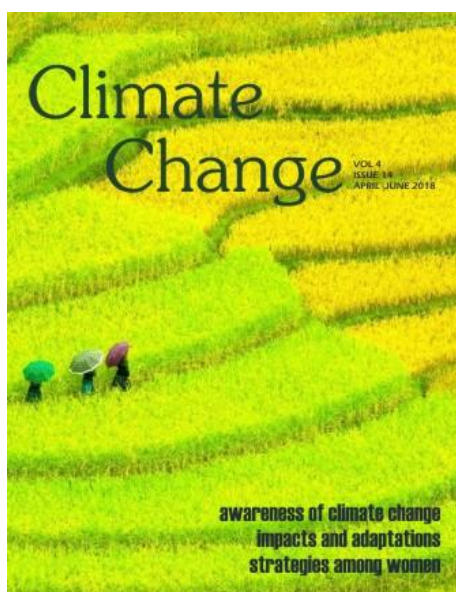


Climate Change

About the Cover



The aim of this quantitative survey study is to examine the level of awareness of climate change impacts and adaptations strategies among women in Ardo-Kola Local Government Area, in Taraba State, Nigeria. Primary data utilized include the socio-economic characteristics of respondents namely, age, educational qualification, occupation and data on awareness, impacts and adaptation strategies to climate change. A multi-stage sampling technique was employed in selection of 220 respondents. The data were subjected to descriptive and chi-square analyses. Result shows that higher percentages of women (81.8%) in the study area are aware of climate change and submitted that climate change has affected their economic activities in recent years. The Chi-Square test of association revealed that education and occupation influence women's level of awareness and knowledge of the causes of climate change but age does not. The respondents' assessment of climatic element in the last 20-30 years agreed with the experts reports; that is, increase in temperature, changes in annual distribution of rainfall, increase in flooding, frequency and length of dry spells are on increase, sourcing for water and fuel wood are the major domestic activities mostly affected by climate change (Ref: Anita H Philip, Vincent N Ojeh, Ejati D Tukura. Awareness of climate change impacts and adaptation strategies among women in Ardo-Kola, North East Nigeria. *Climate Change*, 2018, 4(14), 95-111).

Climate Change & Human Security

Awareness of climate change impacts and adaptation strategies among women in Ardo-Kola, North East Nigeria

Anita H Philip, Vincent N Ojeh, Ejati D Tukura

The aim of this quantitative survey study is to examine the level of awareness of climate change impacts and adaptations strategies among women in Ardo-Kola Local Government Area, in Taraba State, Nigeria. Primary data utilized include the socio-economic characteristics of respondents namely, age, educational qualification, occupation and data on awareness, impacts and adaptation strategies to climate change. A multi-stage sampling technique was employed in selection of 220 respondents. The data were subjected to descriptive and chi-square analyses. Result shows that higher percentages of women (81.8%) in the study area are aware of climate change and submitted that climate change has affected their economic activities in recent years. The Chi-Square test of association revealed that education and occupation influence women's level of awareness and knowledge of the causes of climate change but age does not. The respondents' assessment of climatic element in the last 20-30 years agreed with the experts reports; that is, increase in temperature, changes in annual distribution of rainfall, increase in flooding, frequency and length of dry spells are on increase, sourcing for water and fuel wood are the major domestic activities mostly affected by climate change.

Climate Change, 2018, 4(14), 95-111

Climate Change & Agriculture

Farmers' awareness and perception of climate change and the various adaptation measures they employ in the semi-arid eastern Kenya

Gichangi EM, Gatheru M

A study was conducted to assess farmers' awareness of climate change and to investigate the various adaptation measures they employ to counter adverse effects of climate change in four selected sub-counties in the semi-arid eastern. The study utilised data collected through face to face interviews of 200 households using a structured questionnaire. The data collected was analysed through descriptive statistics using the Statistical Package for Social Sciences (SPSS) version 20.0. The study showed that drought is the key climate-related shock with 100% of households reporting that they had experienced drought. Erratic rainfall was ranked second in importance, with 99.5% of households experiencing this climate shock. The main effects of climate-related stresses were a reduction in crop yield (96 %) and death of livestock (91 %). Other effects included crop failure (89 %), increases in food price (88%) and loss of income (86 %). Purchasing food was the main coping strategy while the most common adaptation strategies were growing of drought-escaping crops and water harvesting. The ability of the community to adapt to changing climate is constrained mainly by lack of resources, lack of access to inputs and to some extent lack of information on climate change and appropriate adaptation strategies. Therefore, making inputs and credit facilities more accessible and provision of climate information to communities are some of the desired interventions that can enhance adaptation to climate change in the region.

