

3.8 「近年の日伊土砂災害技術協力」

国総研危機管理技術研究センター長

後藤 宏二



10 years collaboration between Italy and Japan for sediment-related disaster prevention

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Ministry of Land, Infrastructure, Transport and Tourism (MLIT)

Activities of The sediment disaster prevention technology conference

1998 Sediment disaster in Salerno, Italy

Japanese researchers were dispatched for Salerno

The agreement of establishment

“The sediment disaster prevention technology

conference” in 6th Japan-Italy Joint Committee on Cooperation in Science and Technology

1999 1st conference ,Tokyo and Kagoshima, Japan

2000 2nd conference , Roma, Venice and Longarone, Italy

2002 3rd conference, Tokyo and Hiroshima, Japan

Executive program “Establishment of Geo-Risk Joint Lab”

in 7th Japan-Italy Joint Committee on Cooperation in Science and Technology

2004 4th conference, Salerno and Napule, Italy

2006 5th conference, Tokyo, Japan

Japan-Italy Symposium

“Joint research for sediment disaster prevention” , Tokyo, Japan

2007 Japan-Italy Symposium

“Natural disaster risk management “, Tokyo, Japan

an event related 2007 Primavera Italiana

Executive program

“Evaluation and countermeasure regarding hazard map”

in 8th Japan-Italy Joint Committee on Cooperation in Science and Technology

2008 6th Conference, Orvieto, Assisi and Perugia, Italy

2009 Japan-Italy Symposium

“Risk management for sediment disaster”, Tokyo, Japan

an event related Italia in Giappone 2009

2010 7th Conference, Venice and Palmanova, Italy



Sediment disaster in Salerno, Italy (1998)



Japan-Italy Symposium

“Risk management for sediment disaster” (2009)



7th Conference in Venice (2010)

GRJL:Geo-Risk Joint Lab

Themes of research

“Developing technologies detection and monitoring for Landslide and Debris flow”

Opening ceremony of GRJL (2004)



Right: the Minister of Land, Infrastructure, Transport and Tourism (At that time)



Building of Geo-Risk Joint Lab in Longaron (At that time)
Now GRJL is in CNR-IRPI Padova branch office.



Interaction of researchers between Japan and Italy

Japan -> Salerno Univ.

Dr. Hideaki Mizuno (NILIM)

Duration: 1 year

Italy -> PWRI(Tsukuba, Japan)

Dr. Vittorio Bovolin

(Salerno Univ.)

Dr. Alessandro Pasuto
(CNR)

etc.

Results of joint research between Japan and Italy

- Risk management for landslide
- Debris-flow monitoring system using ground vibration sensor
- Post-event documentation and clarification of generating mechanisms of flash flood
- Application of Ground-based Synthetic Aperture Radar to the lava dome

Risk management for landslide

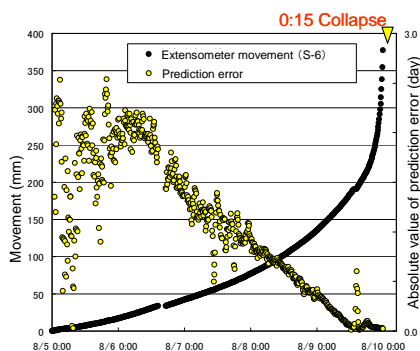
Landslide in Otomura, Nara, Japan, 2004



Risk management for landslide

Technologies for risk management (detection and monitoring)

- Application of prediction methods of the time to landslide failure
 - Saito's equation (secondary creep)
 - Fukuzono's method
- Video camera analysis
 - Maximum speed: 3.5m/s



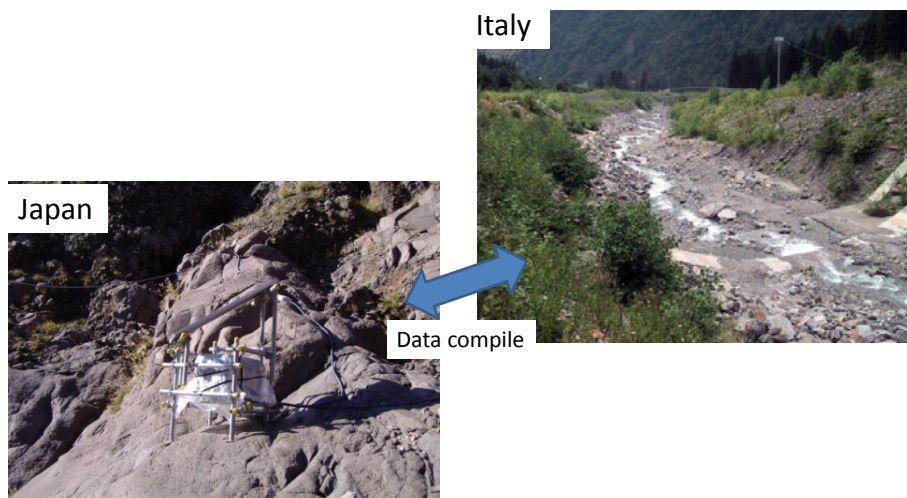
Publications
(Japan-Italy Joint Research)

1. Fujisawa, K., Marcato, G., Nomura, Y., Pasuto, A. (2010): Management of a typhoon-induced landslide in Otomura (Japan). *Geomorphology*, 124, 150-156.
2. Marcato, G., Fujisawa, K., Pasuto, A., Silvano, S., Tagliavini, F., Zabuski, L. (2007): Evaluation of seismic effects on the landslide deposits of Monte Salta (Eastern Italian Alps) using distinct element method. *Natural Hazards and Earth System Sciences*, 7, 695-701.



