Deconvolution after migration

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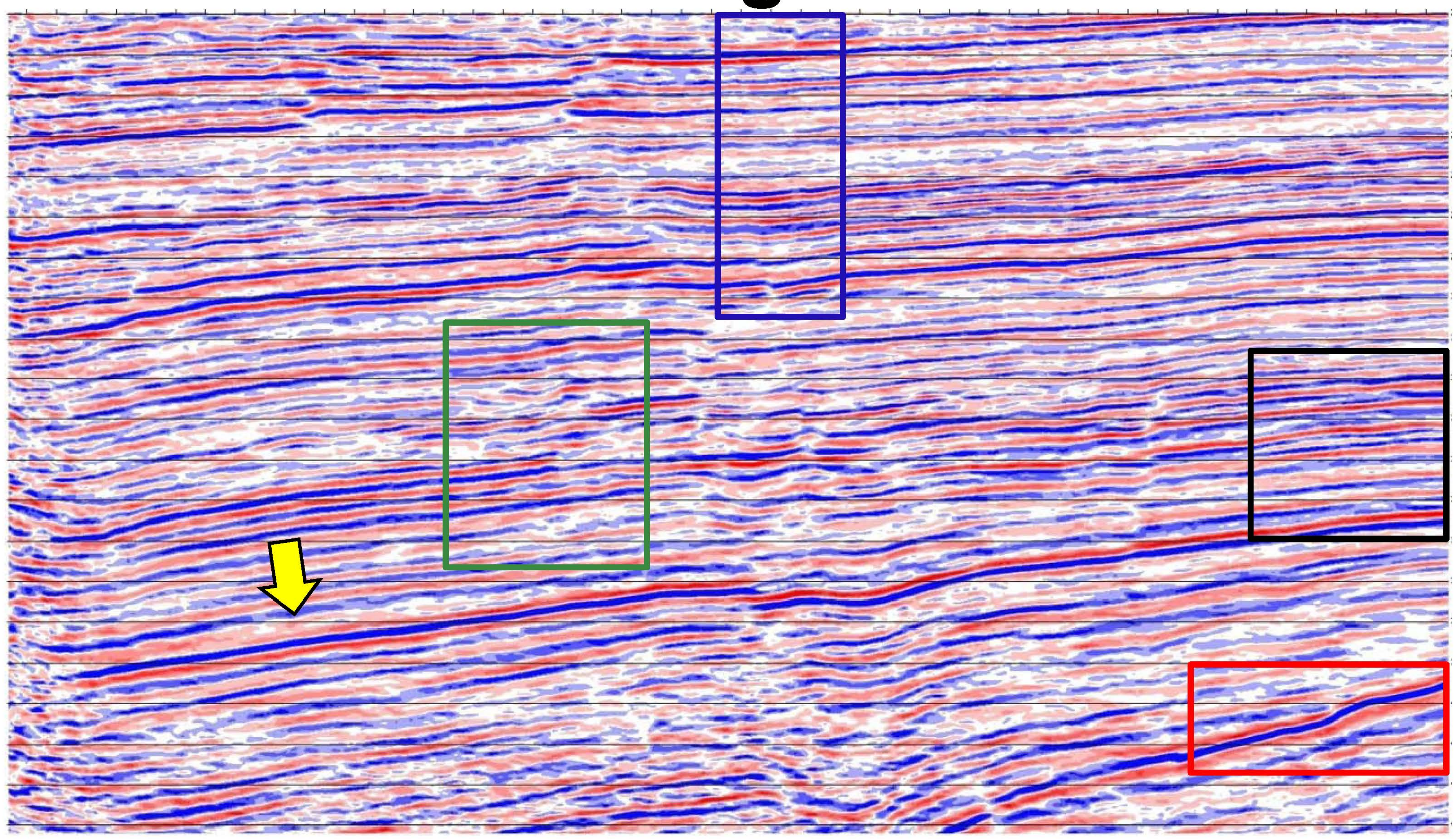
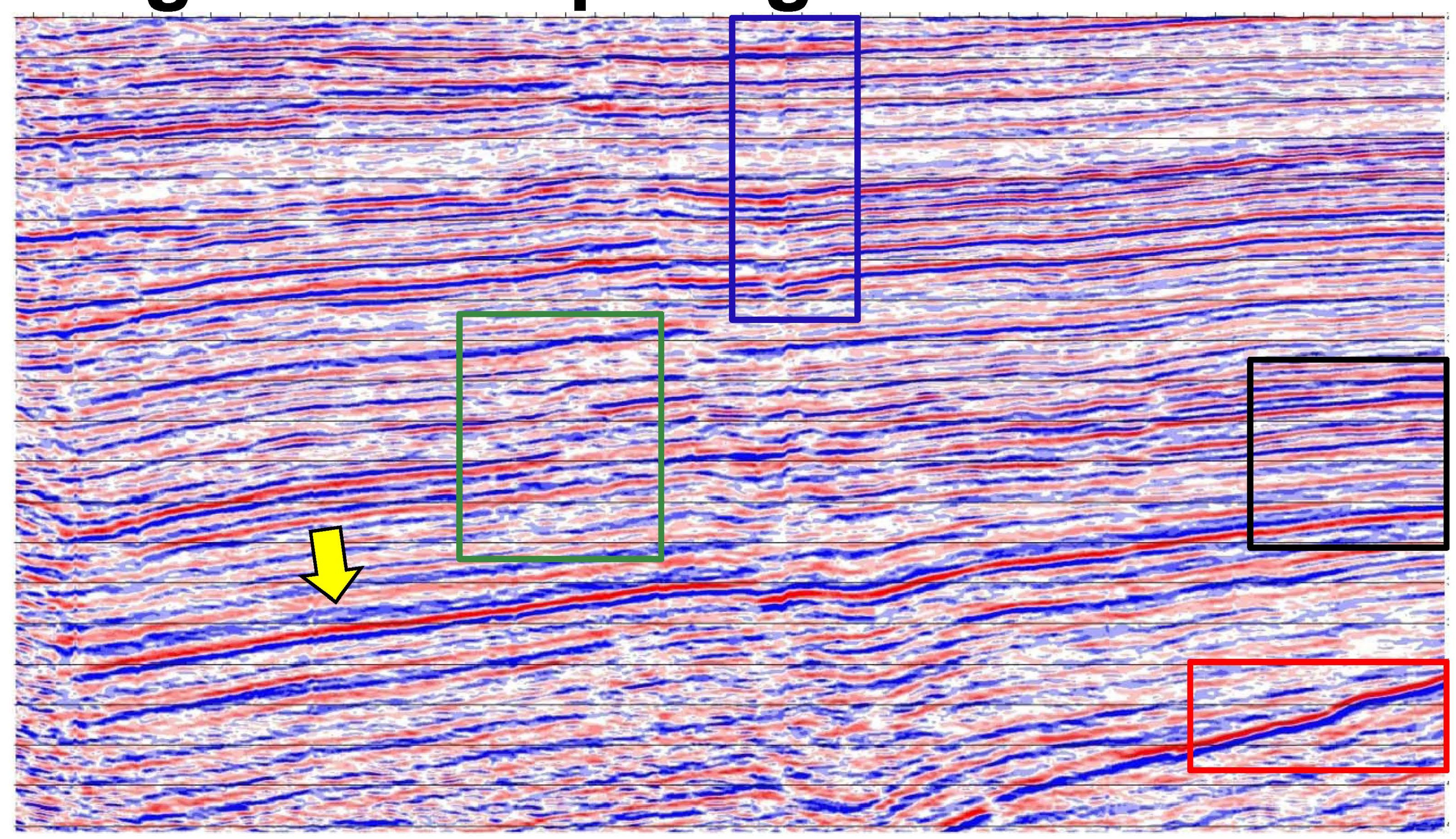
Prestack migrated data



Migration + spiking deconvolution



1. The ultimate inversion of seismic data is a least squares prestack migration. This illustrated a significant improvement in the resolution of the data of relative to a corresponding prestack Kirchhoff migration. A deconvolution after the migration produced a comparable increase in the resolution.

2. The least squares formulation includes a spectral whitening feature that is not included in the migration. Migration is a transpose process.

3. Spectral enhancement should be applied to the data when the signal-to-noise ratio is greater than one. Noise attenuation increases the bandwidth of the data allowing a greater bandwidth to be spectrally enhanced. Migration should attenuate noise and a spectral whitening, or deconvolution, should be applied after the migration.

4. A deconvolution is typically applied after stacking where the SNR has been improved. However, this option is not available to prestack migrations, making deconvolution after a prestack migration even more important.

5. Resolution improvements should be expected from any quality migration that has included the noise attenuation components such as antialiasing filters.

6. A deconvolution after the migration will make the section appear less wormy, with the added benefit of increased resolution.

7. A non-stationary or a time varying deconvolution should produce greater improvements over a larger portion of the data.