

Variabilité climatique au niveau de l'écosystème du Courant des Canaries (10°N-36°N) à l'échelle inter-décennale



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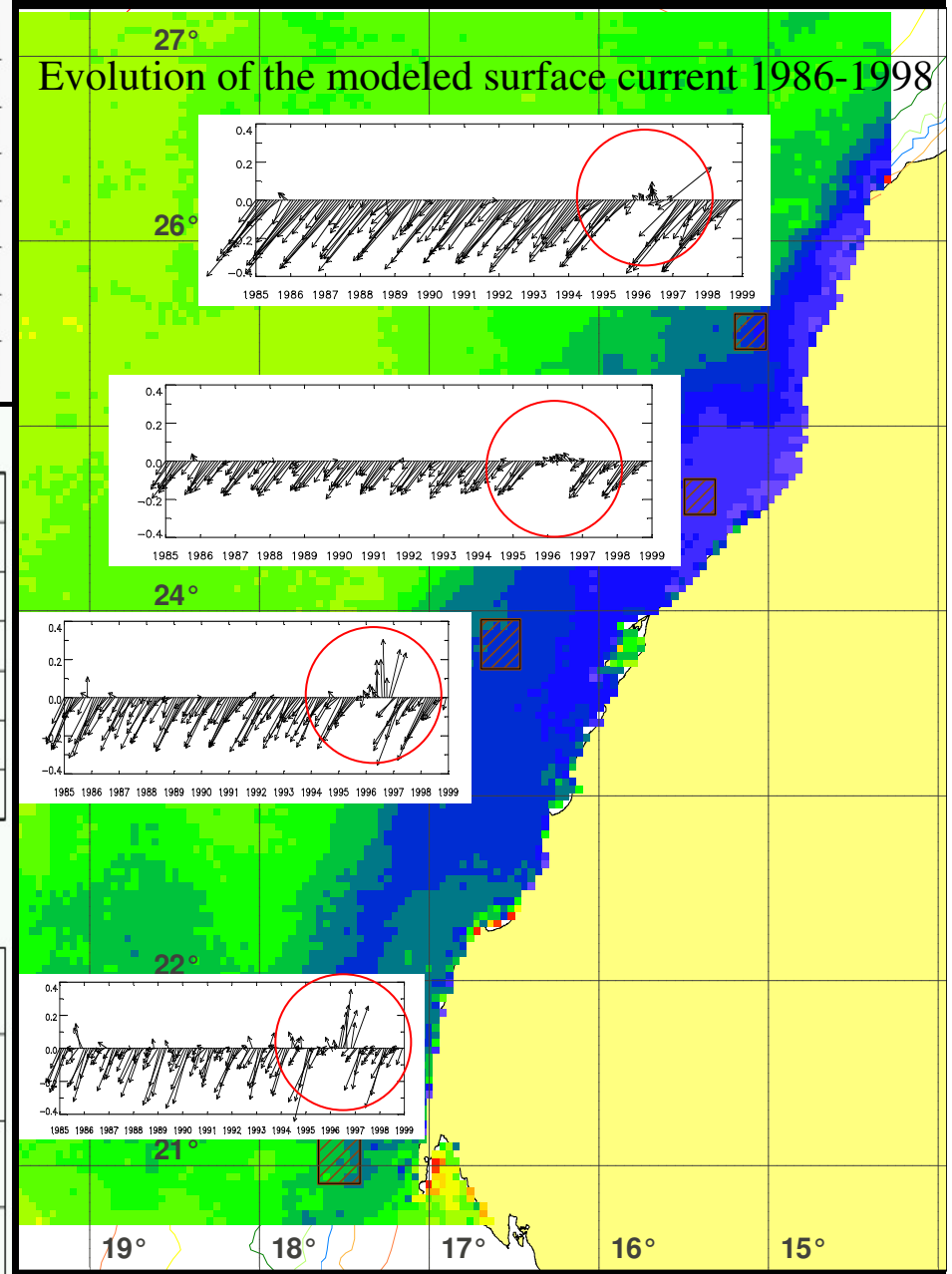
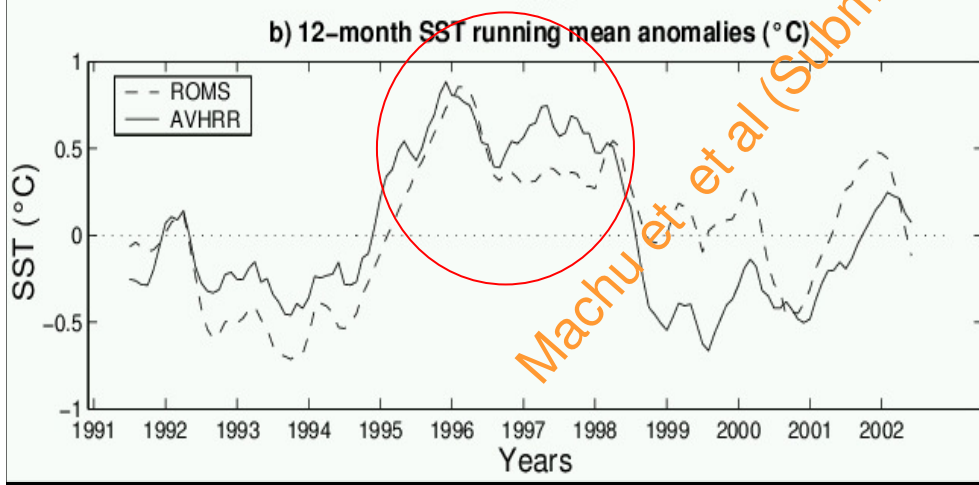
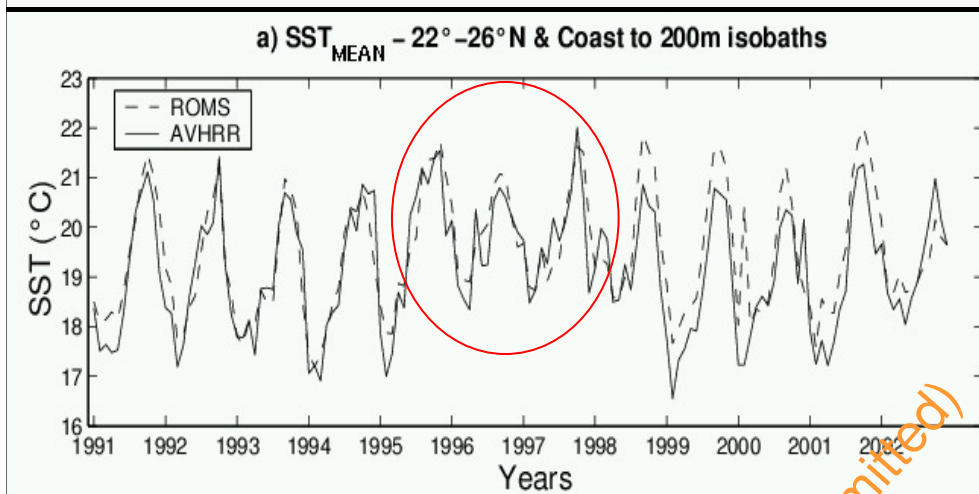
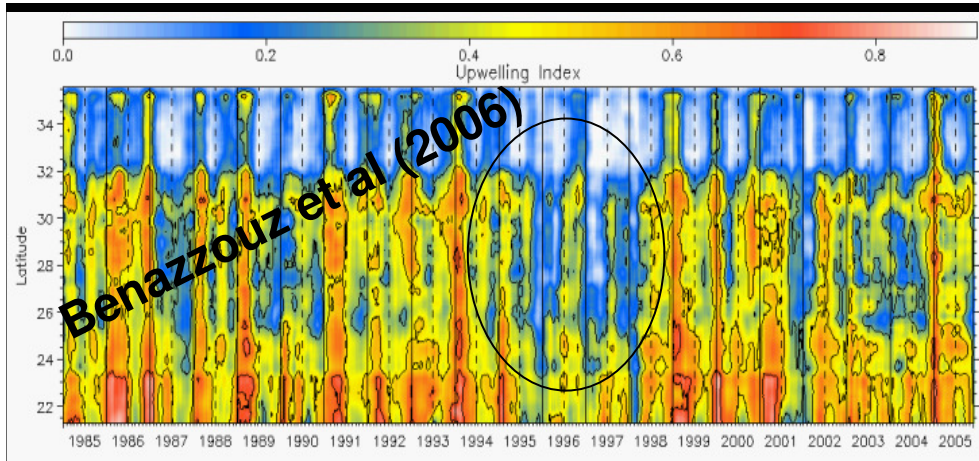
Symposium Petits Pelagiques, 11-14 Mars 2008, Casablanca

A satellite-style map of the Mediterranean region, showing the sea in dark blue, the surrounding landmasses in green and brown, and the Nile river in Egypt in a lighter blue. The text is overlaid on the map.

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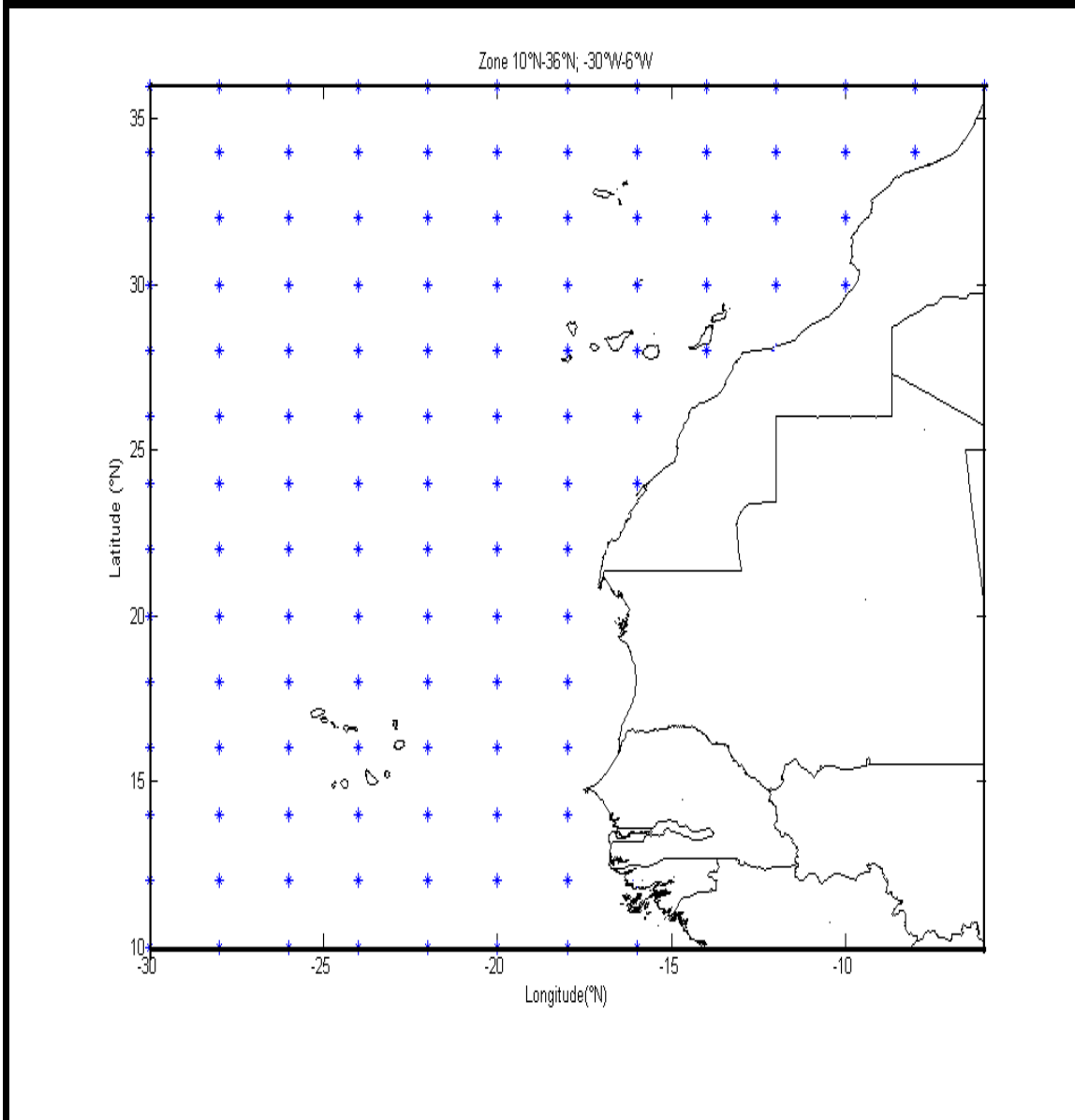
CONTEXTE ET OBJECTIFS DE L'ETUDE



