

Figure 3: HMM experiments on one-channel non-stationary data

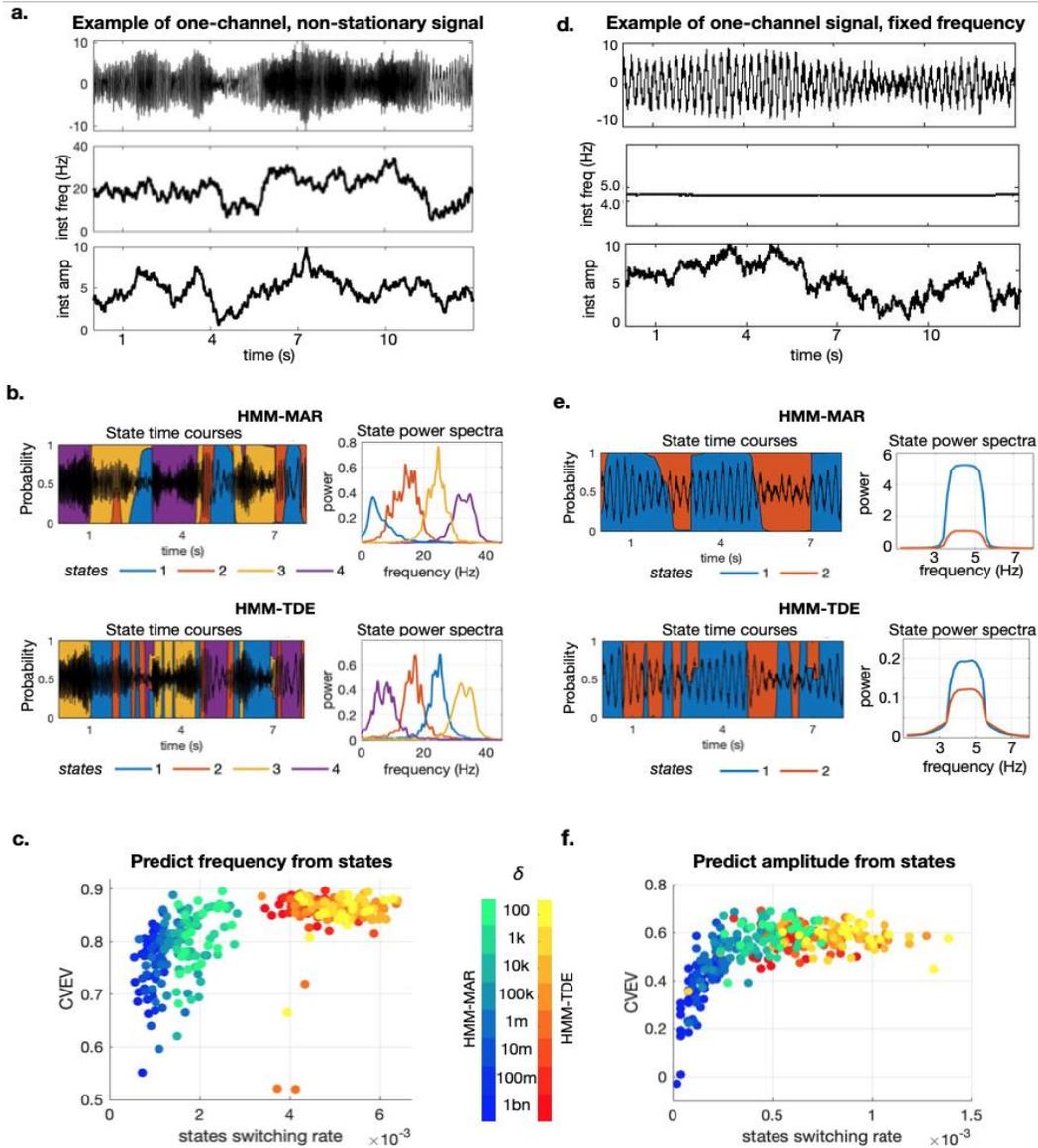


Figure 3: **a.** Example of signal varying in frequency (instantaneous frequency shown in the middle panel) and amplitude (instantaneous amplitude in the bottom panel). **b.** Example of the probabilistic state time courses and state power spectra of HMM-MAR and HMM-TDE applied to the signal in **a**. Here, transition probability matrix prior $\delta = 10k$, HMM-MAR order $P=3$, HMM-TDE lags $L=15$ (in steps of $S=3$). **c.** Cross validated explained variance of the HMM states predicting the ground truth frequency of non-stationary signals (like in **a**), for 20 repetitions of the experiment, for different values of the average state switching rate, manipulated via δ (order and lags set as in **b**). **d.** Similarly to **a**: example of a synthetic signal varying mostly in amplitude. **e.** Example of probabilistic state time courses and state power spectra of HMM-MAR and HMM-TDE applied to the signal in **d**. Here, $\delta = 10k$, $P=3$, $L = 15$, $S=3$. **f.** Cross validated explained variance of the HMM states predicting the ground truth amplitude of the signals as a function of the average state switching rate (varying δ , order and lags set as in **e**), for 20 repetitions of the experiment.