Table of analysis variance

Rregression model is explanatory → We can use this model in order to explain Y

Parameter	Estimate	Standard Error	T Statistic	P-Value
CONSTANT	2900,65	543,153	5,3404	0,0000
xcoord(east)	0,00222026	0,000285089	7,78795	0,0000
ycoord(north)	-0,000987919	0,000167087	-5,91261	0,0000
height	0,0638771	0,00849455	7,51978	0,0000
Coastdistance	0,000483279	0,000339538	1,42334	0,1557

Analysis of Variance

| Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Model	131955,	4	32988,6	51,07	0,0000
Residual	187330,	290	645,966		
Total (Corr.)	319285,	294			

Standard Error of Est. = 25,4159

T-statistic table

p-value je větší něž 0,5 -> tak můžu Xj z modelu eliminovat (protože tím pádem Xj není vysvětlující proměnáá v modelu)

CoastDistance může být vamazána, protože je p-value větší než 0,05

Spustím to znova, ale tentorkát bez coastDistance

factorR = 2388,72 + 0,00187994*xcoord(east) - 0,000814253*ycoord(north) + 0,0660843*height
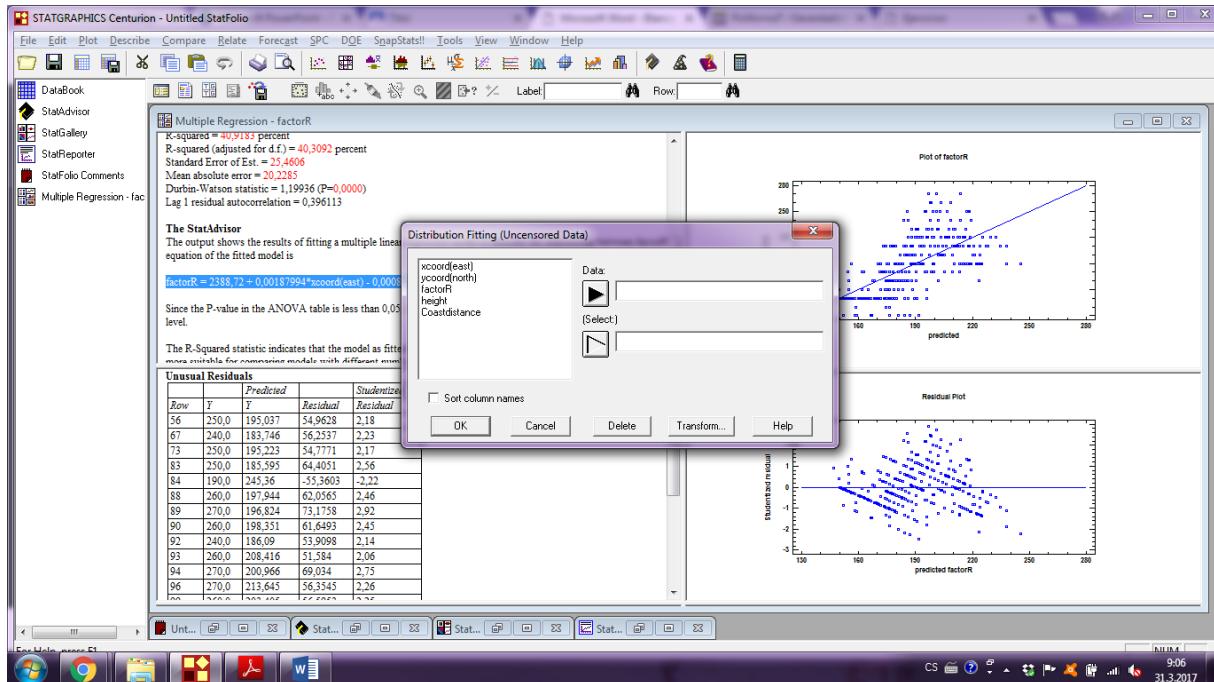
Mam residuals -> pokud je p-value menší než 0,05, tak residuals nesledují normal distribution. Musím uložit residuals a pak udělat describe → fitting unfitted data

Quantile-Quantile Plot
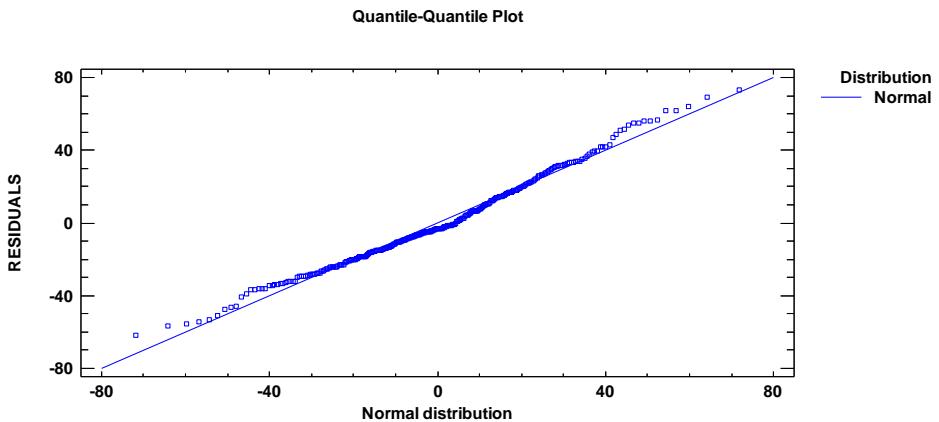
Data are separated (down and up) by the line.

