Large components, buildings and land

- An optimization example on the characterization and clearance process

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Large components, buildings and land

Bayesian method

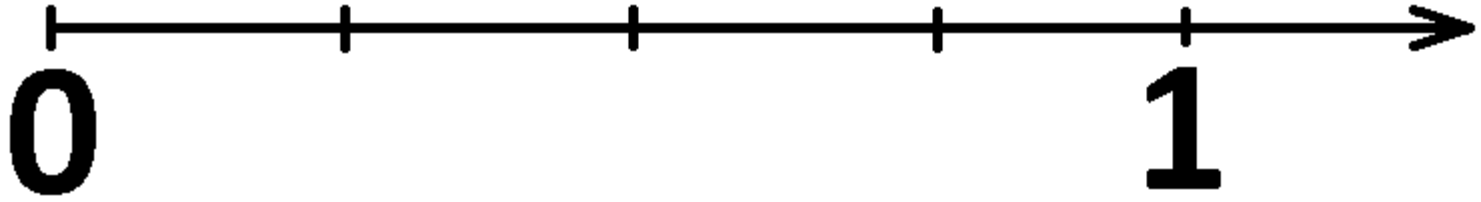
- 1. Planning phase
- 2. Analysis of nuclide distribution in contamination
- 3. Selection of instrument and calculation of detector efficiency
- 4. Elimination of hotspots
- 5. Categorization of surfaces
- 6. Measurement of units
- 7. Statistical treatment of results from measurements
- 8. Comparison with clearance levels

MARSSIM method

- 1. Planning phase
- 2. Classification of areas into survey units
- 3. Selection of instrument(s)
- 4. Determination of number of data points
- 5. Measurement of units
- 6. Statistical tests on the results of the measurements

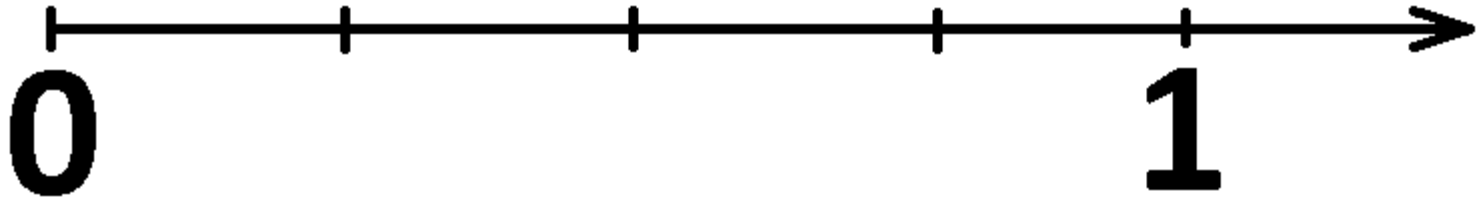
Combining the Bayesian- and the MARSSIM method

- Objects are divided in to segments.
- Each segment is categorized by risk for contamination, geometrical properties and nuclide distribution



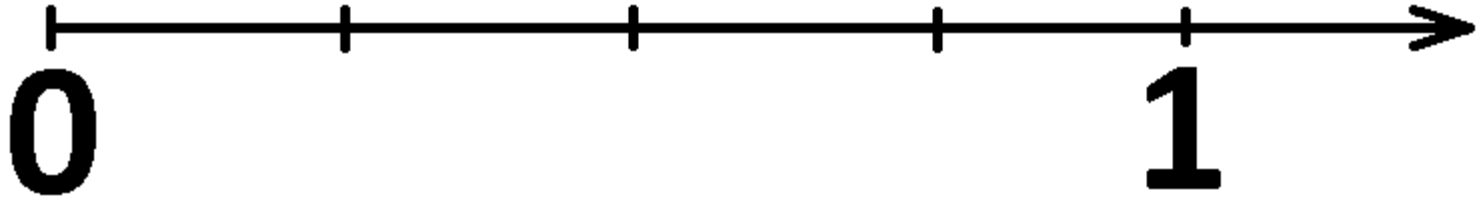
Combining the Bayesian- and the MARSSIM method

- Extremely low risk
- Low risk, just above 0
- Low risk, between 0 and 25 %
- Risk, 25 % - 1
- Contaminated above clearance levels, above 1



