Abstract: The thesis deals with the preparation of initial conditions for numerical weather prediction in high resolution limited area models. It focuses on the problem of preserving the large-scale part of the global driving model analysis, which can not be determined in sufficient quality in limited-area models. For this purpose, the so-called BlendVar scheme is used. The scheme consists of the application of the Digital Filter (DF) Blending method, which assures the transmission of a large-scale part of the analysis of the driving model to the limited area model, and of the three-dimensional variational method (3D-Var) at high resolution. The thesis focuses on the appropriate background error specification, which is one of the key components of 3D-Var. Different approaches to modeling of background errors are examined, including the possibility of taking into account the flow-dependent character of background errors. Approaches are also evaluated from the point of view of practical implementation. Study of evolution of background errors during DF Blending and BlendVar assimilation cycles leads to a new proposal for the preparation of a background error covariance matrix suitable for the BlendVar assimilation scheme. The use of the new background error covariance matrix gives the required property of shifting the 3D-Var impact towards smaller scales.