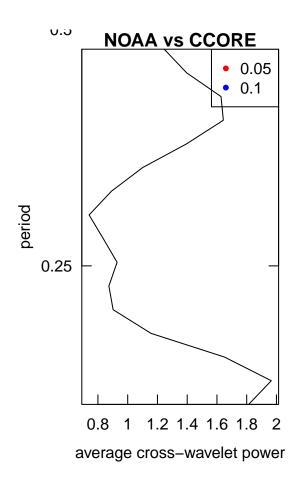


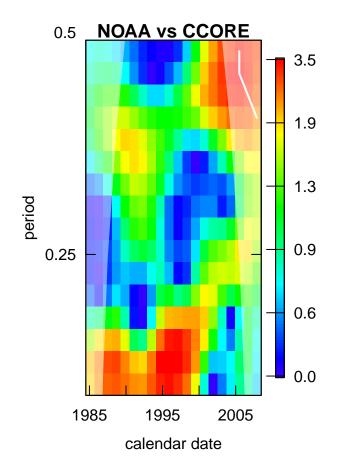


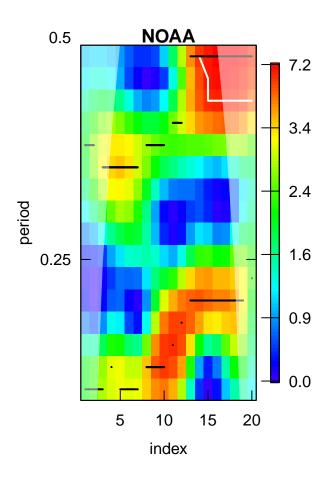


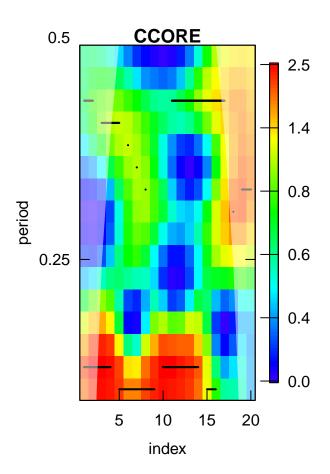


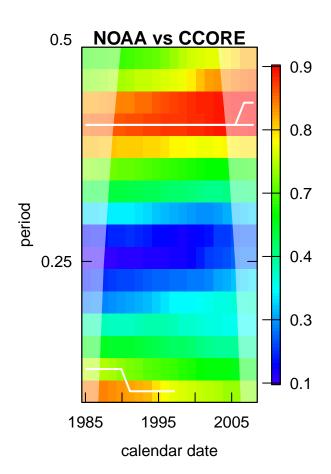
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

