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Lessons learnt from a rockfall time series analysis: data collection, statistical analysis, and applications

Sandra Melzner et al.

Correspondence to: Sandra Melzner (office@geochange-consulting.com)

Supplementary materials (colour blind figures)

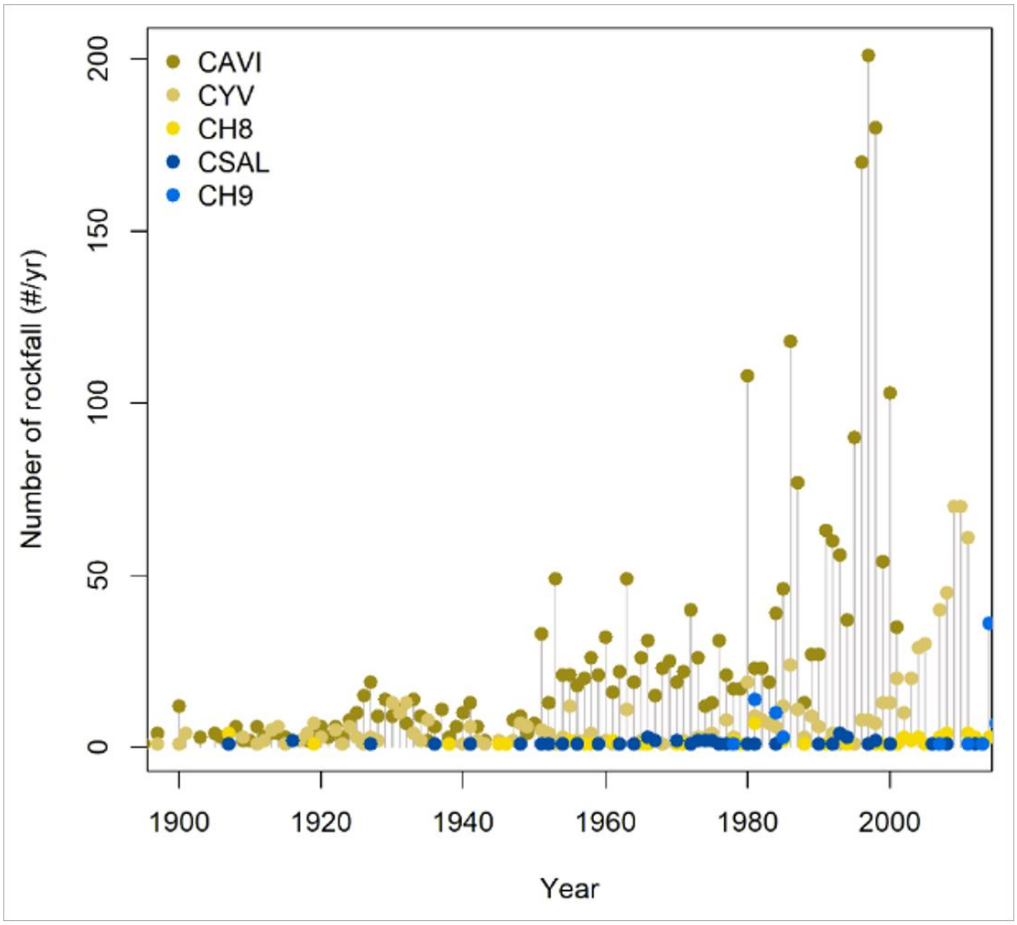

Figure 2: Comparison of absolute number of rockfalls per year (N_j, (annual rockfall frequency) of five historical rockfall time series in Italy (red), Austria (green, purple and blue) and USA (orange). C_{YV} catalogue 1857-2011 (total number of rockfalls 887), C_{AVI} 1489-2001 (total number of rockfalls 2612), C_{H8} 1652- 2014 (total number of rockfalls 76), C_{SAL} 1907-2016 (total number of rockfalls 53) and C_{H9} 1978-2016 (total number of rockfalls 41).

