



2025-yil "Atrof-muhitni asrash va „yashil“ iqtisodiyot yili" va 5-iyun xalqaro atrof-muhitni muhofaza qilish kuniga bag'ishlanadi

IQLIM O'ZGARISHI SHAROITIDA CHO'L – VOHA EKOSISTEMASI: MUAMMOLAR VA YECHIMLAR

**MAVZUSIDAGI XALQARO KONFERENSIYA
MATERIALLARI**

2025-yil 5-6-iyun





**O‘ZBEKISTON RESPUBLIKASI OLIY TA’LIM, FAN VA INNOVATSIYALAR
VAZIRLIGI
BUXORO VILOYAT EKOLOGIY, ATROF MUHITNI MUHOFAZA QILISH VA
IQLIM O‘ZGARISHI BOSHQARMASI
BUXORO DAVLAT UNIVERSITETI
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CONCEPTS OF CLIMATE AND WEATHER, THEIR GENERAL CLASSIFICATION, AND CONTRIBUTING FACTORS

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Climate and weather are two closely related but fundamentally distinct concepts in atmospheric science. While both describe conditions in Earth's atmosphere, their temporal scale and consistency differ significantly. Weather refers to short-term atmospheric events such as rain, wind, or sunshine observed over hours or days. In contrast, climate describes long-term patterns and averages of weather data, generally over a period of 30 years or more.

The accurate understanding and classification of these concepts are essential for various disciplines, including agriculture, urban planning, disaster risk reduction, and environmental management. This paper delves into the differences between climate and weather, presents standard classification models, and investigates the natural and human-induced factors influencing these atmospheric conditions.

Weather can be described as the condition of the atmosphere at a particular time and place. It includes parameters such as temperature, humidity, precipitation, wind speed, and atmospheric pressure. Weather patterns are dynamic and can change rapidly due to atmospheric disturbances.

Climate, on the other hand, represents the average weather conditions of a region over an extended period. It is a statistical summary based on historical weather data, encompassing seasonal patterns, long-term temperature averages, and precipitation levels.

While weather can be forecast with relative accuracy in the short term, climate requires extensive data collection and analysis to observe trends and long-term shifts. Understanding both concepts is essential in preparing for environmental phenomena ranging from daily decisions to long-term sustainability planning.

General Classification of Climate and Weather

Climate Classification

One of the most widely accepted systems for classifying climates is the Köppen-Geiger Climate Classification. It divides world climates into five major types, each represented by a letter:

Tropical (A): Characterized by high temperatures throughout the year and significant precipitation. Found in equatorial regions.

2. Dry (B): Includes desert and semi-arid regions with low precipitation and high evaporation.

3. Temperate (C): Experiences mild winters and warm summers, typically found in mid-latitude zones.

4. Continental (D): Noted for cold winters and warm summers; common in the interiors of large landmasses.

5. Polar (E): Marked by extreme cold and very limited vegetation, located near the poles.

Weather Types

Weather can be categorized into several common types based on atmospheric conditions:

- **Sunny weather:** Clear skies and high solar radiation.
- **Cloudy weather:** Dominated by cloud cover, often reducing visibility and temperature range.
- **Rainy weather:** Associated with moisture-laden clouds and precipitation.
- **Stormy weather:** Includes thunderstorms, strong winds, and sometimes hail or tornadoes.
- **Snowy weather:** Occurs in cold regions, especially during winter months.

