

# Global sensitivity analysis with correlated data

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- Validation of EQ statistics VS MC
  - Quantitative: The statistical moments calculated with EQ and MC get the same results in terms of turbine efficiency into the correlated space (turbine-ps-edit.py)
  - Qualitative: Samples from correlated and uncorrelated spaces are plotted together with the values of efficiency, both for EQ and MC. (mapping-points.py)
- Influence of correlation
  - [Coherence of results with published papers](#): Does the standard deviation change value when we consider the correlation coefficients among temperatures and pressures? Three cases have been compared, taking into account the different correlation among temperatures and pressures; statistical moments for each case have been calculated both with EQ and MC. [Results](#): The expected, decreasing variation of standard deviation has been found for correlated temperatures, instead, for correlated pressures an oscillating behaviour is observed with MC and a constant one with EQ. (script: efficiency-variance.py; notebook: efficiensy-variance-explanation.ipynb)
  - [Perturbation inside an UQ phase of RDO](#): Does the mean, the variance and the coefficients of a surrogate model, obtained with a polynomial approximation, change values when we get samples from correlated space or uncorrelated space? [The comparison between the scripts check-approximation-1 and check-approximation-2 aims to answer to this issue.](#)