October 07-12 INNSBRUCK
ISSW 2018

international snow science workshop
A MERGING OF THEORY AND PRACTICE
The International Snow Science Workshop 2018 would like to sincerely thank the following organizations for supporting ISSW 2018.

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WELCOME MESSAGE

Dear Friends and Colleagues!

On behalf of the International Snow Science Workshop we are pleased to welcome you to the ISSW 2018, taking place Oct 7 to 12, 2018, at Congress Innsbruck, Austria.

The Innsbruck Organizing and Program Committees have made a large effort to breathe life into the ISSW motto "A merging of theory and practice". Besides the classic General Topics, the ISSW 2018 offers Special Topic sessions, a wide range of Training Courses and Field Trips, as well as an integrated exhibition.

For the first time, the ISSW 2018 features a Public Day, where the results and topics of the conference will be discussed with a broader audience, including members of local municipalities and public administrators.

We hope you enjoy the conference and the eclectic side programme in the spectacular setting and the beautiful city of Innsbruck.

DEDICATION

We dedicate this program to the memory of our colleagues, who devoted their lives to the snow and avalanche community.
PROGRAM SUMMARY

General Topics

General Topics (GT) represent the main fields of snow and avalanche research and practice. Every GT oral session comprises 5–6 presentations of 12 minutes length, followed by up to 3 minutes for questions and discussion. GT posters are displayed throughout the whole week and will be highlighted in the poster wrap-up of the corresponding oral session.

O&P1 Snow and avalanche dynamics
O&P2 Protection measures: risk management and engineering solutions
O&P5 Snow hydrology, sustainability and climate change
O&P6 Snow making and ski resort management
O&P10 Snowpack: stability and variability
O&P11 Avalanche forecasting
O&P15 Human factors: risk and strategies
O&P16 Education and rescue

Special Topics

Special Topics (ST) are a platform for the presentation and discussion of specific current practical and scientific topics, which may aggregate multiple GTs. ST oral sessions feature a sequence of 6–7 short oral presentations, 10 minutes each, followed by 10–15 minute panel discussions.

ST oral sessions are part of the afternoon program and are carried out in parallel and concurrent to the ISSW 2018 Training Courses. ST posters are displayed throughout the whole week and will be highlighted in the poster wrap-up of the corresponding oral session.

O&P3 Integral engineering solutions; from protection forests to temporary measures
O&P4 Operational remote sensing - applications for snow and avalanches
O&P7 Avalanche detection industry and research
O&P8 Model chains and simulation
O&P9 Snow products and services
O&P12 Operational forecasting tools
O&P13 Avalanche accidents
O&P14 Avalanches and law
O&P17 Hazard communication and perception
O&P18 Information technologies
O&P19 Terrain-based decision making

Training Courses

Training Courses (TC) will give the attendees professional development opportunities by teaching the state-of-the-art. TCs cover a wide range of topics and are carried out in parallel and concurrent to the ST sessions, as part of the ISSW 2018 afternoon program.

TC1 Avalanche simulation – practical approach
TC2 Construction planning in avalanche prone terrain
TC3 Snow risk management for roads, railways and infrastructure
TC4 Snow making and snow management in ski resorts
TC5 Weather to snowpack stability
TC6 Mountain weather
TC7 Decision making on-site
TC8 Medical aspects of avalanche burial

Field Trips

Numerous Field Trips (FT) combine cultural experience with technical highlights. All FTs deal with interesting local avalanche-related problems and their solutions. All FTs take place on Wednesday Oct. 10, starting at 8:00 in front of the conference center.

FT1 Ski resort safety management
FT2 Integral avalanche risk management
FT3 Water and snow management in modern ski resorts
FT4 Avalanche defense structures
FT5 A history of multifunctional avalanche mitigation
FT6 Hazard and risk mapping
FT7 Temporary avalanche control and detection systems
FT8 Snow and safety management
FT9 IT networks and decision making in ski resorts
FT10 Transport infrastructure and avalanches

Watch our teaser on YouTube
**Oral Presenters**

Please be sure to bring your presentation on a USB-stick to the MEDIA CHECK* at the Congress Innsbruck 2 hours prior to the start of your session at the very latest. Computers are available to preview and upload presentations.

Do not bring your own laptop for the presentation. Standard format will be 16:9 and presenters are asked to prepare their slides in English. If your presentation contains video sequences, please ensure to pack them with a standard codec and do not store them in a Quick Time format since this may not be compatible with PowerPoint presentations.

In order to maintain good time-keeping, please be sure not to exceed the allotted speaking time.

**Speaker breakfast times**

- **Monday, Oct. 8** 07:00 – 07:45
- **Tuesday, Oct. 9** 07:00 – 07:45
- **Thursday, Oct. 11** 07:00 – 07:45
- **Friday, Oct. 12** 07:00 – 07:45

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**Poster Presenters**

**Poster Format**

Please bring your poster in portrait style (max. format A0, portrait format, 841 x 1189 mm). Mounting material will be provided on site.

All posters should be displayed during the entire ISSW 2018 and mounted on Monday, Oct. 8, 2018 in the morning. They have to be taken down on Friday, Oct. 12, 2018 by the end of ISSW 2018.

If you do not remember your poster board number, please look it up on the list of posters.

**Poster Sessions**

There will be daily sessions explicitly dedicated to the posters in Hall Dogana from 16:45 – 18:00. Please make sure that you or one of your co-authors is present at your poster site and prepared to answer questions.

Please check the program for the session your poster has been allocated to.

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**Supported by**

Gauer Peter
Baldissera Roberto
Elder Kelly
Hairside Susanne
Hähler Ina
Kerschbaumer Ralph
Krismer Hanna
Walter Mechthild

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*Please check in at the registration desk for the exact room location.
General information
TRAVEL TO INNSBRUCK

By Plane
Innsbruck has an international airport that is primarily served by Austrian Airlines and partner airlines. Several daily flights connect Innsbruck to Vienna and Frankfurt. Additional flights are available from and to a number of European destinations. Please ask your travel agent for options or refer to www.innsbruck-airport.com.

Intercontinental travellers normally connect via Frankfurt or Vienna. As many intercontinental non-stop flights arrive in Munich, this airport may also be considered a final destination. Transfer from Munich to Innsbruck is convenient by airport shuttle service or train (approx. 2.5 hrs transfer time) or you may rent a car in Munich and drive to Innsbruck (2 hrs driving time).

By Train
Innsbruck is connected to the dense European Inter-City railway network. Therefore, fast and convenient daily trains reach Innsbruck from all over Europe. Please check www.oebb.at for information on train schedules. The main railway station is located a 10 to 15 min walk from Congress Innsbruck.

By Car
Innsbruck is connected to major European motorways arriving from the North (Western Europe and Germany via Munich), from the South (Italy via Verona), from the West (Switzerland via Zurich) and from the East (Hungary via Vienna). This means that Innsbruck can be reached by car within a couple of hours driving from large parts of Central, Western and Eastern Europe.

REGISTRATION INFORMATION

Registration opening hours
The ISSW 2018 registration desk is located close to the main entrance of Congress Innsbruck at the Europa Foyer. Opening hours are as follows:

<table>
<thead>
<tr>
<th>Day</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Sunday, Oct. 7</td>
<td>16:00 – 19:00</td>
</tr>
<tr>
<td>Monday, Oct. 8</td>
<td>07:00 – 16:45</td>
</tr>
<tr>
<td>Tuesday, Oct. 9</td>
<td>07:00 – 16:45</td>
</tr>
<tr>
<td>Wednesday, Oct. 10</td>
<td>Registration is closed</td>
</tr>
<tr>
<td>Thursday, Oct. 11</td>
<td>07:00 – 16:45</td>
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<tr>
<td>Friday, Oct. 12</td>
<td>07:00 – 16:45</td>
</tr>
</tbody>
</table>

Exhibition opening hours
Sunday, Oct. 7: 18:30 – 21:00
Monday, Oct. 8: 08:00 – 19:00
Tuesday, Oct. 9: 08:00 – 19:00
Wednesday, Oct. 10: 08:00 – 19:00
Thursday, Oct. 11: 08:00 – 20:00
Friday, Oct. 12: 08:00 – 18:00

Registration and delegate information help desk
The ISSW 2018 delegate information & help desk is located at the registration desk at the Europa Foyer, close to the main entrance of Congress Innsbruck. Knowledgable staff will provide information and assist with:
- Field Trips
- Local area
- Ground transportation
- Airport transfers
- Sightseeing tours
- Restaurant recommendations
FEES

Registration Fees

<table>
<thead>
<tr>
<th>Registration Fees</th>
<th>EARLY BIRD (until June 18, 2018)</th>
<th>REGULAR (until October 4, 2018)</th>
<th>ON SITE</th>
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<tbody>
<tr>
<td>Full registration</td>
<td>390 €</td>
<td>450 €</td>
<td>510 €</td>
</tr>
<tr>
<td>Students</td>
<td>150 €</td>
<td>150 €</td>
<td>180 €</td>
</tr>
<tr>
<td>Oral / Poster presenters</td>
<td>390 €</td>
<td></td>
<td></td>
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<tr>
<td>½ WEEK REGISTRATION</td>
<td>EARLY BIRD (until June 18, 2018)</td>
<td>REGULAR (until October 4, 2018)</td>
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</tr>
<tr>
<td>SUN–WED</td>
<td>240 €</td>
<td>280 €</td>
<td>320 €</td>
</tr>
<tr>
<td>WED–FRI</td>
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<td>280 €</td>
<td>320 €</td>
</tr>
<tr>
<td>DAY TICKETS</td>
<td>EARLY BIRD (until June 18, 2018)</td>
<td>REGULAR (until October 4, 2018)</td>
<td>ON SITE</td>
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<tr>
<td>MO</td>
<td>160 €</td>
<td>180 €</td>
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<td>TUE</td>
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<td>THU</td>
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<td>FRI</td>
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Field Trips  For details see p. 114

<table>
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<th>Field Trips</th>
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<td>FT1</td>
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<tr>
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<td>25 €</td>
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<td>FT4</td>
<td>40 €</td>
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<td>FT5</td>
<td>40 €</td>
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<td>FT6</td>
<td>40 €</td>
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<td>FT7</td>
<td>40 €</td>
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<td>40 €</td>
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<tr>
<td>FT9</td>
<td>40 €</td>
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<tr>
<td>FT10</td>
<td>40 €</td>
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Side Program  For details see p. 126

<table>
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<tr>
<th>SIDE PROGRAM</th>
<th>PRICE</th>
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<tbody>
<tr>
<td>Ice Breaker</td>
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</tr>
<tr>
<td>Innsbruck Night</td>
<td>45 €</td>
</tr>
<tr>
<td>D’Night</td>
<td>40 €</td>
</tr>
<tr>
<td>Public Welcome</td>
<td>no fee</td>
</tr>
<tr>
<td>ISSW 2018 Banquet</td>
<td>75 €</td>
</tr>
<tr>
<td>Fernie Night</td>
<td>no fee</td>
</tr>
<tr>
<td>Ski race</td>
<td>no fee</td>
</tr>
</tbody>
</table>

REGISTRATION MATERIAL

Full conference registration fee includes the following for each delegate:

- Name badge
- Delegate bag and USB stick with conference proceedings
- Conference program and abstract book
- Attendance to the Welcome Reception – Sunday, Oct. 7
- Attendance to all conference sessions & social hours on the day of registration
- Access to exhibition (incl. Poster sessions)
- Coffee breaks
- Mobile app

Name badges
Delegates are requested to wear their name badge at all times in order to participate in the conference sessions, networking events and exhibition.
ONSITE SERVICES

Experience and share ISSW 2018!
Share your images and experiences from ISSW 2018 with colleagues and friends.

www.issw2018.com  #ISSW2018

Wi-Fi connection
ISSW 2018 is providing free Wi-Fi in the conference area. To ensure a positive Wi-Fi experience for all users please do not use your own wireless hotspot device. The additional Wi-Fi devices create significant RF interference which can interfere with all Wi-Fi networks. Please turn these devices off and connect to the Wi-Fi network ISSW and open your web browser to connect to the internet.

Network name: ISSW
Password: innsbruck2018

Mobile App
Please download the ISSW 2018 mobile app for the most up-to-date conference schedule:

INFORMATION

About Austria
Austria has been a member of the European Union since 1995, the population is 8.5 million, the capital city being Vienna (Wien). Politically, Austria is a democratic republic with the prime minister as the head of the government and parliament elections every five years. The formal head of state is the president, who has more representative duties than political power. The country is divided into nine federal states; Innsbruck is the capital of the state of Tyrol. The language spoken in Austria is German, but most Austrians speak English and many speak some French or Italian too and are happy to be of service to visitors.

