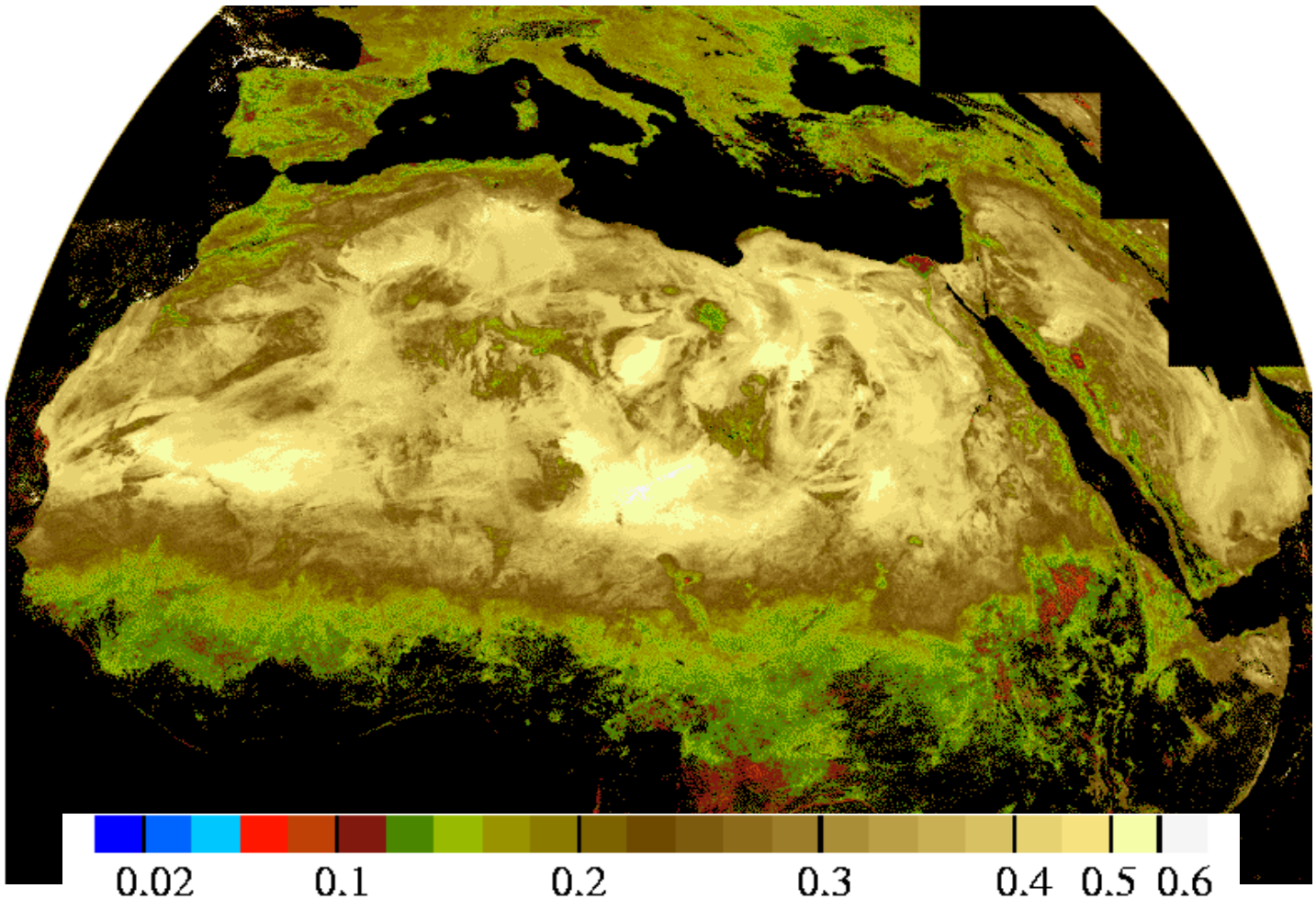
for WP4.1.3 // meeting, 22 Sept 2005 morning, Francoise Guichard

GCM diagnostics : an AMMA S-N transect (lat,height,time)

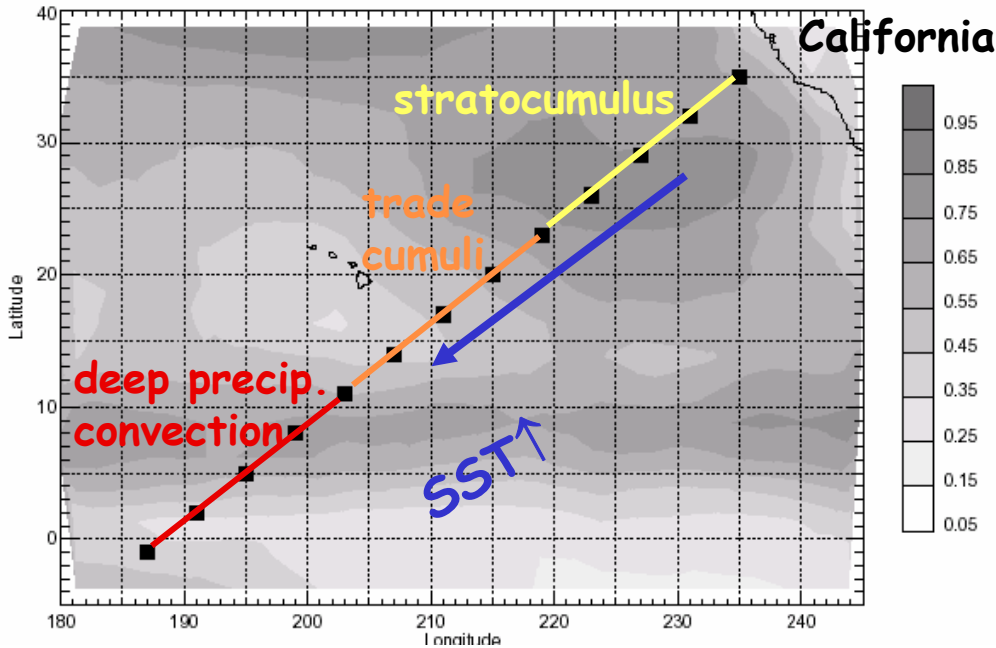
some people involved so far: F. Favot, F. Guichard, I. Musat, F. Hourdin, P. Marquet, P. Ruti