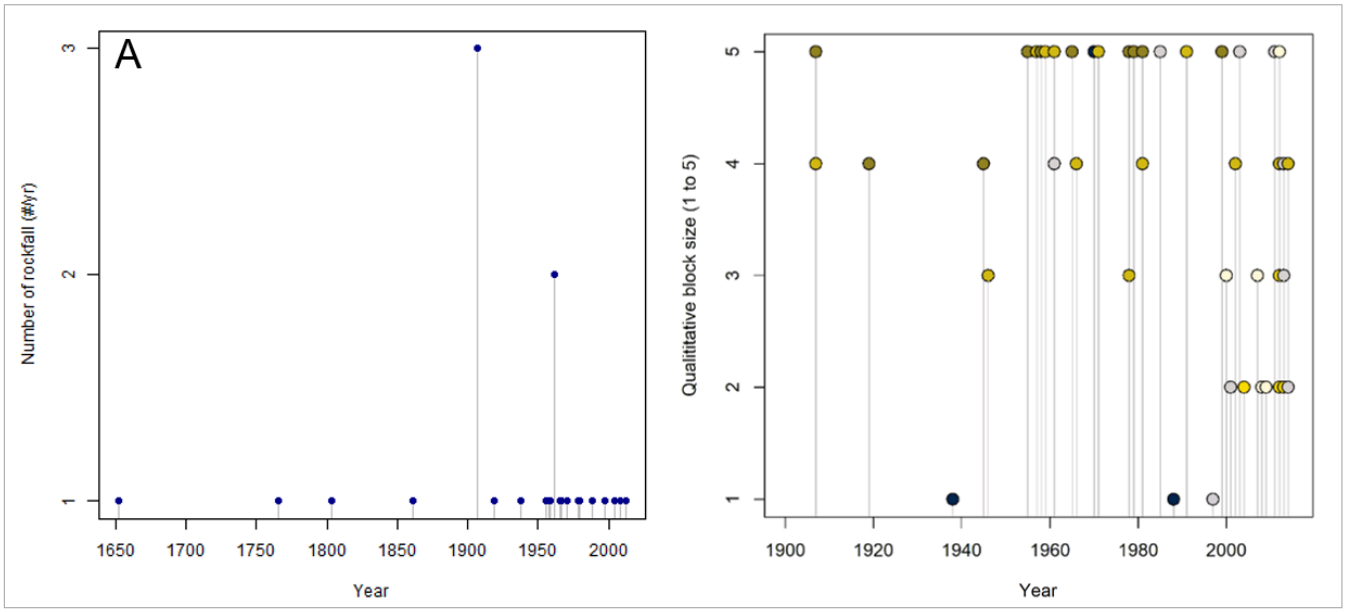

Figure 3: Relationship between the representativeness of the rockfall time series C_{H8} (A) with respect to rockfall which resulted in consequences C_{H10} (B). Legend of fig. B: red points=very large intensity, orange points=large intensity, yellow points=medium intensity, green points= low intensity, blue points= fatality, rosa points= injury, grey points= no info, grey points= no damage.