Ostrowski (2005)

Machu et al (Submitted)

2. OBJECTIF ET ZONE D'ETUDE



OBJECTIF DE L'ETUDE

Appréhender la variabilité climatique inter-décennale agissant sur la région du Courant des Canaries à partir de paramètres hydro-climatiques

BASE DE DONNEES

Base de données ICOADS (International Comprehensive Ocean-Atmosphere Data Set)

ZONE D'ETUDE

10°-36°N ; -30°W-6°W

PERIODE D'ETUDE

1900 (1946)-2005

PARAMETRES ETUDIES

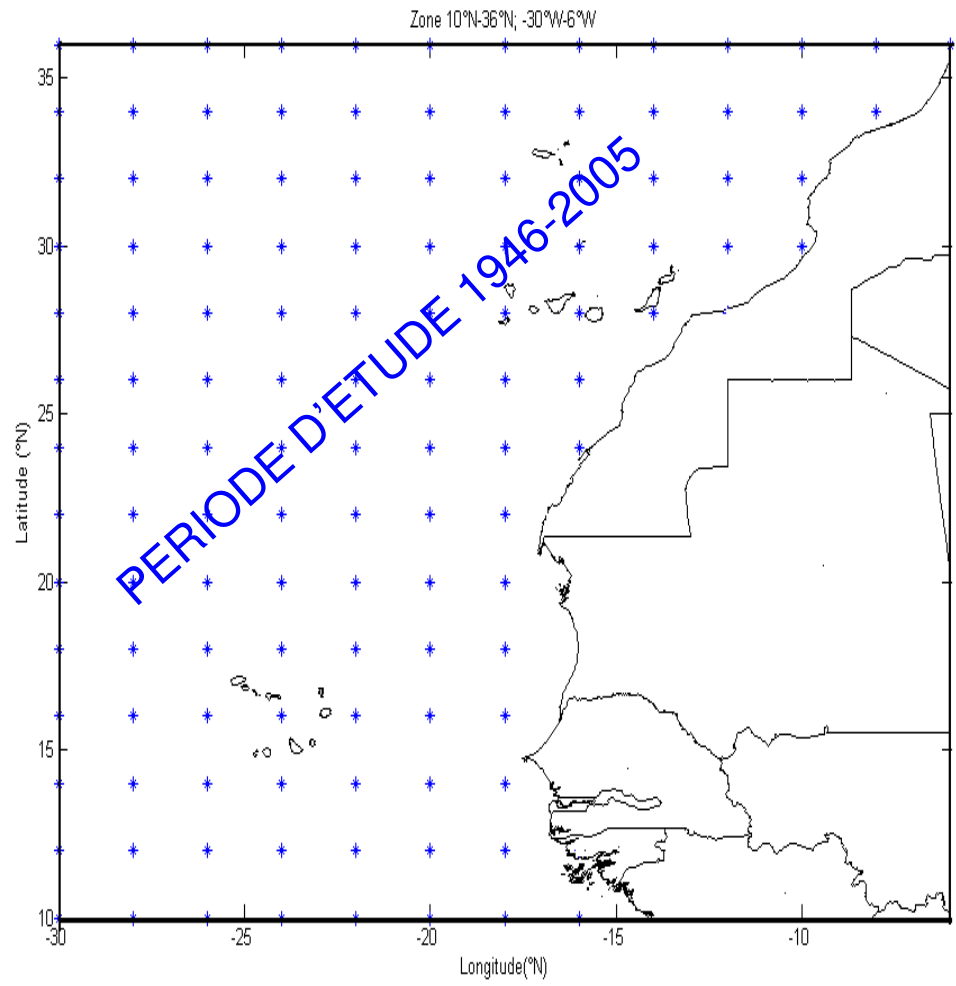
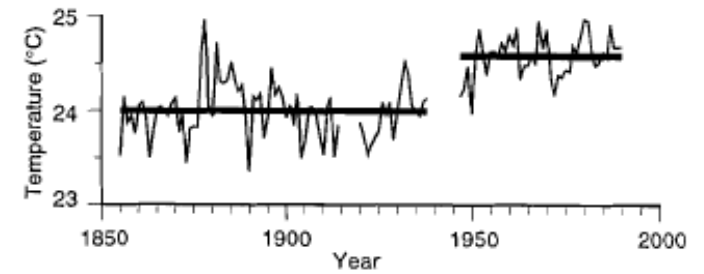
SST (2°x2°)

- Vent (composantes U et V)
- NAO

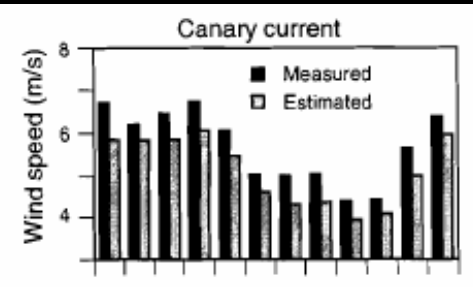
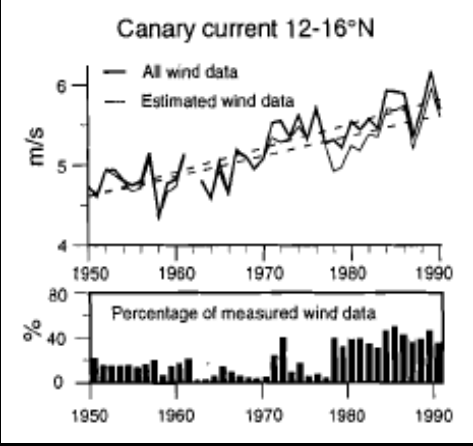
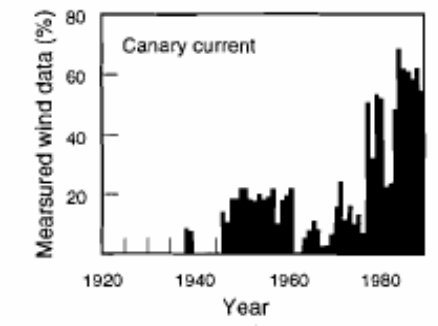
ICOADS: Avantage et Inconvénient

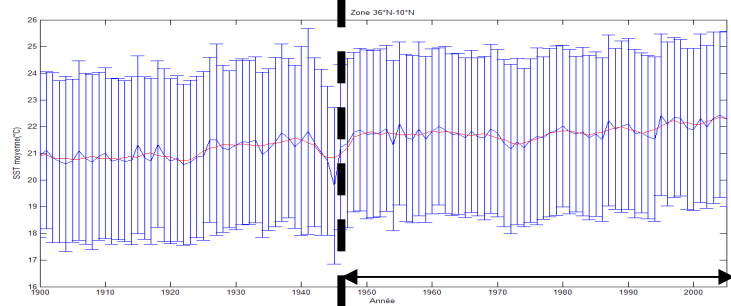
Fig. 1: Time series of Sea Surface Temperature in the tropical Atlantic (10°N-30°N, 30°W-50°W). A shift in the mean value of SST occurred in the late 1940s.

Roy and Mendelssohn (1998)

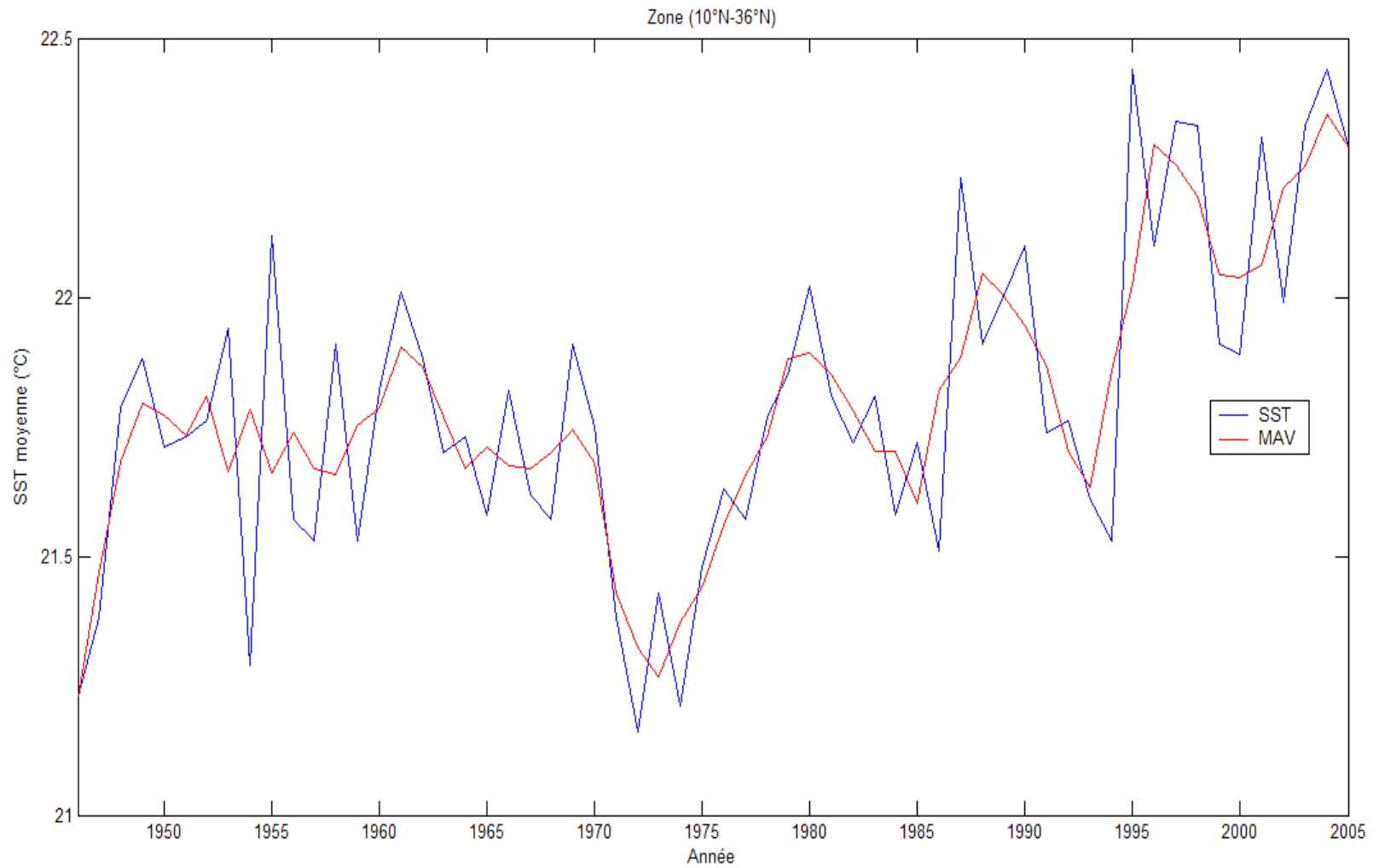


Roy and Mendelssohn (1998)

