

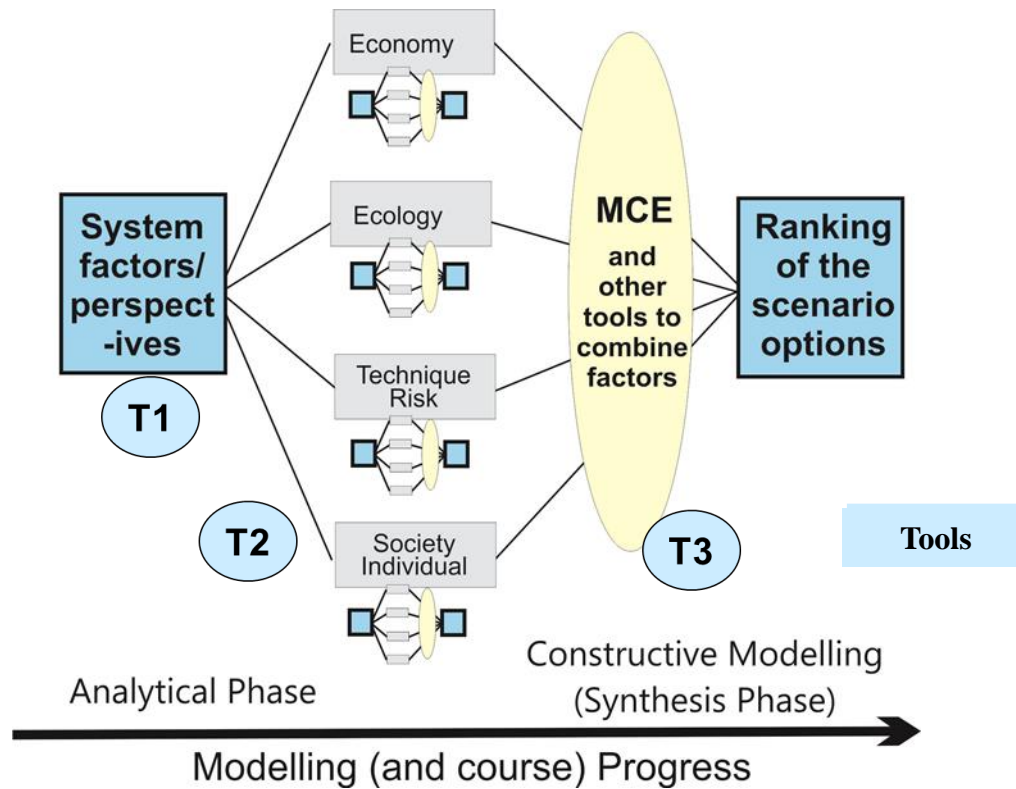
“System Sketch”



This is perhaps the most avoided and probably the most important step in conceptual modeling.

Avoided to save time and to limit complications.

Important because it saves time and limits complications (combines the group ideas and guides the remaining work).



Brunswikian Lens Model

(after Scholz & Tietje 202)

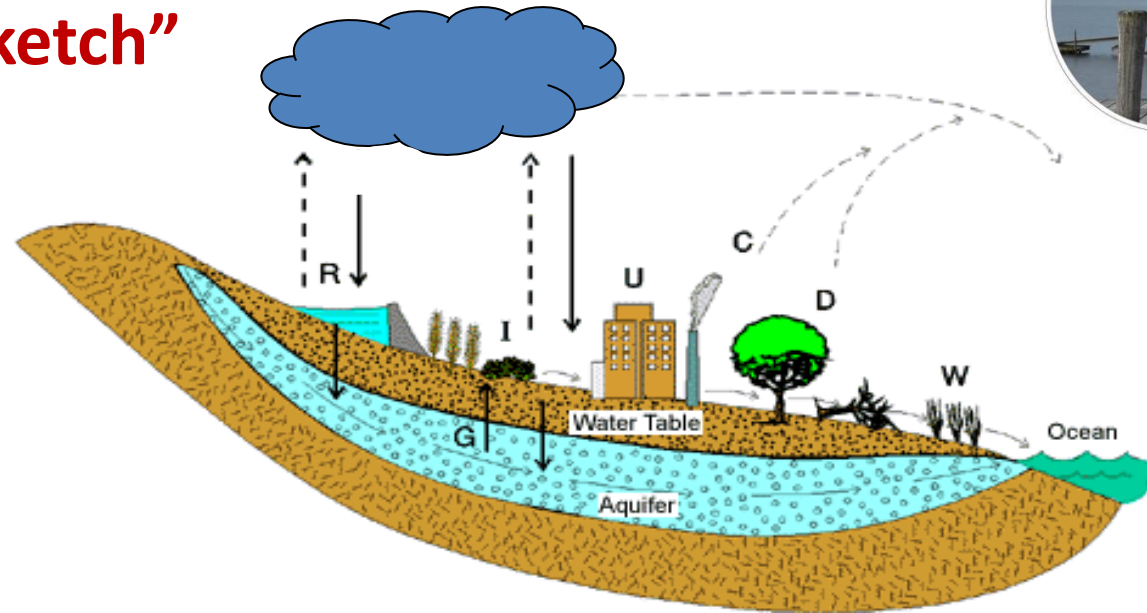
"Tools" (case-study methods)

