Results of the 18th Conference of the European Avalanche Warning Services (EAWS) Rome - Italy, June 4th – 7th 2015

Glòria Marti (IGC), Igor Chiambretti (AINEVA), Hans Konetschny (LWZ Bayern)

Scientific Organization: Glòria Marti, Igor Chiambretti

General Organization: METEOMONT – Corpo Forestale dello Stato – Vincenzo Romeo and Staff

Attendees: see attached list: total attendees 82 [1 AND; 5 AT; 4 CH; 0 CZ; 3 DE; 9 ES; 0 FI; 2 FR; 1 GB; 1 IS; 48 IT; 5 NO; 2 RO; 2 SE; 0 SL; 2 SK; 0 PL; 2 CAN] + 12 observers + 2 interpreters.

7 sessions + 5 poster sessions:

poster sessions - Avalanche forecasting;
poster sessions - Communication, new media and bulletins;
poster sessions - Data collection and exchange;
poster sessions - Civil protection, risk forecasting;
poster sessions - Sponsor Corner

Session 1 - Avalanche danger problems;
Session 2 - Avalanche forecasting problems: full depth slab avalanches, gliding avalanches, wet snow avalanches, slush flows;
Session 3 - EAWS regulations;
Session 4 - Local versus regional forecast;
Session 5 - Data exchange, encoding standards, CAAML, EAWS website;
Session 6 - Avalanche size scale;
Session 7 - Bavarian Matrix, Avalanche Danger Scale, Icons.

Detailed program: see attached enclosure.

Presentations: see pdf files on 18th EAWS Meeting website.

Discussion Session 1 - Avalanche danger problems

The experimental use of avalanche problems in several countries received positive feedback from the end users. Due to the positive feedbacks the WG proposed to adopt four avalanche problems (new snow, drifting snow, old snow with critical layers, wet snow) + two optional problems/situations (gliding snow, favourable conditions) for the top and, eventually, the mid-level of the info pyramid.
The extended as well as the synthetic definitions for the above mentioned 4+2 avalanche problems suggested by the working group still need to be fully discussed and possibly changed. Even though if good examples for associated infographic are already available from several warning services, no agreement on their use was found.

Results Session 1 - Avalanche danger problems

General agreement was achieved on the number of avalanche problems and their use in the upper part of the information pyramid. For the upper part of the information pyramid 4 avalanche problems (new snow, drifting snow, old snow with critical layers, wet snow) + 2 optional problems/situations (gliding snow, favourable conditions) will be adopted. The WG shall work on possible application of the avalanche danger problems also for the mid-level of the info pyramid (travel advices, more detailed info, etc.) as well as onto the general criteria to use and select the problems to be issued. The WG shall collect, from all warning services, no later than mid-September 2015, all possible comments and text changes proposal to the synthetic definition associated to each avalanche problem. No later than the end of October 2015 the WG shall propose the final **synthetic definitions** to be adopted and tested during the next two winter seasons. The warning services shall report about the feedback from the, possible, largest number of end users for each country by end of May 2016. By September 2016 the WG shall collect, from all warning services, all possible comments and text changes proposal to the **extended definitions** associated to each avalanche problem. No later than by the end of February 2017 the WG shall propose the final extended definitions and criteria of usage and selection to be adopted during the 19th EAWS meeting.

Discussion Session 2 - Avalanche forecasting problems: full depth slab avalanches, gliding avalanches, wet snow avalanches, slush flows

Canada, Tyrol, Switzerland and Slovakia presented several examples of avalanche forecasting problems about such avalanche types (see presentations pdf files).

Results Session 2 - Avalanche forecasting problems: full depth slab avalanches, gliding avalanches, wet snow avalanches, slush flows

EAWS has started a general discussion on this issue. The WG shall keep working on this issue to ensure the maximum exchange and sharing of experience about how to enhance the forecasting of such type of avalanche phenomena.

Discussion Session 3 - EAWS regulations

A general agreement was not achieved onto the proposed regulations. The warning services agree about the needing of such regulations but several points still need to be discussed.

Results Session 3 - EAWS regulations

The assembly voted about the following points:

- Voting concept "one nation/one vote" has been approved by (**Yes – 13** – Andorra, Austria, France, Germany, Great Britain, Iceland, Italy – AINEVA, Norway- NVE, Romania, Spain - Catalunya, Slovakia, Switzerland, Sweden; **No – 2** – Italy - METEOMONT, Norway - NGI);
- The regulation will go back to WG for a general discussion on the other points [**Yes – 9** - Switzerland, Norway-NVE, Sweden; Great Britain, Germany, Slovakia, Austria, Italy - METEOMONT; **No – 7** - Andorra, France, Iceland, Italy – AINEVA, Romania, Spain, Spain - Catalunya,].