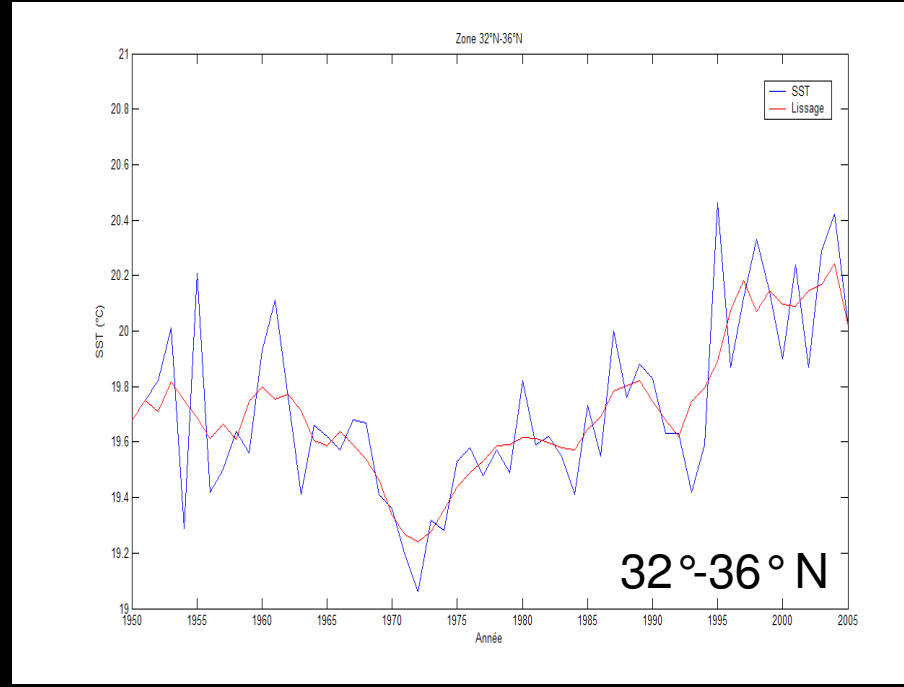
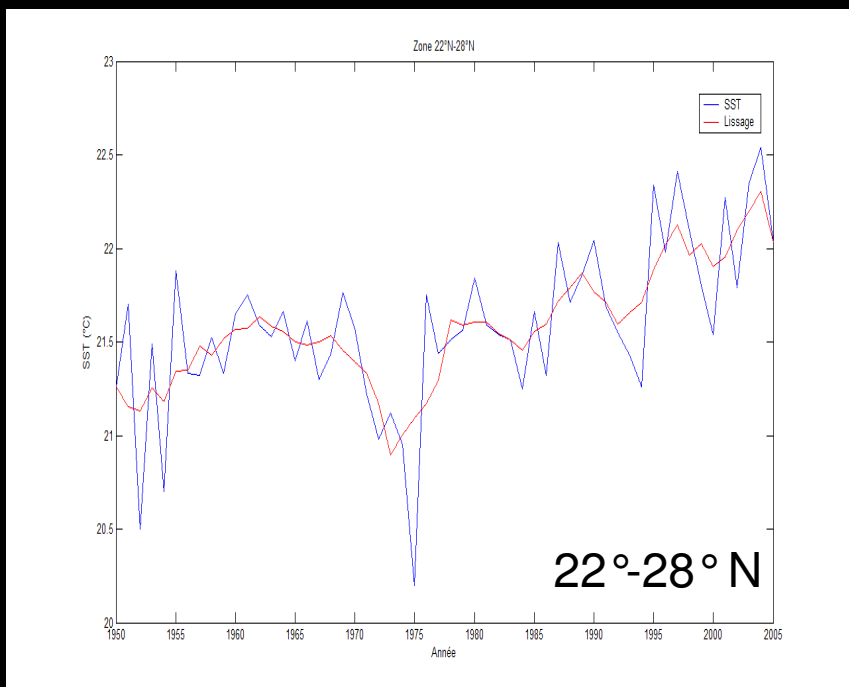
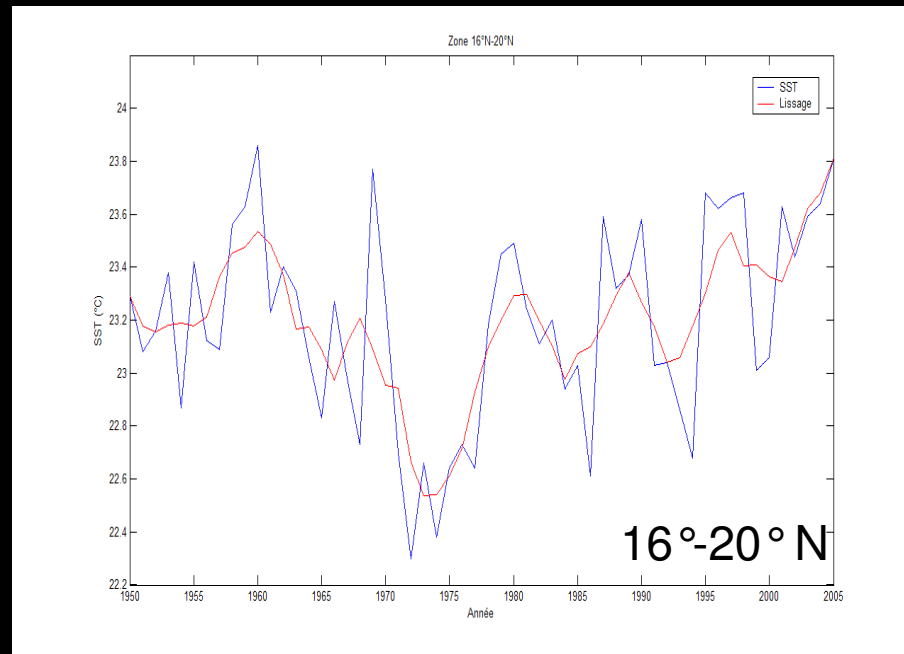
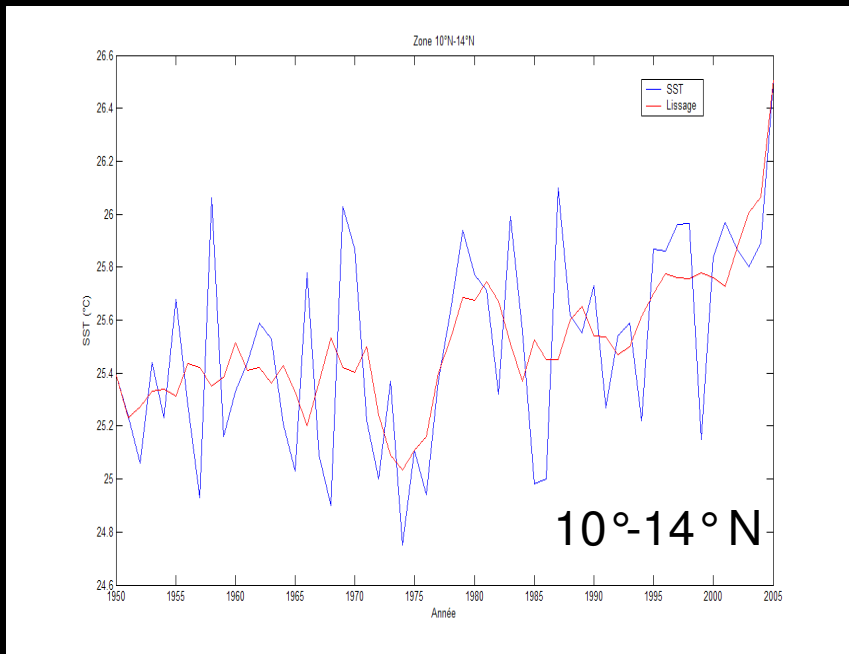




GLOBAL SST (ZONE 10°-36°N; -30°W -6°W)



SST PAR SOUS-ZONE (ZONE 10°-36°N; -30°W -6°W)



