NH9.11 - Natural Hazards Education, Communications and Science-Policy-Practice Interface

Teaching Natural Hazards at University level: Integration of ICT, and advanced and classic techniques in classroom and fieldwork.

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We present our experience of learning by doing while integrating ICT, advanced and classic techniques in classroom and fieldwork, to teach Natural Hazards at University.

Objective:

to learn to assess natural hazards based on the example of a particular mountain area

→ to produce a group map and an individual report (learning by doing; Project Based Learning-PBL)

- The learning activities are structured around a mountain valley affected by floods and landslides.
- The working groups (4-5 students) focus on a specific stretch along the valley and adjacent slopes.
- We alternate classroom activities with field work, organized in 3 steps:
    1) Information compilation and preparation of the field work;
    2) field work (3 days); and
    3) GIS analysis: hazardous and exposed areas, + final synthesis.

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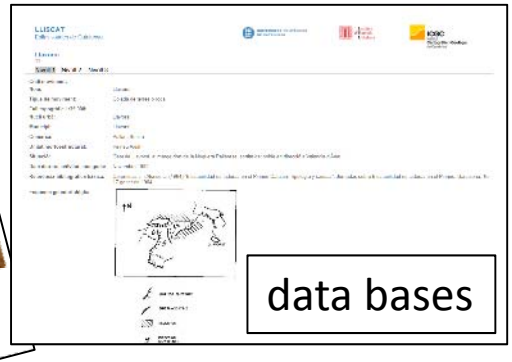
Time

WORK STEPS	SUPPORT	TASK FULFILMENT
1) Information compilation and preparation of the field work:		
a) Information search: basic hazard information of the area: archives, administration and university databases	*Class Dropbox*	Individual
b) classical stereoscopic photointerpretation: • to characterize the geoforms → recent photos • to study the reference flood occurred in 1982 → 1982 ancient aerial photos	*Classical aerial stereoscopy*	Individual
2) field work (3 days):		
c) Presentation of the preliminary observations	*cell phone + PPT + Google Earth*	Small group (4 students)
d) Map legends collective construction: hazard indicators legend	*paper on the wall (as a whiteboard)*	Entire class-group
e) Complementary information	*effects of the 1982 flood video*	Entire class-group
f) Queries	*Class Dropbox*	Individual → Small group
g) Classical stereoscopic photointerpretation (to complete data)	*Classical aerial stereoscopy*	Individual → Small group
h) Mapping of geoforms: as indicators of magnitude and degree of activity	*paper (Din-A3)*	Small group (4 students)
3) GIS analysis considering hazardous and exposed areas, and final synthesis:		
i) GIS exercise: preliminary risk map	*GIS software*	Individual
j) Synthesis class	*Blackboard + PPT*	Entire class-group
k) Report: Natural hazards evaluation in the studied zone	*Written report (paper + PDF)*	Individual

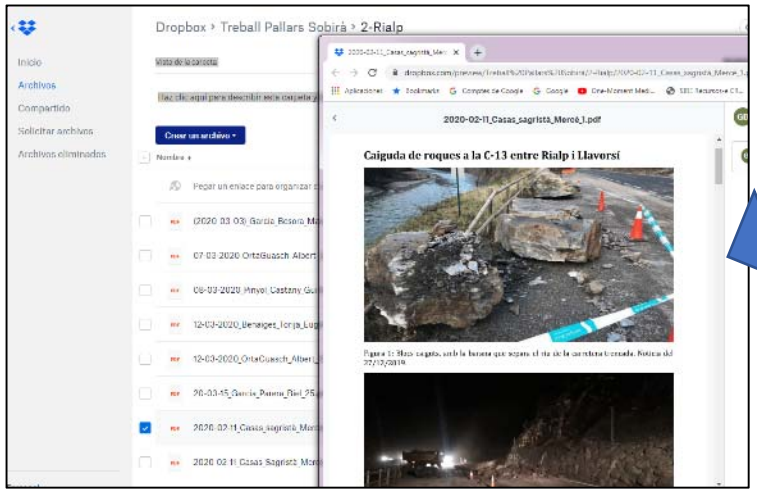
1) Information compilation and preparation of the field work:

a) Information search:

archives



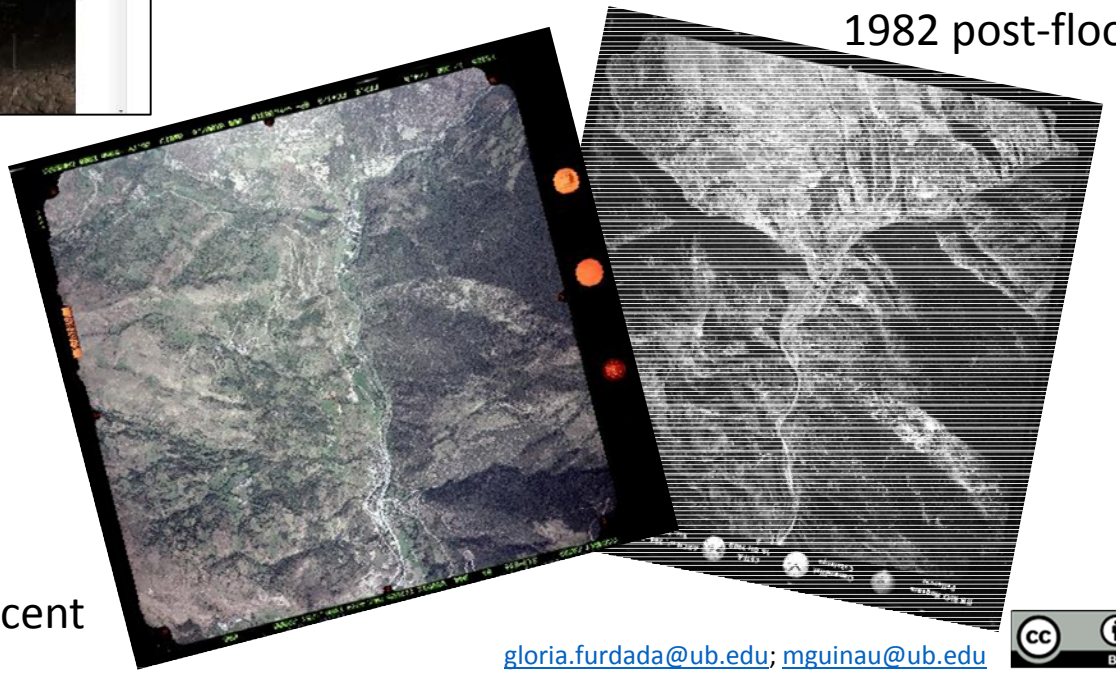
data bases



class dropbox

b) classical stereoscopic photointerpretation:

1982 post-flood



recent

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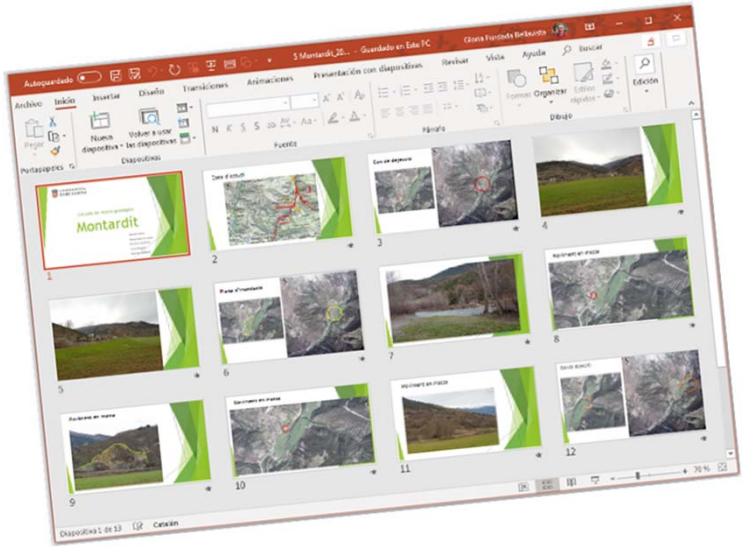
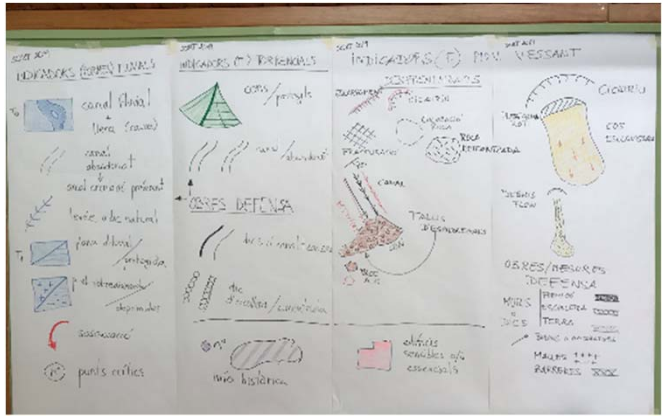
2) field work (3 days):

c) Presentation of the preliminary observations :
groups of 4 students (*observations, cell phone photos, Google Earth images, …*)



d) Map legends collective construction:
hazard indicators legend (*white board*)



