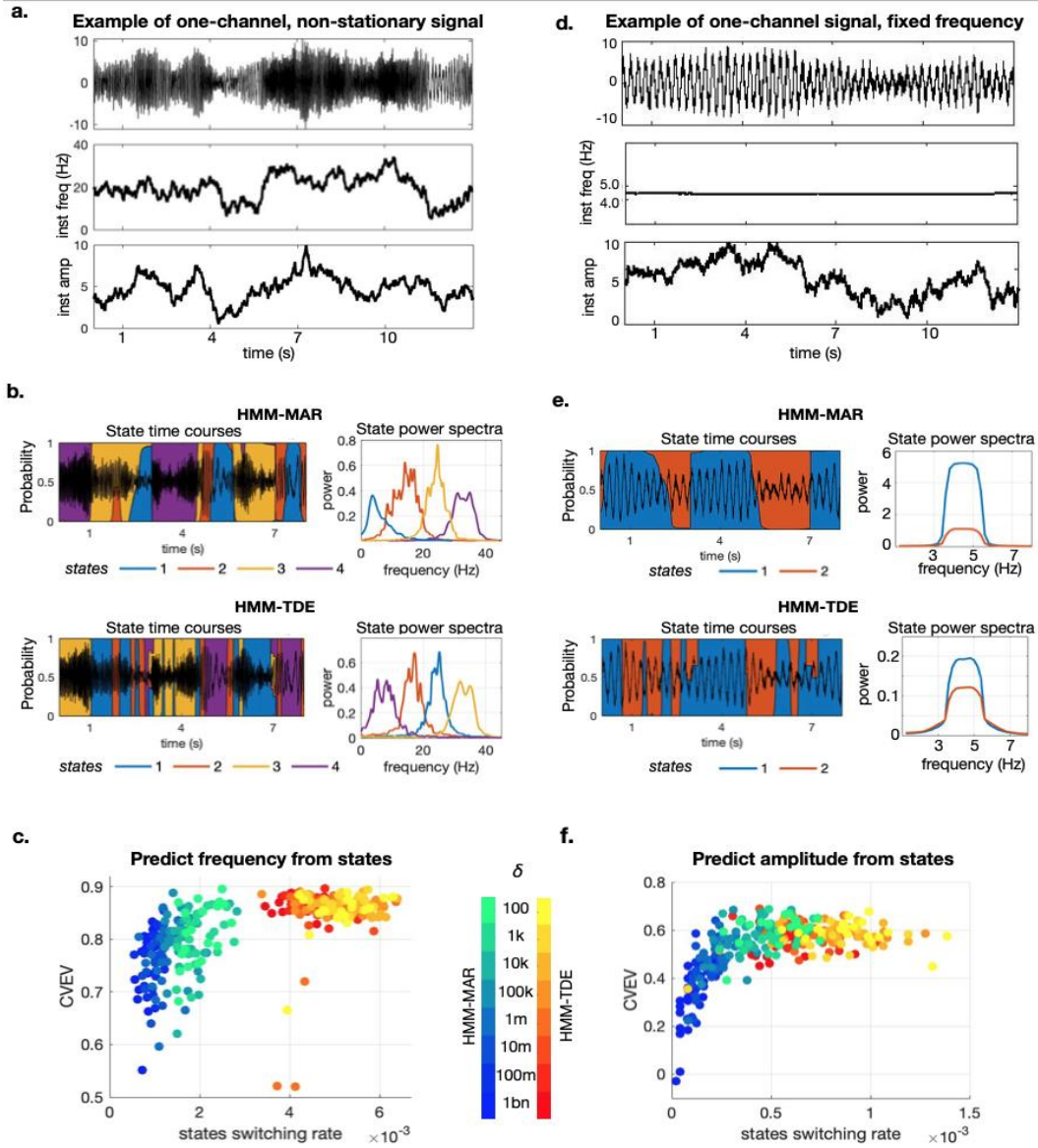


**Figure 3:** HMM experiments on one-channel non-stationary data



**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  $\delta$  (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  $\delta$ , order and lags set as in **e**), for 20 repetitions of the experiment.