⇒ Set up shell files in UNIX to parse picks of arrival times into se
based on shot gather number.

⇒ Set up shell files in UNIX to run inversion work by reading picked
each pick file into other shell files that do the inversion work. T
the picked travel times to travel times obtained by synthetically
waves into a velocity model. The programs are designed to define
determine how long it took each individual ray to get to each rece
determine how long it should have taken. For the inversion work, r
for x, y, and z were set at 2, 1, and 1 km, respectively. No redu
The number of iterations was set at 9 for each run.

⇒ Set up shell files to display the velocity structure models using t
software package. This entailed actually writing the programs to
velocity plot model, a ray coverage model, and a masked velocity m
coverage, for each of the 9 iterations through the inversion proce
essentially how we could see the velocities being generated from th
of all three models used in the inversion process for the V_P models
12 and for the V_S model for Line 12 can be seen in figures 3, 4, 5,

⇒ Convert the seismic line data, which is stored in SEG-Y format, to
then read the data into Promax Version 7.0b to set up flows for the
P-wave arrivals.

⇒ Pick first arrivals of P-wave refractions in Promax. This entaile first arrival for each of the 120 seismograms per each shot gather pick to the 0-phase of the peak.

⇒ Generate individual pick files based on shot gather number. After was done in Promax, we wrote a chain of commands in Promax so that all of the picked travel times into a temporary file which was the individual pick files according to the shot gather number.

⇒ Compute grid spacing and radial distribution for model and equival to set up velocity structure model parameters. This entailed deter spacing to use and the dimensions of the line based on the line le anticipated depth of coverage (z). We went with a grid spacing of twenty 50-m boxes reside within 1 km. Using the formula $nx = (x_1$ determined the grid spacing for each line and then added padding t enough space in the model to encompass all of the ray coverage. Th dimensions used for each of the lines are: Line 8 = 140 x 40 point Line 11 = 150 x 40 points (7.5 x 2.0 km), and Line 12 = 190 x 30 p km).

⇒ Insert into all inversion and GMT-plot shell files appropriate par directory paths for geometry and pick files.

⇒ Choose a starting model, run inversion shell files, then display plot shells. This entailed setting a 1-D velocity as the initial

inversion approach. For all lines the following velocity ranges w
depths of 0-1 km: 1 to 4 km/s, 2 to 4 km/s, 0.5 to 3.5 km/s, and
inversion method modified each starting model, trying to make the
synthetic ray paths match the observed data timepicks. The veloc
iteretively reworked until rms values of the differences gave us a
to zero as possible. For example, if I set the velocity range of
4 km/s which the inversion modified to 1.5 to 2.4 km/s, and other
produce the same range, then these must be the actual velocities t
the data and hence what we seek. For starting models, the griddin
x, y, and z was set at 40, 40, and 12, respectively with the movin
size set at 30, 39, and 11, respectively. As good models were rew
inversion process, the smoothing was gradually decreased. Final m
lines had gridding smoothing size for x, y, and z set at 10, 10, a
the moving average gridding size set at 9, 9, and 3, respectively.

