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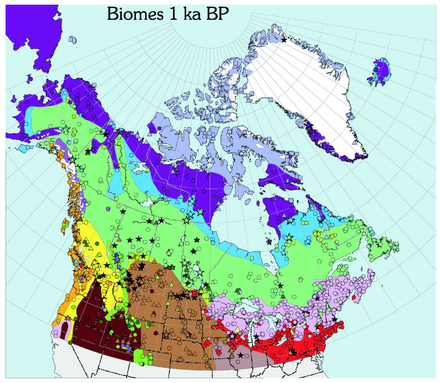
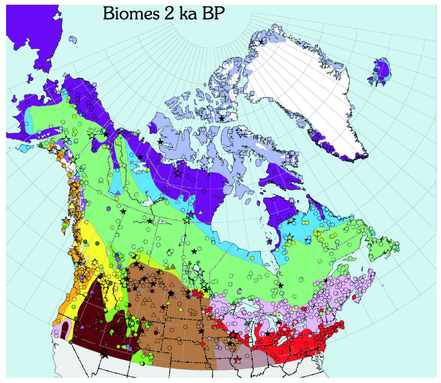
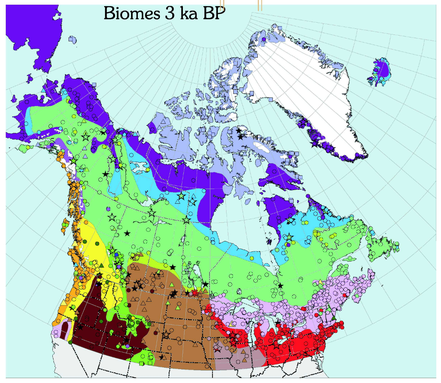
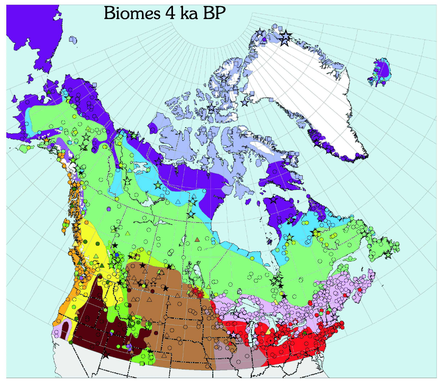
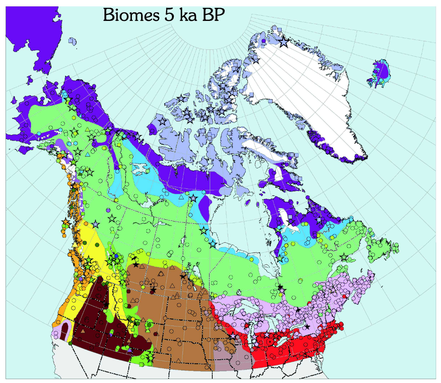
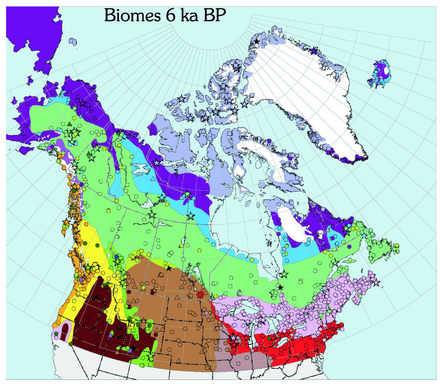