Kolmogorov-Smirnov Test

	Normal
DPLUS	0,0775578
DMINUS	0,0351592
DN	0,0775578
P-Value	0,0575089

Modified Kolmogorov-Smirnov D

	Normal
D	0,0775578
Modified Form	1,3419
P-Value	<0.10

Kuiper V

	Normal
V	0,112717
Modified Form	1,95502
P-Value	<0.05

Cramer-Von Mises W^2

	Normal
W^2	0,22642
Modified Form	0,225834
P-Value	>=0.10

Watson U^2

	Normal
U^2	0,189968
Modified Form	0,190144
P-Value	<0.05

Anderson-Darling A^2

	Normal
A^2	1,25948
Modified Form	1,25948
P-Value	>=0.10

Jediný, kdo odmítá normalitu je Kupier a Watson. U zbytku se bude stačit kouknout na šikmost a špičatosti a můžu se rozhodnout....?

Residual Plot
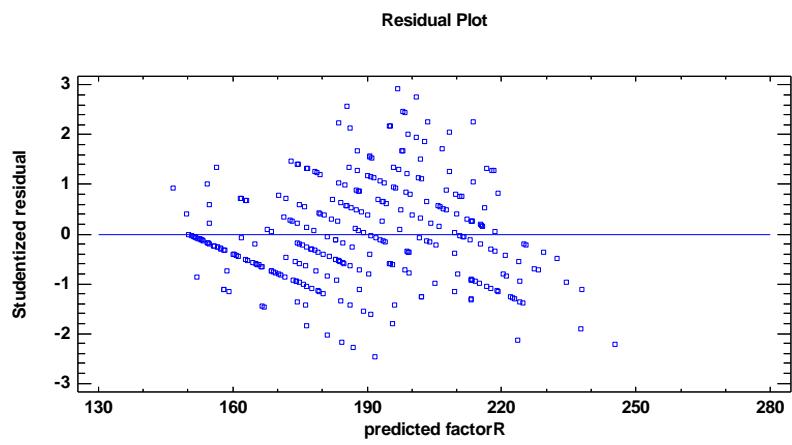
Variance není konstatní, protože factorR je vyšší podle předchozí analýzy.
Nesleduje s homosedasciti hypotézu, a linear hypotéza – můžeme říct, že tato hypotéza je naplněna.

Residual Plot
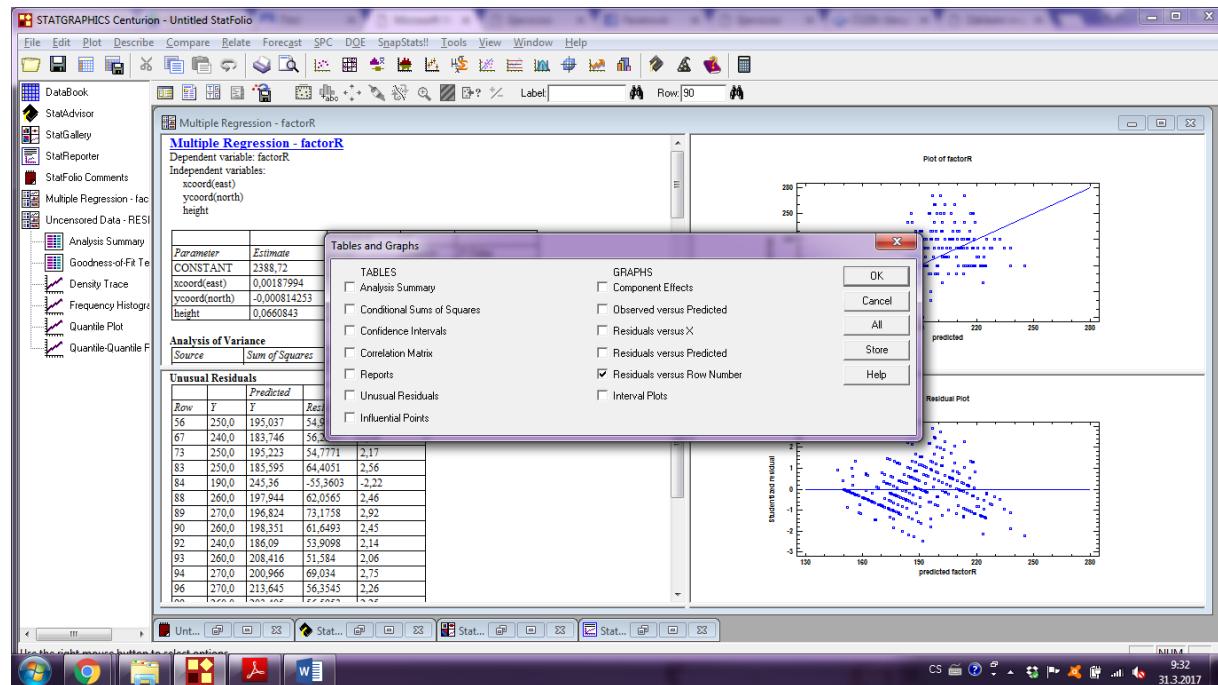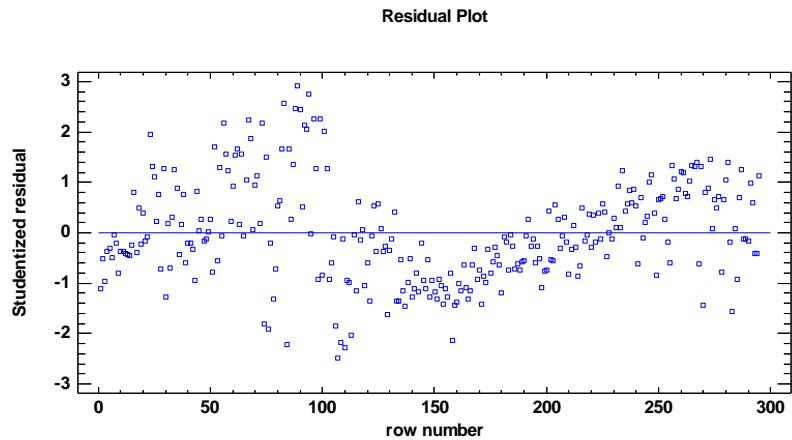
The Durbin-Watson (DW) statistic tests the residuals to determine if there is any significant correlation based on the order in which they occur in your data file. Since the P-value is less than 0,05, there is an indication of possible serial correlation at the 95,0% confidence level. Plot the residuals versus row order to see if there is any pattern that can be seen.