Climate Change, 2018, 4(14), 112-122

Climate Change & Atmospheric Science

Rainfall zoning and its trend analysis for fruit crops in north-west India using GIS

Mohan Singh, Ram Niwas, Godara AK

The weather data for the period of more than 30 years 1980 onward of twenty-two meteorological stations located in arid, semi-arid and humid agro-climatic zones in the hills and plains of north-west India were used in this study. The collected rainfall data was computed as normal rainfall for annual, seasonal, hills, plains and north-west India. For a given location the long period average of rainfall data was considered as normal rainfall. Rainfall trends (seasonal and annual) in north-west India were evaluated using regression trend analysis. The map of north-west India was digitized and different rainfall zones were delineated using GIS software (ArcMap 10.1). Normal annual rainfall was more than one thousand millimetres at eight stations and ranged between 500-900 mm at eleven stations and between 200 to 500 mm for remaining three stations. Normal rainfall was highest at Palampur and lowest at Ganganagar among the 22 meteorological stations. The coefficient of variation was less than fifty per cent for all the stations. The slope (mm/year) of trend line was negative for nine stations and positive for remaining thirteen stations. The slope 5.51, 1.58 and 5.82 were found in hills, plains and north-west India with standard error of 8.35, 6.12 and 6.73 mm, respectively. The confidence level of significant of correlation coefficient was 41.3, 54.7 and 51 per cent in hills, plains and north-west India, respectively. During effective growing season out of 22 stations the rainfall showed decreasing trend at eight stations and increasing trend at remaining fourteen stations. During dormant season it was decreasing with 57 mm per century in hills, 10.7 mm per 100 years in plains but increasing with 68.6 mm per 100 years in north-west India, respectively.

Climate Change, 2018, 4(14), 123-133

Climate Change & Society

Causes, Impacts and Adaptation Strategies to Climate Change: A Case Study of Bangladesh

Mohammed Nasir Uddin, Nahid Anjuman, Abdul Muktaadir Bin Moustainoor Rahman, Md Asaduzzaman Sarker

Climate change is very common but red-hot issue in the global arena while Bangladesh is already treated as one of the most vulnerable area to climate change and is highlighted through the last two world climate change conference at Warsaw in Poland (2013) and Paris in France (2015). A good numbers of studies have already been conducted in the same issue and still conducting as the problems of climate change has been emerging every day. The paper reviews the causes, impacts and adaptation to climate change while agricultural field has taken into considerations for the same. The paper is be made up of general discussion of climate change first and then highlighted the case study of Bangladesh for the same issue. Natural as well as anthropogenic process are the two broad causes of climate change while various impacts of climate change such as sea level rising, reduced productions, drought severity, frequent flooding, increasing salinity etc., that largely affect agriculture and national economy as well. Different adaptation strategies to climate change such as diversified agricultural practices, additional irrigation, using different modern machineries, saline and drought tolerance varieties; integrate farming system, afforestation etc. have been practicing at field level to combat against climate change impacts. Besides, proper management system such as weeding, mulching, thinning, irrigation with fresh water, IPM, integrated farming system, agroforestry etc. are also employed by the farmers to overcome drawbacks of the climate change effects. Existing adaptations strategies can be recommended but future research is necessary to formulate sound policies, more provision for rewarding for environmental practices, strong collaboration with international agencies etc. that might be taken at macro level by the different stakeholders and nations as well.

