

CLIMATE CHANGE 2014

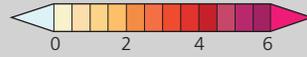
Impacts, Adaptation, and Vulnerability

Climate Change and Key Risks in Africa
From the Working Group II Fifth Assessment Report

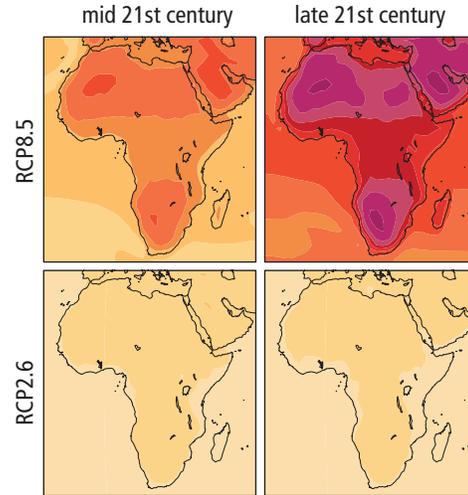
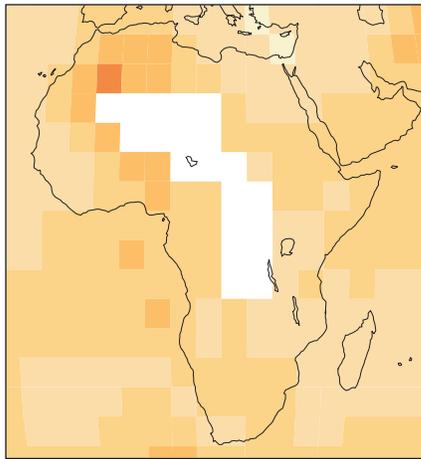
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INTERGOVERNMENTAL PANEL ON climate change

Annual Temperature Change

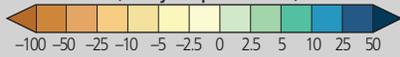
Trend over 1901–2012
(°C over period)



Difference from 1986–2005 mean
(°C)

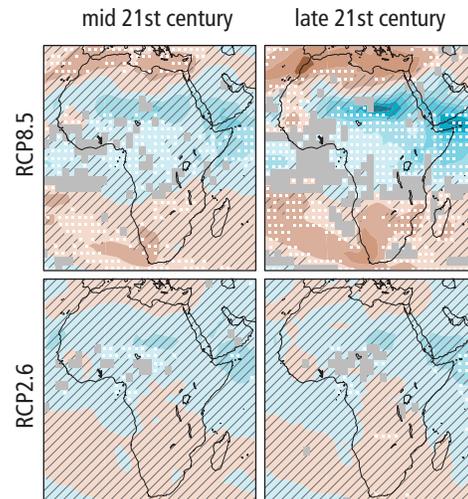
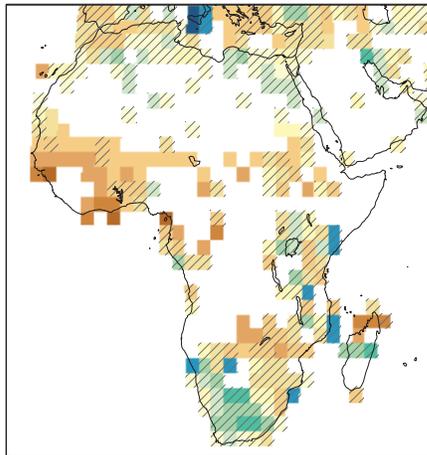


Trend in annual precipitation over 1951–2010
(mm/year per decade)



Annual Precipitation Change

Difference from 1986–2005 mean (%)



Solid Color

Significant trend

Diagonal Lines

Trend not statistically significant

White

Insufficient data

Solid Color

Very strong agreement

White Dots

Strong agreement

Gray

Divergent changes

Diagonal Lines

Little or no change

Observed and projected changes in annual average temperature and precipitation. (Top panel, left) Observed temperature change from 1901–2012. (Bottom panel, left) Observed precipitation change from 1951–2010. (Top and bottom panel, right) Projected temperature and precipitation changes for 2046–2065 and 2081–2100 under RCP2.6 and 8.5, relative to 1986–2005. [WGII AR5 Figure 22-1]

Key regional risks from climate change in Africa and the potential for reducing risk through mitigation and adaptation. Key risks result from high hazard, high vulnerability, and/or high exposure. They are identified based on assessment of the literature and expert judgments. Risk levels are estimated through the 21st century for the current state of adaptation and for a hypothetical highly adapted state. [WGII AR5 Table 22-6]

