EuroVis 2021 Short Papers Additional Material: Visualization of Uncertain Multivariate Data via Feature Confidence Level-Sets

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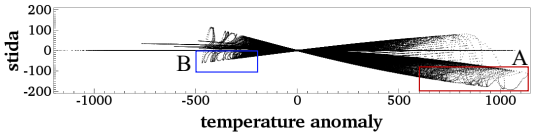
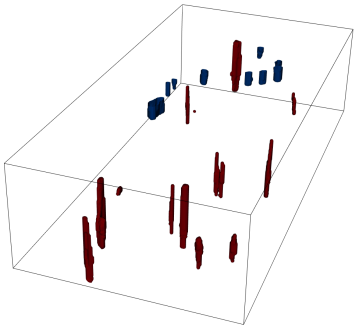
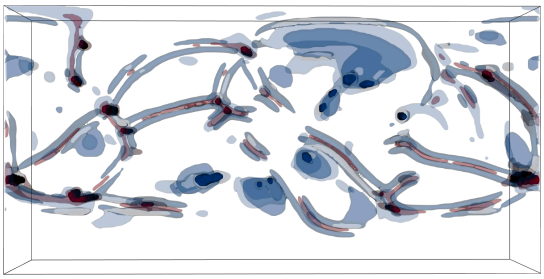


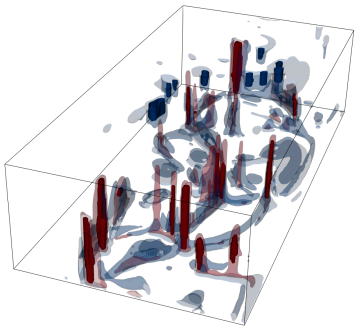
(a) 2D scatterplot of $\mathcal{A}$ and traits. For the traits, we used extremes of temperature anomaly and negative spin-transition-induced density anomaly (stida) to visualize flow patterns. We use $T = \{T_A, T_B\}$.



(b) ZLS_T



(c) View of ZLS_T + $FCLS_{T,68\%}$ revealing the uncertain structure and spatial proximity of features identified by the selected traits.



(d) + $FCLS_{T,68\%}$

Figure 1: We consider a rectilinearly sampled mesh of the IEEE SciVis 2021 contest Earth's mantel convection data set. 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 mantel flow at mid-mantel depths. The use of feature confidence level-sets, as seen in Figure 1c, 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.