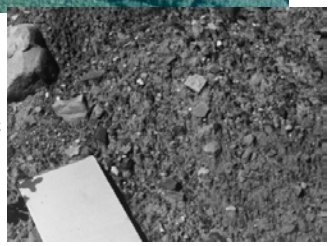
Earth flow

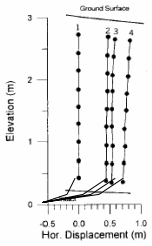
(Limited velocity – max 8m/min)

Thistle, Utah, 1986

Earth flow complex

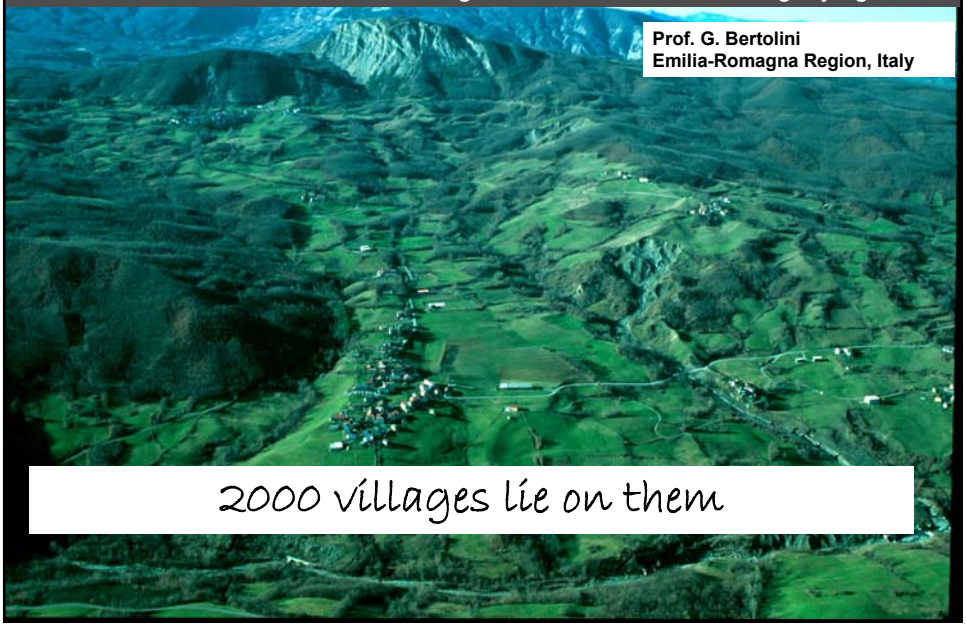


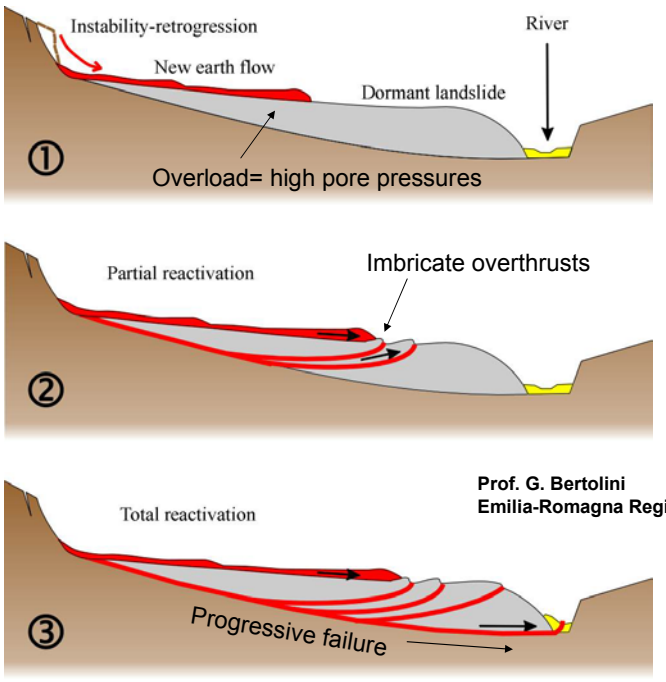
“Earth” – plastic clayey debris



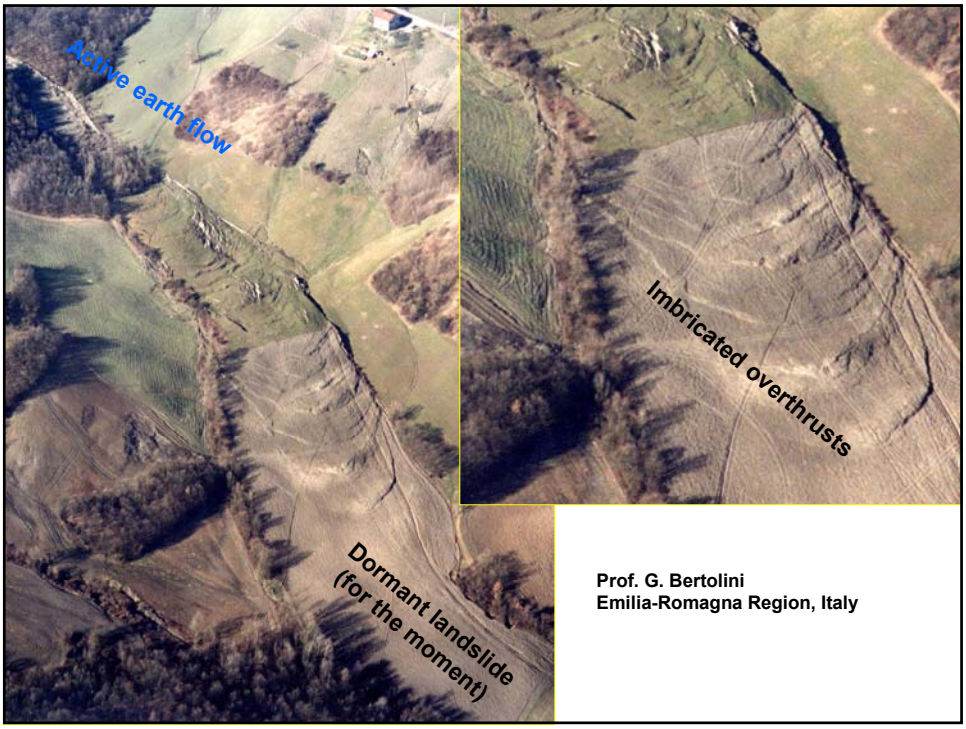
