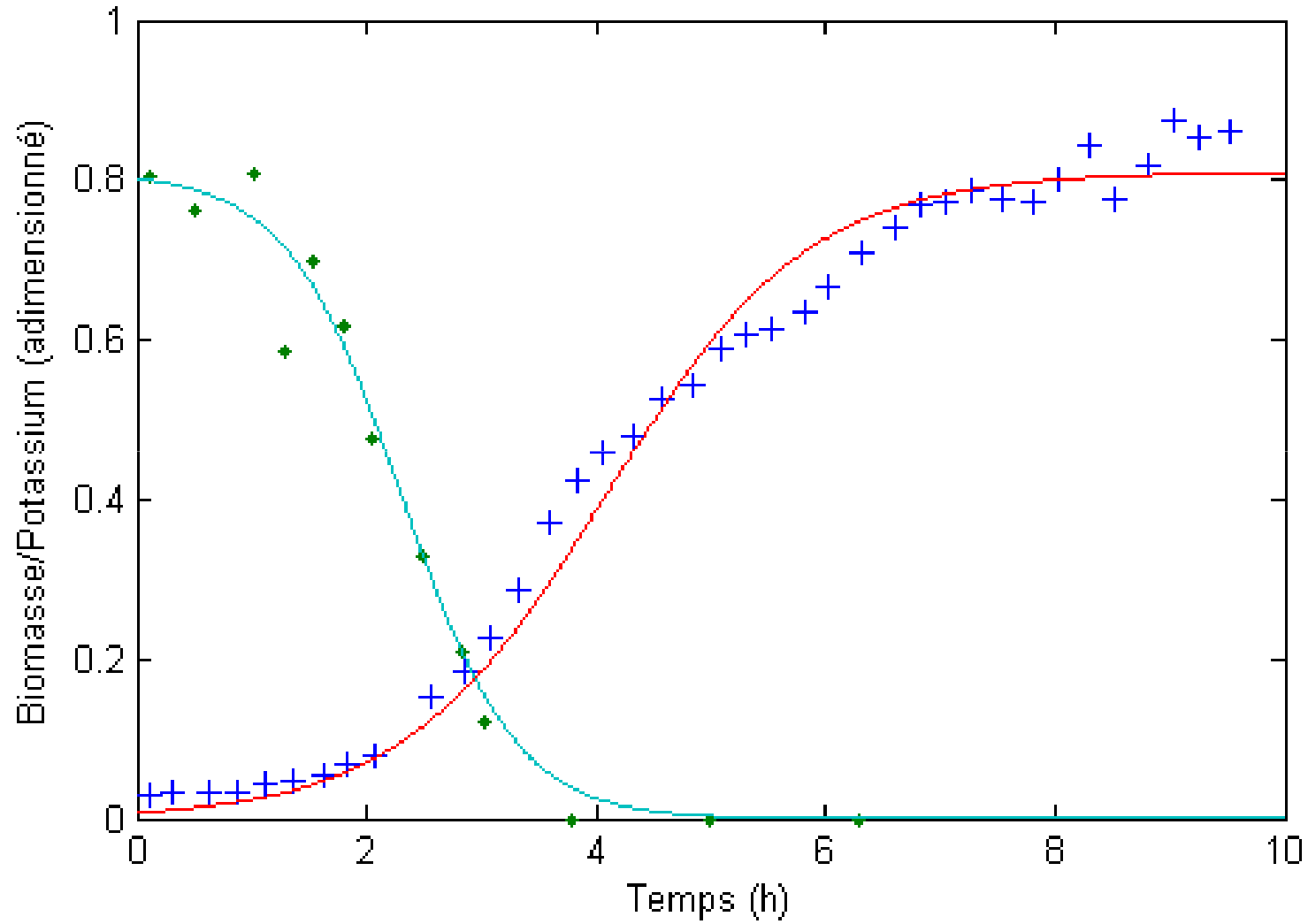


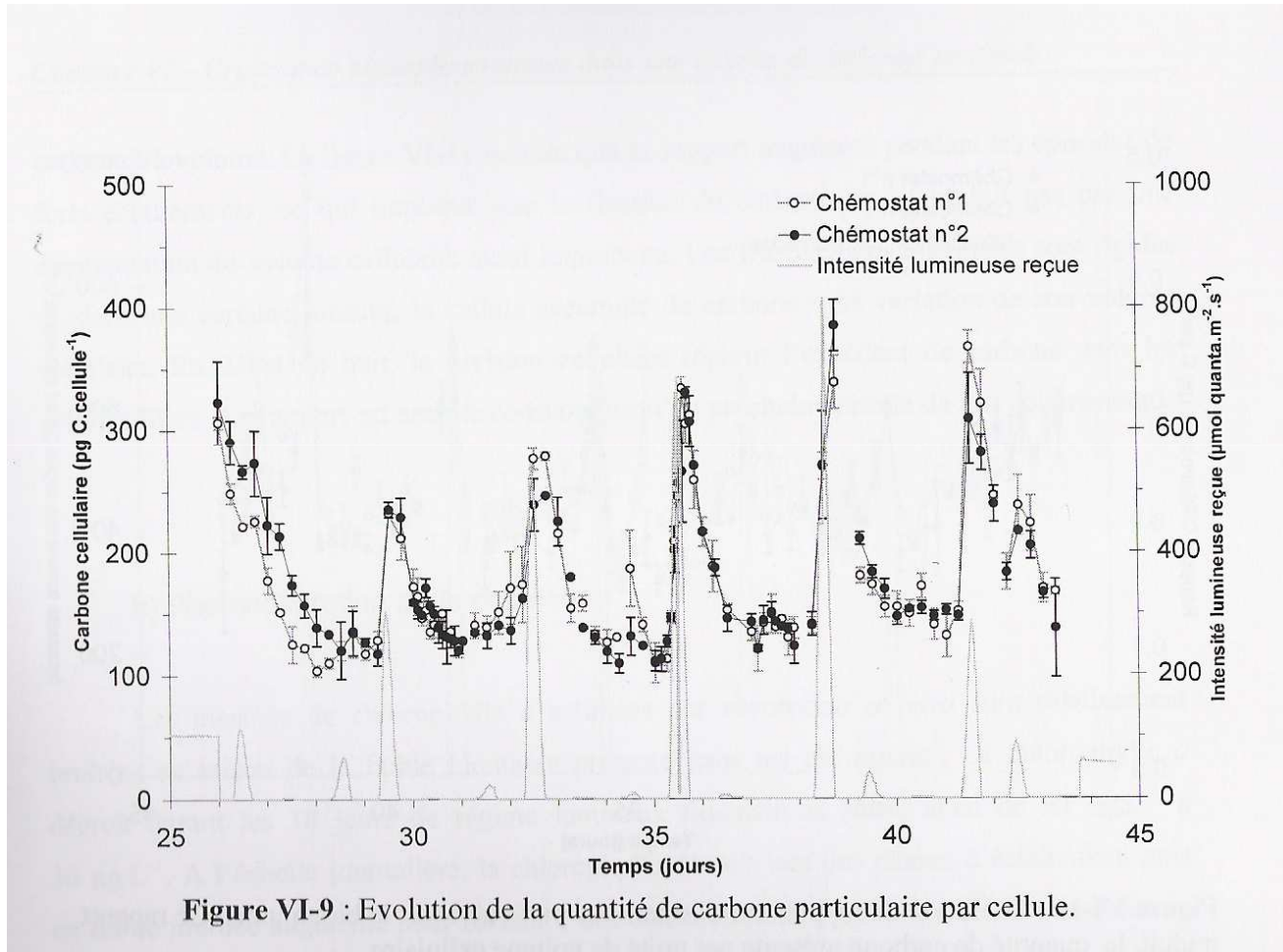
Exemples de séries chronologiques:  
*in vitro* et *in situ*

Données de croissance d'une population bactérienne  
en milieu de culture, limitée par un élément



Data d'après Mulder (1988)

## Exemple de reproductibilité de la dynamique d'une culture de phytoplancton



D'après la thèse de L. Pawlowski (LOV, Villefranche/mer)

# Dynamique d'une chaîne trophique en culture

## The Transient Behaviour of Food Chains in Chemostats

B.W. Kooi & S.A.L.M. Kooijman  
Department of Theoretical Biology,  
Institute of Ecological Science, Faculty of Earth and Life Sciences,  
Vrije Universiteit, De Boelelaan 1087,  
NL 1081 HV Amsterdam, The Netherlands