Contributing Factors to Climate and Weather

Numerous natural and human-induced factors influence both climate and weather patterns. Some of the primary contributors include:

1. **Latitude:** The Earth's curvature results in unequal heating by the sun. Equatorial regions receive direct sunlight year-round, creating warm, humid climates, while polar regions receive less solar energy, resulting in colder conditions.
2. **Altitude:** Higher altitudes typically experience cooler temperatures. Mountainous regions often have distinct microclimates due to changes in air pressure and temperature with elevation.
3. **Ocean Currents:** Warm and cold ocean currents regulate the temperature and moisture of overlying air masses. For example, the Gulf Stream warms Western Europe, while the Humboldt Current cools the western coast of South America.
4. **Topography:** Geographical features like mountains and valleys influence weather and climate. Mountains can block air movement and cause orographic rainfall on the windward side, while the leeward side remains dry (rain shadow effect).
5. **Atmospheric Circulation:** The movement of air masses and jet streams distribute heat and moisture around the globe. Trade winds, westerlies, and monsoons are all part of these large-scale systems.
6. **Vegetation and Land Use:** Forests, grasslands, deserts, and urban areas absorb and emit heat differently. Vegetation affects local humidity and precipitation through processes such as transpiration.
7. **Human Activities:** Industrial emissions, deforestation, and urbanization contribute to climate change by altering natural greenhouse gas concentrations. These changes are often long-term and result in shifts in average temperature and precipitation patterns.

1. Causes and Global Consequences of Climate Change

Climate change, commonly referred to as global warming, poses a serious threat to the planet. Its consequences include disruption of ecosystems, melting glaciers, rising sea levels, and increasingly unpredictable weather. Key drivers include greenhouse gas emissions from burning fossil fuels, deforestation, and industrial processes. To mitigate these effects, measures such as transitioning to renewable energy, reducing carbon emissions, and adopting sustainable consumption patterns are essential.

2. Adaptation: Scientific and Practical Foundations

Adaptation to climate change refers to how organisms, including humans, adjust to new environmental conditions. It involves either physiological changes or genetic evolution through natural selection. In agriculture, adaptation is crucial for introducing crops to new climates, such as the expansion of cotton farming in Uzbekistan. Successful examples include acclimatization of animal breeds and introduction of pest control species suited to local conditions.

3. International Experience

Climate negotiations, such as those under the Paris Agreement, aim to unite developed and developing nations in reducing emissions and adapting to climate threats. While developed countries hold more resources and historical responsibility, developing nations are often more vulnerable. Programs involving youth participation, like those held in Uzbekistan, enhance understanding and engagement with global climate action.

4. Adaptation Strategies in Uzbekistan

Uzbekistan is highly sensitive to climate change, with average temperatures having risen by 1.6°C since 1880—higher than the global average. Future projections estimate an increase of up to 3°C

by 2050, with severe effects in regions like the Aral Sea zone. To address this, Uzbekistan has ratified the Kyoto Protocol and the Paris Agreement, and adopted a national green economy strategy. Efforts include expanding renewable energy use and implementing regulatory frameworks to support climate resilience.

The concepts of climate and weather are central to understanding our natural environment. While weather represents short-term atmospheric conditions, climate provides a long-term perspective. Their classification helps scientists, policymakers, and the public make informed decisions in areas ranging from food security to disaster preparedness.

The various factors that shape climate and weather, such as latitude, altitude, ocean currents, and human activities, demonstrate the complexity of Earth's atmospheric system. As global environmental challenges intensify, a deeper understanding of these concepts is crucial for adaptation, mitigation, and sustainable development.

The impact of climate change is also significant for developing countries, causing social and economic problems. Therefore, it is very important to develop global cooperation, expand sustainable energy sources, and develop effective climate adaptation strategies. All this is necessary to reduce climate change and prevent emergencies.

International climate action and local global initiatives play an important role in reducing climate change and mitigating emergencies. There is no single solution to climate change, but this problem can be solved by ensuring that different countries work together, developing new technologies and implementing innovations.

In addition, every citizen can contribute to preventing climate change by making environmentally responsible decisions in their lives. Such measures will not only help save natural resources, but also increase the social stability of society.

Through enhanced global cooperation on climate change and its mitigation, the introduction of advanced technologies, the transition to sustainable energy sources, and the development of green policies, humanity can take effective steps to reduce the negative impacts of climate change and protect all living things on Earth.

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BUXORO VILOYATINING SUV RESURSLARI VA UNING IFLOSLANISH HOLATI

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