Effects of stratospheric ozone on predictable period for large-scale zonal variability in the troposphere and the stratosphere are examined during the northern winter in 2003/4 when the polar-night jet oscillation (PJO) was very active. PJO is a prominent mode of variability in the stratosphere, showing a quasi-periodicity with periods of 3-5 months. We performed ensemble forecasts from 1 January to 30 April in 2004 using a chemistry-climate model (CCM) developed at the Meteorological Research Institute. This model resolves well the troposphere and the middle atmosphere with a full atmospheric chemistry. To investigate the role of ozone for the PJO in 2003/4, the following ensemble forecasts were conducted:

- (Exp.1) using CCM (interactive ozone)
- (Exp.2) using AGCM with prescribed climatological ozone
- (Exp.3) using AGCM with prescribed zonally averaged ozone of the Exp.1.

These experiments indicate that when the radiative feedbacks of ozone are considered (Exp.1) the model predicts the occurrence of the largest stratospheric sudden warming in the three experiments and its downward propagation into the troposphere, resulting in the best prediction for large-scale zonal variability in the troposphere.