

**DUST EVENTS AND MENINGITIS CASES DURING THE DRY SEASON
(NOVEMBER TO APRIL) IN THE SAHEL FROM 1995 TO 2005:
METHODOLOGY FOR TEMPORAL AND SPATIAL ANALYSIS**

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Meningococcal meningitis depends first of all on the human factors (immunity, population density and movements, ...). Nevertheless, the seasonal dynamics and the environmental and climatic characteristics of the African meningitis belt led to hypothesize an impact of atmospheric conditions on the incidence of epidemic meningitis in the Sahel.

The aim of this study is to assess the role of mineral dust transported by Harmattan trade wind during the dry season. The goal purpose here is to determine whether shared characteristics of atmospheric conditions occur before all the meningitis picks. Due to weekly epidemiological available data, we need weekly dust representations.

The Infrared Difference Dust Index (IDDI) obtained from infrared band of METEOSAT by Legrand (2001) allows detecting dust plume in arid and semi arid areas in the Sahel. As we wanted to detect the most important dust events before the picks of meningitis from 1995 to 2005, maximum IDDI maps were used. Thanks to ESA EPIDEMIO and AMMA EU, it was possible to obtain weekly maximum of IDDI maps, from November to April, during the years 1995 to 2005, over a part of West Africa: N7° to N20°, E-17° to E26°.

From these data, it is possible to determine when and where dust events occurred for performing temporal and spatial analysis with epidemiological data by the means of GIS and image processing. Preliminary results and perspectives to possibly include dust events identification in public health policies for a quasi real time follow up are presented.

Keywords : meningitis, Sahel, Niger, IDDI, dust, aerosols, spatial analysis, METEOSAT



Afrikaanse Moesson Multidisciplinaire Analyse
Afrikanske Monsun : Multidisplinaere Analyser
Analisi Multidisciplinare per il Monsone Africano
Análisis Multidisciplinar de los Monzones Africanos
Afrikanischer Monsun : Multidisziplinäre Analysen
Analyses Multidisciplinaires de la Mousson Africaine

African Monsoon Multidisciplinary Analyses

1st International Conference

Dakar, 28th November – 4th December 2005

Extended abstracts

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Christopher Thorncroft and Elisabeth van den Akker (Editors)

AMMA International

Conference organisation:

Bernard Bourles, Amadou Gaye, Jim McQuaid, Elisabeth van den Akker

English and French editing :

Jean-Luc Redelsperger , Chris Thorncroft, Isabelle Genau

Typesetting:

Sally Marsh, Isabelle Genau, Elisabeth van den Akker

Printing and binding:

Corlet Numérique
14110 Condé-sur-Noireau
France
numeric@corlet.fr

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Convective wind system with aerosols, named "haboob", Hombori in Mali, West Africa.