

Reviewer's report on paper 'A Nonlinear Generalized Boussinesq Equation ((2+1)-D) for Rossby-Khantadze Waves'

This paper addresses the role of sheared Rossby-Khantadze (RK) waves in global atmospheric circulation, particularly in the ionospheric E region. The study builds upon prior research (Kaladze et al., 2011-2014) and explores nonlinear processes associated with RK wave dynamics, including their self-organization into solitary dipolar vortices and their potential to generate sheared zonal flows. They are well studied by many scientists, in which fast and slow electromagnetic wave's propagation features were presented in the shear flow driven ionosphere, fast ones exist in the upper layers of the ionosphere, where magnetic field effect on the waves enhances, but the slow electromagnetic waves – at comparably lower altitudes due to Coriolis force (Aburjania et al, 2006, JGR). It seems that authors are not familiar of the previous works or deliberately ignore those works.

In this papers the waves are investigated with the novel approach - a system of equations for boussinesq model equation from the initial set of equations namely, momentum equation, continuity equation and Maxwell equation telling the nonlinear interaction of considered multiple-scale analysis and asymptotic expansion to derive the nonlinear Boussinesq equation, providing a systematic approach to understanding wave interactions in the ionospheric E-region, the results are verifying the works Khantadze et al, who was investigating these waves for aa long time, but I couldnot find the reference on his works. Can the authors explain this?

In overall, the method used in this paper and the results are valuable for investigation of these waves in the ionosphere. With improvements in writing, clarity, and interpretation, the paper could provide significant insights into ionospheric wave dynamics.