

Réseau International des Organismes de Bassin

Conférence Internationale sur l'application de la directive cadre européenne sur l'eau

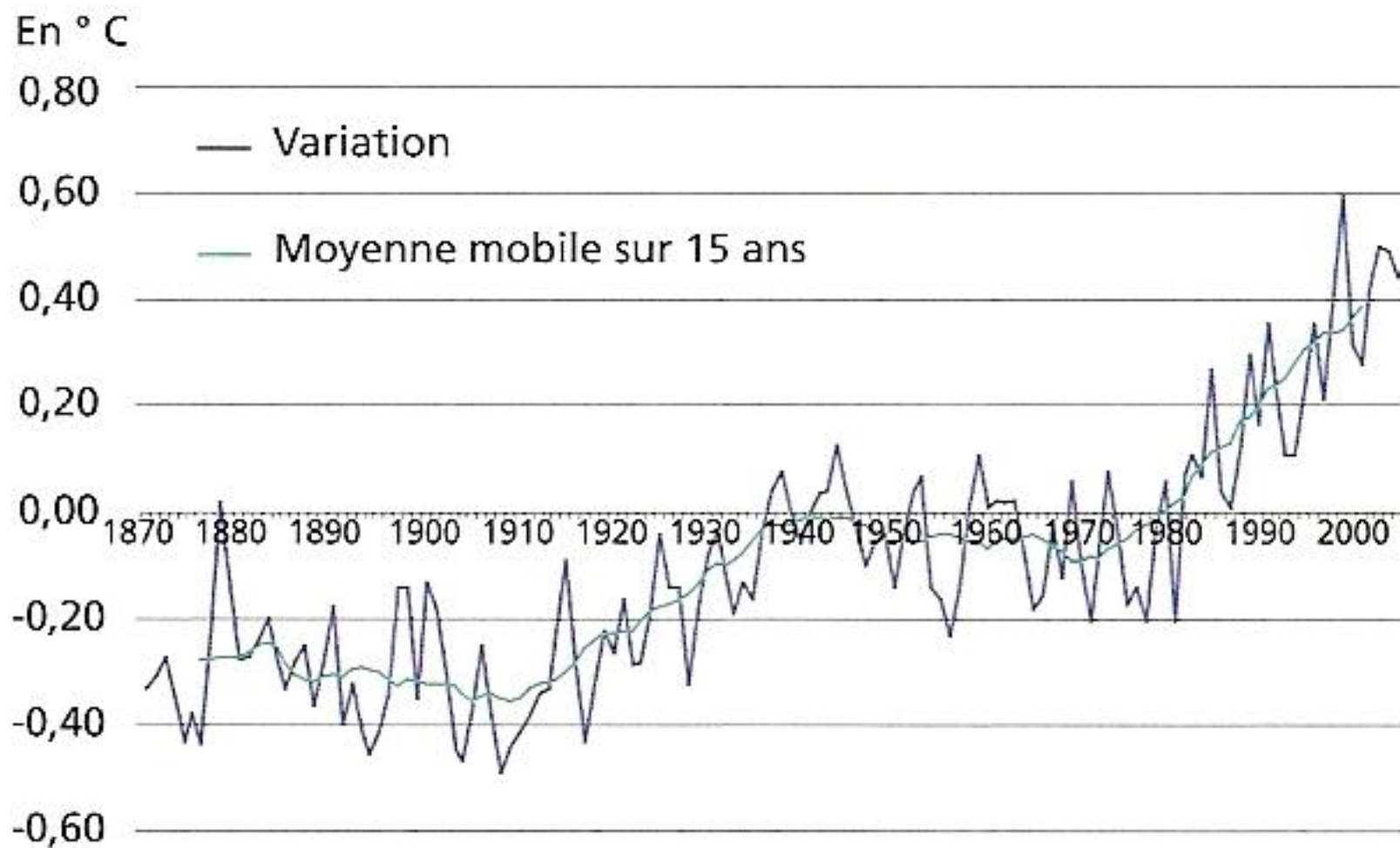
Rome 8-10 Novembre 2007

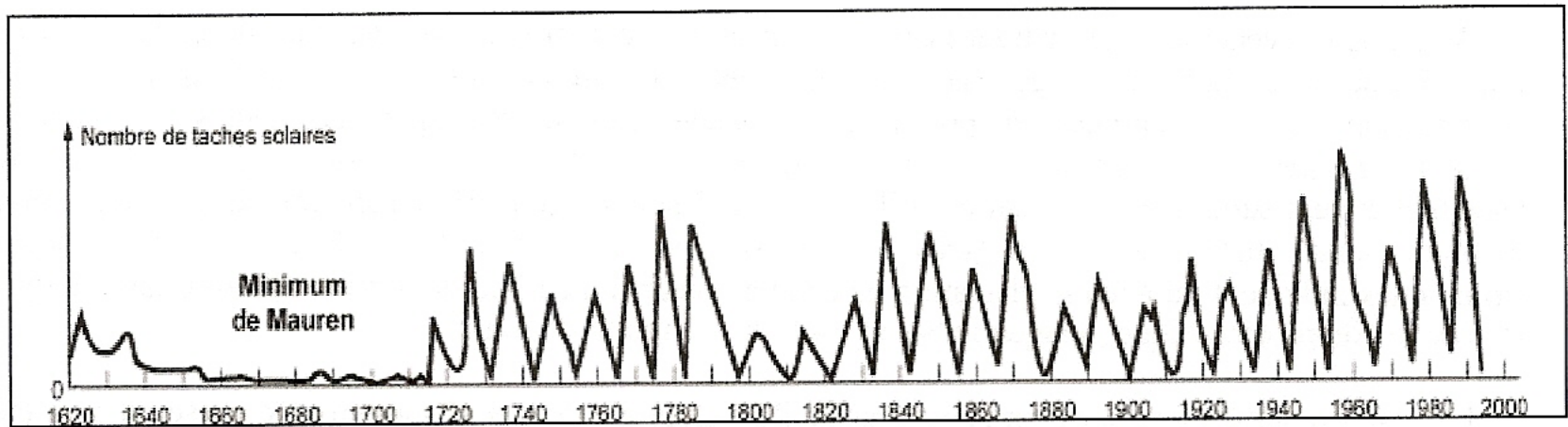