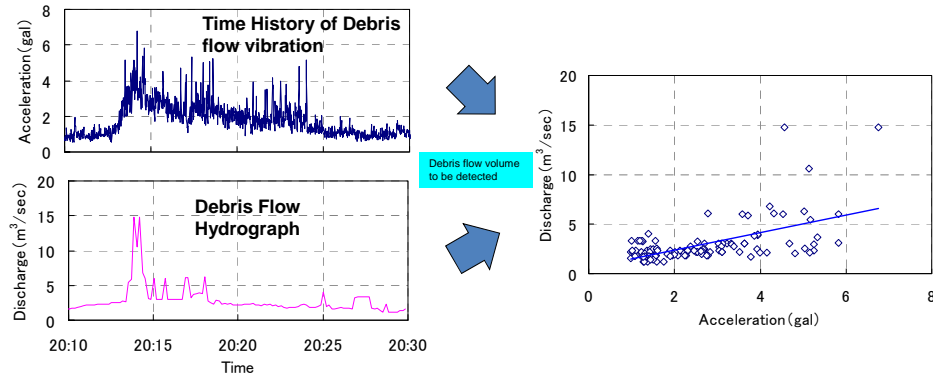
Debris-flow monitoring system using ground vibration sensor

In Japan, ground vibration sensor is used to detect debris flow for evacuation of construction workers and residents.



Debris-flow monitoring system using ground vibration sensor

- The volume of debris-flow is an important factor to predict affected area.
- Japan and Italy share the data of the relationship between debris-flow volume and amplitude of ground vibration.



Japan and Italy are developing advanced debris-flow detecting system which can estimate the volume.

Post-event documentation and clarification of generating mechanisms of flash flood

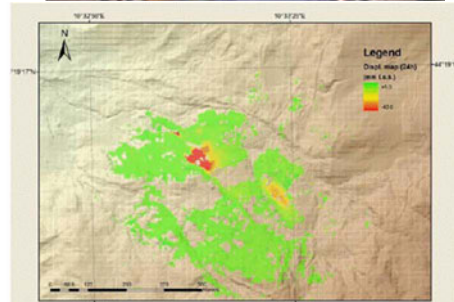
- Climate change is expected to increase the risks of flash floods and the management of them is critical component of public safety and quality of life both in Japan and Italy.
- Both PWRI and CNR-IRPI have been involved in the post-event surveys and documentations vigorously in their own territories.
- In the activities of the Project HYDRATE of the 6th European Framework Programme in which CNR-IRPI has participated as contractor and PWRI as observer, the experiences in Japan and Europe were exchanged.



Application of Ground-based Synthetic Aperture Radar (SAR) to the lava dome of Mt. Unzen, Japan

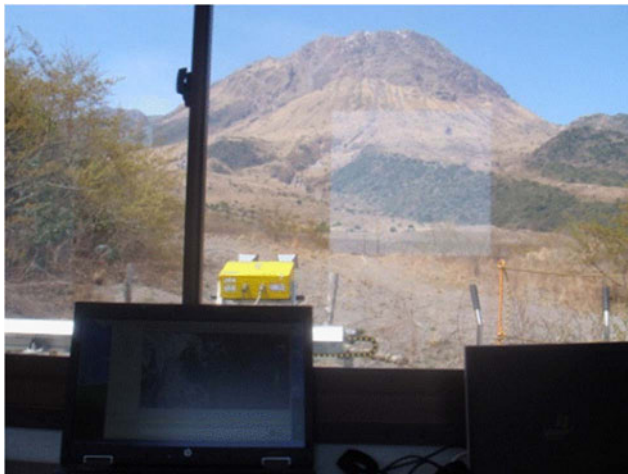
Oct. 2006 The 5th Japan-Italy Technical Conference on Sediment-Related Disaster Prevention

Paolo Farina
(Earth Science Dept., University of Florence)
"Remote sensing technology and sediment disasters: Examples in Italy"



Application of Ground-based Synthetic Aperture Radar (SAR) to the lava dome of Mt. Unzen, Japan

PWRI and Unzen Restoration Office, MLIT are now trying to apply this technique to monitor the lava dome, which is still deforming and posing a serious risk to the community.



The results of the first field test have been jointly presented in the annual meeting of the Japan Society of Erosion Control Engineering, Yokohama in May 2011.

Japan and Italy have various types of sediment disaster and same causes of sediment disaster



Due to various types and causes of sediment disaster, it is difficult to collect the data of disaster for case study in short period.



Japan and Italy help each other by sharing disaster data and technical information.



Japan and Italy can accelerate to develop disaster prevention technology against sediment disaster.

Thank you for your attention!