

Ecography

ECOG-04093

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Supplementary material

Supplementary material Appendix 1. Studies examined to determine how often spatial variation in trend is considered in power analyses for population trend. Studies were all intended to inform specific monitoring programs for wildlife, and are sorted by year and then by author.

Study	Spatial variation in trend included?
Gerrodette (1987)	-
Peterman & Bradford (1987)	-
Taylor & Gerrodette (1993)	-
Thomas (1996)	-
Zielinski & Stauffer (1996)	-
Gibbs & Melvin (1997)	-
Van Strien <i>et al.</i> (1997)	Yes
Gibbs <i>et al.</i> (1998)	-
Gibbs (2000)	-
Carlson & Schmiegelow (2002)	Yes
Hatch (2003)	-
Bart <i>et al.</i> (2004)	-
Purcell <i>et al.</i> (2005)	-
Atkinson <i>et al.</i> (2006)	-
Seavy & Reynolds (2007)	-
Sims <i>et al.</i> (2007)	Yes
Magurran <i>et al.</i> (2010)	-
Reynolds <i>et al.</i> (2011)	-
Christensen & Ringvall (2013)	-
Miller & Mitchell (2014)	Yes*

* As an interaction between site and year (fixed effects). In other studies, site was included as a random effect on the slope (trend).

References (Appendix 1)

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Supplementary material Appendix 2. Effects of parameters and all significant interactions on statistical power to detect population trend. Values were estimated on the logit scale by a generalized linear model. Non-significant interactions were dropped for brevity. All main effects were retained. Interactions are sorted by order (first, second, etc.) and then by descending magnitude of the effect size.

Parameter	Estimate	SE
Intercept	2.020	0.000
N	9.534	0.003
τ	-6.675	0.002
SD_{τ}	-4.215	0.002
Y	2.359	0.002
CV_Y	-1.017	0.002
$SD(CV_Y)$	-0.187	0.002
CV_{obs}	-0.126	0.002
CV_{μ}	-0.004	0.001
$\tau \cdot N$	-15.244	0.007
$SD_{\tau} \cdot N$	-6.826	0.005
$Y \cdot N$	5.636	0.007
$\tau \cdot SD_{\tau}$	3.830	0.004
$\tau \cdot Y$	-3.514	0.004
$SD_{\tau} \cdot Y$	-3.249	0.003
$Y \cdot CV_Y$	2.111	0.003
$Y \cdot SD(CV_Y)$	1.409	0.004
$SD_{\tau} \cdot CV_Y$	1.319	0.003
$CV_Y \cdot N$	-1.074	0.006
$\tau \cdot CV_Y$	0.632	0.004
$Y \cdot CV_{obs}$	0.468	0.004
$SD_{\tau} \cdot SD(CV_Y)$	0.325	0.003
$SD_{\tau} \cdot CV_{obs}$	0.222	0.003
$CV_Y \cdot SD(CV_Y)$	0.168	0.004
$SD(CV_Y) \cdot CV_{obs}$	0.094	0.003
$CV_Y \cdot CV_{obs}$	0.091	0.003
$N \cdot CV_{obs}$	-0.076	0.007
$\tau \cdot CV_{obs}$	0.045	0.005
$\tau \cdot CV_{\mu}$	0.033	0.003
$N \cdot CV_{\mu}$	-0.029	0.004
$SD(CV_Y) \cdot CV_{\mu}$	0.026	0.001
$SD(CV_Y) \cdot N$	-0.024	0.007
$CV_{\mu} \cdot CV_{obs}$	-0.011	0.001
$\tau \cdot SD(CV_Y)$	0.011	0.005
$CV_Y \cdot CV_{\mu}$	0.008	0.001
$SD_{\tau} \cdot CV_{\mu}$	0.004	0.002
$\tau \cdot SD_{\tau} \cdot N$	10.721	0.012
$\tau \cdot Y \cdot N$	-9.537	0.014
$SD_{\tau} \cdot Y \cdot N$	-5.501	0.010

