This study presents the Flexible Permafrost Model (FPM) and applies it to a 1950–2023 ensemble simulation over the Tibetan Plateau, forced by ERA5-Land, to produce estimates of ALT, MAGT, and permafrost extent. The paper is of potential interest to The Cryosphere. However, a few issues remain that affect clarity and technical transparency, particularly regarding the formulation/implementation of turbulent exchange, the use of air density, and the numerical solution of soil heat conduction.

Comments:

1. From the title alone, it is unclear which permafrost diagnostics are being simulated. Please consider sharpening the title.

2. Line 36: The author's name in the reference (Linmao et al., 2024) does not seem right.

3. In Eq. (4), air density is prescribed as $\rho_a = 1.225\ \mathrm{kg\,m^{-3}}$, which corresponds to sea-level conditions and is likely too high over the Tibetan Plateau. Since surface pressure is included in the forcing, please consider computing ρ_a from P (surface pressure) and T_a (surface air temperature) (optionally using virtual temperature if humidity is available)

$$Q_h = \rho_a c_p D_h \left(T_a - T_{s0}\right), \qquad \rho_a \approx \frac{P}{R_d T_a}.$$

4. Line 106–107: The author states, "In current FPM, Monin-Obukhov similarity theory (for Q_h) and Priestley-Taylor method (for Q_e) were combined to improve simulation efficiency as some previous studies". However, the manuscript currently defines the exchange coefficient as $D_h = \kappa^2 u/(\ln(z/z_0))^2$, i.e., a neutral formulation without stability corrections. Please clarify whether full MOST (with stability functions ψ_m, ψ_h and an explicit stability parameter, e.g., Obukhov length or Richardson number) is implemented. If not, please avoid stating MOST and instead describe the neutral approximation.

5. While Eqs. (16–17) describe the governing equation for soil heat conduction with phase change, the manuscript does not specify how Eq. (16) is discretized and solved in time and space (e.g., explicit vs. implicit/Crank–Nicolson scheme, tridiagonal solver), nor how the nonlinear apparent heat capacity formulation is iterated and converged within each time step. Given the daily time step and the fine near-surface vertical resolution, these solver details are essential to assess numerical stability and accuracy. Please provide the temporal discretization, solver/iteration strategy, and convergence criteria, and justify the choice of a 1-day time step.

6. Figure 2: I was wondering why the legend in this figure states "Mod-Obs" if the black line represents the observational soil temperature. Please clarify what the black line represents and ensure the legend matches the plotted quantity.

7. Line 272: "semi-physical 'temperature" should be a writing error.

8. Figure 5: What does "0.33 (0.07)" indicate in the text in the figure?