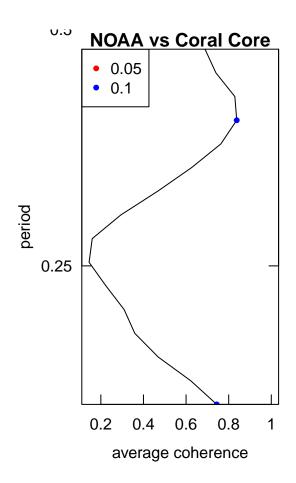


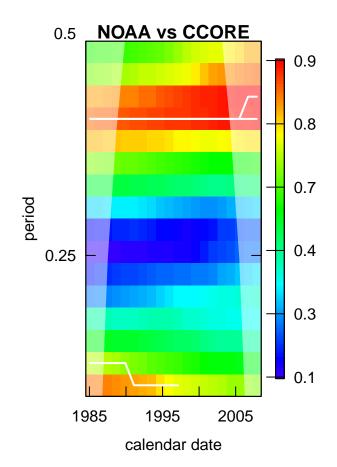


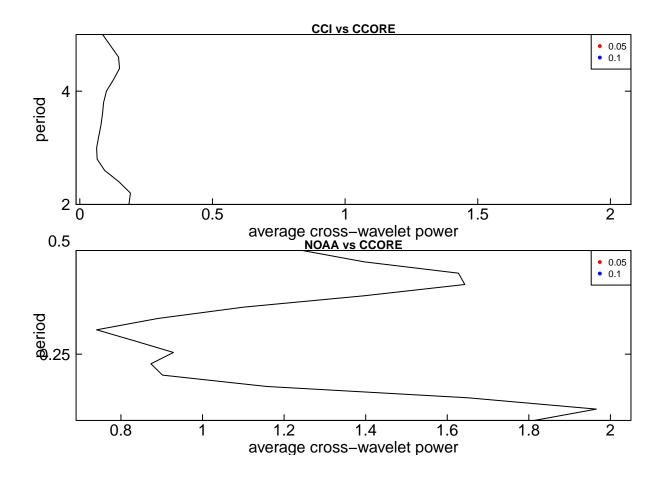


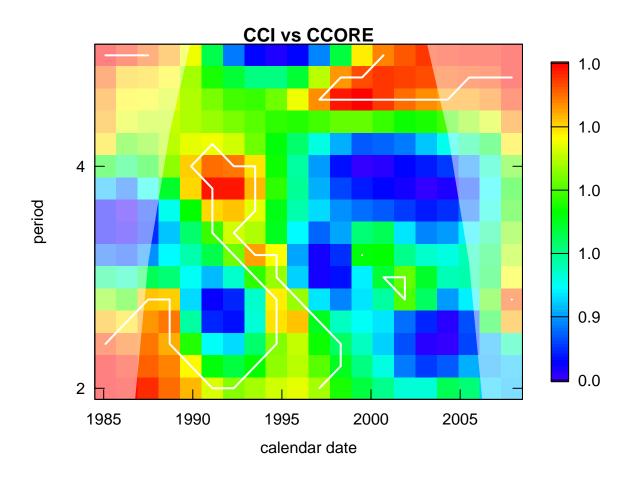


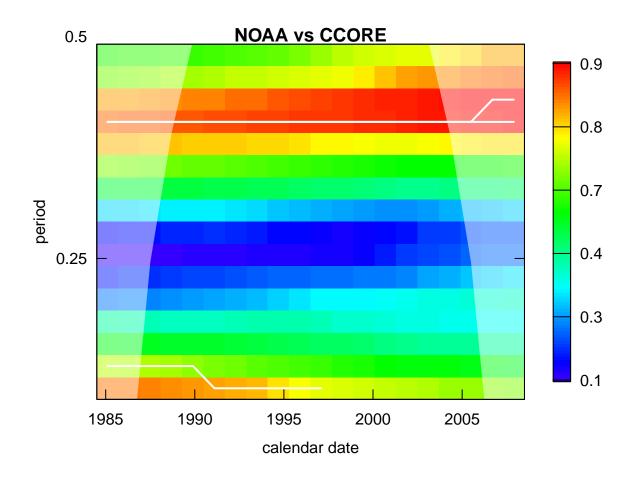






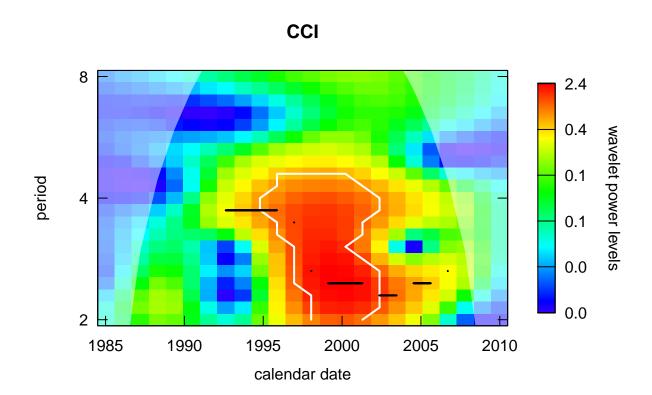