Parameter	Estimate	SE
$Y \cdot CV_Y \cdot N$	4.933	0.010
$Y \cdot SD(CV_Y) \cdot N$	3.957	0.013
$\tau \cdot Y \cdot CV_Y$	-3.114	0.007
$\tau \cdot SD_\tau \cdot Y$	3.075	0.007
$\tau \cdot Y \cdot SD(CV_Y)$	-2.455	0.009
$SD_\tau \cdot Y \cdot CV_Y$	-2.135	0.005
$SD_\tau \cdot Y \cdot SD(CV_Y)$	-1.823	0.006
$Y \cdot CV_Y \cdot SD(CV_Y)$	-1.665	0.006
$\tau \cdot CV_Y \cdot N$	1.393	0.013
$Y \cdot N \cdot CV_{obs}$	0.992	0.013
$SD_\tau \cdot Y \cdot CV_{obs}$	-0.639	0.006
$\tau \cdot Y \cdot CV_{obs}$	-0.619	0.008
$Y \cdot CV_Y \cdot CV_{obs}$	-0.618	0.006
$SD_\tau \cdot SD(CV_Y) \cdot N$	-0.385	0.011
$\tau \cdot SD_\tau \cdot CV_Y$	0.382	0.006
$\tau \cdot SD_\tau \cdot SD(CV_Y)$	0.333	0.007
$SD_\tau \cdot CV_Y \cdot SD(CV_Y)$	-0.269	0.006
$SD_\tau \cdot N \cdot CV_{obs}$	-0.245	0.010
$SD_\tau \cdot CV_Y \cdot CV_{obs}$	-0.230	0.005
$Y \cdot SD(CV_Y) \cdot CV_{obs}$	-0.226	0.005
$\tau \cdot SD_\tau \cdot CV_{obs}$	0.224	0.007
$SD_\tau \cdot CV_Y \cdot N$	-0.162	0.009
$CV_Y \cdot SD(CV_Y) \cdot N$	-0.145	0.012
$SD_\tau \cdot SD(CV_Y) \cdot CV_{obs}$	-0.142	0.003
$\tau \cdot SD(CV_Y) \cdot N$	-0.130	0.015
$SD(CV_Y) \cdot CV_\mu \cdot CV_{obs}$	0.100	0.008
$\tau \cdot N \cdot CV_{obs}$	0.096	0.014
$SD(CV_Y) \cdot N \cdot CV_{obs}$	0.094	0.009
$\tau \cdot CV_Y \cdot SD(CV_Y)$	0.088	0.008
$SD_\tau \cdot SD(CV_Y) \cdot CV_\mu$	-0.083	0.003
$\tau \cdot N \cdot CV_\mu$	0.064	0.008
$CV_Y \cdot SD(CV_Y) \cdot CV_{obs}$	-0.057	0.002
$\tau \cdot CV_Y \cdot CV_{obs}$	0.046	0.008
$SD(CV_Y) \cdot N \cdot CV_\mu$	0.039	0.004
$CV_Y \cdot N \cdot CV_{obs}$	-0.037	0.012
$SD_\tau \cdot CV_\mu \cdot CV_{obs}$	0.034	0.003
$\tau \cdot SD_\tau \cdot CV_\mu$	0.032	0.005
$\tau \cdot CV_\mu \cdot CV_{obs}$	0.032	0.002
$\tau \cdot SD(CV_Y) \cdot CV_{obs}$	-0.026	0.006
$N \cdot CV_\mu \cdot CV_{obs}$	-0.025	0.003
$SD_\tau \cdot N \cdot CV_\mu$	-0.024	0.006
$Y \cdot CV_Y \cdot CV_\mu$	-0.022	0.002
$Y \cdot N \cdot CV_\mu$	0.020	0.003
$Y \cdot SD(CV_Y) \cdot CV_\mu$	0.014	0.003
$Y \cdot CV_\mu \cdot CV_{obs}$	-0.013	0.002

