Converted wave processing using EOM

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Introduction

Prestack migration of converted wave data requires accurate acoustic and shear velocities V_p and V_s. New methods to estimate the shear velocities using a single converted wave velocity V_c are shown in this paper.

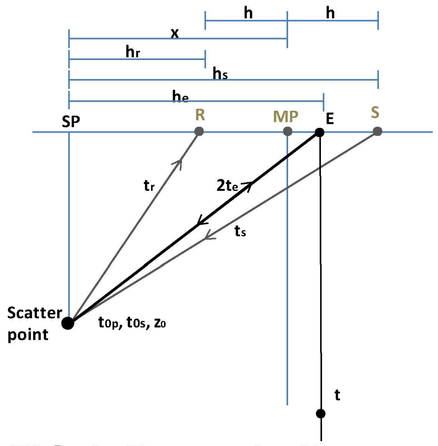


FIG 1 Raypath diagram

$$t = \sqrt{t_{0P}^2 + \frac{h_S^2}{V_{P-RMS}^2}} + \sqrt{t_{0S}^2 + \frac{h_R^2}{V_{S-RMS}^2}}$$

$$t = \frac{1}{V_{P-RMS}}\sqrt{\hat{z}^2 + (x+h)^2} + \frac{1}{V_{S-RMS}}\sqrt{\hat{z}^2 + (x-h)^2}$$

For the equivalent offset h_e,

$$t = \frac{1}{V_{P-RMS}}\sqrt{\hat{z}^2 + h_e^2} + \frac{1}{V_{S-RMS}}\sqrt{\hat{z}^2 + h_e^2}$$

$$\frac{2}{V_{C-RMS}} = \frac{1}{V_{P-RMS}} + \frac{1}{V_{S-RMS}}$$

When x is small relative to h,

$$t = \left(\frac{1}{V_{P-RMS}} + \frac{1}{V_{S-RMS}}\right)\sqrt{\hat{z}^2 + h^2}$$