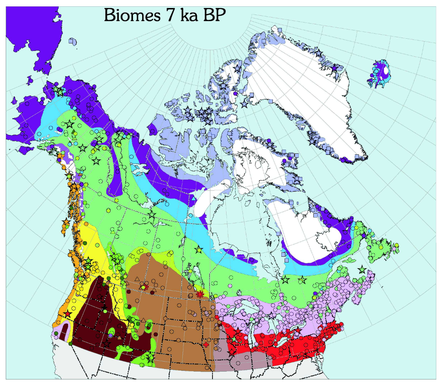


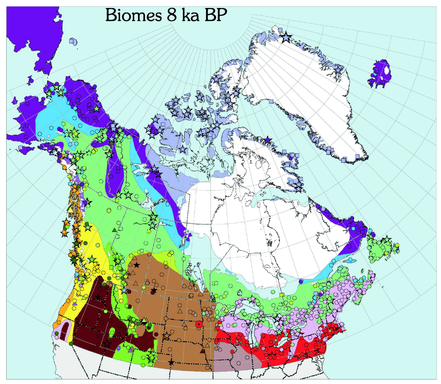








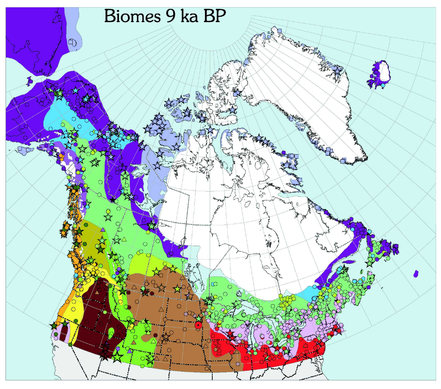


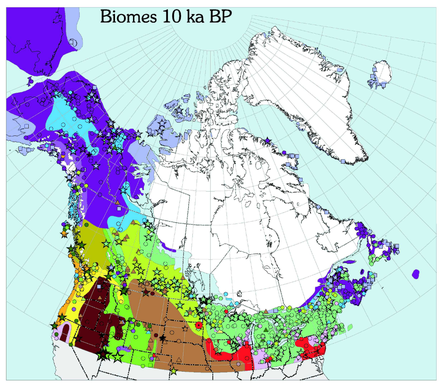


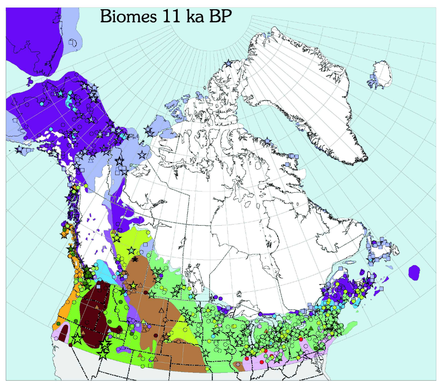
Paleovegetation maps of Northern North America, 18 000 to 1 000 BP

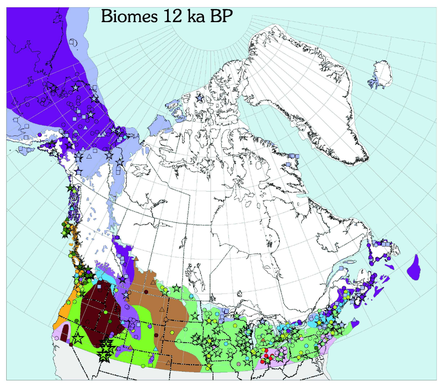
Arthur S. Dyke, Denis Giroux, Louis Robertson, Geological Survey of Canada

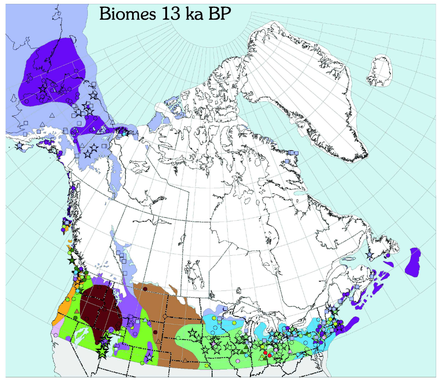
Biomes are climate-controlled vegetation and animal distributions, in equilibrium with climate provided that the climate is not changing too rapidly. They can be reconstructed from paleontological sources with reasonable confidence. Here we present biome maps spanning from the last glacial maximum (18 000 years ago) to modern times. Because the ice sheets during the last glaciation sat in near maximal configurations for a period of about 10 000 years, the vegetation distribution at the last glacial maximum was probably as nearly in equilibrium with its contemporaneous climate as the modern distribution is with the modern climate. Subsequent changes in biome distribution during deglaciation and thereafter reflect the complex interplay of climate forcing and the dynamic constraints that limit plant migration rates. The waning ice sheet configuration was one of the strongest controls of continental climate zones until about 7000 years ago, particularly early in deglaciation. Late deglaciation of the eastern part of the continent delayed attainment of maximum postglacial warmth there. Despite these complexities, regional climate trends through time can be reliably inferred from changing biome distributions. Further analysis of the sensitivity of vegetation to climate change at the biome level would be best facilitated if empirical climate reconstructions for the same time interval based on sources other than vegetation history were available. Nevertheless, because there is evidence of general cooling during the last 3000-5000 years, and longer in places, middle and early Holocene biome distributions and species compositions are reasonable analogues of future equilibrium displacements due to equivalent warming, at least in areas that were long-since deglaciated at these times. Peak postglacial warmth, although not synchronous across the continent, has been estimated elsewhere to have been mainly in the range of 2-4°C above mid 20th century values. Some estimates of immediate future warming exceed that range.

