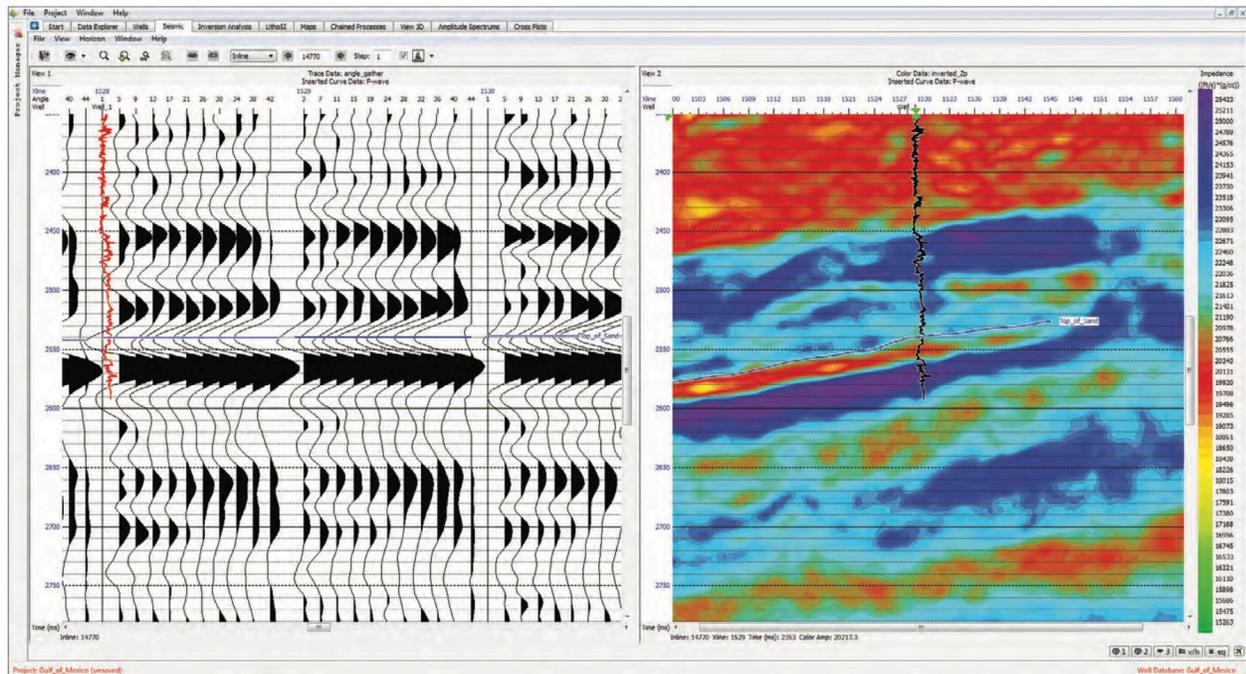


## Seismic Inversion Module

**Strata** performs both poststack and prestack inversions. In the conventional poststack domain, **Strata** analyzes poststack seismic volumes to produce an acoustic impedance volume. In the prestack domain, **Strata** analyzes angle gathers or angle stacks to produce volumes of acoustic impedance, shear impedance and density.

