

## PROGRAMME OF MEETING SESSIONS

Opening ceremonies: Welcome by the Deputy Director, Rocky Mountain Forest and Range Experiment Station; Commissioner of Agriculture, State of Colorado; Project Leader, Mountain Snow and Avalanche Project, Rocky Mountain Forest and Range Experiment Station

### SESSION I. SNOW-COVER STABILITY EVALUATION AND AVALANCHE PREDICTION

SESSION I A. *Monday 13 August 1979 09.00h–10.15h.* CHAIRMAN: J. D. Ives  
RAPPORTEUR: B. Armstrong

INVITED PAPER: R. C. J. Sommerville: Limitations to predictability  
H. Björnsson: Avalanche activity in Iceland, climatic conditions, and terrain features  
Shi Yafeng and Wang Wenying: Research on snow cover in China and the avalanche phenomena of Batura Glacier in Pakistan  
R. G. W. Ward: Avalanche hazard in the Cairngorm Mountains, Scotland

SESSION I B. *Monday 13 August 1979 10.30h–12.00h.* CHAIRMAN: K. Lied  
RAPPORTEUR: R. G. W. Ward

B. B. Fitzharris and P. A. Schaerer: Frequency of major avalanche winters  
Zhang Xiangsong and Wang Yanlong: Preliminary research on the physical and mechanical properties and avalanche of seasonal snow cover at the avalanche station in T'ien-shan, China  
A. Judson, C. F. Leaf, and G. E. Brink: A process-oriented model for simulating avalanche danger

SESSION I C. *Monday 13 August 1979 13.30h–14.45h.* CHAIRMAN: P. A. Schaerer  
RAPPORTEUR: K. Williams

H. Gubler: Simultaneous measurements of stability indices and characteristic parameters describing the snow cover and the weather in fracture zones of avalanches  
E. R. LaChapelle: The fundamental processes in conventional avalanche forecasting  
C. Stethem and R. Perla: Snow-slab studies at Whistler Mountain, British Columbia, Canada

SESSION I D. *Monday 13 August 1979 15.00h–16.00h.* CHAIRMAN: E. R. LaChapelle  
RAPPORTEUR: R. T. Marriott

K. Williams: Credibility in avalanche warnings  
J. Montagne: The university course in snow dynamics—a stepping-stone to career interests in avalanche hazards  
F. Valla: Avalanche education for skiers

## SESSION II. SNOW AND AVALANCHE MECHANICS

SESSION II A. *Tuesday 14 August 1979 08.30h–10.30h.* CHAIRMAN: T. E. Lang  
 RAPPORTEUR: R. A. Sommerfeld

- INVITED PAPER: Brian Brady: On precise long-term prediction of brittle fracture  
 M. Martinelli, Jr, T. E. Lang, and A. I. Mears: Calculations of avalanche friction coefficients from field data  
 O. Buser and H. Frutiger: Observed maximum run-out distances of snow avalanches and the determination of the friction coefficients  $\mu$  and  $\xi$   
 G. Brugnot: Recent progress and new applications of the dynamics of avalanches  
 J. D. Dent and T. E. Lang: Modeling of snow flow  
 H. Shimizu, T. Huzioka, E. Akitaya, H. Narita, M. Nakagawa, and K. Kawada: A study on high-speed powder avalanches in the Kurobe canyon, Japan

SESSION II B. *Tuesday 14 August 1979 10.45h–11.45h.* CHAIRMAN: R. I. Perla  
 RAPPORTEUR: C. Stethem

- A. I. Mears: A fragment-flow model of dry-snow avalanches  
 K. Lied and S. Bakkehøi: Empirical calculations of snow-avalanche run-out distance based on topographic parameters  
 J. P. Navarre and J. Desrues: Finite-element analysis of snow on slopes

SESSION II C. *Tuesday 14 August 1979 13.00h–14.45h.* CHAIRMAN: W. St Lawrence  
 RAPPORTEUR: R. A. Sommerfeld

- P. A. Schaerer and A. A. Salway: Seismic and impact-pressure monitoring of flowing avalanches  
 T. E. Lang and J. D. Dent: Scale modeling of snow-avalanche impact on structures  
 R. Perla, T. T. Cheng, and D. M. McClung: A two-parameter model of snow-avalanche motion

SESSION II D. *Tuesday 14 August 1979 15.00h–17.00h.* CHAIRMAN: N. Maeno  
 RAPPORTEUR: J. D. Dent

- W. St Lawrence: The acoustic emission response of snow  
 R. A. Sommerfeld: Statistical models of snow strength  
 D. A. Ellerbruch and H. S. Boyne: Snow stratigraphy and water equivalence measured with an active microwave system  
 W. Fritzsche: Radar for avalanches—measurements and warning

POSTER SESSION. *Wednesday 15 August 1979 Morning*

- E. Akitaya: Observations of ground avalanches with a video tape recorder (VTR)  
 E. Chacho and M. Molnau: Topographical effects of restructured land on snow deposition  
 H. Frutiger: Swiss avalanche hazard maps  
 S. W. Hackett and D. Fesler: Informal co-operative state-federal avalanche warning system and public education program for south-central Alaska, U.S.A.