The WG shall collect, from all warning services, no later than mid-September 2015, all possible comments and text changes proposal to the EAWS regulations. No later than the end of February 2016 the WG shall propose the final draft copy of the regulations and synthetic definitions to be circulated and adopted during the 19th EAWS meeting.

Discussion Session 4 - Local versus regional forecast

Italy, Norway, France, Spain and Scotland presented several examples of local forecasting and related problems (see presentations pdf files).
The discussion has shown that the local forecast is strongly influenced by the type of activity which it addresses (roads, construction sites or mining, ski areas, etc.), by local factors and by legislation. Once again it has been stated that the European Avalanche Danger Scale is unsuitable for areas smaller than 100 km^2 and especially for single slopes. Different users group need different detailed info on point specific conditions. The issue is also complicated by the missing of an official avalanche forecaster education, the missing of standardized interaction protocol between forecasting services (data exchange; forecasting tools) and by often limited economic resources.

Results Session 4 - Local versus regional forecast

The WG shall take charge of this issue involving in the discussion the local warning services already active. Criteria should be established about the general concept of a local forecast, the use of the danger level, more user-oriented forecasting products (roads, construction or mining sites vs. recreational users).

Discussion Session 5 - Data exchange, encoding standards, CAAML, EAWS website

CAAML as a data sharing standard is still used by only few warning services. The main goal in adopting such standard is to provide the first level information according to the information pyramid for end users (avalanche bulletin on Apps, websites and new media in general) and enhance data sharing between services. SNOWSAFE is an App (www.snowsafe.at) based on CAAML which has already been adopted by Austria, Germany, Slovakia and Catalunya to issue their avalanche bulletins on new media.
Patrick Nairz presented the new EAWS website map. The SnowProfile web tool is now working, it is based on CAAML, it classifies the profiles using the Swiss classification criteria. The glossary will be kept updated.
ARPA Piemonte - AINEVA presented an algorithm for unmanned validation of automatic snow depth measurements.

Samuel Morin presented the general criteria of the COST Action – ES1404. The project involves 24 countries funded by the EU Horizon2020 program; COST is facing budget cuts.

Results Session 5 - Data exchange, encoding standards, CAAML, EAWS website

Services are invited to adopt, if possible, CAAML as a data sharing standard and as an encoding standard for their avalanche bulletins.
The EAWS glossary will be kept updated and consistent with the future changes (see avalanche problems, avalanche size scale, Bavarian Matrix, etc.).
EAWS website, SnowProfile and avalanche accident dataset will still be implemented in the future.The WG will still try to find ways for enhancing data sharing and data encoding standardization.

COST Action – EAWS would like to apply for the next call. A sub-working group will be in charge to study the feasibility and prepare, eventually, all the documents needed. Warning services are kindly asked to provide info, if need, to this WG. Anyway EAWS must fix high expectation for the COST project and set reasonable targets for a time span of 4 years.

Discussion Session 6 - Avalanche size scale

The proposal of changing the avalanche size scale has raised considerable debate since such changes would be reflected also in the European Avalanche Danger Scale and the Bavarian Matrix. The descriptive adjectives for each size degree should be consistent with the European Avalanche Danger Scale definitions as well as with the Bavarian Matrix.

Results Session 6 - Avalanche size scale

The WG shall take charge of this issue involving its harmonization with the European Avalanche Danger Scale definitions. The WG shall collect, from all warning services, no later than December 2015, all possible comments and text changes proposal to the avalanche size scale. No later than the end of May 2016 the WG shall propose the final draft copy of the avalanche size scale to be circulated and adopted during the 19th EAWS meeting.

