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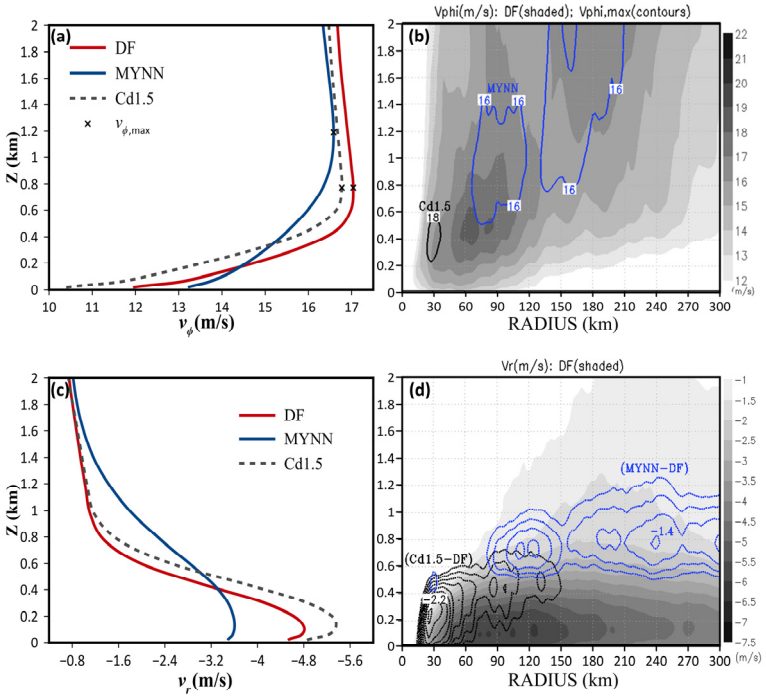

Fig. 4 Impacts of Cd1.5 and MYNN to the height-radial profile of the azimuthally averaged wind structures of TC Megi. Panels on the first row illustrate the tangential wind: (a) averaged within 300 km radius and from t=12 to t=24 h; and (b) v_ϕ at t=12 h of DF (shaded), $v_{\phi,max}$ for Cd1.5 (black contour) and $v_{\phi,max}$ for MYNN (blue contour). The second row shows the temporal mean of the radial inflow (inflow refers to negative values of v_r) from t=12 to t=24 h: (c) averaged within 300 km radius; and (d) v_r of DF (shaded) and the induced inflow (δv_r) ≥ |-0.8| m/s by Cd1.5 (black contour) and MYNN (blue contour) with 0.2 m/s interval.

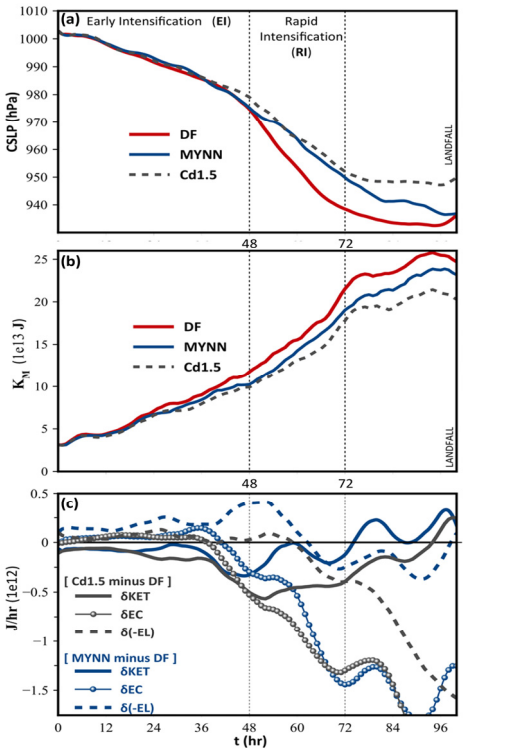

Fig. 7 Comparison of the experiments in terms of (a) central sea-level pressure (CSLP); (b) Volume-integrated mean kinetic energy (K_M); and (c) impacts (δ:={Cd1.5,MYNN} minus DF) on mean K_M tendency (KET), Energy Conversion (EC), and Energy Loss (EL). The energy terms are volume-integrated (whole domain): averaged azimuthally and from z=0.02 to 27.32 km within 398 km radius. Note that the TC showed rapid intensification from t=48 to t=72 h and made landfall at t=96 h.

- Using the MRI/JMA nonhydrostatic model with Deardorff (DF) PBL parameterization, tropical cyclone (TC) Megi (2010) is studied as it intensifies over the ocean.
- At 2-km resolution, the DF scheme simulates more accurate results with deeper central pressure, and shallower maximum winds and inflow layer than the Mellor-Yamada-Nakanishi-Niino scheme.
- Increasing the surface friction with surface drag yields a weaker small TC whereas enhancing the frictional eddy-stress with MYNN scheme simulates a weaker large TC.
- The impact of the friction-induced structural change on the energetics of TC Megi is dual: it enhances the dynamical energy conversion but also amplifies energy loss.