

International Workshop on Paleoseismology,
Active Tectonics & Archeoseismology

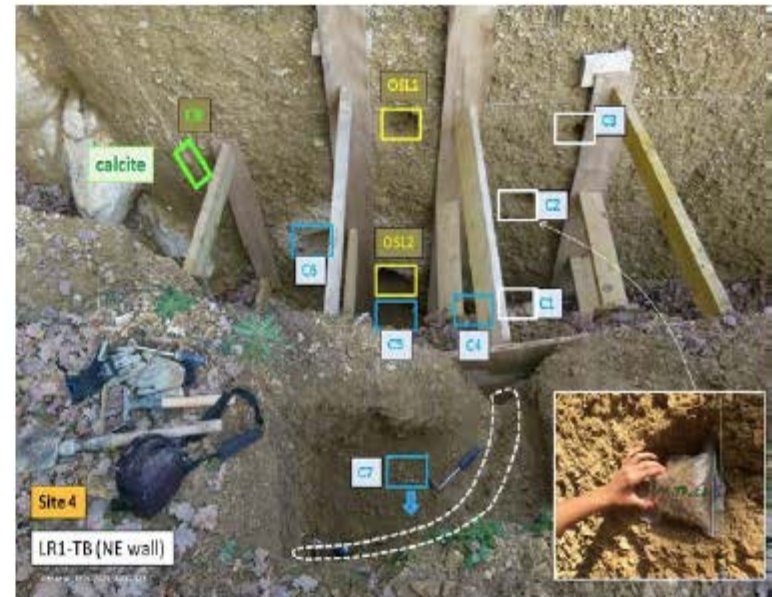


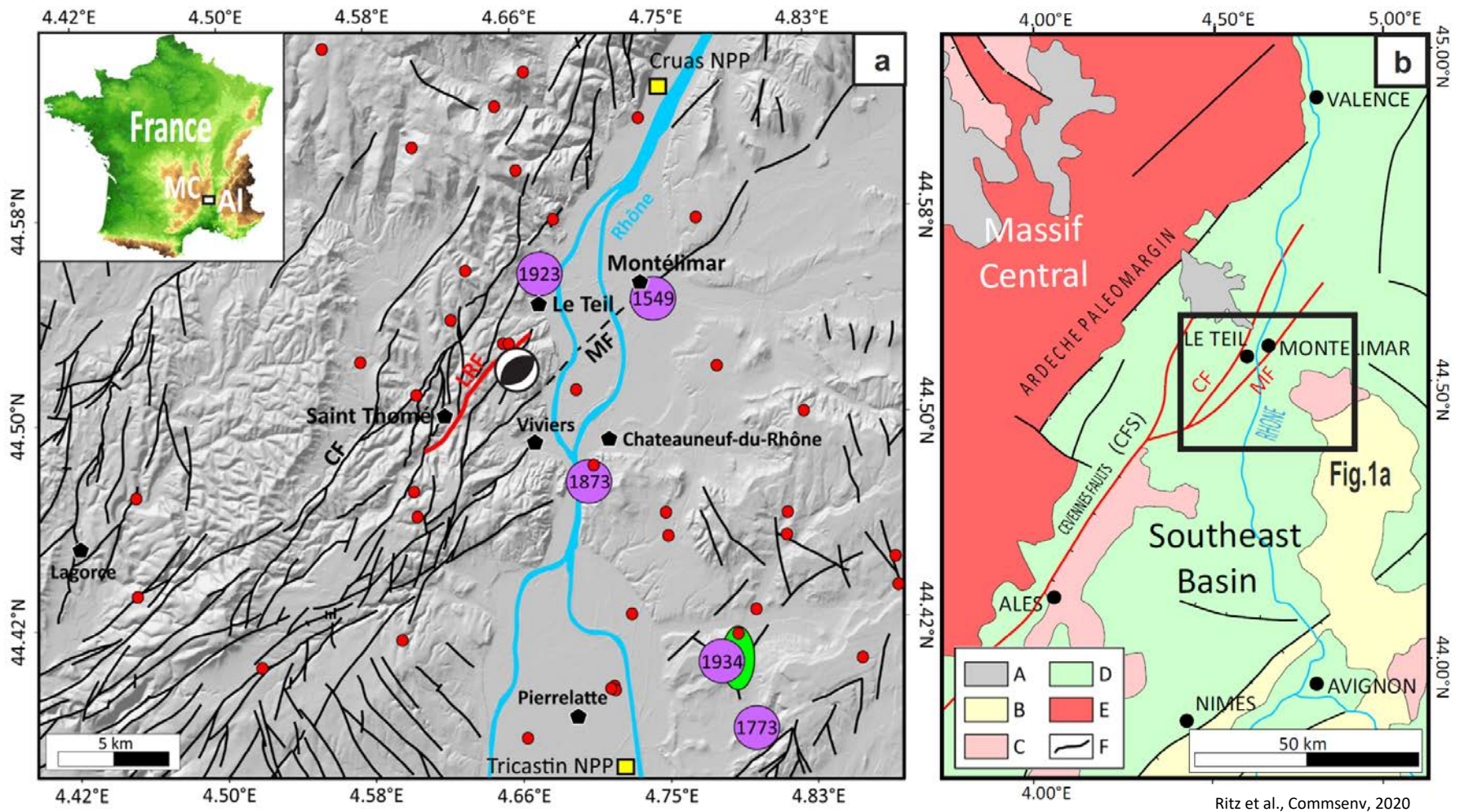
Excursion field book (26 & 30 septembre 2022)

Paleoseismological investigations of the La Rouvière fault, unexpected source of the 11-11-2019, Mw4.9 Le Teil surface rupturing earthquake (Cévennes fault system, France)

J-F Ritz, S. Baize, N. Cathelin, C. Thomasset, M. Riesner, E. Hannouz, M. Ferry, C. Larroque, L. Audin, L. Bollinger,
K. Manchuel, C. Sue M. Rizza, H. Jomard C. Vergnault, P. Arroucau, R. Le Roux-Mallouf

