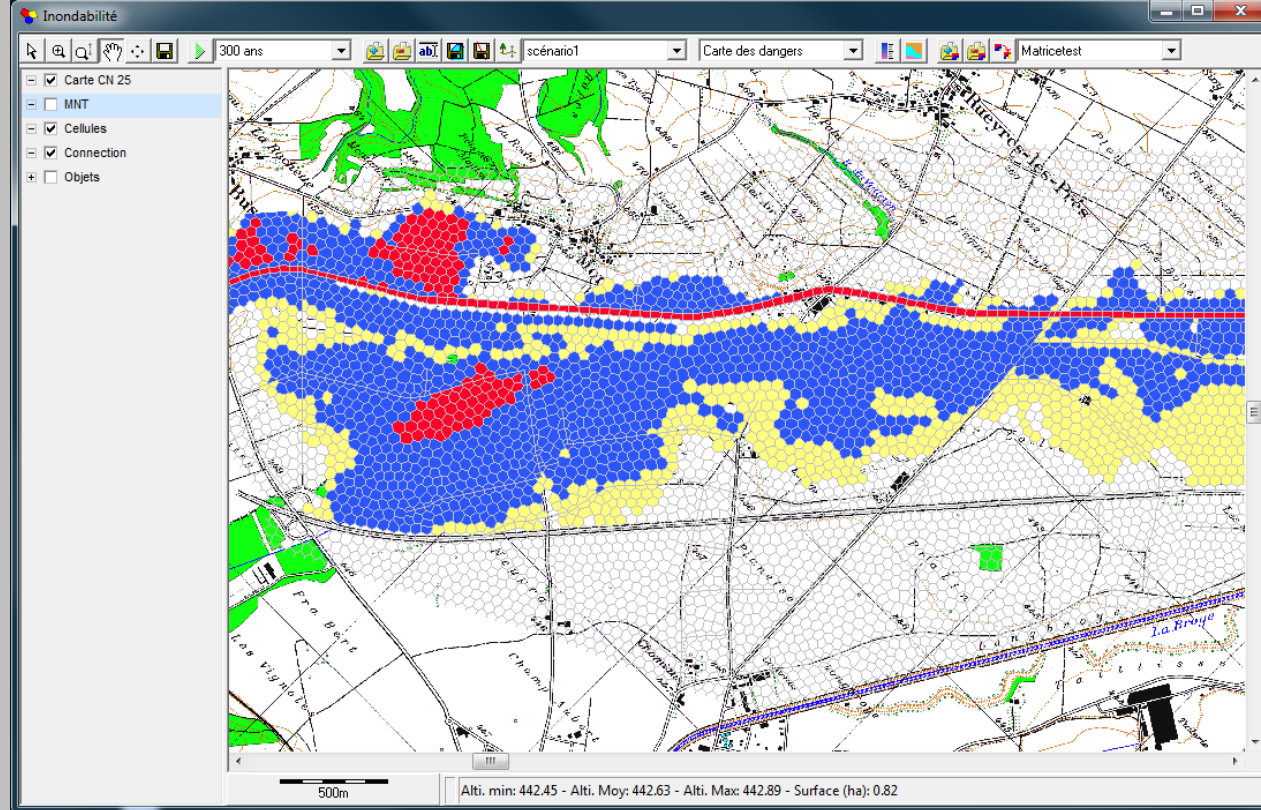


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Team Jabo



Swiss "danger" maps for floods

Exercice *Petite-Glâne*

CHANGES

Barcelonette 2013

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Exercice *Petite Glâne*

CONTEXT