albedo juin 1996 EUMETSAT/JRC



EUROCS 2D cross section (Hadley cell) intercomparison of water cycle in GCMs

Siebesma et al. (2004)



to complement SCM 1D method

cause of error in 1D= cause of error in 3D? (feedback loops)

compare large-scale circulations large-scale, e.g. subsidence over stratocumulus.

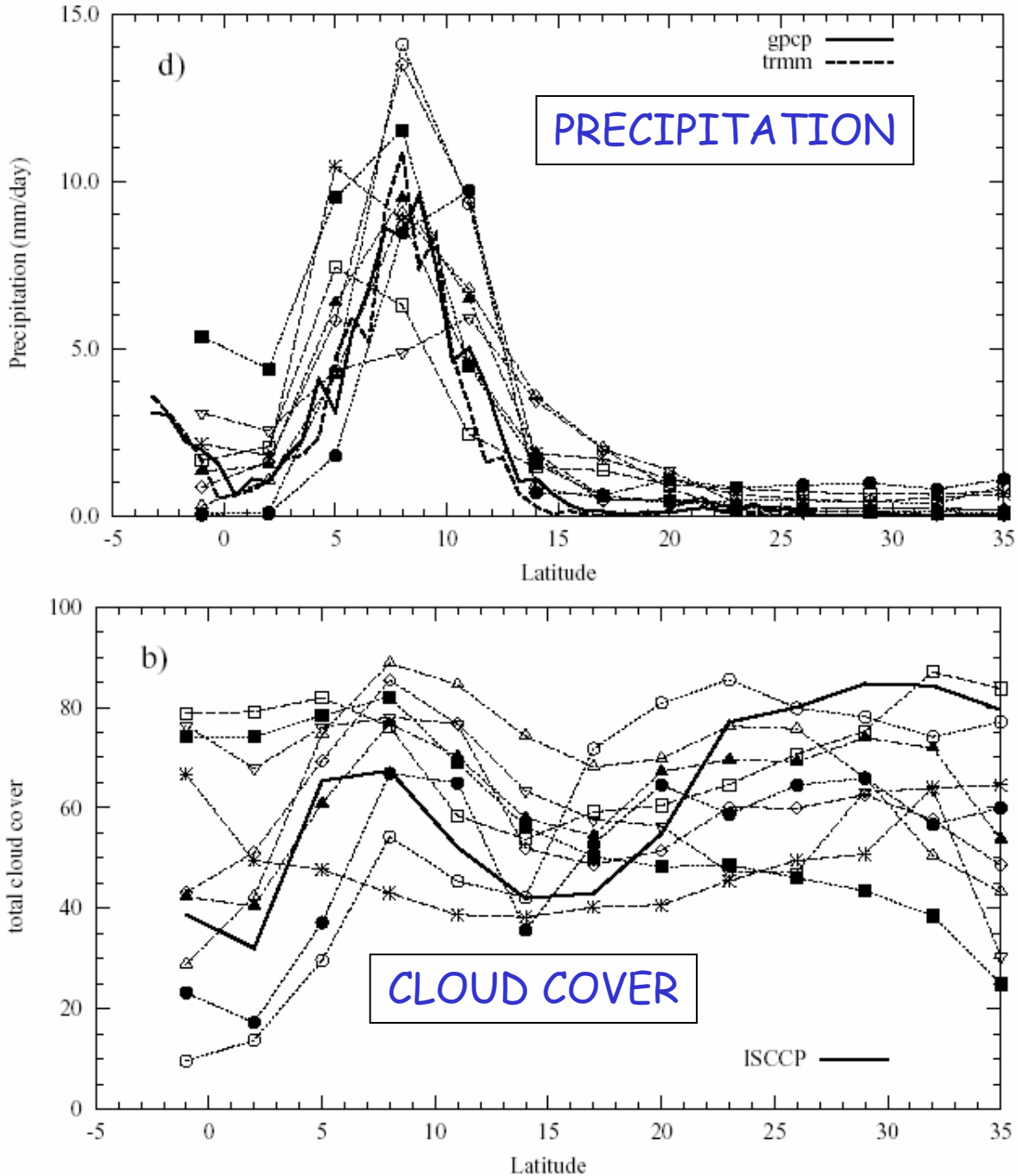
monthly means of :
fct(x): precip, surf evap, rad flux, pw...
fct(x,z): vertical velocity, moisture, cloud fraction, cloud water amount…

different sources of data

(satellite products analyses)

