

## CHANGES IN THE ECOLOGICAL CONDITIONS OF THE ARAL SEA REGION UNDER THE INFLUENCE OF ANTHROPOGENIC FACTORS

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*Annotation: The article analyzes the values of long-term changes in the frequency of sand and dust storms returned in the Aral Sea region on the basis of observations of meteorological stations Nukus, Jaslyk, Chimbay in 1973-2020. The recurrence characteristics of dangerous meteorological events are highlighted.*

*Keywords: Aral Sea region, Aral Sea, Nukus, Jaslyk, Chimbay, meteorological station, sand and dust storm, wind, speed.*

### INTRODUCTION

For the past 70 years, Central Asia has witnessed a global environmental tragedy - the Aral Sea, once the world's fourth-largest sea, is drying up. Since the 1960s, large amounts of water have been taken from the Amudarya and Syrdarya rivers, which flow into the sea, for irrigation and reclamation purposes. Environmental degradation continues to this day along with desertification. The winds blow sand and dust, salts, and agricultural chemicals over a distance of 150-300 km. It is observed that the Aral Sea continues to lose water due to high temperatures and low flow of water entering the sea. The Aral Sea is generally divided into northern and southern parts. The northern part of the sea receives water from the Syrdarya, and the southern part of the sea receives water from the Amudarya. Like all large reservoirs, the Aral Sea once played a role in regulating the climate, mitigating summer heat and winter cold. Now, as the sea dries up, the region's climate has changed dramatically. However, the coast remains vulnerable to severe weather conditions, especially due to salt and dust storms, droughts and extreme high temperatures, with frequent strong wind movements in the surrounding areas, as a result, the recurrence rate of salt and dust storms is increasing.

In view of the above, in this research we have focused on the analysis of long-term changes in sand and dust storm events.

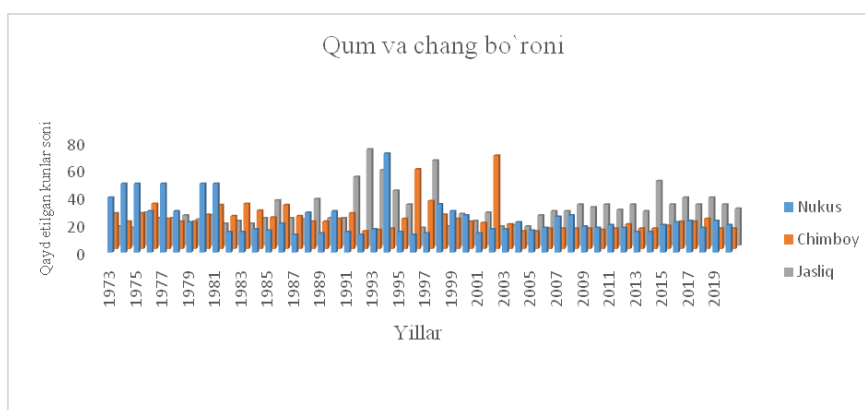
The main purpose of the research: Sand and dust storms focus on the assessment of changes in events over the years. To achieve this goal, the following main tasks were considered in the study and little was solved: Analysis of perennial meteorological data observed at Nukus, Jaslyk, Chimbay, meteorological stations; determining the degradation values of sand and dust storm events over the years.

In carrying out the tasks set before us in the research, we used the observational data of the Hydrometeorological Department of the Republic of Karakalpakstan for the last 47 years, namely from 1973 to 2020.

BA Eisenstata [2], VN Babichenko [2], GN Leuxinoy [2], VE Chub [3], AQ Abdullayev [1], OG Sultashova [1] and others. devoted to the research of others. All of these studies have come to the conclusion that dangerous meteorological events change in the dails. However, the observations in these studies were made on the basis of data available up to 2010.

In performing the tasks identified in the study, sand and dust storm events were analyzed to change over the years.

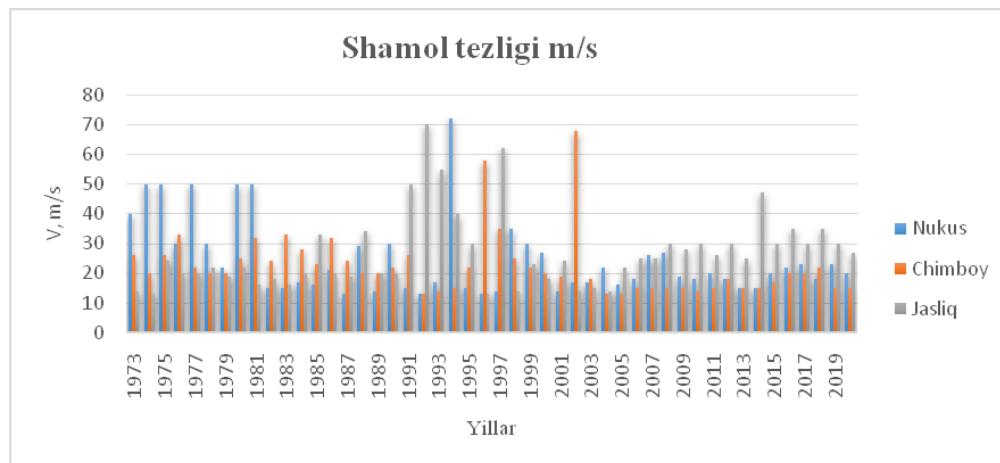
Sand and dust storms, which are the product of strong winds, are a dangerous weather phenomenon, and the Aral Sea region is located in one of the centers of dust storms in Central Asia. The average annual duration of days with dust storms per year is 28 days. The maximum number of days with annual dust storms occurs in spring and early summer, with strong wind movements and rapid drying of the soil surface. Numerous sand and dust storm events lead to uninterrupted continuity of traffic, especially flight safety in aviation, deterioration of meteorological distance visibility. In recent years, there has been an increase in the duration of sand and dust storms. As a proof of our opinion, we present the results of the analysis in the form of a graph (Figure 1).



### **Number of days sand and dust storms were observed (1973-2020).**

During the years under review, the highest rates of sand and dust storms were 13 days in Nukus (1976), 19 days in Chimbay (1979), and 16 days in Jaslyk (1986). However, it should be noted that in the last 15 years (2005-2020) the number of days of sand and dust storms at all meteorological stations has been steadily increasing.

The main factor in the occurrence of sand and dust storm events is strong wind, and then we analyzed the values of the average long-term maximum wind speed recorded at meteorological stations in the years of organization (Figure 2).



### Long-term maximum wind speed, m / s.

The results of the analysis showed that the maximum wind speed was 30 m / s at Nukus meteorological station (01.10.1981), 28 m / s at Chimbay meteorological station (27.12.2002), and 30 m / s at Jaslyk meteorological station (26.09.1992). . At the Jaslyk meteorological station, strong wind movements are often repeated, due to the fact that the meteorological station is located in an open area and in the area where the cyclone-anticyclone movements change dramatically.

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