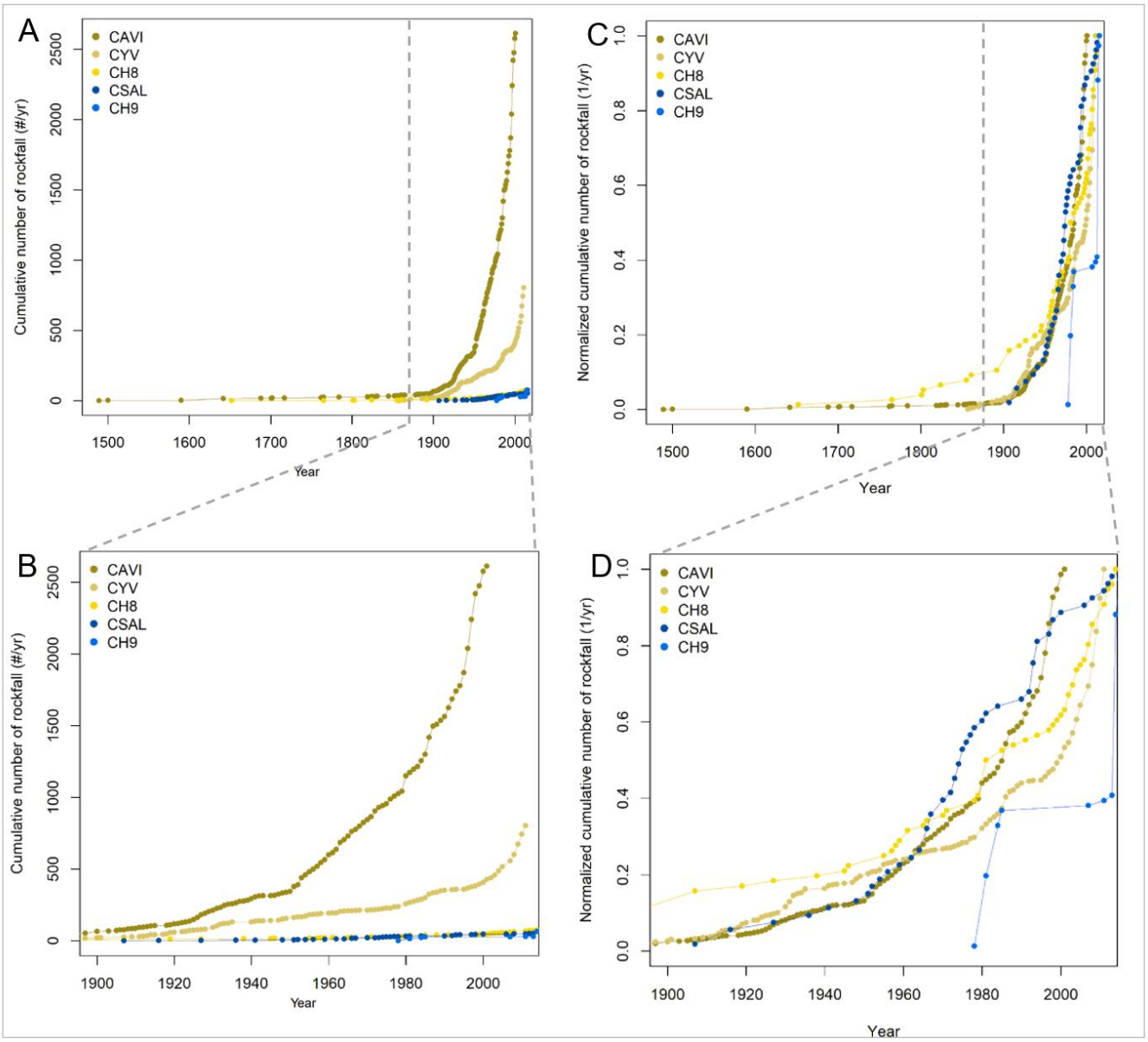

Figure 4: Comparison of the cumulative number of rockfalls (A & B) and normalized cumulative number of rockfalls (N_{CR}, as a function of year, C & D) of the five historical rockfall catalogues C_{H8}, C_{H9}, C_{YV}, C_{AVI} and C_{SAL} from USA (orange curve), Italy (red curve) and Austria (dark and light blue and green curve).