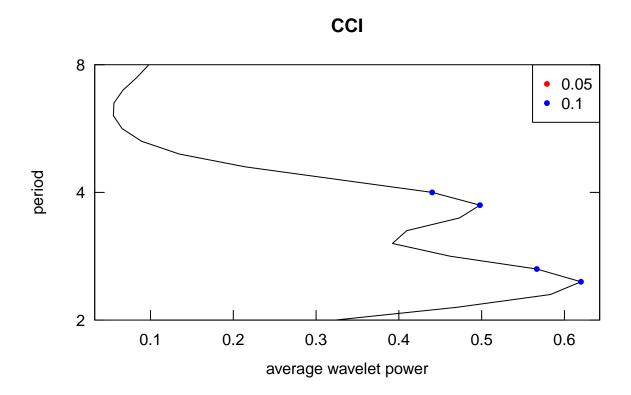


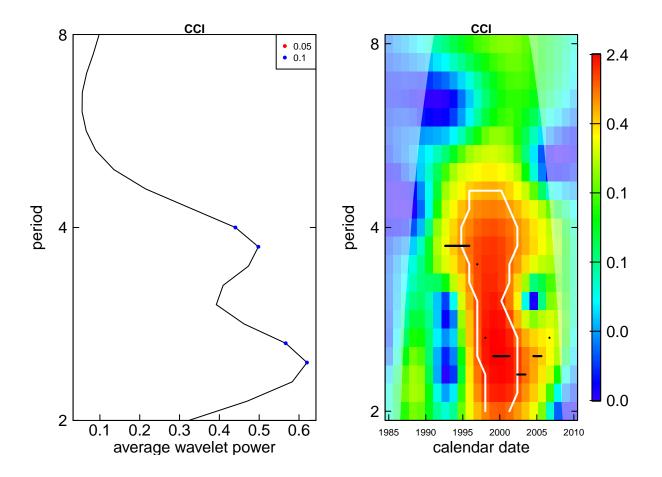


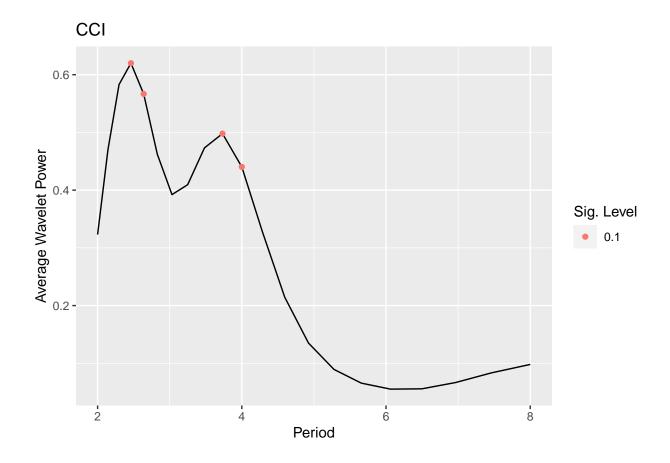
## HAB05B

```
## Smoothing the time series...
## Starting wavelet transformation...
## ... and simulations...
## |
```