Discussion Session 7 - Bavarian Matrix, Avalanche Danger Scale, Icons

The discussion covered various related topics and connected to the previous issue (see Session 6). The No rating and No Snow icons, already presented during the 17th EAWS Meeting in Barcelona, have been illustrated after a successful testing period, during the last two years, by several warning services.
The METEOMONT service presented some experimental icons.
LWD Tirol proposed to rename the Danger Levels due to the fact that “considerable” is an ambiguous term in several languages, e.g. German, Italian, French and English (see also attached pdf file).
Those issues were followed by a lengthy discussion on the current Bavarian Matrix which shows some inconsistencies and limitations compared to the actual European Avalanche Danger Scale definitions and the change proposal of the Avalanche Size Scale. Two possible approaches for the realization of the new matrix and related changes to the Danger Scale and Size Scale have been illustrated (WG and AINEVA’s forecasters – see attached files). Both require a period of testing, and some efforts to solve inherent inconsistencies in the current matrix and the proposed amendments to the danger scale and size scale as well as an attempt to merge the two solutions (which are quite similar).

Results Session 7 - Bavarian Matrix, Avalanche Danger Scale, Icons

No rating / no snow icons, presented during the 17th EAWS Meeting in Barcelona, were finally approved by Austria, France, Germany, Great Britain, Italy – AINEVA and METEOMONT, Norway- NVE, Romania, Switzerland, Sweden. However, for the no rating icon it is suggested to avoid the question mark and to adopt the North America version (without question mark).
Icons proposed by Meteomont will be discussed inside the WG.
Proposal of changes (rename of levels and definition changes) to the European Avalanche Danger Scale, to the Avalanche Size Scale and to the Bavarian Matrix will be discussed, as interconnected issues, by the WG as it was not possible to achieve a general agreement

Conclusion Session

The 18th EAWS meeting ended with the election of the EAWS deputy and WG coordinator and the election of the next conference venue. LWZ Bayern - Germany run for to the host of the next EAWS meeting while holding the EAWS deputy charge. Hans Konetschny (LWZ Bayern - Germany) has been elected as EAWS deputy with the votes of Austria, Great Britain, Italy – AINEVA and METEOMONT, Norway- NVE, Spain, Spain - Catalunya, Slovakia, Switzerland, Sweden. The assembly expressed an unanimous thanks to the work done by Glòria Marti (IGC – Catalunya - Spain) as the EAWS deputy during the last years. Igor Chiambretti (AINEVA – Italy) was reappointed by the assembly as the WG coordinator with the votes of Austria, Great Britain, France, Germany, Italy –METEOMONT, Norway- NVE, Spain, Spain - Catalunya, Slovakia, Switzerland. The 19th EAWS meeting will take place in 2017 in Germany – Bayern.

18th EAWS Meeting Program

Thursday 4th June 2015

14:00 – 18:00 Participants' registration and poster sessions

Topics for the **poster sessions**:

Avalanche forecasting:

- "Remote sensing, model and in-situ data fusion for snowpack parameters and related hazards in a climate change perspective (Proiect SEE – SnowBall RO14-0011)" - [Stăncălie, G., Solberg, R., Gogu, R.C., Mătreaţă, M., and Voiculescu, M., – Romanian National Meteorological Adimin., Norwegian Computing Center, Tech. Univ. Civil Eng. Romania, Nat. Inst. Hydrology and Water Management; West Univ. Timişoara - Romania];
- "ALURTE avalanche danger bulletin 2014/15 - First Winter season" - [Hurtado, R., and Huelin Rueda, P., – ALURTE – Canfranc - Spain];
- Avalanche Problems - [Valt, M., - ARPA Veneto, Arabba Avalanche Centre – AINEVA - Italy];
- "Precipitation type identification - the operational algorithm in ARPA Piemonte based on weather radar and NWP data" – [Campana, V., Cremonini, R., Bechini, R., Gaeta, A.R., Raccanelli, I., Prola, M.C., and Barbero, S. - ARPA Piemonte – Italy];
- "Snow-avalanche hazard evaluation in the Ligurian ski resorts (Italy)" – [Brandolini, P., Faccini, F., Fratianni, S., Freppaz, M., Giardino, M., Lazzeri, R., Maggioni, M., and Romeo, V., - Univ. Genoa, Univ. Turini, METEOMONT – Italy];
- "Mountain Weather Forecasting At CMR Milano Linate" – [Villa, D., Reina, C., Ajello, C., and Ferrai, G., - Italian Air Force Meteorological Service C.M.R. - Centro Meteorologico Regionale Milano Linate – METEOMONT - Italy].

