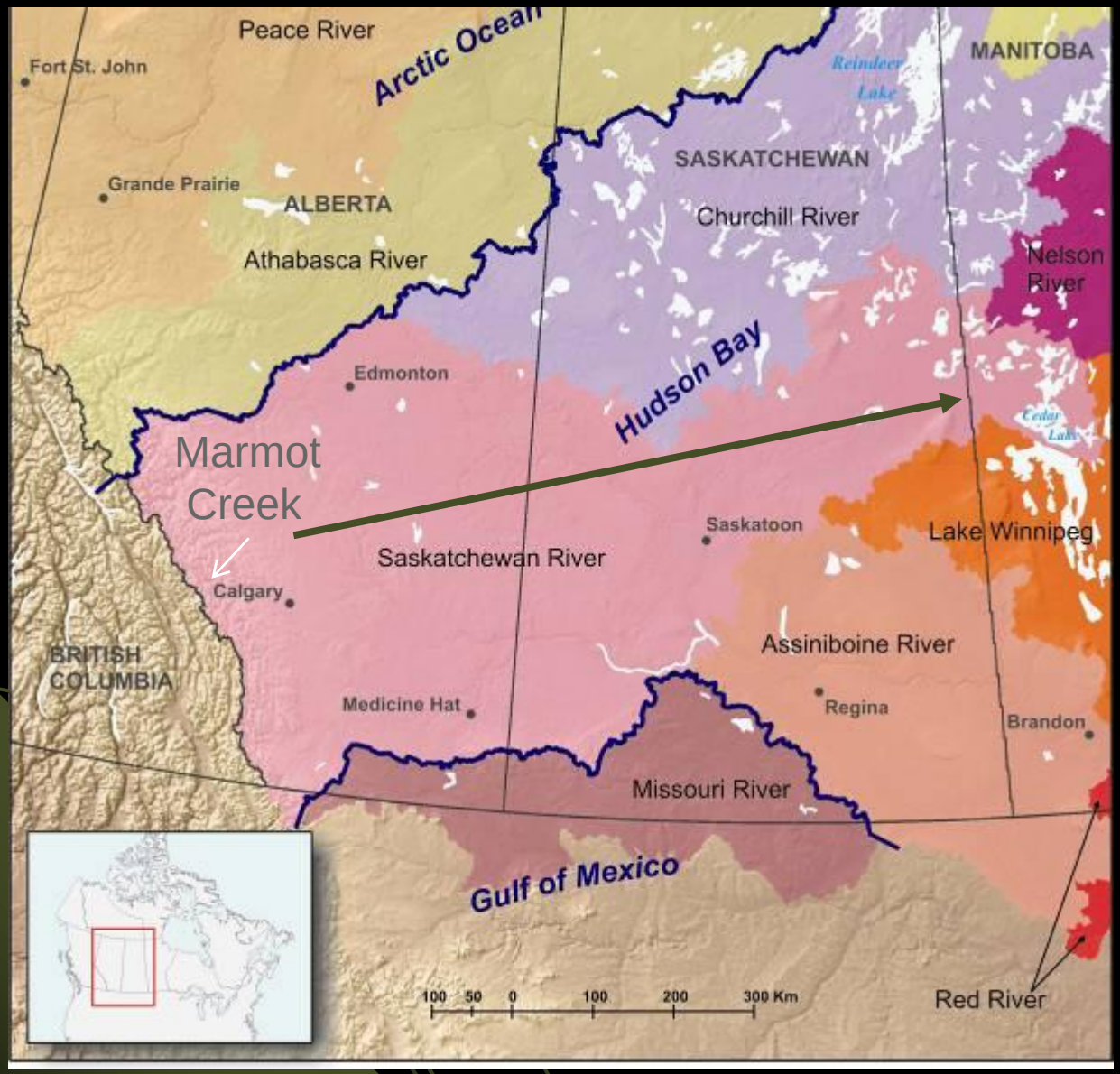
# Introduction to the Marmot Creek ~50th Anniversary Workshop

21-22 Feb 2013, Kananaskis, Alberta

John Pomeroy, Centre for Hydrology & Global Institute for Water Security, University of Saskatchewan
Axel Anderson, Foothills Research Institute
Jim Bruce, Environment Canada (emeritus)
John Diiwu, Alberta Environment and Sustainable Resource Development
Ed Johnson, Biogeoscience Institute, University of Calgary



