Web-based Supplementary Materials for Efficient Bayesian hierarchical functional data analysis with basis function approximations using Gaussian-Wishart processes

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Web Figure 1: Covariance estimates and the true covariances of common grids.



Web Figure 2: Covariance estimates and the true covariances of random grids.



Web Figure 3: Covariance estimates by CSS, PACE, and BABF with the real SEE data.



Web Figure 4: Heatmaps of the correlation estimates by CSS, PACE, and BABF with the real SEE data.

Web Table 1: Example coverage probabilities for the 95% pointwise credible intervals of $\{Z_i(t)\}$, $\mu(t)$, and $\Sigma(t, t)$ by BGP, BHM and BABF with common observation grids. The highest probability is bold for each parameter.

		BGP	BHM	BABF
$\{Z_i(t)\}$	Stationary	0.9483	0.9217	0.9208
	Nonstationary	0.8350	0.9450	0.8742
$\mu(oldsymbol{t})$	Stationary	0.7500	0.7250	0.7250
	Nonstationary	0.6750	0.6750	0.6750
$\Sigma({m t},{m t})$	Stationary	0.0000	0.7869	0.7869
	Nonstationary	0.3819	0.9913	0.9938

Web Table 2: Example coverage probabilities for the 95% pointwise credible intervals of $\{Z_i(t)\}$, $\mu(t)$, and $\Sigma(t, t)$ by BABF with random observation grids. The relatively low coverage probabilities for nonstationary signals are due to narrow 95% confidence intervals.

		BABF
$\{Z_i(t)\}$	Stationary	0.8650
	Nonstationary	0.5625
$\mu(oldsymbol{t})$	Stationary	1.0000
	Nonstationary	0.9000
$\Sigma({m t},{m t})$	Stationary	0.9506
	Nonstationary	0.8550