Motion on discrete slip surfaces (“mudslide”)

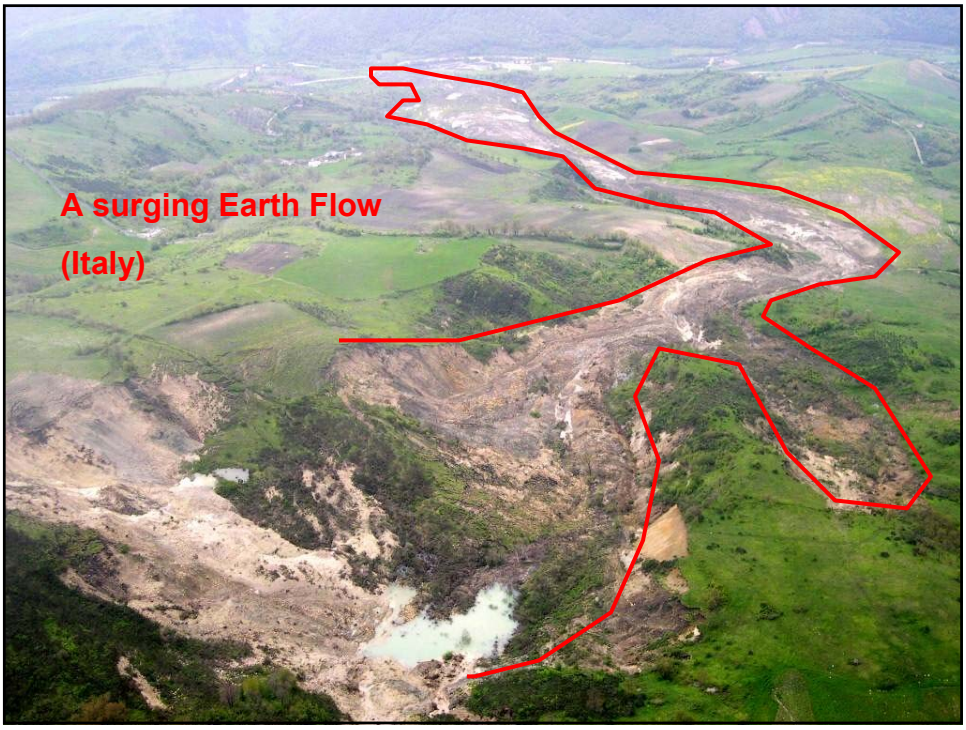
This is a typical earth flow (the Frana di Morsiano): large crown, narrow channel, large foot, a thickness ranging from 10 to 50 m, medium slope angle from 8° to 11°, few kilometers in length……..and a village lying on it