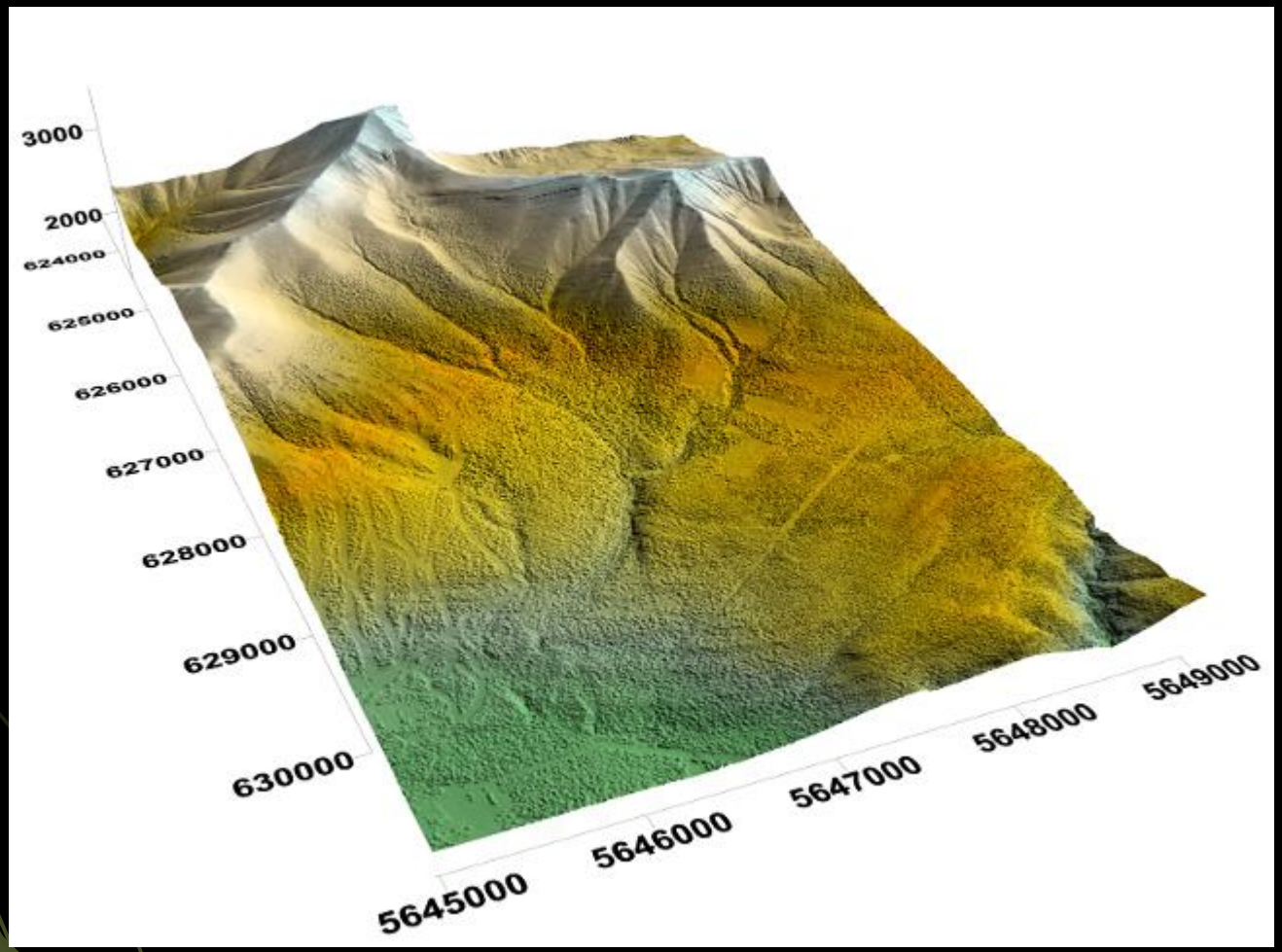

Saskatchewan-Nelson River Basin flows east across Alberta, Saskatchewan and Manitoba to Hudson Bay

# Marmot Creek Research Basin

- Established 1962, operated until 1987 by Canada and Alberta Governments (Marmot Basin Project)
  - Intensive observations – stream gauging, groundwater observation wells, meteorological stations, snow surveys, soil surveys, vegetation surveys
  - Forestry manipulations
  - Process and modelling studies
  - Comprehensive watershed studies: water quality, aquatic ecology
  - Digitized, archived data.
- 1988-2004
  - Groundwater wells, main streamgauge, some weather observations continued by Environment Canada and Alberta Environment
  - No organised research in the basin
- Re-established 2004 by University of Saskatchewan, Environment Canada and University of Calgary
  - Intensive observations – meteorological stations, stream gauging, snow surveys
  - LiDAR, satellite images
  - Automated stations, telemetry, WISKI data archiving
  - Process and modelling studies