ANNUAL SEA-SURFACE TEMPERATURE ANOMALIES

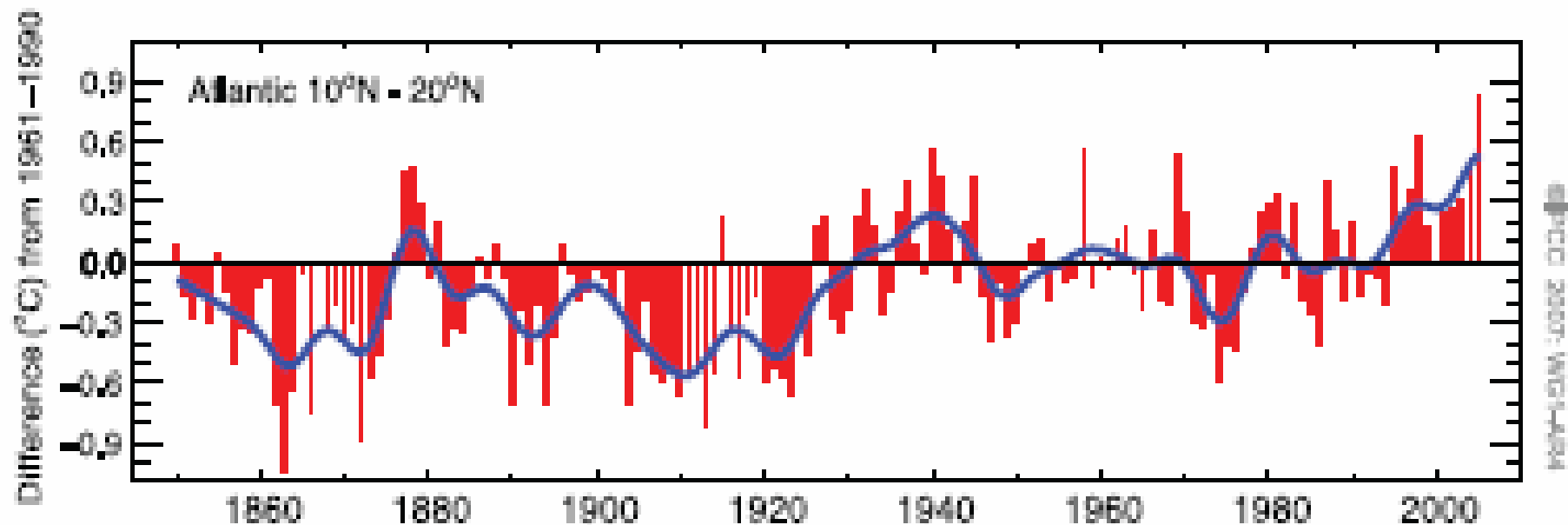
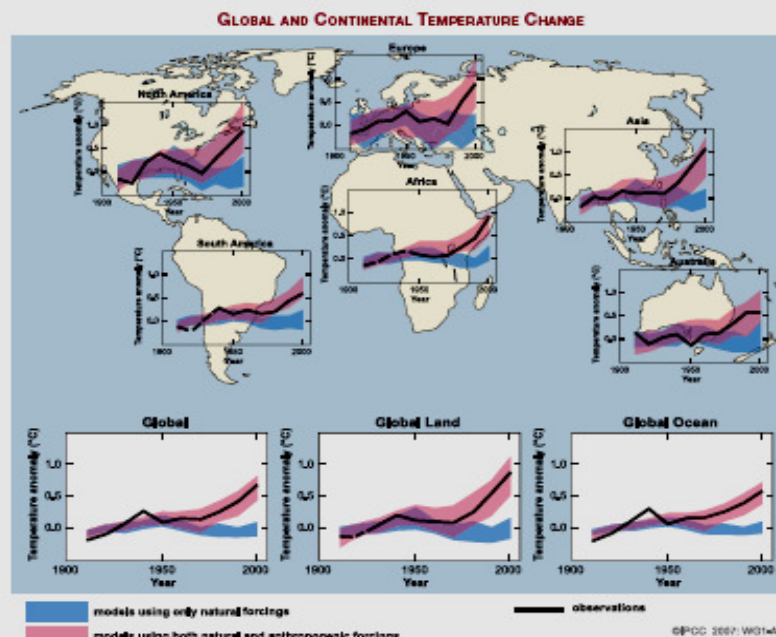
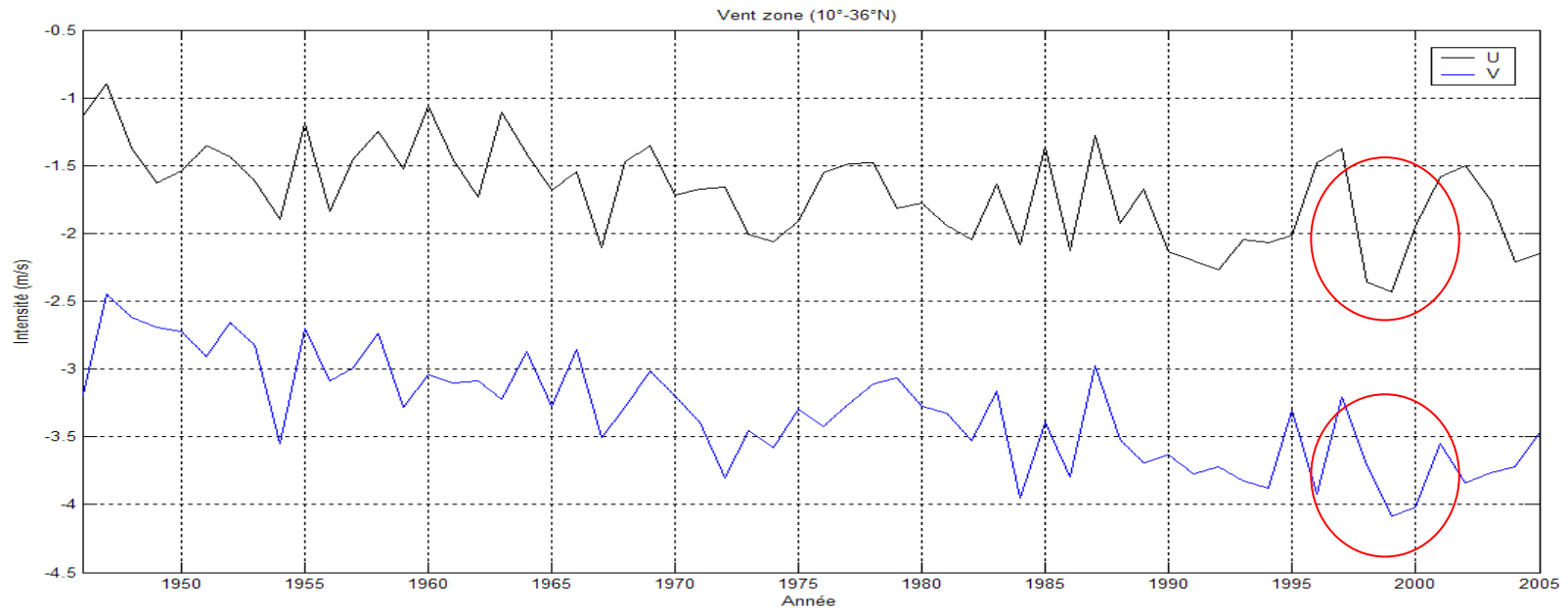
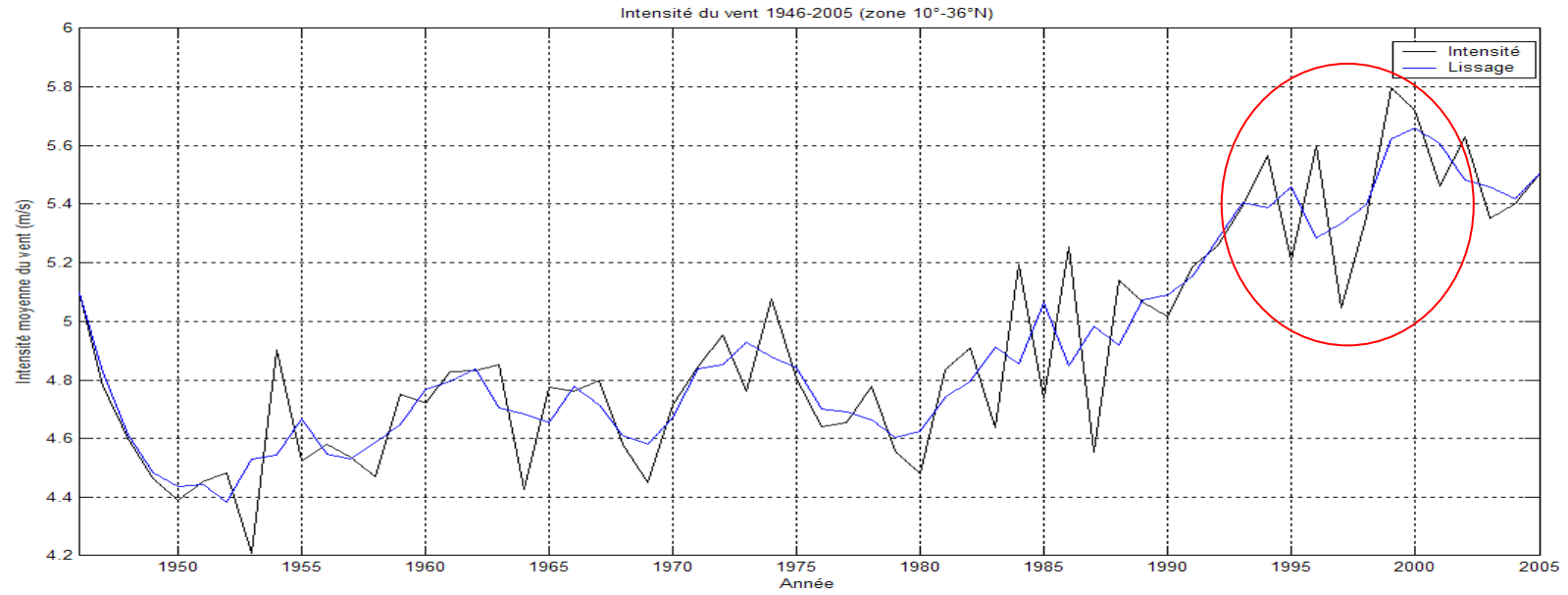


Figure TS.11. Tropical Atlantic (10°N–20°N) sea surface temperature annual anomalies (°C) in the region of Atlantic hurricane formation, relative to the 1961 to 1990 mean. [Figure 3.95]

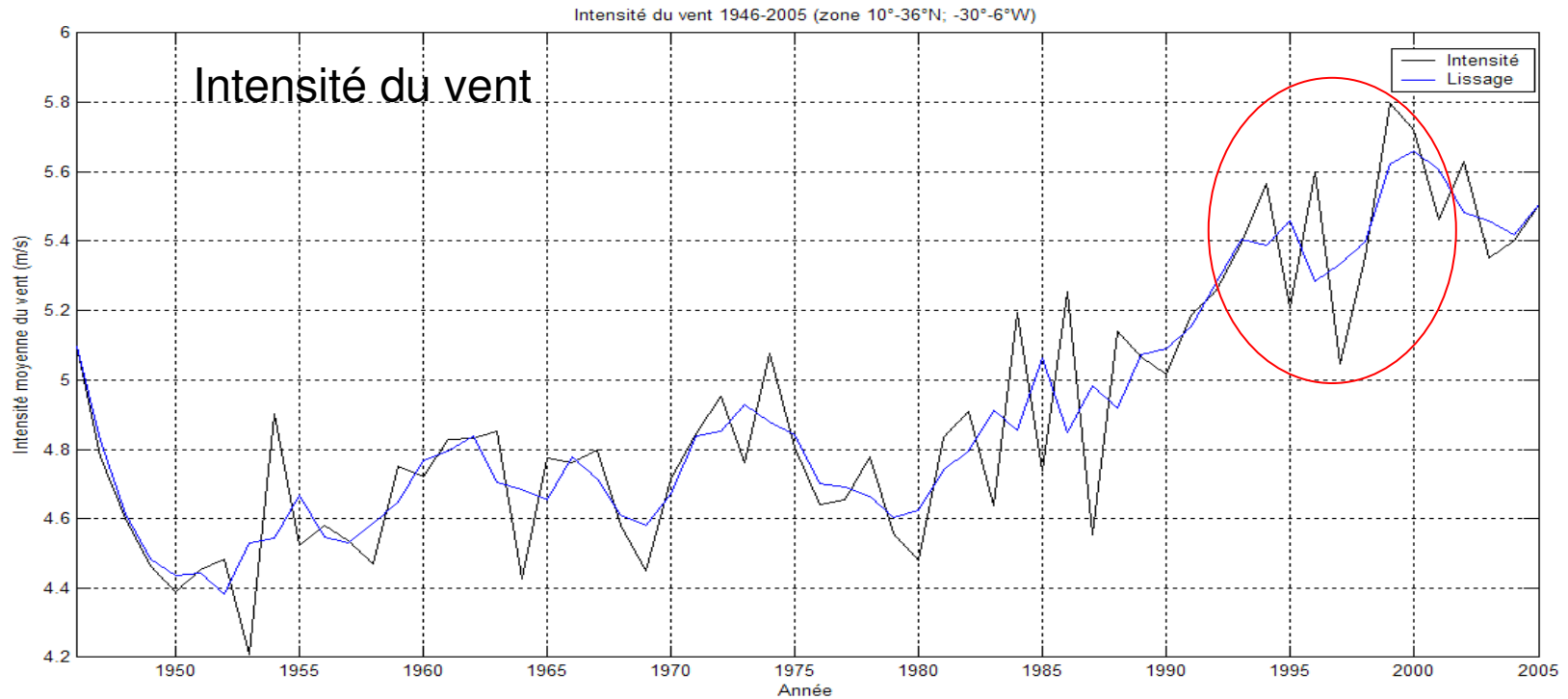


Source IPCC
(2007)

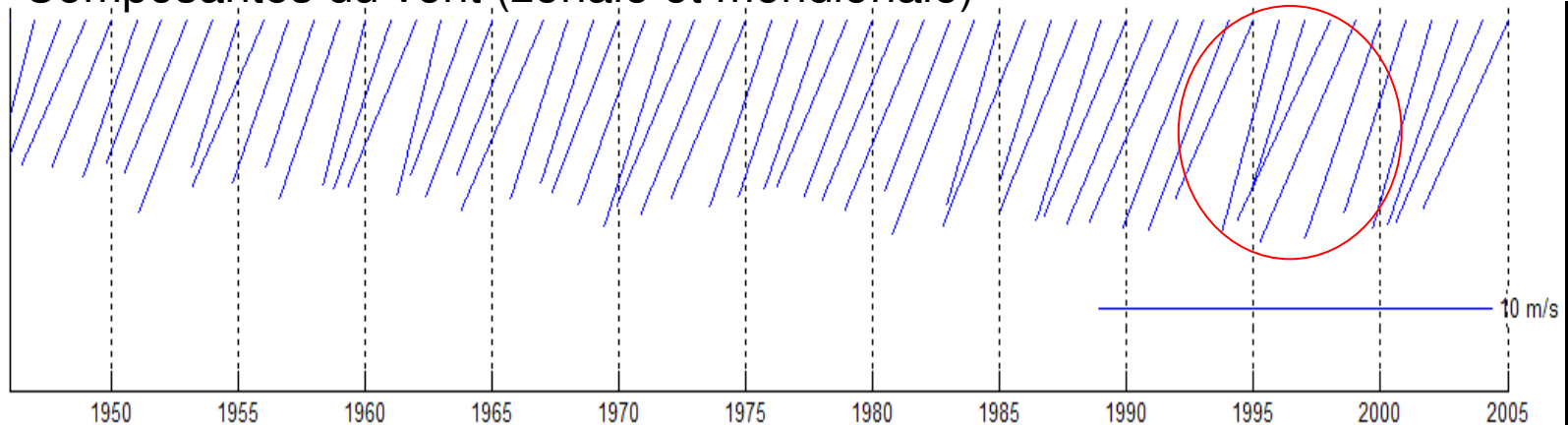
VENT ZONE (10°-36°N; -30°W-6°W)