Unusual Residuals

Row	Y	Predicted Y	Residual	Studentized Residual
56	250,0	195,037	54,9628	2,18
67	240,0	183,746	56,2537	2,23
73	250,0	195,223	54,7771	2,17
83	250,0	185,595	64,4051	2,56
84	190,0	245,36	-55,3603	-2,22
88	260,0	197,944	62,0565	2,46
89	270,0	196,824	73,1758	2,92
90	260,0	198,351	61,6493	2,45
92	240,0	186,09	53,9098	2,14
93	260,0	208,416	51,584	2,06
94	270,0	200,966	69,034	2,75
96	270,0	213,645	56,3545	2,26
99	260,0	203,405	56,5953	2,25
101	250,0	199,104	50,8956	2,02
107	130,0	191,795	-61,7949	-2,48
108	130,0	184,44	-54,4404	-2,17
110	130,0	186,935	-56,935	-2,27
113	130,0	181,114	-51,1137	-2,03
158	170,0	223,578	-53,5784	-2,14

The StatAdvisor

The table of unusual residuals lists all observations which have Studentized residuals greater than 2 in absolute value. Studentized residuals measure how many standard deviations each observed value of factorR deviates from a model fitted using all of the data except that observation. In this case, there are 19 Studentized residuals greater than 2, but none greater than 3.

Label: Row: 90

Multiple Regression - factorR
Dependent variable: factorR
Independent variables:
    Coastdistance
    xcoord(east)
    height

Box-Cox transformation applied: power = -0,1375 shi...
Cochrane-Orcutt transformation applied: autocorrelatio...

Parameter	Estimate	Standard Error	
CONSTANT	1096,05	123,201	8
Coastdistance	-0,00152493	0,000246253	-
xcoord(east)	0,000450652	0,000161492	2
height	0,0544579	0,00675974	8

Analysis of Variance

Source	Sum of Squares	Df	Mean Squ...
Model	116494,	3	38831,3
Residual	147374,	290	508,186
Total (Corr.)	263868,	293	

R-squared = 44,1486 percent
R-squared (adjusted for d.f.) = 43,5708 percent
Standard Error of Est. = 22,543
Mean absolute error = 17,558
Durbin-Watson statistic = 2,4688
Lag 1 residual autocorrelation = -0,23862

The StatAdvisor
The output shows the results of fitting a multiple linear regression model to describe the relationship between factorR and 3 independent variables. The equation of the fitted model is

BoxCox(factorR) = 1096,05 - 0,00152493*Coastdistance + 0,000450652*xcoord(east) + 0,0544579*height

where

Multiple Regression Options

Fitting Procedure
- ☐ Ordinary Least Squares
- ☐ Forward Stepwise Selection
- ☐ Backward Stepwise Selection
- ☑ Box-Cox Optimization
- ☐ Cochrane-Orcutt Optimization

☑ Constant in Model

Transformations
Power: -0,1375
Addend: 0
Autocorrelation: 0,512968

Stepwise Regression
Selection Criterion
- ☐ F-Ratio
- ☑ P-Value

Max. Steps: 50
☑ Display all steps

F-to-Enter: 4,0
F-to-Remove: 4,0
P-to-Enter: 0,05
P-to-Remove: 0,05

OK   Cancel   Help

Residual Plot