Multi-objective simulation-based optimization
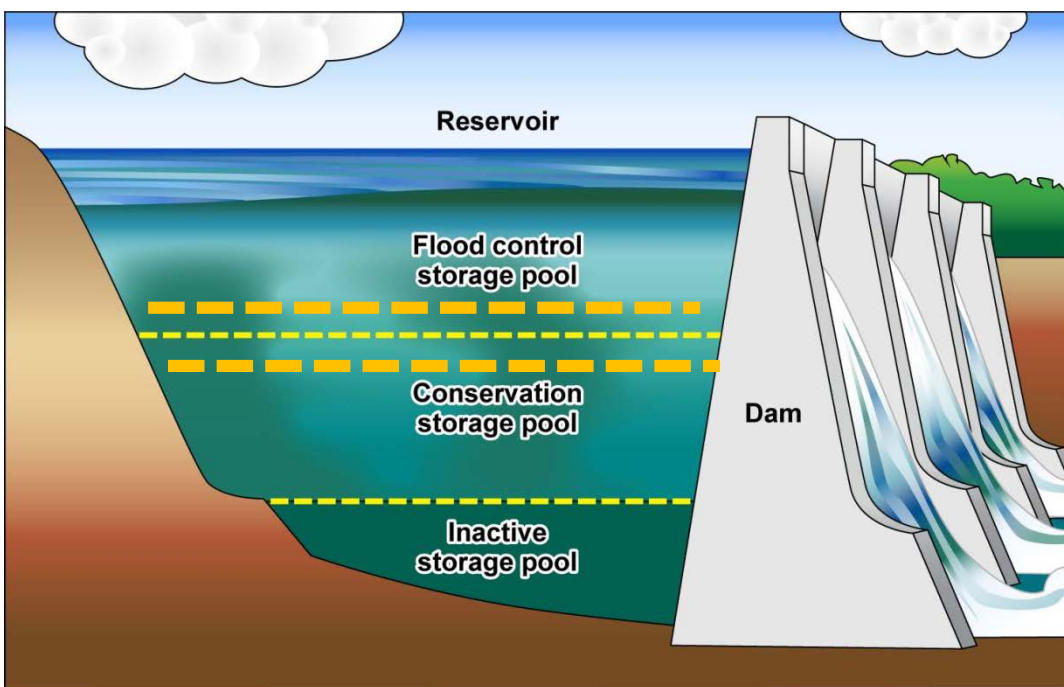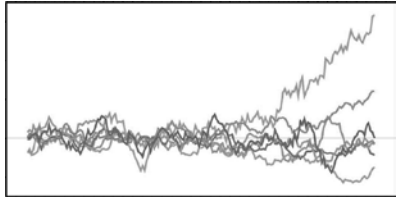