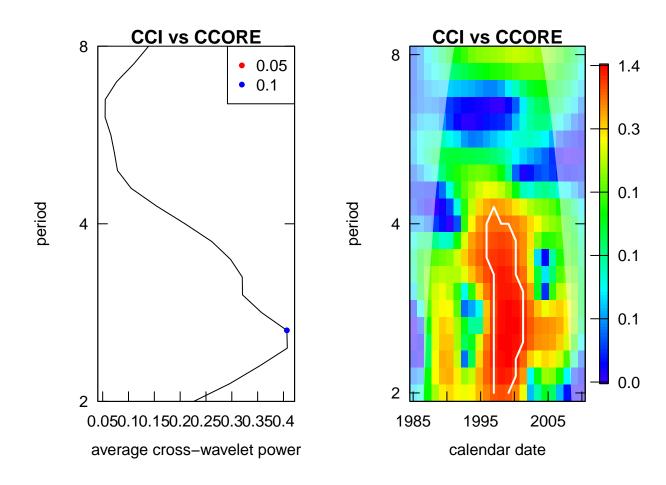


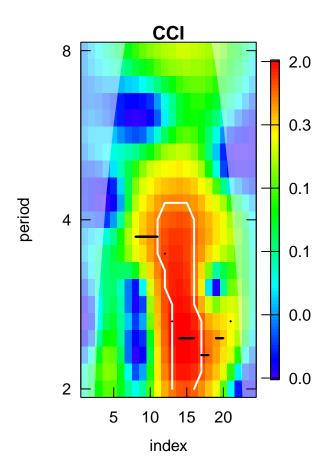


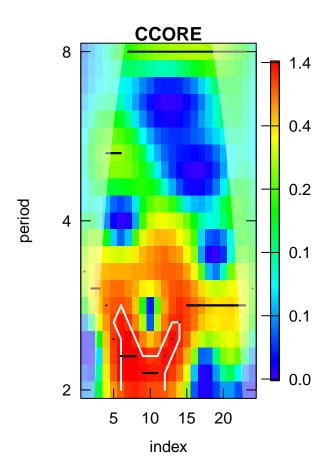


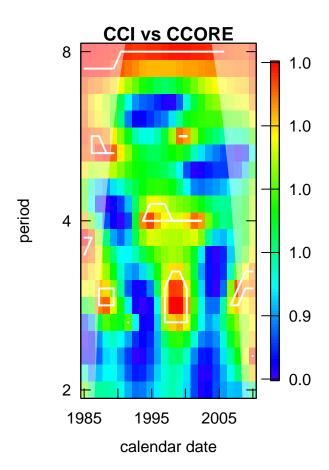


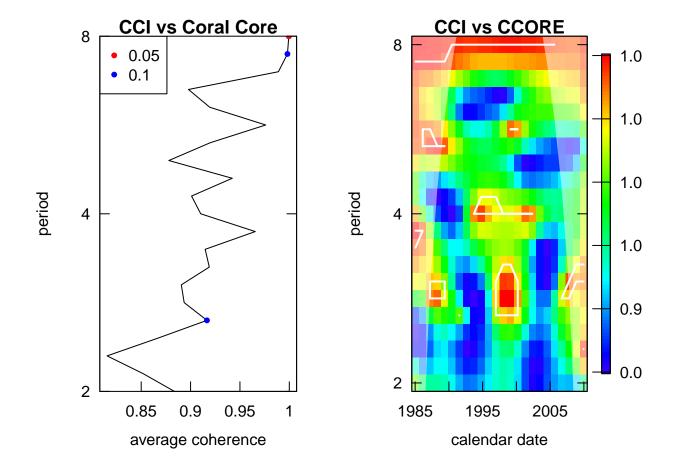
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```



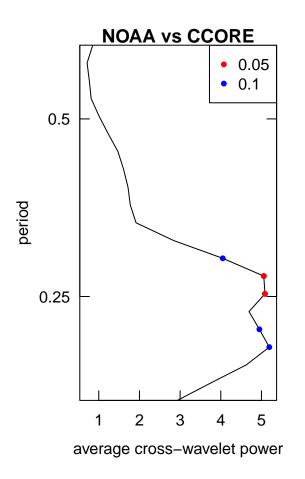


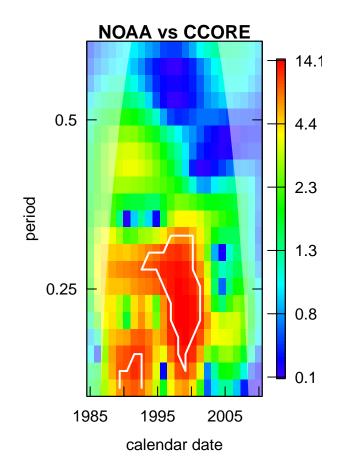


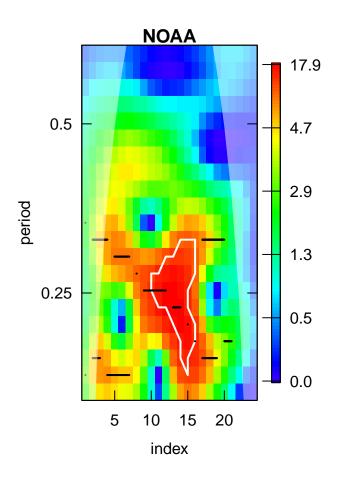


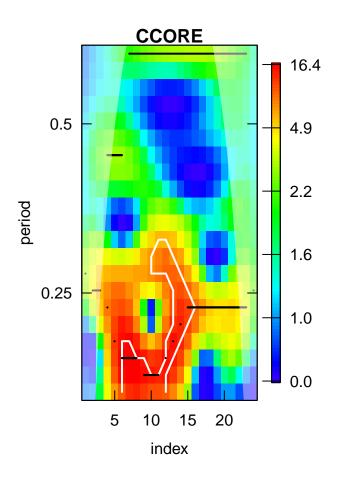


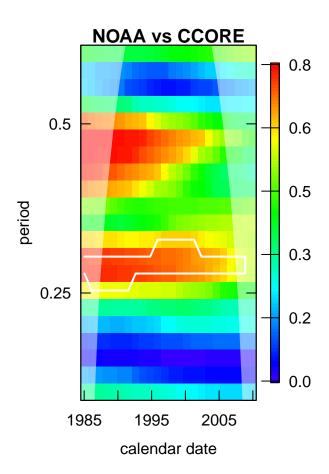
```
## Starting wavelet transformation and coherency computation...
## ... and simulations...
## |
```

