SAMOA

HEALTH & CLIMATE CHANGE

COUNTRY PROFILE 2020

Small Island Developing States Initiative

World Health Organization

United Nations
Framework Convention on
Climate Change

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Acknowledgements

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EXECUTIVE SUMMARY

Despite producing very little greenhouse gas emissions that cause climate change, people living in small island developing States (SIDS) are on the front line of climate change impacts. Recognizing the unique and immediate threats faced by small islands, WHO has responded by introducing the WHO Special Initiative on Climate Change and Health in Small Island Developing States (SIDS). The initiative was launched in November 2017 in collaboration with the United Nations Framework Convention on Climate Change (UNFCCC) and the Fijian Presidency of the COP23 in Bonn Germany, with the vision that by 2030 all health systems in SIDS will be resilient to climate variability and climate change. In March 2018, Ministers of Health gathered in Fiji to develop a Pacific Action Plan to outline the implementation of the SIDS initiative locally and to identify national and regional indicators of progress. As part of the regional action plan, small island nations have committed to developing a WHO UNFCCC health and climate change country profile to present evidence and monitor progress on health and climate change. In the Western Pacific region in particular, the SIDS initiative is a joint effort with For the Future: Towards the Healthiest and Safest Region. It highlights climate change, environment and health as a thematic priority for WHO's work in the Region. The goal is to ensure that countries and communities in the Region have the capacity to anticipate and respond to the health consequences of the changing climate and environment, with the health sector taking a lead role in cross-sectoral, multi-stakeholder efforts.

Samoa's health sector has been involved in the work of climate change and health for many years. The Climate Risk Profile conducted in 2007 identified many specific threats for Samoa, which were dominated by health-related threats. To address these challenges, the Government of Samoa proposed an integrated approach to tackle climate change impacts in relevant sectors. The urgent and immediate adaptation priorities identified in the National Adaptation Plan of Action (NAPA) include the health sector, agriculture sector and the meteorology division of the environment sector. This led to the development of the project Integrating Climate Change Risks into Agriculture and Health Sectors in Samoa, funded by the Global Environment Facility (GEF) and the United Nations Development Programme (UNDP), and coordinated by the Ministry of Natural Resources and Environment. The project aimed to increase the resilience and adaptive capacity of coastal communities in Samoa to the adverse impacts of climate change on agricultural production and public health. Despite the many challenges encountered during the lifespan of the project, the health sector is appreciative for the strategic climate change and health framework that resulted from this work. Many of the outcomes of the health component of this project have provided climate and health baseline data and, more importantly, strategic guidance to the work of climate and health.

The Climate Adaptation Strategy for Health provides a strategic framework to strengthen the resilience of the health sector, to improve the capacity of the health sector, risk management and response to disasters and climate change. Furthermore, the strategy aims to support cross-sectoral collaboration to ensure health concerns are addressed in decision-making in other sectors to reduce risks from climate change. Given that the scope of climate change-related research is growing, the Climate Adaptation Strategy for Health may need to be reviewed and updated where necessary in light of new information on and understanding of climate change and health issues in Samoa. A lot of the climate and health programmes currently in development aim to build and improve upon these existing activities. This includes the Integrated Community Health Advocacy Programmes, a cross-sectoral collaboration, led by health, to provide awareness of climate-related health threats in communities and schools.

The health sector's vision of a 'Healthy Samoa' practically translates the overarching goal for health development in Samoa. The main priority areas include the prevention of communicable diseases and noncommunicable diseases by raising awareness about simple prevention measures, especially during disasters. This vision also increased the capacity of health professionals and aims at 'Putting the Focus Back into Public Health'. The Public Health role within the Ministry of Health is to improve, promote and protect the health of the population or groups of people as distinct from the health of individuals. This involves health promotion, health protection, health surveillance, monitoring and the investigation of infectious disease outbreaks and hazards in the environment.

Samoa's Ministry of Health would like to express gratitude to all stakeholders and partners who contributed directly or indirectly to the great investment in health and climate change work in the health sector and for their inputs to this WHO UNFCCC health and climate change country profile for Samoa. We look forward to the ongoing collaboration in the implementation of the health and climate change programmes to ensure that Samoa is a safe and climate-resilient nation.

Fa'afetai.

KEY RECOMMENDATIONS

1 STRENGTHEN IMPLEMENTATION OF SAMOA'S CLIMATE ADAPTATION FOR HEALTH STRATEGY

Review, update and strengthen the implementation of Samoa's 2014 Climate Adaptation Strategy for Health (CASH) to ensure it is "by Samoa, for Samoa".

2 STRENGTHEN PUBLIC HEALTH SURVEILLANCE SYSTEM

Strengthen public health surveillance system to include meteorological information and improve monitoring of climate sensitive diseases during and post extreme weather events.