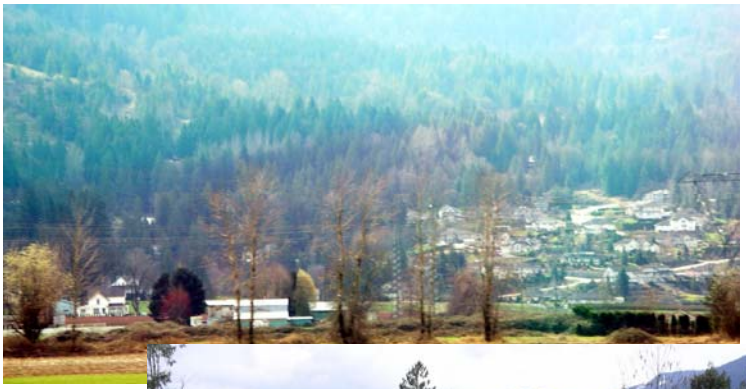




Prof. G. Bertolini
Emilia-Romagna Region, Italy


Active earth flow
Imbricated overthrusts
Dormant landslide
(for the moment)
Prof. G. Bertolini
Emilia-Romagna Region, Italy

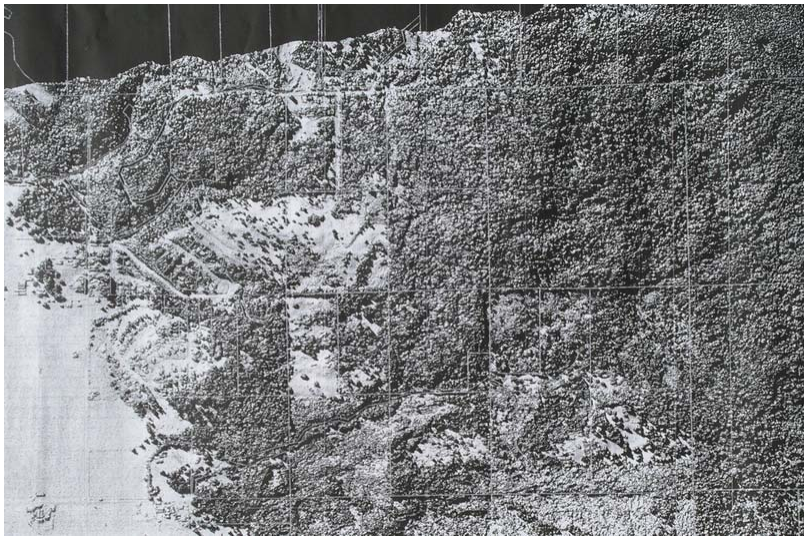

A surging Earth Flow
(Italy)



