

INFLUENCE OF CLIMATE CHANGE ON WEATHER CONDITIONS IN AZERBAIJAN IN 2014

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Observed climate change, undoubtedly, had and has the impact on climatic conditions of certain regions. Each of the last three decades has been successively warmer at the surface than any preceding decade since 1850. Changes in many extreme weather and climate events have been observed since about 1950. It is likely that number of warm days and heat waves has increased in large parts of Europe [1]. According to data of meteorological observation in Azerbaijan in comparison with long-term normal, temperature for the last 100 years has increased by 0,6-1,5⁰C. According to some research in the Republic, as well as in the world, climate change consequences are observed [3]. Abnormal hydrometeorological phenomena became more frequent during last decades in many countries of the world. It is confirmed by the British Meteorological Office, based on data of HadCRUT4, that global warming continued in 2014, but statistically significant differences with previous abnormally warm years of the last decade was not revealed, and it can be compared with the record year 2010 [2].

In Azerbaijan also, 2014 was a year with abnormal weather, record air temperatures were registered during separate spring and summer month.

January 2014 was near normal conditions, but windy. Temperatures in the more places were near normal and above normal. But last days of January and first decade of February 2014 were cold and snowy. Gusts of N-NW'ly and W-SW winds were up to 30-34 m/s in some places in January. Anomal temperatures were registered in February: 02.02.14 minimum air temperature in Baku recorded at -7.0⁰ C, breaking the previous record of -6.4⁰ C in 1937; 03.02.14 minimum air temperature in Baku recorded at -7.9⁰ C, breaking the previous record of -5.5⁰ C in 2012; 04.02.14 minimum air temperature in Baku recorded at -6.7⁰ C, breaking the previous record of -5.5⁰ C in 1913. Precipitation in January and February was near and below normal.

Windy and cold weather observed during 29-30 of March as a result of Scandinavian cyclone intrusion over Azerbaijan. Temperatures dropped 13-18⁰ C and in Baku mean temperature on 29.03.14 was 8⁰ C above average and dropped 6.0⁰ C below average next day 30.03.14: maximum of 26⁰ C decreased to minimum of 2.8⁰ C. The ground was snow covered: in highlands 22-42 cm, in foothills 4-18 cm, in lowlands and in Baku 1-2 cm. Despite this, Precipitation amount in March was near and below normal. March as always was very windy with SW'ly and NW'ly winds, gusts 28-33 m/s, during cold days 35-40 m/s.

Weather in April was windy with near average monthly mean air temperatures, but 17-20 of April temperatures increased and maximum air temperatures in Baku reached 23-28⁰ C, highlands 20-25⁰, foothills 22-30⁰ C, Nakhchivan AR 27-31⁰ C. Highlands and foothills had hail of 6-14 mm. Snow fellover foothills and highlands with 2-27 cm of snow cover at the beginning of month. High SW'ly and NW'ly winds observed most days, gusts 20-25 m/s, some places 28-36 m/s. Precipitation amount in April was near and below normal.

Weather in May was hot with record maximum air temperatures. Maximum air temperatures were: highlands 24-28⁰ C, foothills 32-35⁰ C, lowlands 34-37⁰ C

Baku and Absheron peninsula 31-36⁰ C.

Record temperatures during 8 days (2,10,11,12,16-19 of May) was registered in Baku:

2.03.14 -30.5⁰ C, breaking the previous record of 29⁰ C in 2013;
10.03.14 -30.6⁰ C, breaking the previous record of 29⁰ C in 2012;
11.03.14 -31.0⁰ C, breaking the previous record of 28.4⁰ C in 1953;
12.03.14 -31.9⁰ C, breaking the previous record of 28.8⁰ C in 1968;
16.03.14 -34.6⁰ C, breaking the previous record of 34⁰ C in 1996;
17.03.14 -35.2⁰ C, breaking the previous record of 29.3⁰ C in 1958;
18.03.14 -33.5⁰ C, breaking the previous record of 29.6⁰ C in 2012;
19.03.14 -30.9⁰ C, breaking the previous record of 30.0⁰ C in 2012;

Hail observed very often during May. Hail of 5-26 mm fell in foothill regions caused huge damage to Agriculture and private property.

Monthly Precipitation amount in May was mainly below normal.

