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ROLE OF ATMOSPHERIC CIRCULATION IN THE FORMATION OF ANOMALLY WARM AND ANOMALLY COLD WINTERS IN THE ASIAN TERRITORY OF RUSSIA

INTRODUCTION

As you know, the beginning of the XXI century brought many climatic surprises, including a slowdown in the rate of global warming, which is still being discussed.

The Asian territory of Russia is a vast and poorly studied region of our country. In addition, global climate changes are most clearly manifested in this region, therefore, the study of modern changes in climate elements in this area is of great scientific and practical importance.

A review of scientific studies performed on the example of the Asian Russia and its adjacent territories allows us to note an increase in the number of weather and temperature anomalies in the Asian territory of Russia [1]. Another feature of changes in the temperature regime in this region is the tendency toward cooling observed in winter over the past few years (up to -0.6° C/10 years) [2]. The likely cause of these changes is atmospheric circulation.

RESULTS AND DISCUSSION

The study analyzed the dynamics of winter temperatures on the example of 92 climate stations. The work is based on the use of the average daily air temperature of the winter calendar months from 1947 to 2016. To determine the dependencies between atmospheric circulation and the distribution of air temperature anomalies, we used a calendar of successive changes in elementary circulation of the Northern Hemisphere according to B. Dzerdzeevsky **[3].**

An analysis of the circulation mechanisms showed that in the studied region in winter the temperature regime forms 26 <u>elementary</u>



Fig. 1. Spatial distribution of the total number of cases with negative anomalies in January. a) 1947-1981 b) 1982-2016



Fig. 2. Spatial distribution of the total number of cases with positive anomalies in January. a) 1947-1981 b) 1982-2016

As part of the standard deviation (σ) was selected as a criterion of anomalousness winter season. The spatial distribution of the total number of cases with negative and positive air temperature anomalies (-2 σ , 2 σ) is shown in Fig. 1 (a, b) and Fig. 2 (a, b).

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circulation mechanisms, combined into seven groups. Almost 75% of cases in the winter months there longitude northern circulation and latitudinal circulation repeatability does not exceed 15%. It was revealed that abnormally warm and cold winters are characterized by a predominance of the meridional northern circulation group and groups of zoning disturbances, as well as combined groups, including longitude northern and latitudinal eastern elementary circulation mechanisms. These elementary circulation mechanisms are characterized by blocking processes and breakthroughs of southern cyclones into the study area. In winter, in the Siberian sector, the main baric formation near the surface of the earth is the Asian anticyclone, therefore in the longitudinal and latitudinal circulation groups there is a second component - a stationary position.

