



WORLD
METEOROLOGICAL
ORGANIZATION

Secretary-General's Message

World Meteorological Day 2019 is devoted to the theme “The Sun, the Earth and the Weather”.

The Sun delivers the energy that powers all life on Earth. It drives the weather, ocean currents and hydrological cycle. It shapes our moods and daily activities. It is the inspiration for music, photography and art.

Located nearly 150 million kilometres from Earth, the Sun is the heart of our solar system and keeps our planet warm enough for living things to thrive. For over 4.5 billion years, this hot ball of glowing plasma has been the driving force behind weather and climate, and life on Earth.

Satellite measurements taken over the past 30 years show that the Sun’s energy output has not increased and that the recent warming observed on Earth cannot be attributed to changes in Sun activity.

The rise in temperatures – which are melting ice and heating the oceans – is driven by long-lived greenhouse gases in the atmosphere. Carbon dioxide concentrations reached 405.5 parts per million in 2017 and continue to rise.

As a consequence, since 1990, there has been a 41% increase in total radiative forcing – the warming effect on the climate - by long-lived greenhouse gases. CO₂ accounts for about 82% of the increase in radiative forcing over the past decade.

If the current trend in greenhouse gas concentrations continues, we may see temperature increases of 3 °C to 5 °C by the end of the century. This is well above the target of the Paris Agreement of the United Nations Framework Convention on Climate Change, which aims to hold the global average temperature increase to below 2 °C and as close as possible to 1.5 °C.

Climate change has led to an increase in heat extremes, and new temperature records – at local daily levels as well as at national, regional and global level. Heatwaves are starting earlier and ending later in the year and becoming more frequent and intense as a result of climate change.

Climate models project increases in mean temperature in most land and ocean regions, hot extremes in most inhabited regions, heavy precipitation in several regions and the probability of drought and precipitation deficits in some regions. Climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming.

The Sun can provide an alternative source of energy, which can be harnessed even in cloudy weather. Solar energy is indeed used worldwide and is increasingly popular for generating electricity or heating and desalinating water.

Understanding how the Sun influence weather and climate phenomena is therefore critical to the core mission of WMO of building resilient societies.

The integrated Earth System approach of the WMO community will provide the best possible science and operational services to support countries for weather, climate, hydrology, oceans and the environment.

Petteri Taalas
Secretary-General
World Meteorological Organization