Climat, hydrologie, variabilité et changements

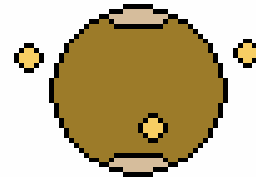
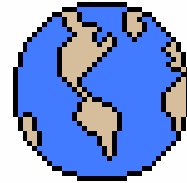
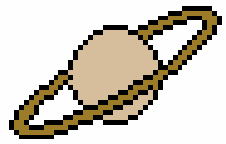
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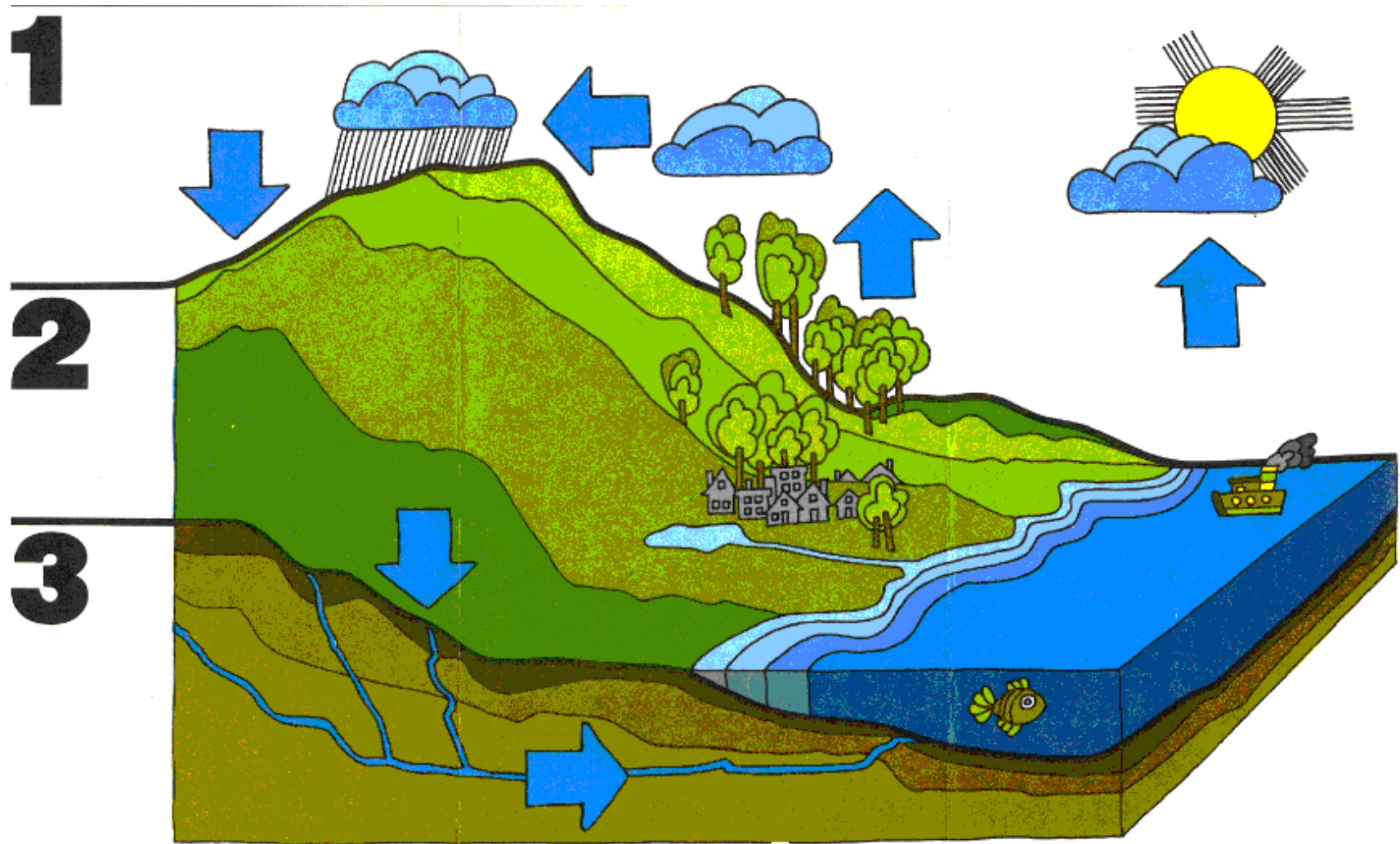