*Journal of Theoretical Biology*, 170:87-94, 1994

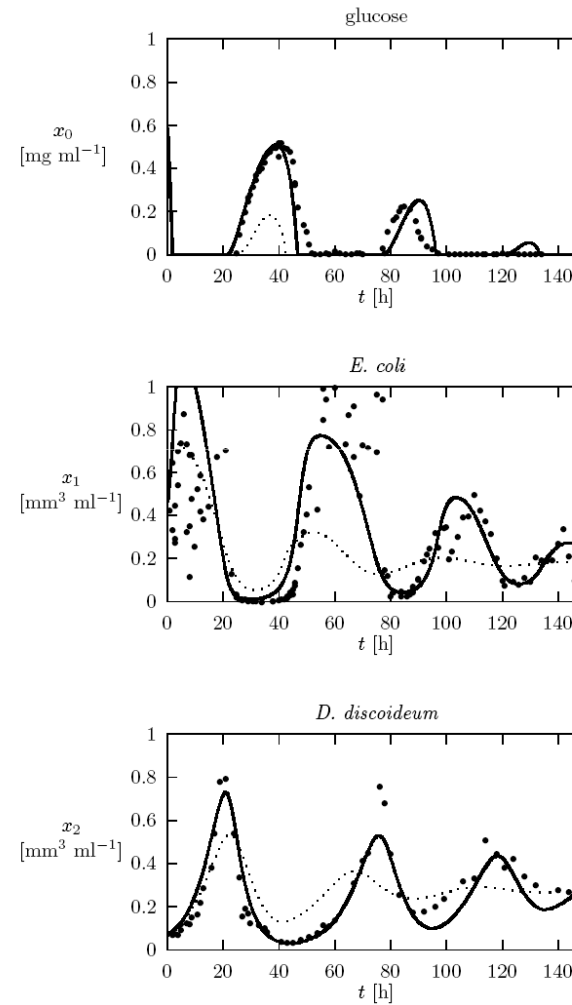


Figure 4: Comparison of experimental data of Dent *et al.* and DEBf model. Model predictions ( — ) and with enforced  $e = f$  ( . . . ) superimposed on data ( • ).

## Dynamique du zooplancton et des anchois au Pérou

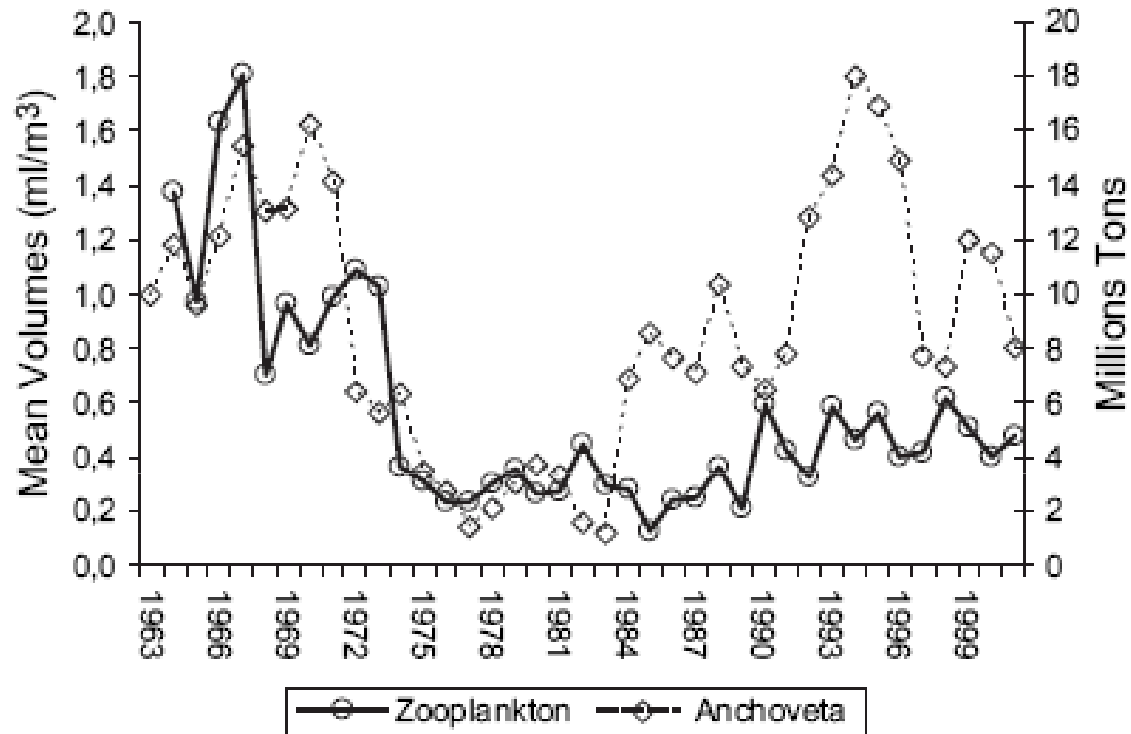


Figure 6. Mean annual zooplankton volumes and Peruvian anchoveta biomass from 1963 to 2001. Zooplankton values of 1979, 1988, and 1989 were interpolated with a 5-year moving average.

