One of the main challenges facing wireless sensor networks (WSNs) is the limited power resources available at small sensor nodes. It is therefore desired to reduce the power consumption of sensors while keeping the distortion between the source and its estimate at the fusion centre (FC) below a specific threshold. In this paper, we analyze a subset selection strategy to reduce the average transmission power of the WSN. We consider a two-hop network and assume the channels between the source and the relay sensors to be time-varying fading channels, modeled as Gilbert-Elliott channels. We show that when these channels are known at the FC, a subset of sensors can be selected by the FC to minimize transmit power while satisfying the distortion criterion. Through analysis, we derive the probability distribution of the size of this subset. We also consider practical aspects of implementing the proposed scheme, including channel estimation at relays. Through simulations, we compare the performance of the proposed scheme with schemes appearing in the literature. Simulation results confirm that for a certain range of end-to-end bit-error rates (BERs), the proposed scheme succeeds to achieve a superior power reduction compared to other schemes.