1. System Sketch – defining and describing the system
2. System structural analysis – studying the internal relationships
3. Multi-criteria evaluation – predicting the impact of the variables

Short method introduction each week. See also "Tools" manual on website

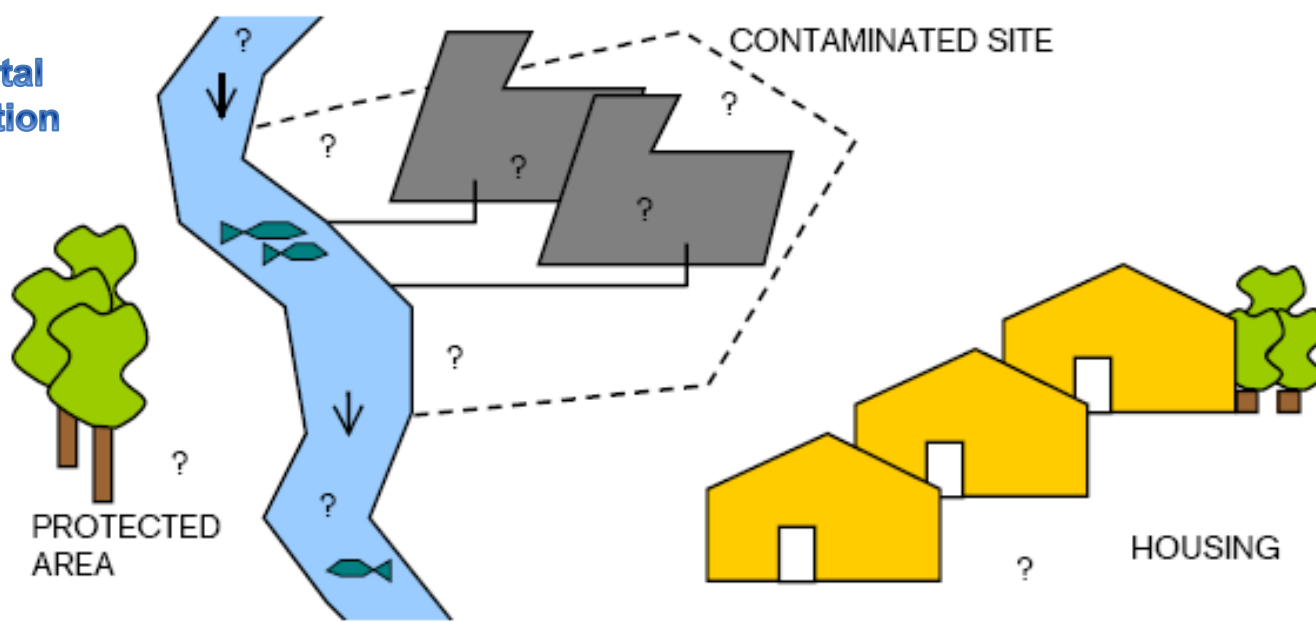


“System Sketch”



Suggestions:

- Make a cartoon-like sketch to show the main features.
- List all of the variable you think are important in this system
 - Reduce the list if possible for a simple first model
 - Detail can be added later
- Complement with a list a set of definitions, assumptions, simplifications and other notes.



FACTORS:

ISSUES

Site History

History of the industrial activity on site.