Earth Flow

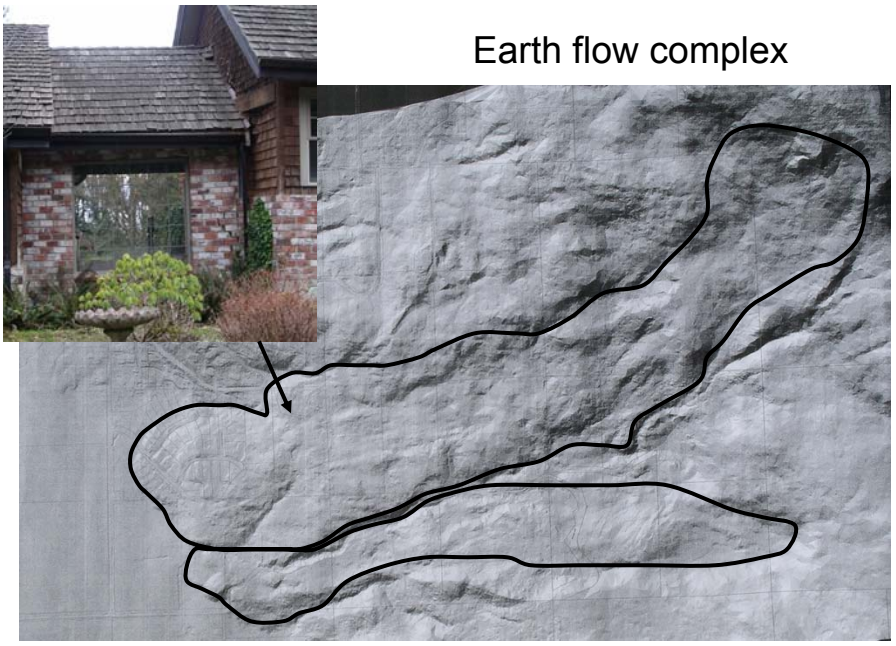
Marble Hill, Chilliwack

Earth flow complex: Lidar, first return



Earth flow complex: Lidar, last return

Earth flow complex



Earth Flow Stabilization
Covatta mudslide, 1996
(Prof L. Picarelli, Naples)

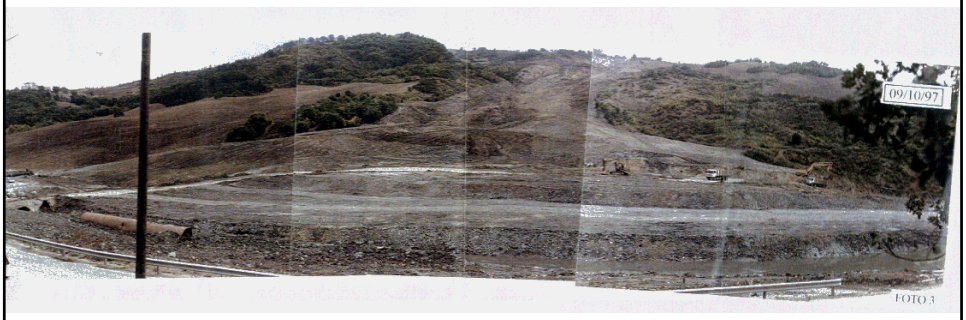
The alimentation zone

Consequences of the movement

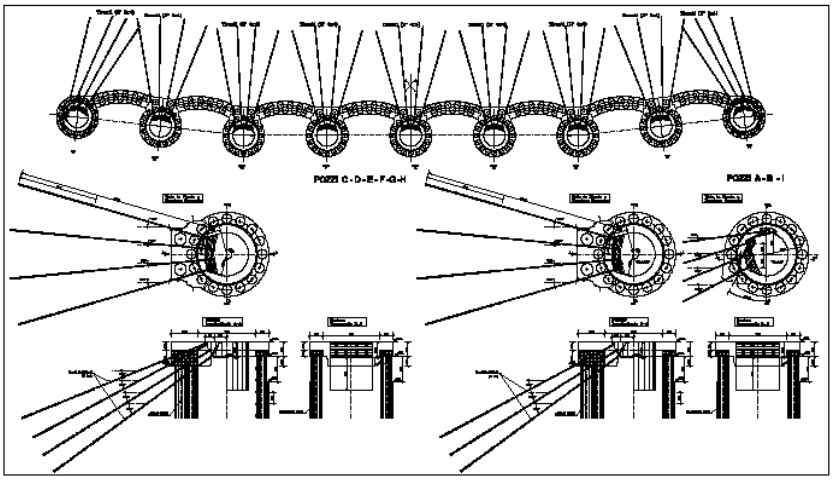
Consequences of the movement

First emergency works

One year after



Retaining structure at the foot of the mudslide to contrast river damming



(Picarelli and Napoli, 2003)

Construction of the structural walls

Safety channel assuring a continuous river discharge

Run-off control

Construction of structural walls at the neck of the alimentation zone

Reshaping of the crown; material substitution, deep and shallow drainage in the depletion zone, stabilization of the neck