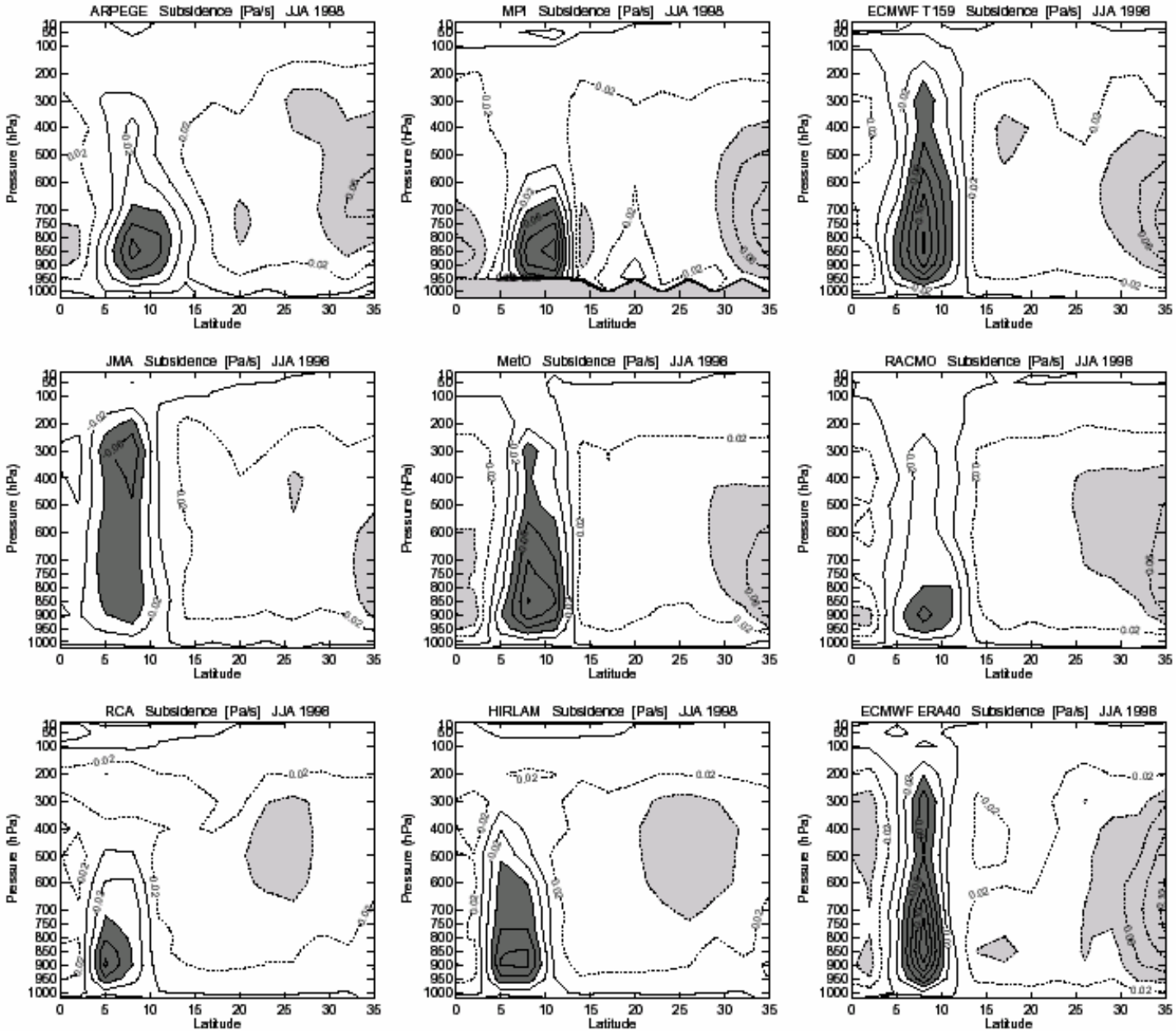
Archive	Datasets	Platforms	ΔxΔy (deg), Δt	Parameters
NASA Langley ASDC	CERES ES9	TRMM	2.5x2.5, ..	TOA Radiative fluxes Surface SW fluxes
RSS, GCSS-DIME	SSMI	DMSP F11, F12, F14	0.25x0.25, 2/day	Liquid water path Water vapour column
ISCCP, GCSS-DIME	D1	based on DX	2.5x2.5, 3hr	Cloud cover
NASA GSFC, GCSS-DIME	GPCP v.2	NOAA, gauges	1.0x1.0, dayly	Precipitation rate
NASA GSFC	TRMM 3B42	TRMM	1.0x1.0, dayly	Precipitation rate
NCEP	OI	AVHRR	1.0x1.0, monthly	Sea surface temperature

Siebesma et al. (2004)



