canadianavalancheassociation

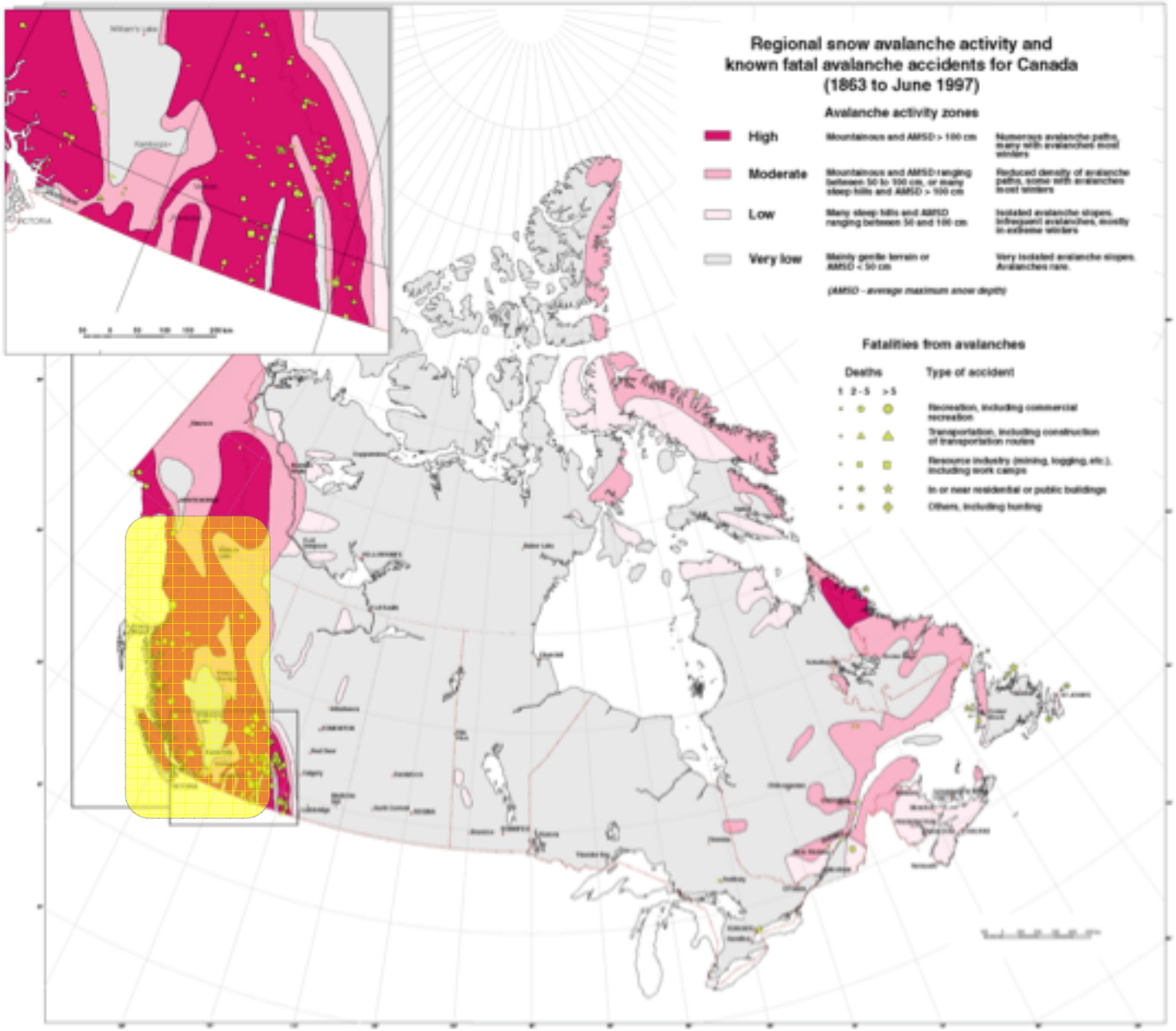
Regulating Avalanche Safety

IKAR Annual Conference, Slovakia 2010

Ian Tomm
Executive Director
Canadian Avalanche Association

Natural Resources Canada | Ressources naturelles Canada

Regional snow avalanche activity and known fatal avalanche accidents for Canada (1863 to June 1997)



(Parks Canada photograph 615-259-D-1994 taken by R. Grayell, reproduced with permission)

The four levels of avalanche activity shown on this map are based on terrain steepness from a shaded relief map and regional values of average maximum snow depth. As a consequence of the map scale and the qualitative method used to delineate the avalanche activity areas, this map is not suitable for site-specific assessments of snow avalanche activity or hazard since it does not take into account isolated steep areas, isolated areas of heavy snowfall or strong winds, extreme winters, unusual storms, or slush flows on less steep terrain. For example, the method used to delineate the regional snow avalanche activity underestimates the activity on areas of the Newfoundland coast where wind-blown snow creates local avalanche activity. Nevertheless, 92% of the reported snow avalanche accidents in Canada fall within the areas of high or moderate avalanche activity.