Parameter	Estimate	SE
$CV_Y \cdot N \cdot CV_{\mu}$	0.013	0.003
$SD_{\tau} \cdot CV_Y \cdot CV_{\mu}$	-0.011	0.002
$SD_{\tau} \cdot Y \cdot CV_{\mu}$	-0.009	0.003
$\tau \cdot SD_{\tau} \cdot Y \cdot N$	9.023	0.022
$\tau \cdot Y \cdot CV_Y \cdot N$	-8.424	0.023
$\tau \cdot Y \cdot SD(CV_Y) \cdot N$	-7.007	0.028
$SD_{\tau} \cdot Y \cdot CV_Y \cdot N$	-5.176	0.016
$SD_{\tau} \cdot Y \cdot SD(CV_Y) \cdot N$	-4.542	0.019
$Y \cdot CV_Y \cdot SD(CV_Y) \cdot N$	-4.407	0.021
$\tau \cdot SD_{\tau} \cdot Y \cdot CV_Y$	3.128	0.011
$\tau \cdot SD_{\tau} \cdot Y \cdot SD(CV_Y)$	2.712	0.013
$\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y)$	2.677	0.014
$SD_{\tau} \cdot Y \cdot CV_Y \cdot SD(CV_Y)$	2.377	0.010
$\tau \cdot Y \cdot N \cdot CV_{obs}$	-1.507	0.027
$Y \cdot CV_Y \cdot N \cdot CV_{obs}$	-1.129	0.020
$SD_{\tau} \cdot Y \cdot CV_Y \cdot CV_{obs}$	1.028	0.010
$SD_{\tau} \cdot Y \cdot N \cdot CV_{obs}$	-0.741	0.019
$SD_{\tau} \cdot CV_Y \cdot SD(CV_Y) \cdot N$	0.705	0.018
$\tau \cdot Y \cdot CV_Y \cdot CV_{obs}$	0.704	0.014
$\tau \cdot SD_{\tau} \cdot SD(CV_Y) \cdot N$	0.652	0.024
$SD_{\tau} \cdot CV_Y \cdot N \cdot CV_{obs}$	0.555	0.017
$\tau \cdot SD_{\tau} \cdot CV_Y \cdot SD(CV_Y)$	-0.492	0.013
$\tau \cdot SD_{\tau} \cdot CV_Y \cdot CV_{obs}$	-0.479	0.012
$SD_{\tau} \cdot Y \cdot SD(CV_Y) \cdot CV_{obs}$	0.437	0.006
$\tau \cdot SD_{\tau} \cdot Y \cdot CV_{obs}$	0.428	0.013
$\tau \cdot SD_{\tau} \cdot CV_Y \cdot N$	0.375	0.020
$\tau \cdot SD_{\tau} \cdot N \cdot CV_{obs}$	0.355	0.022
$Y \cdot CV_Y \cdot SD(CV_Y) \cdot CV_{obs}$	0.342	0.006
$Y \cdot SD(CV_Y) \cdot N \cdot CV_{obs}$	-0.319	0.016
$SD(CV_Y) \cdot N \cdot CV_{\mu} \cdot CV_{obs}$	0.292	0.026
$\tau \cdot Y \cdot SD(CV_Y) \cdot CV_{obs}$	0.245	0.011
$SD_{\tau} \cdot N \cdot CV_{\mu} \cdot CV_{obs}$	0.244	0.011
$SD_{\tau} \cdot CV_Y \cdot SD(CV_Y) \cdot CV_{obs}$	0.196	0.005
$\tau \cdot SD(CV_Y) \cdot CV_{\mu} \cdot CV_{obs}$	-0.194	0.017
$\tau \cdot SD_{\tau} \cdot CV_{\mu} \cdot CV_{obs}$	-0.180	0.008
$SD_{\tau} \cdot SD(CV_Y) \cdot N \cdot CV_{\mu}$	-0.160	0.012
$\tau \cdot CV_Y \cdot SD(CV_Y) \cdot N$	0.159	0.027
$\tau \cdot SD(CV_Y) \cdot N \cdot CV_{obs}$	-0.147	0.017
$SD_{\tau} \cdot SD(CV_Y) \cdot CV_{\mu} \cdot CV_{obs}$	-0.128	0.012
$\tau \cdot SD_{\tau} \cdot N \cdot CV_{\mu}$	0.123	0.015
$CV_Y \cdot N \cdot CV_{\mu} \cdot CV_{obs}$	-0.102	0.008
$Y \cdot SD(CV_Y) \cdot CV_{\mu} \cdot CV_{obs}$	0.098	0.014
$\tau \cdot SD_{\tau} \cdot SD(CV_Y) \cdot CV_{\mu}$	0.088	0.008
$SD_{\tau} \cdot Y \cdot N \cdot CV_{\mu}$	-0.084	0.010
$\tau \cdot SD_{\tau} \cdot SD(CV_Y) \cdot CV_{obs}$	-0.083	0.005