About Innsbruck
Innsbruck, the capital of Tyrol, is located in the Alpine region of Austria, in the valley of the river Inn, at 580 metres above sea level. It is surrounded by mountain ranges and numerous peaks which reach an altitude of approx. 2,700 metres above sea level. The city has 121,000 inhabitants and is home to one of the oldest universities in Europe, founded in the year 1562. Today, over 30,000 students attend the university in Innsbruck. Due to its location, Innsbruck has an excellent tourist infrastructure and is best known for its rich cultural heritage, as well as for its endless opportunities in sports and recreation that include golf, hiking, climbing, rafting, paragliding, canyoning, swimming in lakes, skiing and snowboarding not only in winter time, but also in summer at one of the glaciers nearby. Innsbruck has been the host for Olympic Winter Games twice, in 1964 and 1976. In the town, some 160 restaurants, cafes and bars, most of them in walking distance to the convention centre, offer traditional Tyrolean and Austrian specialities as well as international dishes.

Abstracts
Abstracts selected for ISSW 2018 are presented in Poster and Oral session. All accepted and confirmed abstracts are available on USB stick as well as in the printed abstract book. You can also see all documents in the “speakers” section of the ISSW 2018 App.

Attire
Business casual is appropriate. Room temperature can vary in session rooms. We encourage attendees to dress in layers for their personal comfort.

AM and PM networking breaks
During the conference week, complimentary light snacks and refreshments will be available for registered delegates in the exhibition area.
Cameras and cell phones
No unauthorised recording is allowed in any event during the ISSW 2018. As a courtesy to fellow attendees, please set your cell phones on silent mode during the session.

City transportation and taxi
There is a good public transport system in Innsbruck and its surroundings. Most buses and trams operate until midnight. Detailed information on bus schedules is available at your hotel or at the delegate information help desk. Tickets can be pre-purchased from tobacco-nists, ticket machines at the stops or directly on the bus. Taxis are usually available outside the conference center’s entrance. If you need support please contact the registration or delegate information help desk.

Currency
The official currency in Austria is the EURO (€). Major credit cards are accepted in many hotels, shops and restaurants. Automatic teller machines are also available throughout the city.

Congress documents and badges
Congress documents have to be collected on-site at the registration desk. Name badges must be worn visibly at all times during the conference, networking activities and in the exhibition area.

Certificate of attendance
A certificate of attendance will be available at the conference’s registration desk.

Electricity
Electricity in Austria is 230 Volts, alternating at 50 cycles per second. If you travel to Austria with a device that does not accept 230 Volts at 50 Hertz, a voltage converter is required.

Information for speakers
Please bring your lecture on a USB stick and hand it in at the media check (located next to the registration desk on the ground floor of Congress Innsbruck. Please make sure to do so at least one hour before your session starts. You need not bring your own computer. The meeting rooms are equipped with PC and data projector.

Lost & Found
Lost and found items should be returned/claimed at the registration desk.

Restaurants & bars
There are plenty of restaurants and bars in the inner city of Innsbruck. Please ask at the delegate services information desk for information and recommendations.

Smoking
It is against the law to smoke in any indoor public place or worksite in Austria. Smoking is prohibited in the entire building of Congress Innsbruck. Please note that public transport, transit shelters, taxis and work vehicles are also smoke-free.

Official carrier
The Lufthansa Group Partner Airlines offer comprehensive global route network linking major cities around the world. As official carrier the Lufthansa Group Partner Airlines offer special discounted travel fare. To make a reservation please visit www.ISSW 2018.com and check the “your trip to Innsbruck” section.

Parking
There is an underground car park at the Congress Centre. Participants obtain tickets at reduced rates from the porter’s desk on the ground floor of Congress Innsbruck. Please note that these reduced fares only apply to the Congress garage (garage entry on the left side) and not the other parking facilities (garage entry on the right side). Please also note that street parking in the city is available but limited to 90 minutes.

Staff & volunteers
Volunteers are working throughout the conference venue and are happy to assist with any questions delegates may have regarding ISSW 2018 or Congress Innsbruck. Delegates can easily locate them by their TEAM shirts.

Train station
Innsbruck main station is located in the centre of the city within walking distance of the conference venue. Taxis are also available outside the station's entrance.
Venue ISSW 2018
Congress Innsbruck
Rennweg 3
6020 Innsbruck
T: +43 512 5936 1100

Disclaimer
The organizers have made every attempt to ensure that all information in this publication is correct. The organizers take no responsibility for changes to the program or any loss that may occur as a result of changes to the program. Some of the information provided in this publication has been provided by external sources. Although every effort has been made to ensure the accuracy, currency and reliability of the content, the organizers accept no responsibility in that regard.

Liability and insurance
Neither the organizers nor CMI / PCO Tyrol Congress as their agency accept any liability for personal injuries, or loss of, or damage to property belonging to congress delegates or accompanying persons, either during or as a result of the conference or during any of the networking events. It is recommended that participants arrange for their own personal health, accident and travel insurance before they depart from their countries. Only written agreements shall be valid. The play of jurisdiction shall be Innsbruck.
The scientific and networking events of the ISSW 2018 will take place at Congress Innsbruck, Rennweg 3, Innsbruck. Special information is available at the registration desk for Field Trip meeting points on Oct. 10.

The session halls are located on the ground, 1st and 2nd floor. The board and project meeting rooms are located on the 3rd floor. The exhibition area as well as the poster area are located in Hall Dogana on the ground floor.
The International Snow Science Workshop (ISSW) has a long-standing tradition in North America, where it has been held bi-annually since 1982. The ISSW 2018 in Innsbruck is the 22nd overall and third European ISSW, after Davos (Switzerland) in 2009 and Grenoble (France) in 2013.

The program of the ISSW 2018 features 425 contributions from 27 different countries, underlining the international character of the conference. These contributions were assigned to 19 sessions, distributed over eight General (GT) and eleven Special Topics (ST). In addition, ten Field Trips (FT) and eight Training Courses (TC) underpin the ISSW motto ‘A Merging of Theory and Practice’, promoting knowledge transfer between scientists and practitioners.

Each GT and ST session includes oral and poster presentations — in total 140 oral and 285 poster presentations. Besides the main conference language (English), the ISSW 2018 provides interpretation services in French, Italian and German for all oral sessions located in the main hall ‘Tirol’. Posters are presented during designated poster sessions in the afternoon. They are displayed for the duration of the conference in conjunction with the exhibition and may be visited any time. To promote the variety of presentation methods, posters will be especially highlighted in poster wrap-ups, which will be presented after the last oral presentation of each session. This is a new approach to summarize the content of the posters and point out the highlights of each poster session. After each GT and ST session, the chairs, speakers and interested audience are invited to meet at the speaker’s corner to discuss open questions of the session and contribute to the content summary. The speaker’s corner has an ‘Idea Wall’, which is an interactive communication platform to summarize the contents of the conference, supported by graphic recording.
Review and Scheduling

To provide a high quality and variety-rich program, the ISSW 2018 applied a transparent review and scheduling process, emphasizing the involvement of the international snow and avalanche community. Each short abstract was assigned to at least three of the 130 international reviewers in a double-blind review.

The program scheduling followed the review ranking according to the review criteria (originality and innovation, relevance, quality), the authors’ preference and the ISSW motto ‘the merging of theory and practise’ as well as emphasizing the diversity of the program. The submitted contributions show a good mixture of theory and practice, as identified by the reviewers: 42% combining theory and practise, 21% were either rather theoretical or practical, 10% practical and 6% with a theoretical focus.

Young Snow Professional (YSP) Award

Embracing the ISSW hosting guidelines of affordability, the ISSW 2018 initiated the Young Snow Professional (YSP) Award, encouraging young practitioners and researchers (under the age of 30) to submit their contributions.

Ten YSP-nominees were selected from around 50 submissions, following the review ranking of the short abstracts. Three beneficiaries were then chosen from this pool of nominees by the program committee, following the award guidelines, which especially consider candidates with a long travel distance and highlight the diversity of presenters:

- **ANTON KOMAROV** (Russia) with ‘A new approach to avalanche risk assessment in Russia’ (O3.8 on p. 44)
- **TAYLOR CLARK** (Canada) with ‘Establishing the link between the Conceptual Model of Avalanche Hazard and the North American Public Avalanche Danger Scale: Explorations from Canada’ (O12.4 on p. 77)
- **JOHN SYKES** (USA) with ‘Travel Behavior and Decision-Making of Lift Access Backcountry Skiers’ (O19.3 on p. 97)

Life Achievement Award

The Organizing Committee proudly announce the holders of the ISSW 2018 Life Achievement Award for exceptional, life-long contributions to the snow and avalanche community and promoting the ISSW motto of merging science and practice.

The awarded persons are:

- **JOSEF HOPF** (Austria)
- **KARSTEIN LIED** (Norway)
- **BERNHARD ZENKE** (Germany)
The General Topics (GT) represent the main fields of snow and avalanche research and practice. Every GT is divided into two sessions:

**GT Oral Session**
*Hall “Tirol”*

GT Oral Sessions are part of the morning program. Two Oral Sessions will take place in succession, with a duration of 105 minutes each and a 30 minutes coffee break in between. Every GT Oral Session comprises 5-6 presentations of 12 minutes length followed by up to 3 minutes for questions and discussion. Each session ends with a poster wrap-up to summarize and highlight the contents of the corresponding poster session. GT Oral Sessions do not require pre-registration for attendees and have no attendee limit.

**GT Poster Session**
*Exhibition hall “Dogana”*

GT Posters are displayed throughout the whole week and will be especially highlighted in the corresponding poster session. Dedicated poster sessions take place after the afternoon ST Oral sessions and Training Courses and have a duration of 75 minutes. During the poster sessions, one of the authors will be at their poster to answer questions. All GT and ST Poster Sessions of the day are carried out in parallel.

**ST Oral Session**
*Hall “Tirol” or “Innsbruck”*

ST Oral Sessions are part of the ISSW 2018 afternoon program and are carried out in parallel and concurrent to the ISSW 2018 TCs. There will be long and short oral sessions, with a duration of one or two session blocks of 75 minutes each, with a half-hour coffee break in between. Short oral sessions consist of a sequence of 6 consecutive presentations of 10 minutes each, followed by a 10-15 minute panel discussion. Long Oral Sessions will feature 7 consecutive presentations in the first and 5 in the second session of 10 minutes each, followed by a 25 minute panel discussion. Every ST Oral Session ends with a poster wrap-up of the corresponding poster session. ST Oral Sessions do not require pre-registration for attendees and have no attendee limit.

**ST Poster Session**
*Exhibition hall “Dogana”*

ST Posters are displayed throughout the whole week and will be especially highlighted in the corresponding Oral Session. Dedicated poster sessions take place after the afternoon ST oral sessions and TCs and have a duration of 75 minutes. During the poster sessions, one of the authors will be at their poster site to answer questions. All GT and ST Poster Sessions of one day are carried out in parallel.

Find more information on all presentations in the [ISSW 2018 Abstracts](http://arc.lib.montana.edu/snow-science/) and the [ISSW Proceedings](http://arc.lib.montana.edu/snow-science/), which are also available online.
GENERAL TOPIC 01
8:00—9:45
Snow and avalanche dynamics

ROOM: HALL TIROL
SESSION CHAIR: KOUICHI NISHIMURA
JAN-THOMAS FISCHER

8:05 – 8:20 O1.1
Unified modeling of the release and flow of snow avalanches using the Material Point Method
JOHAN GAUME

8:20 – 8:35 O1.2
The 18th January 2017 Rigopiano avalanche disaster in Italy – Analysis of the avalanche dynamics
BARBARA FRIGO

8:35 – 8:50 O1.3
Avalanches on Mt. Fuji, Japan: Seismic detection and tracking combined with numerical simulations
CRISTINA PÉREZ-GUILLÉN

8:50 – 9:05 O1.4
Towards a probabilistic avalanche simulation strategy for hazard mapping
FELIX OESTERLE

9:05 – 9:20 O1.5
Avalanche pressure measurements at the Vallée de la Sionne test site: Impulsive and steady loading on narrow structures
BETTY SOVILLA

9:20 – 9:25 POSTER WRAP UP
9:25 — 9:45: OFFICIAL WELCOME

M. PATEK • BMNT – Head of DG III – Forestry and Sustainability
A. MATTE • Vice- President of the Tyrolean Parliament
P. MAYER • Managing Director of the BFW
After the official welcome, a press conference will be held at the Congress Center.

