*Session 03*

# LMDz simulation of transport and deposition of mineral dust over the North Eastern Tropical Atlantic

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## Abstract

Saharan dust represents more than 50% of total desertic aerosols emitted around the globe. The advection of desertic aerosols by air mass flux from West Africa to the Atlantic enriches the surface of the ocean in nutrients through atmospheric deposition. It has been shown that dust deposition is seasonal and in opposite phase between the eastern and the western Tropical Atlantic. This seasonality is driven by processes distributing the aerosol through the atmosphere over the continent and by other processes involved in the atmosphere-land-sea interactions. We used the LMD General Circulation Model in a West Africa regional configuration to investigate the processes at work in the fate of dusts. We quantify the atmospheric dust dry and wet deposition respectively in winter and boreal summer for the year 2006. In these estimates, we use simulations with aerosols scavenged by convection or convective features and large-scale precipitations. In the region between 35°W-18°W (longitude) and 0°N-25°N (latitude), we find that 2694 $\mu g.m^{-2}.mth^{-1}$ are deposited by dry process and 157 $\mu g.m^{-2}.mth^{-1}$ are washout in the atmosphere, representing respectively 95% and 5% of the total dust deposition in January. In July, the wet deposition increases up to 58% (1719 $\mu g.m^{-2}.mth^{-1}$) while dry deposition reaches only 42% (1261 $\mu g.m^{-2}.mth^{-1}$). These deposition are related to the physical processes dominated by the sedimentation near the emissions sources, the turbulence in the marine boundary layer in winter and the large-scale rainout in summer over the Atlantic Ocean.

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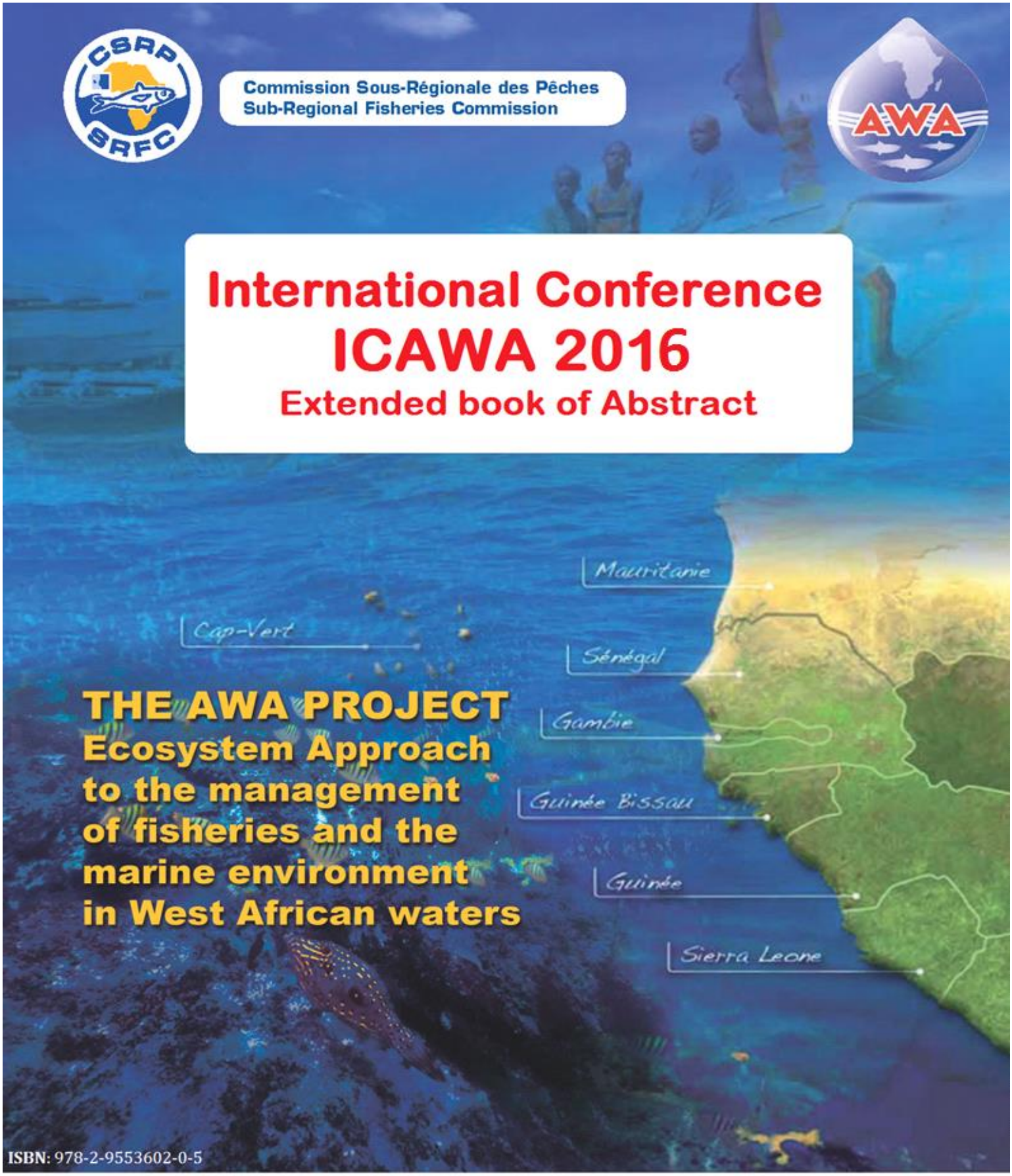
## Extended book of Abstract

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