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INVESTIGATING AND ANALYSING SAHELIAN DUST IN NIGERIA (2000-2020) AND ITS IMPACT
ON THE ENVIRONMENT AND BIOMASS USING REMOTE SENSING SATELLITE TECHNOLOGY

Abstract

The United Nations Convention to Combat Desertification (UNCCD) defined Sand and Dust Storms (SDS) as natural phenomenon linked with land and water management as well as climate change. The intensity of dust transport is a seasonal phenomenon due to existence of inter-tropical discontinuity which accounts for weather phenomenon and seasons in Nigeria. Dust particles especially if coated by pollution act as condensation nuclei for warm cloud formation and as efficient ice nuclei agents for cold cloud generation. These atmospheric pollutants such as sulfur dioxide and nitrous oxide may be carried halfway around the world (Africa not excluded) before descending in rain water to pollute soil and contaminate vegetations. The project investigate and analyse Sahelian Dust in Nigeria (2000-2020) and its impact on the environment and biomass using remote sensing satellite technology in order to determine the socio-economic and health implications of the extreme dust storm in the North Western Nigeria The work was carried out in Jigawa State, Northwestern Nigeria, located between latitudes 11.00N to 13.00N and longitudes 8.00E to 10.15E. Kano and Katsina states borders with Jigawa state to the west. Bauchi and Yobe state borders with Jigawa State to the east and northeast respectively. To the north, Jigawa state shares an international border with Zinder Region in The Republic of Niger. Spatial distribution of dry dust haze) occurrence (DDH) indicates that in the year 2006 to 2007, the frequency of DDH days range increases northeast extending towards areas that normally experience to dry dust haze. Results indicate the variation in the DDH occurrence during the harmattan period around the study area on the average with its least number of DDH days observed in the year 2002 to 2003 and the highest number of DDH days observed in the year 2009 to 2010 over the study area. Furthermore, concentration of dust in the atmosphere decreases as the distance from the source region in the windward direction increases since the larger particles (coarse mode particles) are easily removed from the atmosphere such that they readily and easily settle down since they are heavy enough to be pulled down by the force of gravity as the speed of the wind would reduce as it moves further southward. In conclusion, analysis of dusts indicates that it contained molds such as Alternaira and Botrytis amongthe materials which causes major problems with airway diseases.