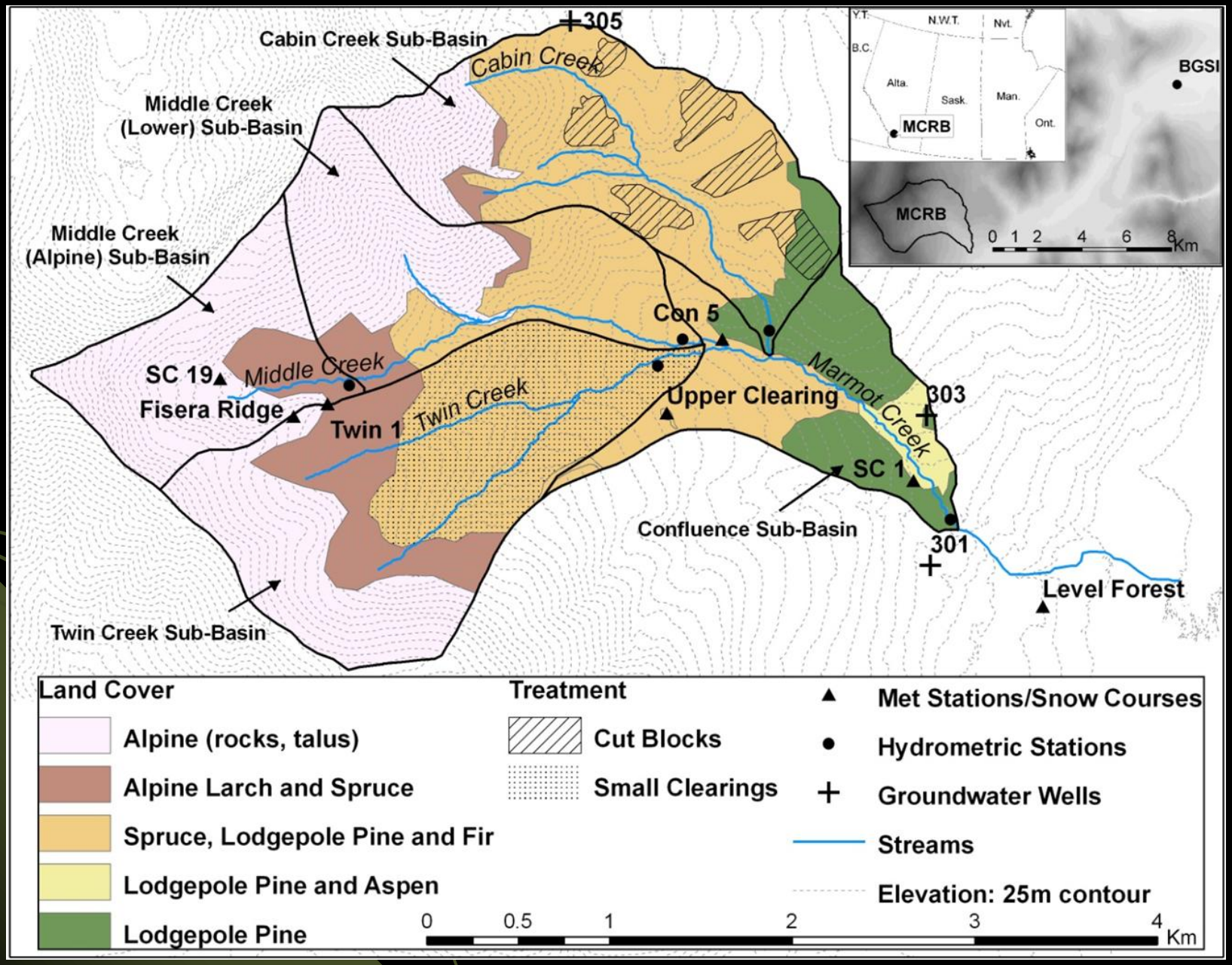
# Marmot Creek Research Basin

- 1450-2886 m.a.s.l. Kananaskis Valley, Bow River
- Alpine
- Subalpine
- Montane
- Clearcut
- Meadow
- +600 mm precipitation
- 70% snowfall
- ~50% runoff