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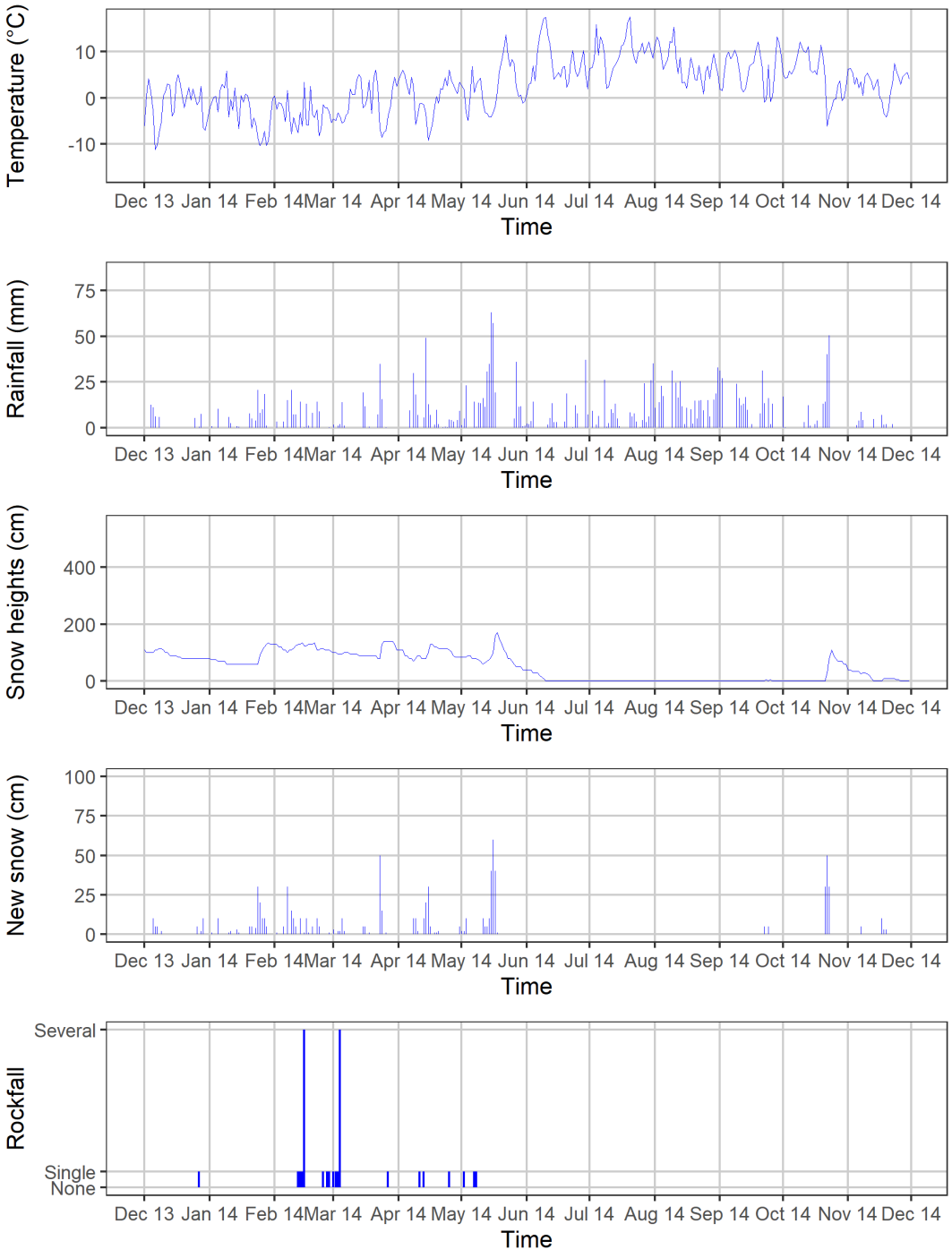

Figure 7: Comparison of rockfalls with climatic conditions (new snow, snow heights, rainfall, temperature). Rockfall data collected by questionnaire/diary of an eye whiteness (a hunter) who is permanently living in this remote area. Data represents only high magnitude rockfalls always in the same rockfall source area (progressive failure).

