

ROCKFALLS AND SLIDES



Figure A3.31 – A ruinous rock slide detached from the flank of Mt. Brancot destroyed several houses in the village of Braulins during the 6 May 1976 Friuli earthquake (M_s 6.5) (A: photo Bordin; B from Briseghella et alii, 1976). The local MCS Intensity was VIII-IX at Braulins.



Figure A3.32 – Crown of landslide menacing the emptied Acciano reservoir, induced by the 26 September 1997 Umbria-Marche earthquake (M_w 6.0). Photo E. Vittori.



Figure A3.33 – A: flank of a wide landslide occurred near Cerda (Palermo, western Sicily) following the September 6, 2002 (M_l 5.6) Palermo earthquake. B: particular of the crown. A local macroseismic intensity of V (EMS98) was estimated at Cerda. Photos M. Guerra and E. Vittori.



Figure A3.34 – Above: rock falls from the flanks of a narrow canyon near Bam (southern Iran) following the 26 December 2003 (Mw 6.5) Bam earthquake. Below: aerial view of rock falls and sinkholes from the same area. The local macroseismic intensity was IX MM (source: Eshghi and Zarè, 2004).



Figure A3.35 – Sinkholes near Bam (southern Iran) following the 26 December 2003 (Mw 6.5) Bam earthquake. The local macroseismic intensity was IX MM (source: Eshghi and Zarè, 2004).



Figure A3.36 – Minor rock falls from the flanks of paved roads near the epicentral area of the 1997 Umbria-Marche earthquake. The preliminary estimate of the Inqua EEE Intensity is VII. Photos E.Vittori.

Cited papers

- BRISEGHELLA L., CAPPELLARI L., DALL'AGLIO R., D'EREDITA' R., GORI R., SIMONI L., TURRINI G., ZAUPA F., 1976, *Earthquake in Friuli (Italy) 1976 – damage to historical monuments and other buildings of artistic interest*. Bollettino Geofisica Teorica ed Applicata, XIX (72), 909-932.
- CAVALLIN A., MARTINIS B., SFONDRINI G., 1977, *Effetti geologici del terremoto: fenditure nel terreno e "vulcanelli" di sabbia*. Rivista Italiana di Paleontologia e Stratigrafia, 83 (2), 369-393.
- ESHGHI S., ZARE' M., 2004, *Reconnaissance report on 26 December 2003 Bam earthquake*. Int. Inst. of Earthquake Eng. and Seism., Teheran Iran. Web: http://www.iiees.ac.ir/English/eng_index.html
- ESPOSITO E., PORFIDO S., SIMONELLI L., MASTROLORENZO G., IACCARINO G., 2000, *Landslides and other surface effects induced by the 1997 Umbria-Marche sequence*. Engineering Geology, 58, 353-376.
- MICHETTI A.M., BRUNAMONTE F., SERVA L., 1995, *Paleoseismological evidence in the epicentral area of the January 13, 1968, Belice (SW Sicily) earthquake*. In Perspectives in Paleoseismology; edited by L. Serva and D.B. Slemmons, Assoc. of Eng. Geol., Spec. Publ. 6, 127-139.
- MICHETTI A.M., BRUNAMONTE F., SERVA L., VITTORI E., 1996, *Trench investigations of the 1915 Fucino earthquake fault scarps (Abruzzo, Central Italy): geological evidence of large historical events*. J. Geophys. Res., 101, 5921-5936.
- MICHETTI A. M., FERRELI L., SERVA L., & VITTORI E., 1997, *Geological evidence for strong historical earthquakes in an "aseismic" region: the Pollino case (Southern Italy)*. Journal of Geodynamics, 24 (1-4), 67-86.
- ODDONE, E., 1915, *Gli elementi fisici del grande terremoto marsicano-fucense del 13 gennaio 1915*. Boll. Soc. Sismol. Ital., 19, 71-216.
- SIRO L., 1976, *Liquefaction of sands in Friuli during may 6 and September 15 1976 earthquakes*. Bollettino Geofisica Teorica ed Applicata, XIX (72), 1203-1452.
- VITTORI E., DEIANA G., ESPOSITO E., FERRELI L., MARCHEGIANI L., MASTROLORENZO G., MICHETTI A.M., PORFIDO S., SERVA L., SIMONELLI A.L., TONDI E., 2000, *Ground effects and surface faulting in the September-October 1997 Umbria-Marche (Central Italy) seismic sequence*. Journal of Geodynamics, 29 (3-5), 535-564.
- VITTORI E., CARVER G., JAYKO A.S., MICHETTI A., SLEMMONS, D.B., 2003, *New insight on the Owens Valley Fault zone (Eastern California, U.S.A.) from detailed Quaternary Fault Map*. 2003 INQUA Congress Reno (NV), July 23-30 2003, Abstract & poster.