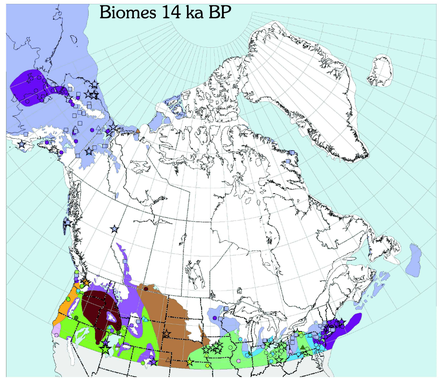


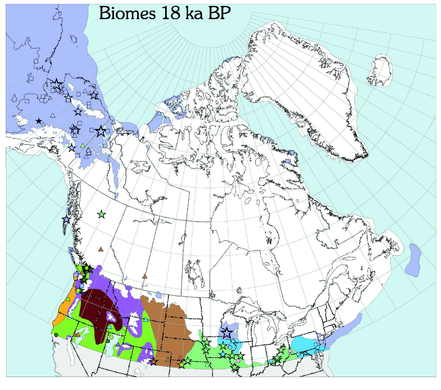












OPEN FILE 4682

PALEOVEGETATION MAPS OF NORTHERN NORTH AMERICA, 18 000 TO 1 000 BP

OPEN FILE DOSSIER PUBLIC
4682
GEOLOGICAL SURVEY OF CANADA COMMISSION GÉOLOGIQUE DU CANADA
2004

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LEGEND

BIOMES
- Herb tundra
- Alpine tundra
- Shrub tundra
- Forest tundra
- Boreal forest
- Boreal parkland
- Subalpine forest
- Interior forest
- Interior forest / Conifer forest
- Coast forest
- Mixed forest
- Deciduous forest
- Savannah
- Grassland
- Steppe
- Unknown
- Ice
- Water

MACROFOSSIL SITES
- Tundra
- Herb Tundra
- Alpine Tundra
- Shrub Tundra
- Forest Tundra
- Boreal Forest
- Boreal Parkland
- Subalpine Forest
- Subalpine Parkland
- Conifer Forest
- Coast Forest
- Mixed Forest
- Deciduous Forest
- Deciduous Parkland
- Grassland
- Steppe

MAMMAL SITES
- Tundra
- Alpine Tundra
- Forest Tundra
- Subalpine Forest Tundra
- Steppe Tundra
- Conifer Forest
- Conifer Parkland
- Mixed Forest
- Deciduous Forest
- Deciduous Woodland
- Grassland
- Riparian
- Steppe
- Widespread

POLLEN SITES
- Tundra
- Herb Tundra
- Alpine Tundra
- Shrub Tundra
- Forest Tundra
- Subalpine Forest Tundra
- Boreal Forest
- Boreal Parkland
- Subalpine Forest
- Subalpine Parkland
- Conifer Forest
- Conifer Parkland
- Interior Forest
- Interior Parkland
- Coast Forest
- Mixed Forest
- Mixed Woodland
- Deciduous Forest
- Deciduous Parkland
- Savannah
- Grassland
- Steppe

Canada

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