Note: some of the 216 accident locations depicted on the map are obscured by overlapping closely-spaced symbols.

Sources

Topographic information:

Canada. Energy, Mines and Resources
1980. Canada. Geological Surveys Directorate, Surveys and Mapping Branch, Energy, Mines and Resources Canada, Map MCR 100, 1 : 5 000 000 scale.

Average maximum snow depth:

Canada. Fisheries and Environment
1979. Mean maximum depth of snow and times of occurrence, Map 11, Hydrological Atlas of Canada, Fisheries and Environment Canada, Ottawa.

Avalanche fatalities:

Barbeau, M., Liverman, D. and Taylor, D.
1993. The assessment of geological hazards and disasters in Newfoundland, Newfoundland Department of Natural Resources, Geological Survey, Report 93-1, p. 93-70.

Jamieson, J.B. and Geldsetzer, T.
1996. Avalanche Accidents in Canada, Vol. II, 1984-1996, Canadian Avalanche Association, Revelstoke, BC, Canada, 350 p.

Manners, S.
1997. Avalanche Involvements 1959-97, Avalanche News 53, Canadian Avalanche Association, Revelstoke, BC, Canada, p. 22-26.

McKerlane, R.G.
1990. Snow Avalanche Impacts and Management in Canada, Ph.D. Thesis, University of Waterloo, Waterloo, Ontario, Canada, 272 p.

Schaerer, P.A.
1987. Avalanche Accidents in Canada III, A Selection of Case Histories, 1978-1984, National Research Council of Canada, Institute for Research in Construction, Publication 27955, 136 p.

Stethem, C.J. and Schaerer, P.A.
1979. Avalanche Accidents in Canada I, A Selection of Case Histories of Accidents, 1955 to 1978, National Research Council of Canada Publication 17262, 114 p.

Stethem, C.J. and Schaerer, P.A.
1980. Avalanche Accidents in Canada II, A Selection of Case Histories of Accidents, 1943 to 1979, National Research Council of Canada Publication 18523, 70 p.

Recommended Citation:

Jamieson, B. and Brooks, G.R.
1998. Regional snow avalanche activity and known fatal avalanche accidents for Canada (1863 to June 1997). Geological Survey of Canada, Open File 3592.

Copies of this Open File may be obtained from:

Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario K1A 0E8

or

Geological Survey of Canada (Calgary), 3303-33rd Street N.W., Calgary, Alberta T2L 2A7