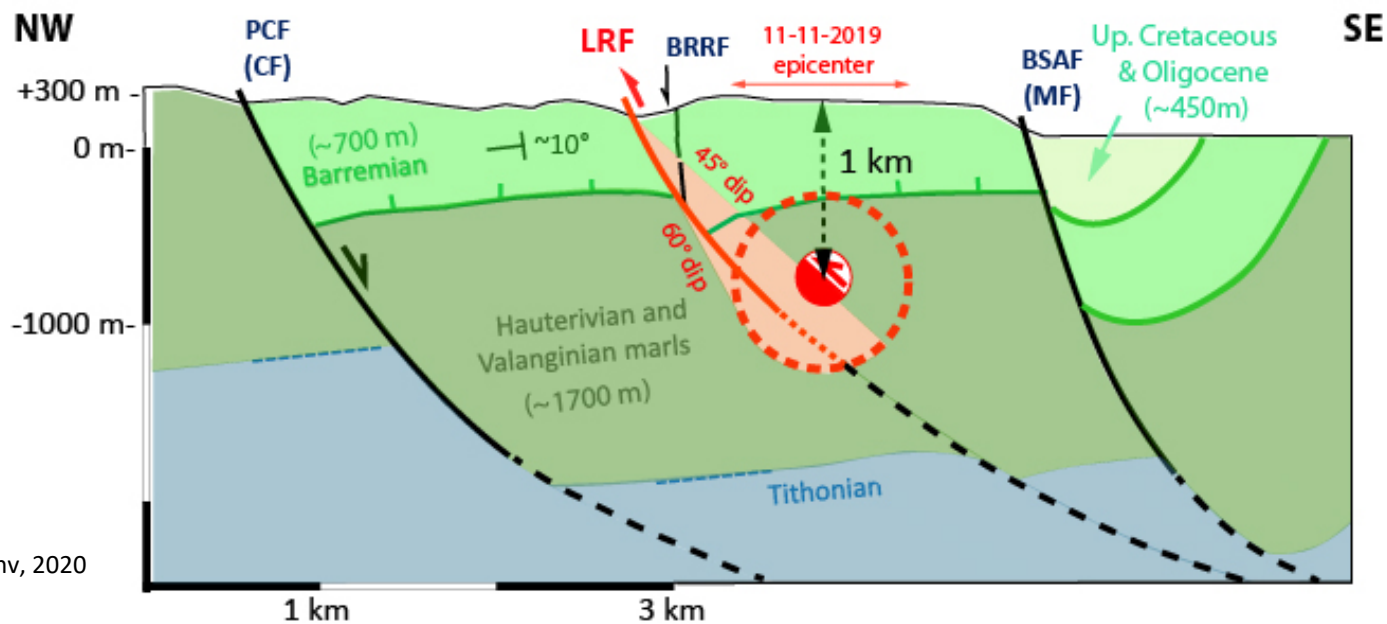
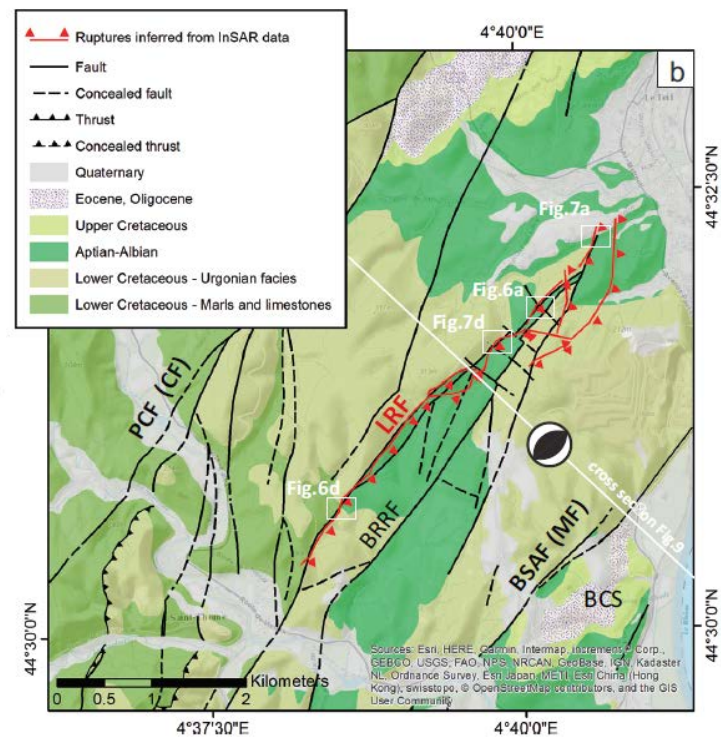
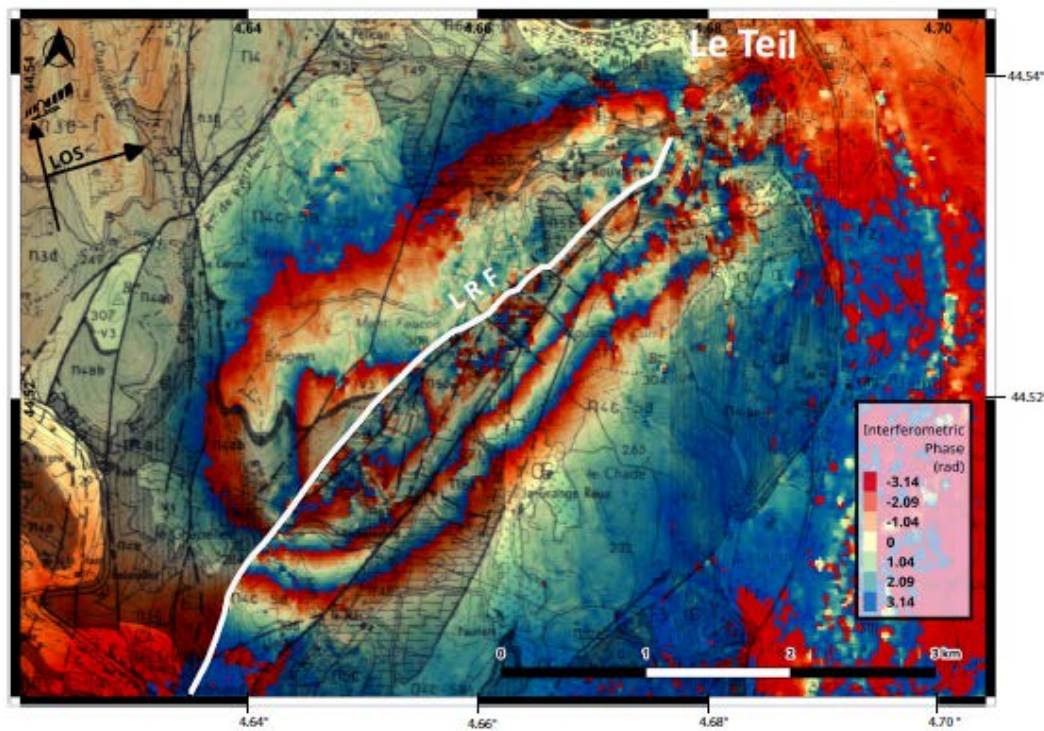
DOI: [10.5281/zenodo.7109758](https://doi.org/10.5281/zenodo.7109758)