VERTICAL VELOCITY

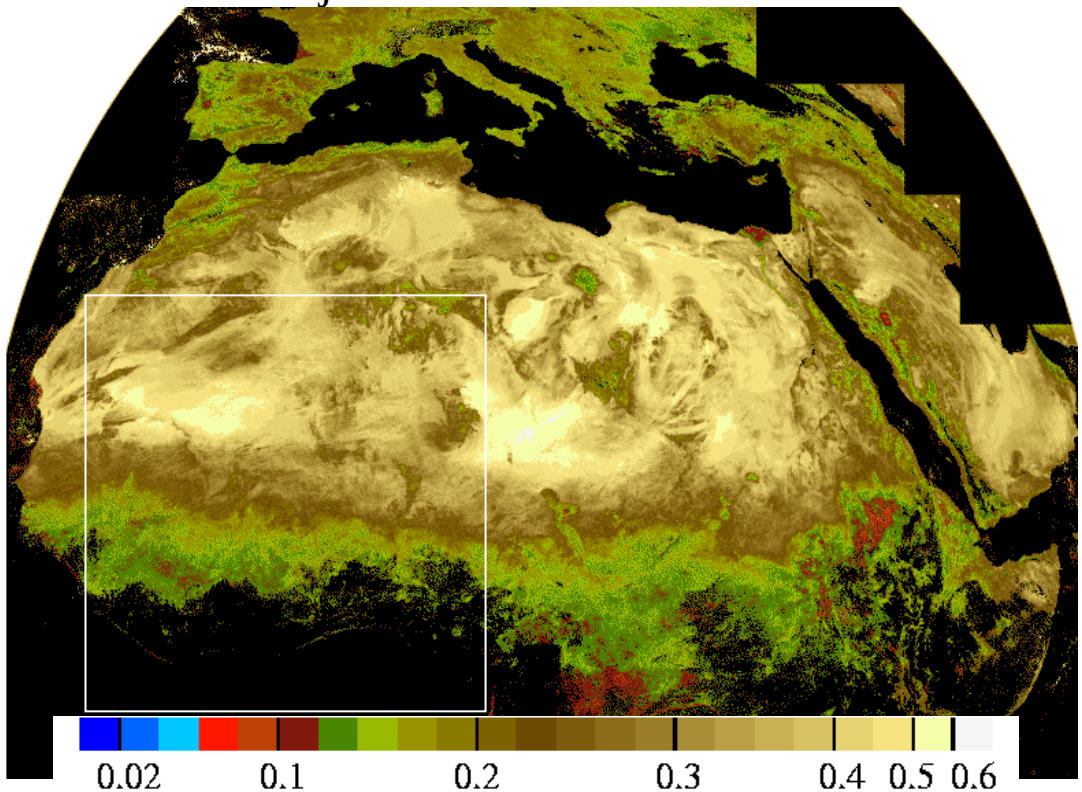
Siebesma et al. (2004)



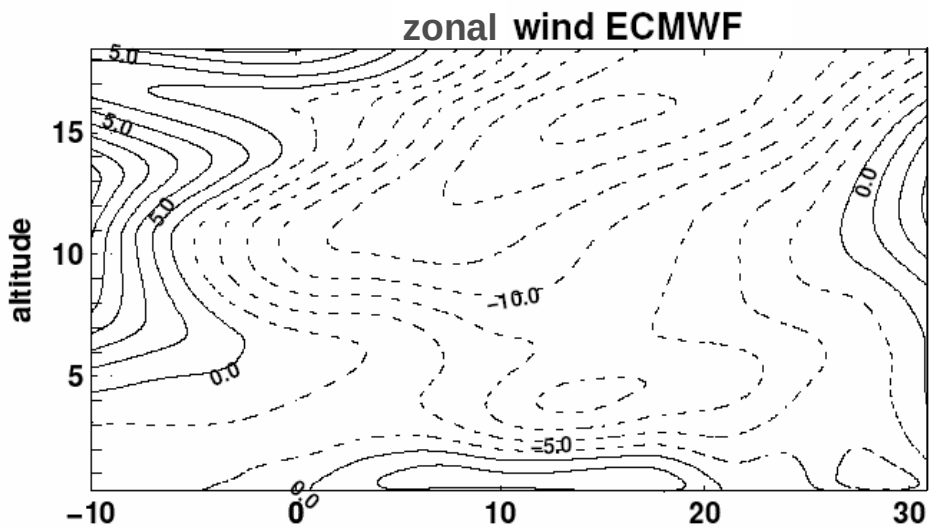
characteristics of the area at large scale