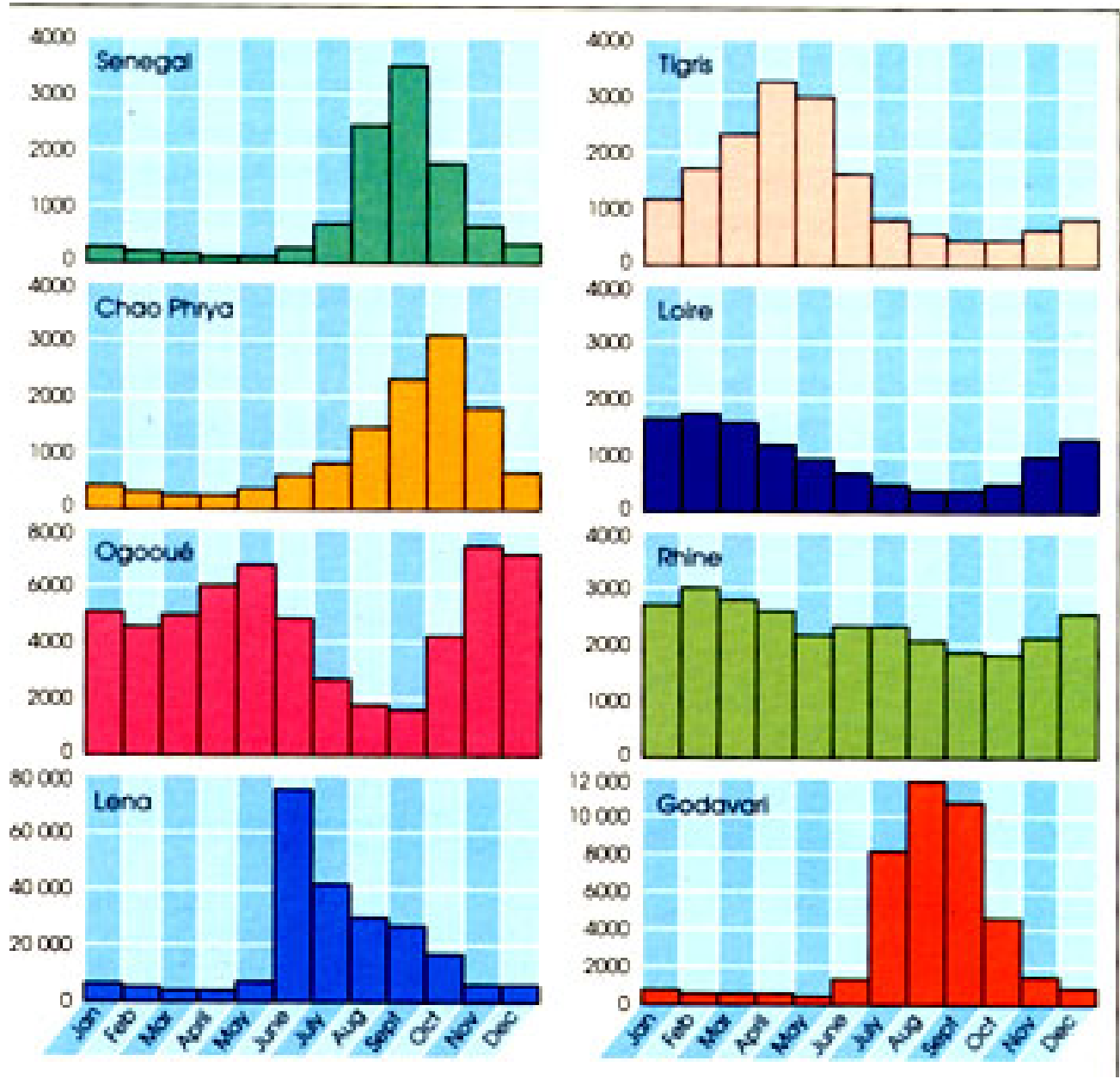
POPOCATEPETL



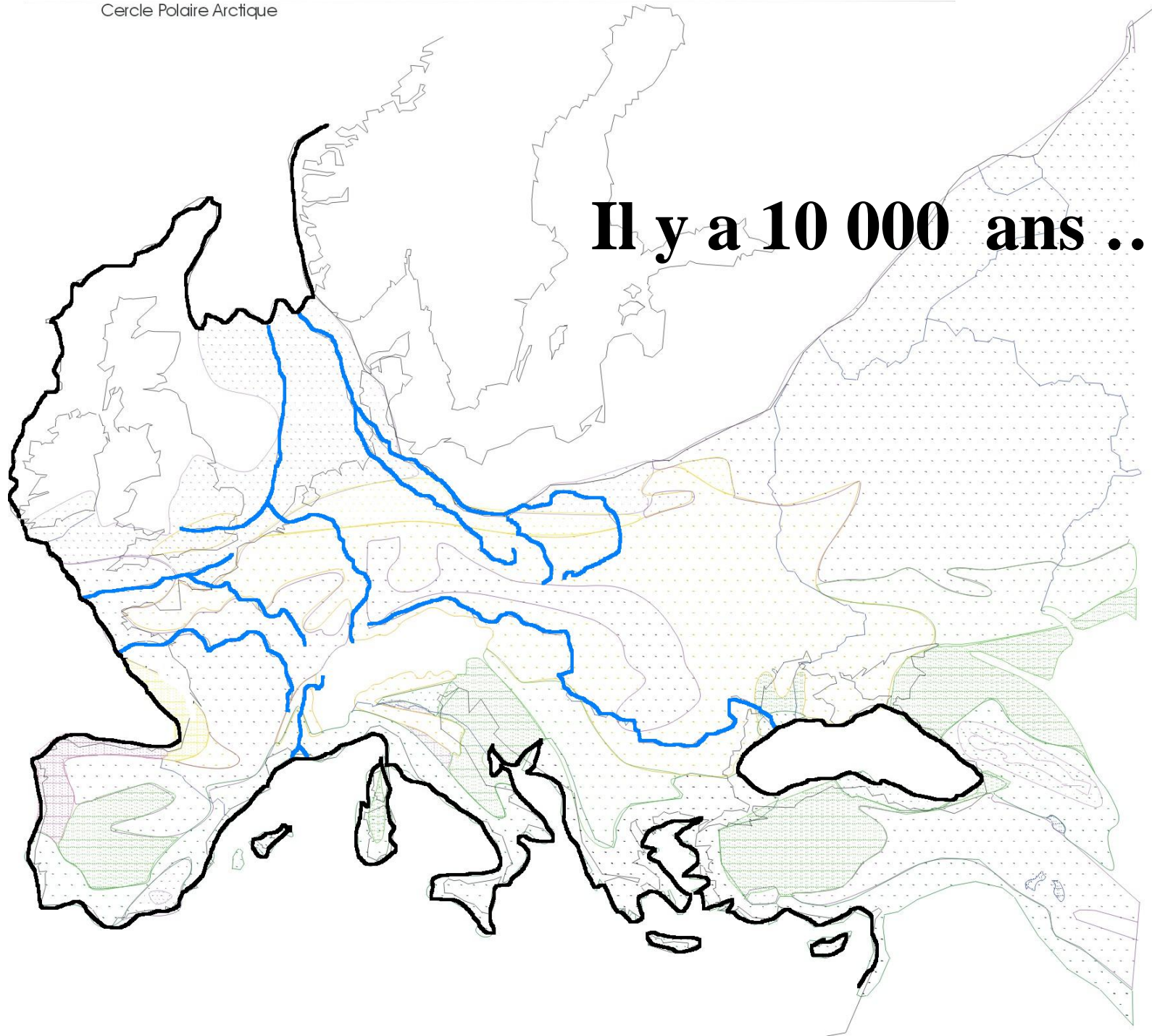




1 454 320 000 km³



Il y a 10 000 ans ...



Equations de Navier Stokes

$$\frac{\partial \vec{v}}{\partial t} + (\vec{v} \cdot \nabla) \vec{v} = - \frac{\nabla p}{\rho} + \nu \nabla^2 \vec{v} + \vec{f}$$

$$\nabla \cdot \vec{v} = 0$$

Invariantes d'échelle

Sous une transformation isotrope $\vec{x} \Rightarrow \frac{\vec{x}}{\lambda}$ si