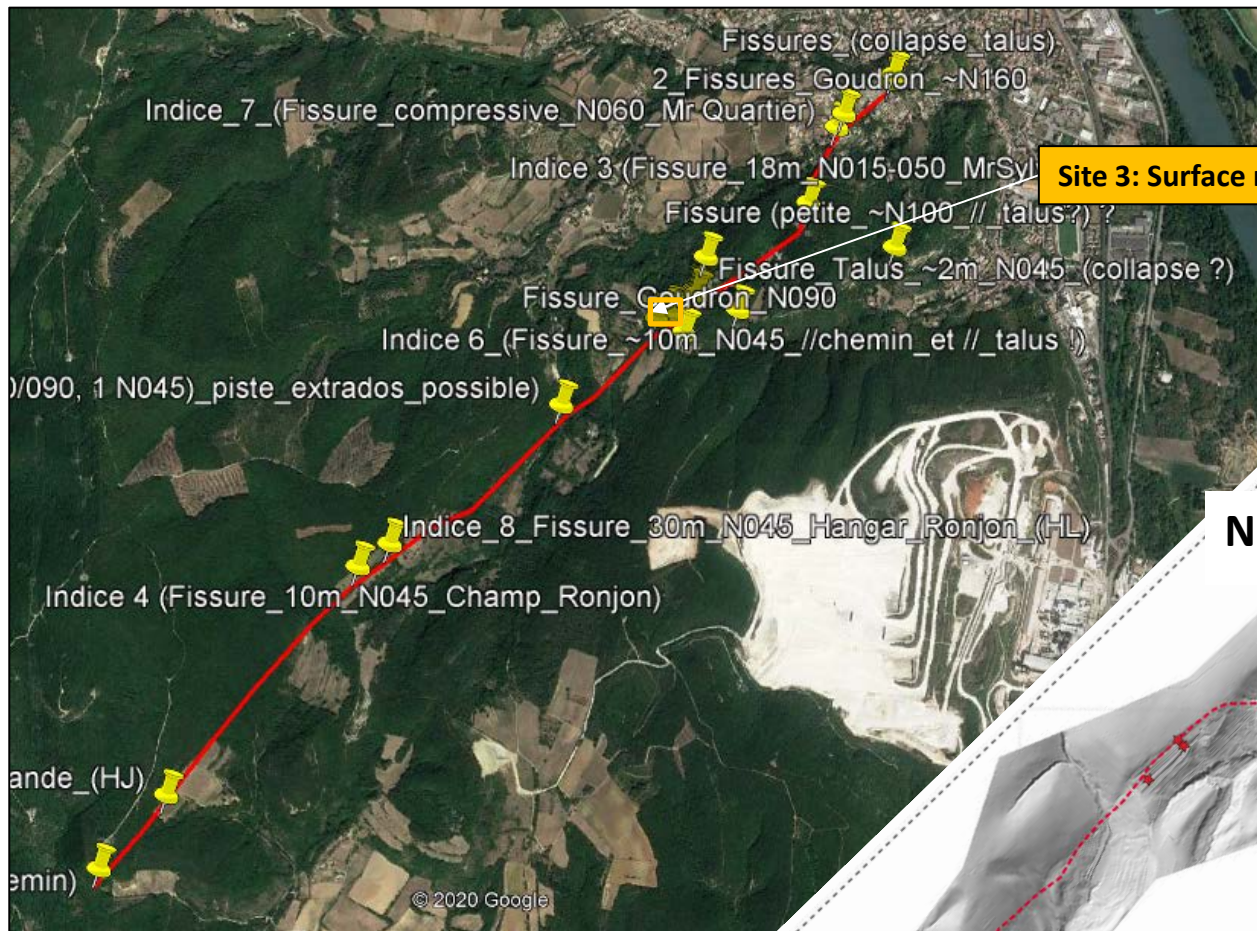




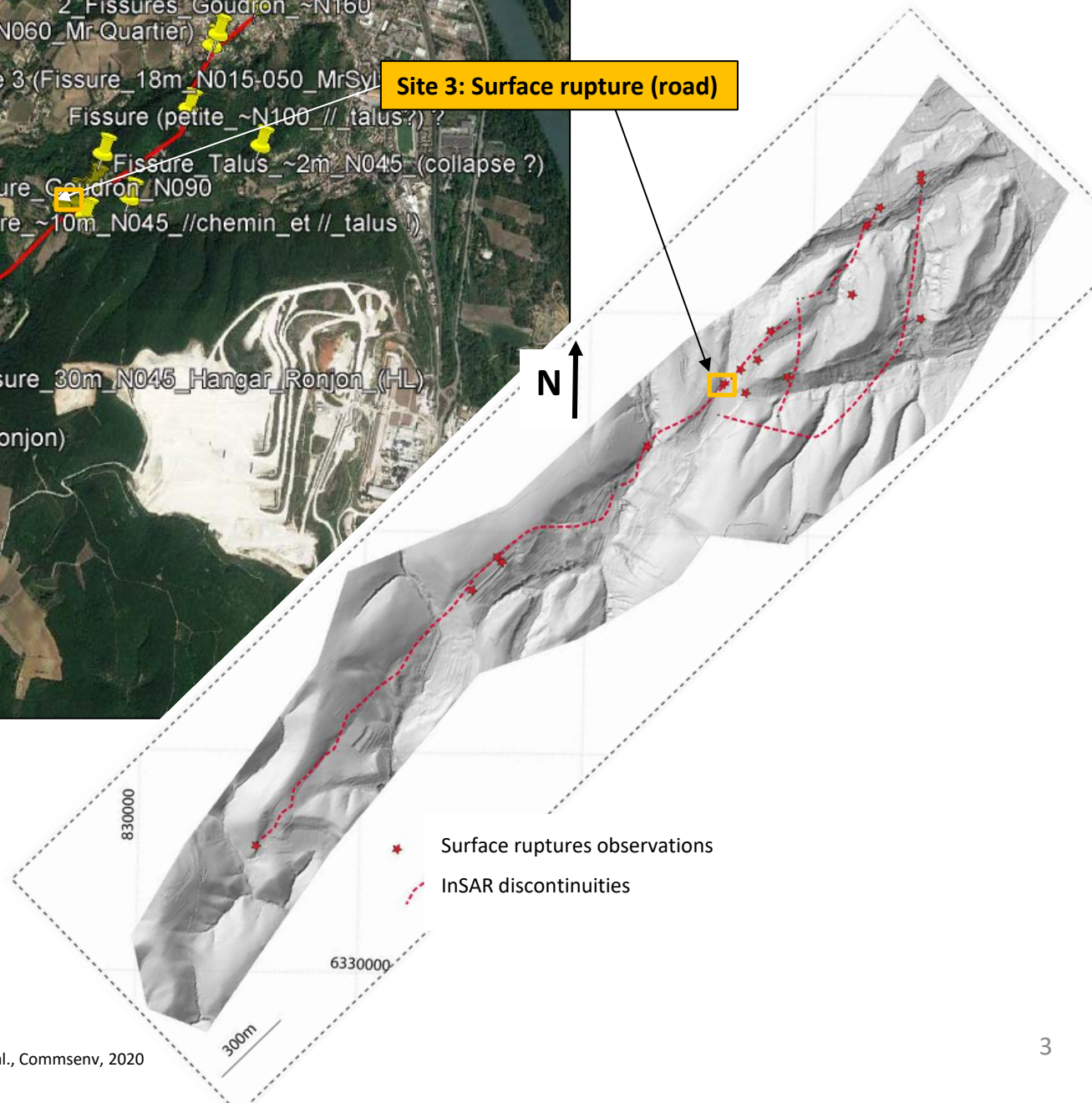
The Rhône River Valley in France, a densely populated area with many industrial facilities including several nuclear power plants, was shaken on November 11th 2019, by the Mw 4.9 Le Teil earthquake. Field, seismological and interferometric synthetic aperture radar observations indicated that the earthquake occurred at a very shallow focal depth on a southeast-dipping reverse-fault. Evidence of surface rupture up to 15 cm uplift of the hanging wall along a northeast-southwest trending discontinuity with a length of about 5 km have documented (Ritz et