We consider two standard ways of collecting data in seismic imaging: the common midpoint acquisition geometry and the common offset acquisition geometry. We study the linearized operator $F$, which maps singularities in the velocity field to singularities in the resulting pressure field at the surface. We use the microlocal properties of $F$ and $F^*F$ to determine which geometry shows more features of the subsurface and adds fewer artifacts. This is joint work with V. Krishnan, C. Nolan, T. Quinto. (Received January 11, 2015)