Objective 2 minimize risk of flooding

Objective 1 minimize risk of shortage
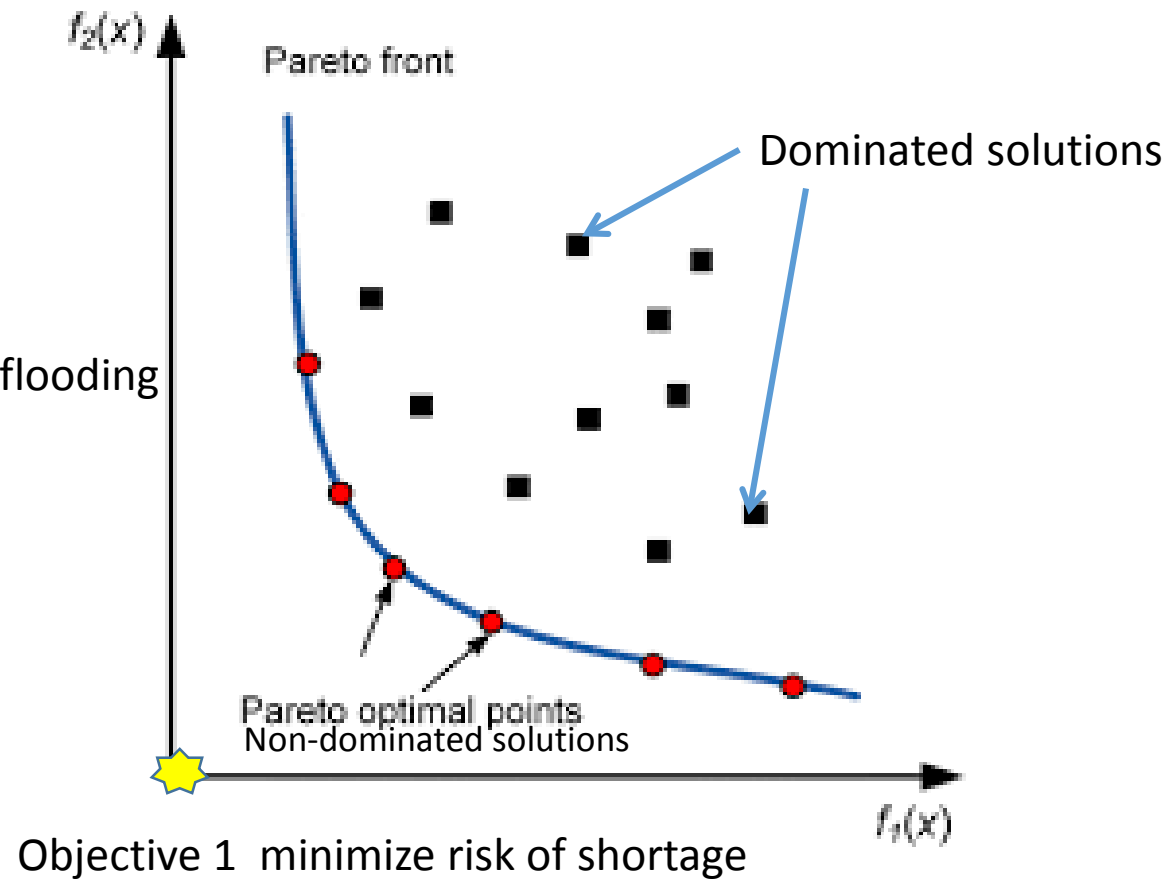
Policy variables

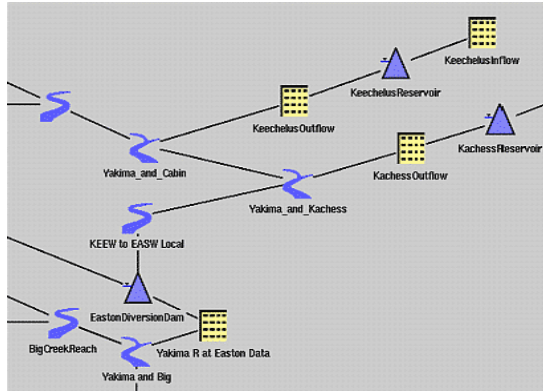**Hydrology and Demand Scenarios** for probabilistic or risk based objectives
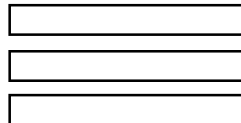
OR Single Input stream for deterministic output

Operations variables

Water Supply Model

Model Outputs

Other output of interest not needed for search, e.g., metrics

Decision Levers management and infrastructure options

x_1 x_2 x_3
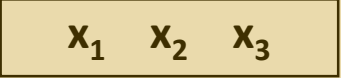
Borg-RW Version X

MOEA

Borg

Objectives measurements of system performance

f_1 f_2 f_3
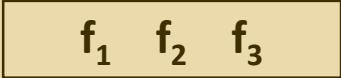
Constraints limits of acceptable performance

$f_1 < n_1$, $f_2 < n_2$, $f_3 > n_3$

2

Average Shortage
Volume (AF)

800,000

600,000

400,000

200,000

2007 IG Policies

—— PA

····· RSA

- - - WSA

45.1%   27.3 yrs   71%   921,638 AF   2,300,000 AF   15.4%   9,245,978 AF   3.22%

0%   0 yrs   0%   197,953 AF   0 AF   0.08%   9,037,708 AF   0%

Mead 1000   Max Cons. Short.   LB Shortage Freq.   Avg. LB Shortage Vol.   Max LB Shortage Vol.   Powell 3490   Powell WY Release   Lee Ferry Deficit