EULERIAN DERIVATIONS OF NON-INERTIAL NAVIER-STOKES EQUATIONS

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Abstract
The paper presents an Eulerian derivation of the non-inertial Navier-Stokes equations as an alternative to the Lagrangian fluid parcel approach. This work expands on the work of Kageyama and Hyodo [1] who derived the incompressible momentum equation for constant rotation for geophysical applications. In this paper the derivation is done for the Navier-Stokes equations in compressible flow for arbitrary rotation for implementation in aero-ballistic applications.