

Comments on the manuscript “**DReaMIT: A Dynamical Reanalysis Framework for Modelling Surface-Based Temperature Inversions in Cold Environments**”  
by **Victor Pozsgay et al.**

The authors attempt to develop a generalized method for downscaling model outputs to local station and point scales. This study has the potential to significantly advance climate downscaling research based on atmospheric reanalysis data and facilitate the assessment of regional climate changes using CMIP model projections. Therefore, the manuscript is suitable for publication in *Geoscientific Model Development* (GMD), and revision with careful polishing is recommended. The generalized and detailed comments are provided below.

Generalized comment:

A major issue is that the authors compare their new method with three existing approaches while assuming that readers are already familiar with these baseline methods. This may limit the readability and broader applicability of the work. I recommend generalizing the formulations of the three comparative methods (Equations 2–5) in terms of absolute/relative elevation and hypsometry, rather than simply citing previous studies. Equations 2–5 differ primarily in their definitions of the height term  $h$ , which can be explicitly summarized. Such generalization can directly highlight the novelty of the proposed method and make the contributions accessible to broader readers who may not have a background in climate downscaling.

Detailed comments:

The manuscript is well structured, with methods and results presented clearly. I only have a few minor suggestions to resolve ambiguous points and further improve readability.

[1] Lines 140–145. Please elaborate on the formulation of the hypsometry for broader readership. For each station, is  $x_0$  the station location and  $z_0$  the station elevation? In Equation (2), is  $h(x_0)$  a constant value? It appears to also vary with  $z$ , and the authors need to clarify this function explicitly.

[2] Sections 3.3.4 and 4.2. The description of  $\alpha$  is confusing. Why is it referred to as “observed  $\alpha$ ” (around Line 190)? Given that  $\alpha$  is a fitted parameter, it cannot be directly observed like temperature. This wording also hinders the interpretation of Figure 4. Additionally, the blue and orange points in Figure 4 appear to follow an exponential distribution rather than a linear relationship with depth, which tends to support the proposed method.