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e) Complementary information

f) Queries → through internet: *class dropbox, databases,* etc.

→ through books and reports

e) Classical stereoscopic photointerpretation (to complete data)

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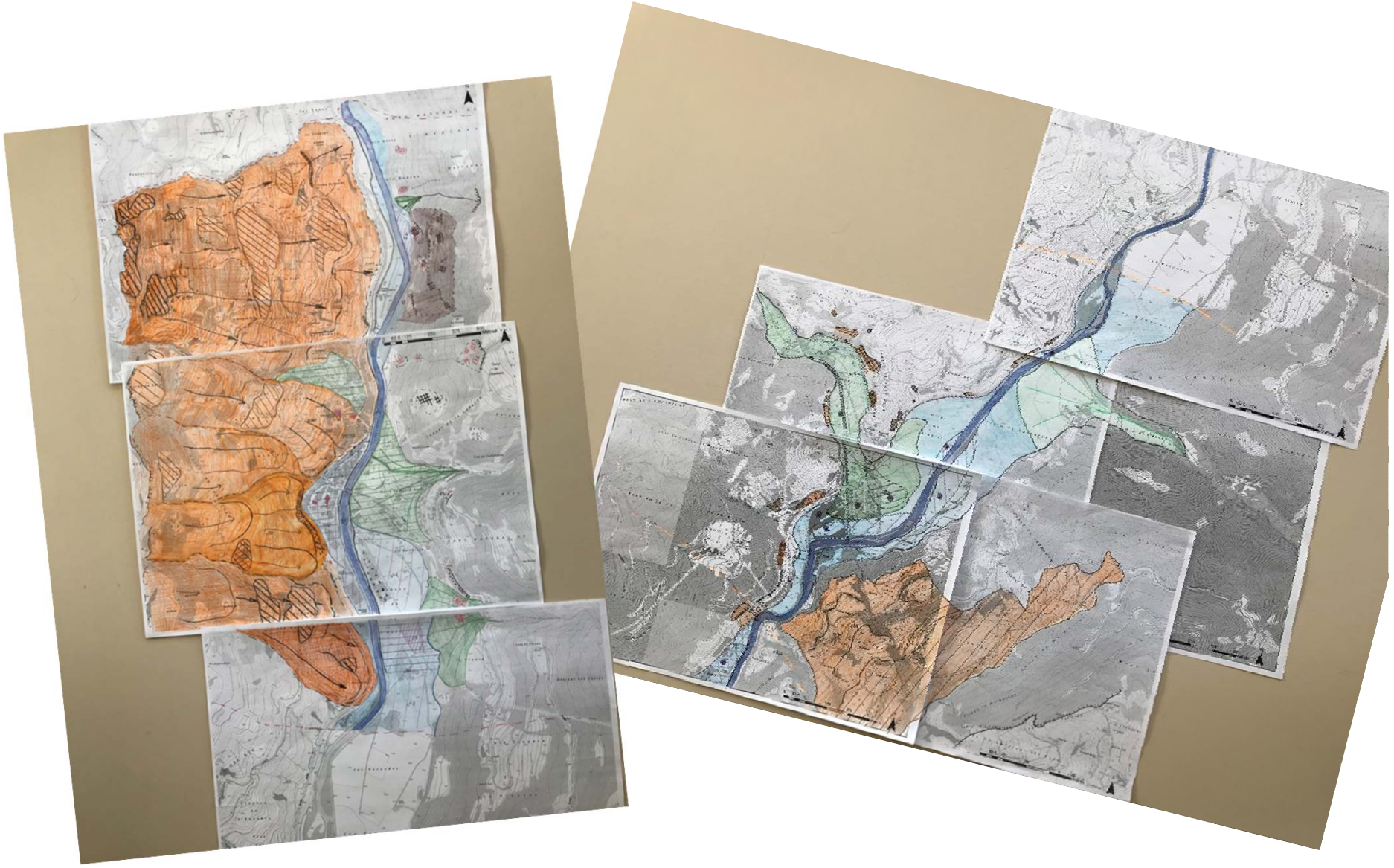
h) Mapping of geoforms: as indicators of magnitude and degree of activity