Contaminants

Contaminants present, properties, toxicity, amounts.

Exposure to humans

Land-use, accessibility to site, transport of contaminants.

Exposure to eco-systems

Recipients, vulnerable area.

Geology

Geological history, stratigraphy, soil material, anthropogenic activities.

Hydrology

Precipitation and evaporation, land surface and infiltration.

Hydrogeology

Geological history, transport conditions, anthropogenic activities, e.g. pipes and drains.

Physical boundaries

Geological units, hydrogeological boundaries, man-made boundaries.

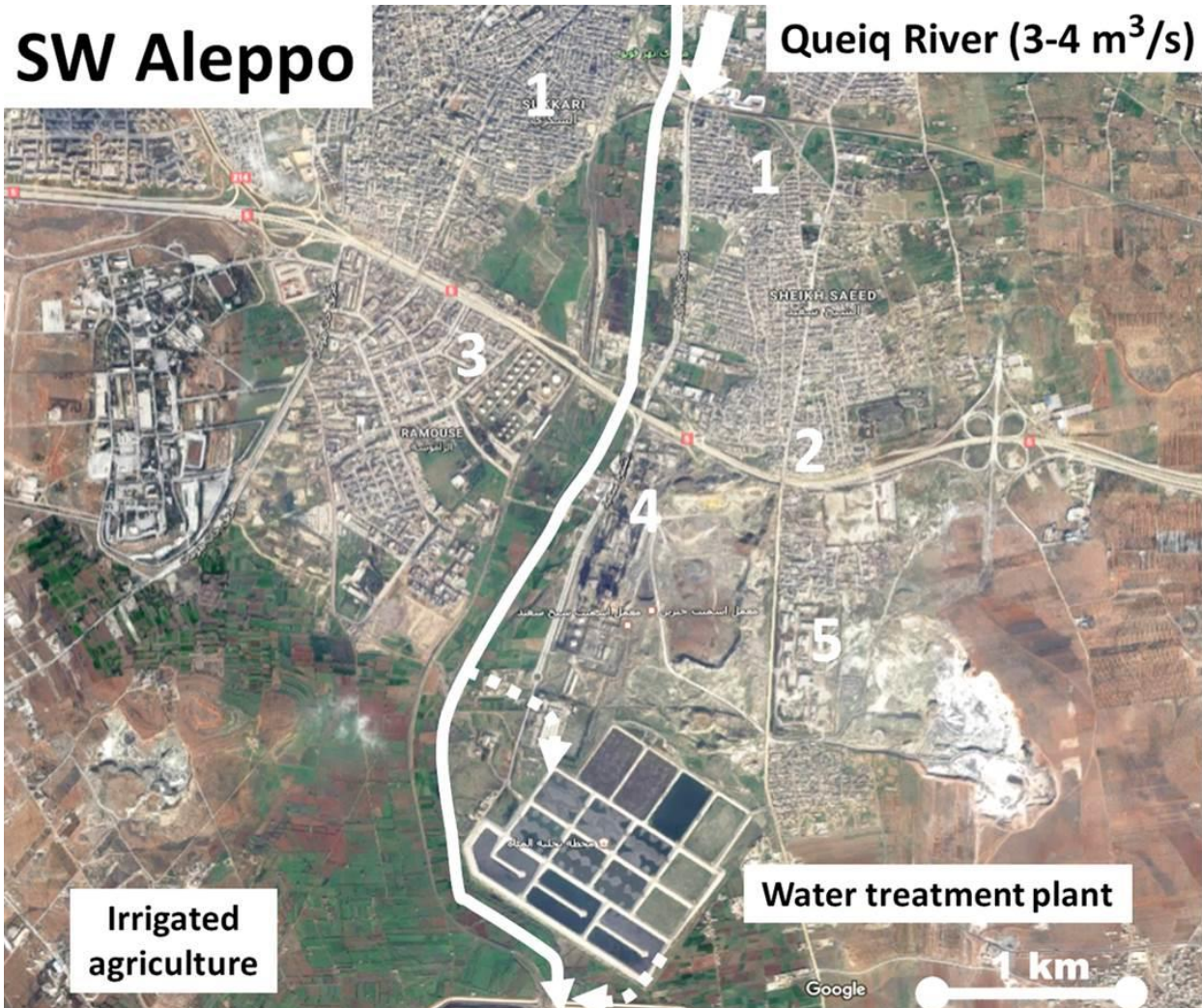
Administrative boundaries

Landowner, environmental legislation, responsibility.

