INTERREG III – ALCOTRA - Projet n° 023

ROCKSLIDETEC

ACTION A
BASIC DESCRIPTION OF THE FIELDS OF THE DATA BASE

1. VALLEY WALL

Field name	Basic description	Type
Name	Name of the homogenous valley wall, in which one or several rock falls occurred	text
GEOMETRY		
Zmax, Zmin	Maximal and minimal elevations of the valley wall (m or degree)	integer
X1, Y1	Coordinates of the upper left corner of the valley wall (m or degree)	real
X2, Y2	Coordinates of the upper right corner of the valley wall (m or degree)	real
X3, Y3	Coordinates of the lower right corner of the valley wall (m or degree)	real
X4, Y4	Coordinates of the lower left corner of the valley wall (m or degree)	real
Projection system / datum	Coordinates system (WGS84 is preferred)	look up
MORPHOLOGY		
Morphology description	Slope angle, aspect, …	memo
Overall stability of the slope	Is the whole valley wall moving? What velocity (cm/year)?	memo
CLIMATOLOGY		
Annual rainfall	Mean annual rainfall (mm)	integer
Annual temperature	Mean annual temperature (°C)	real
Data source and climatic remarks	Name of the climatic station and distance from the rock fall (horizontally and vertically), measurement period, …	memo
HYDROLOGY AND SEISMS		
Spring	Presence of spring(s) in the valley wall	boolean
Seepage	Seepage in the valley wall	boolean
Type of permeability	Type of permeability of the rock mass (fissural, karstic, porosity)	look up
Proximity of an active sismic fault		boolean
PGA475	Peak Ground Acceleration with 475 year return period (g unit)	text
Hydrological and seisms setting	e. g. discharge of springs and torrents, name and distance of the active sismic fault	memo
GEOLOGY		
Tectonic unit	Tectonic unit according to Schmid et al. (2004)	look up
Stratigraphy		memo
Lithology		look up

2. ROCK FALL (contains basic information on the event)

Field name	Basic description	Type
Ordinary name	Ordinary name of the rock fall	text
Present hazard	Present hazard means that the description does not concern an occurred rock fall, but a potential one	boolean
GENERALITIES		
Responsible	Responsible of the data	look up
Update		date
Appreciation	Appreciation on the quality of the information	look up
Other names	Other names of the rock fall	memo
Location		
Municipality	Municipality where the major part of the scar is located	text
Administrative subdivision	Département (F), Region (I), Canton (CH)	look up
Country		look up
Centroïd of scarp		
X, Y, Z	Coordinates of the centroïd of the scarp (m or degree)	real
Projection / datum	Coordinates system	look up
Valley wall	valley wall where the rock fall took place	look up
Date		
Century		text
Year		integer
Month		integer
Day		integer
Hour		integer
Minute		integer
Duration	Duration in decimal hour	integer
Dating	Dating (for Holocene or Pleistocène rock falls)	boolean
Comment on date or dating	e.g. what method was used for dating, dated material, lab code, results and their significance (true age, min/max, …)	memo
VOLUME		
Initial volume	Volume of the rock mass before the movement (with the uncertainty)	long int
Volume of deposit	Volume of the deposit (with the uncertainty)	long int
Remarks on volumes		memo
EFFECTS		
Fatalities	Number of deaths	long int
Value	Cost of damages (euros)	real
About the evaluation	Comment on the evaluation	memo
Valley dam	Did the rock fall dam the valley ?	boolean
Effect	Lake, alluvium filling, stream diversion	look up
Dam failure	Did the rock fall dam fail ?	boolean
Comment	e.g. date and effects of dam failure	memo
Secondary effects		memo
Residual activities		memo
REFERENCES AND OTHER REMARKS		
ID	Identification number of the rock fall in different inventories	text
References	Bibliographic references	memo
Maps	Existing maps of the rock fall	memo
Remarks	Remarks about the information sources	memo

