

# Exercise 3. Flood hazard assessment using 2D flood propagation model outputs

## ANSWERS



- Open the maps **max\_h\_5y** and **max\_h\_200y** and check the content of the file. Both maps contain the water depth in meters.

### Question 1:

Which map shows the greatest flood extent and water depths; Why?

The map **max\_h\_200y**; This is a very large and rare event with such an enormous amount of water that it will inundate a very large area.

- Close both maps.



- Fill in the following table:

| Map        | Return Period | Annual Probability |
|------------|---------------|--------------------|
| Max_h_5y   | 5 Year        | 0.2                |
| Max_h_10y  | 10 years      | 0.1                |
| Max_h_20y  | 20 years      | 0.05               |
| Max_h_50y  | 50 years      | 0.02               |
| Max_h_100y | 100 years     | 0.01               |
| Max_h_100y | 200 years     | 0.005              |

- Create the map with the annual probability for the flood with the 5 year return period by typing the following statement in the command-line:

**Prob\_5y:=iff(max\_h\_5y>0, xxx, 0)**

Where xxx is the annual probability you calculated in the table.

**Question 2:**

What is the meaning of this ILWIS statement?

Create a new map with the Prob\_5y with the value of the annual probability (0,2) for those parts where the water depth in the map max\_h\_5y is larger than 0 cm and with a value of 0 for the non-flooded areas.

- Repeat this for the other 5 maps and create the maps Prob\_10y, Prob\_20y, Prob\_50y, Prob\_100y and Prob\_200y.



**Question 3a:**

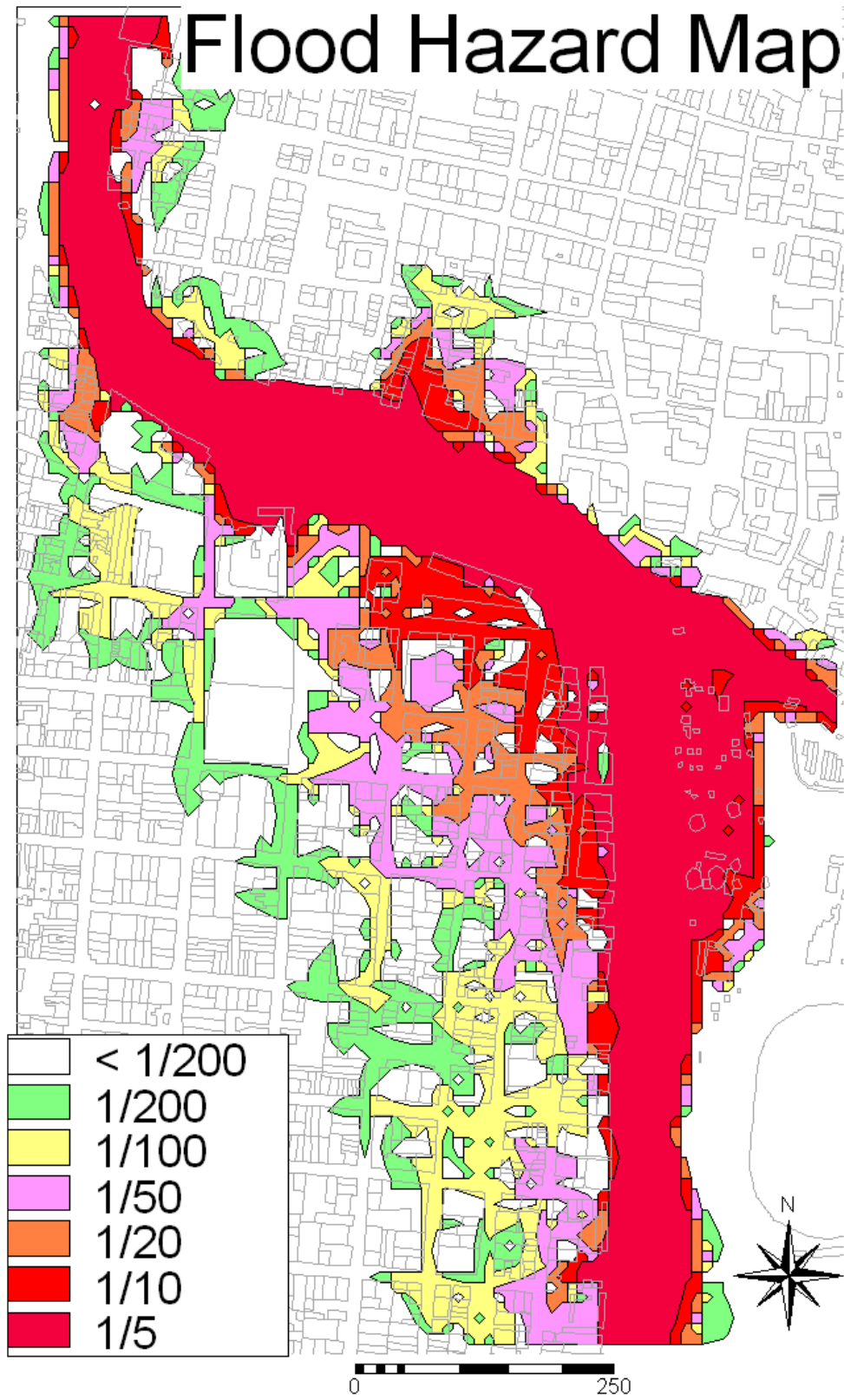
What is the current domain of the hazard map?

Value

**Question 3b:**

Why is it not possible to transform maps with such a domain to vector format?

In a value domain, all pixels can have all kinds of values; A polygon delineates an area with a uniform value. In a value map these do not exist – unless you want to create a polygon for each individual pixel. In order to transform a raster map with value domain to vector format (polygons) one first has to create uniform areas; this is called classification, or in ILWIS terminology, map slicing. The resulting map has a class (group) domain that can be polygonized.



**Deliverables:**      **7 maps:**      **maxh\_cla**  
   **maxc\_cla**  
   **maxi\_cla**  
   **maxr\_cla**  
   **duration\_cla**  
   **tff\_cla**  
   **sediment\_cla**

