



International workshop

**“Regional early warning systems
for rainfall- and snowmelt-induced landslides”
“Need for international forum?”**

26th - 28th of October 2016

Norwegian Water Resources and Energy Directorate, NVE
Oslo, Norway

Program

Wednesday 26. October 2016

9:00-10:30 - Arrival and registration

10:30-10:50 - **Opening and welcome** (Morten Johnsrud, NVE)
- **Purpose of the workshop** (Graziella Devoli, NVE)
Room: Glomma (1st floor)

10:50-12:00 **The Norwegian landslide warning system**
- *“Regional early warning for soil slides, debris flows, and slush flow in Norway”*
(Hervé Colleuille, NVE) (20 min)
Questions (10 min)

- *“The application of the landslide early warning along transportation lines in Norway*
(Tore Humstad and Roald Aabøe, Norwegian Public Roads Administration, SVV) (20 min)
Questions (10 min)

Chair: Graziella Devoli (NVE)
Room: Glomma (1st floor)

12:00-13:00 - Lunch
Room: Glomma (1st floor)

13:00-14:15 **State of the art about national and regional EWS in the different countries**

13:00-13:25 - *“Landslide and Debris-Flow Early Warning in the United States.”*
(Dennis Staley, USGS) (15 min)
Questions (10 min)

13:25-13:50 - *“Daily landslide hazard assessments; the use of process models and weather regimes to enhance the capability to issue regionally specific forecast and provide longer outlooks.”*
(Tom Dijkstra, Helen Reeves, Katy Freeborough, Claire Dashwood, Joanne Robbins, Rutger Dankers, BGS-Met Office, UK) (15 min)
Questions (10 min)

13:50- 14:15 - *“Early warnings for shallow landslides in Iceland”*
(Harpa Grímsdóttir and Jón Kristinn Helgason, Vedur) (15 min)



Questions (10 min)

Chair: Mads-Peter Dahl (NVE)

Room: Glomma (1st floor)

14:15-14:30 - *Coffee break*

14:30-16:30 **State of the art about national and regional EWS in the different countries**

Presentation of 15 min for each country

14:30-14:55 - *"EWS for rainfall-induced slope phenomena: shallow landslides and channelized debris flows in Piemonte, Italy"*

(Davide Tiranti and Roberto Cremonini, ARPA Piemonte) (15 min)

Questions (10 min)

14:55-15:20 - *"Towards an operational rainfall induced landslide early warning system for Italy"*

(Fausto Guzzetti, CNR) (15 min)

Questions (10 min)

15:20-15:45 - *"Monitoring and early warning systems in Austria – an overview"*

(Rudolf Schmidt and Margarete Wöhrer Alge, die Wildbach) (15 min)

Questions (10 min)

15:45- 16:10 - *"Early warning systems for landslides in Switzerland"*

(Manfred Stähli, WSL) (15 min)

Questions (10 min)

Chair: Mads-Peter Dahl (NVE)

Room: Glomma (1st floor)

16:30-17:00 **Visit E-warning room**

Guide: Søren Boje (NVE)

Room: Flomvarslingsrom (3rd floor)

17:00-19:00 **Poster, Tapas and Drink**

Room: Vettisfossen (7th floor)

Logistic: Heidi Lee (NVE)



Thursday 27. October 2016

9:00-9:30 **State of the art about national and regional EWS in the different countries**

Presentation of 15 min for each country

9:00-9:30 - *"Early warning systems for rainfall-induced landslides in Sweden"*

(Charlotte Cederbom, SGI) (15 min)

Questions (10 min)

Chair: Graziella Devoli (NVE)

Room: Vettisfossen (7th floor)

9:30-10:30 **Experiences from case studies**

Presentation of 15 min and discussion

9:30-10:00 - Iceland - *"Permafrost landslide in Móafellshyrna mountain in 2012"*

(Harpa Grímsdóttir and Jón Kristinn Helgason, Vedur) (15 min)

Discussion (15 min)

10:00-10:30 - Switzerland – *Case study from Swiss prealpine area (Emmental) from 2002 and 2005*

(Manfred Stähli, WSL) (15 min)

Discussion (15 min)

10:30-10:40 - *Coffee break*

10:40-12:10 **Experiences from case studies**

10:40-11:10 - USA – *Case study on expansion of the post-fire debris-flow early warning system, currently operational in southern California, to other areas in the western United States."*

(Dennis Staley, USGS) (15 min)

Discussion (15 min)

11:10-11:40 - Norway - *Landslide events in Gudbrandsdalen in June 2011 and May 2013*

(Søren Boje, NVE) (15 min)

Discussion (15 min)

11:40-12:10 - UK – *Antecedent precipitation as a potential proxy for landslide incidence in South West UK: a case study reflecting on 2012/2013 landslide season*

(Tom Dijkstra, Helen Reeves, BGS) (15 min)

Discussion (15 min)

Chair: Graziella Devoli (NVE)

Room: Vettisfossen (7th floor)

12:10-12:15 – Practical information about Group discussion on selected topics
(Graziella Devoli, NVE)



12:15-13:00 - Lunch
Canteen NVE (1st floor)

13:00-14:30 **Group discussion on selected topics**

1. The importance of reliable landslide data and feedback from field as essential information for thresholds development and evaluation of warning performance.
Theme's leaders: Helen Reeves (BGS), Manfred Stähli (WSL)
Room: Eidefossen (1st floor)
2. Thresholds. Recognition of dynamic thresholds and accounting for antecedences and triggering conditions.
Theme's leaders: José Cepeda (NGI), Søren Boje (NVE)
Room: Tyssø (1st floor)
3. How do we know if a system works, or does not work? (Methods, tools and concepts for the validation of operational landslide early warning systems, and for the evaluation of their performances)
Theme's leaders: Mads-Peter Dahl (NVE), Luca Piciullo (UNISA)
Room: Sauda (1st floor)
4. How do we best use the forecasts, and other products, prepared by the systems?
How do we communicate the risk?
Theme's leaders: Dennis Staley (USGS), Per Glad (NVE)
Room: Skjøli (1st floor)

14:30-14:45 - Coffee break

14:45-16:30 Short presentation by theme's leaders (5 min each) and discussion
Theme's leaders

Chair: Graziella Devoli (NVE)
Room: Vettisfossen (7th floor)

16:30 – 19:00 - Free

19:00 – - Dinner (possibility to walk to the restaurant)
Markveien Mat & Vinhus AS, Torvbakk gt 12, 0550 Oslo



Friday 28. October 2016

9:30-11:00 Exchanging best practice and International collaboration. Needs for International network/forum for rainfall-induced landslide early warning?

Discussion on Future work

Establishment: Do we need an international forum for landslides EWS?

Purpose: Objectives of the forum? Possible topics?

Organization: How the forum should be organized? How often? Where?

Introduction by: Graziella Devoli (NVE)

Discussion leaded by: Fausto Guzzetti (CNR-IRPI)

Room: Vettisfossen (7th floor)

11:00 – 12:00 Summarizing results

Summary by: Tom Dijkstra (BGS), Fausto Guzzetti (CNR-IRPI)

Room: Vettisfossen (7th floor)

12:00-12:30 Closure of the workshop. Important achievements

Closure by: Graziella Devoli (NVE)

Room: Vettisfossen (7th floor)

12:30-14:00 - Lunch

Canteen NVE (1st floor)