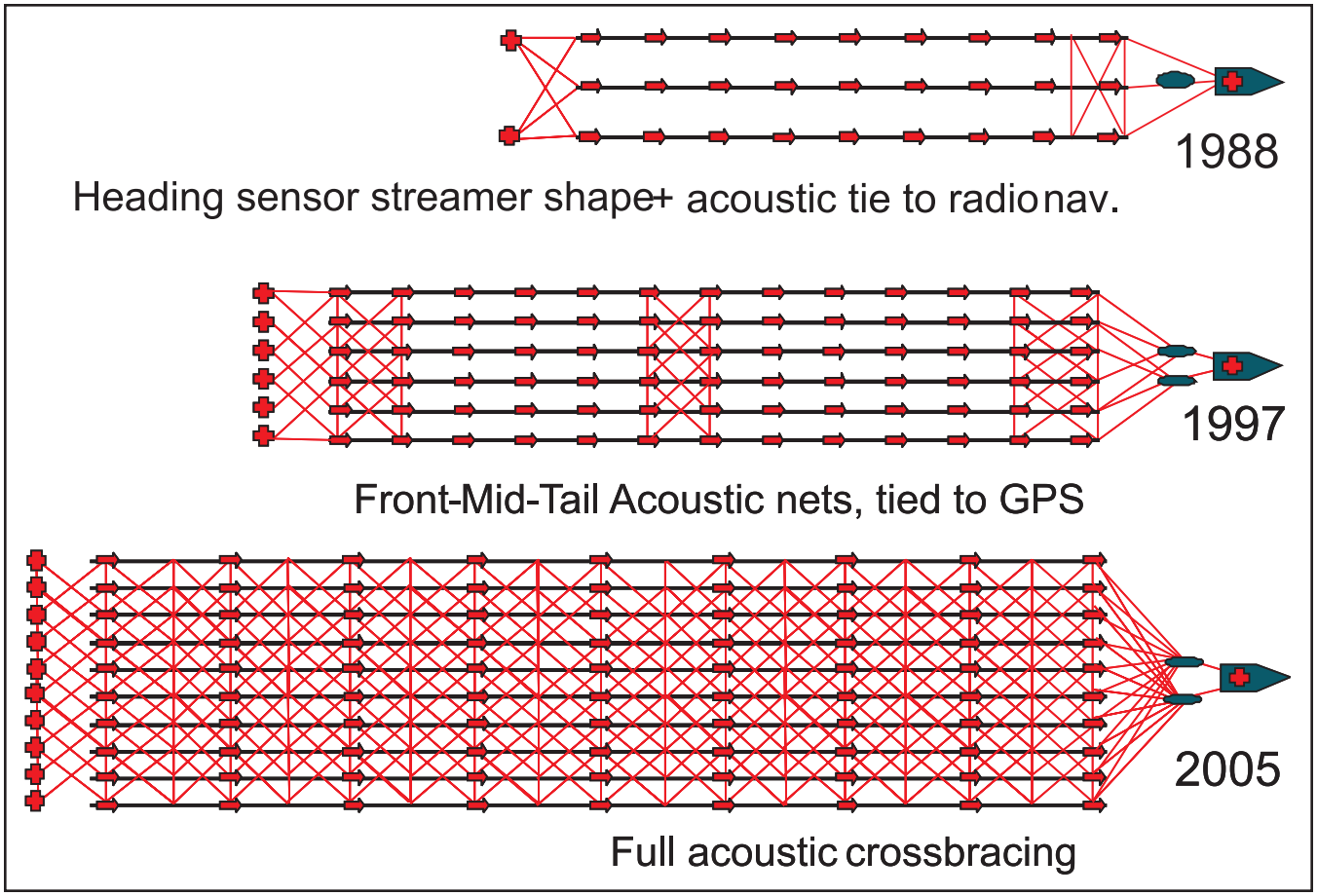

Fig-2. The evolution of streamer positioning networks.

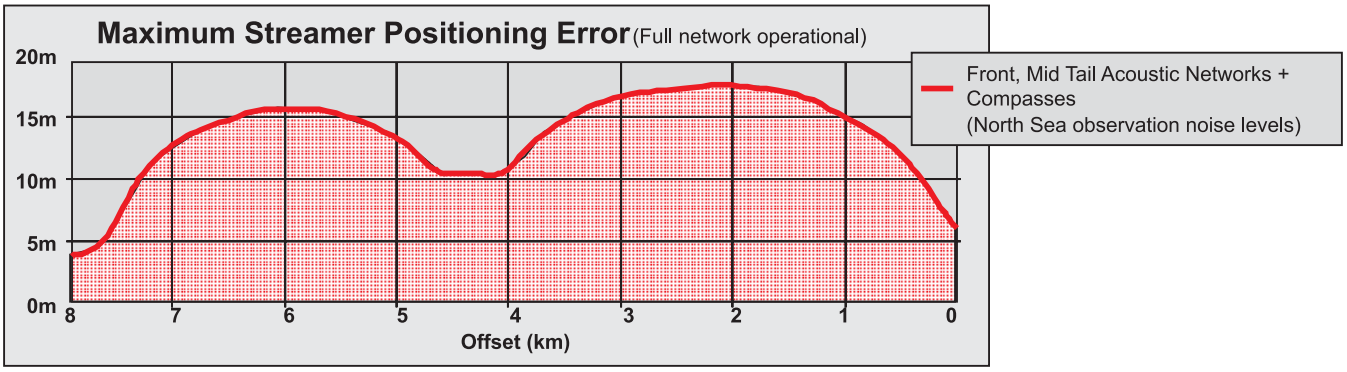

Fig-3. Typical 3D streamer positioning errors as a function of source-receiver offset

based on North Sea data, and the offsets shown are longer than typically used in North Sea work. Positioning errors are commonly of the same order of magnitude as 50% of the crossline bin size.

What is the impact of positioning errors on the 3D and 4D seismic image ?

The precise impact of positioning errors will depend upon the geology, and seismic data processing techniques. Regardless of the processing technique, in the presence of dip, Gaussian distributions of error will lead to some loss of high frequency data. Provided that the bin size is small enough to adequately sample the structure, then the loss of high frequency associated with these errors is typically small enough to be acceptable for most 3D imaging applications.

Unfortunately, positioning errors are NOT purely Gaussian. In practice, many factors conspire to introduce spatial and temporal correlations (Gikas *et al*[1])

- An area of poor acoustic performance caused by the vessel wake and the source arrays commonly creates distortion of the network close to the vessel. As the vessel maneuvers down the line, and winds and currents