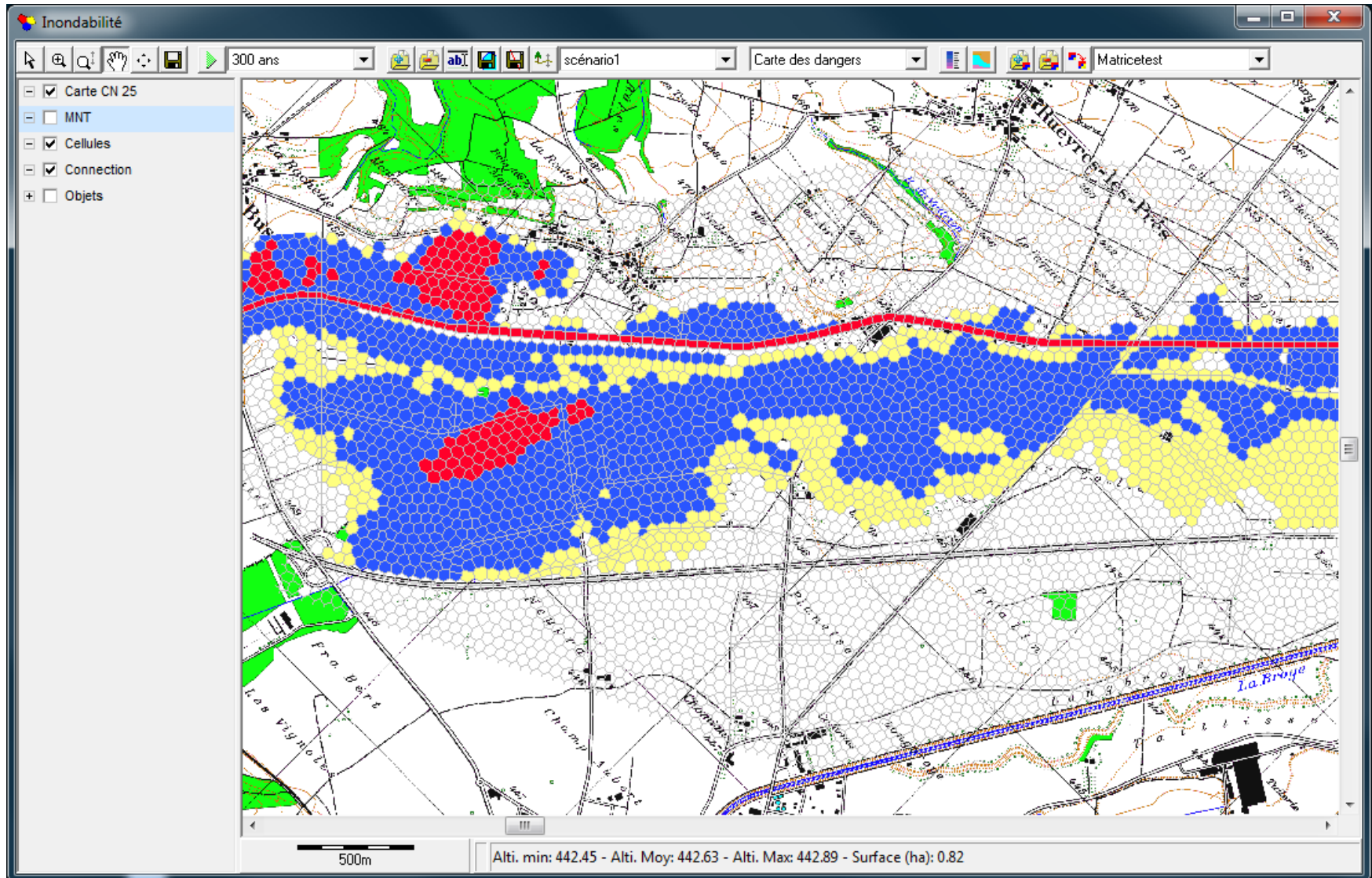
The *Petite Glâne* river regularly floods the plain of *Broye* on the Swiss plateau. Because of a new motorway, this region is growing fast (mostly new industries, but also houses and roads, etc. A military airport has plans to develop and become civilian).