GENERAL TOPIC 02
10:15—12:00
Protection measures: risk management and engineering solutions

ROOM: HALL TIROL
SESSION CHAIR: JEAN-MARC TACNET
BRIAN GOULD

10:15 – 10:30 O2.1
Wind transport scenarios based on the slope aspect for avalanche risk management purposes
ELOÏSE BOVET

10:30 – 10:45 O2.2
Reconsidering hazard zones after implementing avalanche mitigation measures: case study of the Vallascia avalanche in Airolo, Switzerland
STEFAN MARGRETH

10:45 – 11:00 O2.3
Investigating avalanche interaction with defence structures using unmanned aerial system photogrammetry
MARC ADAMS

11:00 – 11:15 O2.4
Rockslide defense structures exposed to small avalanches and snow glides
NICOLAS VILLARD

11:15 – 11:30 O2.5
Application of non-linear fracture process zone models developed for rock mechanics to avalanche initiation and associated implications for field tests
THOMAS BOONE

11:30 – 11:45 O2.6
Effectiveness of avalanche protection structures in run-out zones: the Taconnaz avalanche path case in France
THIERRY FAUG

11:45—12:00 POSTER WRAP UP AND SESSION SUMMARY
SPECIAL TOPIC 03 | PART 1
13:30—14:45

Integral engineering solutions: from protection forests to temporary measures

ROOM: HALL TIROL
SESSION CHAIR: GEBHARD WALTER
PETER BEBI

13:30 – 13:40 03.1
Multi-level avalanche risk reduction on the Trans-Canada Highway – Three valley gap remote avalanche control system (RACS)
ALAN JONES

13:40 – 13:50 03.2
Best practice guide on controlled avalanche blasting – guidelines of the province of the Tyrol on the use of temporary avalanche control measures
HARALD RIEDL

13:50 – 14:00 03.3
Prioritizing avalanche mitigation measures for the Trans-Canada Highway through Glacier National Park
CHRIS ARGUE

14:00 – 14:10 03.4
Risk-oriented vs hazard-oriented decision-making for opening and closing of traffic routes
MICHAEL BRÜNDL

14:10 – 14:20 03.5
Destructive avalanches in mediterranean region
VINCENZO ROMEO

14:20 – 14:30 03.6
Historical avalanche protection barriers as a technical and cultural heritage
ANITA DREXEL

14:30 – 14:40 03.7
Avalanche risk management in the ski resort of the Silvrettaseilbahn AG Corporation (Ischgl)
SERAFIN SIEGELE

14:40–14:45 DISCUSSION

SPECIAL TOPIC 04 | PART 1
13:30—14:45

Operational remote sensing – applications for snow and avalanches

ROOM: HALL INNSBRUCK
SESSION CHAIR: MARTIN RUTZINGER
YVES BÜHLER

13:30 – 13:40 04.1
Radar remote sensing of mountain snow: a review of current ground-based, airborne and satellite-based approaches to monitoring snow properties
HANS-PETER MARSHALL

13:40 – 13:50 04.2
Improved snow physical parameters retrieval using SAR data in the Arctic (Svalbard)
JEAN-PIERRE DEDIEU

13:50 – 14:00 04.3
Laser mapping of mountain snowpacks: enabling resilient management of water resources and avalanche hazard in a changing world
JEFFREY DEEMS

14:00 – 14:10 04.4
Analysis of the spatio-temporal development of snow surface wetness in a high alpine area using terrestrial laser scanning reflectivity
KATHARINA KNOEBL

14:10 – 14:20 04.5
Improved snow parameters estimation through integration of simulated and remotely sensed snow cover information
LUDOVICA DE GREGORIO

14:20 – 14:30 04.6
Monitoring cornice dynamics and associated avalanche activity with a terrestrial laser scanner
HOLT HANCEK

14:30 – 14:40 04.7
Mysnowmaps: an operative tool for high resolution snow mapping in real time
MATTEO DALLAMICO

14:40–14:45 DISCUSSION
SPECIAL TOPIC 03 | PART 2
15:15—16:30

Integral engineering solutions: from protection forests to temporary measures

ROOM: HALL TIROL
SESSION CHAIR: GEBHARD WALTER
PETER BEBI

15:15 – 15:25 O3.8
A new approach to avalanche risk assessment in Russia
ANTON KOMAROV

15:25 – 15:35 O3.9
How Little Cottonwood Canyon got this way and what can be done to fix it.
BILL NALLI

15:35 – 15:45 O3.10
The avalanche warning service of Austrian Railways – development of an innovative safety concept
CHRISTIAN RACHOY

15:45 – 15:55 O3.11
Cougar Corner – The Largest snow net project in the western hemisphere
BRIAN GOULD

15:55 – 16:05 O3.12
A manual for assessing, mapping and mitigating snow avalanche risk
BRUCE JAMIESON

16:05—16:30 POSTER WRAP UP AND PANEL DISCUSSION

SPECIAL TOPIC 04 | PART 2
15:15—16:30

Operational remote sensing – applications for snow and avalanches

ROOM: HALL INNSBRUCK
SESSION CHAIR: MARTIN RUTZINGER
YVES BÜHLER

15:15 – 15:25 O4.8
Remote sensing of snow cover in mountainous regions
ANDREAS DIETZ

15:25 – 15:35 O4.9
Operational avalanche activity monitoring using radar satellites: From Norway to worldwide assistance in avalanche forecasting
MARKUS ECKERSTORFER

15:35 – 15:45 O4.10
Assimilation of snow surface reflectance observations from MODIS into distributed ensemble snowpack simulations in the French Alps
BERTRAND CLUZET

15:45 – 15:55 O4.11
Monitoring avalanche debris in the French mountains using SAR observations from Sentinel-1 satellites
FATIMA KARBOU

15:55 – 16:05 O4.12
Operational Monitoring of Alpine Snow Cover within the European Copernicus Programme
THOMAS NAGLER

16:05—16:30 POSTER WRAP UP AND PANEL DISCUSSION
| POSTER | P1.1 | A Multi-Sensor Avalanche Experiment at the Fortress, Alberta | JIM MCELWAINE |
| POSTER | P1.2 | Challenges and limitations of in situ particle tracking in avalanches | ROBERT WINKLER |
| POSTER | P1.3 | First Experimental Insights on a Novel Sensor Network based Measurement Platform for Avalanche Dynamics | FELIX ERLACHER |
| POSTER | P1.4 | Relationship between avalanche size and frequency based on avalanche video image observation in a warm snowy region | YUSUKE HARADA |
| POSTER | P1.5 | Avalanche pressures at the Vallée de la Sionne test site: Interaction of avalanches and narrow structures studied with DEM | MICHAEL KYBURZ |
| POSTER | P1.6 | Monitoring of snow and ground temperature in the glide avalanche area at Trefall, Eksingadalen in Western Norway | NJÅL FARESTVEIT |
| POSTER | P1.7 | Snow and soil-mixed avalanches induced by a large earthquake | YOICHI ITO |
| POSTER | P1.8 | Studies on the snow avalanche dynamics by the full-scale experiments in Niseko, Japan | KOUICHI NISHIMURA |
| POSTER | P1.9 | Snow gliding and glide snow avalanches: recent outcomes from two experimental test sites in Aosta Valley (NW Italian Alps) | MARGHERITA MAGGIONI |
| POSTER | P1.10 | Ice/snow avalanches from the hanging snout of the Palòn de la Mare glacier (Central Italian Alps) | MARGHERITA MAGGIONI |
| POSTER | P1.11 | Retrieving ice-avalanche basal friction law parameters from a back-analysis of the collapse of Altels glacier (1895, Bernese Alps, Switzerland). Application to Taconnaz glacier instability (French Alps) | EMMANUEL THIBERT |
| POSTER | P1.12 | Analysis of two spontaneous avalanche events based on the observations of the Long-Term Ecological Research network in Matsch, Südtirol, Italy | CHRISTIAN BRIDA |
| POSTER | P1.13 | Avalanche probability: Slab release and the effect of forest cover | PETER GAUER |
| POSTER | P1.14 | Mass and temperature effects of entrained snow on the lubricated flow regime and implications for predicting avalanche run-out distance | KATREEN WIKSTROM JONES |
| POSTER | P1.15 | Study on Friction Characteristics of Snow Using Rotary Drum Device | KENICHI ODA |
| POSTER | P1.16 | Granulation experiments with snow in a rotating drum | KILIAN HEIL |
| POSTER | P1.17 | Granular flow on a chute: avalanche simulations on a rough inclined plane | GIOVANNA CARAMUTA |
| POSTER | P1.18 | Monitoring low-tree trunk strain during snow season on an avalanche slope | AYANA MIYASHITA |
SPECIAL TOPIC  P2
16:45—8:00
Protection measures: risk management and engineering solutions
ROOM: EXHIBITION HALL / DOGANA

POSTER P2.1
Transportation Avalanche Research Pooled Fund Program
JOHN STIMBERIS

POSTER P2.2
Braking mounds in avalanche simulations – a SamosAT case study
CHRISTIAN TOLLINGER

POSTER P2.3
Monitoring forces in steel wire rope nets: Evaluation of short and long term influences
ENGELBERT GLEIRSCHER

POSTER P2.4
New generation of drifting snow FlowCapt acoustic sensor
HERVÉ BELLOT

POSTER P2.5
Everyday work of an avalanche engineer – Focus on assessment criteria, avalanche loads on masts and buildings
BENNO HOFER

POSTER P2.6
Research on sudden visibility impairment associated with gaps in snow fences
MASARU KODA

POSTER P2.7
Avalanche Breaker in Eastern Tyrol
HANSPETER PUSNIG

POSTER P2.8
Comparing two methods of artificial avalanche triggering: gas vs. solid explosives
STEPHAN SIMIONI

POSTER P2.9
Fast versus slow avalanche impact dynamics: insights from measurements at Lautaret pass avalanche test-site, France
THIERRY FAUG

POSTER P2.10
Protection of high mountain huts against avalanche hazard: a case study at Pavé lake, French Alps
THIERRY FAUG

POSTER P2.11
Evaluation of an infrasound detection system for avalanches in Rogers Pass, Canada
JORDY HENDRIKX

POSTER P2.12
Changes in the Snow Pressure Acting on Snow Bridges in the Hokkaido Region of Japan
WATARU TAKAHASHI

POSTER P2.13
Fragility curves assessment of a protective structure against snow avalanches
ISABELLE OUSSET

POSTER P2.14
How reliable are design avalanche loads? A systematic approach to estimate their uncertainty.
MARK SCHAER

POSTER P2.15
Relation between the Growth Management of Trees in Highway Snowbreak Woods and their Snowbreak Effectiveness
HIROSHI OTA

POSTER P2.16
Effects of Tree Height on Snowpack Instability in the North Shore Mountains of Vancouver, BC Canada
ZACHARY WENTZ

POSTER P2.17
Active and passive avalanche protection structures. Development of protection systems in 40 years of snows and avalanches
FRIEDRICH MAIR

POSTER P2.18
Design and Construction of an Avalanche Deflection Berm, Mount Kitchener Avalanche Path, Aoraki Mount Cook National Park, NewZealand
ALAN JONES

POSTER P2.19
The Challenges of Mitigation Measures in Longyearbyen Svalbard
ARNI JONSSON

POSTER P2.20
Glacier hazards in the canton of Valais, Switzerland: observation and categorization of 80 dangerous glaciers
MARTIN PROKSH
### SPECIAL TOPIC P3

**16:45—18:00**

**Integral engineering solutions: from protection forests to temporary measures**

**ROOM: EXHIBITION HALL / DOGANA**

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<td>Planning for Highways in Avalanche Prone Areas in Troms County Northern Norway</td>
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<td>Integral Avalanche Control of an Alpine Rail Route, by the Example of the Dalaas Municipality, Austria</td>
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<td>Manfred Eggert</td>
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<td>Yusuke Harada</td>
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<td>Steve Robertson</td>
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### Special Topic P4
**Operational remote sensing – applications for snow and avalanches**

**Room:** Exhibition Hall / Dogana

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GENERAL TOPIC 05
8:00—09:45
Snow hydrology, sustainability and climate change
ROOM: HALL TIROL
SESSION CHAIR: KELLY ELDER NICOLAS ECKERT

8:05 – 08:20 05.1
Climate change in the Alps and its consequences for snow
ANDREAS GOBIET

8:20– 8:35 05.2
Global warming response of snowpack in Hokkaido, northern island of Japan
YUTA KATSUYAMA

8:35 – 8:50 05.3
Community Snow Observations (CSO): A citizen science campaign to validate snow remote sensing products
KATRINE WIKSTROM JONES

8:50– 9:05 05.4
Using machine learning and snow water equivalent reconstruction to predict today’s SWE and avalanche conditions in Afghanistan
EDWARD HAMILTON BAIR

9:05 – 9:20 05.5
240 years of climatic trends in avalanche activity in the Vosges Mountains, north-east France
FLORIE GIACONA

9:20 – 9:35 05.6
Climate patterns associated with major avalanche years in a regional tree-ring based avalanche chronology for the U.S. Northern Rocky Mountains
ERICH PEITZSCH

