Frequent changes in shoreline position &/or sediment source.

Isolation of Lake Manitoba.

Relatively stable shoreline position & sediment source.

Modern Lake Manitoba.

Gradual freshening of basin hydrology.

Closed basin evaporitic groundwater dominated.

Modern Conditions.

Increasing terrestrial influence.

Inorganic Mg-CaCO₃ Ostracode CaCO₃ (Ito et al., 1996) (Last et al., 1996)

WARM

MOIST

DRY

WET

COOL

MAGNETICS

Diatoms (Risberg et al., 1999)

OSTRACODES

CURRY (1997)

STABLE O & C ISOTOPES

POLLEN

MOLLUSCS

(PIP, 1990)

ORGANIC GEOCHEMISTRY

δ¹³C

δ¹⁸O

Modern Conditions

Warm Shallow Water Species

Cool Deep Water Species

Mollusc Recovery

AQUATIC VEGETATION

Modern Conditions

Cool(?)

Deep Water

WARM

SHALLOW WATER

ABUNDANT AQUATIC VEGETATION

CLOSED BASIN EVAPORITIC SALINE GROUNDWATER DOMINATED

FREQUENT SHIFTS BETWEEN OPEN & CLOSED BASIN

OPEN BASIN

GROUNDWATER

WATER SOURCE

GROUNDWATER

PRECIPITATION

RUNOFF

CLOSED BASIN EVAPORITIC SALINE GROUNDWATER DOMINATED

CLOSED BASIN EVAPORITIC SALINE GROUNDWATER DOMINATED

Gradual freshening of basin hydrology.

Modern Lake Manitoba.

Modern Lake Manitoba.

INCREASING TERRESTRIAL INFLUENCE

ALGAE, CYANOBACTERIA, LIPID-RICH & SAPROPELIC TERRESTRIAL ORGANIC MATTER

LOW ORGANIC MATTER PRESERVATION

TERRESTRIAL ORGANIC MATTER

ALGAE, OCHRE

CARBONATE

OCHRE