ICES Journal of Marine Science, 61: 478–484 (2004)  
doi:10.1016/j.icesjms.2004.03.027

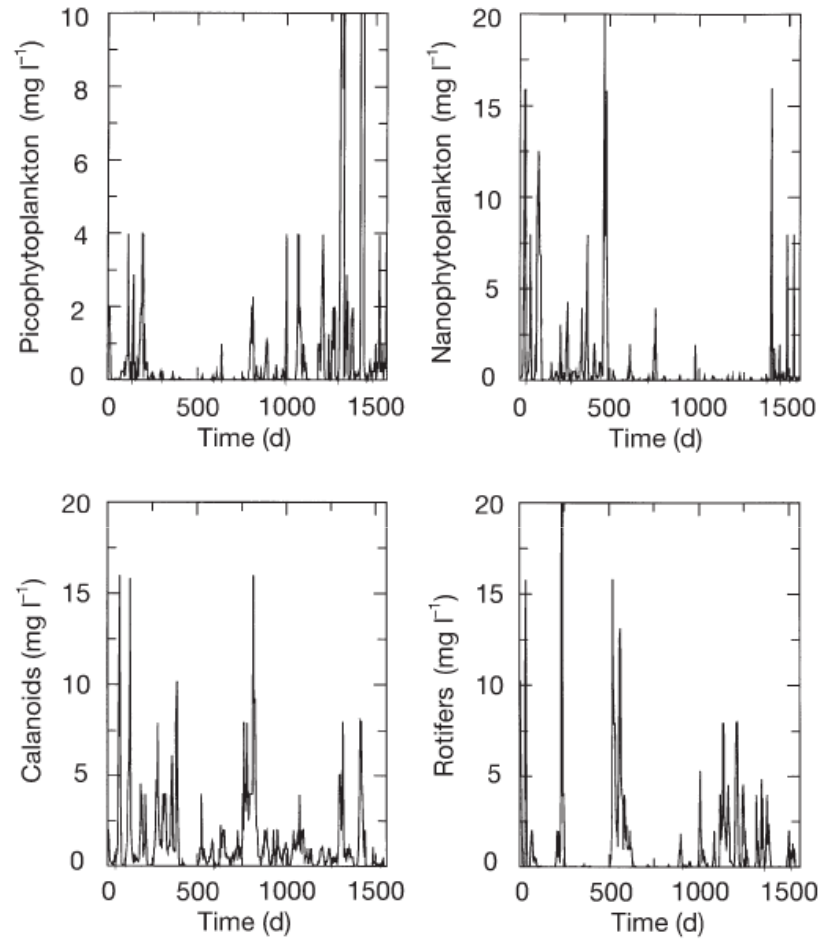
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### Zooplankton volume trends off Peru between 1964 and 2001