VENT ZONE (10°-36°N; -30°W-6°W)

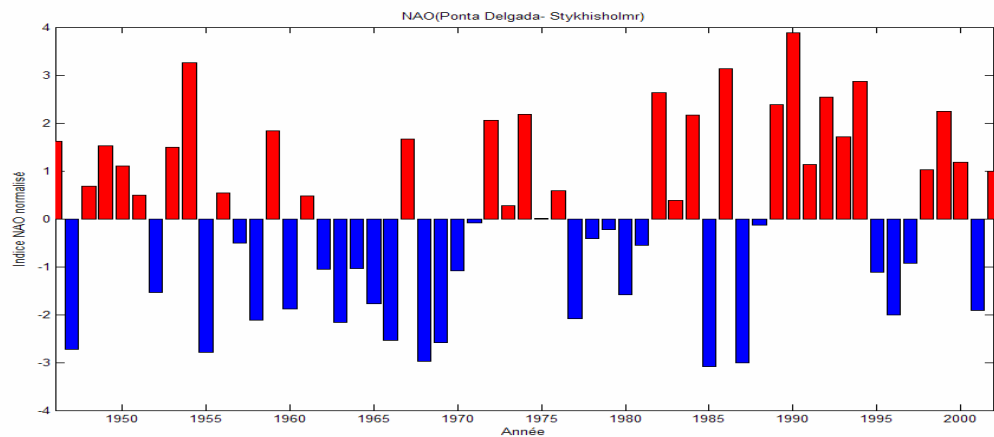


Composantes du vent (zonale et méridionale)

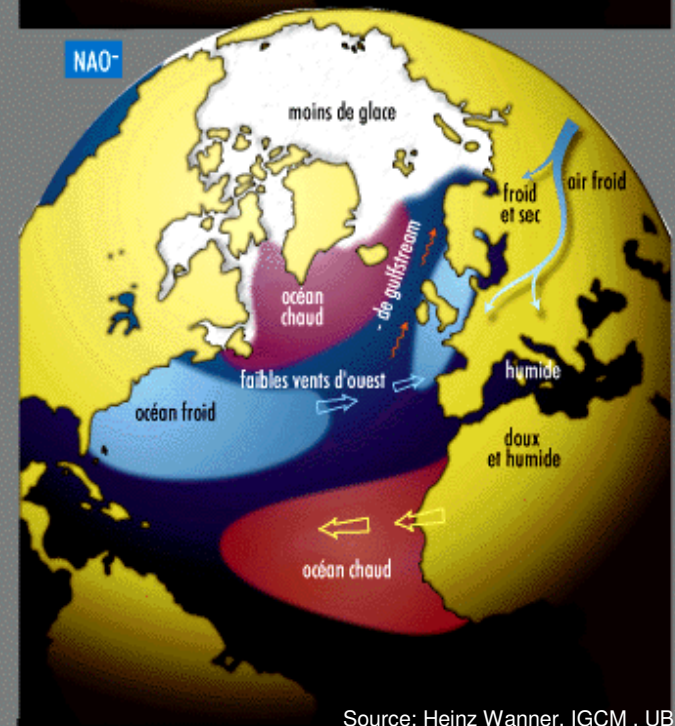
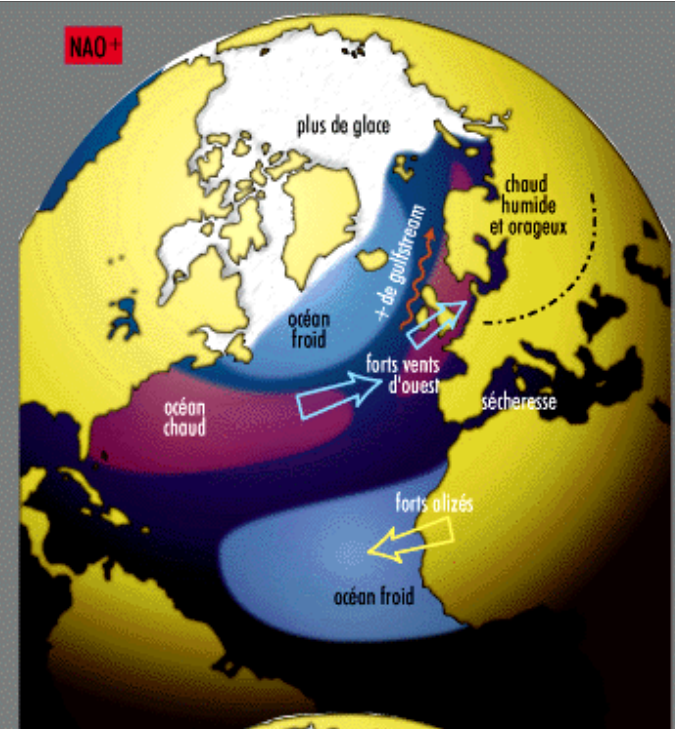


REPONSE SST, VENT ↔ NAO

L'OSCILLATION NORD ATLANTIQUE

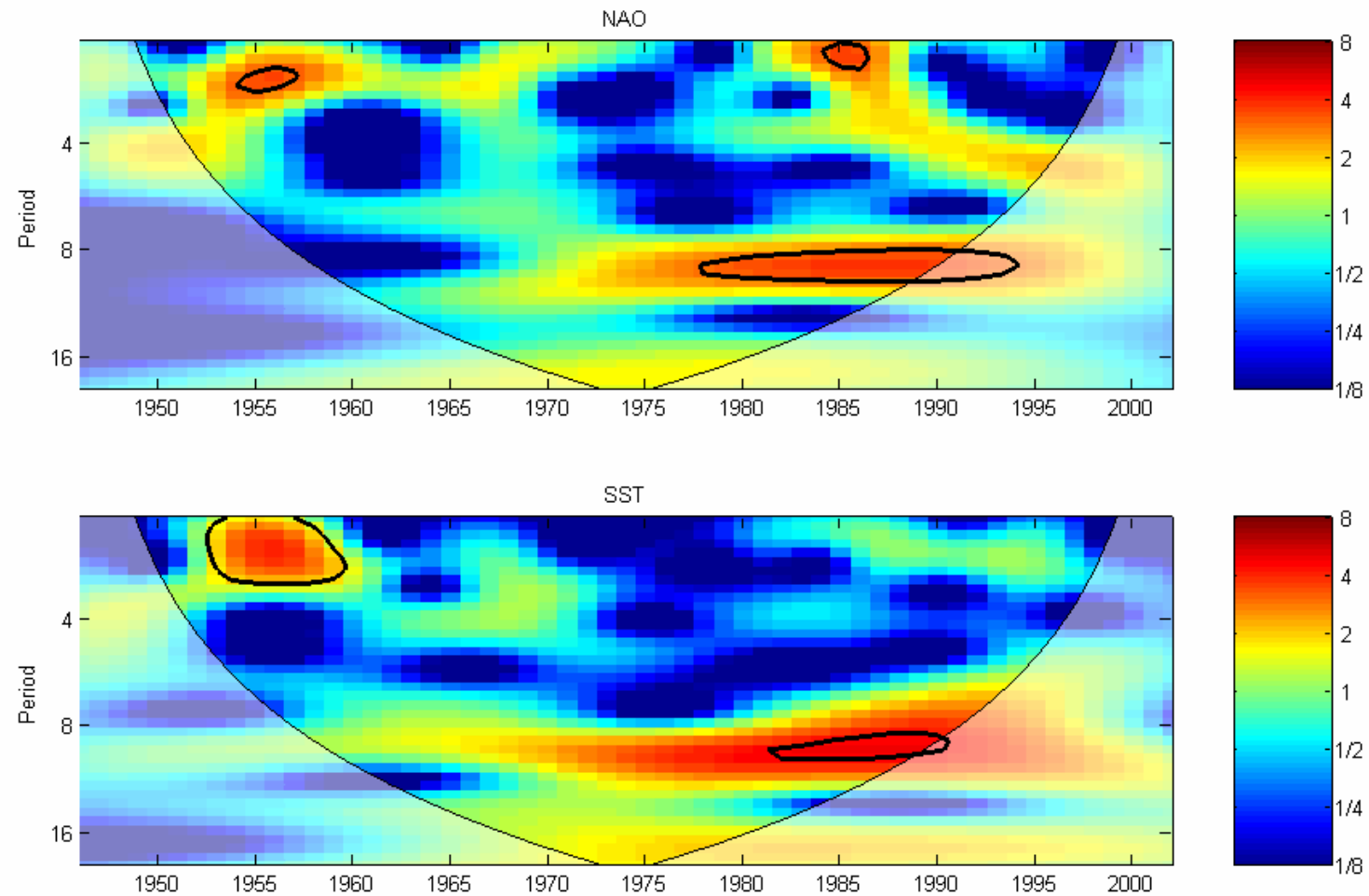


Data source: <http://www.cdg.ucar.edu/jhurrell/>



Source: Heinz Wanner, IGCN, UB

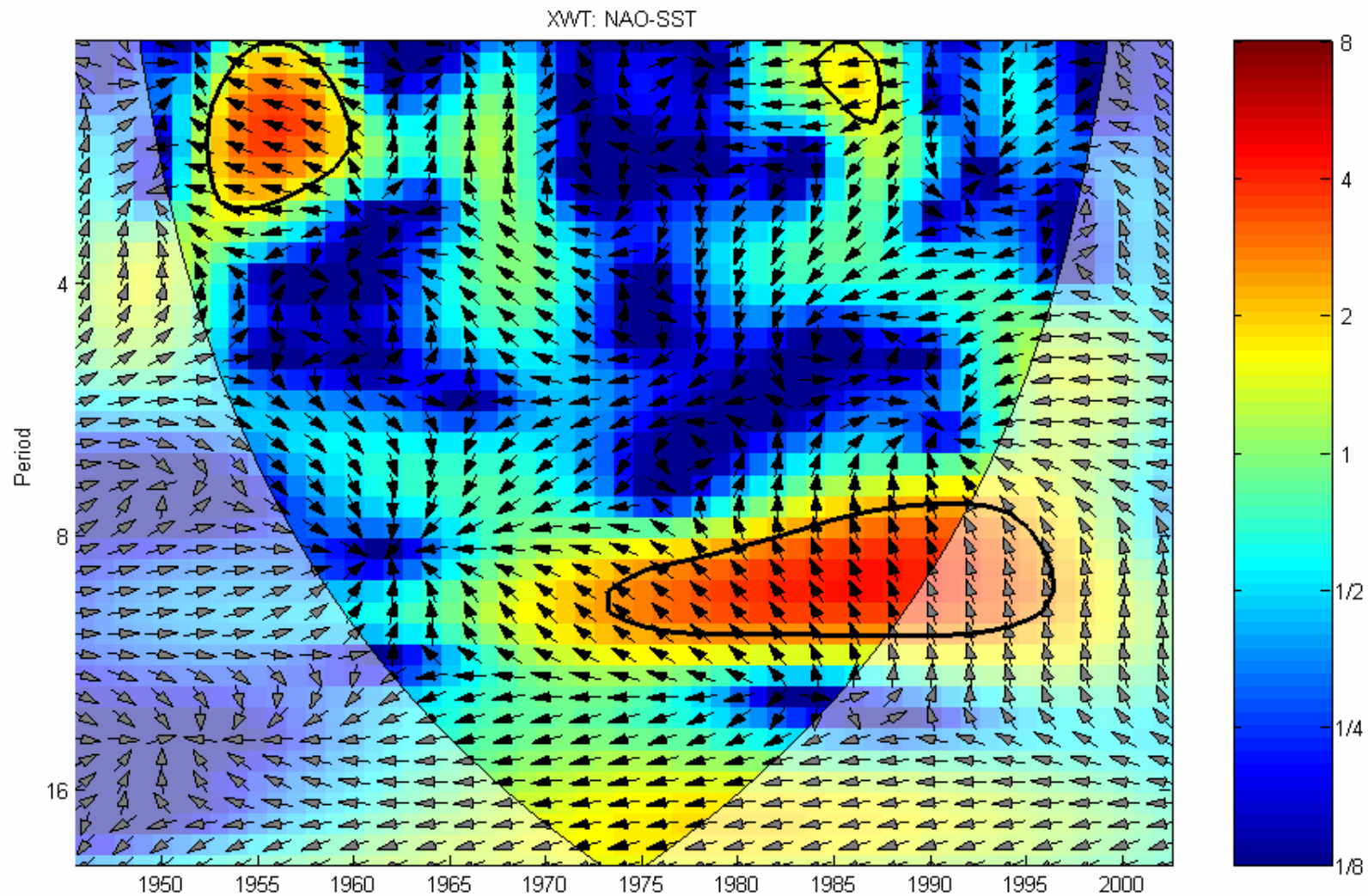
CWT (Continuous Wavelet Transform) NAO-SST



