The paper has been substantially improved, and it now much easier to understand what the authors have exactly done. But because precisely of the clarifications given by the authors, it appears that the estimation problem that underlies their work is largely underdetermined. This point requires in my mind additional experiments.

The authors now mention the numerical dimensions of the model they have used (subsection 5.4). They write the horizontal grid has size 81 x 121, and that the model has 11 levels in the vertical. Since there are four prognostic variables for each point of the 3D-grid (***u***, ***v***, ***temp*** and ***salt***), and one additional variable for each point in the horizontal ($\boldsymbol{\eta}$), that should give for the state vector a dimension (4x11 +1) x 81 x 121 = 441045, and not 116640 as said in the paper. Since there are 5000 observations every four days, that would require 353 days to observe the full system. The results of assimilations performed on periods that are much shorter than that will be determined primarily, not by the values of the observations, but by the initial first guesses and the matrices $\boldsymbol{B}$ and $\boldsymbol{B}^{PLS}$. These results will not be very significant as to the performance of the assimilation algorithm, whether it is DBFN or Variational Assimilation. The authors stress (ll. 475-477) the importance of the choice of $\boldsymbol{B}$ and $\boldsymbol{B}^{PLS}$. From the evidence given in the paper, the choice of those matrices and of the associated first guesses must have a dominant impact on the results. I consider that it is necessary that the authors perform additional experiments with a higher temporal density for observations (while keeping a density that is realistic in comparison with existing or anticipated observation systems), so that the compared performance of DBFN and Variational Assimilation can be more precisely assessed.

I would have a number of additional comments and suggestions. But these bear on presentation much more than on scientific content, and I defer them to a possible third review.