3 CONDUCT HEALTH AND CLIMATE ASSESSMENTS

Conduct health impact assessments (HIA) and a national assessment of climate impacts, vulnerability and adaptation for health. These assessments should also include risks related to water and food supplies, sanitation and vector control, and noncommunicable diseases (including nutrition, psychosocial and mental health). Conduct bi-annual hospital risk resilience assessments.

4 ESTABLISH A HEALTH – CLIMATE EARLY WARNING SYSTEM (H-CLEWS)

Establish a health and climate early warning system and conduct further research linking health and climate information (including CLEWS, early warning and response systems (EWARS), geographic information systems (GIS), health information systems (HIS) and climate risk maps).

5 DEVELOP A COMPREHENSIVE DISASTER MANAGEMENT AND RESPONSE PLAN FOR THE HEALTH SECTOR

WHO RESOURCES TO SUPPORT ACTION ON THESE KEY RECOMMENDATIONS:

https://www.who.int/activities/building-capacity-on-climate-change-human-health/toolkit/

BACKGROUND

Samoa consists of two main islands, Savaii and Upolu, in addition to several smaller, uninhabited islets *(1)*. The geography of Samoa consists of narrow coastal plains combined with a volcanic, mountainous interior. The climate is tropical, with a rainy season and tropical cyclones from November to April and a dry season from May to October *(1,2)*. It is expected that Samoa will experience rising temperatures, extreme weather events, rising sea levels, ocean acidification, and coral bleaching as a result of climate change.

Such climatic changes can result in both direct and indirect health effects in Samoa *(3)*. These effects bring serious burdens to the health care system, in particular public health surveillance and response. Additionally, public health measures, such as safe water and food shortages, are dependent upon a clean environment and thus are an important indicator for monitoring changes in the risk and burden of noncommunicable diseases and communicable conditions. Climate change also poses specific threats for vulnerable groups, including women, children, the elderly, those with disabilities or existing health problems, and people lacking social support.

There is already increasing evidence of climbing trends of infectious diseases within affected populations and communities during and after extreme weather events. However, there is limited evidence to prove causality of such events, owing to the complexity of identifying and linking climatic causes with health effects. To improve this evidence base, the Ministry of Health and the Meteorology Division in Samoa has strengthened their collaboration to ensure that meteorological data is fed to the public health surveillance system for monitoring disease trends and outbreaks during extreme climatic conditions. Current developments in the area of climate change and health include establishing a public health surveillance system that can manage and track climate-related diseases and monitor disease outbreaks *(3)*.

HIGHEST PRIORITY CLIMATE-SENSITIVE HEALTH RISKS FOR SAMOA

Direct effects	
Health impacts of extreme weather events	✓
Heat-related illness	
Indirect effects	
Water security and safety (including waterborne diseases)	✓
Food security and safety (including malnutrition and foodborne diseases)	✓
Vector-borne diseases	✓
Zoonoses	
Respiratory illness	
Disorders of the eyes, ears, skin and other body systems	
Diffuse effects	
Disorders of mental/psychosocial health	
Noncommunicable diseases	
Health systems problems	
Population pressures	

Source: Table adapted from Human health and climate change in Pacific island countries (2015) *(4)*. Please refer to reference *(4)* for further information on each category.

CLIMATE HAZARDS RELEVANT FOR HEALTH

Climate hazard projections for Samoa

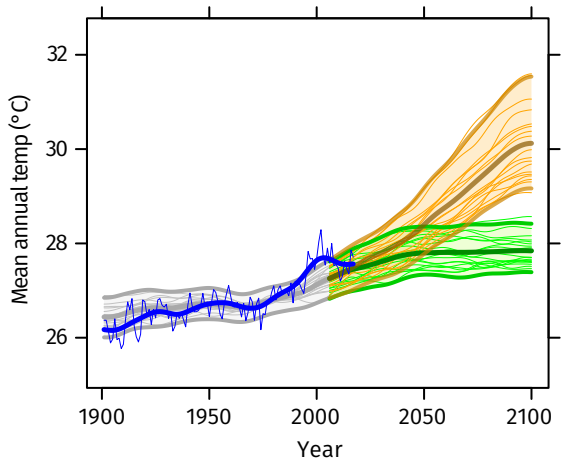
Country-specific projections are outlined up to the year 2100 for climate hazards under a 'business as usual' high emissions scenario compared to projections under a 'two-degree' scenario with rapidly decreasing global emissions (see Figures 1–5).

The climate model projections given below present climate hazards under a high emissions scenario, Representative Concentration Pathway 8.5 (RCP8.5 – in orange) and a low emissions scenario (RCP2.6 – in green).[a] The text describes the projected changes averaged across about 20 global climate models (thick line). The figures[b] also show each model individually as well as the 90% model range (shaded) as a measure of uncertainty and the annual and smoothed observed record (in blue).[c] In the following text the present-day baseline refers to the 30-year average for 1981–2010 and the end-of-century refers to the 30-year average for 2071–2100.