Patricia Ayón, Sara Purca, and Renato Guevara-Carrasco

## Dynamique planctonique en mésocosme



Vol. 242: 29–37, 2002

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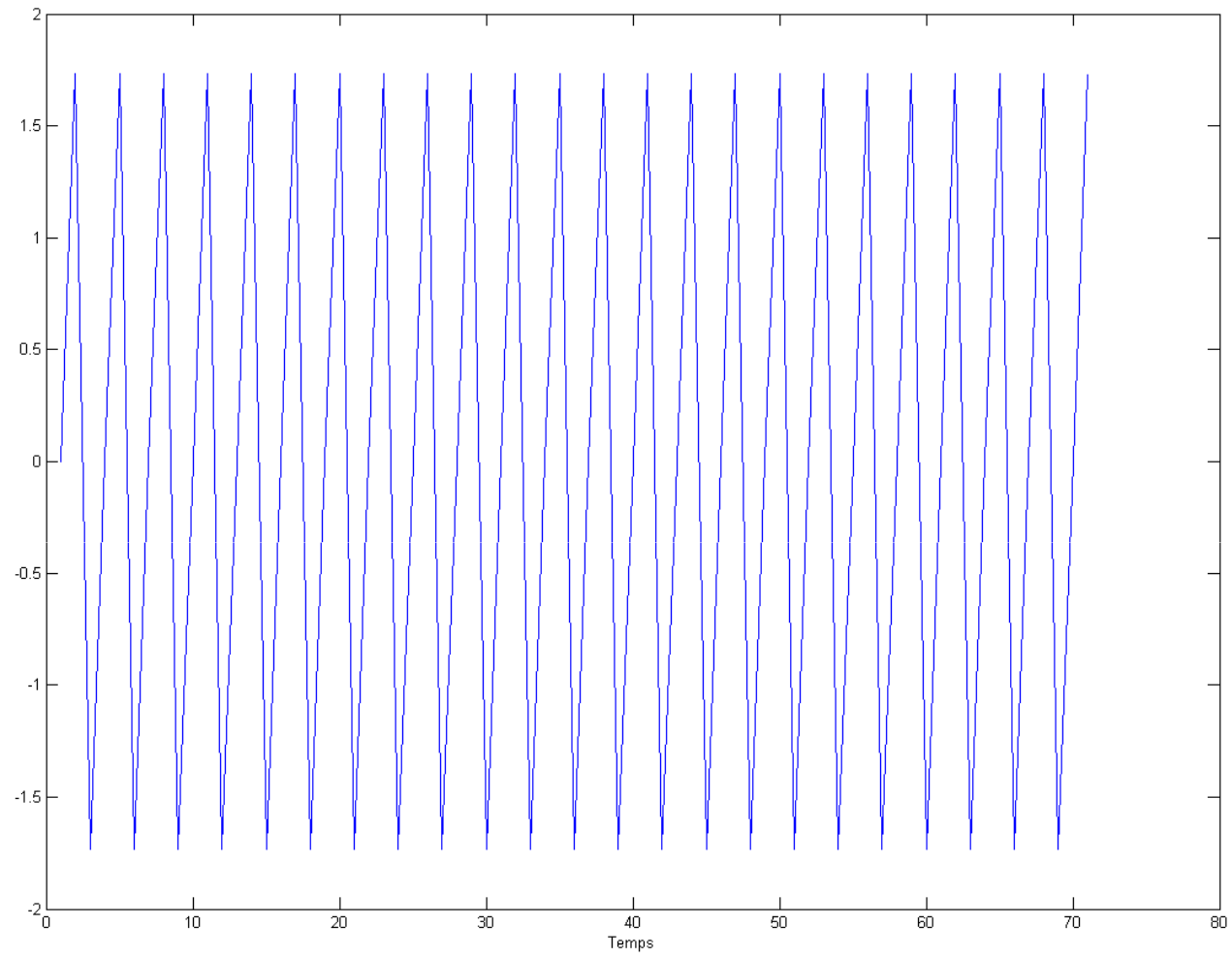
Published October 25