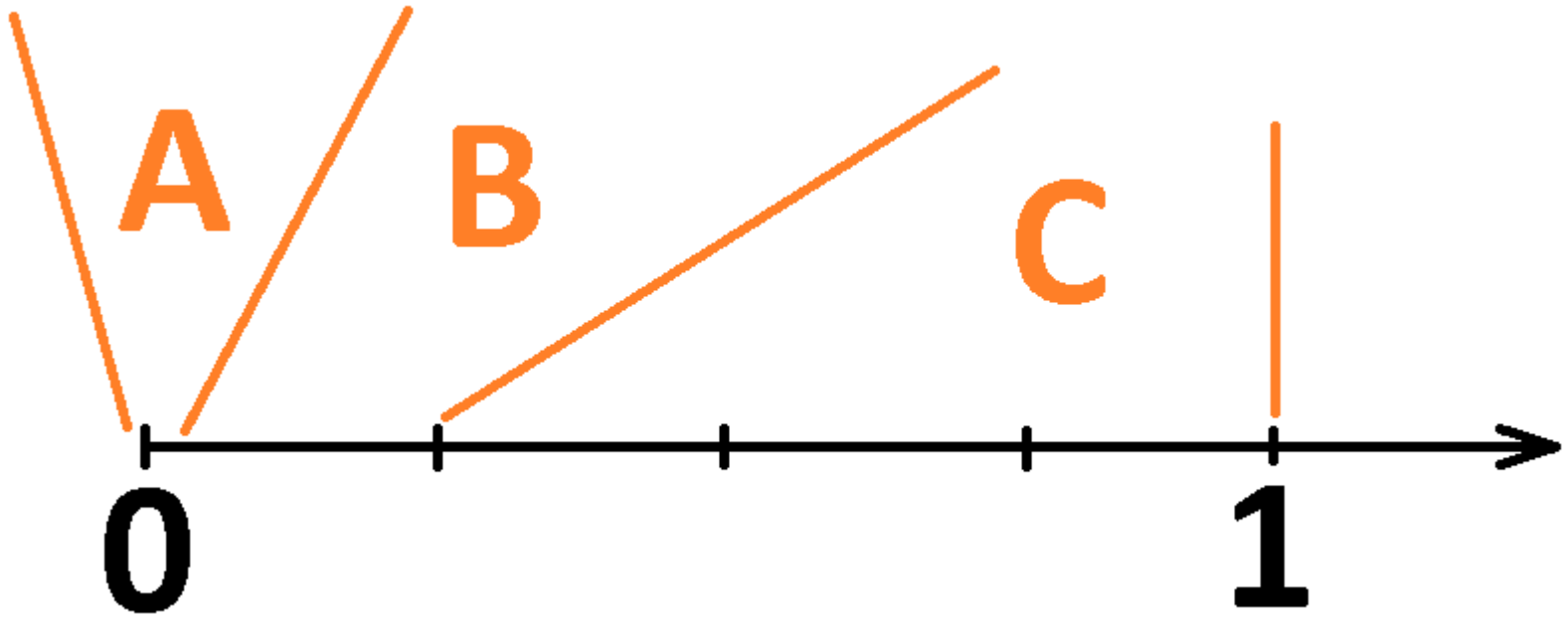
Combining the Bayesian- and the MARSSIM method

Extremely low risk	No measurements
Low risk, just above 0	MARSSIM statistics
Low risk, between 0 and 25 %	MARSSIM statistics
Risk, 25 % - 1	Parametric statistics
Contaminated above clearance levels, above 1	No measurements



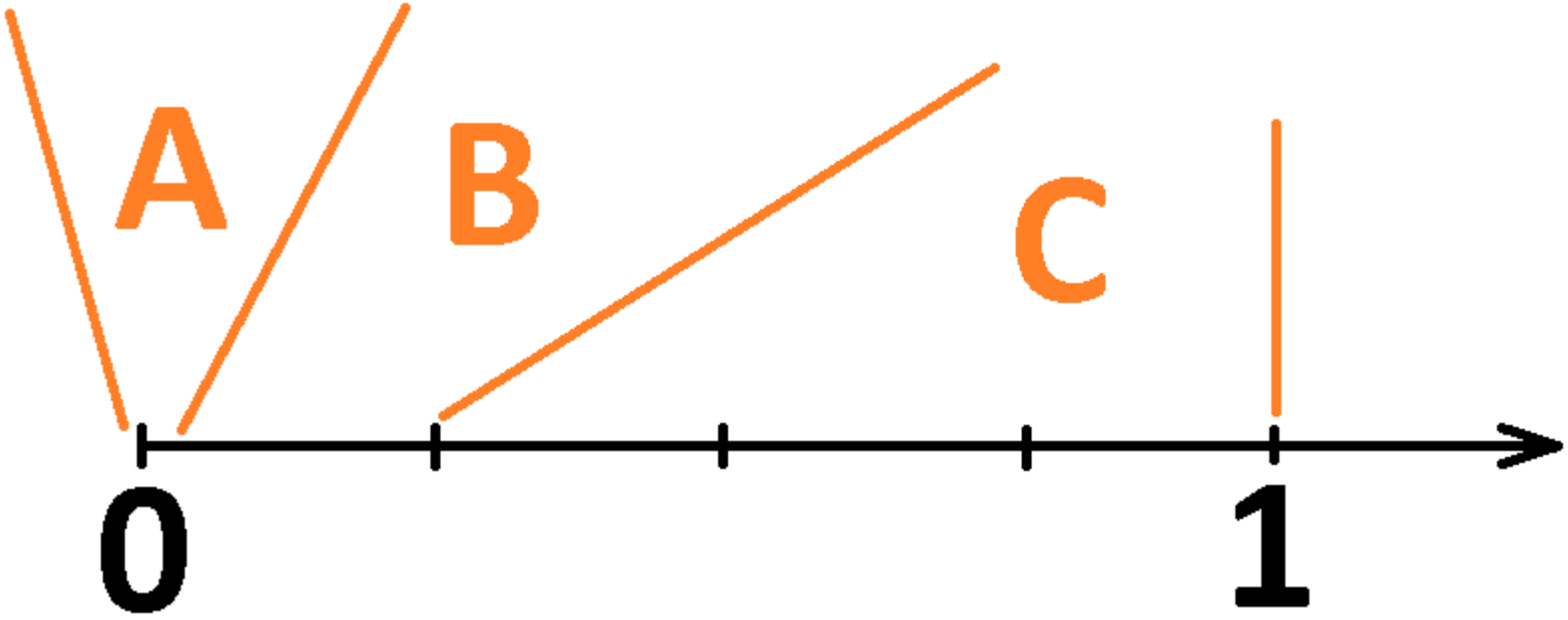
Combining the Bayesian- and the MARSSIM method