Time

Will the conditions above change? Possible degradation of contaminants.

System Sketch Examples



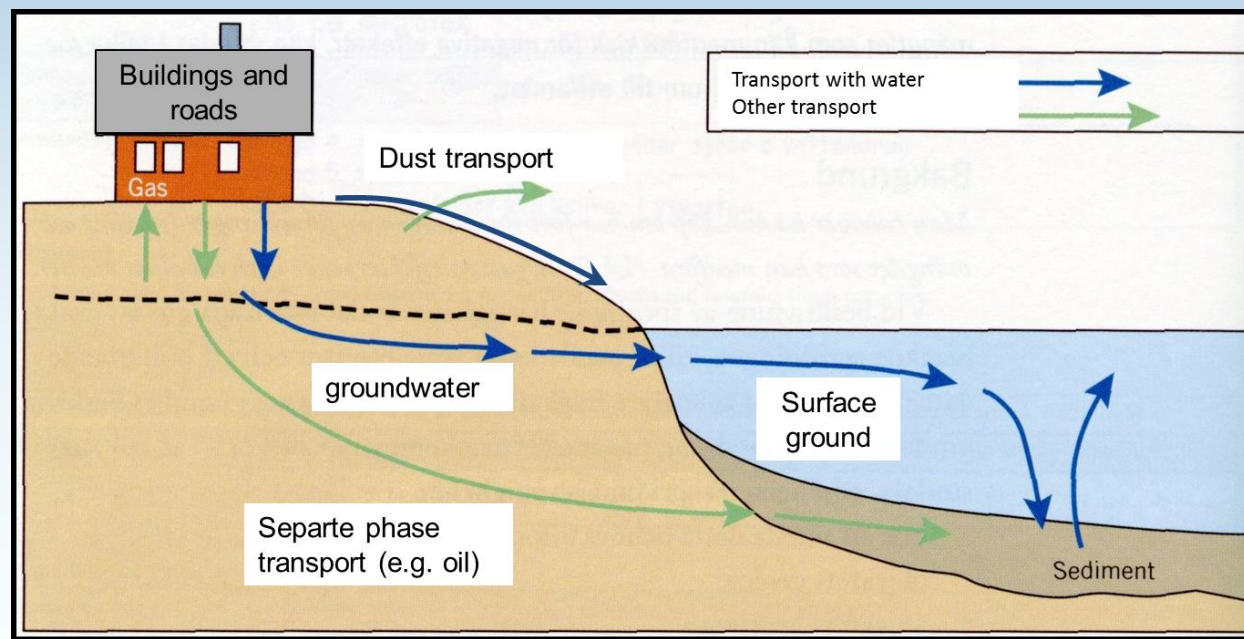
POLLUTION SOURCES