Climate Change, 2018, 4(14), 134-143

Climate Change (Regional)

Estimating the Impact of Climate Change on Desertification in Northern Borno: A Geo-Spatial Approach

Philip H John, Vincent N Ojeh, Felix N Nkeki

Nigeria is one of the most desert prone countries in Africa and the problem of desertification is expending southwards from 12° 30' to 10° 30'. In addition, rivers and lakes are being silted leading to rapid drying up of water bodies. A typical example is the case of the receding Lake Chad. This environmental problem has led many researchers to investigate the magnitude and monitor it spread, as a result, the geo-spatial approach has become the most widely use because of its efficiency. Majority of these studies are focused on the extent of the problem neglecting the fundamental causal factor of desertification. It is evident from available literature that few or no study has estimated the impact of climate change on desertification using a geo-spatial approach. Based on this, this paper investigates how climate change facilitates desertification in the north eastern part of Nigeria within the context of geo-spatial analysis and in addition, to map the magnitude of desertification in the region. The paper utilized climatic data and supervised classified remotely sensed data in micro soft excel and ILWIS environment respectively for detecting climate change and desert encroachment in the study region. The results showed that climate change facilitates desertification and that over 31 percent of the land surface of the region has become bare and the problem became worsened during the study period from 1986 to 2006. This problem was highly facilitated by extreme climatic condition.

Climate Change, 2018, 4(14), 144-155

Climate Change & Human Security

Targeting Vulnerable Groups in Climate Change Extension

Nwobodo Cynthia E, Odii JN, Ezeuzo OP, Iloegbu AC

Climate change vulnerability is the degree to which change in climate may damage or harm a system and the ability of that system to adapt to new climatic conditions. This paper sought to explore the vulnerable groups in climate change. Inductive and deductive reasoning through review of relevant literature was used in the paper. Countries, regions, economic sectors, social groups and households differ in their degree of vulnerability to climate change, as a result of uneven change in temperature and precipitation, uneven distribution of climate change impacts around the globe and the fact that resources and wealth are unevenly distributed. The paper concluded those children, the aged, women, the disabled, the marginalized, and the minorities are the worst victims of natural disasters due to their lower status in society. It is advocated that these groups should be prioritized in any development agenda geared towards ameliorating the impacts of climate change on populations.

Climate Change, 2018, 4(14), 156-165

Climate Change & Education

Awareness of Climate Change Impacts and Adaptation in Delta State, Nigeria

Ojeh VN, Ozabor F

This study investigates the awareness of climate change impacts and adaptation in Delta state, Nigeria. The multistage sampling technique was employed in the selection of the respondents in the study area and 600 copies of questionnaire were administered in the 3 senatorial districts of the state. Statistical means and percentages were used to analyze and present results. Major findings include; (58.8%) of respondents did not have awareness of climate change while 41.2% claimed they are aware of the issue of climate change and its impacts; 33% of respondents identified that they know the causes of climate change while about 67% did not know, yet majority of respondents agreed that they have noticed long term changes in temperature (77.8%) and rainfall (65.5%) in the area. Furthermore, adaptation strategies include adjusting of planting date (41.5%), switching to other crops most of which are early maturing crops (37.8%) and saving food and seed (20.7%). Respondents however, suggested that, tree planting (59.8%), prayer (15.8%), changing crop type (20.3%) will help mitigate and/or reduce the impacts of climate change in the area. The study recommends that the Government, Non-Governmental Organisations (NGOs) and civil society organizations should intensify efforts in environmental education and awareness campaign on climate change impacts, mitigation and adaptation in the State; encouragement of observational studies in the state to have a data base on the state of the climate; tree planting be pursued vigorously so that the problem of climate change is alleviated in the area.