Vitesse $\vec{v} \Rightarrow \frac{\vec{v}}{\lambda^H}$

Temps $t \Rightarrow \frac{t}{\lambda^{1-H}}$

Viscosité $\nu \Rightarrow \frac{\nu}{\lambda^{1+H}}$

Force internes $\vec{f} \Rightarrow \frac{\vec{f}}{\lambda^{2H-1}}$

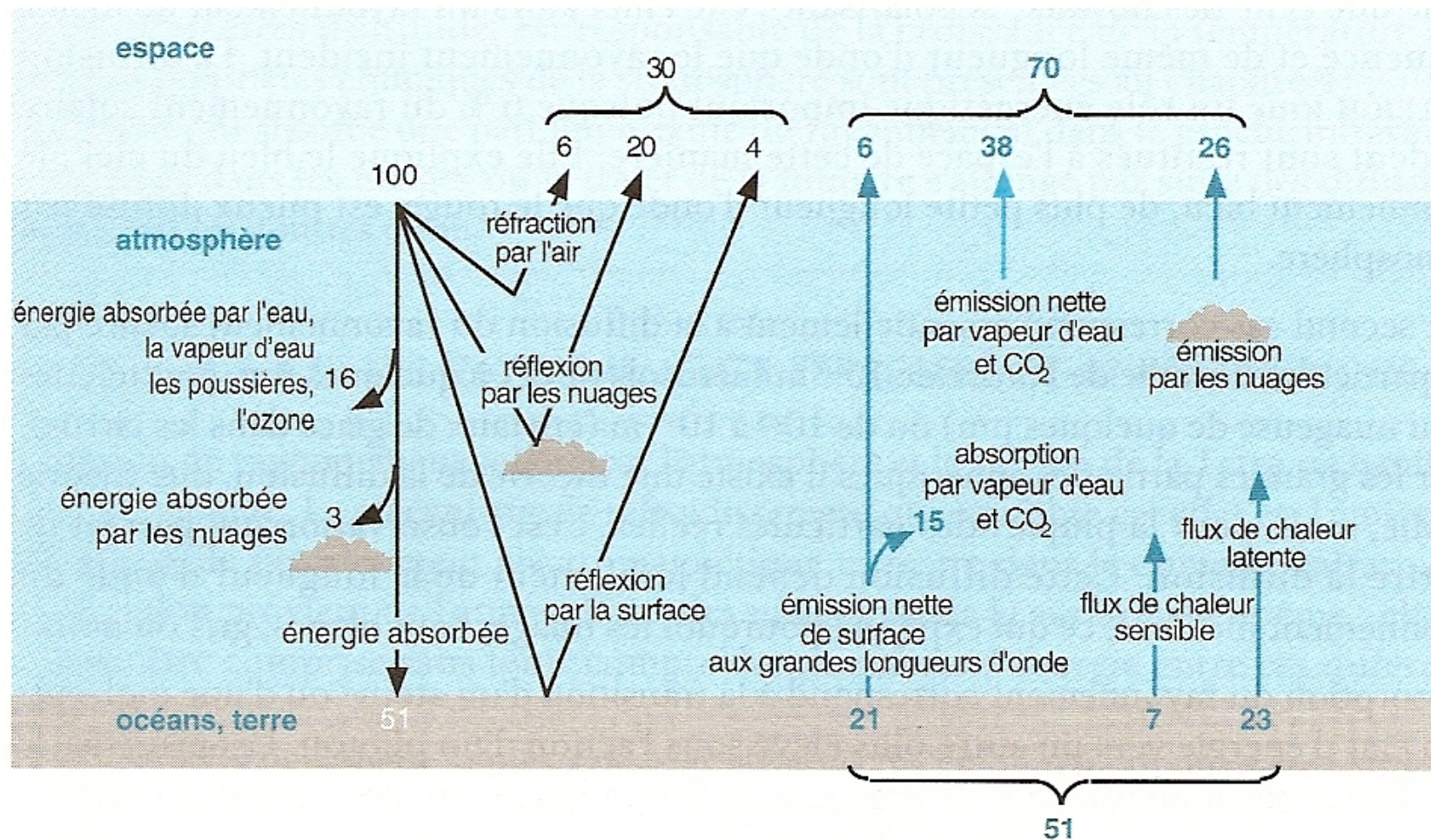
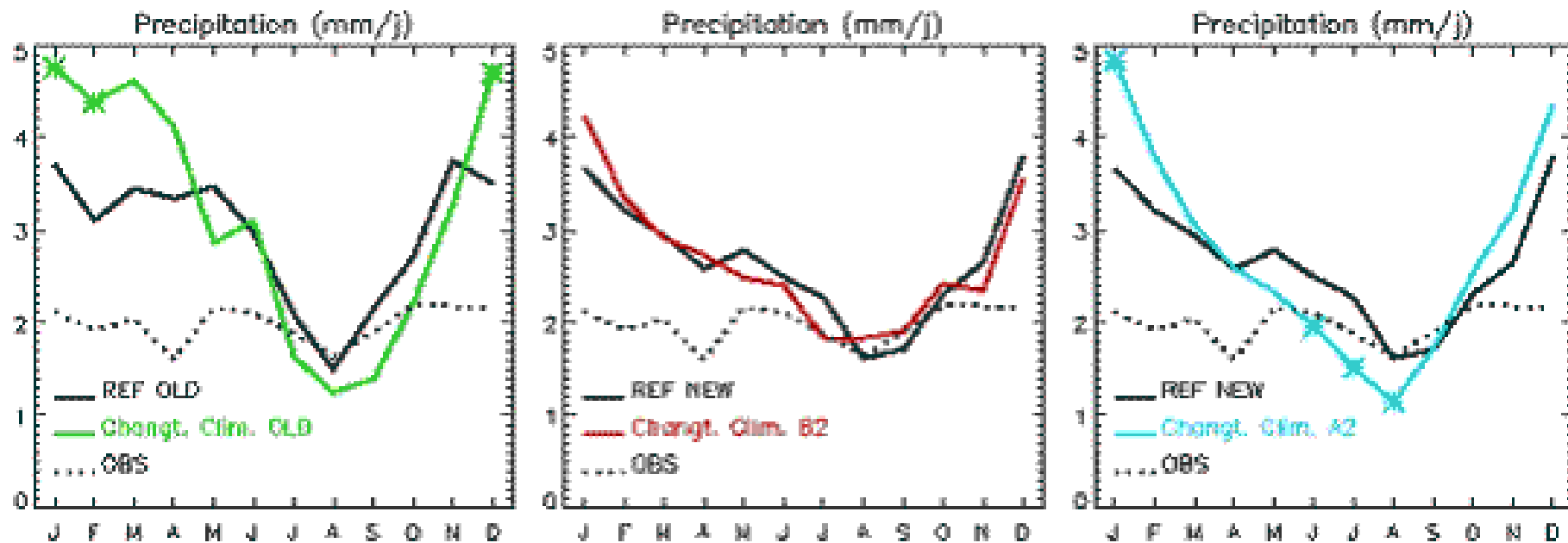
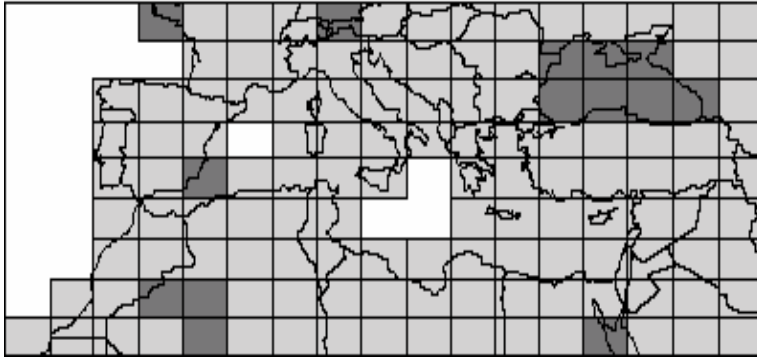