Parameter	Estimate	SE
$\tau \cdot CV_Y \cdot N \cdot CV_{obs}$	0.078	0.025
$Y \cdot CV_Y \cdot CV_\mu \cdot CV_{obs}$	-0.073	0.005
$SD_\tau \cdot Y \cdot SD(CV_Y) \cdot CV_\mu$	-0.069	0.007
$\tau \cdot SD_\tau \cdot Y \cdot CV_\mu$	0.066	0.007
$Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu$	0.055	0.008
$\tau \cdot CV_Y \cdot SD(CV_Y) \cdot CV_{obs}$	-0.054	0.005
$\tau \cdot CV_Y \cdot CV_\mu \cdot CV_{obs}$	0.050	0.006
$SD_\tau \cdot SD(CV_Y) \cdot N \cdot CV_{obs}$	0.033	0.007
$SD_\tau \cdot CV_Y \cdot CV_\mu \cdot CV_{obs}$	-0.030	0.006
$\tau \cdot CV_Y \cdot N \cdot CV_\mu$	-0.028	0.007
$SD_\tau \cdot Y \cdot CV_Y \cdot CV_\mu$	0.028	0.004
$\tau \cdot Y \cdot N \cdot CV_\mu$	-0.024	0.007
$\tau \cdot Y \cdot CV_\mu \cdot CV_{obs}$	0.019	0.004
$\tau \cdot Y \cdot CV_Y \cdot CV_\mu$	0.016	0.004
$\tau \cdot SD_\tau \cdot CV_Y \cdot CV_\mu$	0.016	0.005
$Y \cdot CV_Y \cdot N \cdot CV_\mu$	-0.015	0.006
$\tau \cdot Y \cdot SD(CV_Y) \cdot CV_\mu$	-0.014	0.005
$Y \cdot CV_Y \cdot SD(CV_Y) \cdot CV_\mu$	-0.013	0.004
$\tau \cdot CV_Y \cdot SD(CV_Y) \cdot CV_\mu$	-0.011	0.004
$\tau \cdot SD_\tau \cdot Y \cdot SD(CV_Y) \cdot N$	7.469	0.043
$\tau \cdot SD_\tau \cdot Y \cdot CV_Y \cdot N$	7.414	0.036
$\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot N$	7.278	0.045
$SD_\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot N$	5.189	0.031
$\tau \cdot SD_\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y)$	-2.962	0.022
$\tau \cdot Y \cdot CV_Y \cdot N \cdot CV_{obs}$	1.653	0.043
$\tau \cdot SD_\tau \cdot Y \cdot N \cdot CV_{obs}$	0.975	0.043
$SD_\tau \cdot Y \cdot CV_Y \cdot N \cdot CV_{obs}$	0.933	0.030
$\tau \cdot SD_\tau \cdot CV_Y \cdot SD(CV_Y) \cdot N$	-0.831	0.042
$SD_\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot CV_{obs}$	-0.724	0.009
$\tau \cdot SD(CV_Y) \cdot N \cdot CV_\mu \cdot CV_{obs}$	-0.697	0.056
$\tau \cdot SD_\tau \cdot CV_Y \cdot N \cdot CV_{obs}$	-0.632	0.039
$\tau \cdot SD_\tau \cdot N \cdot CV_\mu \cdot CV_{obs}$	-0.486	0.025
$\tau \cdot Y \cdot SD(CV_Y) \cdot N \cdot CV_{obs}$	0.456	0.033
$\tau \cdot SD_\tau \cdot Y \cdot CV_Y \cdot CV_{obs}$	-0.448	0.021
$Y \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_{obs}$	0.437	0.018
$SD_\tau \cdot SD(CV_Y) \cdot N \cdot CV_\mu \cdot CV_{obs}$	-0.392	0.039
$\tau \cdot SD_\tau \cdot SD(CV_Y) \cdot CV_\mu \cdot CV_{obs}$	0.373	0.027
$Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu \cdot CV_{obs}$	0.352	0.046
$\tau \cdot SD_\tau \cdot SD(CV_Y) \cdot N \cdot CV_\mu$	0.343	0.027
$\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot CV_{obs}$	-0.332	0.014
$\tau \cdot SD_\tau \cdot CV_Y \cdot SD(CV_Y) \cdot CV_{obs}$	0.331	0.012
$SD_\tau \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_{obs}$	-0.296	0.015
$\tau \cdot CV_Y \cdot N \cdot CV_\mu \cdot CV_{obs}$	0.246	0.018
$\tau \cdot Y \cdot SD(CV_Y) \cdot CV_\mu \cdot CV_{obs}$	-0.236	0.031
$\tau \cdot SD_\tau \cdot Y \cdot N \cdot CV_\mu$	0.235	0.026