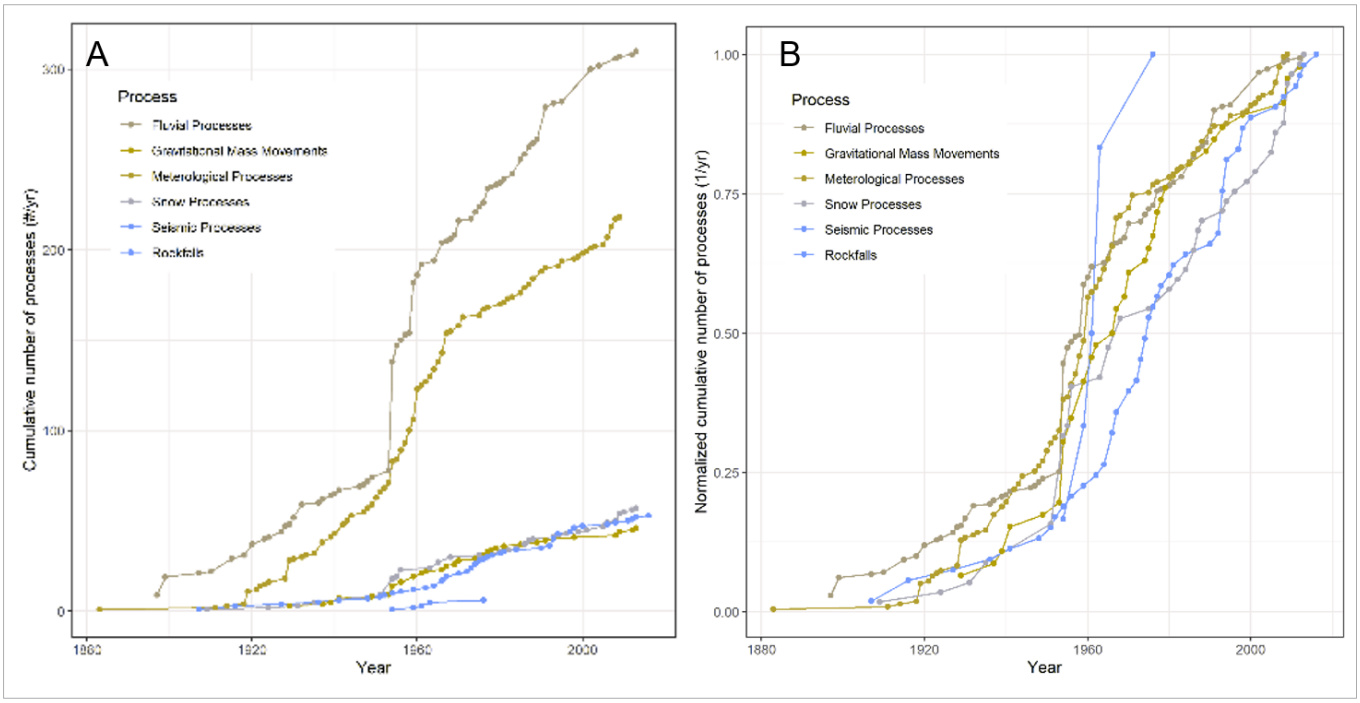

Figure 8: Comparison of the cumulative number of different natural processes (N_{CR}, as a function of year) of the catalogue compiled by the review of the chronicles of the police department in Austria.

