land

Merging Historical Archives with Remote Sensing Data: A Methodology to Improve Rockfall Mitigation Strategy for Small Communities

Supplementary Material

Rock mass characterization.

Station ID	Description	Instability
sm_11	The cleavage identify dangerus wedges (small)	High
sm_15a	Low discunitinute persistence, stable slope	Low
sm_14	Rocky wedges and sliding planes: average dangerous	Moderate

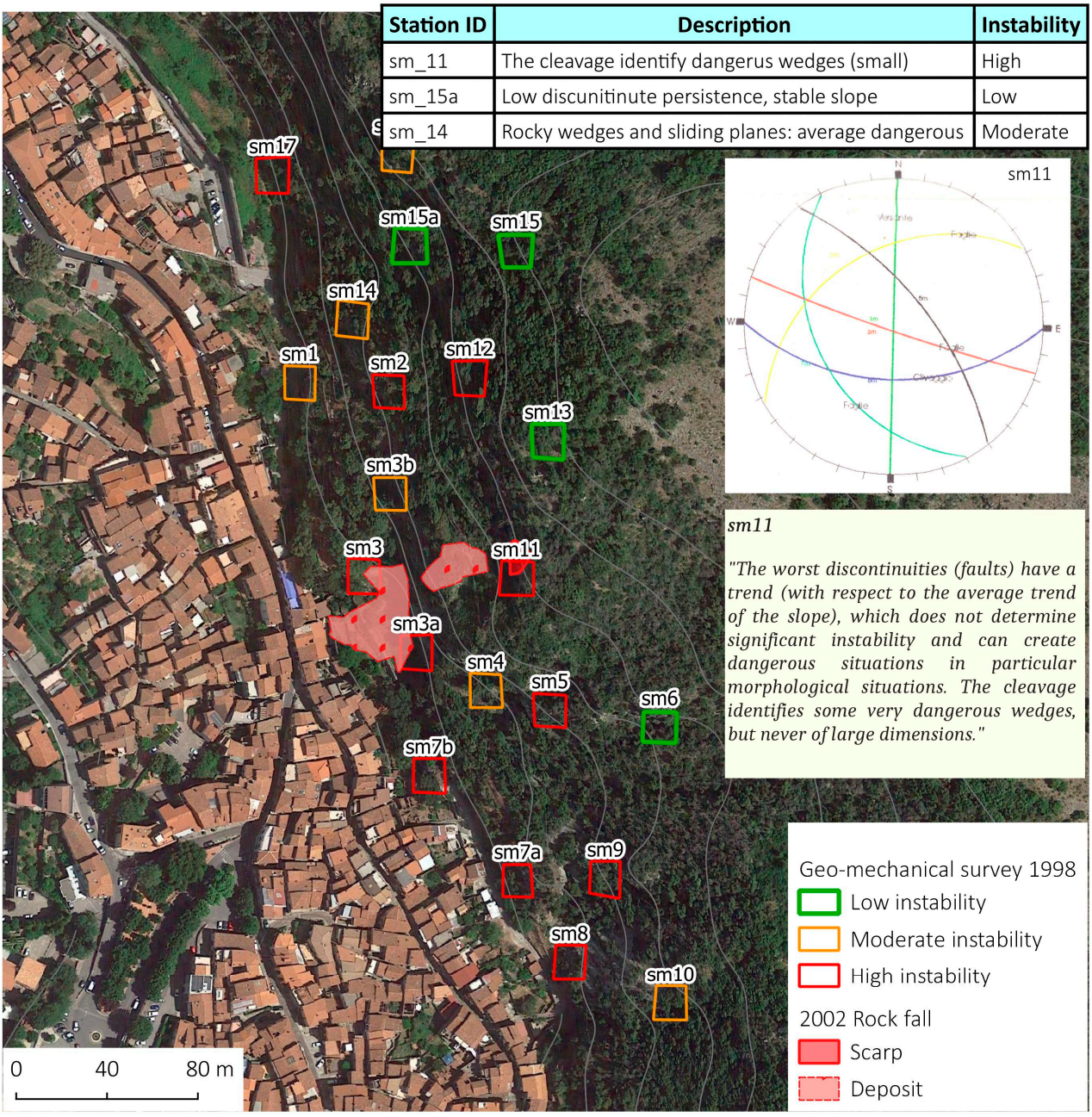

Figure S1. Lauria, map of potential rockfall/topple instability for each geomechanical station. A detail of station sm11, with description and discontinuities stereogram, nearby the January 2002 rockfall. (translated and geocoded from the technical relation for Lauria municipality, 1998 unpublished [43])

Table S1. sm11: main parameter of measured discontinuities (from the technical relation for Lauria municipality, 1998 unpublished [43])

Type	DIP (°)	DIP DIR (°)	Aperture mm	Persistence m	JRC	JCS
clevage	50	200	5	4	8	130
clevage	40	290	1	10	12	90
clevage	50	50	0	2	15	55
clevage	90	160	15	5	10	120
clevage	90	120	1		16	
fault	70	100	25	30	10	120
fault	55	90	0.5	15	9	135
fault	50	40	1	5	12	
fault	90	60	12	5	10	140
fault	80	310	5	5	8	

