

IMPROVING THE ACCURACY OF SELECTION OF BIRD RADAR ECHOES AGAINST A BACKGROUND OF ATOMIZED CLOUDS AND ATMOSPHERIC INHOMOGENEITIES

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ABSTRACT

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The algorithm for bird radar echo selection was developed in Israel and has been successfully used for many years to monitor birds in periods of massive intercontinental migration in order to ensure flight safety in civil and military aviation. However, it has been found that under certain meteorological conditions the bird echo selection algorithm does not filter out false signals formed by atomized clouds and atmospheric inhomogeneities. Although the algorithm is designed to identify and sift false signals, some useful echoes from smaller birds are erroneously sifted as well.

This paper presents some additional features of radar echoes reflected from atmospheric formations that can be taken into account to prevent the loss of useful bird echoes. These additional features are based on the use of polarization, fluctuation and Doppler characteristics of a reflected signal. By taking these features into account we can reduce the number of false signals and increase the accuracy of the bird echo selection algorithm. The paper presents methods for using radar echoes to identify species and sizes of birds, together with recommendations on using the data to ensure flight safety during periods of massive intercontinental bird migration.

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