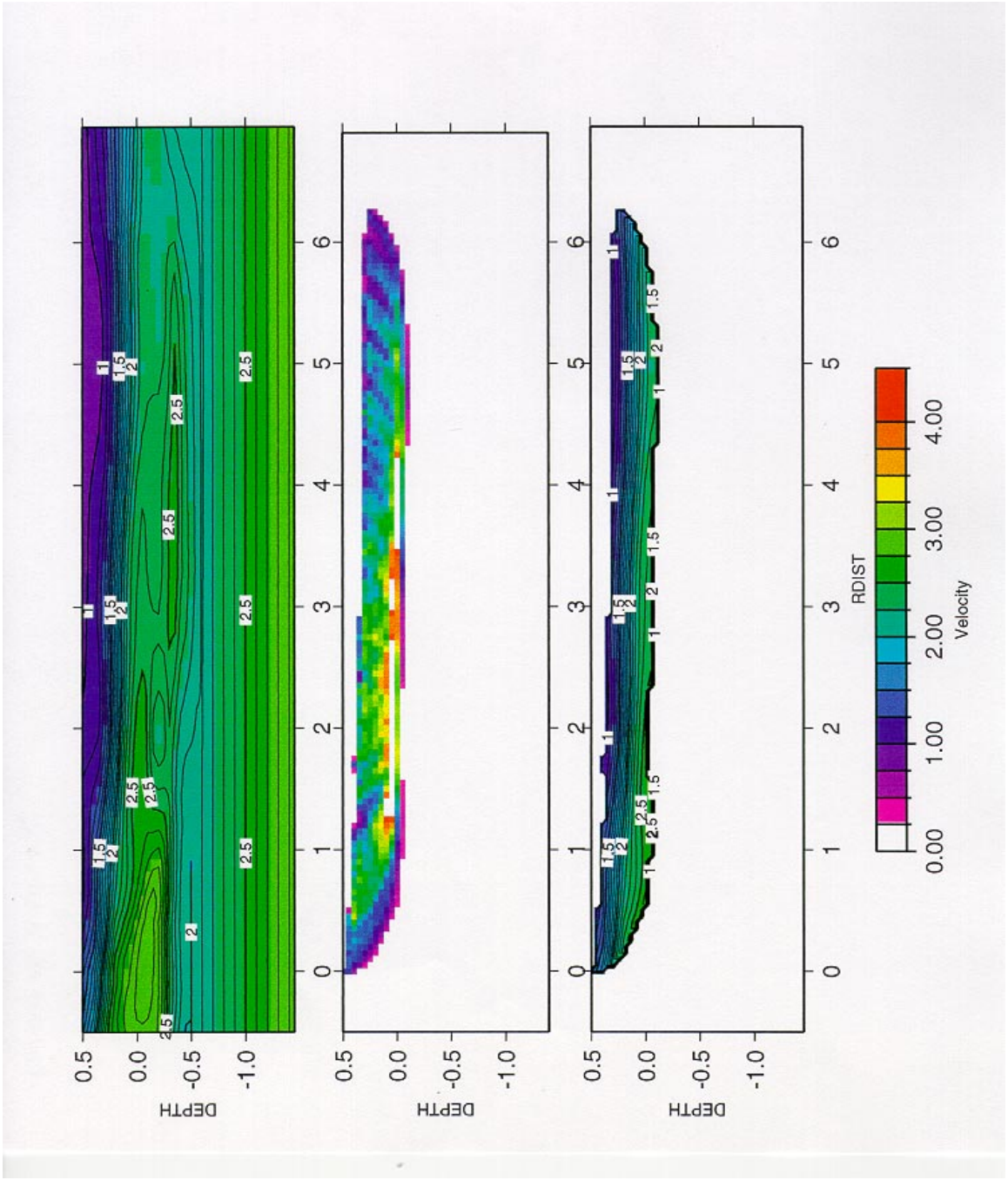

Figure 3. Velplot (top), Ray Coverage (middle), and Masked Velplot based on Ray Coverage (bottom) for Line 11 Vp structure. North is to the left. Ray Coverage scale is 0-500.

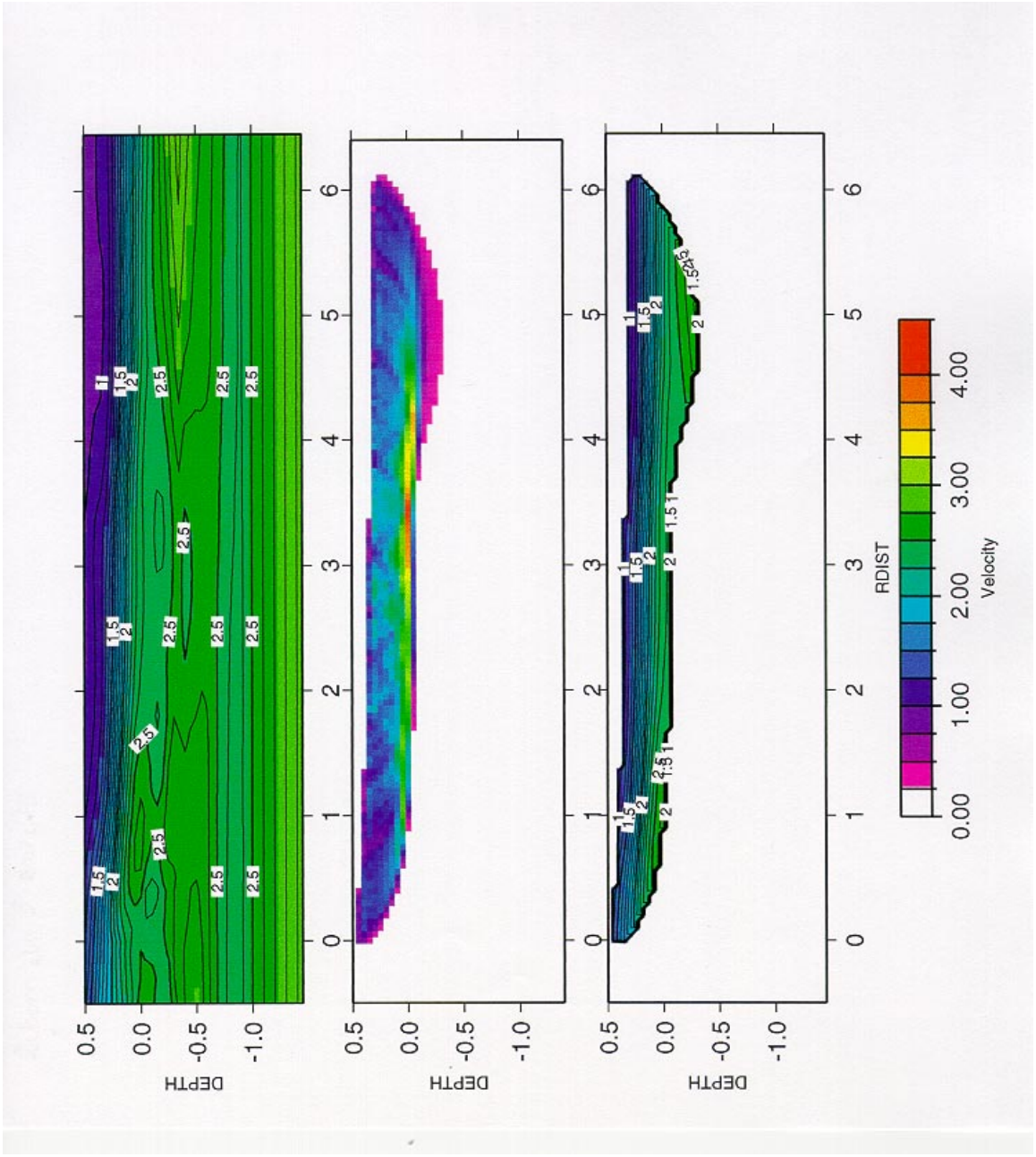

Figure 4. Velplot (top), Ray Coverage (middle), and Masked Velplot based on Ray Coverage (bottom) for Line 8 Vp structure. North is to the left. Ray Coverage scale is 0-1000.