al., Commsenv (Nature) 2020). Together, these lines of evidence show that the Oligocene La Rouvière fault was reactivated. These observations raise the question of whether displacement from surface rupture represents a hazard in regions with strong tectonic inheritance and very low strain rates.

During this field trip, we will observe some of the 2020 rupture evidences associated with the 2019 Le Teil earthquake, and visit paleoseismological trenches that have been opened along the La Rouvière fault after the earthquake.

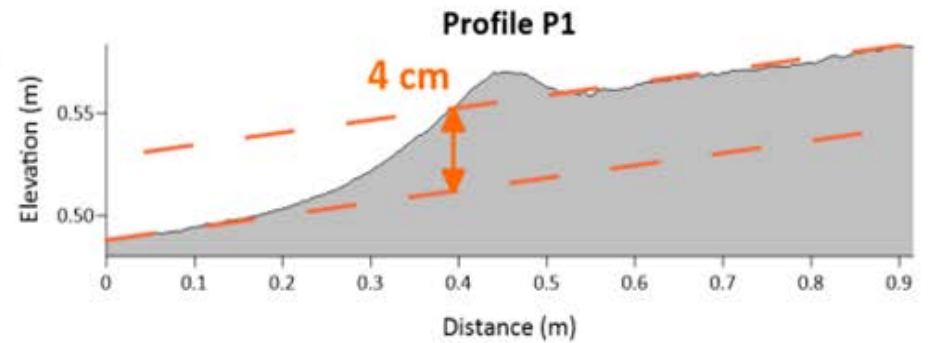
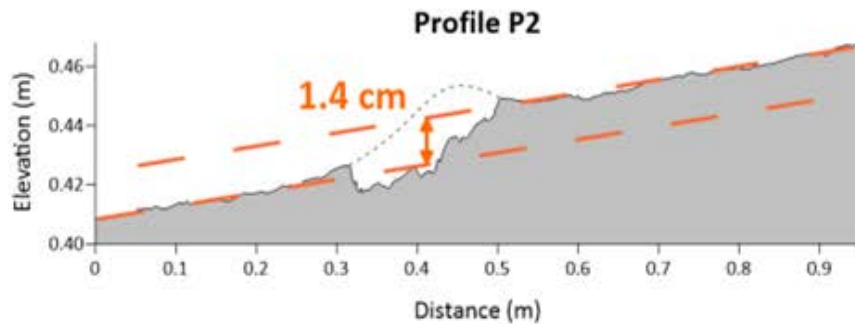
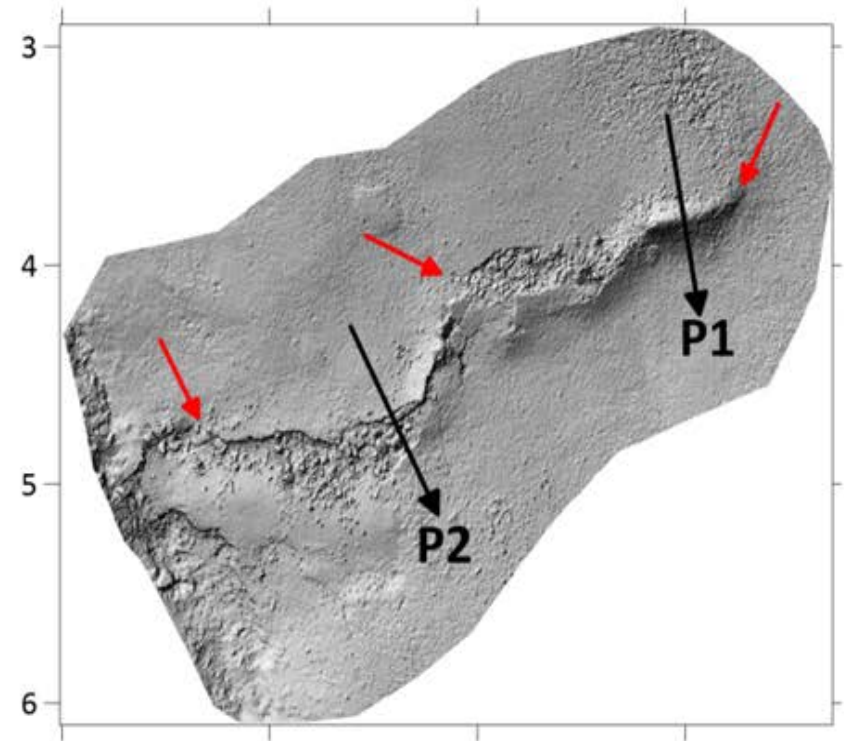




