# Notes

## Simulation decomposition from M. Kozlova paper

1. Identify key variables ~V\_i and possible range of values.
2. Id. Keys ~V that can be manipulated
3. Identify boundaries ~B\_ij for each ~A\_ij of chosen subset ~V\_i variable.
   1. Maybe label them apropriately
4. Form a groups ~G\_k of combinations to specify decomposition scheme

### Example categories

Rain – Min/Max from all the simulations – set boundaries to quantiles 3 thresholds ?? Dry, Moderate, Wet.

Price – Normal, optimistic, fantastic ? :D

## Seeing the model what might be done

What to monitor ?

Price ? Dam levels ?

A decision to, control flood gates

A decision to, control maintenance

## What are we to do ?

Maintenance control module

Improvement comparing to normal model

Sensitivity analysis

Multiple approaches possible

Approaches to solution

Maintenance cost estimation in next 7 days, monitor evolution of cost using, this will use last 30 samples of flow to predict future flow into dam.

* Mean of all values
* Mean of las t 30 values
* Threshold

If percentage drop of estimated maintenance cost exceeds certain threshold, there will be signal to enable maintenance. This is done for each dam separately.

There are hints, sometimes when dam is low, it happens that dam stops generating for a day. This can be addressed by extracting signal from module of generator, and used as signal to enable maintenance, one day of production thus will be spared.

So main idea of solution is, create modules that guess when it would be optimal to run maintenance, then combine the signal and in one decision module select when to run the maintenance.

Maintenance can be run when certain conditions are met:

Next day there is outage in power production, or dam is low 0-2

The estimated maintenance cost is below average, considering some threshold (parameter if simulation). 0-2

## Tests

Should be better

1)

Price increase volatility <= should benefit

Price add drift +

Price add drift and volatility

2)

Rain less often <= should benefit