

Ecosystems: climate change vulnerability and resilience[†]

Oksana N. Lipka ^{1,*} and Tatiana B. Shishkina ²

Cover Letter

Dear colleagues,

The proposed paper covers vibrant and fundamentally important issues on climate change vulnerability and resilience of ecosystems in a regional context.

The paper has been specially produced for The 5th International Electronic Conference on Atmospheric Sciences (ECAS 2022), Biometeorology section. It covers the interplay of atmospheric conditions and ecosystems at the biome level in an interdisciplinary manner, as well as potential adaptation solutions to respond to, and mitigate, the adverse effects of climate change. The paper provides documented examples of how atmospheric conditions change impacts on living organisms and what consequences can be expected.

The key words are connected to the section directly: biometeorology and climate change; weather sensitivity; biomes; ecosystems; climate change adaptation.

The key findings are outlined in the abstract:

Abstract: Since 1976, mean annual temperature in Russia has been rising at 0.47oC per decade (in the Arctic at 1oC per decade). This process determined shifts in biome boundaries and large-scale ecosystem restructuring. Biome boundaries should have moved 400 to 500 km northwards in the Arctic and 200 to 300 km northwards in other climate zones and will likely shift another 200–500 km to the north. Arctic, mountain, steppe, and the Far East ecosystems are the most vulnerable to adverse climate change. Creation of protected areas has become a priority measure for the adaptation of ecosystems. On average, federal protected areas account for 7.6 percent of a biome territory across the country; however, in five biomes no federal protected areas have been established. For the purpose of effective adaptation to climate change it is advisable to increase the total territory covered by all-category protected areas to 17 percent of each biome.

- We confirm that this manuscript, in whole or in part, is not under consideration for, or published in, any other journal.
- Both authors have approved of the manuscript and agree to its submission to MDPI Environmental Sciences Forum journal.

Dr. O.N. Lipka

T.B. Shishkina