

SWIM and Horizon 2020 Support Mechanism

Working for a Sustainable Mediterranean, Caring for our Future

Title: Training Monitoring of non-point source pollution

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Session 2.1 Network design: introduction

Network design:

- Where : sampling sites: exact x,y coordinates
- When : frequency/year , period of sampling, repeating cycle
- What : determinants
- How : what methods for sampling and analysis
- Who : organisation of sampling, analysis, reporting

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Recipe: ingredients & quantities

There is no recipe for designing monitoring networks!

Apply a structured tailor-made approach with monitoring cycle!

Variables:

- river basin and hydrological characteristics
- heterogeneity in land use and other pressures
- available information and information needs

Constraints:

- available knowledge and equipment
- staff capacity
- **budget**

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Statistical design versus pragmatic design

Statistical design needs (apart from statistical knowledge):

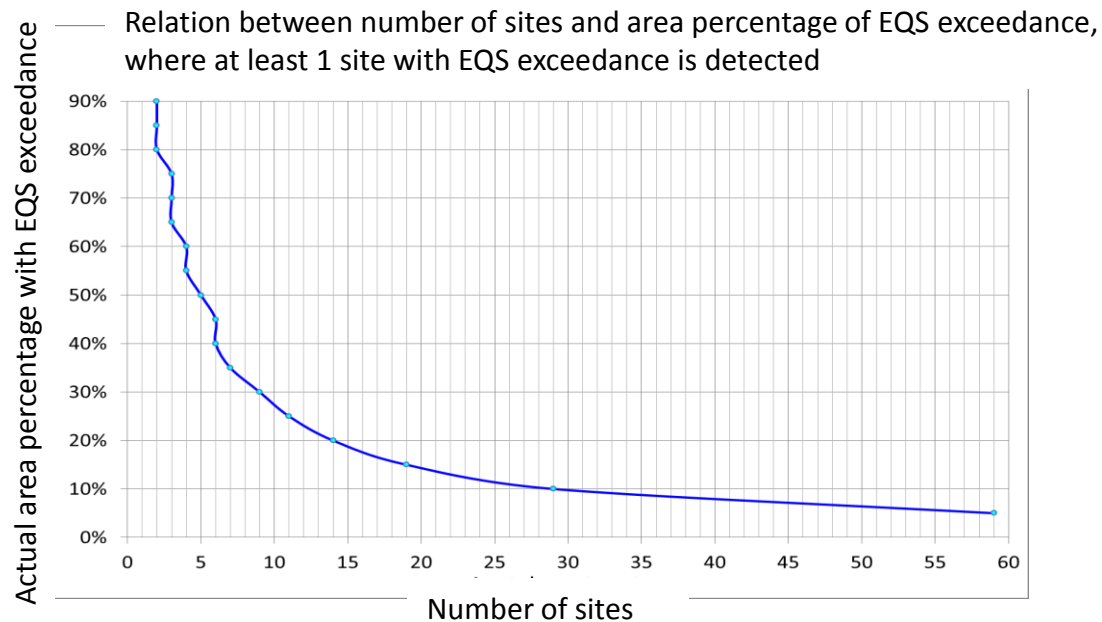
- Some knowledge on heterogeneity and variation to be expected
 - Historic information should be available
- Defining what precision and confidence is wanted in answering information needs
 - Very difficult for policy makers
- Unrealistic budgets
 - Example: NL mineral network is 6 Mi Euro /year
- Statistical evaluation of networks and trend analyses of networks often show: too low number of sites or too low measuring frequency to detect significant trends

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Example of Statistical design:

Information need/monitoring objective: description of water quality status in a basin, detection of EQS exceedances.

More concrete: establish the percentage of the basin area where at least 1 site shows a EQS exceedance with 95% confidence



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Pragmatic design

- Look for (known) spatial differences in pressures in locating sites
- Adjust frequency to hydrological regime (precipitation, droughts)
- Tune the determinants to the expected pollutants
- Consider a stepwise approach in inventory phase: first year(s) broad package, later more dedicated
- Evaluate and adjust the network regularly

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Example 3 from Israel