well defined
strong meridian surface gradients

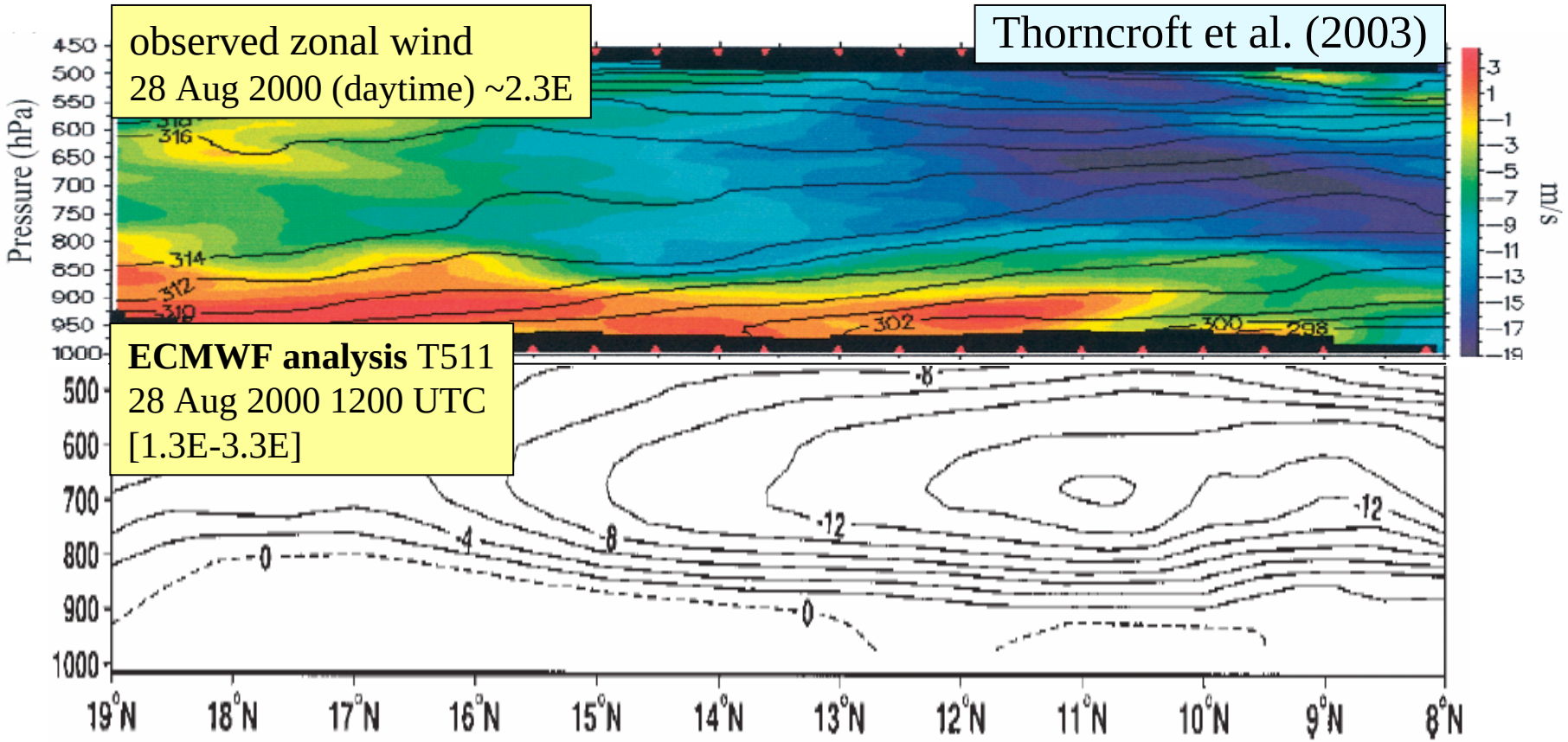
albedo juin 1996 EUMETSAT/JRC



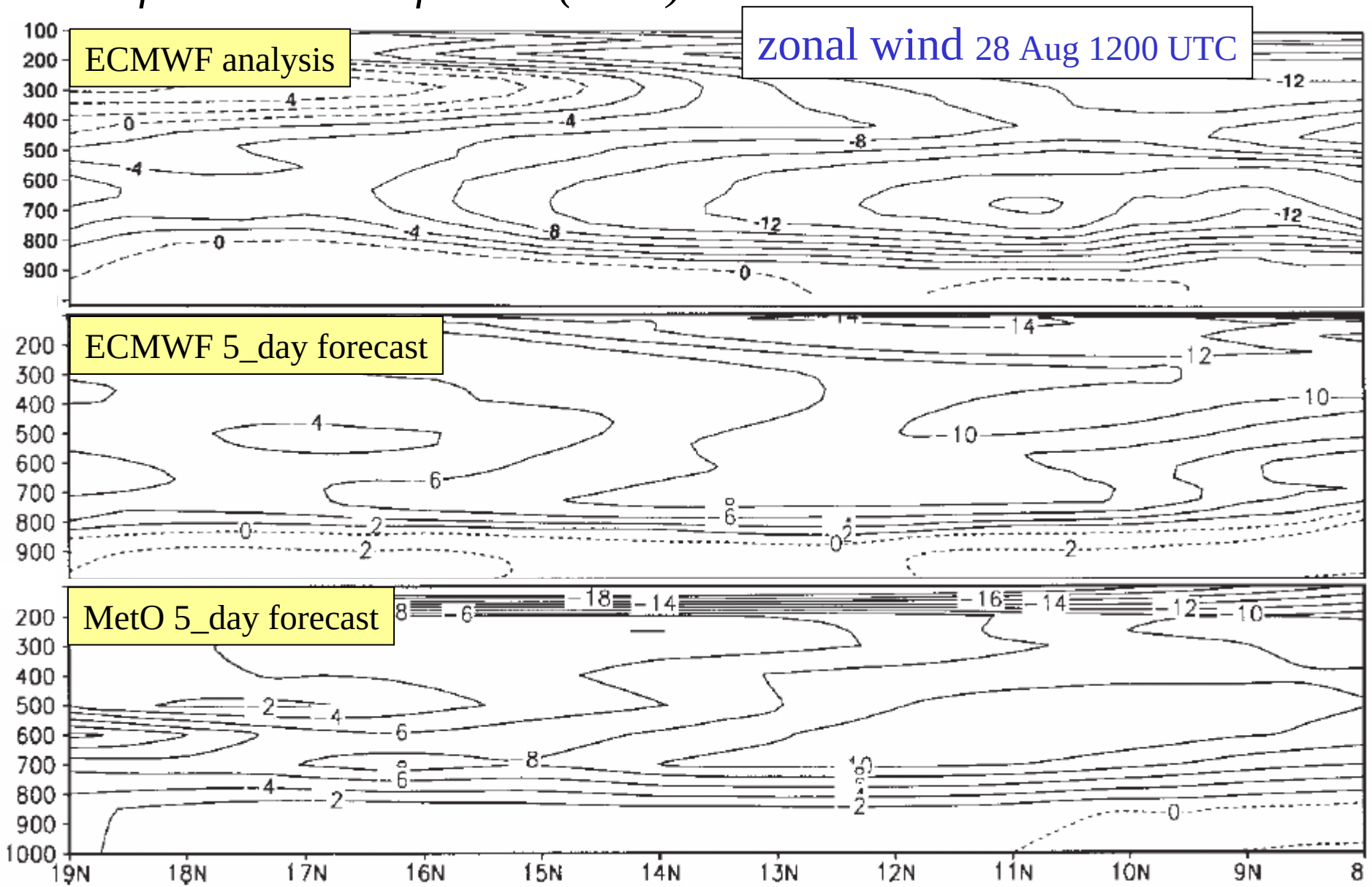
specific circulations
African easterly jet



