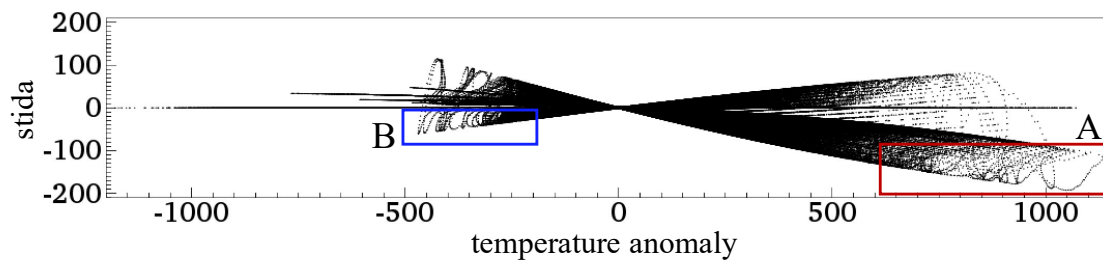


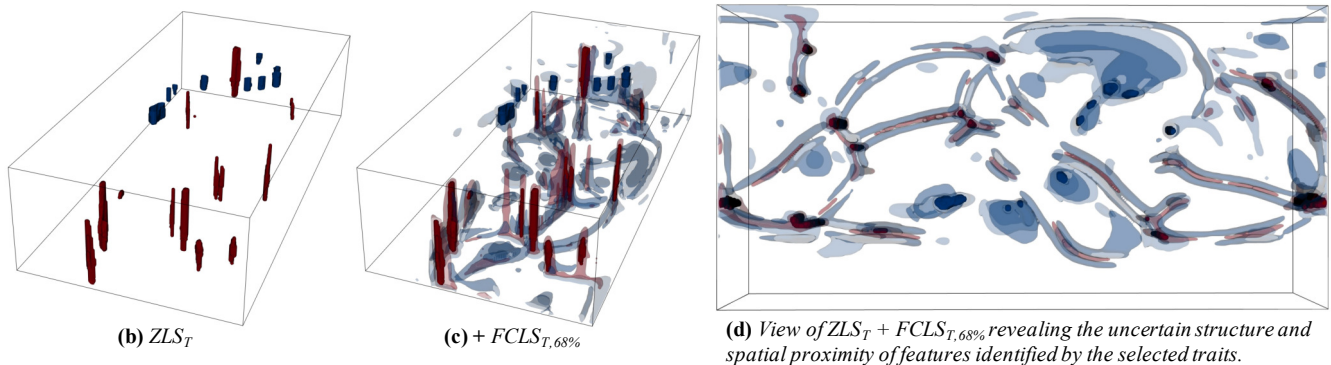
# Supplementary Material: Visualization of Uncertain Multivariate Data via Feature Confidence Level-Sets

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(a) 2D scatterplot of attribute space and traits. For the traits, we used extremes of temperature anomaly and negative spin-transition-induced density anomaly~(stida) to visualize flow patterns. We use  $T = \{T_A, T_B\}$ .



**Figure 1:** We consider a rectilinearly sampled mesh of the IEEE SciVis 2021 contest Earth’s mantle convection data set [SYP17]. Here, we select traits defined over the temperature anomaly and spin-transition-induced density anomaly (stida) attributes to visualize regions with the flow patterns of rising hot plumes ( $T_A$ , red) and sinking material ( $T_B$ , blue). While the negative density anomaly can accelerate hot rising plumes, for cold material as the negative density anomaly becomes positive it can cause a downward acceleration or avalanche. These flow patterns are associated with the acceleration of mantle flow at mid-mantle depths. The use of feature confidence level-sets highlight the proximity and interaction of these features in the spatial domain, and consequently, the benefits of exploring feature definition via confidence intervals in settings of uncertainty.

## References

- [SYP17] SHAHNAS M., YUEN D., PYSKLYWEC R.: Mid-mantle heterogeneities and iron spin transition in the lower mantle: Implications for mid-mantle slab stagnation. *Earth and Planetary Science Letters* 458 (2017), 293–304. doi:<https://doi.org/10.1016/j.epsl.2016.10.052.1>