Climate Change, 2018, 4(14), 166-174

Climate Change & Disasters

Impacts of flood on the lives of school children in Basse, upper river region of the Gambia

Demba Baldeh, Alagie Bah, Momodou Njie, Bubacarr Jallow, Sidat Yaffa

In recent years, The Gambia has witnessed a shift in rainfall patterns, marked by occurrence of annual flash floods in the low lying topographic communities such as Basse. This study investigates the impacts of flood on the lives of school children in Basse and identifies the adaptation measures employed to overcome the challenges. Proportional sampling was used to select the sample size of 255 (138 from Kaba-Kama, 117 from Basse Layout communities) based on 95% confidence level and 5% margin of error. Although the school children were not directly affected by floods at the school level, a considerable number of them have been found to be severely affected by floods either at home or during their journey to/from school. Chi square test analysis showed that food supply and stationery loss varied significantly between the communities of Kaba Kama and Basse Layout, which may inadvertently cause low syllabus coverage and poor performance in examinations. The study revealed that although the civil society groups and school authorities were proactive in helping students to overcome the problems induced by floods, most of their efforts were derailed by other factors such as political interference, lack of resources and the prerequisite skills necessary to handle flood induced problems. The findings provide important insights that can contribute to public policy formulation and reforms relevant for climate change resilience in The Gambia.

Climate Change, 2018, 4(14), 175-182

Climate Change & Atmospheric Science

Block level weather forecast using T-1534 model output and biasfree temperature forecast by decaying weighted mean procedure during summer monsoon season in India

Ashok Kumar, Ch. Sridevi, Durai VR, Singh KK, Prasad VS, Mukhopadhyay P, Krishna RPM, Deshpande M, Chattopadhyay N

The forecast based upon T-1534 model output and bias corrected technique decaying weighted mean (DWM) for temperature had been prepared and implemented on 1st December 2017 for 655 districts and 6500 blocks. The procedure for getting forecast for the districts and blocks in India including altitude corrections is based upon regular(0.125x0.125) grid output from the T-1534 Model. A verification study is conducted for rainfall forecast at 0.125x0.125 degree grid for Indian Window (0-40°N and 60°E-100°E) and for bias free maximum/minimum temperature for Indian window (7.5°N -37.5°N and 67.5°E-97.5°E) for summer monsoon season (June, July, August and September) 2017. The skill of both these important weather parameters had been found to be very good and usable for all parts of the country except oceanic islands and high terrain regions. From the Indian window, the forecast was down scaled for all the districts and blocks. A detailed verification study for the skill of the forecast at block level for four important weather parameters i.e., rainfall, cloud amount, maximum and minimum temperature is conducted. The skill of the rainfall forecast is obtained for categorical forecast and as well as for yes/no forecast and absolute values of cloud amount and bias free maximum and minimum temperatures. The skill found is very good. The study indicates that forecasts so obtained has the potential to be used for the block level forecast without making much value additions by the forecaster.

Climate Change, 2018, 4(14), 202-223

Climate Change & Agriculture

Thermal indices and heat use efficiency of apricot cultivars in Himachal Himalayas

Mohan Singh, Suman Jangra

Field experiment was conducted during 2015-2017 in the research farm of Dr. YS Parmar University of Horticulture & Forestry located at Horticultural Research Station, Seobag (32°N, 77°E and 1350 m amsl) in Kullu valley of Himachal Pradesh to assess the chilling and thermal time requirements for different phenophases of three apricot cultivars. Average chilling hours accumulated before bud break of apricot varieties was 696 CH for Angelo Errani with 18.2 per cent of coefficient of variation, 721 CH for Harcot with 8.1 per cent and 709 CH for Canino Tardivo with 6.1 per cent, respectively. On an average from bud burst to maturity Angelo Errani required 1191.9 GDD with 7.99 percent of CV, Harcot 1424.8 GDD with 8.87 percent CV and Canino Tardivo required 1712.4 GDD with 1.95 percent. The photothermal index for whole growing period from was highest (13.6) for Harcot in 2015 and lowest (12.0) for Angelo Errani. The mean thermal use efficiencies were observed highest for Harcot followed by Angelo Errani and Canino Tardivo with higher variability in Canino Tardivo followed by Angelo Errani and lowest in Harcot. Thermal indices explained more than 98 percent variation in fruit yield of Harcot, Angelo Errani and 95 per cent variation in Canino Tardivo. Harcot and Angelo Errani were observed precocious and fruiting was recorded in the fifth year after plantation. They were showing better utilization of heat units and hence, suitable for diversification in apricot cultivation under changing and prevailing climatic conditions of mid hills region of Himachal Himalayas.

Climate Change, 2018, 4(14), 224-234