9:35 - 9:45
POSTER WRAP UP AND SESSION SUMMARY

GENERAL TOPIC 06
10:15–12:00
Snow making and ski resort management
ROOM: HALL TIROL
SESSION CHAIR: MICHAEL ROTHLEITNER SAMUEL MORIN

10:15 – 10:30 06.1
Designing a seamless modelling chain to predict snow conditions in ski resorts: a research project in the service of snow management
CARLO MARIA CARMAGNOLA

10:30 – 10:45 06.2
Climate constraints on ski tourism sustainability in the French Alps in the 21st century
PIERRE SPANDRE

10:45 – 11:00 06.3
Simulating snow conditions in ski resorts with the physically based snowpack models AMUNDESEN, Crocus, and SNOWPACK/Alpine3D
FLORIAN HANZER

11:00 – 11:15 06.4
Life in ice and snow
KLEMENS WEISLEITNER

11:15 – 11:30 06.5
Measurement of specific surface area of falling snow
SATORU YAMAGUCHI

11:30 – 11:45 06.6
The Economics of Snow in a Changing Climate
MARCA HAGENSTAD

11:45–12:00
POSTER WRAP UP AND SESSION SUMMARY
SPECIAL TOPIC 07 | PART 1
13:30—14:45

Avalanche detection: Industry and research

ROOM: HALL TIROL
SESSION CHAIR: HANSUELI GUBLER
PETER GAUER

13:30 – 13:40 O7.1
An automated alarm and warning system for the Bisgletscher icefall, Switzerland, using a 5 km Avalanche Radar and a High-Resolution Camera
LORENZ MEIER

13:40 – 13:50 O7.2
Avalanche Monitoring Using Portable Low-cost Infrasound Systems
HANS-PETER MARSHALL

13:50 – 14:00 O7.3
Real-time Radar Avalanche Detection of a large Detection Zone for Road Safety in Norway
ANDREAS PERSSON

14:00 – 14:10 O7.4
Comparative analysis of avalanche signals and Geodar data at the Vallée de la Sionne test site (2018)
PERE ROIG-LAFON

14:10 – 14:20 O7.5
Avalanche evolution along the path of VDSL (SLF) experimental site extracted from the analysis of the spectrograms of the recorded seismic signals
EMMA SURINACH

14:20 – 14:30 O7.6
Evaluating the performance of operational infrasound avalanche detection systems at three locations in the Swiss Alps during two winter seasons
STEPHANIE MAYER

14:30 – 14:40 O7.7
Detection and tracking of snow avalanches in Little Cottonwood Canyon, Utah using multiple small-aperture infrasound arrays
JEFFREY JOHNSON

14:40–14:45 DISCUSSION

SPECIAL TOPIC 08
13:30—14:45

Model chains and simulation

ROOM: HALL INNSBRUCK
SESSION CHAIR: WOLFGANG FELLIN
ANDREAS GOBIET

13:30 – 13:40 O8.1
Topographic uncertainty in avalanche simulations
JULIA KOWALSKI

13:40 – 13:50 O8.2
The MeteoIO Pre-Processing Library for operational applications
MATHIAS BAVAY

13:50 – 14:00 O8.3
Applying numerical snow avalanche simulations for hazard assessment in the Kamchik pass area, Uzbekistan
ELEONORA SEMA KOVA

14:00 – 14:10 O8.4
Interception of snowfall by the trees is the main challenge for snowpack simulations under forests
MATTHIEU LAFAYSE

14:10 – 14:20 O8.5
Wet snow avalanche simulations to assess flow-obstacle-interactions and potential defense structure designs
SHIVA P. PUDASAINI

14:20 – 14:30 O8.6
Snow entrainment: Avalanche interaction with an erodible substrate
PERRY BARTELT

14:30—14:45 POSTER WRAP UP AND PANEL DISCUSSION

14:40–14:45 DISCUSSION
SPECIAL TOPIC 07 | PART 2
15:15—16:30

Avalanche detection: Industry and research

ROOM: HALL TIROL
SESSION CHAIR: HANSUELI GUBLER
PETER GAUER

15:15 – 15:25 O7.8
Infrasound Detection of Avalanches: operational experience from 28 combined winter seasons and future developments
WALTER STEINKOGLER

15:25 – 15:35 O7.9
Verification of the Success of Artificial Avalanche Releases in an Operational Project with Radar, Seismology, and Infrasound in Gonda (Lower Engadine, Switzerland)
PEDER CAVIEZEL

15:35 – 15:45 O7.10
Automatic classification of continuous seismic data for avalanche monitoring purposes
MATTHIAS HECK

15:45 – 15:55 O7.11
Real-time microseismic avalanche detection and warning system
ASGEIR KVISTEDAL

15:55 – 16:05 O7.12
8 years experience in avalanche detection by using a Pulse Doppler Radar
RICHARD KOSCHUCH

16:05—16:30
POSTER WRAP UP AND PANEL DISCUSSION

SPECIAL TOPIC 09
15:15—16:30

Snow products and services

ROOM: HALL INNSBRUCK
SESSION CHAIR: LINDSEY NICELSON
JEFF DEEMS

15:15 – 15:25 O9.1
Developing Applications: Avalanche Path Hazard Assessment
LEA ZHECHEVA

15:25 – 15:35 O9.2
Safer Liquid Monopropellant for Low Velocity/High Energy Avalanche Charges: Initial Tests Results, Application and Use Case
WAYNE SAWKA

15:35 – 15:45 O9.3
The Valalanche project: putting recent progress in snow avalanche mapping into practice
MARTIN PROKSCH

15:45 – 15:55 O9.4
An Explosive Delivery System implementation in the Steep Gullies at the Arapahoe Basin Ski Area
RYAN EVANCZYK

15:55 – 16:05 O9.5
Designing a wearable persuasive avalanche warning system
SABINE PREZENSKI

16:05 – 16:15 O9.6
ExploSKI - an explosives accounting software for smartphones and desktop computers
CHRISTOPH SUTER

16:15—16:30
POSTER WRAP UP AND PANEL DISCUSSION
GENERAL TOPIC P5
16:45—18:00
Snow hydrology, sustainability and climate change
ROOM: EXHIBITION HALL / DOGANA

POSTER P5.1
Climatic Factors Triggering Snow Avalanche in Kunes Valley of Tianshan Mountains, China
LANHAI LI

POSTER P5.2
A mechanical device determining the volumetric liquid water content of snow - SNOWPRESS
REINHARD FROMM

POSTER P5.3
MICHAEL ENGEL

POSTER P5.4
Bivariate spatial modeling of snow depth and snow water equivalent extremes in Austria
HARALD SCHELLANDER

POSTER P5.5
Effect of snow cover on hydrological response during rain-on-snow events
ROMAN JURAS

POSTER P5.6
Investigating performance and correlation of ground-based snow depth and precipitation measurements
KAY HELFRICHT

POSTER P5.7
Snowcover density and Snow Water Equivalent in the Italian Alps
MAURO VALT

POSTER P5.8
The Stavbrekka glide avalanche in Norway – lessons learned after three years of monitoring
TORE HUMSTAD

POSTER P5.9
Modeling snow water equivalent exclusively from daily snow depths
MICHAEL WINKLER

POSTER P5.10
The contribution of snowmelt to the annual waterbalance in the Tyrolean Alps
GERHARD WIESER

POSTER P5.11
Sustainability of small ski resorts and ski slope management under climate change in South Tyrol
SARA CASAGRANDE BACCHIOCCHI

POSTER P5.12
Simulating liquid water infiltration – comparison between a three-dimensional water transport model and a dual-domain approach using SNOWPACK
HIROYUKI HIRASHIMA

POSTER P5.13
Extreme snowfalls in Russia
DARIA FEDOTOVA

POSTER P5.14
Linking variations of meteorological and snow conditions in the French mountain regions to global temperature levels
SAMUEL MORIN

POSTER P5.15
Estimation of accumulation from snow avalanches on the mountain glaciers
ANTON KOMAROV

POSTER P5.16
Effects of Snow Cover on Seed Germination for Two Species in Iron Mine Tailings, Cold Desert
XIAOYING ZHAO

POSTER P5.17
Global warming reduces the consequences of snow-related hazards
ERIK HESTNES

POSTER P5.18
Snow cover and climate changes in the Italian Alps (1930-2018)
MAURO VALT
GENERAL TOPIC P6
16:45—18:00
Snow making and ski resort management
ROOM: EXHIBITION HALL / DOGANA

POSTER P6.1
Social, economic and ecologic benefits of small ski resorts: A local resilience model in the Alpine Space? MARTHA GÄRBER

POSTER P6.2
A new test site to investigate machine-made snow production MICHAEL ROTHLEITNER

POSTER P6.3
The “Mountain Tourism” component of the Copernicus Climate Change Services – Sectoral Information Service “European Tourism”: towards pan-European analysis and projections of natural and managed snow conditions SAMUEL MORIN

POSTER P6.4
Remote sensing techniques for helping decision making in slopes management in ski resorts MARC PONS

POSTER P6.5
Using remote avalanche control systems for snow cover management – a best-practice example from Samnaun (Switzerland) SAM WYSSEN

POSTER P6.6
Climate Change in the Alps – The “2°C Target” in the Practice Check ERICH LANG

POSTER P6.7
Looking to the Future: Predictions of Climate Change Effects on Avalanches by North American Practitioners CHRIS WILBUR

POSTER P6.8
Analysis of two avalanche zones in the Southern Pyrenees (Andorra and Catalonia) using historical analysis, snow-climate data and mixed flowing/powder avalanche modelling. SERGI RIBA PORRAS

POSTER P6.9
Snow Cover Subject to Climate Change ULRIKE STARY

POSTER P6.10
Methane production of snow-covered soils due to oxygen depletion CHRISTIAN NEWESELY

POSTER P6.11
PROSNOW – Provision of a prediction system allowing for management and optimization of snow in alpine ski resorts SAMUEL MORIN

POSTER P6.12
Climate change and adaptation strategies in winter tourism: the case study of the Monterosa Ski area and the Municipality of Ayas (Regione Autonoma Valle d’Aosta) ELENA DURANDO

POSTER P6.13
The extraordinary 2017-2018 winter season in Aosta Valley. GIOVANNA BURELLI

POSTER P6.14
Database of long-term meteorological and snow-pit observations in Japan SATORU YAMAGUCHI

POSTER P6.15
Climatic trends in snow observations in Andorra ANNA ALBALAT

POSTER P6.16
Preparation and maintenance of pistes: A review of state-of-the-art knowledge & methods FABIAN WOLFSPERGER

POSTER P6.17
Snow farming (storage) in the Alps and Scandinavia: today’s and future activities FABIAN WOLFSPERGER

POSTER P6.18
Testing Ice Nucleation Particles in an Artificial Cloud ULRICH WORTHMANN
### SPECIAL TOPIC P7
**16:45—18:00**
**Avalanche detection: Industry and research**
**ROOM: EXHIBITION HALL / DOGANA**

| POSTER P7.1 | Avalanche Doppler Radar Monitoring – Long Term velocity measurements at the Vallée de la Sionne | MICHAEL NEUHAUSER |
| POSTER P7.5 | Thermocrons – A Simple and Affordable Technique for Measuring Temperature Gradients | GREG GAGNE |
| POSTER P7.2 | Detecting Backcountry Avalanches in the Bridger-Teton Range Using Synthetic Aperture Radar | DANIELLE BARNA |
| POSTER P7.6 | Monitoring of the Weissmies Glacier before the failure event of September 10, 2017 with Radar Interferometry and High-Resolution Deformation Camera | LORENZ MEIER |
| POSTER P7.3 | Retrieving snow stratigraphic information using a Frequency Modulated Continuous Wave (FMCW) Ka-band radar | M. JACOB LALIBERTE |
| POSTER P7.4 | Application of a K-band Microwave sensor in the detection of water melt-freeze states within a snowpack | SANTIAGO RODRIGUEZ |
| POSTER P7.7 | 7 years of avalanche measurements with GEODAR radar | ANSELM KÖHLER |
| POSTER P7.8 | Testing and comparing a new 1.4 GHz coaxial sensor for liquid water content in snow | JEAN-BENOIT MADORE |
| POSTER P7.9 | Drone-mounted UWB radar system for measuring snow depth and layering: Technical implementation, specifications and first mission results | MARKUS ECKERSTORFER |
| POSTER P7.10 | Bringing Near Infrared Light to Practice Part II | MICAH JOHNSON |
| POSTER P7.11 | Automatic People Detection in Avalanche-Controlled Terrain during All-Weather Conditions | LORENZ MEIER |
| POSTER P7.12 | A New Advanced Radar for Detection of Snow Avalanches | RICHARD NORLAND |
| POSTER P7.13 | Improved apparatus for measuring specific surface area of snow by the methane adsorption method | SATORU YAMAGUCHI |
| POSTER P7.14 | SNOWAVE: a novel FMCW radar architecture for snow cover monitoring | PEDRO ESPÍN LÓPEZ |
SPECIAL TOPIC  P8
16:45—18:00
Model chains and simulation
ROOM: EXHIBITION HALL / DOGANA

