For a Cautious Use of Big Data and Computation

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RGS 2016

Session Geocomputation : The Next 20 years

September 2016

Computational power : an exponential use

But to what purpose ?

Theories and Computation

Case study : Context and Rationale

Dataset construction

Locally stationary spatial correlations

$Y_i[\vec{x}, t]$ spatio-temporal stochastic process, assumptions :

1. Local spatial autocorrelation is present and bounded by l_ρ (in other words the processes are continuous in space) : at any $\vec{x}$ and t, $\left|\rho_{\|\Delta\vec{x}\|<l_\rho}\left[Y_i(\vec{x}+\Delta\vec{x}, t), Y_i(\vec{x}, t)\right]\right| > 0$.
2. Processes are locally parametrized : $Y_i = Y_i[\alpha_i]$, where $\alpha_i(\vec{x})$ varies with l_α, with $l_\alpha \gg l_\rho$.
3. Spatial correlations between processes have a sense at an intermediate scale l such that $l_\alpha \gg l \gg l\rho$.
4. Processes covariance stationarity times scale as $\sqrt{l}$.
5. Local ergodicity is present at scale l and dynamics are locally chaotic.

Conclusion

Reserve

Reserve Slides

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