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CWT expands the time series into time frequency space

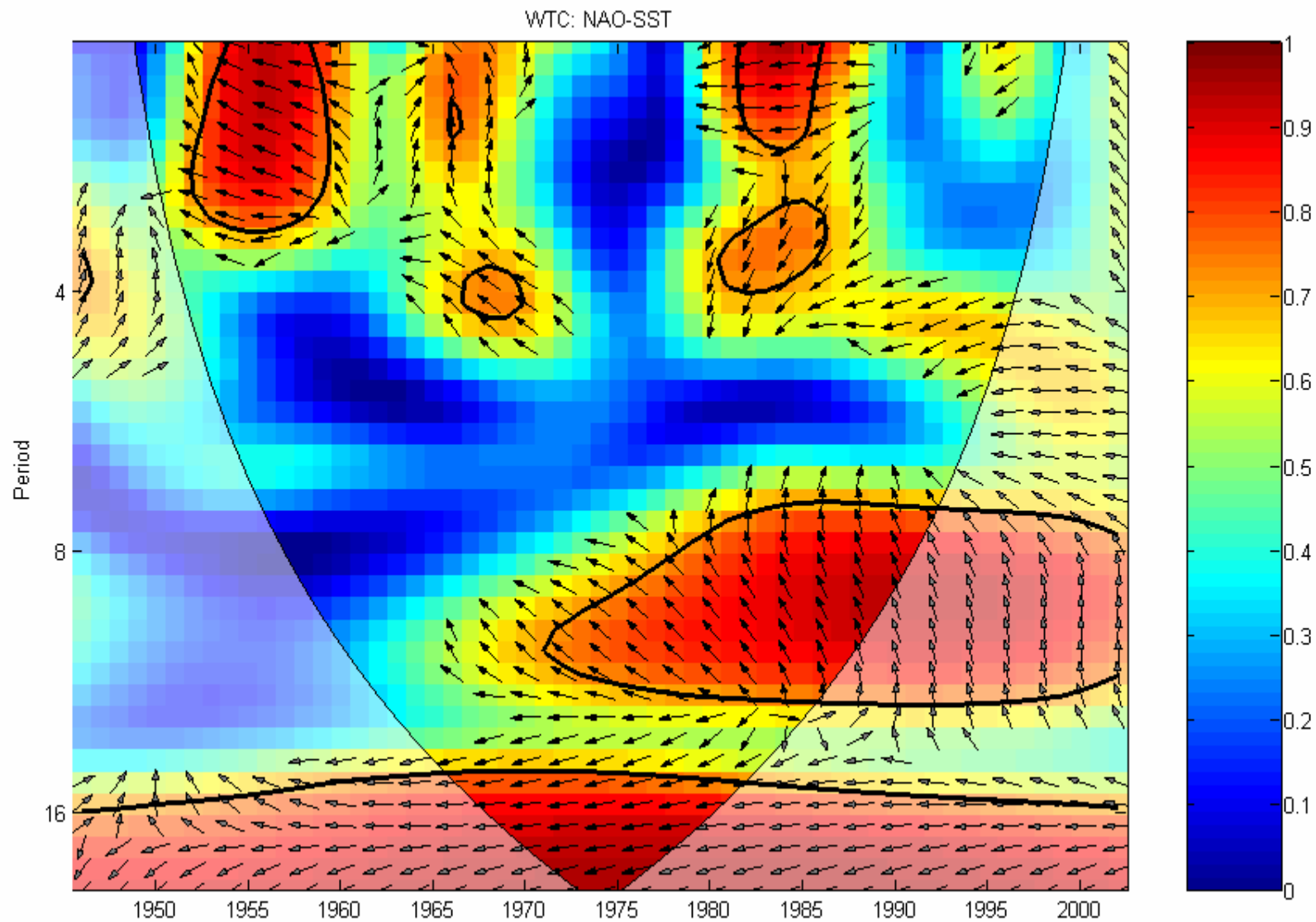
XWT (Cross Wavelet Transform) NAO-SST



XWT find regions in time frequency space where the time series show high common power

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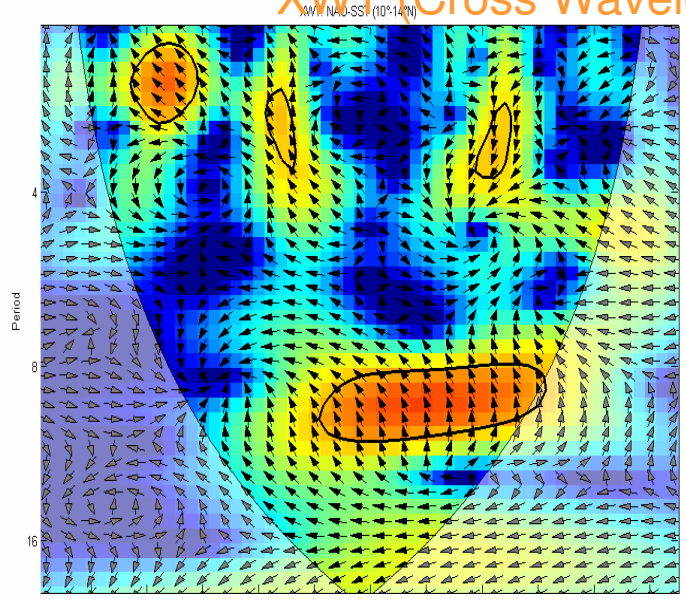
WTC (Wavelet Coherence) NAO-SST



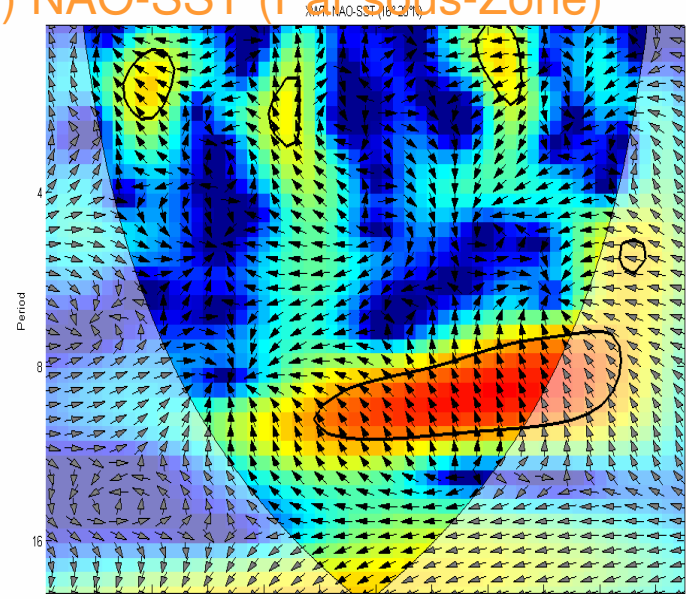
WTC finds regions in time frequency space where the two series co-vary

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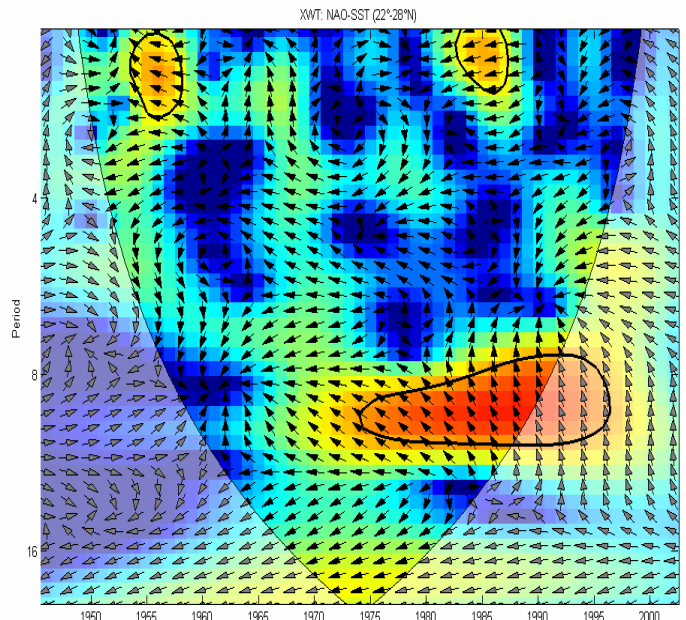
XWT (Cross Wavelet Transform) NAO-SST (Par sous-Zone)