Site 3: Surface rupture (road)



Site LR6 : Surface rupture (road)



Paleoseismological investigations along the LRF

Alba F.

Pontet-de-Couloubre F.
St-Rémèze- F. (BDFA)

Rhône River

Escoutay River

Le Teil

R2-T1_trench
LR6-T1_trench

LR1-TD_trench LR1-TB_trench
LR1-TA_trench

LR4-TA_trench

LR5-T1_trench

La Rouvière F.

LES CROTTE

Saint-Thomé

CHAMBRIAND

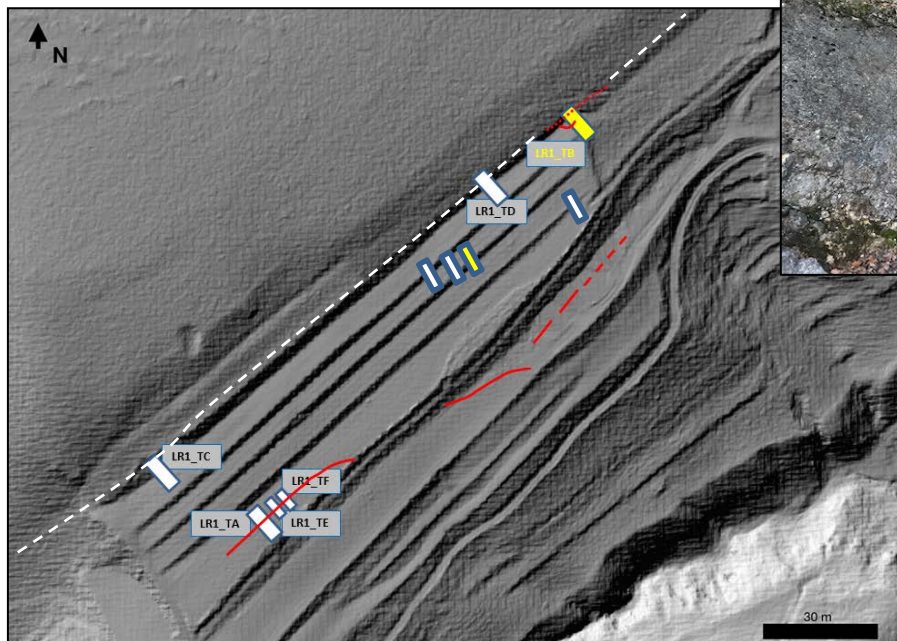
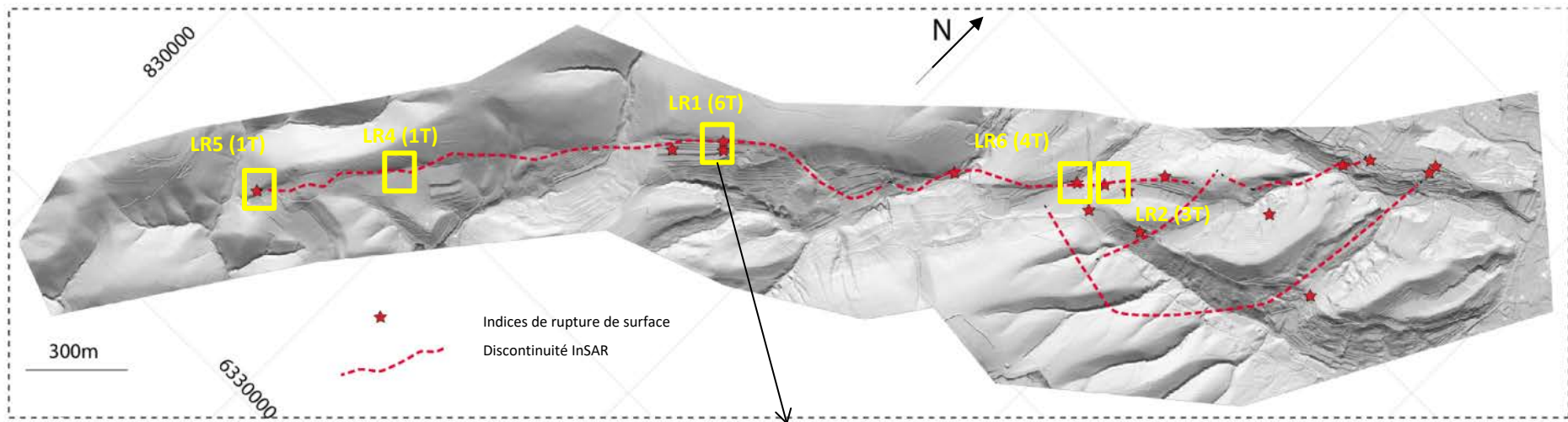
LR3-T1_trench LR3-T2_trench
LR3-T3_riser

Bayne-Roche-Renard F.