[10W,10E]
July
2000-2001

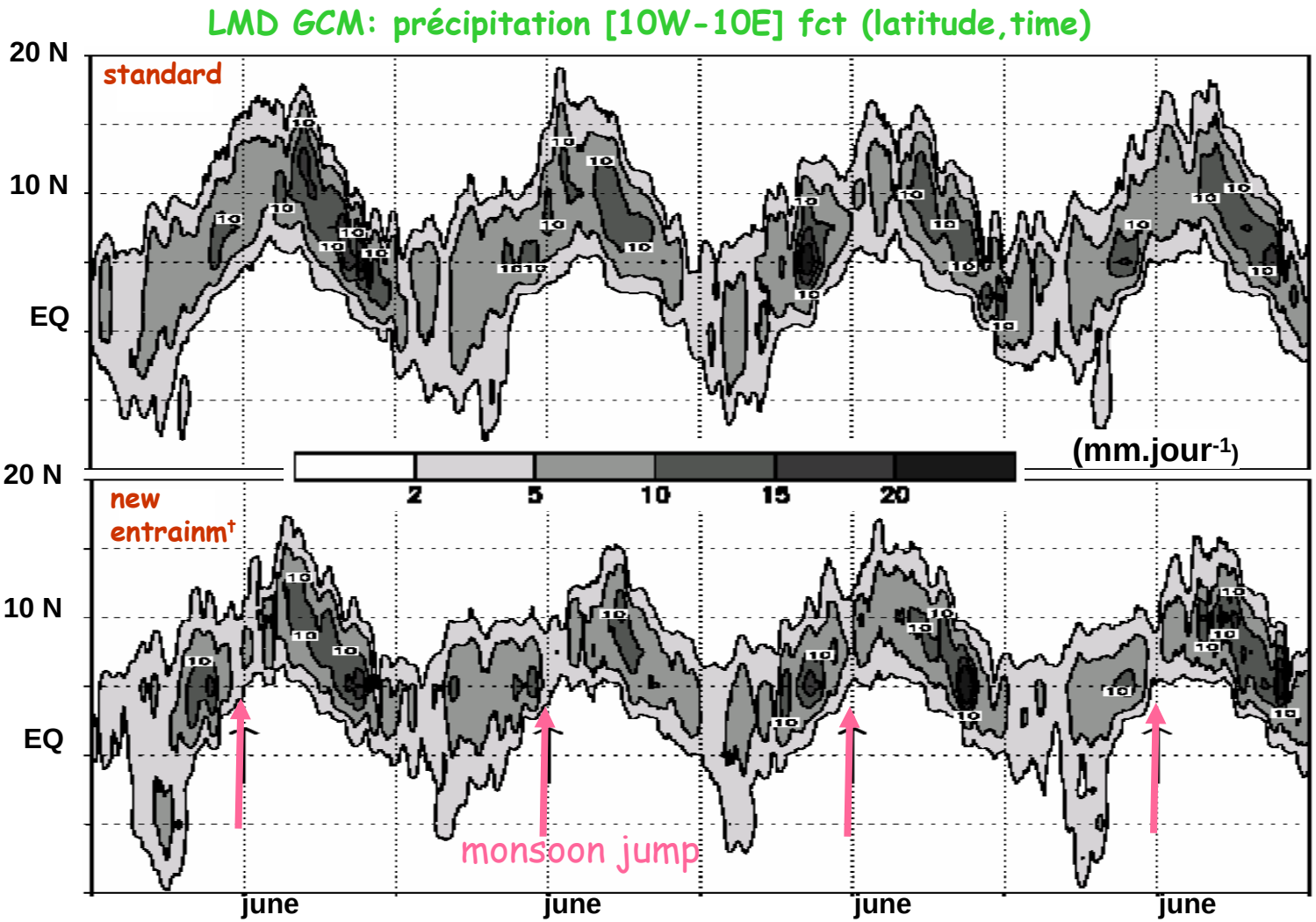

observed zonal wind
28 Aug 2000 (daytime) ~2.3E
Thorncroft et al. (2003)
Pressure (hPa)
450
500
550
600
650
700
750
800
850
900
950
1000
316
314
312
310
302
300
298
3
1
-1
-3
-5
-7
-9
-11
-13
-15
-17
-19
m/s
ECMWF analysis T511
28 Aug 2000 1200 UTC
[1.3E-3.3E]
500
600
700
800
900
1000
-8
-12
-4
-8
0
0
-12
19°N
18°N
17°N
16°N
15°N
14°N
13°N
12°N
11°N
10°N
9°N
8°N

from Thorncroft et al. (2003)

