Online Optimization with  $b_k = sine^2-sine$  and time-varying Hessian Online gradient 10<sup>2</sup> Control-based Sys ID ARX Control-based Baseline  $10^{1}$ Tracking error  $^{10_{-5}}$ 10<sup>0</sup> 10<sup>-3</sup>  $10^{-4}$ 100 200 400 500 300 Time