POSTER  P8.1
A multi-layer snow cover model for numerical weather prediction and climate models
SASCHA BELLAIRE

POSTER  P8.2
Modelling snow redistribution by wind – Low Tatras, Slovakia
ANNA SERES

POSTER  P8.3
Back-calculation of avalanche dynamics on the Arctic island Svalbard using r.avaflow.
URSULA ENZENHOFER

POSTER  P8.4
Automated identification of forest with protective function against snow avalanches in the Trento Province (Italy).
FABIANO MONTI

POSTER  P8.5
Potential of automated avalanche dynamic simulations for large scale hazard indication mapping in Italy: a first test application in Aosta Valley
MARGHERITA MAGGIONI

POSTER  P8.6
Comparison of powder snow avalanche simulations based on reference events from Switzerland
KORBINIAN SCHMIDTNER

POSTER  P8.7
Automatic Dynamic Avalanche Modeling – An example of its application in an operational setting in Norway
CESAR VERA

POSTER  P8.8
Statistical runout modeling of snow avalanches in the Catalan Pyrenees
PERE OLLER

POSTER  P8.9
To the origin of the temperature bias in the AROME numerical weather forecast model: investigations at a high-altitude site
ISABELLE GOUTTEVIN

POSTER  P8.10
Operational model-based forecast of wet snow avalanche activity: Experiences from two seasons
ANDREAS GOBIET

POSTER  P8.11
Simulation of dense snow avalanches with open-source software
ANDREAS HUBER

POSTER  P8.12
Calibrating Extreme Avalanche Runout in a Canadian Transitional Snow Climate Using RAMMS Dynamic Avalanche Model
RYAN BUEHLER

POSTER  P8.13
Dan3D Model Parameters for Snow Avalanche Case Studies in Western Canada
MICHAEL CONLAN

POSTER  P8.14
Can scenario-based avalanche dynamics calculations help in the decision making process for road closures?
LUKAS STOFFEL

POSTER  P8.15
A successful attempt to introduce the protective dams into snow avalanches simulations by RAMMS in the Khibini Mountains, Russia
ALLA TURCHANINOVA

POSTER  P8.16
ISSW 2018 | INNSBRUCK
POSTER P8.17
Model fusion – from weather activity to avalanche length
LISA JÖBSTL

POSTER P8.18
Simulating snow process chains: avalanche-river interactions with r.avaflow
TOMMASO BAGGIO

POSTER P8.19
A Bayesian approach to consider uncertainties in avalanche simulation
ANDREAS KOFLER

POSTER P8.20
Modeling snow avalanches with MAWAMOSCA
KATALIN GILLEMOT

POSTER P8.21
Evaluating approaches to assess avalanche hazards from the user point of view
KORBINIAN SCHMIDTNER

POSTER P8.22
Linking modelled potential release areas with avalanche dynamic simulations: an automated approach for large-scale avalanche hazard mapping
YVES BÜHLER

POSTER P8.23
Estimates on the reach of the powder part of avalanches
PETER GAUER

POSTER P9.1
Results of a survey amongst avalanche professionals on preventive avalanche control measures
LISA DREIER

POSTER P9.2
Managing protection measures using a mobile assessment app
NICHOLAS DAWES

POSTER P9.3
Using cloud based solutions for avalanche operations – merging data collection, documentation, communication and avalanche control
BENJAMIN MEIER

POSTER P9.4
Ideal sidecut geometry of winter sports equipment
BENOIT CAILLAUD

POSTER P9.5
S-LOAD avalanche blaster for the LM32 avalanche trigger
JÜRG KNOBEL

SPECIAL TOPIC P9
16:45—18:00
Snow products and services
ROOM: EXHIBITION HALL / DOGANA
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GENERAL TOPIC 010
8:00—9:45
Snowpack: Stability and variability
ROOM: HALL TIROL
SESSION CHAIR: ED ADAMS
ALEC VAN HERWIJNEN

8:05 – 8:20  O10.1
Localized dynamic loading in extreme snowmobile manoeuvres
IAIN STEWART-PATTERSON

8:20 – 8:35  O10.2
Snowpack stabilization following storms: Field experiments and modelling of temporal changes in snow mechanical properties after loading
KARL BIRKELAND

8:35 – 8:50  O10.3
Measuring snow mechanical properties typical of storm snow instabilities
BENJAMIN REUTER

8:50 – 9:05  O10.4
Distributed modelling of snow cover instability at regional scale
SASCHA BELLAIRE

9:05 – 9:20  O10.5
Quantitative comparison of snow profiles
PASCAL HAGENMULLER

9:20 – 9:35  O10.5
Anti-crack nucleation in snowpacks without assuming initial defects: modeling dry snow slab avalanches
PHILIPP LAURENS ROSENDAHL

9:35—9:45  POSTER WRAP UP AND SESSION SUMMARY

GENERAL TOPIC 011
10:15—12:00
Avalanche forecasting
ROOM: HALL TIROL
SESSION CHAIR: CHRISTINE PIELMEIER
ETHAN GREENE

10:15 – 10:30  O11.1
When do avalanches release: investigating time scales in avalanche formation
ALEC VAN HERWIJNEN

10:30 – 10:45  O11.2
Slope scale avalanche forecasting in the arctic (Svalbard)
ALEXANDER PROKOP

10:45 – 11:00  O11.3
Forecasting for dry and wet avalanches during mixed rain and snow storm
SCOTT SAVAGE

11:00 – 11:15  O11.4
Regional versus local avalanche danger evaluation
FABIANO MONTI

11:15 – 11:30  O11.5
Project ALBINA: The technical framework for a consistent, cross-border and multilingual regional avalanche forecasting system
NORBERT LANZANASTO

11:30 – 11:45  O11.6
Quantifying the obvious: the avalanche danger level
JÜRГ SCHWEIZER

11:45—12:00  POSTER WRAP UP AND SESSION SUMMARY
13:30—13:40  O13.1
Spatial and temporal analysis of fatal off-piste and backcountry avalanche accidents in Austria with a comparison of results in Switzerland, France, Italy and the US.
CHRISTIAN PFEIFER

13:40—13:50  O13.2
Reanalysis of recent avalanche accidents in Val d’Aran, Central Pyrenees: a communication challenge for different user groups
JORDI GAVALDÀ BORDES

13:50—14:00  O13.3
The avalanches in 1965 nearby Obertauern and the 50th anniversary of the Austrian Board of Alpine Safety
PETER HÖLLER

14:00—14:10  O13.4
The 18th January 2017 Rigopiano avalanche disaster in Italy – analysis of the applied forensic field investigation techniques
IGOR CHIAMBRETTI

14:10—14:20  O13.5
Avalanches in Bulgaria – human and nature perspective
MOMCHIL PANAYOTOV

14:20—14:30  O13.6
ATES mapping and Avalanche Problems in Avalanche Accidents and Close-calls in Val d’Aran, Central Pyrenees
IVAN MONER SEIRA

14:30—14:45  POSTER WRAP UP AND PANEL DISCUSSION
SPECIAL TOPIC 014
15:15—16:30
Avalanches and Law
ROOM: HALL TIROL
SESSION CHAIR: PETER HÖLLER
PETER PLATTNER

Snow avalanches and accountability - Examples from Svalbard, Norway
HREFNA DÖGG GUNNARSDÓTTIR

15:25 – 15:35 O14.2
Recent experience with inbounds avalanches and litigation at U.S. ski areas
PAUL BAUGHNER

15:35 – 15:45 O14.3
Avalanche, Criminal Law, Personal Responsibility
MARGARETH HELFER

15:45 – 15:55 O14.4
Legal Practice International – Germany
STEFAN BEULKE

15:55 – 16:05 O14.5
Ski Tours – A Legal Vacuum on Fashionable Peaks?
KLAUS PAFFENEDER

16:05 – 16:15 O14.6
Criminal Law & Consequences of an Avalanche Accident in Switzerland
PATRIK BERGAMIN

16:15—16:30
POSTER WRAP UP AND PANEL DISCUSSION

SPECIAL TOPIC 012 | PART 2
15:15—16:30
Operational forecasting tools
ROOM: HALL INNSBRUCK
SESSION CHAIR: INGRID REIWEGER
VALERIO SEGOR

15:15 – 15:25 O12.8
Distilling regional patterns from weather and snowpack models
SIMON HORTON

15:25 – 15:35 O12.9
The 2017-2018 glide-snow avalanche winter above Innsbruck: A nightmare with unpredictable end for local avalanche safety control?
SEBASTIAN LARCHER

15:35 – 15:45 O12.10
A new approach for examining the effects of large-scale atmosphere-ocean oscillations on the nature of regional avalanche hazard in western Canada
BRET SHANDRO

15:45 – 15:55 O12.11
Comparison of various forecast products of new snow depth in 24 hours on French ski resorts at different lead times
MATTHIEU VERNAY

15:55 – 16:05 O12.12
Avalanche Commissions – a Critical Link in the Safety Chain in Alpine Winters
ANTON MATTLE

16:05—16:30
POSTER WRAP UP AND PANEL DISCUSSION
POSTER P10.1
Release of avalanches on persistent weak layers in relation to snowfall and loading events in Colorado, USA
JASON KONIGSBERG

POSTER P10.2
The effects of natural impurities on the mechanical behavior of ice
KEVIN HAMMONDS

POSTER P10.3
Using a high-resolution particle tracking method to analyze extended column tests
ARDEN FELDMAN

POSTER P10.4
Snow stability tests: impact of lateral vs. vertical loading
GEORG KRONTHALER

POSTER P10.5
Parks Canada Profiles: Comparing hand hardness to thin-blade resistance
FRASER POGUE

POSTER P10.6
Meteorological triggers for major avalanches: a case study with two different conditions of extreme weather in the Hohe Tauern Range, Salzburg, Austria
MICHAEL BUTSCHEK

POSTER P10.7
Indicators for snow gliding: a case study at the Wildkogel, Salzburg (AUT)
GEORG LEITINGER

POSTER P10.8
Winter periods with a high activity of glide avalanches – characteristics and preconditions
PETER HÖLLER

POSTER P10.9
Investigations on glide-snow avalanches
ANDREAS EBERL

POSTER P10.10
Microstructure-based analysis of cone penetration tests in snow
PASCAL HAGENMULLER

POSTER P10.11
Prediction of snow failure: mission impossible?
ACHILLE CAPELLI

POSTER P10.12
Crack propagation in weak snowpack layers: insights from high-resolution, high-speed photography image correlation
BASTIAN BERGFELD

POSTER P10.13
Snowpack patterns in the Eastern Pyrenees and the case of winter 2016/17
CARLES GARCIA-SELLES

POSTER P10.14
Patterns of snowpack cooling and consequences on instability in the Pyrenees
SANTI MANGUAN ESTEBAN

POSTER P10.15
On combining snow cover and snow instability modelling
BENJAMIN REUTER

POSTER P10.16
Recognizing similarity in complex vertical profiles
MICAH JOHNSON

POSTER P10.17
Persistent Weak Layers Across the Alps – the Beech-Larch-Theory and the Underrated Influence of Absolute Humidity
LUKAS RUETZ

POSTER P10.18
Study of the estimation of snow properties at an arbitrary point
RYOTA SA TO
POSTER P10.19
Air temperature and winter Radiative fluxes on Tincan, Kenai Mountains, and Mount Roberts, Juneau, AK
RACHEL NEWELL

POSTER P10.20
Approaches of avalanche predictions resulting from non-rimed falling snow crystals using the SNOWPACK model
HIROYUKI HIRASHIMA

POSTER P10.21
First attempt at prediction of avalanches resulting from no rimed falling snow crystals in Japan
SATORU YAMAGUCHI

POSTER P10.22
Observation of fingering flow and lateral flow development in layered dry snowpack by using MRI
TAKAFUMI KATSUSHIMA

POSTER P10.23
Modelling the propagation saw test with a three-dimensional discrete element method
GREGOIRE BOBILLIER

POSTER P10.24
Comparison and classification of an Arctic Transitional snow climate in Tromsø, Norway
PAUL VELSAND

POSTER P10.25
Cross propagation saw and extended column test comparison during periods of avalanche instability
TXEMA ARTETA

POSTER P10.26
Simple method to estimate surface snow density
YASUSHI KAMATA

POSTER P10.27
Thresholds in wind speed, air temperature and relative humidity controlling slab formation
ROBERT COMEY

POSTER P10.28
Increasing the operational usability of the snow cover model SNOWPACK
FABIANO MONTI

POSTER P10.29
The characteristics of weak layers of slab avalanches occurred in Hokkaido in the decade from 2007 to 2017
TOSHIHIRO OZEKI