$$V_{C-RMS} = 2\frac{V_{P-RMS} + V_{S-RMS}}{V_{P-RMS}V_{S-RMS}}$$

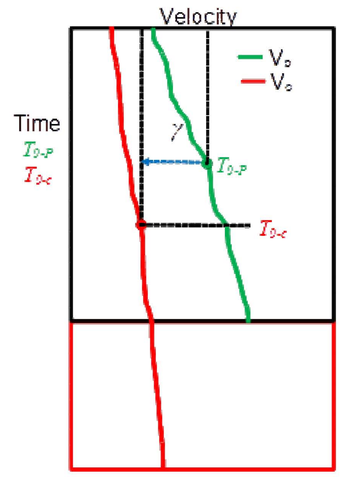


FIG 2 Converting P to C velocities

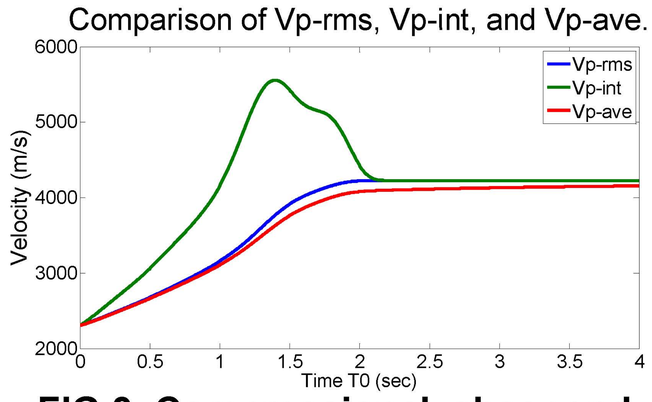


FIG 3 Compressional, shear and converted velocities

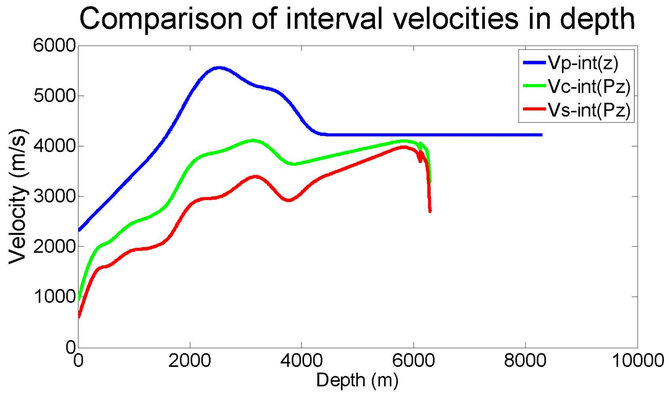


FIG 3 Comparison of interval velocities in depth

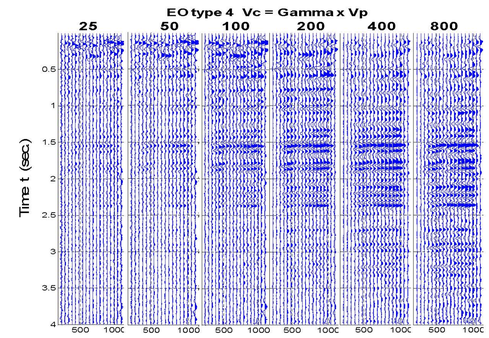


FIG 4 Panels of x<< h

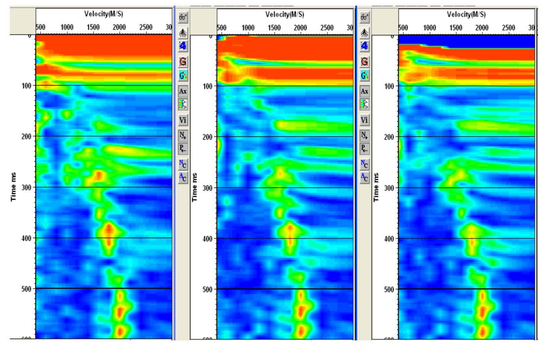


FIG 5 Semblance super, simple, and EO

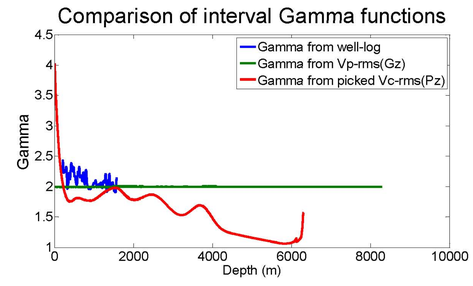
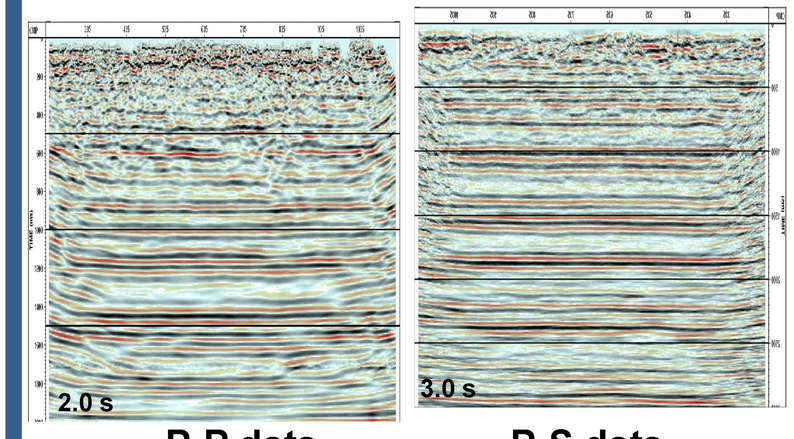


FIG 6 Gamma: defined estimated and log.



P-P data **P-S data**

FIG 7