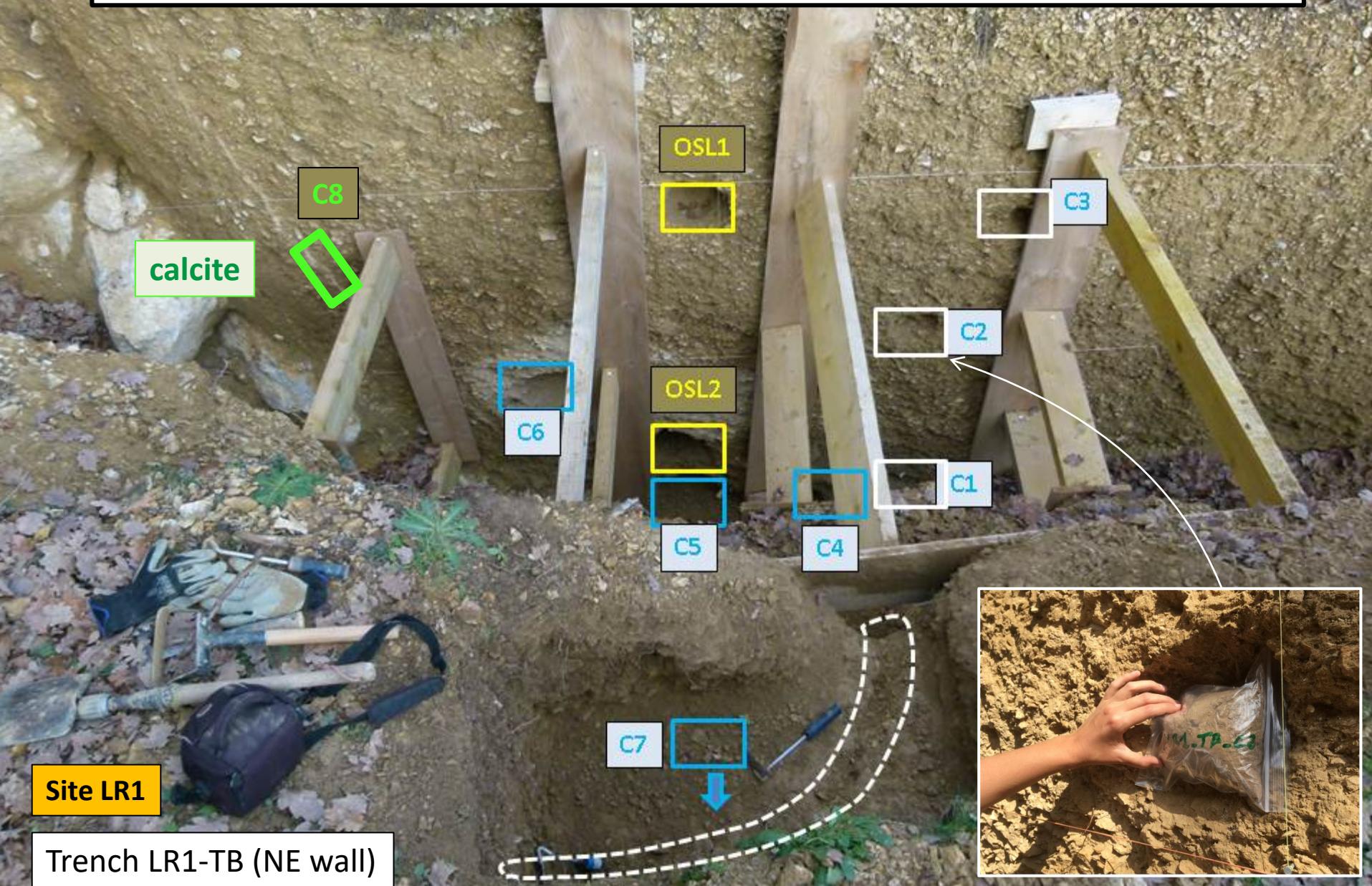
Marsanne F. (BDFA)

SAINT-ALBAN

Saint-Alban



Radiocarbon and OSL dating of the colluvium bulk matrix (periglacial screes / heads)