### Recurrence quantification analysis as a tool for characterization of non-linear mesocosm dynamics

Joachim W. Dippner<sup>1,\*</sup>, Reinhard Heerkloss<sup>2</sup>, Joseph P. Zbilut<sup>3</sup>

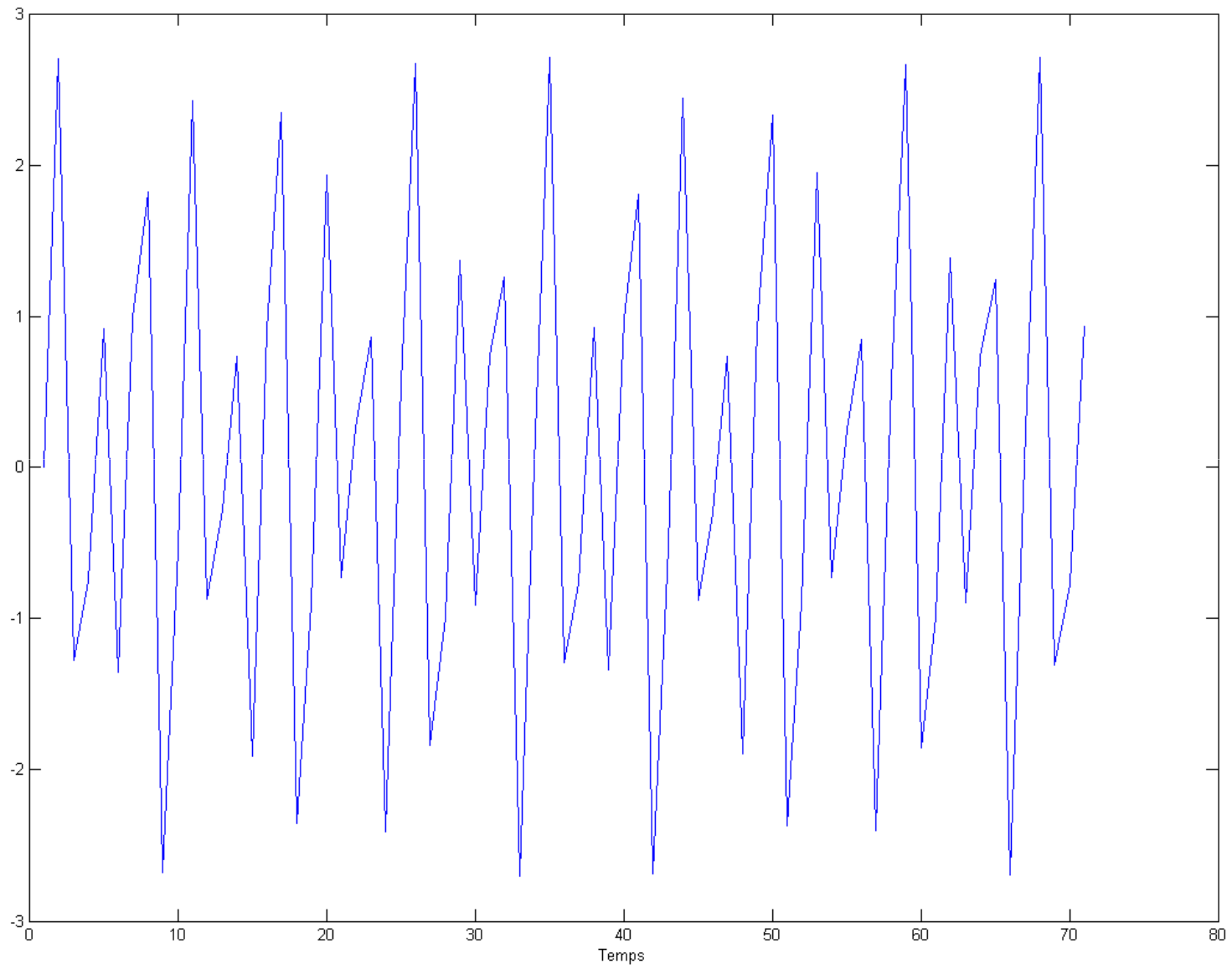
# Classes de séries chronologiques : exemples

