Climate information relevant for Health

This factsheet presents Working Group I (WGI) assessments of changes in climatic factors of **high relevance**[&] that could have direct (e.g., combined temperature and humidity thresholds above which prolonged exposure may be deadly) and indirect impacts on human health, the latter encompassing *ecologically* (e.g., range shifts of disease vectors and zoonotic hosts, and increased development rates of pathogens), *physically mediated* (e.g., fatalities and injuries during disasters), and *cascading or secondary impacts* (e.g., water-borne diseases following water shortages and floodings).

[&] {Table 12.2 entries under WGII category "Health, wellbeing and communities"}

Links to the assessments of WGII and WGIII: *Our report is focused on the assessment of climatic variables (temperature, precipitation, drought, extreme events, etc.). We do not provide information about the impacts of climate change and adaptation for the health sector (assessed in IPCC Working Group II, particularly Chapter 7) nor how sectors could mitigate their emissions (assessed by the IPCC Working Group III).*

HEAT AND COLD

- At increasing warming levels, extreme heat will exceed critical thresholds more frequently (*high confidence*). By the end of the 21st century, dangerous humid heat thresholds, such as the US NOAA Heat Index (HI) of 41°C, will be exceeded much more frequently under a very high emissions scenario (SSP5-8.5) than under a low emissions scenario (SSP1-2.6), and will affect many regions (*high confidence*). In many tropical regions, the number of days per year where a HI of 41°C is exceeded would increase by more than 100 days relative to the recent past under SSP5-8.5, while this increase will be limited to less than 50 days under SSP1-2.6 (*high confidence*). {12.3.1.2, TS.1.4 and figure TS.6}

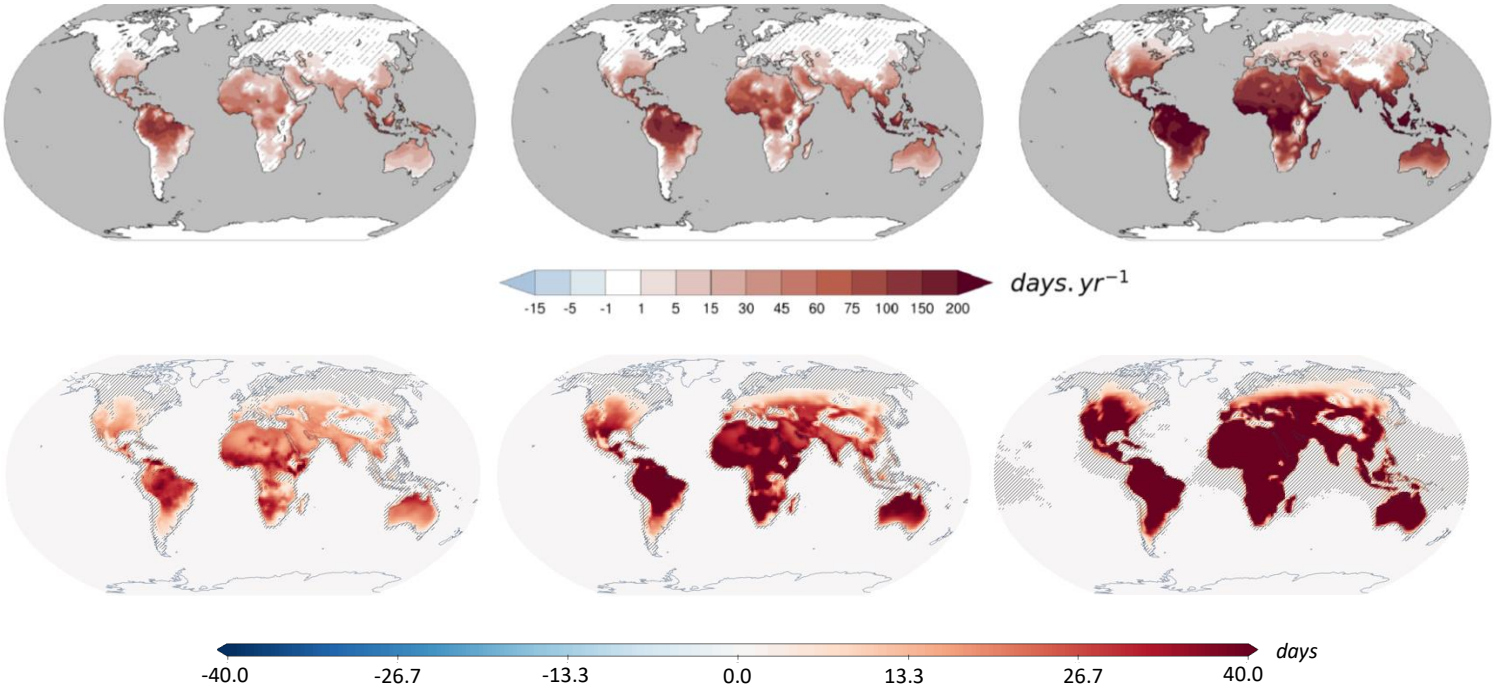

Figure 1: (Top panels) Projected changes in the mean number of days per year with HI exceeding the 41°C threshold. HI depicts the number of days per year averaged across each region at which a heat warning for human health at level 'danger' would be issued according to the US National Oceanic and Atmospheric Administration – NOAA (NOAA HI41, see Chapter 12 and Annex VI). Left panel is for SSP1-2.6, 2081–2100; middle panel is for SSP5-8.5, 2041–2060; and right panel is for SSP5-8.5, 2081–2100, all expressed as changes relative to 1995–2014. (Bottom panels) Projected change in the mean number of days per year with maximum temperature Tx exceeding 35°C. Left, middle and right panels are for SSP1-2.6, SSP2-4.5, and SSP5-8.5, respectively, all for 2081-2100, relative to 1995-2014. {Adapted from Figure 12.4}

HEAT AND COLD (Cont.)