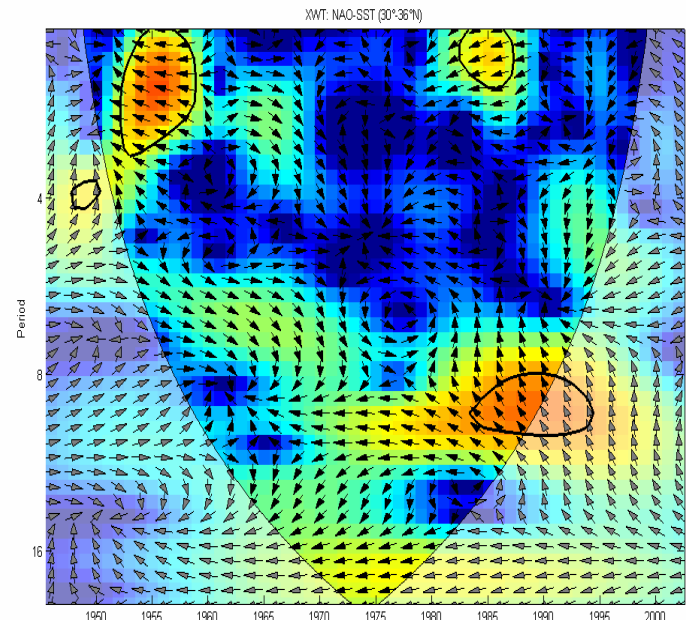
10°-14° N



16°-20° N

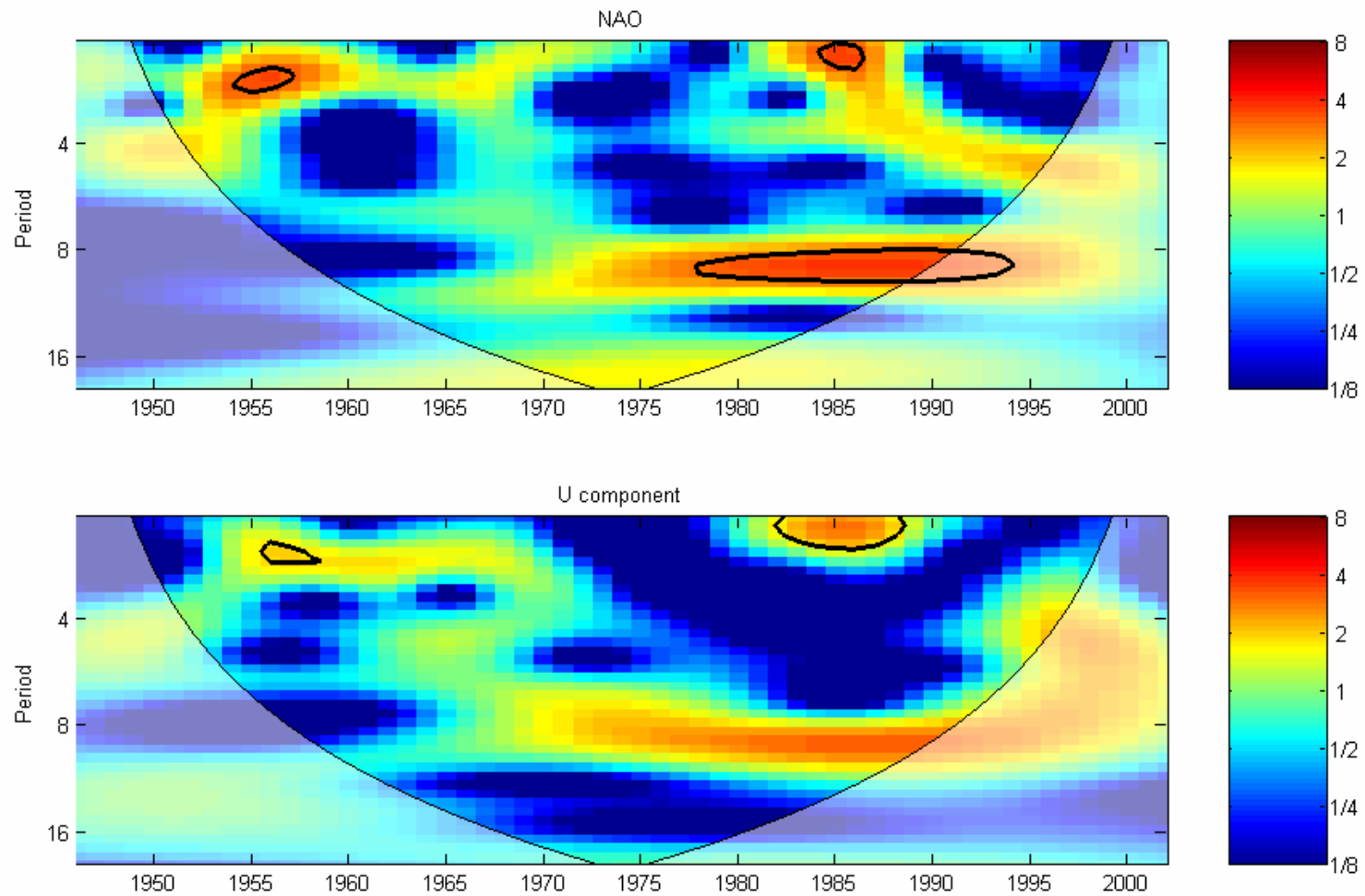


22°-28° N

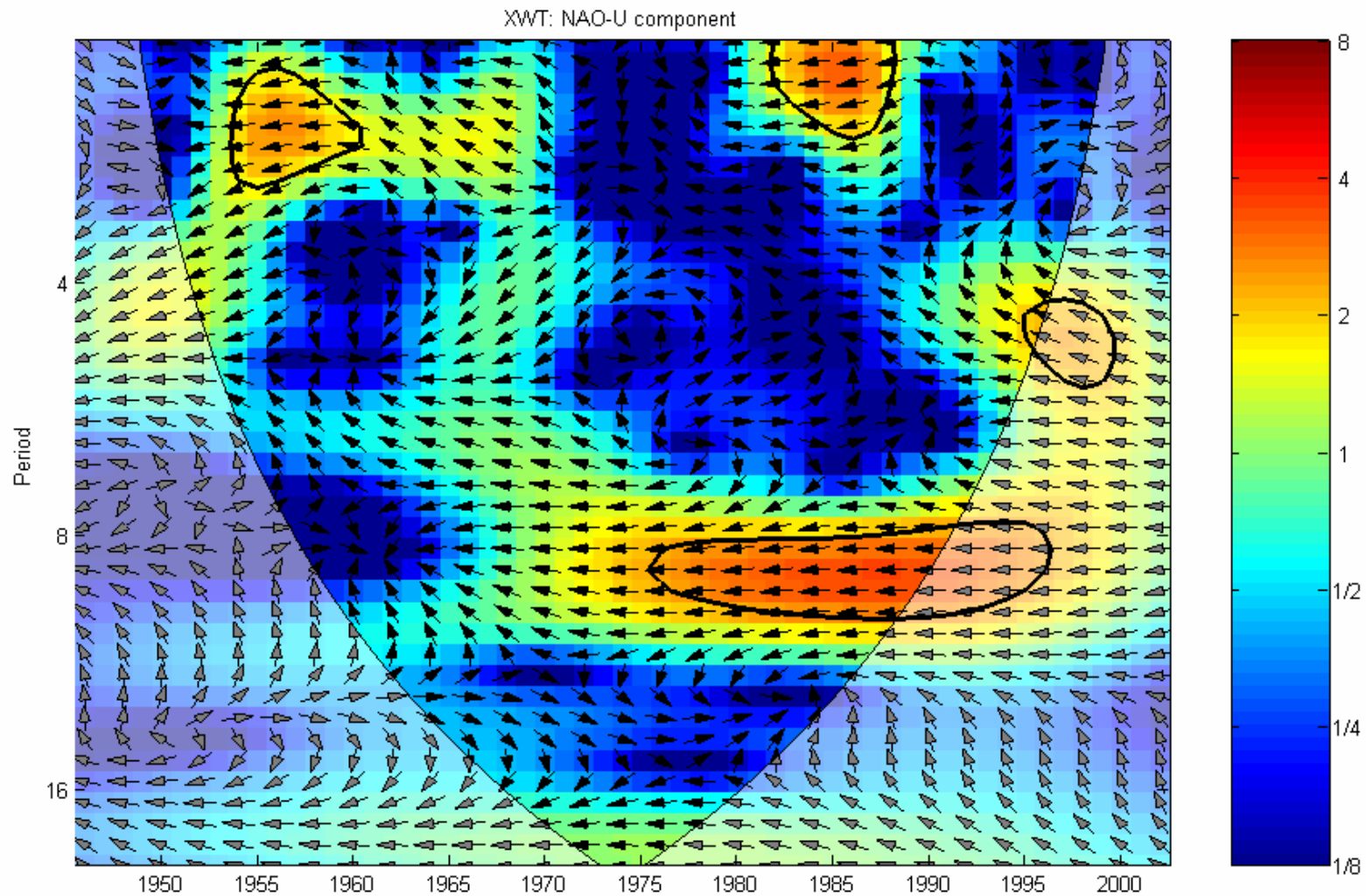


32°-36° N

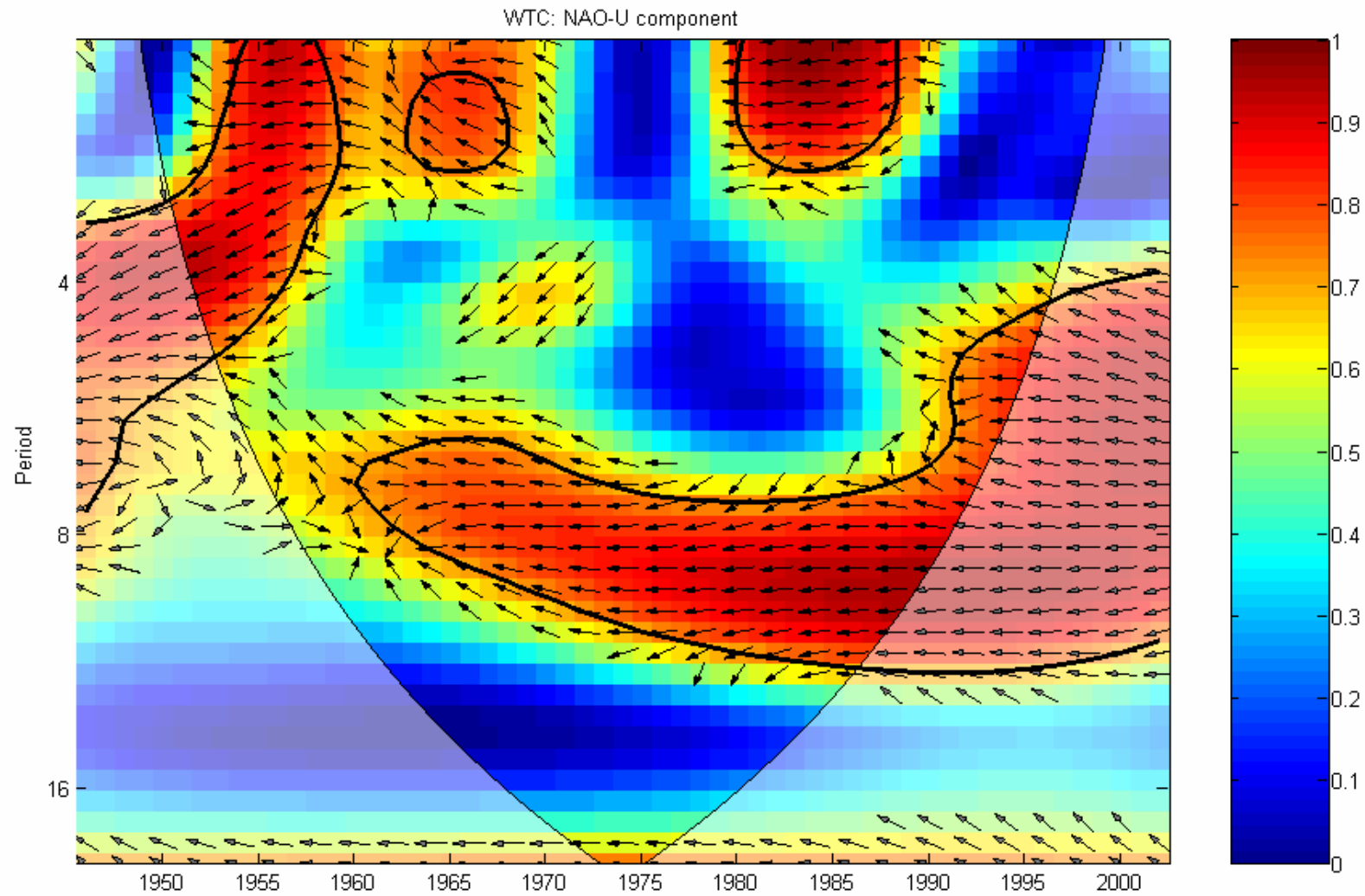
CWT (Continuous Wavelet Transform) NAO - Composante U