# Dynamique périodique

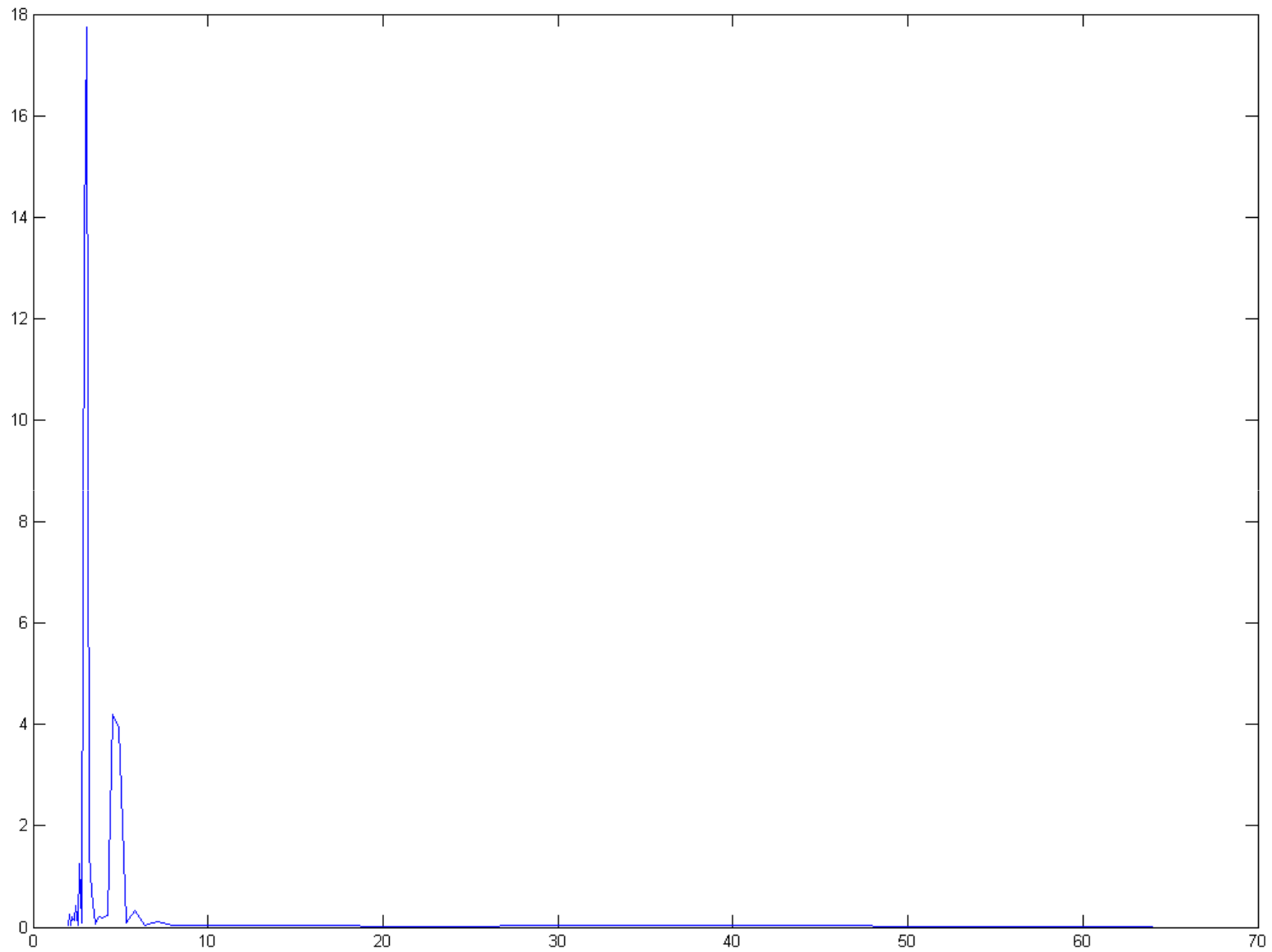




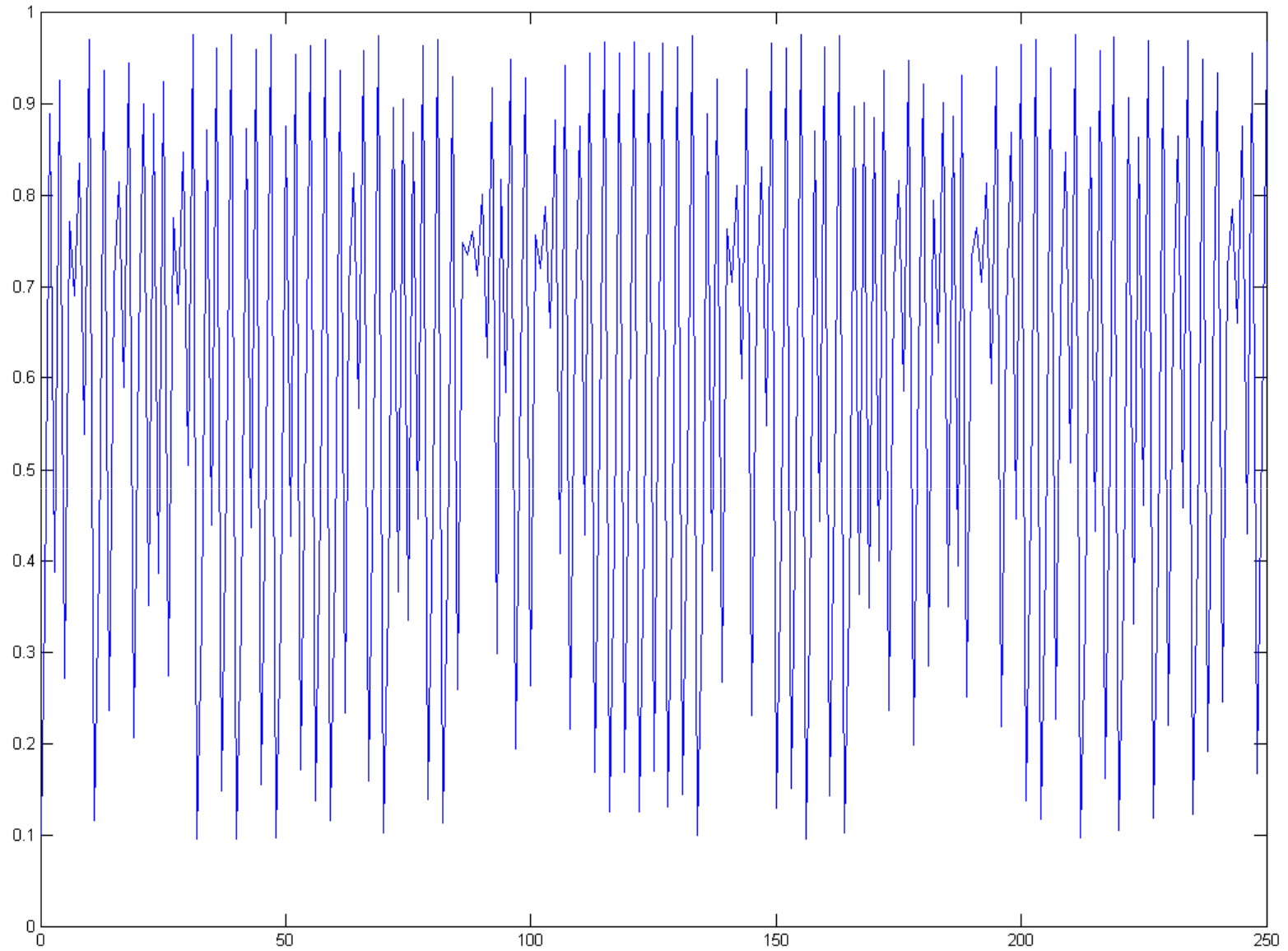
# Dynamique quasipériodique



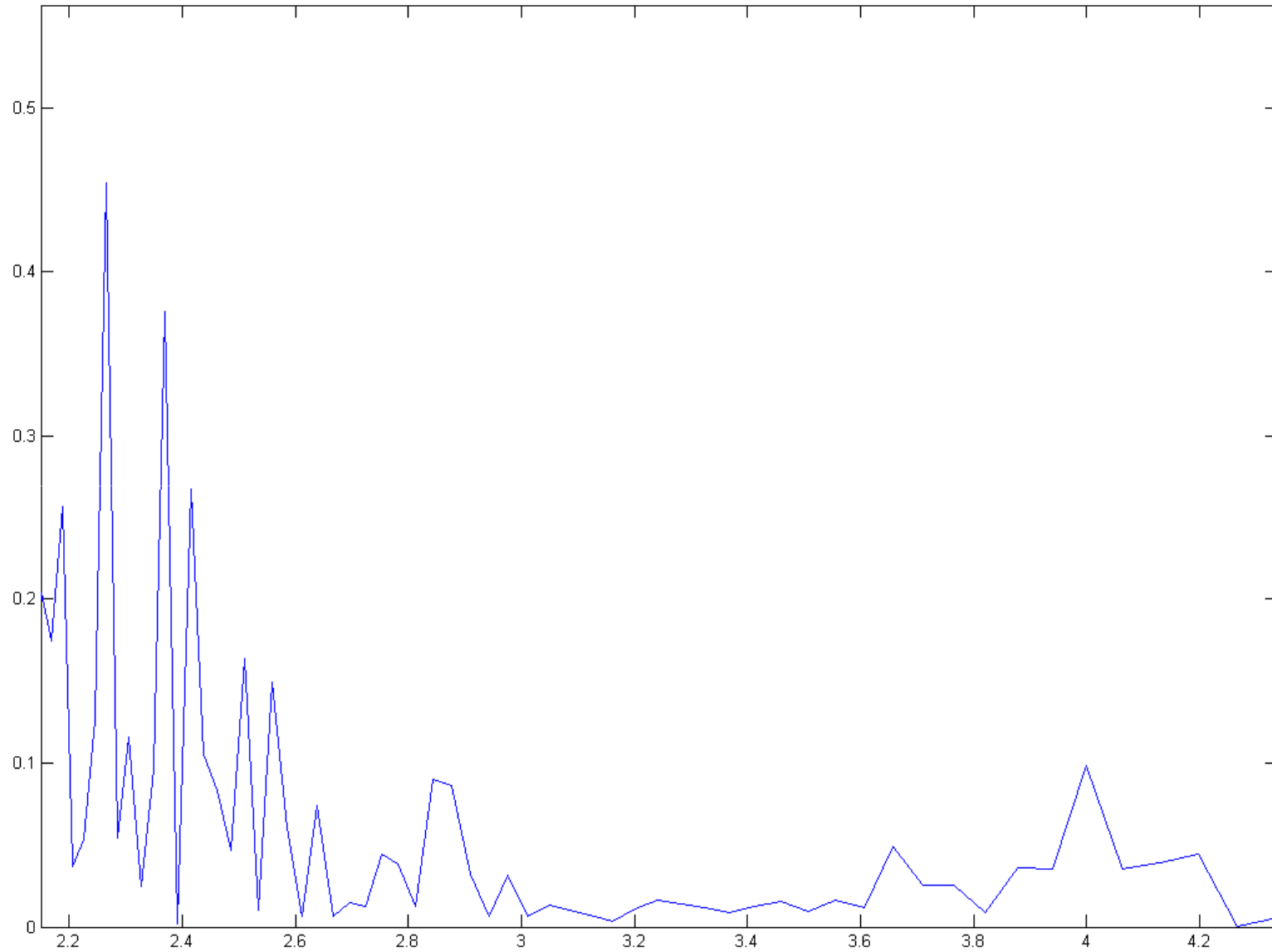
Spectre de Fourier de la série précédente



# Dynamique chaotique



Spectre de Fourier de la série précédente



## Représentation de la série dans le plan $(x_t, x_{t+1})$