Communication, new media and bulletins:

- "User rating of the Swiss avalanche forecast – part 1 - Effect of the new bulletin-structure" - [Winkler, K., and Techel, F., - WSL-SLF – Switzerland];
- "User rating of the Swiss avalanche forecast – part 2 – Bulletin user analysis" - [Winkler, K., and Techel, F., - WSL-SLF – Switzerland];
- "Towards a European ATES platform" – [Gavalda, J., Moner, I., Bacardit Penarroya, M., – Centre de Lauegi d'Aran – Spain];
- "SnowTerm – a thesaurus on snow and ice" – [Plini, P., Salvatori, R., Valt, M., De Santis, V., and Di Franco, S., Nat. Res. Council of Italy – Inst. Atmospheric Pollution Research; ARPA Veneto – Arabba Avalanche Centre - Italy];
- "Piedmont seasonal weather, snow and avalanche report @ a glance" – [Pelosini, R., Nicolella, M., Renier, L., Prola, M.C., Faletto, M., Solero, E., and Viglietti, D. - ARPA Piemonte – Italy];
- "New media product in Piemonte - the avalanche bulletin video" – [Prola, M.C., Faletto, M., Viglietti, D., Solero, E., Saladin, A., and Barbera, E., - ARPA Piemonte – Italy];
- The new Italian snow and avalanche App for Android and iOS in English language – [METEOMONT - Italy];
- The Italian State snow and avalanche bulletin – new structure and organization of the information translated in five languages – [METEOMONT - Italy].

Data collection and exchange:

- "Collecting snow measurements with Ushahidi – ARPA Piemonte experience 2014-2015" – [Cremonini, R., Gaeta, A.R., Solero, E., Pispico, R., Faletto, M., Prola, M.C. and Barbero, S., - ARPA Piemonte – Italy];
- "Snow avalanche measurements and risk estimation – a balance at the end of ten seasons" - [Milian, N., – National Admin. Meteorology - Romania];
- "www.snowcrystals.it" [Salvatori, R., and Valt, M., - Nat. Res. Council of Italy – Inst. Atmospheric Pollution Research - Italy];
- "GeoAvalanche – A snow avalanche spatial data infrastructure in the cloud" – [Bartoli, F., - CTO Geobeyond Srl – Italy].

Civil protection, risk forecasting:

- "Safer winter trips in Romania - avalanche risk forecasting and protection" - [Milian, N., and David, A. – National Admin. Meteorology Romania; Sibiu Mountain Rescue Team - Romania];
- "Local forecasting for avalanche danger on mountain roads N330 and A2606" - [Hurtado, R., and Huelin Rueda, P., – ALURTE – Canfranc - Spain];

- "From avalanche hazard to avalanche risk – a method for the evaluation of vulnerability and the Lombard Continuous Matrix" – [Valsecchi, I.Q., Cucchi, A., and Hagos, S., - UO Civil Protection Lombardia Region – Italy and Progesi Group BV-Tech - Italy];
- "Recreational avalanche accidents in Switzerland" – [Techel, F., and Zweifel, B., - WSL-SLF – Switzerland];
- The National snow and avalanche monitoring network for the Civil Protection: an example of collaboration between State and Regional Services – [METEOMONT - Italy].

Sponsor Corner:

- High Resolution Laser for measuring snow depth (Georg Heinemann, G. Lufft GmbH | Optical Sensors | Berlin Office)**.**

Friday 5th June 2015

08:00 – 09:00 Participants' registration

09:00 – 09:30 Meeting opening and institutional greetings
(chairperson: Vincenzo Romeo – Country Manager of METEOMONT)

Cesare Patrone	(Head of the Italian State Forestry Corps)
Daniela Piccoli	(Director of METEOMONT Division)
Silvano Gandino	(METEOMONT Manager – Alpine Troops Command)
Cristiano Aiello	(METEOMONT - Italian Air Force National Meteorological Service)
Gloria Marti	(EAWS Deputy)
Igor Chiambretti	(EAWS WG Coordinator - AINEVA)

09:30 – 10:40 Session 1
Avalanche danger problems (chairperson: Rudi Mair– LWD Tirol)

1) General overview of past experiences:
   - Patrick Nairz LWD Tirol
   - Thomas Stucki SLF
   - Solveig Kosberg Ovstedal NVE
   - Mauro Valt AINEVA – METEOMONT
2) An introduction to discussion and proposal (Igor Chiambretti – AINEVA – EAWS WG coordinator);
3) 1st Proposal (Mauro Valt – ARPAV CVA – AINEVA);
4) 2nd Proposal (Vincenzo Romeo – METEOMONT).