Fig. 2 – Transformations de l'énergie solaire incidente.

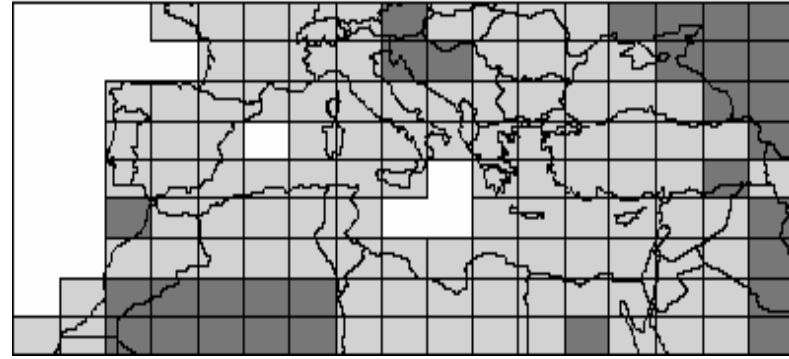




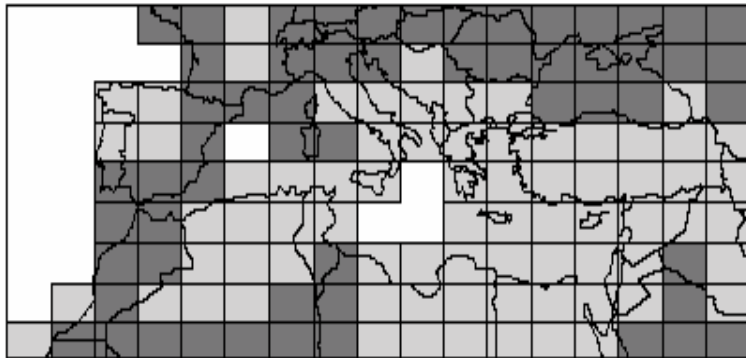
Précipitations observées et simulées sur le bassin de la Seine