POSTER P10.30
Development of a surface hoar production apparatus using circuit wind tunnel
TOSHIHIRO OZEKI

POSTER P10.31
Evaluation of the SNOWPACK model under arctic conditions
VERONIKA HATVAN

POSTER P10.32
A critical angle for avalanches with multiple starting zones
KATALIN GILLEMOT

POSTER P10.33
Evolution of non-persistent weak layer and snowpack stability during snowfall
HIROKI MATSUSHITA

POSTER P10.34
Investigation of the interplay between shear failure and normal collapse of weak layers using microstructure-based mechanical simulations
PASCAL HAGENMULLER

POSTER P10.35
The northeastern continental snow climate: A new snow climate classification for the Gaspé Peninsula, Québec, Canada
FRANCIS MELOCHE

POSTER P10.36
Red Snow: killer of the stability of the snowpack?
MAURO VALT

POSTER P10.37
Snow with Saharan sand. Hazard evaluation at a local scale
MASSIMO RAVIGLIONE
Avalanche forecasting

ROOM: EXHIBITION HALL / DOGANA
SPECIAL TOPIC  P12
16:45—18:00
Operational forecasting tools
ROOM: EXHIBITION HALL / DOGANA

POSTER  P12.1
On the use of forecasting tools during a numerous slab avalanches event in March 2018
DANIEL GOETZ

POSTER  P12.2
A concept of harmonizing regional avalanche forecasting
MATTHIAS WALCHER

POSTER  P12.3
Methods used in operational avalanche forecasting around the globe – a comprehensive study
VIKTOR ANTAL ÁGOSTON

POSTER  P12.4
A nearest neighbour model applied in forecasting spontaneous large sized avalanches reaching infrastructures in the Aosta Valley
LUCA VALLATA

POSTER  P12.5
Modelling spatial snow drift patterns using wind fields and negative openness
JUTTA STAUDACHER

POSTER  P12.6
Stability index modeling using the new spatial resources modeling framework (SMRF)
MICAH JOHNSON

POSTER  P12.7
Sensitivity of modeled snow instability to meteorological input uncertainty
BETTINA RICHTER

POSTER  P12.8
Synoptic Climatology of Deep Slab Avalanches in the Western United States
ANDREW SCHAUER

SPECIAL TOPIC  P13
16:45—18:00
Avalanche accidents
ROOM: EXHIBITION HALL / DOGANA

POSTER  P13.1
Evaluation of 30 years of nivo-meteorological and avalanche data in Andorra
JON APODACA

POSTER  P13.2
A history of snow avalanche accidents in the Romanian Carpathians
MIRCEA VOICULESCU

POSTER  P13.3
Accidents related to snow in alpine terrain
DAGMAR WALTER

POSTER  P13.4
20 years of avalanche incidents in Slovakia – comprehensive overview of avalanche incidents in Slovakia
MAREK BISKUPIĆ

POSTER  P13.5
Statistical investigation of avalanche accidents using natural and touristic impact factors
REINHARD FROMM

POSTER  P13.6
Avalanche Danger Level 5 in Lower Austria in April 2017 – a Case Study
ARNOLD STUDEREGGER

POSTER  P13.7
Avalanche accidents in Russia
ALLA TURCHANINOVA

POSTER  P13.8
Soelden 2015 avalanche: What can be learned?
CYNTHIA BERLACK
SPECIAL TOPIC P14
16:45—18:00
Avalanches and law
ROOM: EXHIBITION HALL / DOGANA

POSTER P14.1
Are strategic methods sufficient for an adequate assessment of avalanche danger? – the state of facts in the case of a judicial procedure
PETER HÖLLER

POSTER P14.3
Legal principles of Tyrolean avalanche commission activities and training ordinance of the Tyrolean avalanche commissions
HARALD RIEDL

POSTER P14.2
About methods and motifs
STEFAN BEULKE

POSTER P14.4
Illegal & lethal snowmobiling in northern Norway’s avalanche prone mountains - what’s going on?
BJØRN MICHAELSEN
GENERAL TOPIC 015
8:00—9:45

Human factors:
Risk and strategies

ROOM: HALL TIROL
SESSION CHAIR: PAUL MAIR
BRUCE TREMPER

8:05 – 8:20 O15.1
Quantitative Risk Reduction Method (QRM), a data-based method that allows estimating avalanche risk on backcountry routes
GÜNTER SCHMUDLACH

8:20 – 8:35 O15.2
The Dangerator: a method for estimating avalanche danger in areas with no public avalanche forecast
JAMES FLOYER

8:35 – 8:50 O15.3
Sense-making in the snow: Exploring the cognitive work of avalanche professionals in a Canadian ski resort
LAURA MAGUIRE

8:50 – 9:05 O15.4
Analysis of factors used in existing decision-making frameworks for avalanche terrain
MARKUS LANDRØ

9:05 – 9:20 O15.5
The risk of death and major injury from natural hazards in mechanized backcountry skiing in Canada
MATTHIAS WALCHER

9:20 – 9:35 O15.6
Do avalanche airbags lead to riskier choices in the backcountry?
PASCAL HAEGELI

9:35—9:45 POSTER WRAP UP AND SESSION SUMMARY

GENERAL TOPIC 016
10:15—12:00

Education and rescue

ROOM: HALL TIROL
SESSION CHAIR: BARBARA HINTERSTOISSER
BRUCE JAMIESON

10:15 – 10:30 O16.1
Freeride vs. freedead: Case study of an avalanche accident with a chaotic rescue in the Pyrenees.
JON APODACA

11:00 – 11:15 O16.4
How can (serious) gaming help to trace and improve snow avalanche expertise process? An innovative methodology and application to roads risk management
JEAN-MARC TACNET

11:15 – 11:30 O16.5
‘Backcountry Ascender’ avalanche educator case study – leveraging incentive based learning and peer accountability to drive avalanche education
CHRISTOPHER MAYER

11:30 – 11:45 O16.6
Avalanche rescue – training and body position determine extraction time
BERND WALLNER

11:45—12:00 POSTER WRAP UP AND SESSION SUMMARY
SPECIAL TOPIC 017 | PART 1
13:30—14:45

Hazard communication and perception
ROOM: HALL TIROL
SESSION CHAIR: KARSTEN MÜLLER, KARL BIRKELAND

13:30 – 13:40 O17.1 Consistency and Accuracy of Public Avalanche Forecasts in Western Canada
GRANT STATHAM

13:40 – 13:50 O17.2 Consistency and bias in avalanche forecasts: a look across borders in the Alps
FRANK TECHEL

13:50 – 14:00 O17.3 The influence of avalanche bulletins to the decision-making of mountain guides
ENGELBERT GLEIRSCHER

14:00 – 14:10 O17.4 Avalanche danger ratings and deaths, putting things into perspective
TERRY EYLAND

BRUCE EDGERLY

14:20 – 14:30 O17.6 Show, Don’t Tell: Modelling behaviour on social media as a strategy for influencing behaviour in data sparse regions
JENNIFER COULTER

14:30 – 14:40 O17.7 Applications of Probability-Consequence Diagrams for Avalanche Forecasting and Education
BRUCE TREMPER

14:40 – 14:45 DISCUSSION

SPECIAL TOPIC 018
13:30—14:45

Information technologies
ROOM: HALL INNSBRUCK
SESSION CHAIR: MARTIN SCHUSTER, MARTIN BERNER, PASCAL HAEGELI

13:30 – 13:40 O18.1 Varsom:regobs – a common real-time picture of the hazard situation shared by mobile information technology
RUNE VERPE ENGESET

13:40 – 13:50 O18.2 OGC standards and web services pipeline for processing avalanche and earth observation open data
FRANCOIS BARTOLI

13:50 – 14:00 O18.3 Presence of social media use and smart phone technology among backcountry skiers and snowboarders, Hatcher Pass, Alaska
CRISTIAN ORTEGA

14:00 – 14:10 O18.4 The effect of communication equipment on avalanche transceivers
ILARI DAMMERT

14:10 – 14:20 O18.5 KommTool – communication and management system for avalanche commissions – a versatile risk management tool
GERNOT ZENKL

14:20 – 14:30 O18.6 Exploring the potential of mobile phone data (Call Detail Records) to track and analyze backcountry skiers dynamics in avalanche terrain
MARC PONS

14:30 – 14:45 DISCUSSION

14:30—14:45 POSTER WRAP UP AND PANEL DISCUSSION
SPECIAL TOPIC 017 | PART 2
15:15—16:30
Hazard communication and perception

ROOM: HALL TIROL
SESSION CHAIR: KARSTEN MÜLLER
KARL BIRKELAND

15:15 – 15:25 O17.8
Project ALBINA: A conceptual framework for a consistent, cross-border and multilingual regional avalanche forecasting system
RUDI MAIR

15:25 – 15:35 O17.9
Words of estimative probability and the language of the forecast. Are we all communicating the same risk?
JIMMY T ART

15:35 – 15:45 O17.10
Avalanche Canada’s special public avalanche warning: Development and evolution of an effective risk communications tool
MARY CLAYTON

15:45 – 15:55 O17.11
Changes in attitudes to risk and knowledge about avalanches among Swedish skiers after the introduction of national avalanche safety program
PER-OLOV WIKBERG

15:55—16:30
POSTER WRAP UP AND PANEL DISCUSSION

SPECIAL TOPIC 019
15:15—16:30
Terrain-based decision making

ROOM: HALL INNSBRUCK
SESSION CHAIR: SCOTT THUMLERT
JORDY HENDRIKX

Avalanche terrain maps for backcountry skiing in Switzerland
STEPHAN HARVEY

15:45 – 15:55 O19.4
Terrain selection and forecasted avalanche danger: Do recreationists select safer terrain when the forecasted danger increases?
AUBREY MILLER

15:55 – 16:05 O19.5
A new, guide-focused approach for characterizing skiing terrain to facilitate risk management decisions
BRENDAN WAKEFIELD

16:05 – 16:15 O19.6
Keeping up with Jeremy Jones: Positional preferences and risky terrain choices
ANDREA MANNBERG

16:15—16:30
POSTER WRAP UP AND PANEL DISCUSSION
GENERAL TOPIC  P15
16:45—18:00

Human factors: Risk and strategies

ROOM: EXHIBITION HALL / DOGANA

POSTER  P15.1
How do we really use terrain in the backcountry? A comparison between stated terrain preferences and observed backcountry travel behavior
JORDY HENDRIKX

POSTER  P15.2
Avalanche decisions: probabilistics reloaded?
JAN MERSCH

POSTER  P15.3
Heading out the gates: What 3 years of surveys teaches us about “sidecountry” use in Jackson, WY
STEPHANIE THOMAS

POSTER  P15.4
Avalanche prediction and evaluation of knowledge
KRISTER KRISTENSEN

POSTER  P15.5
Managing snow avalanche risk in areas not covered by the snow avalanche forecasting service in Norway
AGNES HAKER

POSTER  P15.6
Prevention and awareness of naturally occurring inbounds hazards in the East Kootenays
J.J. GOODISON

POSTER  P15.7
Avalanche avoidance made simple: Instant clinometry and immediate visual risk check
MATTI VERKASALO

POSTER  P15.8
Merging decision strategies for backcountry skiers in avalanche terrain using fuzzy logic and imprecise probability theory
CHRISTIAN PFEIFER

POSTER  P15.9
Austrian Nature Friends: facing avalanche danger in ability-oriented ways
ARNOLD STUDEREGGER

POSTER  P15.10
Real-time avalanche risk estimation on ski
MARCUS LANDSCHULZE

POSTER  P15.11
Perspectives on ski cutting
JOHN STIMBERIS

POSTER  P15.12
Bayesian reasoning in avalanche terrain: A theoretical investigation
PHILIP A. EBERT

POSTER  P15.13
Who’s at risk in the backcountry? Hypothetical terrain choices and past experience of avalanche incidents among Norwegian backcountry riders
ANDREA MANNBERG

POSTER  P15.14
The guide book safe ski tours in Norway
ERLEND SANDE

POSTER  P15.15
To go or not to go: Decision making at individual slope
STEPHAN HARVEY

POSTER  P15.16
Practical recommendation on operational activities of the Tyrol avalanche commissions in line with the principle: Perceive – assess – act and check.
HARALD RIEDL

POSTER  P15.17
SWOT analysis in management and danger of snow avalanches in Spain
JON APODACA
POSTER P15.18
Are they experts? Self-assessed backcountry skills among backcountry skiers in Norway and North America
ANDREA MANNBERG

POSTER P15.19
Searching for the missing denominator: Toward a data-driven human science of avalanche risk and safety
RUSSELL COSTA

POSTER P15.20
Are you sharp while ascending? An empirical investigation of the relation between physical activity and cognitive function
AUDUN HETLAND

POSTER P15.21
Survey on mountain behaviour and perception of avalanche risk
AINA MARGALEF