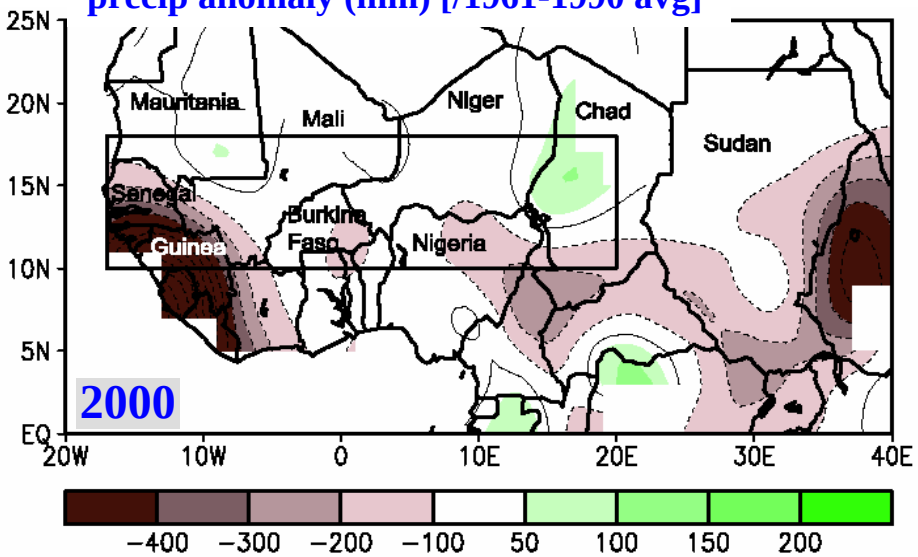


after 5 days, significant drift in both models (likely not alone...)

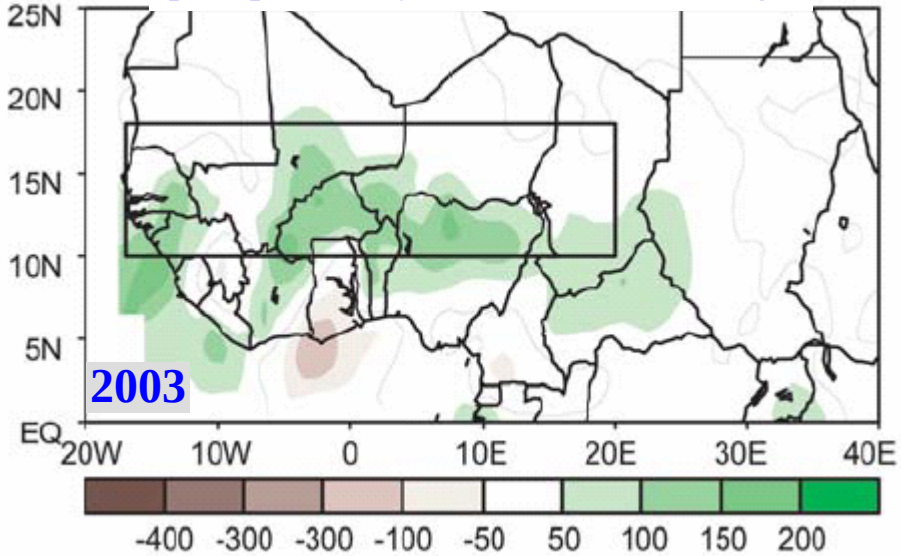
Grandpeix et al. (2004)



precip anomaly (mm) [/1961-1990 avg]



precip anomaly (mm) [/1979-1995 avg]



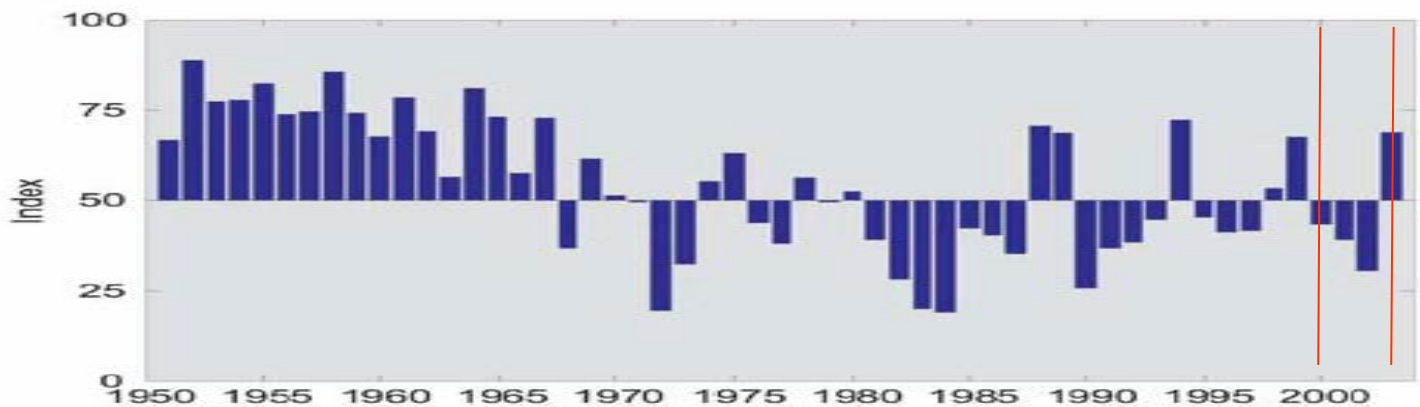
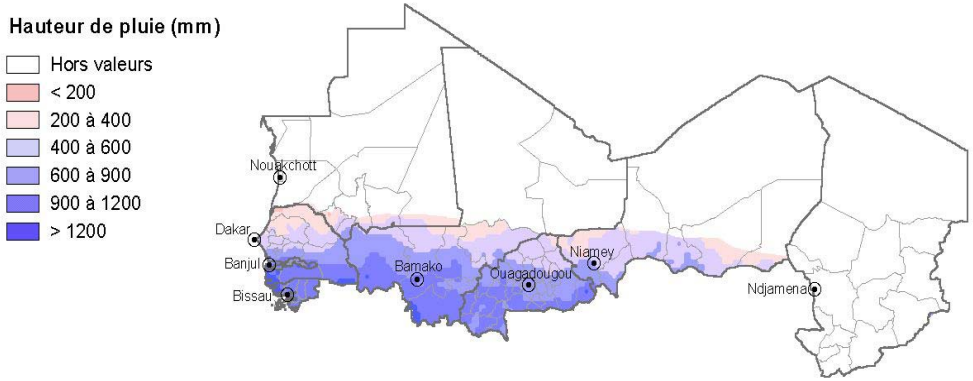


FIG. 6.24. Precipitation index time series for the period 1951–2003 expressed in terms of percentiles. The index was calculated from the 1971–2000 base period seasonal means for the African Sahel during Jun–Sep using a gamma distribution.

