

# Probabilistic tools in OpenEarth

Kees den Heijer

Delft University of Technology, Deltares

May 10, 2012

## Importance Sampling variable

### Structure array

fieldname	description
Name	Name corresponding to stochastic variable
Method	Functionhandle of importance sampling function (e.g. @prob_is_uniform)
Params	Parameters in cell-array as input for the corresponding method

# Importance Sampling structure

```
sampling =  
    Name: 'WL-t '  
    Method: @prob.is.uniform  
    Params: {[-0.3375]  [5.9978]}
```

# Run Monte Carlo with Importance Sampling

```
% run the calculation using Monte Carlo
resultMC = MC(...
    'stochast', stochast,...
    'NrSamples', 3e4,...
    'x2zFunction', @x2z,...
    'IS', sampling);
```

## Monte Carlo result output

```
>> resultMC.Output
```

```
ans =
```

```
    P_f: 0.2033  
    Beta: 0.8300  
    Calc: 30000  
    P_exc: [30000x1 double]  
    P_corr: [30000x1 double]  
    idFail: [30000x1 logical]  
        u: [30000x2 double]  
        P: [30000x2 double]  
        x: [30000x2 double]  
        z: [30000x1 double]
```