

Bottom Depth Echo-Sounding Correction

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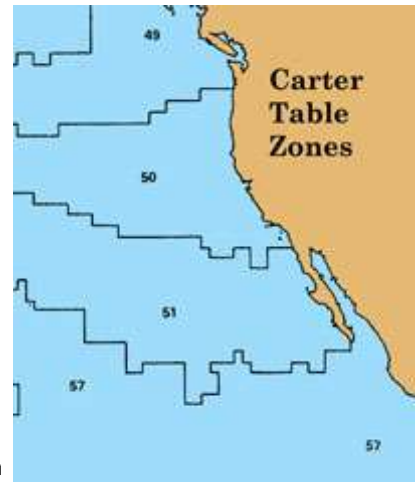
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(<http://calcofi.org/images/maps/CarterTablesMapColor.jpg>) CalCOFI has always corrected bottom depths reported using Carter Tables 50 & 51 for the CalCOFI operations area, California's west coast. An explanation of the need for this correction can be read below and at:

<https://www.ngdc.noaa.gov/mgg/fliers/84mgg18.html>

"An echo sounding is measurement of the two-way travel time of an acoustic signal between a shipborne transducer and a submerged reflecting surface, usually the ocean bottom. To convert an echo sounding to depth, the travel-time measurement is commonly halved and multiplied by an assumed speed of sound through seawater, either 4,800 ft/sec, 800 fathoms/sec or 1,500 m/sec. The resulting value must be corrected for variations in the speed of sound because of variations in the temperature, salinity, and pressure of sea water. Traditionally, corrections to echo soundings have been

interpolated for various areas of the world's oceans from tables published by D.J. Matthews in 1939.* Though the Matthews tables are long outdated, their continued use allowed new depth values to be merged with the large existing data base of depths derived similarly. In 1980, the United Kingdom's Hydrographic Department published a new edition of the correction tables, based on the work of D.J.T. Carter of the United Kingdom's Institute of Oceanographic Sciences.** The Carter tables were adopted in place of Matthews tables by the Twelfth International Hydrographic Conference in Monaco in 1982."



Sample code illustrating CalCOFI stations from Lines 93-77 may be in Carter Table Zone 50 or 51:

If Line in [77, 80, 82, 83, 87, 90, 93] then

Case Line of

```
77, 80, 82, 83 : Assign(table, 'CARTER50.DAT');
```

```
87 : if Sta in [90, 100, 110] then Assign(table, 'CARTER51.DAT')  
    else Assign(table, 'CARTER50.DAT');
```

```
90 : if Sta in [90, 100, 110, 120] then Assign(table, 'CARTER51.DAT')  
    else Assign(table, 'CARTER50.DAT');
```

```
93 : if Sta in [55, 60, 100, 110, 120] then Assign(table, 'CARTER51.DAT')  
    else Assign(table, 'CARTER50.DAT');
```

End