

West African monsoon intra seasonal variability: a precipitable water perspective



Equations of specific humidity a:

(1): General equation of the specific humidity $D_{iab}q$ (source of q due to diabatism) ε_q (errors due to

(2): Seasonal cycle of each term is subtracted from the 6-hourly ERAI data, then composite

(3): The integral of (2) in the three directions

operator is applied \rightarrow composite of the

anomalous budget

III/ Physics and dynamics of the synoptic mode

> The linear adiabatic model points out the necessity to include diabatic processes to explain

ompletely the mode.

A- Humidity composite budget

 $\frac{\partial q}{\partial t} = -u_i \frac{\partial q}{\partial x} + D_{iab} q + \varepsilon_q \quad (I)$

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1. Introduction

Large IntraSeasonal Variability (ISV) in this region which can have dramatic impacts on agricultural yields, health, water resources : A growing demand of different users of information...

V Difficulties of numerical models to handle a fair forecast of rainfall during the monsoon because of observing system gaps, models resolution, convective process parameterizations...

Focus on the Precipitable Water (PW): One of the limiting factors for rainfall in the Sahel, important link with precipitation, more persistent and less intermittent than rainfall (Holloway and Neelin 2010), better captured by GCM.

✓ <u>Objectives</u>: (i) Assess the regional features of PW variability, (ii) Give a focus on the synoptic scale to understand the monsoon surges structures and physics.



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