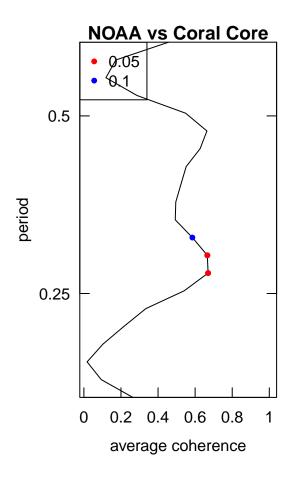


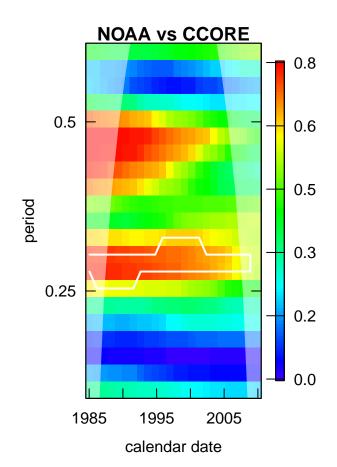


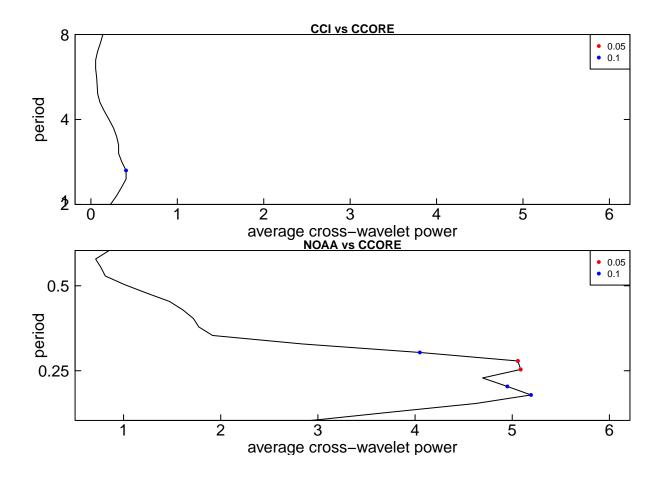


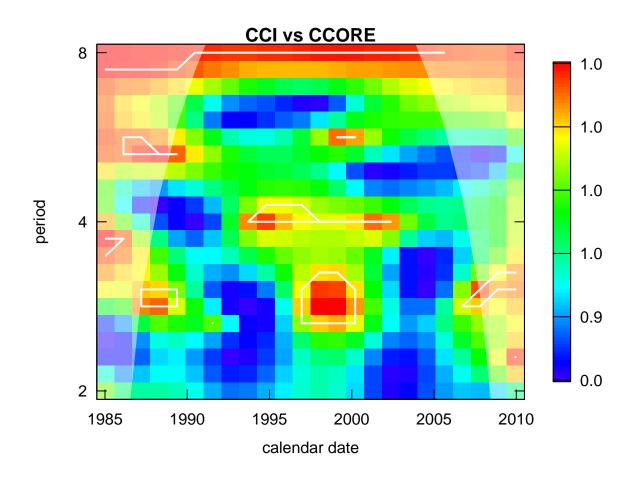


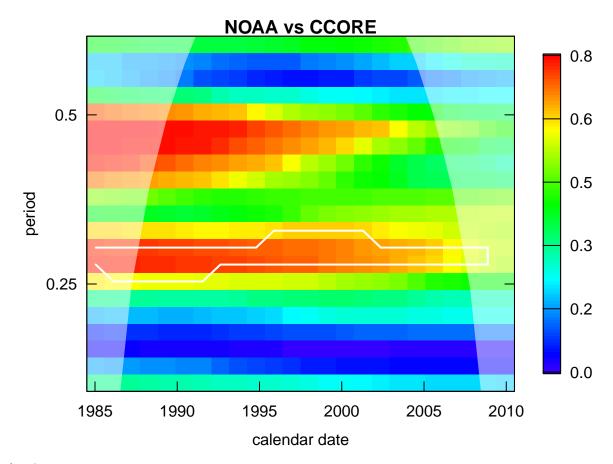












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