**3.2 Landscape Effects on Thermal Sensitivity**

Spatial variability in thermal sensitivity was explained by landscape and hydrologic variables. In PCA, the first five principal components explained 60.3% of the variance in these variables (Table 2) and 99% of spatial variance in thermal sensitivity (i.e., ***ϕ*** in Eq. (1)). The spatial thermal sensitivity was not significantly explained by PC1 (metrics of monthly and annual stream flows), but significantly explained by PC2 (spring to summer water velocity), PC3 (coordinates, baseflow index, precipitation, and air temperature), PC4 (winter water velocity), and PC5 (landcover and geology) (Fig. 4). Specifically, stream temperature was more buffered from (less sensitive to) air temperature fluctuations at stream segments characterized by low spring to summer water velocity (PC2: 95% HPDI = [-0.007, -0.0015]), southern latitudes with higher baseflows (PC3: 95% HPDI = [-0.004, -0.001]), high winter velocity (PC4: 95% HPDI = [-0.006, -0.002]), and high soil permeability, and predominantly colluvial sediment and deciduous forest (PC5: 95% HPDI = [0.0004, 0.004]).

To complement the PCA, correlation analysis of individual variables showed that stream temperature was more buffered from air temperature fluctuations when baseflow index was high (Pearson *r* = -0.45), segments were located farther south (*r* = 0.44) and in smaller watersheds (*r* = 0.40), and segments were characterized with lower stream flows in March (*r* = 0.40). Taken together, latitude and baseflow index (i.e., a metric of groundwater) were consistently identified as determinants of spatial thermal sensitivity in the two analyses.