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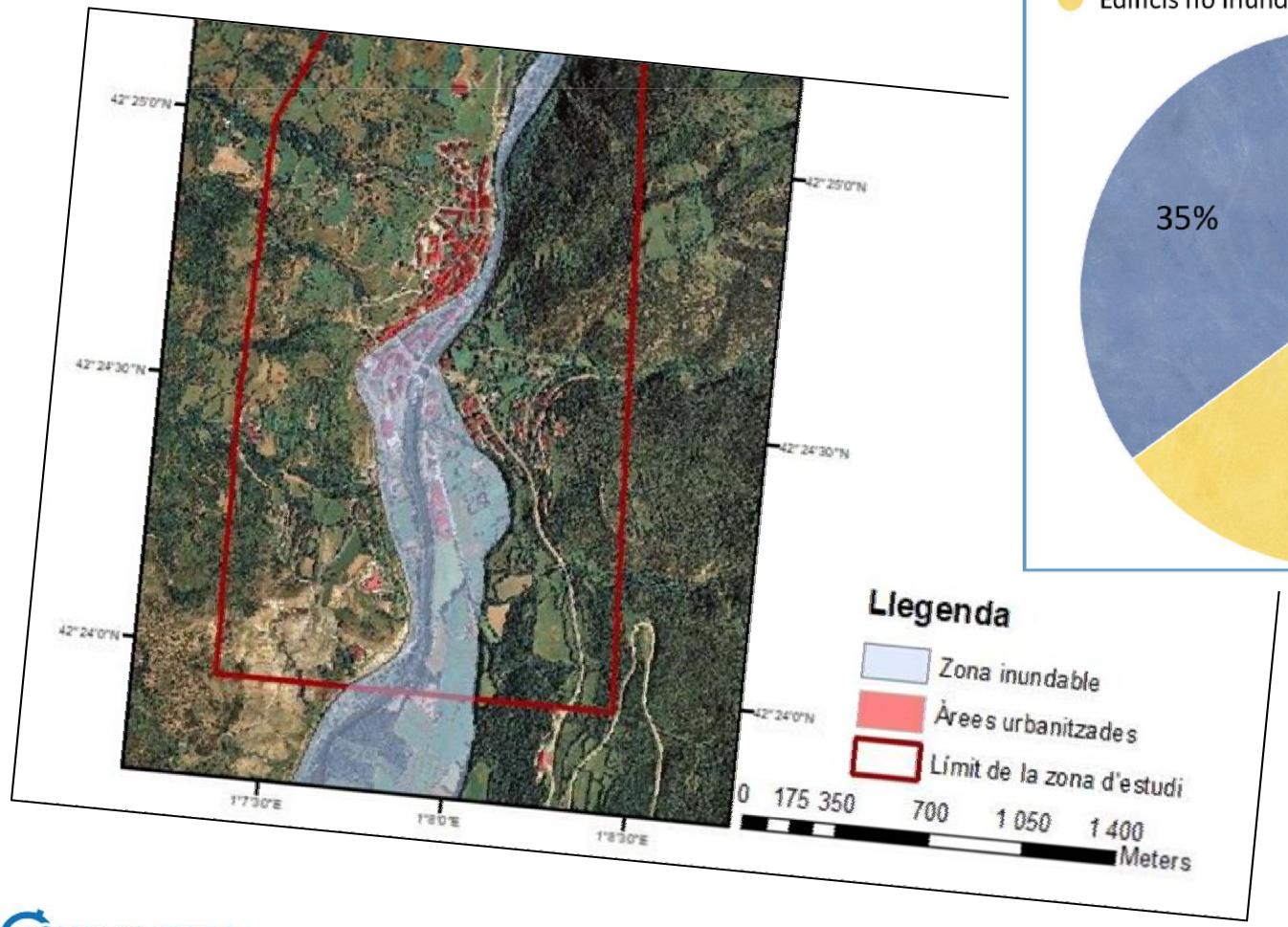
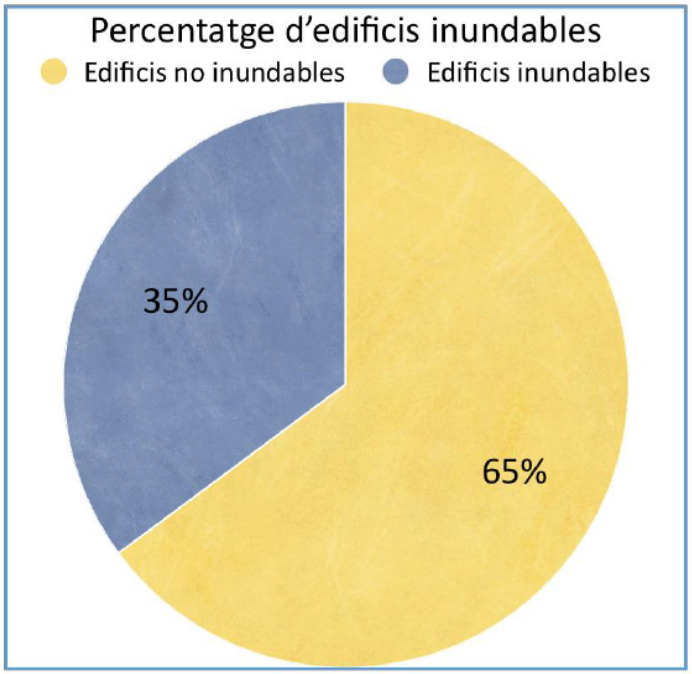
3) GIS analysis considering hazardous and exposed areas, and final synthesis:

i) GIS exercise: preliminary risk map





j) Synthesis class

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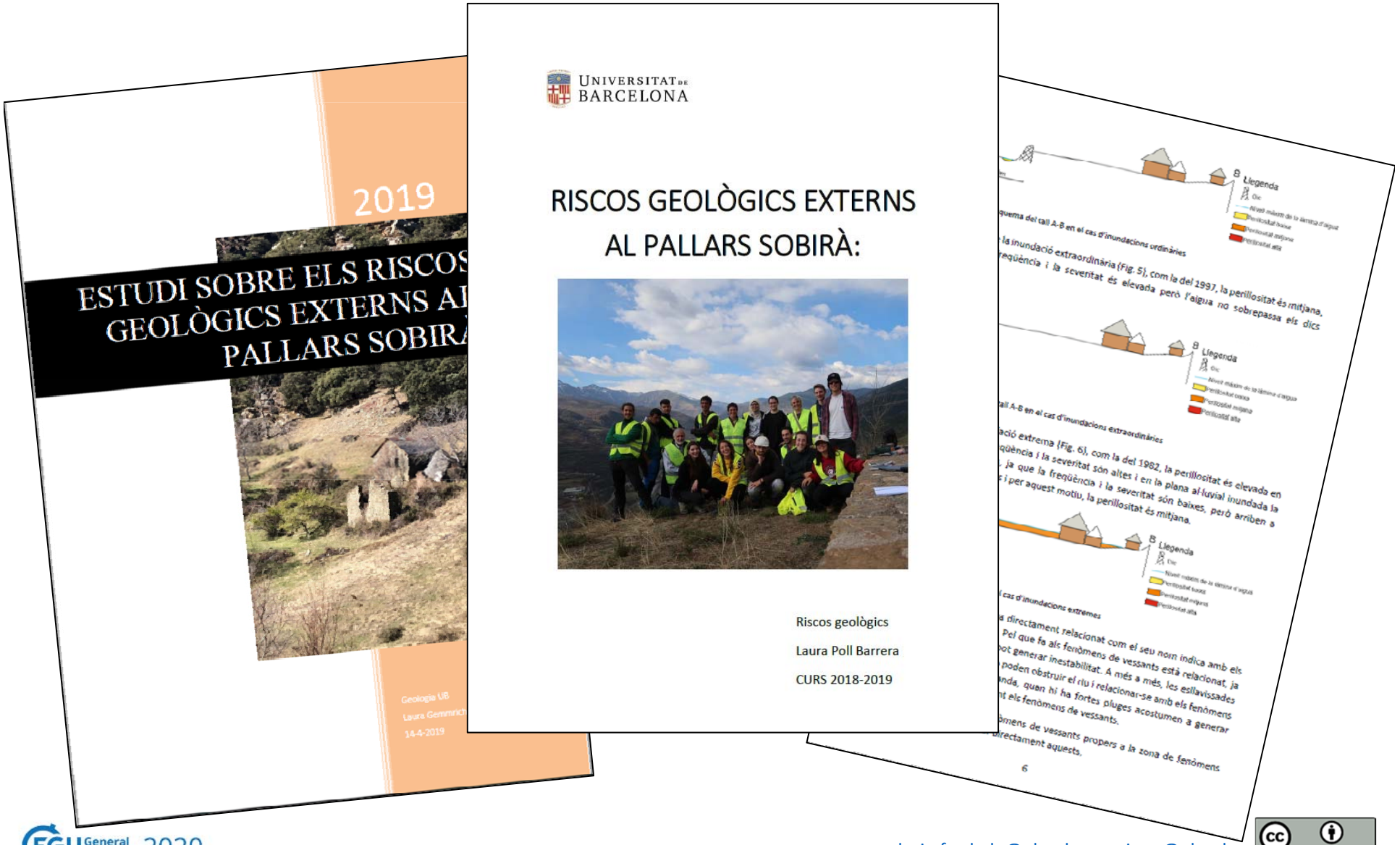
k) Personal report: Natural hazards assessment in the studied zone



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CONCLUSIONS

- Students integrate theoretical knowledge and practical work.
- Students develop group work skills and oral and written expression.
- Students develop the capacity to work with classical and ICT techniques and technology, and to integrate the results.
- Students experience in the field what indicators are needed to perform a good analysis of the magnitude and degree of activity of geological phenomena that can affect a mountain area.
- The knowledge acquired throughout information search and queries, photointerpretation, field work and GIS application is put into practice, in this case for the assessment of geological hazard.
- The work approach as a natural hazards assessment project in a subject of the last course especially motivates the students who feel close their incorporation in a real workplace.

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