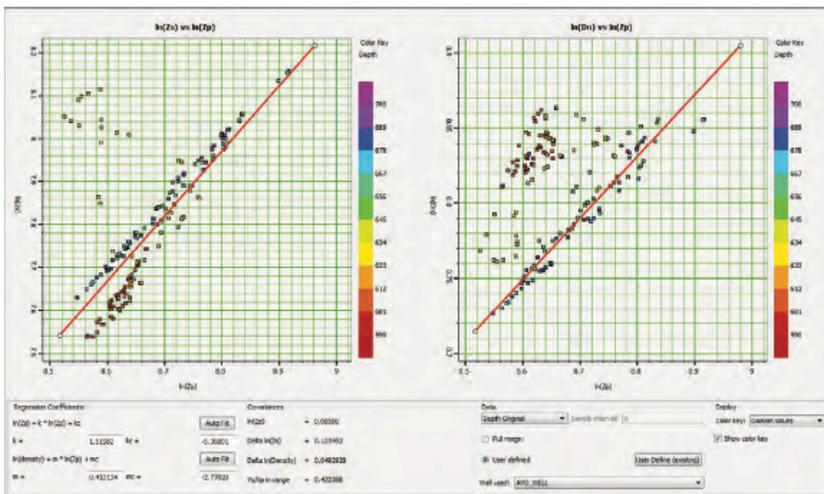
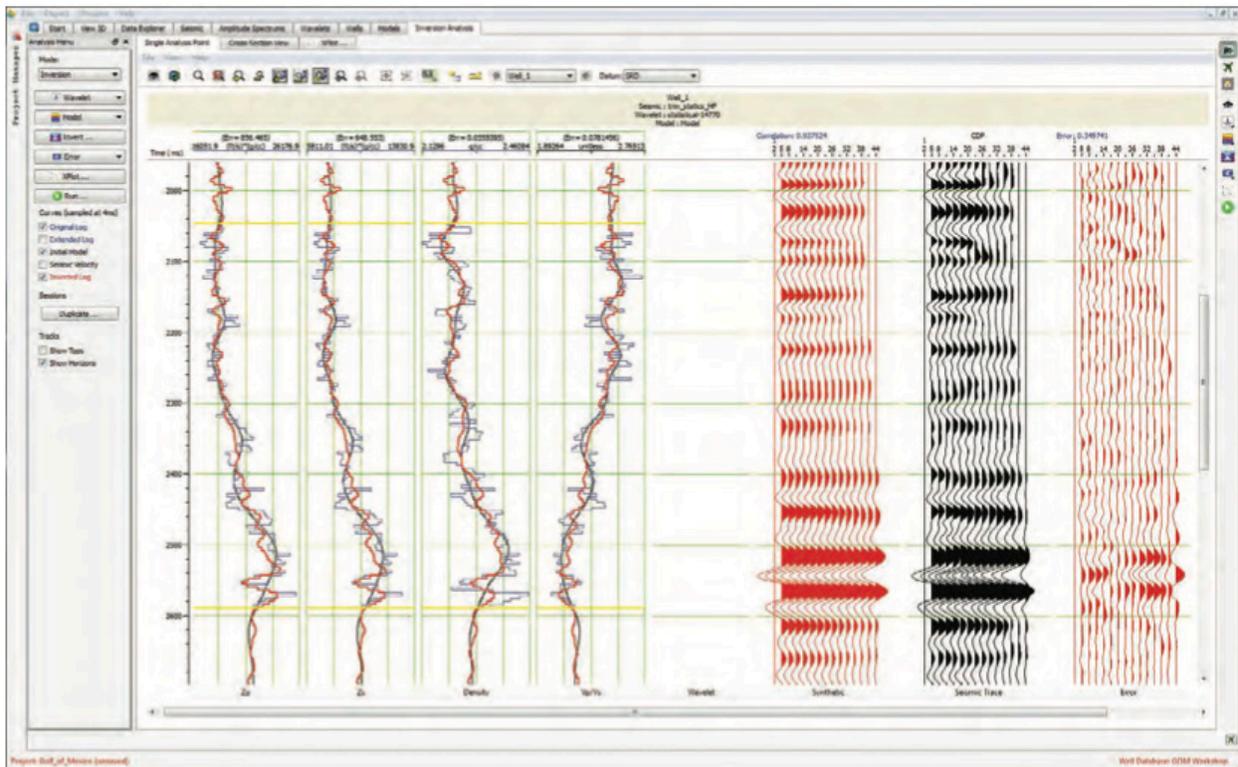


### Seismic Inversion

Simultaneous inversion of prestack seismic data can be especially useful for analyzing data with AVO anomalies. The typical seismic inputs for this process are NMO-corrected angle gathers. Data conditioning tools are available within **HampsonRussell** such as super gather, trim statics, and angle gather to prepare the input data.