Temperatures in June were near to normal and a little above normal in some parts of the country, but, heavy hail observed during most of the days. Hail of 10-33 mm caused huge damage to Agriculture and private property, some people suffered also. Precipitation in June, generally, was below normal, but some places near to normal. Temperatures in July were near to normal and some places above normal. Record maximum air temperature registered in Baku: on 06.07.14 and was 36.6⁰ C, breaking the previous record of

35.1⁰ C in 2010. Precipitation was, generally, below normal, but some places near normal, highlands near and above normal. August, especially, the second part of August was anomaly hot and dry which continued for several days with record maximum temperatures. Precipitation was below normal, some parts of the country had no rain at all.

Thermal depression dominated over the region in the second part of August and this caused heat waves. Hot and dry weather conditions persisted continuously for a number of days. On 19.08.14 Absolute maximum temperatures in some regions were recorded as:

Gedabek (highlands) - 37⁰ C, breaking the previous record of 35⁰ C in 2006;

Agstafa (foothills) - 41⁰ C, equaling to the previous record of 41⁰ C in 2000;

Sheki (foothills) - 40⁰ C, breaking the previous record of 38⁰ C in 2000;

Zaghatala (foothills) - 41⁰ C, breaking the previous record of 38.5⁰ C in 2006;

Goytepe (lowlands) - 41⁰ C, equaling to the previous record of 41⁰ C in 2006;

In Baku during 6 days (17,23,24,26,27,28 of August) daily maximum temperatures were recorded.

On 17.08.14 daily maximum air temperature in Baku was recorded at 36.5⁰ C, breaking the previous record of 36.2⁰ C in 2005, On 23.08.14 daily maximum air temperature in Baku was recorded at 37.3⁰ C, breaking the previous record of 35.1⁰ C in 1999, On 24.08.14 daily maximum air temperature in Baku was recorded at 37.3⁰ C, breaking the previous record of 35.5⁰ C in 2006, On 26.08.14 daily maximum air temperature in Baku was recorded at 37.0⁰ C, breaking the previous record of 35.0⁰ C in 2006, On 27.08.14 daily maximum air temperature in Baku was recorded at 39.0⁰ C, breaking the previous record of 35.1⁰ C in 2007,

On 28.08.14 daily maximum air temperature in Baku was recorded at 38.5⁰ C, breaking the previous record of 36.4⁰ C in 2006.

Intensive rainfalls fell from last days of September. Relatively high temperatures dropped 10-15⁰ C. Monthly precipitation amount spread differently, mainly above normal in foothills, highlands and Baku-Absheron peninsula, near normal in rest parts of the country. Weather in October was cool and windy with heavy rainfalls. Mean air temperatures in Baku and Absheron peninsula was 0.9-1.7⁰C, Nakhchivan AR 0.5-1.3⁰C, foothills 0.2-1.9⁰ C, highlands 0.4-0.6⁰ C, lowlands 0.3-1.5⁰ C below normal. Monthly precipitation amount was above normal most places of the country (140-336% of normal). Weather in November was milder than usually. Mean air temperatures in November were near and a little above normal, precipitation mainly below normal, some places near normal.

First part of December was cool and windy. Air temperatures were a little below normal. Snow fell over the ground and snow cover was up to 30 cm. Gusts of winds reached 20-28 m/s in regions of the country, in Absheron peninsula and in the sea 27 m/s. Alibek station (foothills) registered gusts of W'yly winds of 40 m/s on 24.12.14. Last week of December was characterized with warm air temperatures, for example, mean daily temperature in Baku was 10⁰ C below average, and its maximum was 19⁰ C, breaking the previous record of 15.8⁰ C in 1904. Monthly precipitation amount in December was mainly below normal, some parts near normal.

Conclusion: Except autumn season, 2014 characterized by less precipitation amount and lack of snow cover; hot weather with record air temperatures were observed in May and August and, as a result, summer season was very dry. Agriculture had a deficient of water resources. High winds observed in May and April over whole country with heavy hail in foothills, causing huge damage to Agriculture and private properties.

Literature

1. Intergovernmental Panel on Climate Change, Climate Change 2013 The Physical Science Basis, 2013, 203 p.
2. Dr. Peiser Benny, The Global Warming Police Forum (GWPF), Newsletter, CCNET 27.01.15.
3. The Second National Communication of the Republic of Azerbaijan on the UN Framework Convention on Climate Change. Baku, 2010, 96 p.