10:40 – 11:00 Coffee break and poster session

11:00 – 11:25 Discussion and deliberation (Session 1)

11:25 – 11:35 Sponsor speech

11:35 – 12:20 Session 2
Avalanche forecasting problems: full depth slab avalanches, gliding avalanches, wet snow avalanches, slush flows
(chairperson: Karl Klassen – Avalanche Canada)

1) Overview on North America approach (Karl Klassen – Avalanche Canada);
2) Full depth slab avalanches and gliding avalanches, past experience examples (Patrick Nairz - LWD Tirol);
3) Wet snow avalanches and gliding avalanches, past experience examples (Frank Techel– WSL-SLF);
4) Glide events analysis in Slovakia (Biskupič Marek and Kyzek Filip – Avalanche Prevention Center – Slovakia).

12:20 – 13:50 Lunch

13:50 – 14:20 Discussion and deliberation (Session 2)

14:20 – 14:30 Sponsor speech

14:30 – 15:20 Session 3
EAWS regulations (chairperson: Mark Diggins - Scottish Avalanche Information Service)

14:30 – 14:50 Regulation illustration (Igor Chiambretti – AINEVA – EAWS WG coordinator).

14:50 – 15:20 Discussion and deliberation (Session 3)

15:20 – 15:40 Coffee break and poster session

15:40 – 16:40 **Session 4**
Local versus regional forecast (chairperson: Christoph Mitterer – LWD Bayern)

Experiences and problems:

1) Local forecast at Livigno (Fabiano Monti – ALPsolut);
2) Local forecast in Norway, problems and possible solutions derived by such experience (Peter Gauer – NGI);
3) European Avalanche Danger Scale and local forecast – use and abuse (Peter Gauer – NGI);
4) French experience with a focus on the problem of the information towards the off-piste skiers (Cecile Coleou – Meteo France);
5) Twelve years of local avalanche forecasting in Val d'Aran highways – An example of merging local and regional forecast (Jordi Gavalda - Aran Avalanche Center);
6) Local Versus Regional Forecasting - Observations from The Scottish Avalanche Information Service – (Mark Diggins – SAIS).

16:40 – 17:00 Discussion and deliberation (Session 4)

17:00 – 17:30 **Session 5**
Data exchange, encoding standards, CAAML, EAWS website
(chairperson: Cecile Coleou - Meteo France)

General overview:

1) CAAML, SnowProfile, Accidents, EAWS website (Patrick Nairz – LWD Tirol);
2) Encouraging snow data sharing: an algorithm for unmanned validation of automatic snow depth measurements (Mattia Faletto – ARPA Piemonte – AINEVA);
3) COST Action (Samule Morin – Meteo France);

17:30 – 17:40 Discussion and deliberation (Session 5)

Saturday 6th June 2015

09:00 – 09:20 **Session 6**
Avalanche size scale (chairperson: Thomas Stucki - SLF)

1) Avalanche size scale, a proposal (Ernesto Crescenzi – METEOMONT);
2) Avalanche size scale - AINEVA's forecasters considerations (Stefano Sofia - CF Regione Marche - AINEVA);
3) WG report and proposal (Muller Karsten – NVE).

09:20 – 10:00 Discussion and deliberation (Session 6)

10:00 – 10:20 Coffee break and poster session

10:20 – 12:20 **Session 7**
Bavarian Matrix, Avalanche Danger Scale, Icons
(chairperson: Gloria Marti i Domenech – ICGC – EAWS deputy)

1) No rating / No snow icons (Paola Dellavedova – UNV Aosta Valley - AINEVA);
2) New icons - considerations (Ernesto Crescenzi – METEOMONT);
3) Danger level scale and Bavarian Matrix – AINEVA's forecasters considerations (AINEVA);
4) Renaming the Danger Levels (Rudi Mair – LWD Tirol);
5) WG report and proposal (Thomas Stucki – SLF).

12:20 – 13:50 Lunch

13:50 – 14:10 Discussion and deliberation (Session 7)

14:10 – 15:15 **Conclusions** (chairpersons: Vincenzo Romeo – METEOMONT)

14:10 – 14:30 Igor Chiambretti – AINEVA-EAWS WG coordinator

14:30 – 14:55 Elections - Gloria Marti i Domenech – ICGC – EAWS deputy
14:55 – 15:15 Summarization; next EAWS-conference - Igor Chiambretti – AINEVA-EAWS WG coordinator; Gloria Marti i Domenech – ICGC – EAWS deputy.