Modelling uncertainties associated with the relatively coarse spatial scale of the models compared with that of small island states are not explicitly represented. There are also issues associated with the availability and representativeness of observed data for such locations.

Rising temperature

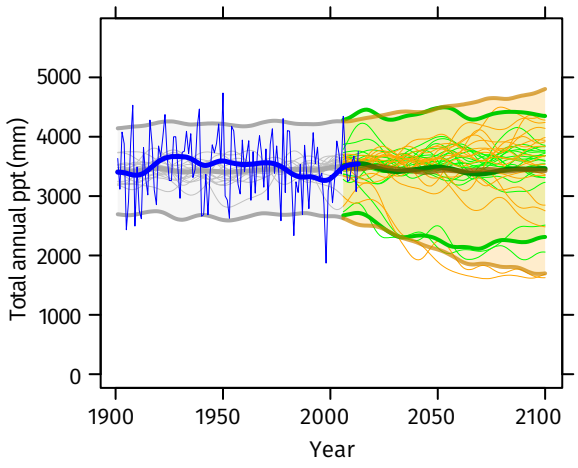
FIGURE 1: Mean annual temperature



Under a high emissions scenario, the mean annual temperature is projected to rise by about 2.7°C on average by the end-of-century (i.e. 2071–2100 compared with 1981–2010). If emissions decrease rapidly, the temperature rise is limited to about 0.8°C.

Little change in total precipitation

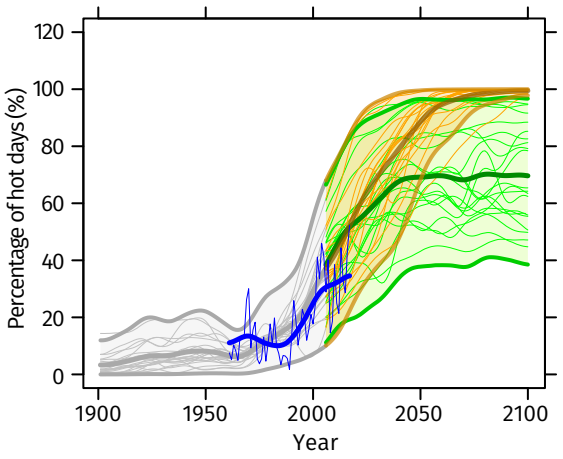
FIGURE 2: Total annual precipitation



Total annual precipitation is projected to remain almost unchanged on average under a high emissions scenario, although the uncertainty range is large (-45% to +19%). If emissions decrease rapidly there is little projected change on average with an uncertainty range of -30% to +10%.

More high temperature extremes

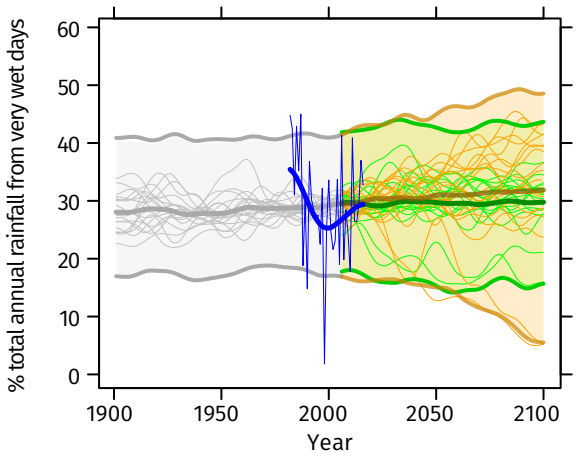
FIGURE 3: Percentage of hot days ('heat stress')



The percentage of hot days[d] is projected to increase substantially from about 20% of all observed days on average in 1981–2010 (10% in 1961–1990). Under a high emissions scenario, almost 100% of days on average are defined as 'hot' by the end-of-century. If emissions decrease rapidly, about 85% of days on average are 'hot'. Note that the models tend to overestimate the observed increase in hot days (about 30% of days on average in 1981–2010 rather than 20%). Similar increases are seen in hot nights[d] (not shown).