# Observations Clustered in Small Basins Improve Understanding

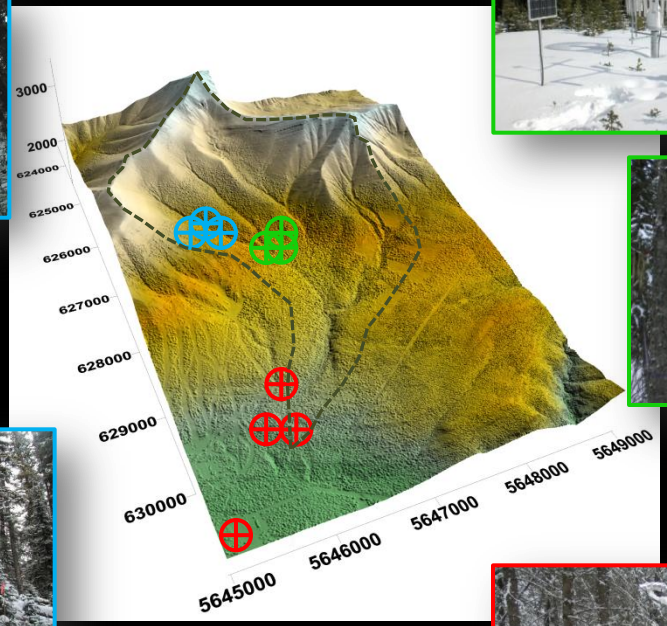
# Topography, Vegetation, Instrumentation



# Land Cover Management

# Forest Snow Research in Marmot Creek

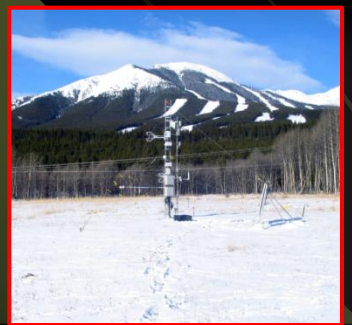




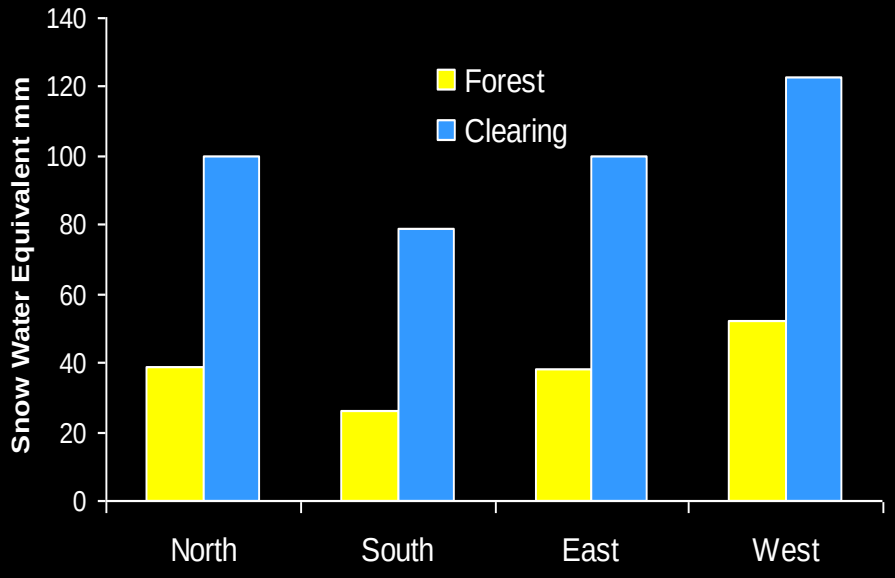







# Snow Interception & Sublimation Loss in Marmot Creek




# Mt Allan Cirque, Marmot Creek

- 2318 m
- Ridge above treeline
- Windblown
- U, T, RH
- Precip
- Radiation
- Snowdepth
- Camera
- 2 outlier stations

# Fisera Ridge
# North and South Facing Slopes

North face – wind scoured

South face – deep snow drifts

# Snow Surveys

# Stream Gauging

# Purpose of Workshop

- Celebrate the half century of knowledge and technology from Marmot Creek
- Review the challenges, designs and results of the
  - early research period
  - recent research period
- Anticipate and plan for the future science in the basin

# Talks on……

- Reviews of observations, expectations and management for the experimental basin 1962-1987
- Results of recent field and modelling studies in the basin
- Changes that have been observed or modelled in the basin over time
- Forest management and policy implications of research in Marmot Creek.
- Future studies and plans for Marmot Creek.

- 22 talks and 2 posters spanning 50+ years of research