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Supplement of

Causes of interannual variability over the southern hemispheric tropospheric ozone maximum

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Method of calculating the variance explained by each predictor in the regression

Table 1: Definition of symbols

Quantity	Definition	Description
SYY	$\sum (y_i - \bar{y})^2$	Sum of squares for the y's
RSS	$\sum (y_i - x_i \hat{\beta})^2$	Residual sum of squares
SSreg	SYY-RSS	Sum of squares for the regression
r^2	SSreg/SYY	The proportion of variability in Y explained by regression

Table 2: Two Analysis Of Variance table with different orders of fitting (Example for regression with StratO₃ and EmisO₃ over South Atlantic in December at 270 hPa)

<i>(a) First analysis</i>		<i>(b) Second analysis</i>	
	Sum Sq		Sum Sq
StratO3	110.81	EmissO3	76.65
EmissO3	25.13	StratO3	59.29
SSreg	135.94	SSreg	135.94
RSS	45.47	RSS	45.47
SYY	181.41	SYY	181.41

Table 3: Variance explained by each predictor following the method described in (Kruskal, 1987;Chevan and Sutherland, 1991; Groemping, 2007)

Source	StratO3	EmisO3
Mean Sum Sq	85.05	50.89
Variance explained by each predictor	0.47	0.28

Reference:

Chevan, A., and Sutherland, M.: HIERARCHICAL PARTITIONING, American Statistician, 45, 90-96, 10.2307/2684366, 1991.

Groemping, U.: Two simple estimators of relative importance in linear regression based on variance decomposition - Response, American Statistician, 61, 282-283, 2007.

Kruskal, W.: RELATIVE IMPORTANCE BY AVERAGING OVER ORDERINGS, American Statistician, 41, 6-10, 10.2307/2684310, 1987.