Site LR1

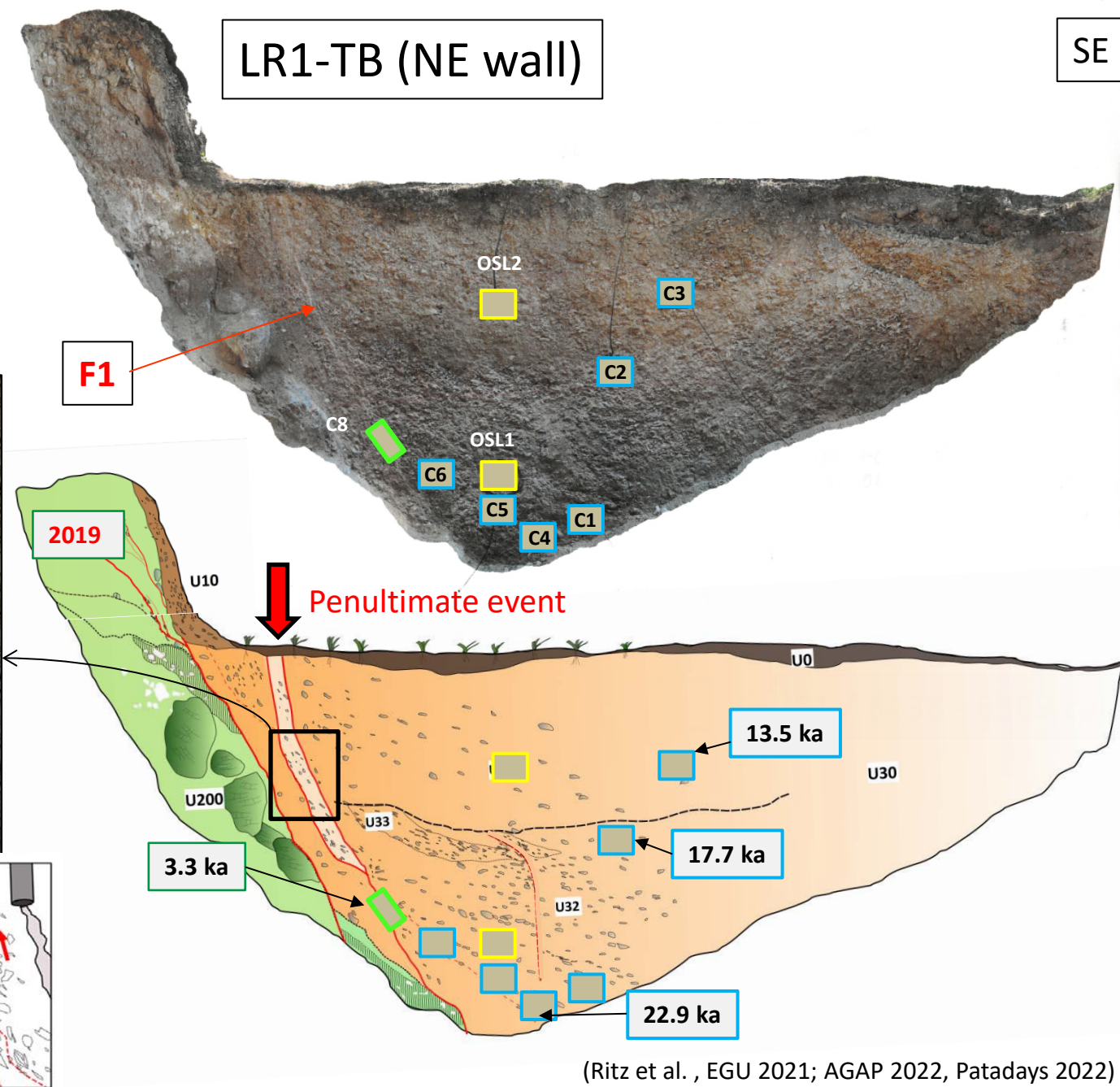
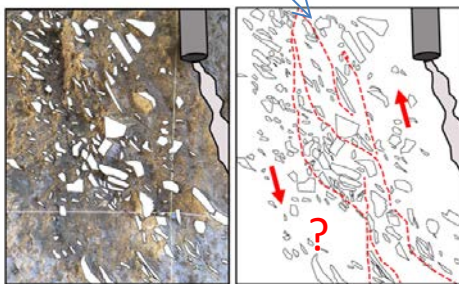
Trench LR1-TB (NE wall)

NW

LR1-TB (NE wall)

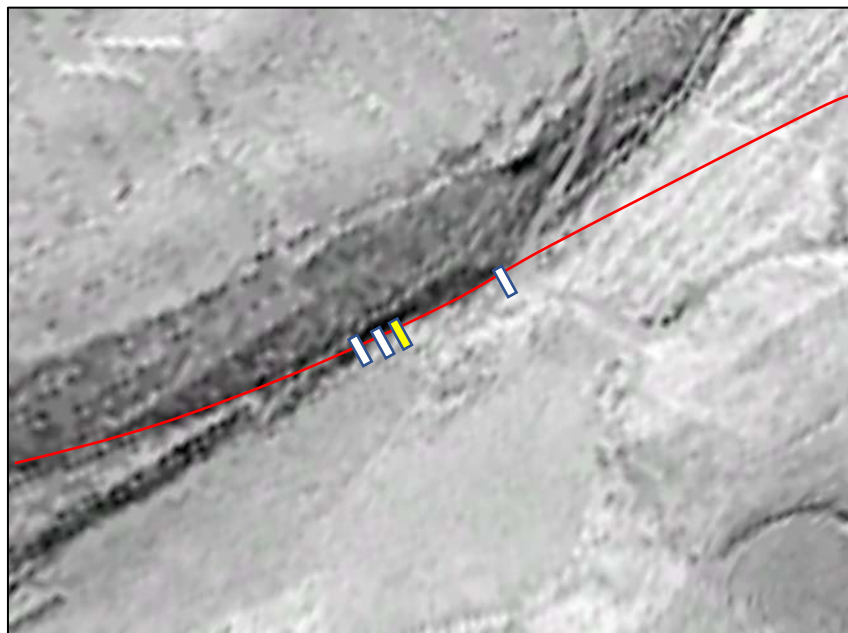
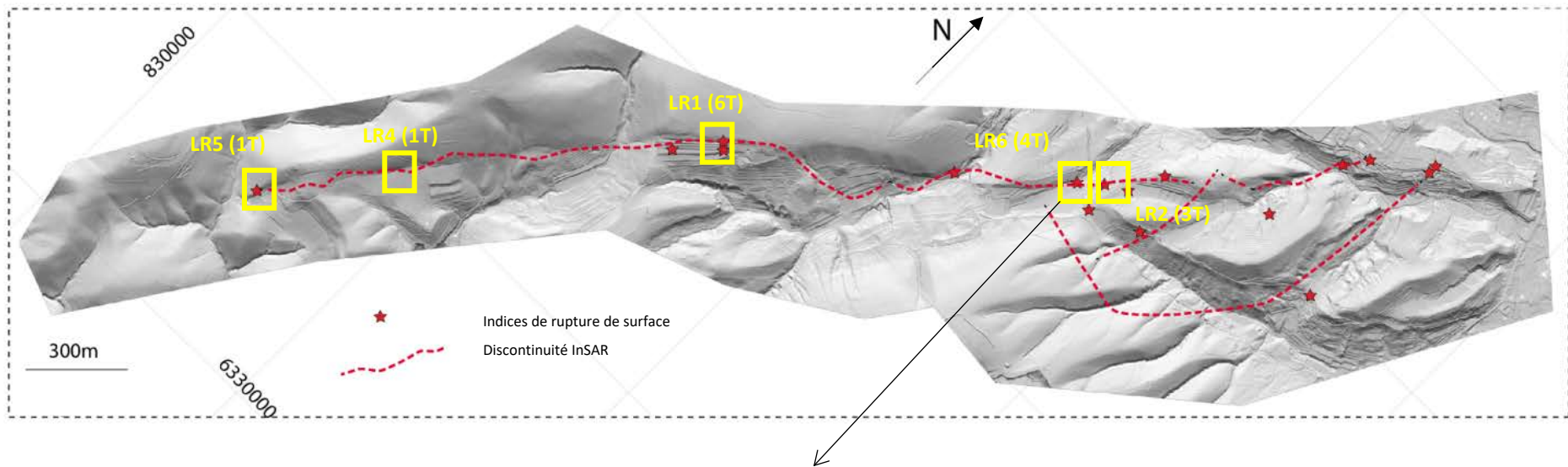
SE

Reverse faulting fabric ?