Small increase in extreme rainfall

FIGURE 4: Contribution to total annual rainfall from very wet days ('extreme rainfall' and 'flood risk')

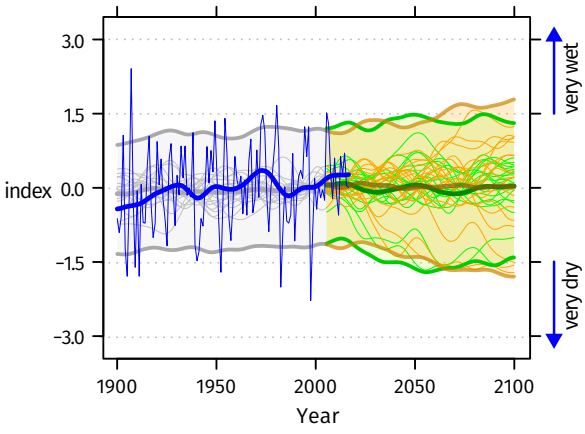


The proportion of total annual rainfall from very wet days[e] (about 30% for 1981–2010) shows little change on average by the end-of-century although the uncertainty range is somewhat larger particularly under a high emissions scenario (about 8% to almost 50%). Total annual rainfall shows little projected change (see figure 2).

FIGURE 5: Standardized Precipitation Index ('drought'), 1900–2100

The Standardized Precipitation Index (SPI) is a widely used drought index which expresses rainfall deficits/excesses over timescales ranging from 1 to 36 months (here 12 months, i.e. SPI12).[f] It shows how at the same time extremely dry and extremely wet conditions, relative to the average local conditions, change in frequency and/or intensity.

SP12 values show little projected change from zero on average, though year-to-year variability remains large. A few models indicate larger decreases (more frequent/intense drought events) or increases (more frequent/intense wet events).



NOTES

[a] Model projections are from CMIP5 for RCP8.5 (high emissions) and RCP2.6 (low emissions). Model anomalies are added to the historical mean and smoothed.

[b] Analysis by the Climatic Research Unit, University of East Anglia, 2018.

[c] Observed historical record of mean temperature is from CRU-TSv3.26 and total precipitation is from GPCC. Observed historical records of extremes are from JRA55 for temperature and from GPCC-FDD for precipitation.

[d] A 'hot day' ('hot night') is a day when maximum (minimum) temperature exceeds the 90th percentile threshold for that time of the year.

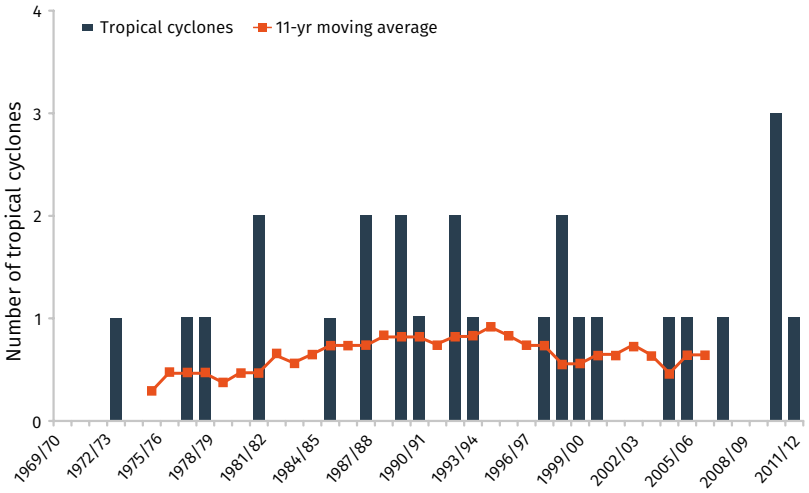
[e] The proportion (%) of annual rainfall totals that falls during very wet days, defined as days that are at least as wet as the historically 5% wettest of all days.

[f] SPI is unitless but can be used to categorise different severities of drought(wet): above +2.0 extremely wet; +2.0 to +1.5 severely wet; +1.5 to +1.0 moderately wet; +1.0 to +0.5 slightly wet; +0.5 to -0.5 near normal conditions; -0.5 to -1.0 slight drought; -1.0 to -1.5 moderate drought; -1.5 to -2.0 severe drought; below -2.0 extreme drought.

Tropical cyclones

Tropical cyclones affect Samoa mainly between November and April. Between the 1969/70 and 2010/11 seasons, 26 cyclones developed within or crossed the Samoa Exclusive Economic Zone (EEZ); an average of six cyclones per decade (see Figure 6) *(5)*.

FIGURE 6: Time series of the observed number of tropical cyclones developing within and crossing the Samoa EEZ. The 11-year moving average is in orange



Source: Australian Bureau of Meteorology and CSIRO. Climate Variability, Extremes and Change in the Western Tropical Pacific: New Science and Updated Country Reports, 2014 *(5)*.

POTENTIAL FUTURE CHANGES IN TROPICAL CYCLONES: A GLOBAL PERSPECTIVE *(6–13)*[a]

Total number	Intensity	Frequency of category 4 and 5 events	Average precipitation rates near storm centre

Increase Decrease

Sea level rise

Sea level rise is one of the most significant threats to low-lying areas on small islands and atolls. Research indicates that rates of global mean sea level rise are almost certainly accelerating as a result of climate change. The relatively long response times to global warming mean that sea level will continue to rise for a considerable time after any reduction in emissions.