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PAPER TITLE *MODELING OF THE ATMOSPHERIC TRANS RADIOACTIVE CONTAMINATION FROM CHERNOBYL ACCID USING ETA MODEL*

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ABSTRACT (See instructions overleaf)

MODELING OF THE ATMOSPHERIC TRANSPORT OF RADIOACTIVE CONTAMINATION FROM CHERNOBYL ACCIDENT USING ETA MODEL

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The atmosphere is the main media to transporting and dispersing the radioactive and/or chemical contaminants in accidental situations. The atmospheric models can be used to simulate the transport of contaminants in typical accidental cases and for realistic meteorological conditions. This report describes an approach in simulating of the Chernobyl accident and similar hypothetical cases. The study is based on an atmospheric model extended by the additional equation that is modeling the transport of a certain radioactive concentration. A step mountain synoptic model, called ETA model (well-known model for weather forecasting), is used to investigate the transport and deposition of radioactive material in the Chernobyl accidental zone. Calculation was done in two steps for five 48-hours forecast periods. The first step is consisted in calculating of meteorological fields over Europe using horizontal resolution of 0,5 degrees. The second step is based on integration the same version of ETA model. The model is completed by the new prognostic equation for contaminant, with high horizontal resolution (about 20 km). The meteorological fields obtained by first step are used for initial and boundary conditions. The results of calculations are discussed by comparison with measurements. It is demonstrated that the model can reproduce certain observed characteristics of deposited material at the earth's surface inside the Chernobyl accidental zone.