POSTER P15.22
Self-perception and reality in avalanche terrain – A snapshot of freeriding and ski touring in Switzerland
MANUEL GENSWEIN

POSTER P16.1
Development of avalanche search and rescue courses in Japan based on the best practice in avalanche rescue by mountainsafety.info
KEN-ICHI SAKAKIBARA

POSTER P16.2
Burial duration, depth and air pocket explain avalanche survival patterns in the Alps
GIACOMO STRAPAZZON

POSTER P16.3
Let's break tradition and save more lives: Using snowmobiles for avalanche rescue
MICHAEL DUFFY

POSTER P16.4
Monitoring of subjects during avalanche breathing experiments – possible errors
LENKA HORAKOVA

POSTER P16.5
The influence of snow physical properties on humans breathing into an artificial air pocket
HANNES GATTERER

POSTER P16.6
European Snow Booklet
ANNA HABERKORN

POSTER P16.7
The effectiveness and retention of minimal transceiver, shovel and probe companion rescue training
DEREK BAIN

POSTER P16.8
The “essential distinctions” – a new framework in avalanche education
LUKAS RUETZ
Wise ones - case study on prominent mentors of the US avalanche industry
EEVA LATOSUO

Winter 2016-2017 snowfall and avalanche emergency management in Italy (Central Appennines) – a review
IGOR CHIAMBERTTI

Simplifying the signal search: Why you don’t need to rotate your transceiver vertically
BRUCE EDGERLY

Avalanche Incident countermeasures by the Japan AvSAR Council
AZUSA DEGAWA

BackcountrySOS
STEPHANIE THOMAS

Courses on snow and avalanches at the BOKU University of life sciences and natural hazards, Vienna, Austria
INGRID REIWEGER

Avalanche education in Austria – about the current status and a new concept
MATTHIAS WALCHER

Riskmanagement on and off prepared pistes - Presentation of a teaching tool to the mediation adequate to age of behaviour patterns in and beyond the organised ski area.
ALEXANDER HOLAUS

Are hand-held infrared thermometers and cameras useful for avalanche forecasting? For avalanche education?
BRUCE JAMIESON

Injuries in avalanche search and rescue dogs: A survey based study
DON MCPHALEN

ARGE-SCHNEE: An elaborated training of search and rescue dogs in snow
BARBARA HINTERSTOISSER

Opportunities and limits of rescue dog operations after disasters due to mass movements and avalanches
DIETER HORN
SPECIAL TOPIC P17
16:45—18:00
Hazard communication and perception

ROOM: EXHIBITION HALL / DOGANA

POSTER P17.1
ALLAUS.AD: A New Web-Based Platform for Avalanche Information and dissemination in Andorra
AINA MARGALEF

POSTER P17.2
Do trends in forecasted avalanche danger affect our perception of the current avalanche hazard
FINN HOVEM

POSTER P17.3
How to assess and communicate persistent weak layers: a forecaster’s perspective
PATRICK NAIRZ

POSTER P17.4
Efficacy in communication of avalanche warnings
RUNE ENGESET

POSTER P17.5
Important skills for modern avalanche forecasters – social media, photography, videography, blogging
LUKAS RUETZ

POSTER P17.6
How and when is information about avalanches and avalanche danger communicated by different stakeholders and could that cause problems?
PER-OLIV WIKBERG

POSTER P17.7
Avalanche.report – The Interactive Platform for Snow, Avalanches & Warning
THOMAS FALKNER

SPECIAL TOPIC P18
16:45—18:00
Information technologies

ROOM: EXHIBITION HALL / DOGANA

POSTER P18.1
GIS based generation of avalanche terrain exposure scale mapping as guidance for expert guided mapping in Norway
HÅVARD TOFT LARSEN

POSTER P18.2
LAWIS – a collaborative data communication portal for avalanche risk management and prevention
KAREL KRIZ

POSTER P18.3
Avalanche communication information based on the example of the Lawine Tirol App
PATRICK PIXNER

POSTER P18.4
Ski Touring Bitacora – an innovative approach for trip planning, recording observations, and risk management while traveling in Avalanche terrain
SANTIAGO RODRIGUEZ

POSTER P18.5
NATLEFS: A snow observing tool for mountain guides in South Tyrol
LUKAS RASTNER
How many start-zones capable of producing an avalanche large enough to bury or kill a skier do heli-ski guides encounter over the course of a season?

EIRIK SHARP

What terrain is acceptable for skiing under different avalanche conditions? Extracting knowledge from heli-ski guides

PASCAL HAEGELI

“How Stop or Go” – decision making and action strategy for the backcountry

MICHAEL LARCHER

How do experts interpret avalanche terrain from a map?

GÜNTER SCHMUDLACH

Snowmobilers terrain preferences and exposure to avalanche terrain

JORDY HENDRIKX

Avalanche terrain exposure scale mapping in the Pyrenees: An expanding project

MONTSE BACARDIT
Training Courses

Training Courses (TC) will give the attendees professional development opportunities by teaching the state-of-the-art. TCs cover a wide range of topics and are carried out parallel and concurrent to the ST sessions, as part of the ISSW 2018 afternoon program. There are long and short TCs, with a duration of one or two blocks of 75 minutes each with a half-hour coffee break in between.

TCs are limited in the number of participants. Therefore, every participant may only register for one TC. Course registration is obligatory and takes place within the normal registration process (first come, first serve). TCs are all held in English and no professional translation services are available.
Numerical simulations of avalanches are a useful tool to estimate process magnitudes and potential damages. This training course strives to enhance the user’s knowledge of current procedures and methods for employing avalanche simulations. It focuses on the application of avalanche models and the interpretation of results with regard to expert’s reports and hazard mapping. Benefits as well as the limits for practical utilization of avalanche models are shown.

This course gives a summary of historically grown and state-of-the-art techniques for planning the construction of mitigation measures in avalanche prone terrain. The participants will be introduced to tools that shed light on how safety and construction guidelines can be combined with an appealing architecture. Technical planning and design are elaborated using different examples.

This training course presents approaches to assess snow and avalanche related hazards endangering transport infrastructure. An essential part are risk management guidelines for road and railways required by infrastructure providers on a local and regional level. The use of different decision support tools and mitigation measures are also discussed.

The production and management of technical snow has become increasingly important to the ski industry worldwide. This training course focuses on state-of-the-art techniques to produce and manage technical snow. Different techniques are discussed regarding their application on a large-scale and arising problems are addressed with respect to snow quality and hydrologic balance.
Trainingskurs TC5: Weather to snowpack stability

**Preisenter:**
Arnold Studeregger, Christoph Mitterer, Wilfried Ertl, Thomas Feistl

Snow, once on the ground, is subject to snow metamorphism and changes its characteristics dependent on the prevailing atmospheric conditions. Since temperature, wind, radiation and other meteorological parameters directly influence the evolution of slabs and weak layers within the snowpack, they have a direct impact on avalanche hazard. This training course aims to increase the attendees' understanding of different weather patterns affecting the snowpack and altering its properties.

Trainingskurs TC6: Mountain weather

**Preisenter:**
Michael Winkler, Susanne Lentner, Manfred Bauer

Weather determines the formation and development of the seasonal snowpack and significantly influences avalanche danger. The precise prediction of snowfall events is therefore crucial for estimating local avalanche hazard. This training course focuses on the meteorological evolution of snowstorms in mountainous regions and mountain weather forecasting based on numerical weather models.

Trainingskurs TC7: Decision making on-site

**Preisenter:**
Benjamin Zweifel, Arnold Studeregger, Bernhard Zenke, Martin Edlinger

Decision making in avalanche terrain is not only based on physical factors of avalanches, but also on the human dimension of the decision making process. Up-to-date decision making aids in avalanche terrain therefore follow a holistic approach. In this training course, two decision making tools are presented: W3 with a holistic and competence oriented approach and SOCIAL with a more specific focus on group dynamic processes. The use of such tools and possible future improvements are discussed.

Trainingskurs TC8: Medical aspects of avalanche burial

**Preisenter:**
Hermann Brugger, Giacomo Strapazzon, Hannes Gatterer, Bernd Wallner

This training course includes basic concepts, discussion of case reports and a round table talk supported by an interactive televoting system. We will discuss new medical aspects of avalanche burial, with special attention on first responder CPR, the survival curve as well as rescue devices.
Field Trips

Numerous Field Trips (FT) combine cultural experience with technical highlights. All FTs deal with interesting local avalanche-related problems and their solutions. All FTs take place on Wednesday Oct 10, 2018. At the same time as the excursions, the Public Day will be held in the conference center.

FTs are limited in the number of participants and registration within the normal registration process (first come, first serve) is obligatory. Most FTs are held in English. Translation into English will be provided for all German-speaking FTs.
Nordkette is the name of the mountain chain located north of Innsbruck. The Nordkette ski resort is directly accessible via cable car from Innsbruck’s city center, from where one can travel to the highest point (Hafelekars at 2250 m a.s.l.) in approximately 40 min. Once at the top, visitors have a spectacular view over the Inn Valley and as far south as the Dolomites. In wintertime, the steep slopes of the Nordkette give rise to avalanche danger, affecting skiers and local residents alike, thus requiring a continuous and professional safety management. Participants of this excursion will visit the ski area and learn about transport management, avalanche mitigation, access control, as well as the well-planned guidance system for the local recreation area on the Nordkette.

FT LEADER: EVELINE GMAINER ANDREAS FÖGER

The Stubai Valley is characterized by high-altitude mountains, which reduce the available living space to the narrow valley bottom and cause avalanches, endangering settlements and infrastructure lines. For example, more than 100 avalanche paths cross the access road to the Stubai glacier ski resort, located at the head of the valley. However, only few of these avalanche catchments are checked by mitigation measures like snow bridges, catching or deflecting dams. Stubai’s ski resort and the picturesque scenery attract large amounts of winter tourists and thus a lot of traffic; the approximately 15,000 permanent inhabitants cater to almost 1.1 Mio. overnight stays every season. The excursion will visit some interesting locations and viewpoints along the valley, to give an impression of the challenges facing avalanche risk management there.

FT LEADER: CHRISTIAN TOLLINGER IVO SCHREINER

The Patscherkofel is an iconic mountain located south of Innsbruck. It is situated right on the doorstep of the city. The ski resort there is equipped with a snowmaking system that provides runs for all ability levels. In addition, the snow park near the mountain station is a hotspot for the Innsbruck freestyle scene and for guests from all over the world. Directly in the base area at 1,000 m a.s.l., the “Kinderalm” allows kids to learn to ski or to improve their skills with professional guidance. Three days a week, slopes are illuminated in the evening for night-skiing. A 10-passenger cabin ropeway provides access up to 1950 m a.s.l.. The wide range of activities on Patscherkofel require professional water and snow management. Careful use of water and energy resources is one of the main guidelines for the ecological and economic success of the ski area. During this excursion, participants will be given an insight into the challenges facing the ski area operator regarding planning the snowmaking system as well as the daily management of snow-making and grooming.

FT LEADER: MICHAEL ROTHLEITNER SIEGFRIED SAUERMOSER

Innsbruck, the provincial capital of Tyrol is endangered by ten avalanches paths. The past events cadaster shows that some avalanches reached the outskirts of the city. After a big avalanche in 1935, the Austrian Service for Torrent and Avalanche Control started building mitigation measures in different avalanche paths. In the runout area of the Arzleralm avalanche, breaking mounds and small dams were erected. After several avalanche events in 1968, the catching dam was enlarged to its current height of 25 m. Some steel supporting structures were built in the release areas of the Rastiboden, Gerlehner and Gerschrofen avalanches. In the avalanche path of the Mühlauer Klamm, two avalanche breakers were constructed during the last years. Beside these technical measures, some afforestations were implemented to improve the protective effect of the forests. We will visit these sites and learn more about the avalanche defense structures protecting Innsbruck.

FT LEADER: ANNEGRET JENNER SIEGFRIED SAUERMOSER
A field trip to the Paznaun Valley offers a comprehensive understanding of avalanche mitigation and management. The valley, located in Western Tyrol, is known for its large mountain chain north of the city that poses a significant threat to local residents. The trip will showcase the destruction caused by avalanches, particularly the Arzlalm avalanche. Visiting these locations will highlight the need for strong defense structures in these high-altitude areas.

**FIELD TRIP FT5**

8:00—17:00

**A history of multifunctional avalanche mitigation**

**Galtür**

**START:** CONGRESS INNSBRUCK

**FT LEADER:**

CHRISTIAN WEBER

HUBERT AGERER

The Paznaun Valley is located in Western Tyrol and will give the excursion participants spectacular views and impressions of Alpine natural hazards. Stops en route through the valley will show the scale of the challenge facing local residents to manage the very confined living space and compromise with intense touristic use. Shortly before reaching the village Galtür, we will ascend an exposed gravel road, which leads straight into the release areas of several large avalanches endangering the valley bottom (Wasserleiter-, Weisse Riefe and GroßTal Avalanches). Besides visiting the steel snow bridges constructed in these bottom sections of this road, endangered by a vast number of avalanches (RACS) and two avalanche radar units have been installed for the protection of two key sections of this road, endangered by the Ulmicherbachl, GroßTal and Hoher Zug avalanche paths. The participants will be visiting these locations and learn about the local avalanche risk management.