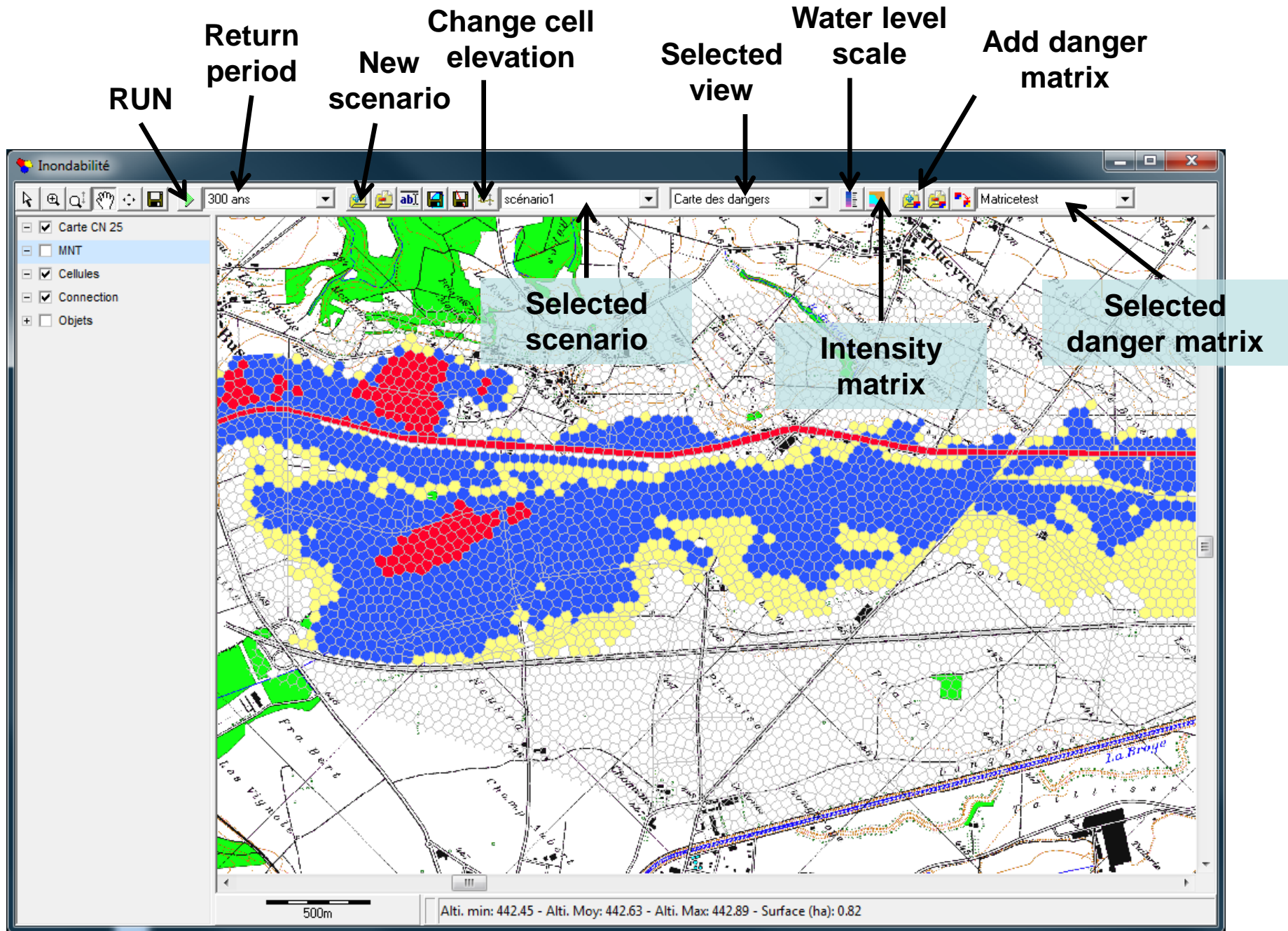
Your job is to draw «danger» maps for floods according to the Swiss regulations and to propose mitigation measures.

Exercice *Petite Glâne*



Software: *Inondabilité* (by R. Metzger)





Exercice *Petite Glâne*

DATA (as shapefiles)

- Topographical map 1:25'000 (CN25) and DEM lidar (MNT)
- A mesh of cells with the hydraulic state (water level) and one with connections between cells (transfer)
- The discharge scenarios corresponding to return period of 30, 100 and 300 years (with profiles cross the river)
- Object at risk that should be protected in priority

MODEL

- The hydraulic model is *VERTIGE* and you start it by double-clicking on:

inondabilité.exe

- Initial configuration is in `..\projet\ProjetBase.ver` (no need to modify it)
- Directories `..\projet\Q30ans`, `Q100ans`, `Q300ans` contain the time series used for the hydraulic processing.

Exercice *Petite Glâne*

The model is able :

- to estimate the water level in each cell for different scenarios
- to calculate and draw flood intensity maps
- to calculate and draw flood danger maps
- to graphically change the elevation of some cells in order to simulate mitigation measures effects