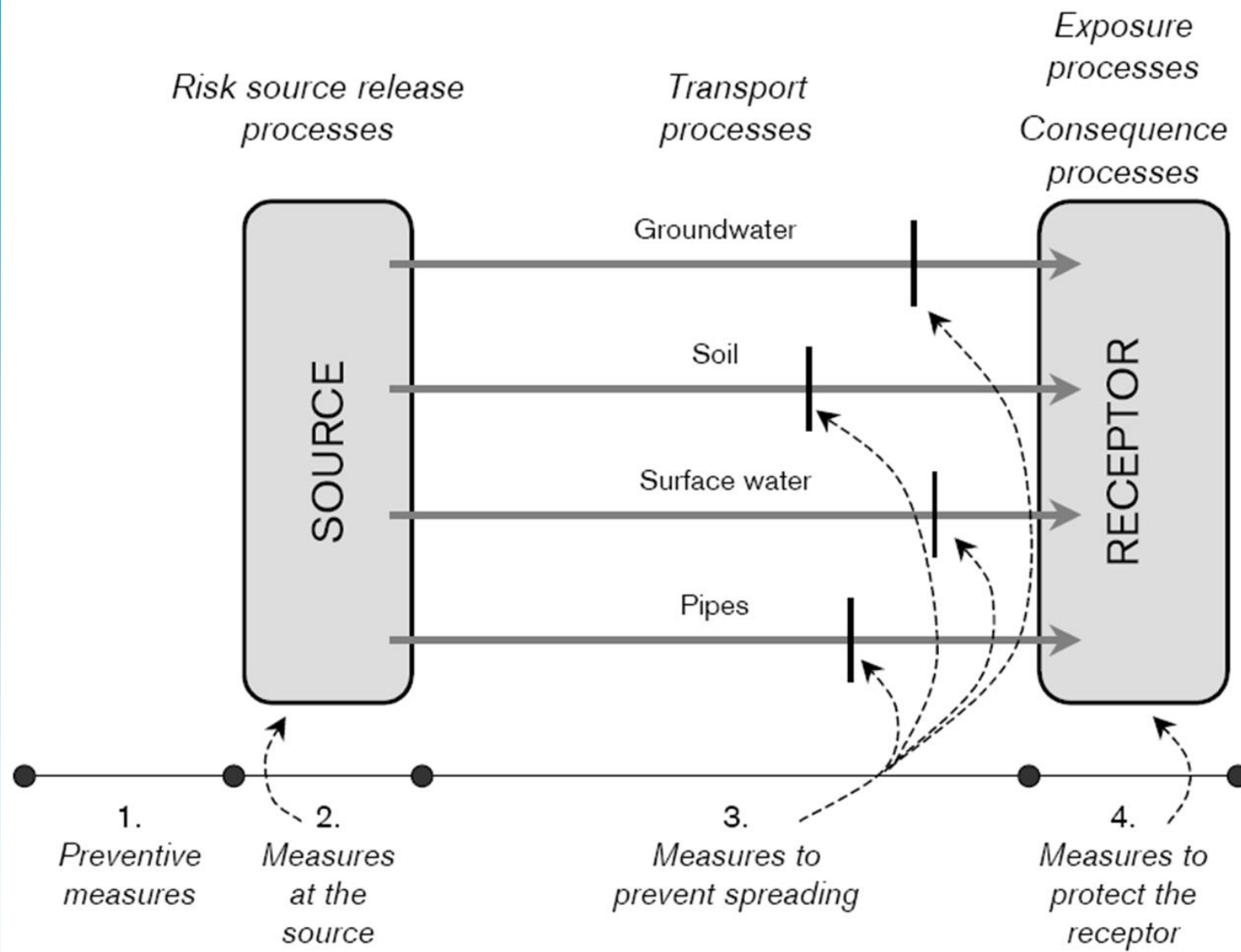
- 1) Urban runoff
- 2) Oil storage tanks
- 3) Cement plant
- 4) Urban sewage
- 5) Leather tanning factory



