



International workshop

"Early warning systems for rainfall-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**
- "*Early warning for landslide and debris flows 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: Aart Verhage (NVE)
Room: Glomma (1st floor)

12:00-13:00 - Lunch
Cantina NVE (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: Aart Verhage (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 Wöhler 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: Aart Verhage (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**

Guide: (NVE)

Logistic: Heidi Lee (NVE)

Room: Vettisfossen (7th floor)



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

- Early warning systems for rainfall-induced landslides in Sweden
(Charlotte Cederbom, SGI) (15 min)
Questions (10 min)

Chair: Aart Verhage (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 2011 and 2013*
(Monica Sund, 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* (15 min)

Discussion (15 min)

Chair: Aart Verhage (NVE)

Room: Vettisfossen (7th floor)

12:10-13:00 - *Lunch*

Cantina NVE (1st floor)



13:00-14:30 **Group discussion on selected topics**
Each group work 15 minutes for each topic

1. The importance of reliable landslide data and feedback from field as essential information for thresholds development and evaluation of warning performance.
2. Thresholds. Recognition of dynamic thresholds and accounting for antecedences and triggering conditions.
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)
4. How do we best use the forecasts, and other products, prepared by the systems?
How do we communicate the risk?

Chair and theme's leaders: to be defined

Room: Eidefossen, Tyssø, Sauda, Skjølø (1st floor) and Vettisfossen (7th floor)

14:30-14:45 - *Coffee break*

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

Discussion leaded by: to be defined

Room: Vettisfossen (7th floor)

11:00 – 12:00 Summarizing results

Summary by: to be defined

Room: Vettisfossen (7th floor)

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

Closure by: NVE

Room: Vettisfossen (7th floor)

12:30-14:00 - Lunch

Cantina NVE (1st floor)