3. INITIAL SLOPE

Name	Basic description	Type
GENERALITIES		
Topographical data before failure		
Existing maps before failure		boolean
DTM of initial slope		boolean
Comment on maps, DTM and other remarks	e.g. morphology of the slope or the valley before the rock fall	memo
PROFILE		
Segment code	The slope profile is divided in segments (from top to bottom), each defined by two points (top and toe)	text
Segment top		
X1, Z1	Coordinates of the segment top (m)	integer
Segment toe		
X2, Z2	Coordinates of the segment toe (m)	integer
Segment aspect	Aspect of the slope segment, counted clockwise from north (°)	integer
Substratum lithology		look up
Superficial deposit	Material over the substratum (alluvium, glacier, undistinguished deposits, no cover, scree, rock fall deposit, till)	look up
Water presence	Type of water (snow, lake, wet, moist, dry)	look up
Vegetation	Bush, forest, grass, grass and forest, moss, no, nude	look up
Hydrology, facies, morphology and other remarks		memo

4. DISCONTINUITIES

Name	Basic description	Type
Code	Code of the discontinuity set	text
CHARACTERISTICS		
Generalities		
Taking part in failure		boolean
Plane of failure		boolean
Open	Joints are generally open in the rock mass	boolean
Weathering		boolean
Monitoring	One or several joints of the set were (or are) monitored	boolean
Position	Position in the scar (basal slip surface, lateral shear plane, rear tension crack)	look up
Discontinuity type	Bedding plane, fault, joint, other, schistosity/foliation	look up
Lithology		look up
Infilling	Cemented (quartz, calcite, …), clay, loose material, other, no	look up
Geometry		
Dip direction	Dip direction, counted clockwise from the north	integer
Dip	Dip (from the horizontal plane)	integer
Spacing	Spacing between the joints of the set (measured perpendicularly to the joints)	real
Extension	Extension (length) of the joints of the set	real
Roughness	Barton's JRC (Joint Roughness Coefficient) at the scale of 10 cm	integer
Ondulation	Barton's JRC (Joint Roughness Coefficient) at the scale of 10 m	integer
Opening	Free distance between the two rock surfaces of a joint	real
Cluster	The joints of the family are locally concentrated in clusters	boolean
Unique plane	The set consist in an unique plane (which can play an important role in the failure)	boolean
REMARKS	Example: The slide affected massive limestone beds, overlying thin layers of marl and limestone.	memo

5. FAILURE

Name	Basic description	Type
SCAR		
Movement preceding rock fall	Failure mechanism before the fall (buckle, column failure, composite movement, compound slide, overhang failure, planar slide, rotational slide, stepped slide, stepped wedge slide, topple, wedge slide)	look up
Maximal elevation of the scar	Elevation of the upper point of the scar (m)	integer
Minimal elevation of the scar	Elevation of the lower point of the scar (m)	integer
Maximal inclined length of the scar	(m)	integer
Maximal width of the scar	(m)	integer
Maximal thickness of the fallen rock mass	Initial maximal thickness of the fallen rock mass, before the fall (m)	integer
Inclined surface of the scar	(m^2)	long int
Catchment basin	Area in which the rainwater flows towards the scar (m^2)	long int
REMARKS		
Detailed mechanism	examples: composite slide-topple mechanism, topple of an isolated column, rotational sliding surface resulting from flexural topple of the strata.	memo
Morphology and geometry of the scar	e.g. precise if the sliding surface is visible or partly covered by the deposit	memo
CAUSES		
Ground conditions		
Weathered material		look up
Sheared material		look up
Jointed or fissured material		look up
Adversely oriented discontinuities		look up
Contrast in permeability	Contrast in permeability and its effect on ground water	look up
Contrast in stiffness	e.g. stiff material over plastic material	look up
Geomorphological processes		
Tectonic uplift		look up
Glacial rebound		look up
Glacial erosion of slope toe		look up
Deep-seated gravitational slope deformation		look up
Previous large landslide		look up
Fluvial erosion		look up
Wave erosion of the toe		look up
Erosion of lateral margins		look up
Deposition loading the slope crest		look up
Vegetation removal	by erosion, forest fire, drought	look up
Man-made processes		
Excavation of slope or its toe		look up
Loading of slope or its crest		look up
Irrigation		look up
Drawdown of reservoir		look up
Infilling of reservoir		look up

