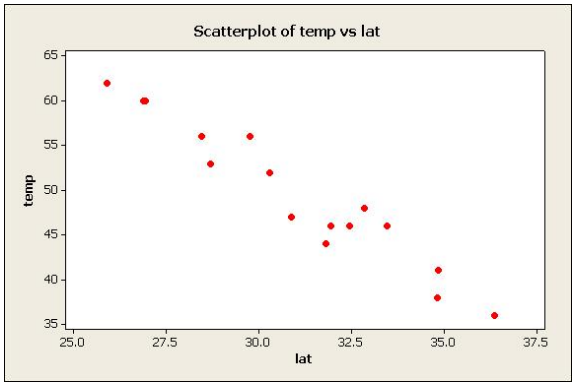
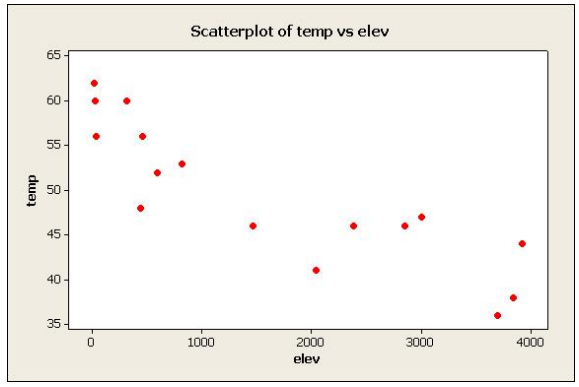
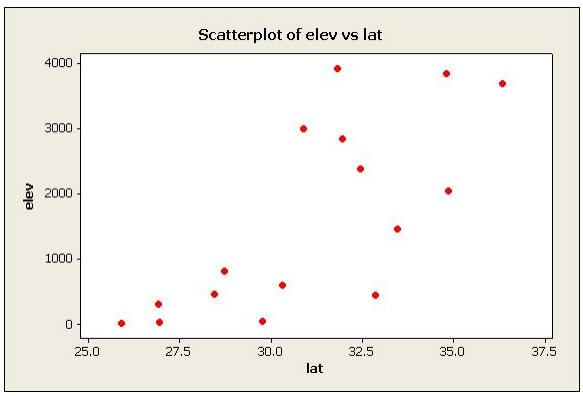
Example: Temperature vs latitude and Elevation







Regression Analysis: temp versus lat, elev, lat2, elev**2, lat*elev**

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The regression equation is
temp = 103 - 1.45 lat - 0.00227 elev - 0.0054 lat**2 + 0.000000 elev**2
       - 0.000007 lat*elev

Predictor        Coef     SE Coef      T      P
Constant       103.03       58.34   1.77  0.108
lat            -1.451       4.014  -0.36  0.725
elev        -0.002274    0.006011  -0.38  0.713
lat**2       -0.00541     0.06871  -0.08  0.939
elev**2    0.00000016  0.00000026   0.60  0.560
lat*elev   -0.0000069   0.0002051  -0.03  0.974

S = 0.945280   R-Sq = 99.1%   R-Sq(adj) = 98.6%

Analysis of Variance
Source          DF      SS      MS       F      P
Regression       5  933.00  186.60  208.83  0.000
Residual Error  10    8.94    0.89
Total           15  941.94

Unusual Observations
Obs   lat    temp     Fit  SE Fit  Residual  St Resid
  7  28.7  53.000  55.016   0.399    -2.016     -2.35R
R denotes an observation with a large standardized residual.
```

Regression Analysis: temp versus lat, elev, lat*elev

The regression equation is
temp = 110 - 1.85 lat - 0.00229 elev + 0.000014 lat*elev

Predictor	Coef	SE Coef	T	P
Constant	109.752	3.860	28.43	0.000
lat	-1.8487	0.1328	-13.92	0.000
elev	-0.002286	0.002068	-1.11	0.291
lat*elev	0.00001372	0.00006420	0.21	0.834

S = 0.883649 R-Sq = 99.0% R-Sq(adj) = 98.8%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	3	932.57	310.86	398.11	0.000
Residual Error	12	9.37	0.78		
Total	15	941.94			

Regression Analysis: temp versus lat, elev

The regression equation is
temp = 109 - 1.83 lat - 0.00185 elev

Predictor	Coef	SE Coef	T	P
Constant	109.259	2.979	36.68	0.000
lat	-1.8322	0.1038	-17.65	0.000
elev	-0.0018463	0.0002188	-8.44	0.000

S = 0.850596 R-Sq = 99.0% R-Sq(adj) = 98.8%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	2	932.53	466.27	644.45	0.000
Residual Error	13	9.41	0.72		
Total	15	941.94			

Source	DF	Seq SS
lat	1	881.00
elev	1	51.53

Unusual Observations

Obs	lat	temp	Fit	SE Fit	Residual	St Resid
7	28.7	53.000	55.171	0.269	-2.171	-2.69R

R denotes an observation with a large standardized residual.