(Ritz et al. , EGU 2021; AGAP 2022, Patadays 2022)

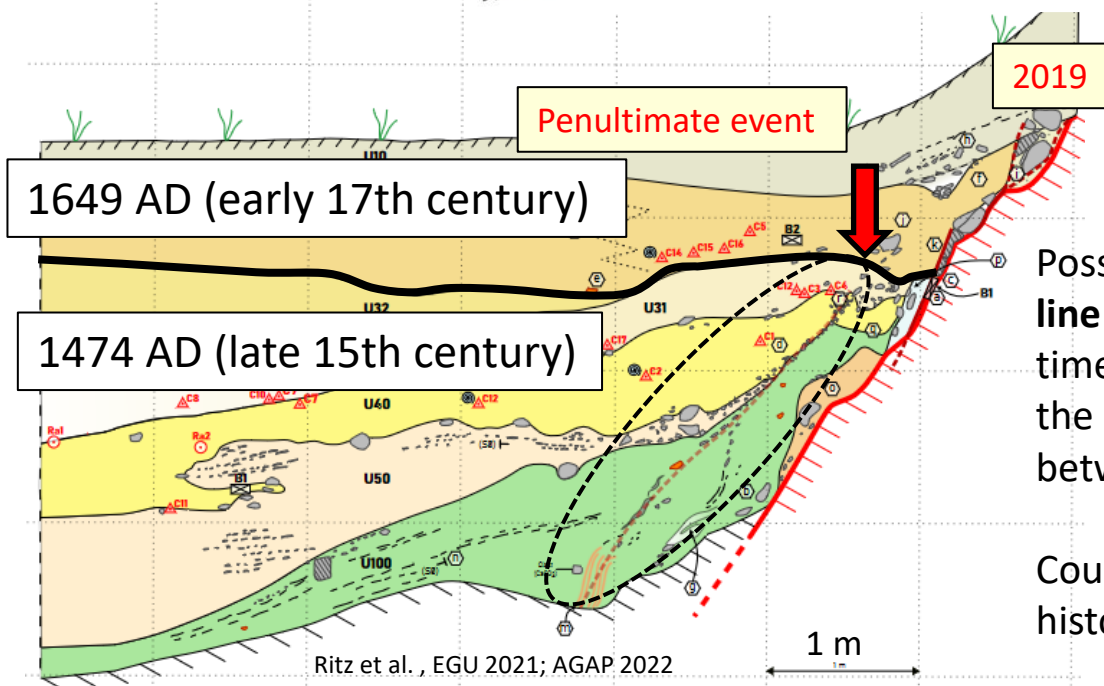
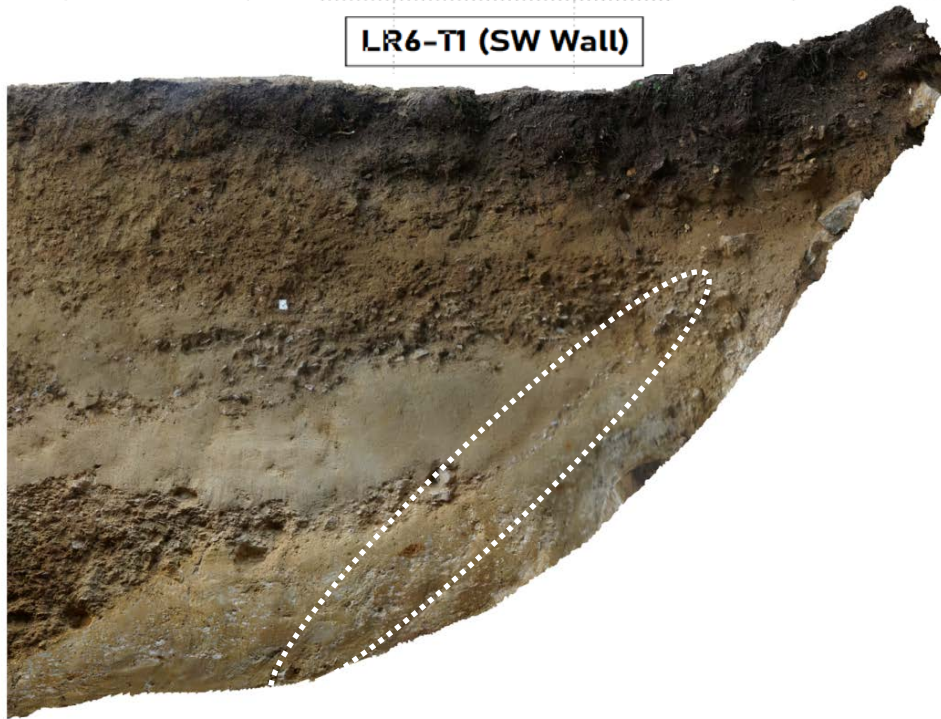
Preliminary interpretation : at least 1 surface rupturing event between 13570 and 3300 years



SE

LR6-T1 (SW Wall)

NW



Preliminary interpretation:

Possible surface-rupturing event (the **thick black line** corresponds to the ground surface at the time of the earthquake) on the northern part of the central segment of the Rouvière fault between 1474 and 1649 AD.

Could it correspond to the Montélimar 1549 AD historic earthquake ?