OPEN FILE
DOSSIER PUBLIC
3592
1998

Canada

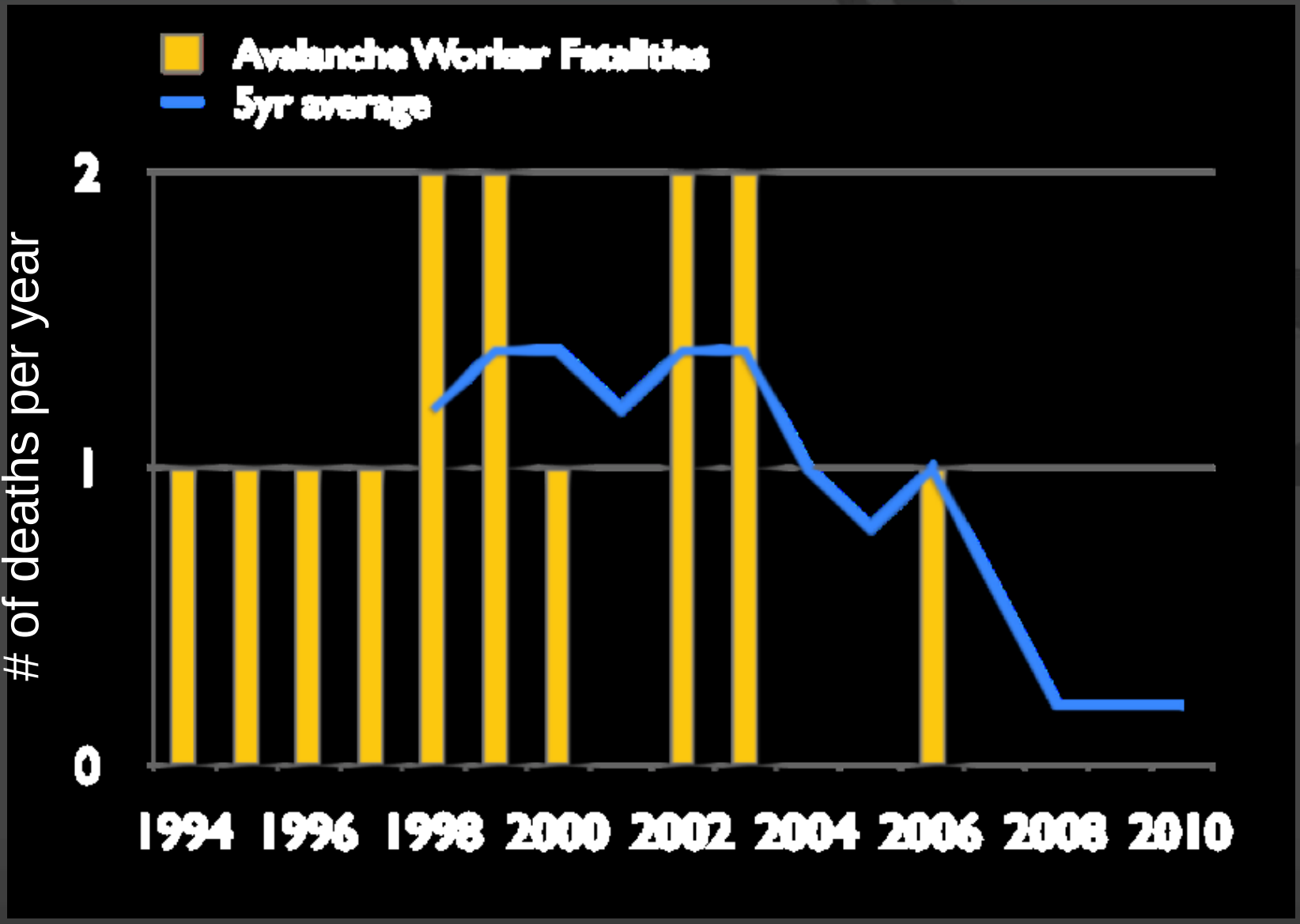
WORKING TO MAKE A DIFFERENCE

canadianavalancheassociation

Who is WorkSafeBC

- Government insurance plan for employers
- If a worker gets hurt government looks after them
- Regulations written that employers must follow
- Large fines if employers are found in violation

Why do we have a regulation?


Avalanche Worker Fatalities
5yr average
# of deaths per year
2
1
0
1994
1996
1998
2000
2002
2004
2006
2008
2010

Data: CAA

Triggers to regulatory change

- History of worker fatalities
  - 7x more hazardous than forestry work
- High profile guide fatality at a cat skiing operation
  - Guide checking weather station alone in early morning
  - Weather Plot located at the bottom of a long return period avalanche path
  - Investigation prompted regulatory change
  - Employer was fined $50,000

The beginning - 2006

- WorkSafeBC tried to strip all authority from avalanche workers (guides, ski patrol, highways technicians, etc)
- Responsibility given to engineers and geoscientists
  - In Canada there are not very many engineers who understand avalanches well
- CAA response – this won't improve worker safety
- Supported by partner organizations
- Started 2 year consultation process

What are the requirements

- If you have a worksite affected by avalanches you must have,
  - Avalanche Risk Assessment
  - Avalanche Safety Plan
    - Safe work procedures, documentation of forecasting and risk management procedures
    - Emergency response
    - Equipment & Training of staff
- Must be approved by a ‘Qualified Avalanche Planner’

The results…

- CAA training and certification recognized as the common thread in all avalanche work in Canada.
- New ‘certification’ created – Qualified Avalanche Planner
  - Guiding – mechanized
  - Guiding – non-mechanized
  - Ski Area
  - Public Safety (government, others)
  - Industrial - Forestry, Mining, Railways, Highways
  - Snowmobiling

CAA training & certification

- Now written into and recognized by government regulation
  - Avalanche Operations Level 3 (forecasting)
  - Avalanche Rescue
  - Weather Skills for Avalanche Forecasters
  - Snow Avalanche Mapping
  - Annual compliance with Continuing Professional Development standards (set by CAA).

Other requirements…

- Experience
  - 15 years as consultant
  - 10 years as employee
  - Management experience – 3-5 years
- Guide certification
- Explosives training and certification (optional)
- Professional liability and errors/omissions insurance
- Accident investigation experience
- Advanced avalanche mapping (CAA course)


P. Hein

Challenges

- Old workers, new standards
- Search and Rescue
  - Avalanche risk assessments
- Scope of Practice
- Code of Conduct & Discipline
- Fall Protection
  - CE/UIAA certified equipment not recognized by WorkSafeBC

Successes

- CAA training & certification the standard for worker safety
- Industry maintains control over standards
- Other jurisdictions looking at adopting the QAP standards
  - Parks Canada (federal)
  - Alberta
- Future security for CAA training programs

canadianavalancheassociation

Avalanche Floatation Packs (AFD)

- WorkSafeBC interested in adoption of packs for worker safety
- WorkSafeBC knows of European use/context
  - French fine
- CAA lead research project to investigate future of AFD in the Canadian workplace.
  - Funded by WorkSafeBC

Parting Thought...

- Society has a tendency to optimize around hardline rules.
- The risk in avalanche work is that;
  - we focus our attention to meeting the regulation
  - we lose focus of other important aspects of avalanche risk management in the process


Questions?
itomm@avalanche.ca
canadianavalancheassociation