- A - Wilcoxon Rank Sum-test and Quantile-test (MARSSIM)
- B - Sign-test and/or Wilcoxon Rank Sum-test (MARSSIM)
- C - Bayesian statistics, UCL95 below 1. Proven Gaussian distribution.



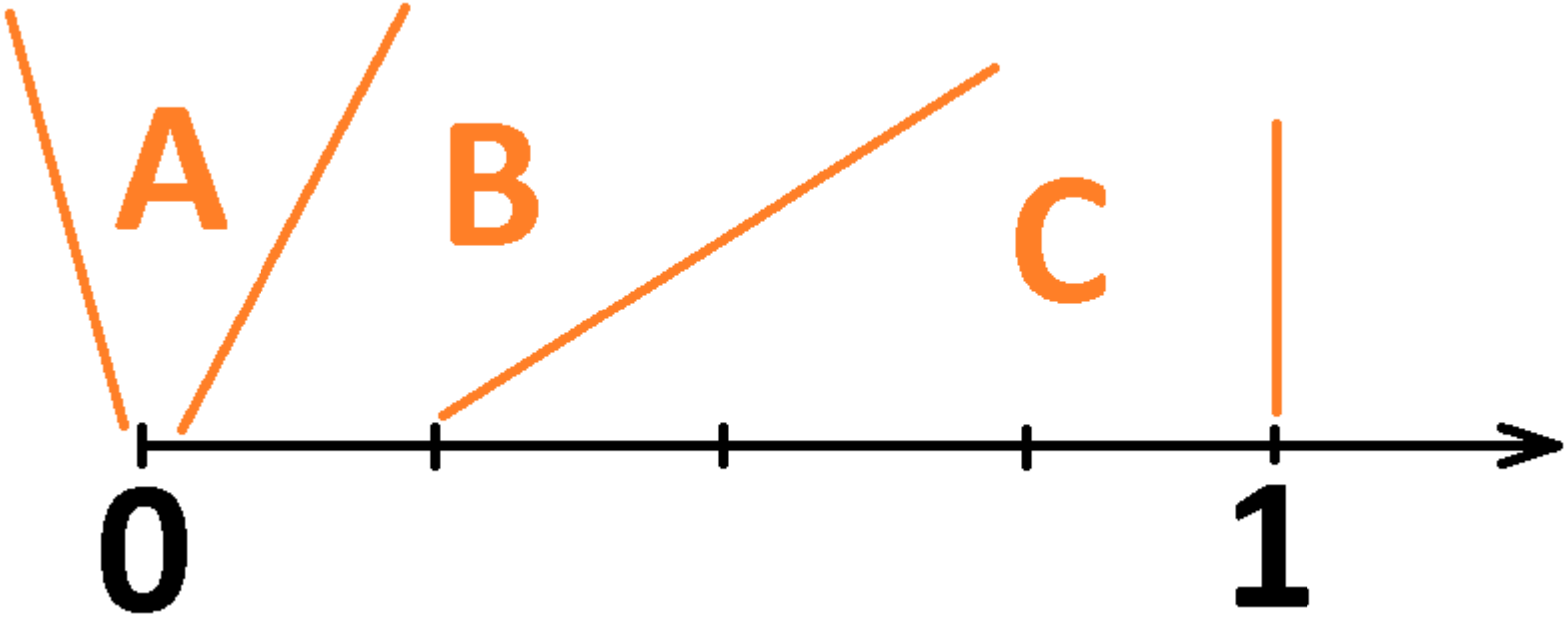
Combining the Bayesian- and the MARSSIM method

- All units measured at randomized locations
- Hotspot scan in region C
- Large units in region A and B since no need for Gaussian distribution
- OK to reuse measurements if unit is find to be a C instead of B



Combining the Bayesian- and the MARSSIM method

- Calculated number of measurements / unit for A, B and C units.
- Great gain in minimizing the number of measurements in region A and B since these units are geometrically large
- Accurate with 95 % confidence close to the clearance limits



Thanks for your time!

Questions?

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