

Ch6 - Ex 2 - Days of frost (frost) as a function of elevation (elev) and latitude (lat).

```
*25 Days of frost by elevation and latitude.
data list free / elev lat frost.
begin data
2375 39.27 73.0 1586 38.63 29.0 1459 39.00 28.0 680 39.17 25.0
604 38.35 11.5 1298 39.47 32.5 3242 37.58 64.0 1426 37.37 13.0
550 39.38 23.0 2250 37.80 37.0 675 38.05 26.0 2135 38.23 73.0
635 39.65 24.7 1649 39.10 41.0 2727 38.66 56.0 1053 39.48 34.0
2424 37.97 37.0 789 38.80 16.0 659 40.10 41.0 673 37.67 12.0
end data.
```

CORR frost elev lat /STAT = DESCR.

	Mean	Std. Deviation	N
frost	34.83500	18.777149	20
elev	1444.45000	828.574138	20
lat	38.68650	.778928	20

	frost	elev
elev	.760	.000
lat	.058	-.402
	.809	.079

```
FORMAT elev (F5.0) lat (F5.2) frost (F2.0).
REGRESS /STAT = DEFAU ZPP CHANGE / DEP = frost
/ENTER elev /ENTER lat /SAVE PRED(prd) RESI(res).
```

Change Statistics							
Model	R	R Square	R Square Change	F Change	df1	df2	Sig. F Change
1	.760	.577	.577	24.556	1	18	.000
2	.857	.734	.157	10.064	1	17	.006

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3865.508	1	3865.508	24.556	.000
	Residual	2833.537	18	157.419		
	Total	6699.045	19			
2	Regression	4919.201	2	2459.600	23.493	.000
	Residual	1779.845	17	104.697		
	Total	6699.046	19			

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Model		Unstandardized Coefficients		Standardized Coefficients		Correlations			
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part
1	(Constant)	9.969	5.749		1.734	.100			
	elev	.017	.003	.760	4.955	.000	.760	.76	.760
2	(Constant)	-399.658	129.207		-3.093	.007			
	elev	.021	.003	.934	6.839	.000	.760	.86	.855
	lat	10.441	3.291	.433	3.172	.006	.058	.61	.397

	Mean	Std. Deviation	N
Predicted Value	34.83	16.091	20
Residual	.000	9.679	20

VARI LABEL prd ' ' res ' '.

```
LIST.
elev lat frost prd res
2375 39.27 73 60.61759 12.38241
1586 38.63 29 37.24024 -8.24024
1459 39.00 28 38.41615 -10.41615
...
```

CORR frost elev lat prd res /STAT.

	frost	elev	lat	prd
prd	.857			
res	.515	.000	.000	.000

```
REGRESS /STAT = R /DEP = lat /ENTER elev /SAVE RESI(res1.e).
```

Model	R	R Square
1	.402	.162

	Mean	Std. Deviation	N
Predicted Value	38.6865	.31308	20
Residual	.00000	.71324	20

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REGRESS /STAT = R /DEP = frost /ENTER elev /SAVE RESI(resf.e).

Model	R	R Square
1	.760	.577

	Mean	Std. Deviation	N
Predicted Value	34.84	14.264	20
Residual	.000	12.212	20

VARI LABEL resf.e '' resf.e ''.  
CORR resf.e WITH frost resf.e elev.

		frost	resf.e	elev
resf.e	Pearson Correlation	.397	.610	.000

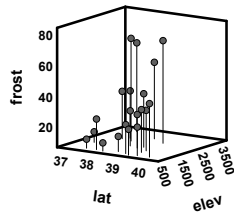
COMP zfrost = (frost-34.835000)/18.7771495.  
COMP zlat = (lat-38.686500)/.7789282.  
COMP zelev = (elev-1444.450000)/828.5741383.  
REGRESS /DESCR /DEP = zfrost /ENTER zlat zelev.

	Mean	Std. Deviation	N
zfrost	.00000	1.000000	20
zlat	.00000	1.000000	20
zelev	.00000	1.000000	20

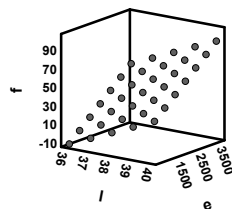
Model	Unstandardized Coefficients		Standardized Coefficients			
	B	Std. Error	Beta	t	Sig.	
1	(Constant)	1.580E-15	.122	.000	1.000	
	zlat	.433	.137	.433	3.172	.006
	zelev	.934	.137	.934	6.839	.000

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GRAPH /SCATTERPLOT(XYZ)=elev WITH frost WITH lat.



INPUT PROGRAM.  
LOOP e = 500 TO 3500 BY 500.  
LEAVE e.  
LOOP l = 36 TO 40 BY 1.  
END CASE.  
END LOOP.  
END LOOP.  
END FILE.  
END INPUT PROGRAM.  
COMPUTE f = -.399.658 + .021\*e + 10.441\*l.  
GRAPH /SCATTERPLOT(XYZ)=e WITH f WITH l.



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