Innsbruck is endangered by several large avalanches originating on the Nordkette, a large mountain chain north of the city. During the search for historical avalanche data as a basis for the hazard zone mapping of Innsbruck, extensive documentation of frequent avalanche events of variable magnitude was found for one of the largest avalanche paths on the Nordkette - the Arzlalm avalanche. Using extreme value statistics, developed for hydrographical applications, it was possible to bring together the newly found runout data with well-known data of extreme events and thus determine the runout length for a 150-year return period. An additional challenge was the assessment of the effects of the mitigation measures, which were erected during the observation period. During this excursion you will hear about how the avalanche hazard mapping for Innsbruck was carried out. You will see and learn about the individual design and technical principles of the avalanche breakers in the Mühlauerklamm Avalanche. Finally, we take a trip to the top of Nordkette to see the instrumented snow net installations there and discuss the gained findings.

**FT LEADER:**

MANFRED PITTRACHER

LEOPOLD STEPANEK

**FIELD TRIP FT6**

8:00—17:00

Hazard and risk mapping

**Innsbruck Mühlau**

**START:** CONGRESS INNSBRUCK

The Austrian state road B188 is located in the avalanche-exposed Paznaun Valley (Tyrol). Several sections of the road have to be closed regularly due to high avalanche danger. As the main economic activity of the Paznaun Valley is winter tourism, closure of the only access road is very expensive for the region. Therefore, several remote avalanche control systems (RACS) and two avalanche radar units have been installed for the protection of two key sections of this road, endangered by the Ulmicherbachl, GroßTal and Hoher Zug avalanche paths. The participants will be visiting these locations and learn about the local avalanche risk management. In the second part of the excursion, an introduction to the avalanche control strategy in the ski resort Ischgl will be given. The trails and ski lifts in the resort are endangered by a vast number of avalanches and the avalanche control has to be done as quickly as possible to allow a timely start of the ski operation. Therefore, the avalanche control team uses a variety of artificial avalanche release methods, ranging from hand charges, over heli-bombing to different types of RACS.

**FT LEADER:**

PAUL DOBESBERGER

WALTER STEINKOGLER

**FIELD TRIP FT7**

8:00—16:30

Temporary avalanche control and detection systems

**Paznaun Valley**

**START:** CONGRESS INNSBRUCK

The ski area Stubai Glacier is the biggest glacier ski resort in Austria with 108 kilometers of ski-runs, 26 lifts and cable cars, which have a total transport capacity of approx. 40,000 persons per hour. As the ski resort is partly built on an increasingly shrinking glacier, snow management is highly important. While until 2002 the glacier could also be used for summer skiing, nowadays the ice is artificially covered during the summer months in order to minimize glacier retreat. Besides the problems and risks faced due to global warming, crevasses still pose severe risks for guests and employees – alongside avalanches. This excursion on the one hand focuses on safety management practices with regard to crevasse and avalanche hazards in the ski resort. On the other hand, it addresses the production and management of technical snow. Additionally, the Mountain Rescue Service Tyrol will present a tripod and a tripod for crevasse rescue on the glacier and will simulate a typical avalanche rescue scenario.

**FT LEADER:**

RUDI MAIR

FRANZ TANZER

**FIELD TRIP FT8**

8:00—16:30

Snow and safety management

**Stubai Glacier**

**START:** CONGRESS INNSBRUCK

This excursion on the one hand focuses on safety management practices with regard to crevasse and avalanche hazards in the ski resort. On the other hand, it addresses the production and management of technical snow. Additionally, the Mountain Rescue Service Tyrol will present a tripod and a tripod for crevasse rescue on the glacier and will simulate a typical avalanche rescue scenario.
The participants of this excursion will visit one of the most famous skiing hotspots in the Alps. From the origin of skiing at beginning of 20th century to the development of the first avalanche blasting masts in the 80’s, progress has now arrived in the digital age. Smartphones, social networks and IT communication are used in the Lech ski area to support risk analyses and decision making of snow and avalanche safety management. The participants will learn about the current IT state-of-the-art in Lech, and how cooperation and communication between different organizations in a very large ski resort are managed. Snow and avalanche networking platforms used by ski and mountain guides are presented, which are connected to documentation applications of avalanche commissions and ski patrols, allowing the exchange of data and human observations via apps in real time.

**FT LEADER:**
MARTIN BERNER FAIL
MARTIN SCHUSTER

Linear transport infrastructure is the life-line of Alpine regions. Roads and railways transport people and essential goods along the valleys and over mountain passes. In tourist areas, arrival and departure traffic often causes congestion, especially on the weekends. The Arlberg was already made accessible to tourism in 1884, by the construction of the railway line. Later, in addition to the Arlberg Pass road, a high-level road connection through the Stanzer Valley was built. All these infrastructure lines are seriously endangered by avalanches. The participants of this excursion will be introduced to the organizational avalanche protection concepts of the infrastructure operators and tourism communities in the Stanzer Valley, Western Tyrol. The avalanche warning service of the Austrian Federal Railways (ÖBB), the ASFINAG expressway administration, the provincial road administration as well as the largest tourism community in the Stanzer valley, Sankt Anton am Arlberg, will present their common approach to assess avalanche danger. The use of Alpine meteorological data and various mitigation measures are also discussed during the field trip.

**FT LEADER:**
CHRISTIAN RACHOY
CLEMENS SCHEKULIN
Public Day
PUBLIC DAY

Oct. 10, 13:00—17:30
LOCATION: HALL TIROL
CONGRESS INNSBRUCK

For the first time, in order to offer the results and topics of the conference to a broader audience, a PUBLIC DAY – Open Day will be organized, in cooperation with the Tyrolean Presidency of the EU Strategy for the Alpine Region (EUSALP) and the EUSALP Action Group 8, which deals with natural hazard management in the Alpine region.

The event takes place in the “Hall Innsbruck” of the Congress Innsbruck on Oct. 10, from 13:45. The main language during the afternoon will be German but translations into English are offered.

The Motto is:
Safe living space through new ways in risk management

The Alps are one of the most beautiful and valuable habitats in the world. The transformation of society and the effects of climate change have led to significant changes in recent years and present new challenges for risk management for the development of a safe habitat in the mountains. The EU Strategy for the Alpine Region offers an opportunity to respond to these particular challenges of the Alpine space in close cooperation with 48 regions and 7 states. The high-calibre afternoon event offers the audience insights into cooperative approaches on how to jointly protect the Alps as a living and economic area for sustainable development. The proposed solutions are then critically examined and discussed in a podium discussion by representatives from politics, practice and research.

GUIDED CONFERENCE TOUR

Oct. 10, 13:00
LOCATION: CONGRESS INNSBRUCK

We also offer a guided tour of the Congress Center on Wednesday Oct. 10, 2018 (meeting point is the registration desk). The tour will give participants an overview of the most interesting scientific topics, the trade show as well as the subsequent public day, which begins at 13:45.

PARTNER PROJECT INTERNATIONAL MIDTERM CONFERENCE

Oct. 10, 9:00—12:15
LOCATION: HALL INNSBRUCK
CONGRESS INNSBRUCK

The ISSW hosts the international Midterm Conference of INTERREG-ALPINE SPACE Project RockTheAlps
Organisers are IRSTEA (FRA) and BFW.

TIME PROGRAM PRESENTER
13:00 – 13:45 Guided tour of the poster and exhibition area of the ISSW 2018
13:45 – 15:45 Climate and Social Changes Michael Staudinger
ALBINA – EUREGIO Avalanche report Rudi Mair
IMULA – Integration of Forests as part of risk management Karl Kleemayr
New ways to protect infrastructures - challenges and examples Robert Müller
Risk Governance on community level Daniel Kurz
15:45 – 16:15 Coffee break
16:15 – 17:30 Impuls statement Sabine Volgger
Panel discussion with:
• Erika Rogl
• Christian Wilhelm (Switzerland)
• Thomas Feistl (Bavaria)
• Maria Freisinger-Auckenthaler
• Gebhard Walter
• Josef Geisler
17:30 Public Welcome: buffet & social hour

The Public Welcome is the closing event of the Public Day and offers ISSW 2018 participants the possibility to meet policy and decision-makers involved in natural hazard management in Austria in general and in Tyrol in particular. The event will take place on Oct. 10, 17:30 at Congress Innsbruck.
SOCIAL HOUR

The daily Social Hour will take place in conjunction with the afternoon Poster Session and will start at 17:15. The ISSW 2018 invites all participants to join in for drinks, food and live music! The Social Hours are generously supported by our sponsors.

Oct. 7, 18:30
LOCATION: EXHIBITION HALL
CONGRESS INNSBRUCK

The check-in for the ISSW 2018 opens on Oct. 7, 16:00 at the Congress Innsbruck. The Ice Breaker starts at 18:30, offering the first opportunity to meet and greet other participants. Finger food and drinks will be provided.

ICEBREAKER
MEET & GREET
**INNSBRUCK NIGHT**

**BANQUET**

**Oct. 11, 19:30**  
**LOCATION:** KRISTALL FOYER  
CONGRESS INNSBRUCK

The typical festive gala dinner of the ISSW 2018 will take place in the Kristall Foyer in the Congress Center at 19:30 on Oct. 11, 2018. The banquet will include a three-course meal, an award ceremony, a book presentation and special musical entertainment ...

**D’NIGHT**

**Oct. 9, 18:30**  
**LOCATION:** ORANGERIE  
CONGRESS INNSBRUCK

The D’night offers female ISSW attendees the opportunity to gather and share information as well as network with other professional women in the field of snow and avalanches. Above all those women who have made significant contributions to the field of snow and avalanches in the past years will be honored. Food, drinks and musical entertainment are provided. At 21:00 the D’ Night is admission free for all ISSW 2018 attendees.

D’NIGHT Organizers  
DREIER LISA  
MITTERER SUSANNA  
REIWEBER INGRID

**FERNIE NIGHT**

**Oct. 12, 18:00**  
**LOCATION:** ORANGERIE  
CONGRESS INNSBRUCK

The officially final event of the ISSW 2018 will be held under the motto of the upcoming ISSW 2020 in Fernie (British Columbia, Canada), offering ample time to review on the achievements and success of the conference week. Finger food and drinks will be offered at the Orangerie at Congress Innsbruck on Oct. 12, 2018 from 18:00 onwards.

**SKI RACE**

**Oct. 13**  
**LOCATION:** STUBAI GLACIER

For the first time in the history of ISSW-Conferences, the ISSW 2018 team will organize a ski race to conclude a successful conference week with a fun activity. The race will be held at the nearby Stubai Glacier Ski Area on Oct. 13, 2018. Bus departure will be at 8:00, Saturday, Oct. 13, 2018, in front of the Congress Center. Further details will be announced at the conference. All necessary ski equipment can be rented at the Stubai Glacier.
LEISURE ACTIVITIES

In addition to the official conference program, Innsbruck offers countless recreational opportunities.

There are special offers for participants of the ISSW 2018 if you book with the password „ISSW 2018“.

Follow the links at the official ISSW 2018 homepage at Program – Leisure activities. in the offer-column you’ll find the contacts to organise your leisure activities.

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<td>Golf tour</td>
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<td>Transportation Avalanche Research Pool (T ARP)</td>
<td>Transportation Avalanche Peer Group Meeting</td>
<td>07.10.2018</td>
<td>13:00–16:00</td>
<td>Freiburg</td>
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<td>Wyssen</td>
<td>Int. Teammeeting Wyssen Avalanche Control</td>
<td>07.10.2018</td>
<td>13:00–19:00</td>
<td>New Orleans</td>
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<td>ZAMG</td>
<td>Are you monitoring snow water equivalent (SWE) and snow load?</td>
<td>09.10.2018</td>
<td>15:30–16:30</td>
<td>New Orleans</td>
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<td>ISSW</td>
<td>ISSW-SC Steering Committee Meeting</td>
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<td>Canadian Avalanche Association</td>
<td>International InfoEx Group Demonstration</td>
<td>09.10.2018</td>
<td>11:00–11:30 &amp; 14:00–15:00</td>
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<td>Canadian Avalanche Association</td>
<td>CAA Industry Training Program curriculum update</td>
<td>09.10.2019</td>
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<td>GEObeyond</td>
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<td>09.10.2018</td>
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<td>IRSTEABFW</td>
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<td>10.10.2018</td>
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