Predicting sediment pollution trends along a Gothenburg stream

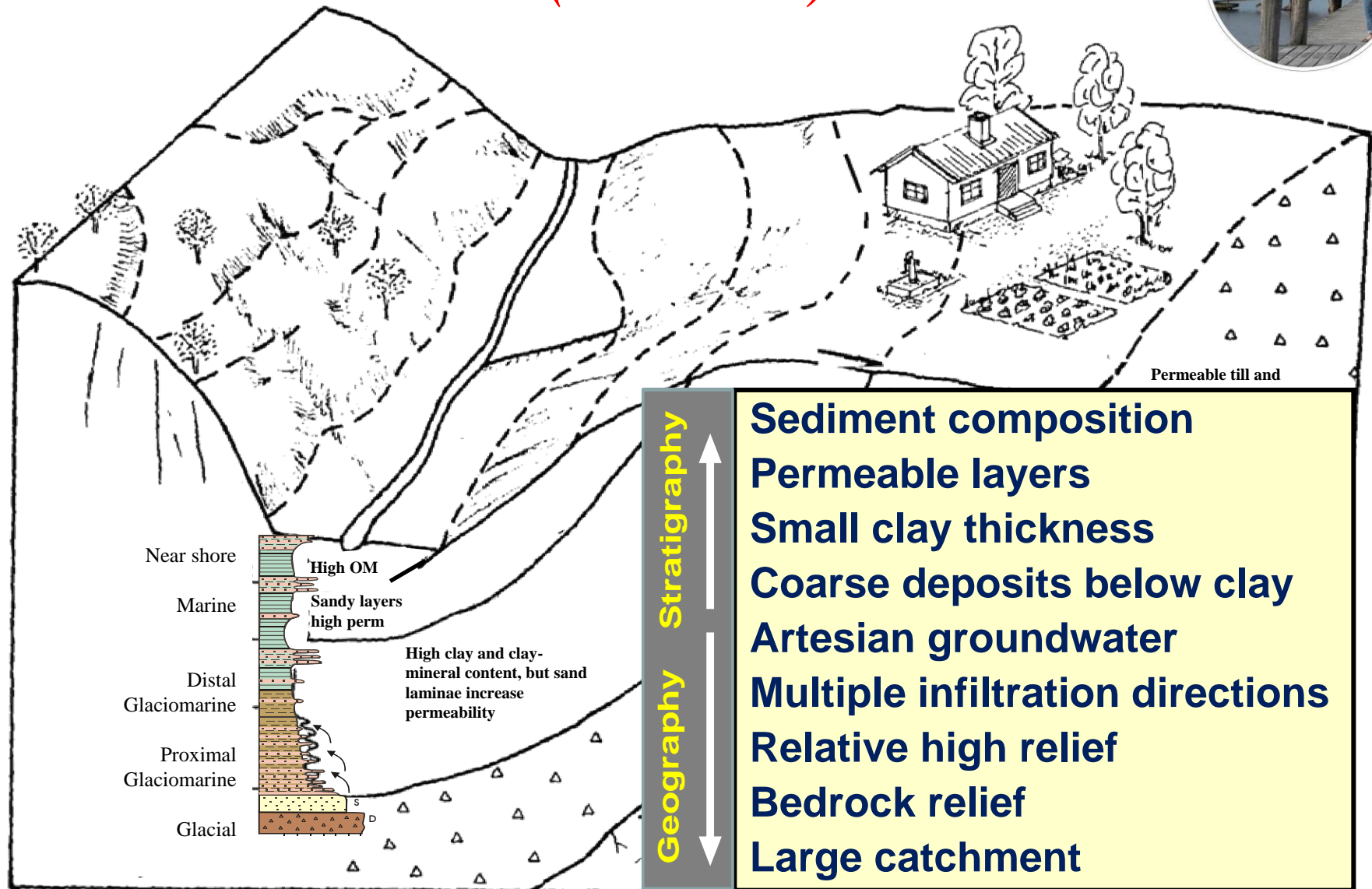
Clear definitions will benefit all steps of the analysis





What is the analysis to be used for?

“Environmental Sketch” relative to Landslide Risks (SW Sweden)





Hourglass structure:

moving from
general

to specific

to general



Introduction

Methods

Results

Discussion

PLATFORM paper published in connection with the 2021 workshops:

A methodology manual for conceptual modeling to aid multidisciplinary and international project initiation.

Tools for project scoping: Conceptual modeling of stakeholders, activities and goals.

The Geopark concept and landscape sustainability, case study in Bohuslän, Sweden.

Geopark comparisons and functional modeling.

Applications of multi-criteria evaluation to investigate the potential of the combined Volga Energy cascade.

Multi criteria evaluation of projects to reduce algal blooms in the Volga River reservoirs.

Multi-criteria evaluation of a possible geopark at the confluence of the Oka and Volga Rivers.

Multi-criteria evaluation of the Volga Energy Cascade.

Remote assessment of sustainable groundwater resources using karezes (qanats), north of Kandahar, Afghanistan.

Potential applications of modern GIS technology in Geopark assessments.



Case-Study Groups

1. Landscape Perspectives

(Milda)

- Irprin River Flooding
- Geopark/Wetlands Reserve
- Socioeconomic factors

2. Water Resources

(Ahmed)

- Source to Recipient modeling
- Supply and Pollution Threats

3. Agr. & Urban Pollution

(Lennart)

- Agricultural pollution
- Urban pollution

Later model applications might be to evaluate the changing conditions (scenarios) with:

War

Reconstruction

Climate Change (e.g. 30 years)



Group planning

- **Today**

- Continue discussion of the “system”
- Decide on how to illustrate the system
- Decide on an extra meeting if necessary for making the “sketch” or adding details

- **Thursday**

- Presentation of the group and each member for everyone
- Present the the case study “sketch” and discuss this with everyone