Modern systems that measure dynamical phenomena often have limitations as to how many sensors can operate at any given time step. This thesis considers a sensor scheduling problem in which the source of a diffusive phenomenon is to be localized using single point measurements of its concentration. With a linear diffusion model, and in the absence of noise, classical observability theory describes whether or not the system's initial state can be deduced from a given set of linear measurements. However, it does not describe to what degree the system is observable. Different metrics of observability have been proposed in literature to address this issue. Many of these methods are based on choosing optimal or sub-optimal sensor schedules from a predetermined collection of possibilities. This thesis proposes two greedy algorithms for a one-dimensional and two-dimensional discrete diffusion processes. The first algorithm considers a deterministic linear dynamical system and deterministic linear measurements. The second algorithm considers noise on the measurements and is compared to a Kalman filter scheduling method described in published work.