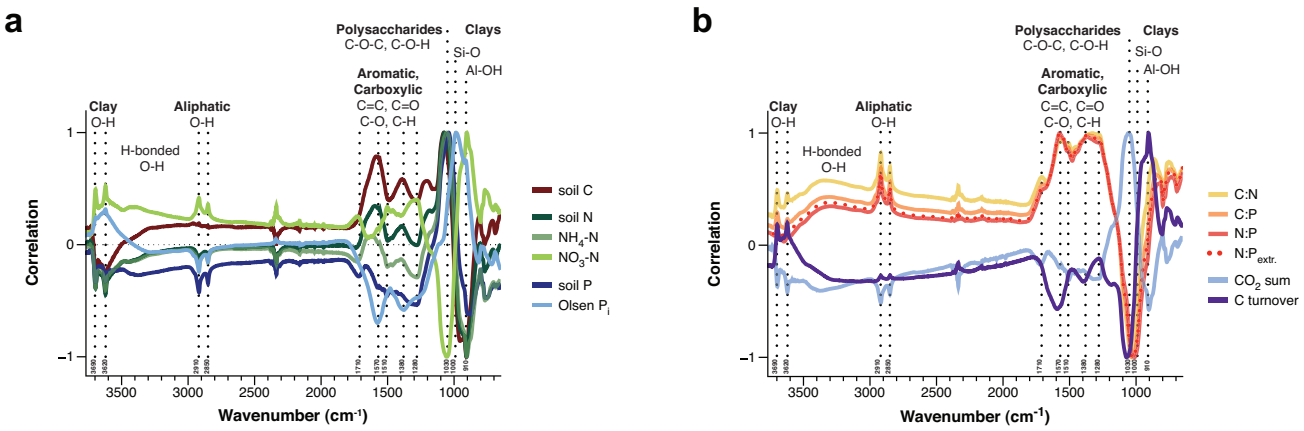

Figure S2: Correspondence of soil carbon chemical groups by FTIR with nutrients and C cycling. Plot shows statistical relationships among soil chemical factors and C cycling with FTIR spectral features determined by partial least squares regression with five fitted parameters. Spectral features associated with different C bond types are revealed by their correlation to soil variables including **a)** soil C, N, and P chemistry, and **b)** soil stoichiometry and carbon cycling. Aromatic and carboxylic features not specifically labeled included wavenumbers: (1280) C-O of carboxylic acid, phenol; (1380) C-O of phenolics, carboxylates; (1510): C=C of aromatics; (1570): C-H of aromatics; and (1710) C=O of carboxylics.