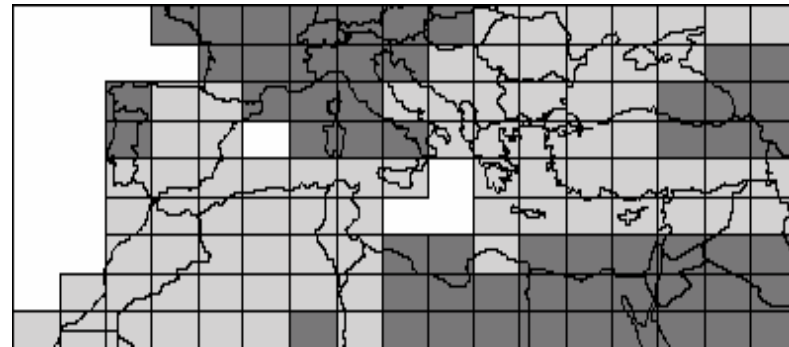
HadCM3



ECHAM4



NCAR



CSIRO

■ augmentation

■ diminution

Evolution prévue des précipitations à l'horizon 2080

d'après Ardouin-Bardin 2006

Le 3ième rapport du GIEC suggère que
la gravité des évènements extrêmes
(Sécheresses, Crues, Tempêtes,...)
devrait augmenter
en raison du changement climatique.

Trend detection in river flow series: 1. Annual maximum flow

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UK*

Abstract Results of a study on change detection in hyc
maximum river flow are presented. Out of more than a
available by the Global Runoff Data Centre (GRI
worldwide data set consisting of 195 long series of
selected, based on such criteria as length of series, cur
values, adequate geographical distribution, and priori
analysis of annual maximum flows does not support
growth of high flows. Although 27 cases of strong, s
were identified by the Mann-Kendall test, there are 3
(137) time series do not show any significant changes
advised in interpreting these results as flooding is a co
a number of factors that can be associated with loc
climatic processes. Moreover, river flow has strong
long-term persistence which can confound the results o

No upward trends in the occurrence of extreme floods in central Europe

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Massachusetts 02215, USA

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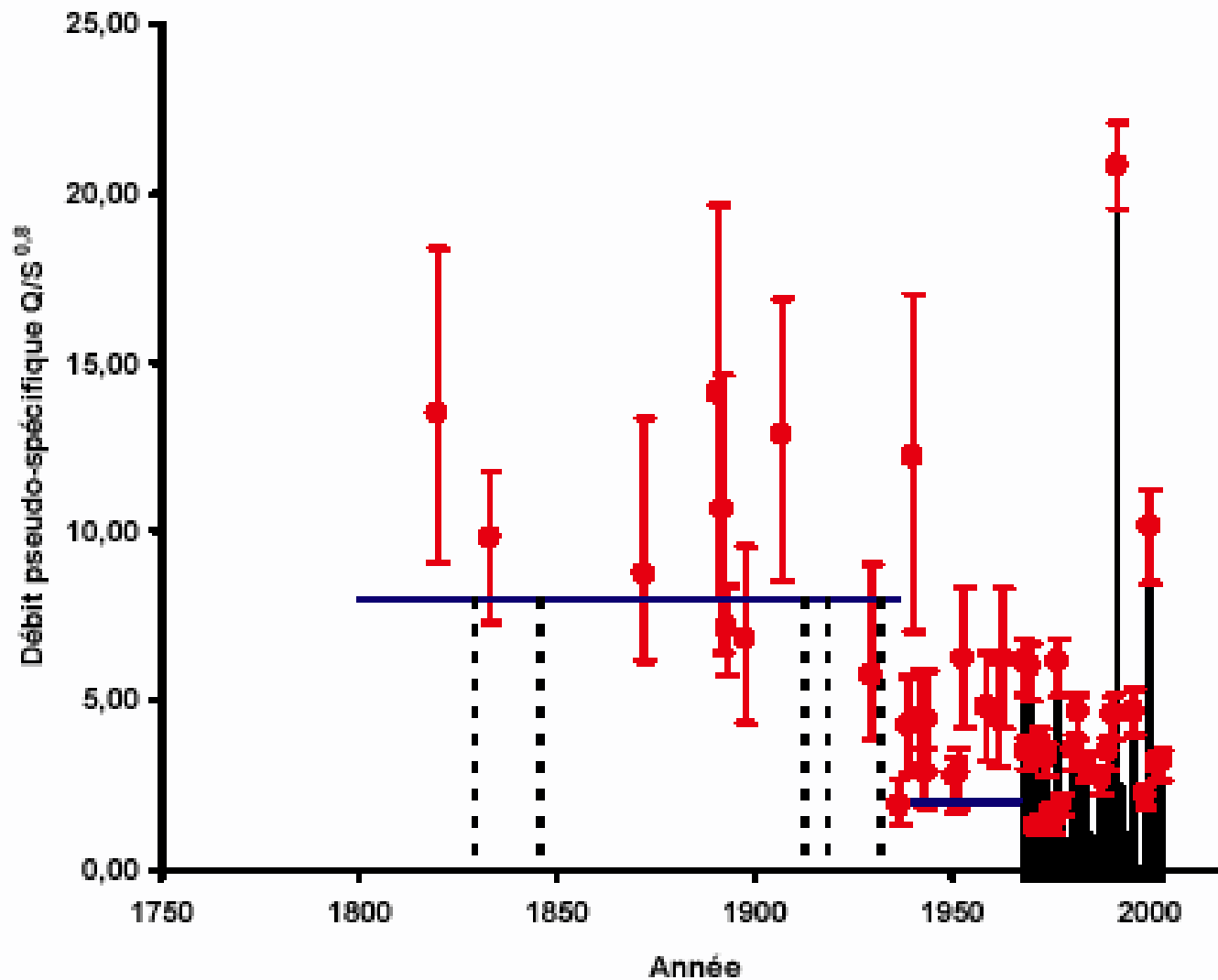


