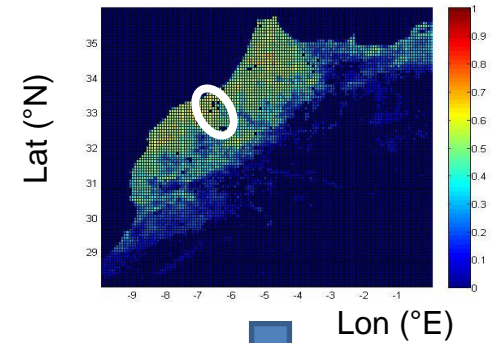


Modélisation par approche globale de la dynamique du blé pluvial observée par télédétection spatiale en zone semi-aride



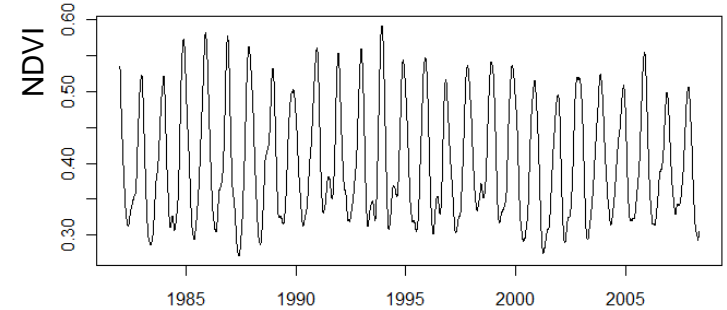
Mangiarotti S.
Drapeau L.
Coudret R.
Jarlan L.

Carte des indices NDVI (Maroc, Février 2000)



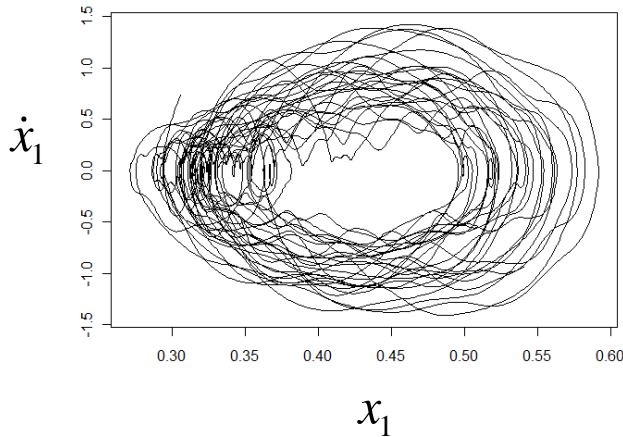
$$NDVI = \frac{\rho_{PIR} - \rho_R}{\rho_{PIR} + \rho_R}$$

Série temporelle (Settat) 1982–2008



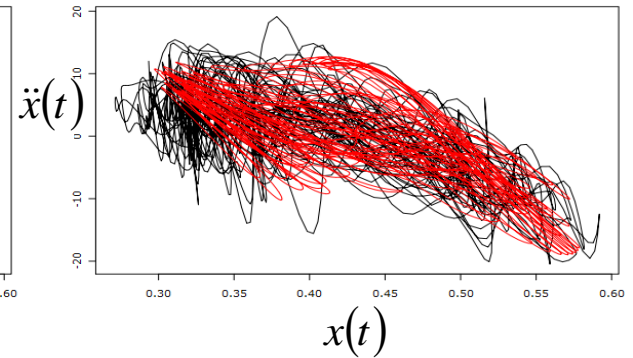
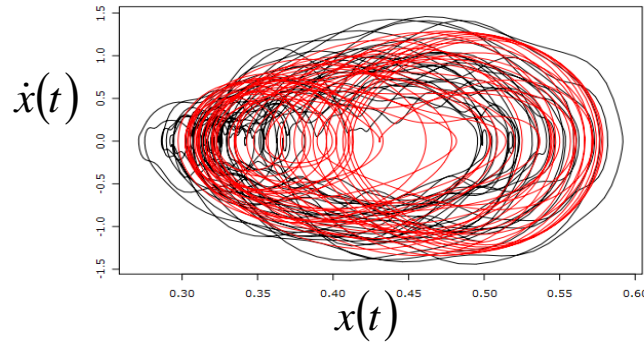
Modélisation Globale
Goesbet & Letellier (1994)

$$\begin{cases} \dot{x}_1 = X_2 \\ \dot{X}_2 = X_3 \\ \dots \\ \dot{X}_n = R(x_1, X_2, \dots, X_n) \end{cases}$$



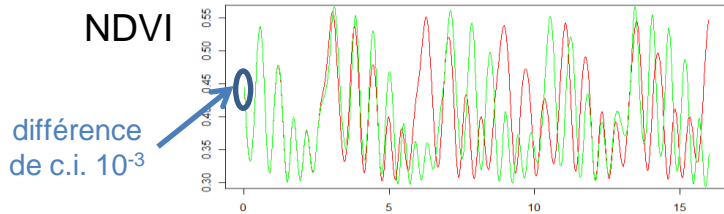
$$\begin{cases} x_1 = NDVI \\ X_2 = \dot{x}_1 \\ X_3 = \ddot{x}_1 \\ \dots \\ X_n = x^{(n)} \end{cases}$$

PoMoS & GloMo



Forte sensibilité aux c.i.

Exposants de Lyapunov



$$\hat{\lambda}_1 = 5.3 \gg 0 \quad (\text{Wolf et al. 1985})$$

$$\hat{\lambda}_2 = 2.5 \gg 0 \quad (\text{Grond et al. 2003})$$

Application de 1^{er} retour

Diagramme de bifurcation