## Inversion Analysis

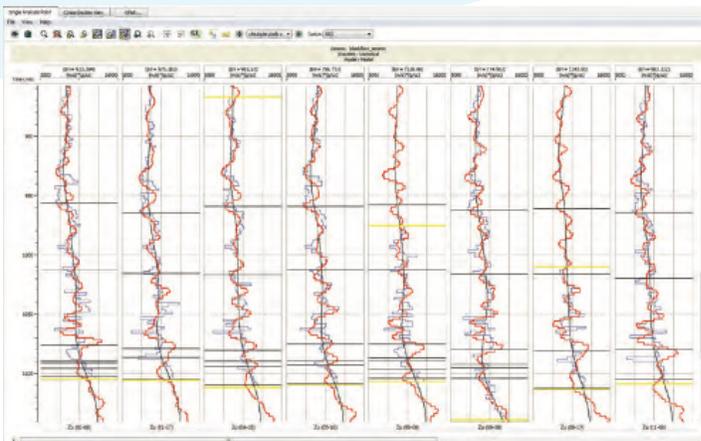
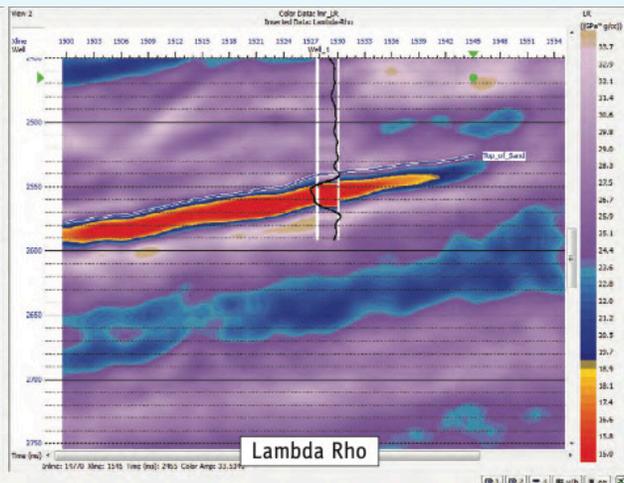
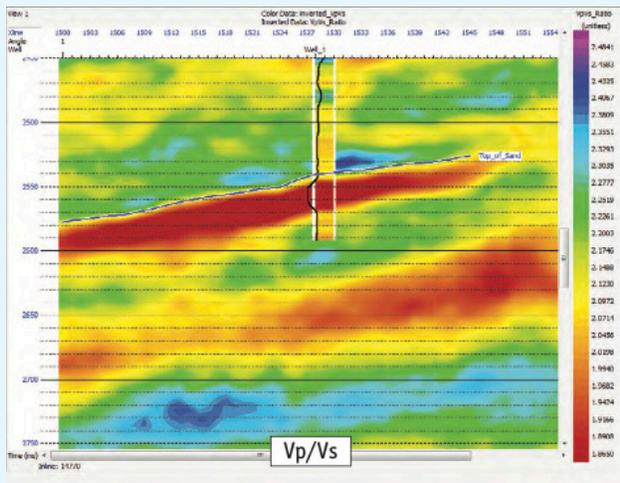
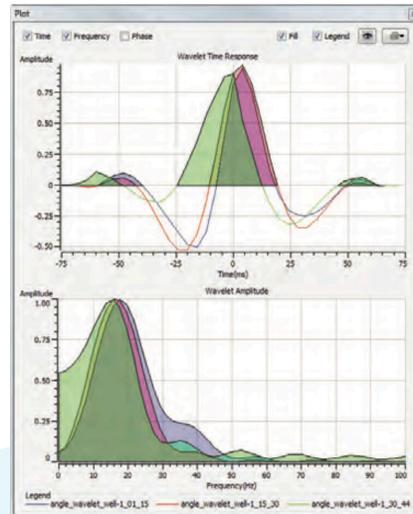
The inversion analysis tool shows the resulting inversion trace at each well location, overlain on top of the original impedance logs. It also shows the synthetic traces that result from the inverted data and compares them to the input seismic volume. This allows for fast and exact calibration between inversion results and well logs, allowing quality control and parameter refinement to be carried out interactively at the well locations before inversion of the full volume.



The simultaneous inversion process is stabilized by including a background relationship between P-Impedance, S-Impedance, and Density. **Strata** derives this relationship graphically using the existing wells in the project.

### HampsonRussell Seismic Inversion Options

- Prestack simultaneous inversion
- Poststack inversion:
  - Model Based
  - Sparse spike: linear programming and maximum likelihood
  - Colored: relative and absolute
  - Bandlimited



### Inversion Results

The typical output volumes from prestack inversion are elastic property volumes such as Vp/Vs ratio, P-Impedance, S-Impedance and Density. These attributes can then be transformed into rock property volumes such as Lambda-Rho, Mu-Rho and Young's Modulus.

**Inversion Benefits With Strata:**

- Facilitates inversion of both prestack and poststack seismic to produce impedance attribute volumes
- Easily QC and optimize inversion parameters at well locations using the inversion analysis
- Enables access to multiple inversion techniques such as model-based, colored, and sparse spike inversion
- Produces elastic attribute volumes as outputs which are ideally suited to be used as inputs for **Emerge** attribute prediction, or **LithoSI** facies classification