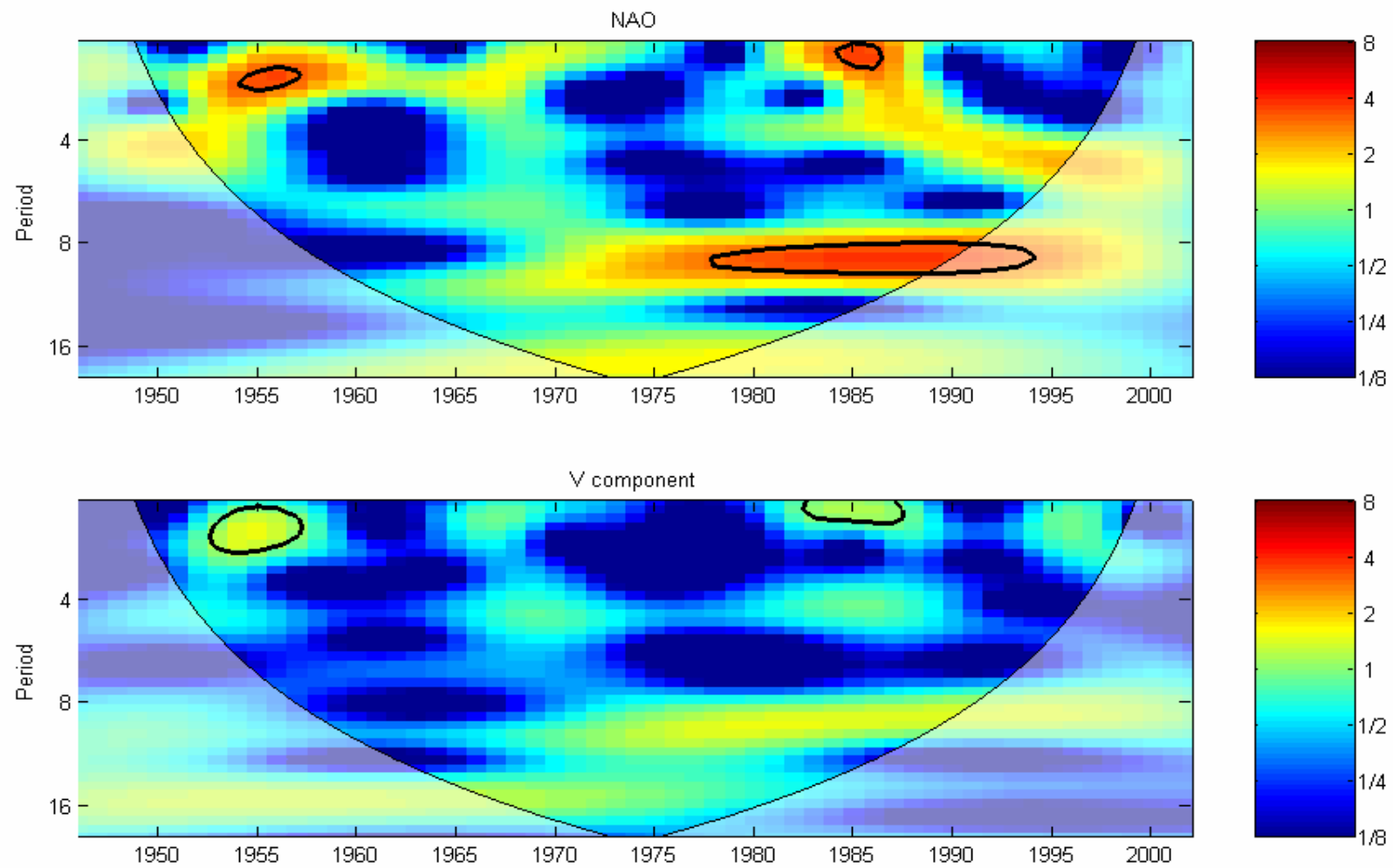
XWT (Cross Wavelet Transform) NAO – Composante U



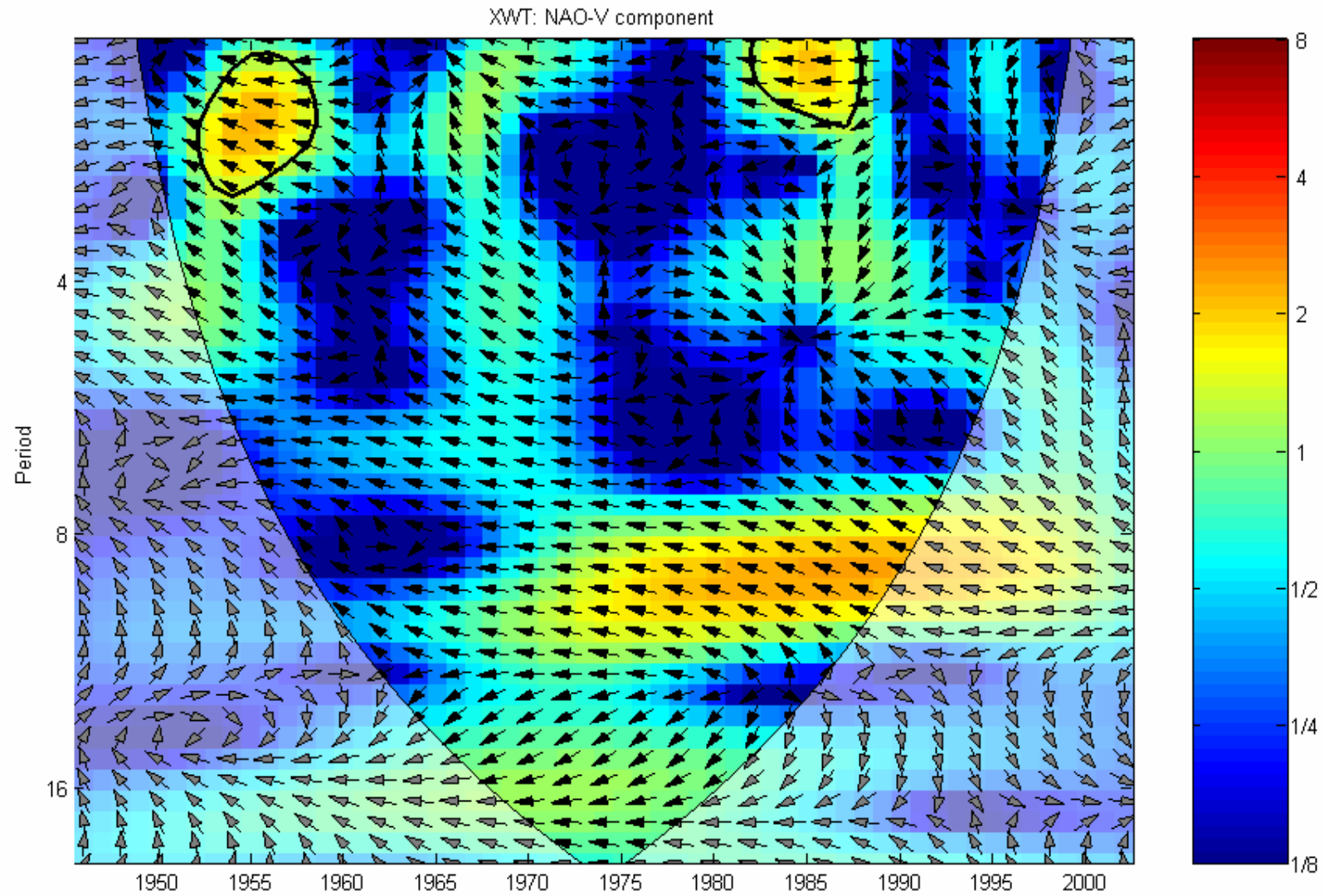
WTC (Wavelet Coherence) NAO – Composante U



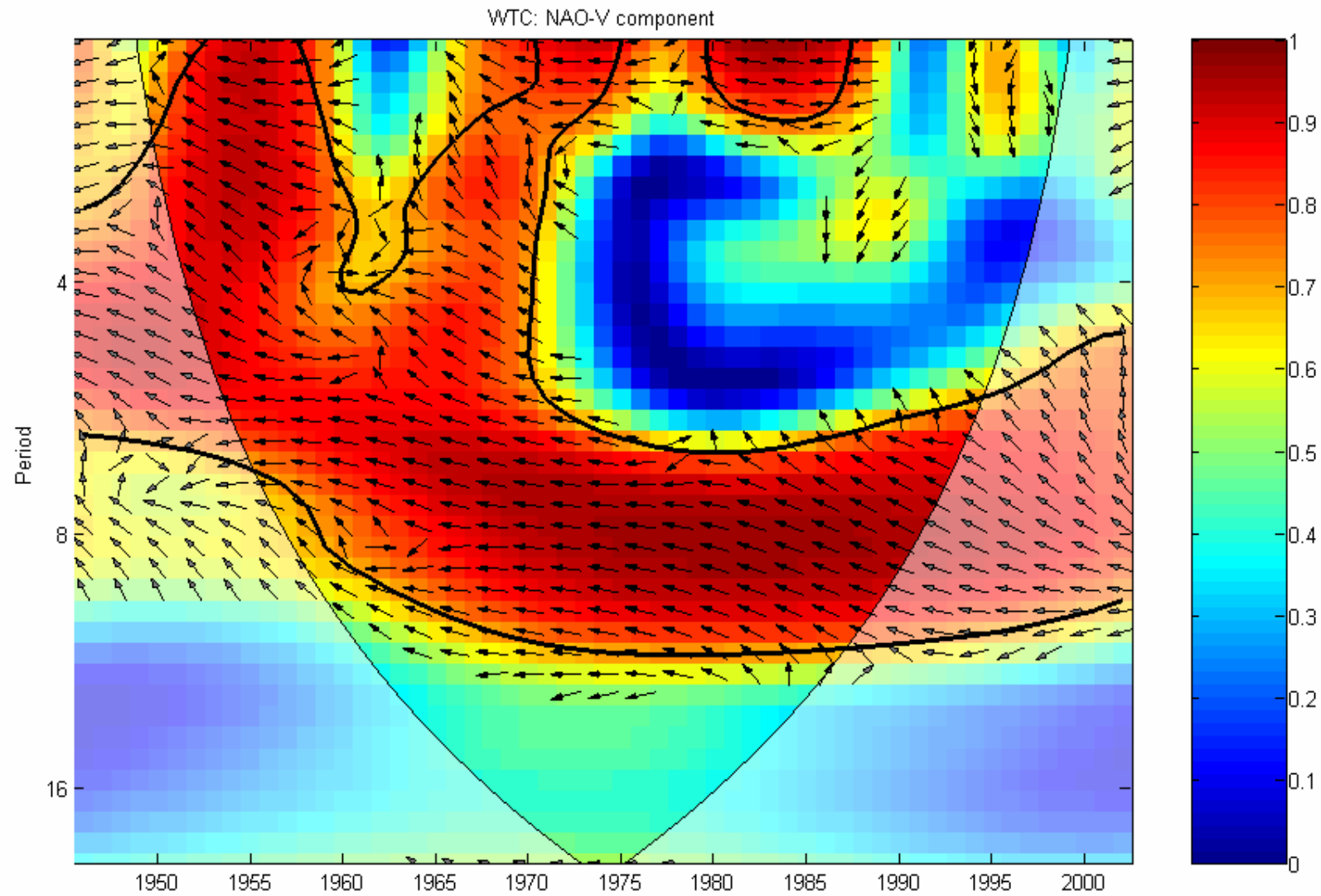
CWT (Continuous Wavelet Transform) NAO-V



XWT (Cross Wavelet Transform) NAO - Composante V



WTC (Wavelet Coherence) NAO – componente V



Conclusions générales et recommandations

- Fluctuations inter-décadales des paramètres étudiés dans la zone 10°-36°N;
- Période 1970-80 («cooling period») et tendance vers la hausse des paramètres observés à partir des années 1990;
- Différentes réponses dans les basses et hautes fréquences de la SST face au forçage NAO selon les (sous-) zones.
- Influence de la NAO sur les composantes zonale et méridionale du vent entre 1955-1960 et ~ 1985 (pour des périodes < 4 ans) et entre 1975 et 1990 (pour des périodes > 8 ans).

Recommandations

- Affiner l'étude à une échelle saisonnière et mensuelle
- Affiner l'étude par zone d'upwelling;
- Etendre la zone d'étude à 46°N pour étudier la variabilité par zone géographique



Image courtesy of [Earth Sciences and Image Analysis Laboratory](#), NASA Johnson Space Center.

MERCI DE VOTRE ATTENTION