Climate-related drivers of impacts									Level of risk & potential for adaptation		
Warming trend	Extreme temperature	Drying trend	Extreme precipitation	Precipitation	Damaging cyclone	Sea level	Ocean acidification	Sea surface temperature			
Key risk			Adaptation issues & prospects			Climatic drivers			Timeframe	Risk & potential for adaptation	
Shifts in biome distribution, and severe impacts on wildlife due to diseases and species extinction (<i>high confidence</i>) [22.3.2.1, 22.3.2.3]			Very few adaptation options; migration corridors; protected areas; better management of natural resources						Very low	Medium	Very high
Compounded stress on water resources facing significant strain from overexploitation and degradation at present and increased demand in the future, with drought stress exacerbated in drought-prone regions of Africa (<i>high confidence</i>) [22.3-4]			<ul style="list-style-type: none"> Reducing non-climate stressors on water resources Strengthening institutional capacities for demand management, groundwater assessment, integrated water-waste-water planning, and integrated land and water governance Sustainable urban development 						Very low	Medium	Very high
Degradation of coral reefs results in loss of protective ecosystems and fishery stocks (<i>medium confidence</i>). [22.3.2.3]			Few adaptation options; marine protected areas; conservation and protection; better management of natural resources						Very low	Medium	Very high
Reduced crop productivity associated with heat and drought stress, with strong adverse effects on regional, national, and household livelihood and food security, also given increased pest and disease damage and flood impacts on food system infrastructure (<i>high confidence</i>) [22.3-4]			<ul style="list-style-type: none"> Technological adaptation responses (e.g., stress-tolerant crop varieties, irrigation, enhanced observation systems) Enhancing smallholder access to credit and other critical production resources; Diversifying livelihoods Strengthening institutions at local, national, and regional levels to support agriculture (including early warning systems) and gender-oriented policy Agronomic adaptation responses (e.g., agroforestry, conservation agriculture) 						Very low	Medium	Very high
Adverse effects on livestock linked to temperature rise and precipitation changes that lead to increased heat and water stress, and shifts in the range of pests and diseases, with adverse impacts on pastoral livelihoods and rural poverty (<i>medium confidence</i>) [22.3.4.2, 22.4.5.2, 22.4.5.6, 22.4.5.8]			Addressing non-climate stressors facing pastoralists, including policy and governance features that perpetuate their marginalization, is critical for reducing vulnerability. Natural resource-based strategies such as reducing drought risk to pastoral livelihoods through use of forest goods and services hold potential, provided sufficient attention is paid to forest conservation and sustainable management.						Very low	Medium	Very high
Changes in the incidence and geographic range of vector- and water-borne diseases due to changes in the mean and variability of temperature and precipitation, particularly along the edges of their distribution (<i>medium confidence</i>) [22.3]			<ul style="list-style-type: none"> Achieving development goals, particularly improved access to safe water and improved sanitation, and enhancement of public health functions such as surveillance Vulnerability mapping and early warning systems Coordination across sectors Sustainable urban development 						Very low	Medium	Very high
Undernutrition, with its potential for life-long impacts on health and development and its associated increase in vulnerability to malaria and diarrheal diseases, can result from changing crop yields, migration due to weather and climate extremes, and other factors (<i>medium confidence</i>). [22.3.5.2]			Early warning systems and vulnerability mapping (for targeted interventions); diet diversification; coordination with food and Agriculture sectors; improved public health functions to address underlying diseases						Very low	Medium	Very high
Increased migration leading to human suffering, human rights violations, political instability and conflict (<i>medium confidence</i>) [22.3.6, 22.4.5, 22.5.1.3]			Adaptation deficit to current flood and drought risk; effective adaptation includes sustainable land management and modification of land use, drought relief, flood control and effective regional and national policy and legislative environment that allows for flexible adaptation responses.						Very low	Medium	Very high
Sea level rise and extreme weather events disrupt transport systems, production systems, infrastructure, public services (water, education, health, sanitation), especially in informal areas (flooding) (<i>medium confidence</i>) [22.3.7, 22.4.4.4, 22.4.4.6, 22.4.5.6, 22.4.5.7]			Limited options for migration away from flood prone localities Enhanced urban management and land use control would reduce both vulnerability and exposure to risks; would require policy review, significant capacity development and enforcement. Low-cost soft protective coastal infrastructure options could reduce risk significantly in some areas; while hard infrastructural options are expensive, need technical knowledge and not always environmentally sustainable.						Very low	Medium	Very high