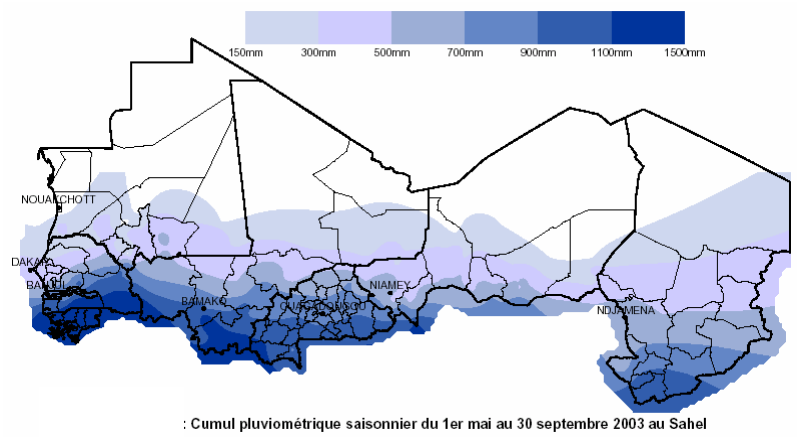
(from clim. ass. BAMS)

2000

2003

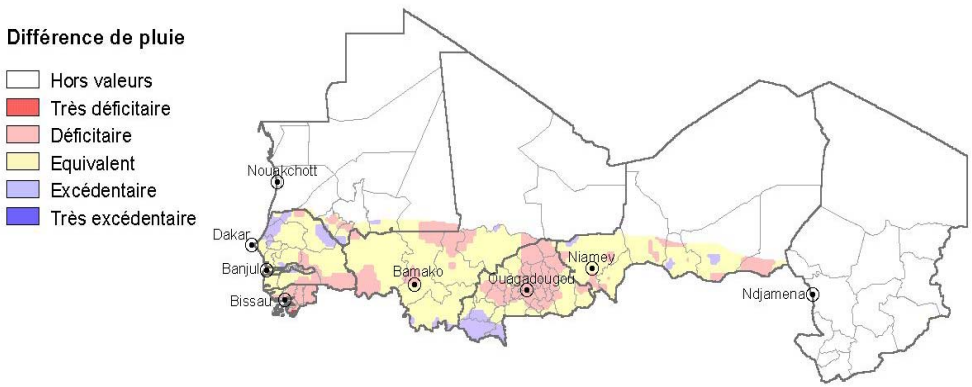


Cumul pluviométrique du 1er mai au 30 septembre 2000



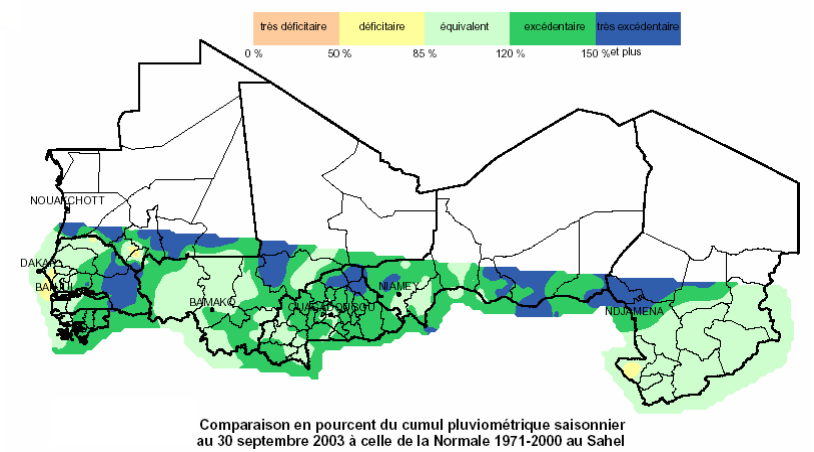
: Cumul pluviométrique saisonnier du 1er mai au 30 septembre 2003 au Sahel

Sources : Données DNM



Comparaison du cumul pluviométrique saisonnier par rapport à la normale 1961-1990

Sources : Doni



Comparaison en pourcent du cumul pluviométrique saisonnier au 30 septembre 2003 à celle de la Normale 1971-2000 au Sahel

figures from Agrhymet web site

AMMA transect part of AMMA-MIP http://amma-mip.lmd.jussieu.fr

« something light & focussed » (F. Hourdin words)

from email exchanges in July, we decided on a few other things

North-South 2D transect [10E,10W]

focus on intra-seasonal to seasonal to inter-annual variability

assess mean dynamical structure (FIT,AEJ,TEJ) & latitude-time variation of convection (rainfall), clouds, in relation with surface

list of diagnostics and technical information for running models (web site) still aspects to discuss (RCM,...)

start of a web site including observational products & figures for evalution purpose (re-analyses, satellite data, AMMASAT)

results from 2 GCMs expected by the end of the year

next news: at the Dakar conference