



Fig. 8. Dimensional, PE adjusted velocity responses corresponding to the 3D mesoscale tracer variability eigenvectors (1) to (4), and (10) to (13), illustrated in Fig. 7. The Panel numbers indicate these 3D tracer eigenmode numbers. Two response fields are shown for each mode: the barotropic transport stream function and the internal zonal velocity. They are discussed in the text.

As the adjustment PE integrations for velocity responses are carried out in parallel, the SVD of the matrix which columns are the normalized differences between the PE adjusted states and initial state is updated and a convergence criterion evaluated (Section A.1, Eqs. (A13), (A14) and (A15)). The criterion measures the value added by new differences. In the present case, a similarity coefficient is required to be larger than 97%. This is satisfied after 289 integrations (Lermusiaux, 1997). The corresponding SVD estimates the dominant decomposition of the initial PE variability covariance matrix.