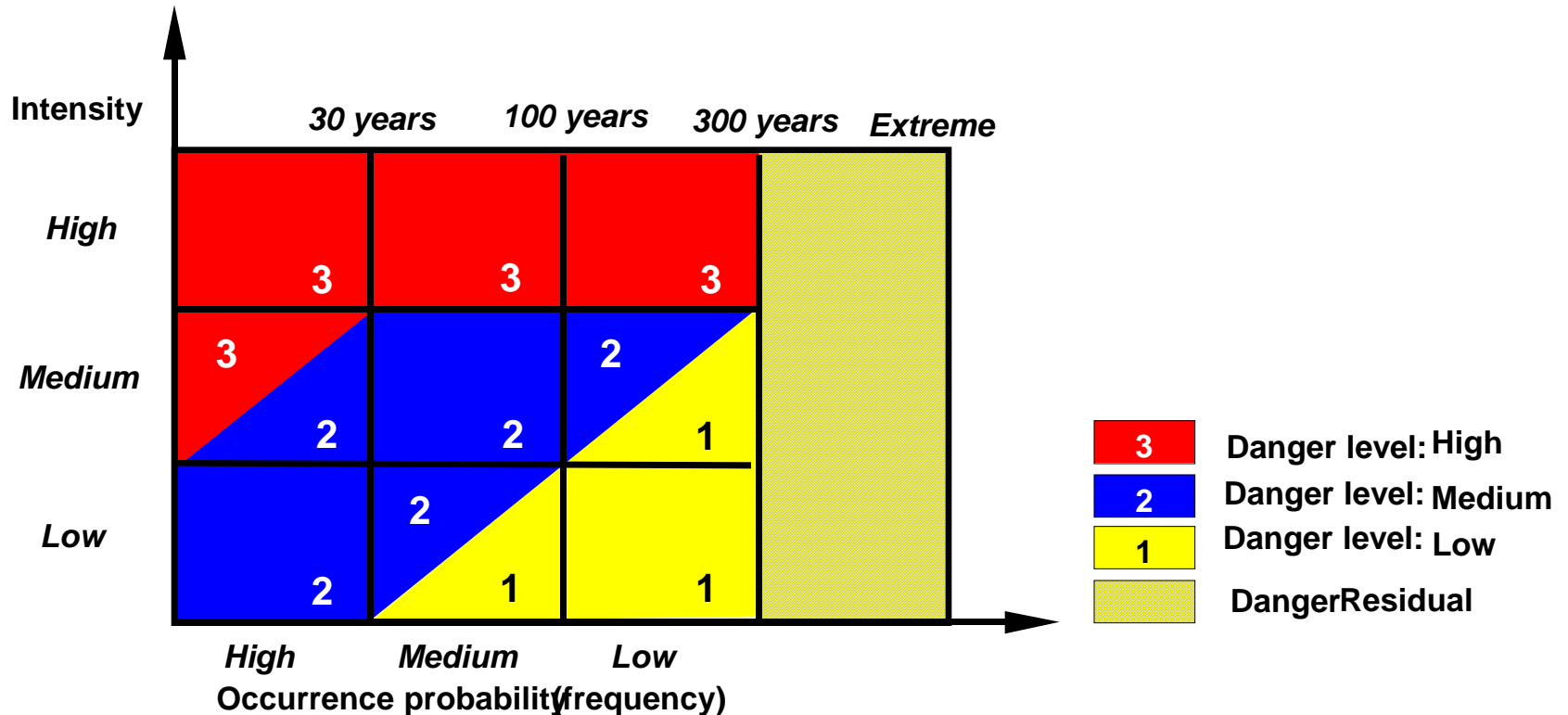
All the user's data are saved in \UsrData.