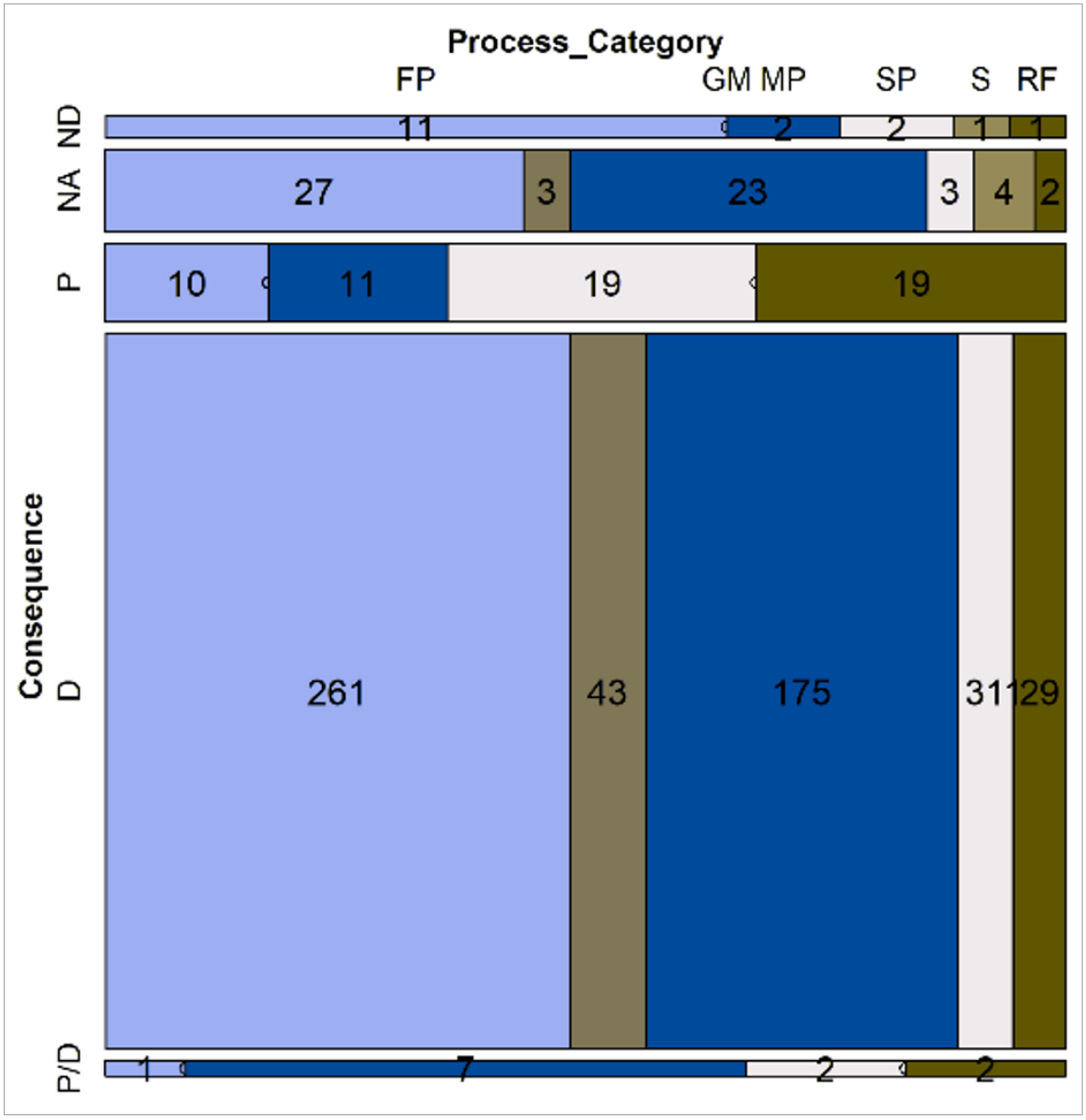

Figure 9: Display of relationship consequences and natural processes of the catalogue compiled by the review of the chronicles of the police department in Austria. P/D= damage and fatalities, D= damage, P= fatalities, N/A=no information in the historical account, N/D= no consequences. FP= Fluvial processes (light blue), GM=Gravitational Mass Movement (brown), MP= Meteorologic Processes (blue), SP= Snow Processes (grey), S= Seismic Processes (red) and RF= Rockfall (green).