figure 30 . Résultats de la reconstitution des crues historiques de la Salz



La dispartion de la mer d'Aral



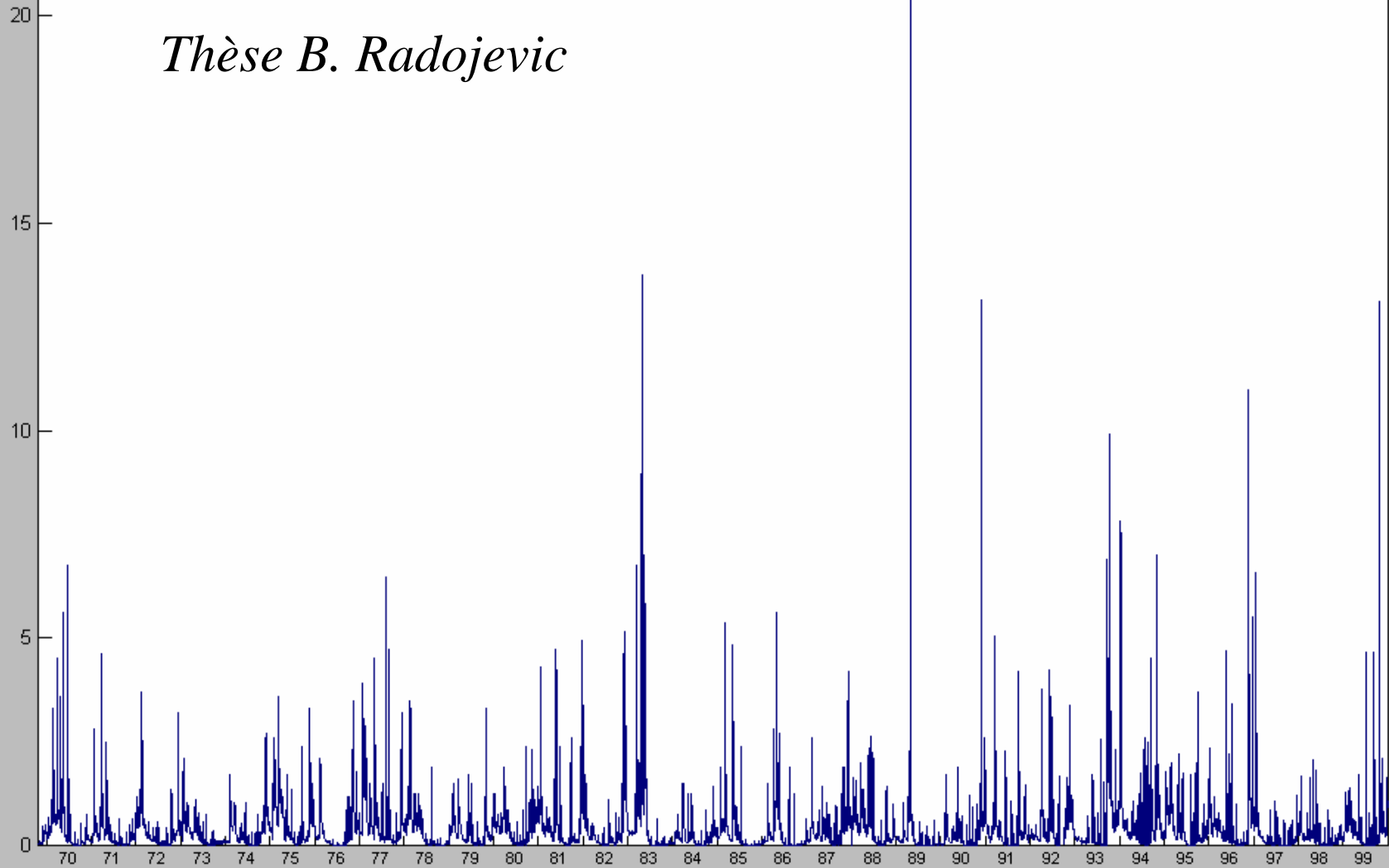
Assèchement de l'aval du Fleuve jaune, Chine, années 90

Echelle gauche
Débit (m³/s)

D:\A_these\Biljana\hydrologie\crap6999.qv2 - Yzeron à Craponne (49 km²)

Yzeron à Craponne (France) 49 km², de 1970 à 1999

Thèse B. Radojevic



Séquence du 27/10/1969 10:37 au 31/12/1999 23:59

Merci de votre attention