Exercice *Petite Glâne*

TO DO

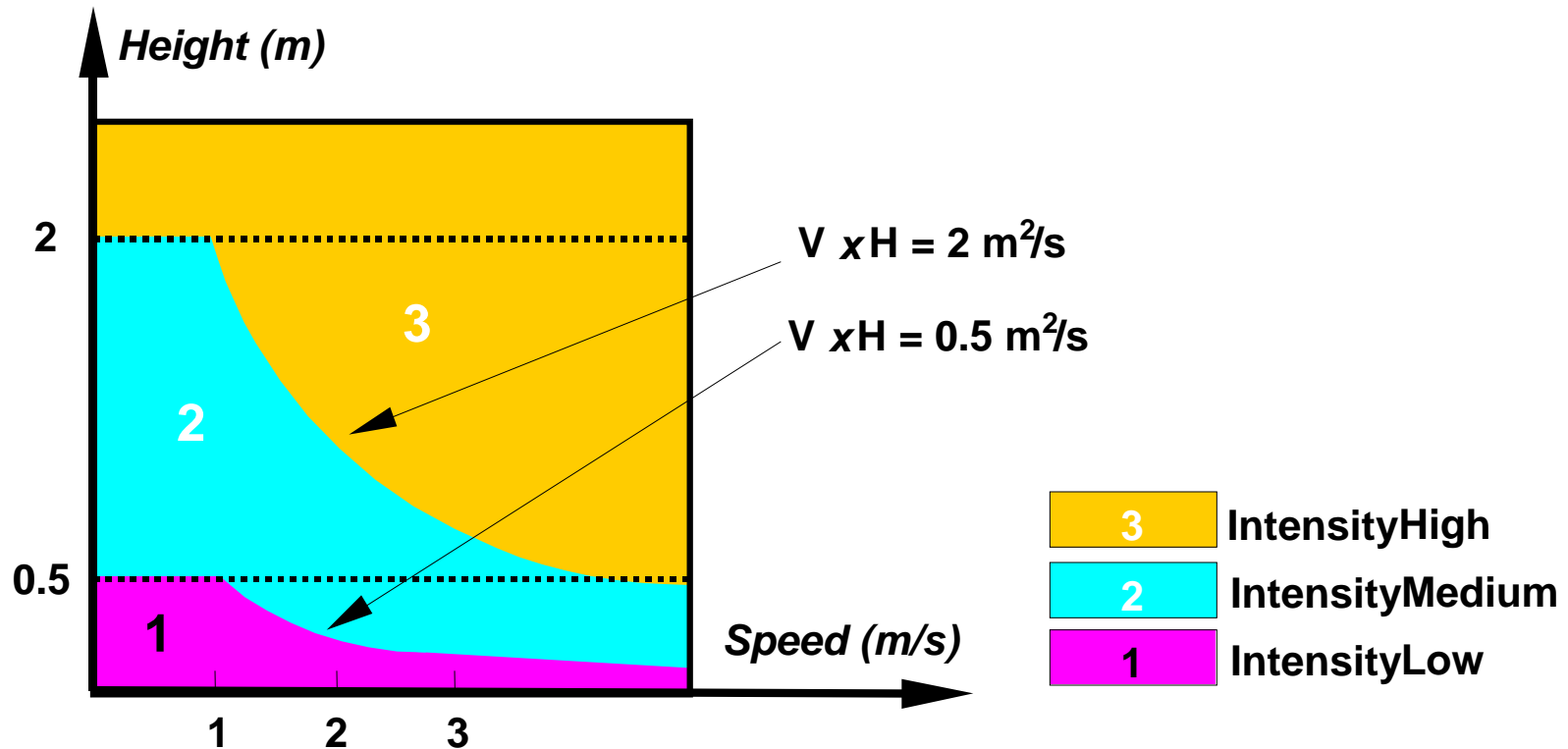
1. **Draw a danger map for the present situation (scenario 1).** In order to do it, you must define intensities, draw intensities maps for the 30, 100 and 300 y return periods. Combine then in a danger map.
2. Select the object you want to protect and justify your choices.
3. Identify the weaknesses and lacks of protection measures of the present situation.
4. Propose at least 2 different scenarios to reduce the risk.
5. Draw the danger maps corresponding to these scenarios.
6. Analyse the effects on the objects you want to protect, and the rest of the area.
7. Make land planning recommendations for the future of the area

SWISS recommendations for Danger



Matrix Intensity-Fréquency (from a report of Lance 1997)

Swiss recommendations for flood intensities



Intensity levels (from Lance 1997, Bassin Versant de la Venoge)

Proposition of protection goals to objects

Categories	Surface objects						Linear objects			Point Objects		Protection goals (*)		
	Natural surfaces			Built surface			Traffic		Distribution networks	Pylons	Isolated buildings	Return period (years)		
	Agriculture (in general)	Forest	Green areas	Dwelling	Socio-economic	Industrial	Roads	Railways				1 to 30	30 to 100	100 to 300
A	Fields Meadow	Un-exploited forest	Natural state terrain				Alpine path (pedestrian, ski)					3	3	3
B	Pasture Cultivation	Exploited forest					Trekking path, forest road					2	3	3
C	Vineyards Rotation fields (for crops)	Protective forest					Municipality roads		Electric air cables, surface and underground pipes, of municipal level	For electric cables of municipal importance	Barn	2	2	3
D			Parks	Dwellings settlement (low density)			County roads	Single lane	Electric air cables, surface and underground pipes, of county level	For electric cables of county importance	Isolated dwelling place, Cowshed	1	1	2
E				Dwellings settlement (medium density)	Leisure area Sport activities		National roads	Double lane	Téléskis Téléphériques Electric air cables, surface and underground pipes, of national level	For electric cables of national importance		0	1	2
F				Town, Dwellings settlement (high density or high value)	Economic activity zones (offices, ...) Camping	Industrial zones					Isolated industrial or commercial building,	0	0	1
G	Any object at risk with a particular function in case of emergency (chemical industries, strategic roads, hospitals, ...)											Assessed individually		

(*) Maximum accepted intensity: nil if 0, low if 1, medium if 2, high if 3