Table S2. Description of some significant rock mass characterization stations **(**translated from the technical relation for Lauria municipality, 1998 unpublished [43])

ID	Instability Degree	Description
sm11	high	The worst discontinuities (faults) have a trend (compared to the average slope trend), which does not determine significant instability and can create dangerous situations in particular morphological situations. The cleavage identifies some very dangerous wedges, but never of large dimensions
sm12	high	The presence of block sliding planes consisting of very persistent discontinuities (sliding along the layer) and wedges with very inclined intersection line, determine a very unstable structural situation
sm2	high	The rock mass has less inclined landslides than the slope (relatively persistent stratification) and sub-vertical fracturing planes and faults, which give rise to free blocks even of large dimensions: the situation is, therefore, of severe instability
sm3	high	The formation of rocky wedges with even very inclined intersection lines determined by faults and block sliding surfaces, still consisting of faults, leads to a very dangerous instability
sm5	high	Stratification in deep slope conditions and sub-vertical faults that isolate the blocks with a high degree of instability
sm1	average	Moderate instability: the presence of two wedges with a moderate inclined intersection line formed by small persistent discontinuities; Toppling planes created by persistent faults with the same slope trend but plunging inside the slope
sm4	average	Presence of wedges and surfaces that can cause toppling determines a situation moderately predisposed to failure
sm15a	low	The low persistence of the most frequent discontinuities and the overall scarp slope arrangement determine a stable structural arrangement
sm6	low	The slope has a sub-vertical EW trend, the presence of a wedge with a very inclined intersection line between fault surfaces and small persistent cleavage toppling planes, that do not create significant stability problems

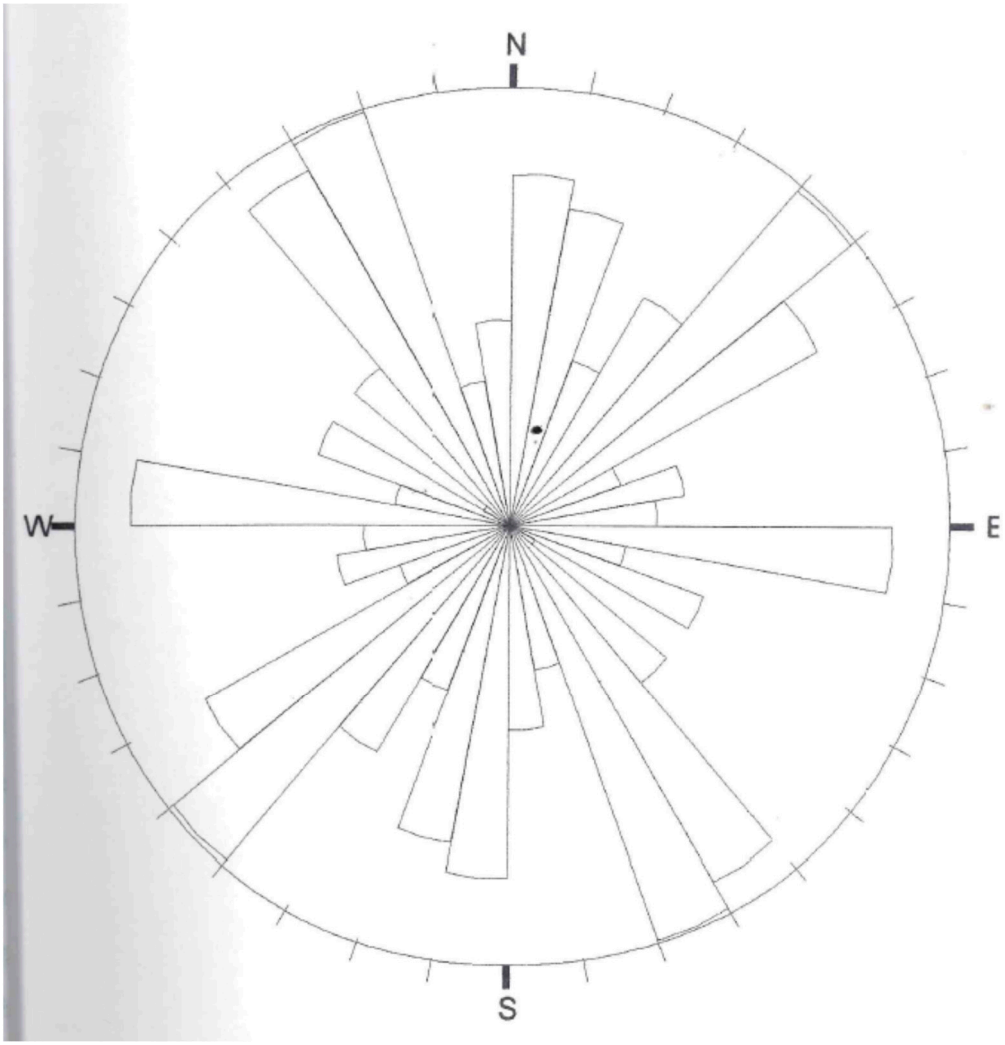

Figure S2. Original polar diagram of the average orientation of the discontinuity systems of the slope affected by rockfall (digitalized from the technical report for Lauria municipality, 1998 unpublished [43])