- W. Hotchkiss: Lavine—a 16 mm movie; General avalanche safety—a slide tape program  
 H. J. Körner: The energy-line method in the mechanics of avalanches  
 E. R. LaChapelle and S. A. Ferguson: Snow-pack structure: stability analyzed by pattern-recognition techniques  
 M. Martinelli, Jr: Goat Lick Bridge avalanche  
 Qiu Jiaqi and Hu Ruji: The avalanches of December 1966 in western T'ien-shan, China  
 R. A. Schmidt: Measuring blowing snow  
 R. A. Sommerfeld: Spectral analyses of acoustic emissions from snow slopes  
 Y. Yamada: Gear-type glide meter as an instrument for forecasting full-depth avalanches

SESSION II E. *Thursday 16 August 1979 08.30h–10.00h.* CHAIRMAN: D. Marbouty  
 RAPPORTEUR: S. Ferguson

- R. L. Brown: Propagation of stress waves in alpine snow  
 D. M. McClung: Fracture mechanical models of dry-slab avalanche release  
 J. B. Johnson: A model for snow-slab failure under conditions of dynamic loading  
 Z. Watanabe: Tensile strain and fracture of snow

SESSION II F. *Thursday 16 August 1979 10.15h–11.45h.* CHAIRMAN: S. C. Colbeck  
 RAPPORTEUR: D. M. McClung

- N. Maeno, K. Nishimura, and Y. Kaneda: Viscosity and heat transfer in fluidized snow  
 H. Narita: Mechanical behaviour and structure of snow under uniaxial tensile stress  
 R. L. Armstrong: An analysis of compressive strain in adjacent temperature-gradient and equi-temperature layers in a natural snow cover

### SESSION III. AVALANCHE ZONING

SESSION III A. *Thursday 16 August 1979 13.15h–14.45h.* CHAIRMAN: M. Martinelli, Jr  
 RAPPORTEUR: R. L. Armstrong

INVITED PAPER: John Rold: Avalanche hazard planning in Colorado—the State and local government relationships

- H. Frutiger: History and present state of legalization of avalanche zoning in Switzerland  
 L. de Crécy: Avalanche zoning in France—regulation and technical bases

SESSION III B. *Thursday 16 August 1979 15.00h–16.30h.* CHAIRMAN: H. Frutiger  
 RAPPORTEUR: R. A. Sommerfeld

- E. Hestnes and K. Lied: Natural-hazard maps for land-use planning in Norway  
 G. L. Freer and P. A. Schaerer: Snow-avalanche hazard zoning in British Columbia, Canada  
 A. I. Mears: Municipal avalanche zoning: contrasting policies of four western United States communities  
 J. D. Ives and M. Plam: Avalanche hazard mapping and zoning problems in the Rocky Mountains, with examples from Colorado, U.S.A.  
 S. W. Hackett and H. S. Santeford: Avalanche zoning in Alaska, U.S.A.

SESSION II G. *Friday 17 August 1979 08.00h–08.45h.*

CHAIRMAN: R. A. Sommerfeld  
 RAPPORTEUR: D. A. Ellerbruch

S. C. Colbeck: Thermodynamics of snow metamorphism due to variations in curvature  
 D. Marbouty: An experimental study of temperature-gradient metamorphism

SESSION IV. WIND TRANSPORT AND DEPOSITION IN IRREGULAR TERRAIN

SESSION IV A. *Friday 17 August 1979 08.45h–10.00h.*

CHAIRMAN: R. A. Schmidt  
 RAPPORTEUR: D. Alford

D. Fox: On deposition to a forested mountain

J. D. Iversen: Drifting-snow similitude—transport-rate and roughness modeling

R. D. Tabler: Geometry and density of drifts formed by snow fences

R. D. Tabler: Self-similarity of wind profiles in blowing snow allows outdoor modeling

Wang Zhonglong and Chen Yuan: Research on prevention of snow-drifts by blower fences

J. D. Bergen: A slip-velocity hypothesis applied to hydraulically smooth wind flow over a snow cover

SESSION IV B. *Friday 17 August 1979 10.15h–11.45h.*

CHAIRMAN: M. Martinelli, Jr  
 RAPPORTEUR: A. I. Mears

R. A. Schmidt: Threshold windspeeds and elastic impact in snow transport

P. M. B. Föhn: Snow transport over mountain crests

SESSION IV C. *Friday 17 August 1979 13.30h–15.30h.*

CHAIRMAN: M. Martinelli, Jr  
 RAPPORTEUR: A. I. Mears

D. Alford: Spatial patterns of snow accumulation in the alpine terrain

M. Takeuchi: Vertical profile and horizontal increase of drift-snow transport