- At increasing warming levels, it is *likely* that cold spells will become less frequent towards the end of the century. {12.3.1.3 and TS.1.4}

WET AND DRY

- Heavy downpours can lead to pluvial flooding. It is *extremely likely* that heavy precipitation will become more frequent and more intense with additional warming. {12.3.2.3 and TS.2.6}
- Landslides, mudslides, rock falls, and other mass movements can lead to injuries and fatalities. In major mountainous regions, extreme precipitation is projected to increase (*medium* to *high confidence*, depending on location), with potential cascading consequences of floods and landslides in all scenarios (*medium confidence*). {12.3.2.4 and TS.4.3.2.10}
- A reduction in water availability (via aridity or hydrological drought) challenges water supplies. Fires produce smoke plumes that reduce air and water quality (via deposition). There is *low confidence* in the magnitude of changes in aridity, drought and fire weather, but the probability of crossing uncertain regional thresholds increases with further warming (*high confidence*). {12.3.2.5, 12.3.2.7, 12.3.2.8 and TS.2.6}

WIND

- In North America, severe wind storms, tropical cyclones and dust storms are shifting toward more extreme characteristics (*medium confidence*). {12.3.3.1, 12.3.3.2, 12.3.3.3, 12.3.3.4, and TS.4.3.2.6}
- The proportion of tropical cyclones that are intense is expected to increase (*high confidence*), but the total global number of tropical cyclones is expected to decrease or remain unchanged (*medium confidence*). {TS.2.3}

AIR POLLUTION

- A warmer climate is expected to increase surface ozone by a few parts per billion over polluted regions, depending on ozone precursor levels (*medium* to *high confidence*). {12.3.7.1, 6.5}
- Climate-driven changes to meteorological conditions generally favor extreme air pollution episodes in heavily polluted environments, though with strong variations across regions and selected metrics (indicators) (*medium confidence*). {6.5}
- Air pollution dedicated policies will facilitate reaching air quality improvements more rapidly in many regions to reach the World Health Organization guidelines. Additional policies (e.g., access to clean energy, waste management) envisaged to attain Sustainable Development Goals bring complementary air pollution reduction. {6.6.3, 6.7.3, Box 6.2, Box TS.7}

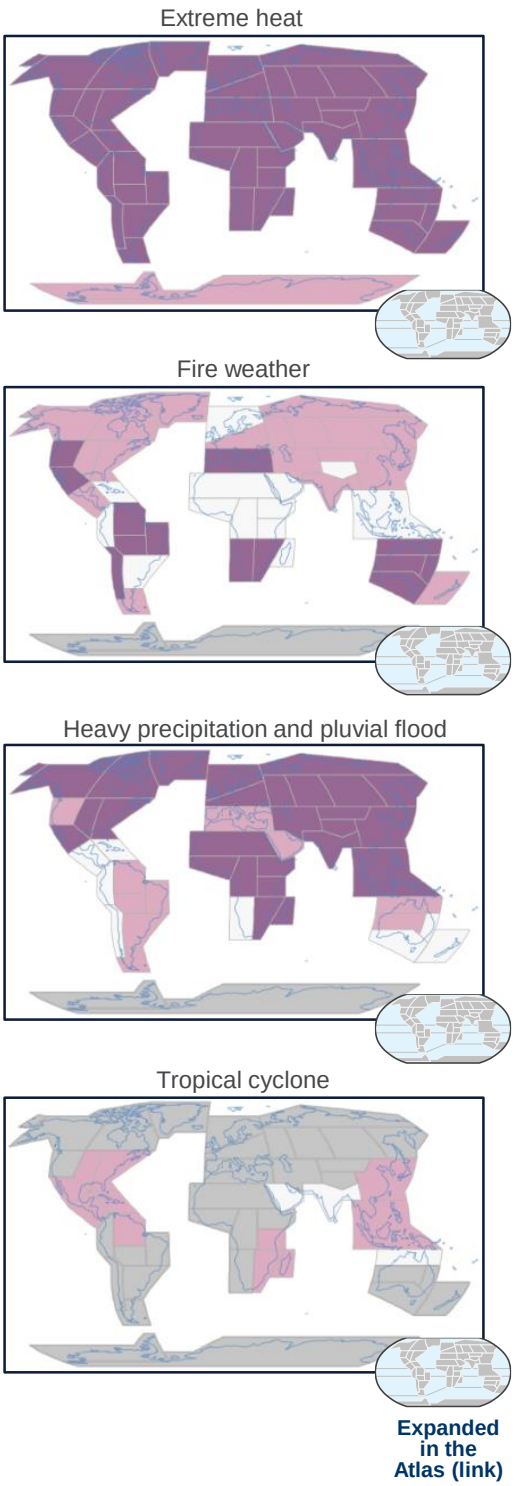

Figure 2: Projections in climatic impact-drivers categories. Changes refer to a 20–30-year period centered around 2050 and/or consistent with a 2°C warming. {Interactive Atlas}