Parameter	Estimate	SE
$Y \cdot CV_Y \cdot N \cdot CV_\mu \cdot CV_{obs}$	-0.201	0.016
$SD_\tau \cdot Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu$	-0.168	0.023
$\tau \cdot SD_\tau \cdot CV_Y \cdot CV_\mu \cdot CV_{obs}$	0.150	0.012
$SD_\tau \cdot Y \cdot SD(CV_Y) \cdot CV_\mu \cdot CV_{obs}$	-0.143	0.022
$SD_\tau \cdot CV_Y \cdot N \cdot CV_\mu \cdot CV_{obs}$	-0.131	0.018
$\tau \cdot SD_\tau \cdot CV_Y \cdot N \cdot CV_\mu$	0.128	0.014
$\tau \cdot CV_Y \cdot SD(CV_Y) \cdot CV_\mu \cdot CV_{obs}$	-0.109	0.012
$\tau \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_{obs}$	-0.106	0.015
$CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu \cdot CV_{obs}$	0.106	0.015
$Y \cdot CV_Y \cdot SD(CV_Y) \cdot CV_\mu \cdot CV_{obs}$	0.092	0.013
$\tau \cdot SD_\tau \cdot Y \cdot SD(CV_Y) \cdot CV_\mu$	0.083	0.016
$\tau \cdot Y \cdot CV_Y \cdot CV_\mu \cdot CV_{obs}$	0.083	0.012
$SD_\tau \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu$	-0.065	0.014
$SD_\tau \cdot Y \cdot CV_Y \cdot CV_\mu \cdot CV_{obs}$	0.058	0.010
$Y \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu$	-0.048	0.010
$\tau \cdot SD_\tau \cdot Y \cdot SD(CV_Y) \cdot CV_{obs}$	0.044	0.009
$\tau \cdot SD_\tau \cdot Y \cdot CV_\mu \cdot CV_{obs}$	-0.038	0.009
$SD_\tau \cdot Y \cdot SD(CV_Y) \cdot N \cdot CV_{obs}$	-0.036	0.014
$SD_\tau \cdot Y \cdot N \cdot CV_\mu \cdot CV_{obs}$	0.036	0.010
$\tau \cdot SD_\tau \cdot CV_Y \cdot SD(CV_Y) \cdot CV_\mu$	0.029	0.012
$SD_\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot CV_\mu$	-0.024	0.011
$\tau \cdot SD_\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot N$	-8.038	0.072
$\tau \cdot SD_\tau \cdot Y \cdot CV_Y \cdot N \cdot CV_{obs}$	-1.411	0.070
$\tau \cdot SD_\tau \cdot SD(CV_Y) \cdot N \cdot CV_\mu \cdot CV_{obs}$	0.886	0.087
$\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_{obs}$	-0.800	0.045
$\tau \cdot Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu \cdot CV_{obs}$	-0.753	0.100
$SD_\tau \cdot Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu \cdot CV_{obs}$	-0.399	0.069
$\tau \cdot Y \cdot CV_Y \cdot N \cdot CV_\mu \cdot CV_{obs}$	0.350	0.041
$\tau \cdot SD_\tau \cdot CV_Y \cdot N \cdot CV_\mu \cdot CV_{obs}$	0.328	0.043
$\tau \cdot SD_\tau \cdot Y \cdot SD(CV_Y) \cdot CV_\mu \cdot CV_{obs}$	0.315	0.049
$\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot CV_\mu \cdot CV_{obs}$	-0.309	0.030
$Y \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu \cdot CV_{obs}$	0.307	0.040
$\tau \cdot SD_\tau \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_{obs}$	0.304	0.039
$\tau \cdot SD_\tau \cdot Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu$	0.269	0.053
$\tau \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu \cdot CV_{obs}$	-0.233	0.035
$SD_\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu$	-0.140	0.033
$SD_\tau \cdot Y \cdot CV_Y \cdot N \cdot CV_\mu \cdot CV_{obs}$	0.135	0.026
$\tau \cdot SD_\tau \cdot Y \cdot CV_Y \cdot N \cdot CV_\mu$	0.133	0.024
$\tau \cdot SD_\tau \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu$	0.114	0.034
$\tau \cdot SD_\tau \cdot CV_Y \cdot SD(CV_Y) \cdot CV_\mu \cdot CV_{obs}$	-0.101	0.017
$\tau \cdot SD_\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot CV_\mu$	0.092	0.025
$SD_\tau \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu \cdot CV_{obs}$	0.090	0.022
$SD_\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot CV_\mu \cdot CV_{obs}$	-0.085	0.023
$\tau \cdot SD_\tau \cdot Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu \cdot CV_{obs}$	0.924	0.161
$\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu \cdot CV_{obs}$	-0.696	0.099

Parameter	Estimate	SE
$\tau \cdot SD_\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_{obs}$	0.675	0.050
$\tau \cdot SD_\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu$	0.384	0.083
$SD_\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot N \cdot CV_\mu \cdot CV_{obs}$	-0.241	0.069
$\tau \cdot SD_\tau \cdot Y \cdot CV_Y \cdot SD(CV_Y) \cdot CV_\mu \cdot CV_{obs}$	0.226	0.052
$\tau \cdot SD_\tau \cdot Y \cdot CV_Y \cdot N \cdot CV_\mu \cdot CV_{obs}$	-0.139	0.057