Mining	Open pits or underground galleries	look up
Artificial vibration	including blasting, traffic, pile driving, heavy machinery	look up
Physical processes		look up
Intense rainfall	Intense, short period, rainfall	look up
Rapid snow melt	Rapid melt of deep snow	look up
Prolonged exceptional precipitation		look up
Earthquake		look up
Thawing of permafrost		look up
Freeze and thaw weathering		look up
Shrink and swell weathering	of expansive soils	look up
Rapid drawdown	following floods, high tides or breaching of natural dam	look up
Trigger	Does this process explain the date of the rock fall?	boolean
Forewarning signs		
New tension cracks		look up
Precursory falls		look up
Hydrogeological precursory signs		look up
Piezometric precursory signs		look up
Subsidence		look up
Noise		look up
Others		memo

6. POST-FAILURE SLOPE

Name	*Basic description*	*Type*
GENERALITIES		
Propagation parameters		
Hmax (m)	Difference of elevation between the higher point of the scar and the extreme point of the deposit.	integer
Lmax (m)	Horizontal distance between the higher point of the scar and the extreme point of the deposit, measured along the trajectory.	integer
Propagation mechanism	Avalanche (continuous flow of blocks), fall (free falling, bouncing on the slope, rolling), slide	look up
alpha (°)	"Fahrböschung" or propagation angle = Arctan(Hmax/Lmax)	integer
Factors influencing propagation		
Ice over the path		look up
Snow over the path		look up
Incorporation of water		look up
Incorporation of other materials		look up
Chanelization of the fallen rock mass		look up
Remarks		memo
PROFILE		
Segment code	The slope profile is divided in segments (from top to bottom), each defined by two points (top and toe)	text
Segment top		
X1, Z1	Coordinates of the segment top (m)	integer
Segment toe		
X2, Z2	Coordinates of the segment toe (m)	integer
Segment aspect	Aspect of the slope segment, counted clockwise from north (°)	integer
Width of the flow path (m)		integer
Present thickness of the		integer

deposit (m)		
Type	Type of segment (scar, transit, deposit, outside)	look up
Substratum lithology		look up
Superficial deposit	Material over the substratum (alluvium, glacier, undistinguished deposits, no cover, scree, rock fall deposit, till)	look up
Water presence	Type of water (snow, lake, wet, moist, dry)	look up
Vegetation	Bush, forest, grass, grass and forest, moss, no, nude	look up
Post-event reworking of deposit material		boolean
Remarks		memo

7. DEPOSIT

Name	Basic description	Type
GENERALITIES		
Morphometry characteristics		
Zmax, Zmin (m)	Maximal and minimal elevation of the deposit surface	integer
Horizontal length of the deposit (m)		integer
Horizontal projected surface (m^2)		long int
Maximal vertical thickness (m)		integer
Maximal width (m)	Maximal width normal to the trajectory	integer
Run up	Does the rock fall run up the opposite side of the valley?	boolean
Seepage	Is there seepage on the deposit	boolean
Shape of the deposit	Chanelized, single tongue, L shape, T shape, other	look up
Deposit evolution and other remarks	e.g. precise if the deposit has been eroded since the rock fall, missing volume if known, …	memo
ZONES		
Zone code	The deposit can be divided in different zones, having different characteristics	text
Zmax, Zmin (m)	Maximal and minimal elevation of the zone surface	integer
Horizontal projected surface (m^2)		long int
Average vertical thickness (m)		long int
Type of matrix	clast supported, matrix supported	look up
Maximal block size (m^3)		real
Average block size (m^3)		real
Slided block	Is this part (zone) of the deposit a slided block?	boolean
Acquiferous role	Is this part (zone) of the deposit an aquifer?	boolean
Description and other remarks	e.g. granulometric parameters (D10, D25, D50, D75, D90)	memo