



CLIMATE WEST FORUM

MAY 3 & 4

WINNIPEG, MANITOBA

CLIMATE MODELS MUST FACTOR IN MANY VARIABLES



- 1) Incoming Solar Radiation
- 2) Scattering by Aerosols and Molecules
- 3) Absorption by the Atmosphere
- 4) Reflection/Absorption by Clouds
- 5) Emission of Longwave Radiation from Earth's Surface
- 6) Condensation
- 7) Turbulence
- 8) Reflection/Absorption at Earth's Surface
- 9) Snow
- 10) Soil Water/Snow Melt
- 11) Snow/Ice/Water Cover

- 12) Topography
- 13) Evaporation
- 14) Vegetation
- 15) Soil Properties
- 16) Rain (Cooling)
- 17) Surface Roughness
- 18) Sensible Heat Flux
- 19) Deep Convection (Warming)
- 20) Emission of Longwave Radiation from Clouds

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CLASSROOM SESSIONS INVOLVE LEARNING THE BASICS OF METEOROLOGY, WEATHER, CLIMATE, AND THE VARIABLES THAT GO INTO CLIMATE MODELING USING COMPUTERS



A KEY PART OF OUR PROGRAM IS OUR SOLAR POWERED WEATHER STATION WHERE DATA IS COLLECTED AND STORED EVERY 6 HOURS. THIS CAN HELP DETECT CHANGES FROM BASELINE WEATHER DATA AND CHANGES OCCURING OVER TIME.



STUDENTS MONITOR SNOW DEPTH IN A RESEARCH PLOT TO DETERMINE TRENDS IN PRECIPITATION



SNOW DEPTH IS RECORDED WEEKLY. THIS DATA HAS BEEN SHARED WITH MANITOBA CONSERVATION. THEY USE A COMPUTER MODEL TO PREDICT WINTER KILL IN UNGULATE SPECIES SUCH AS WHITE-TAILED DEER AND MOOSE.

STUDENTS CHECK FOR AQUATIC INVASIVE SPECIES USING A VARIETY OF SUBMERGED EQUIPMENT. INVASIVE SPECIES CAN SPREAD FASTER IN A WARMING CLIMATE

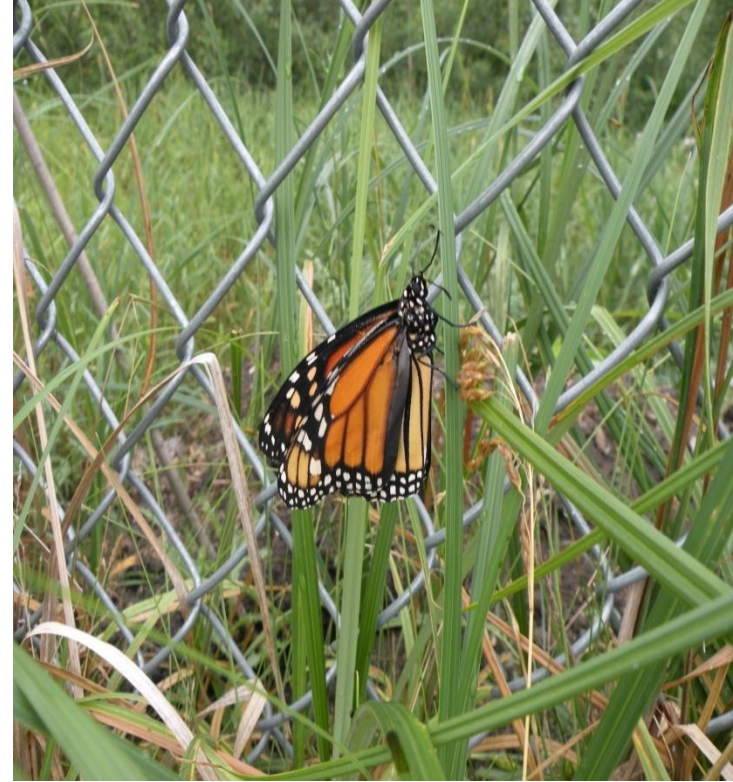




WATER SAMPLES FROM THE BLACK RIVER ARE ANALYZED FOR OXYGEN CONTENT. WARM WATER CAN HOLD LESS OXYGEN, AND CAN CONTRIBUTE TO FISH KILLS, AND ALGAE BLOOMS.

THINNING ICE IN A WARMING CLIMATE HAS HUGE SAFETY IMPLICATIONS FOR FISHERS, HUNTERS, AND TRAPPERS





STUDENTS MAINTAIN A POLLINATOR GARDEN. THE OBJECTIVE IS TO ATTRACT AND RETAIN A BREEDING POPULATION OF MONARCH BUTTERFLIES, AN IMPORTANT INDICATOR SPECIES OF CLIMATE CHANGE.



LAKE WINNIPEG SHORELINE IN THE COMMUNITY OF BLACK RIVER FIRST NATION. LOW WATER LEVELS OCCURRED DURING THE 2 BACK TO BACK DROUGHT YEARS OF 2020 AND 2021. THIS MADE IT DIFFICULT FOR LOCAL FISHERS TO SET NETS AND MADE BOATING VERY DANGEROUS . IT ALSO DAMAGED FISH SPAWNING HABITAT, SO THAT AN ENTIRE YEAR CLASS OF FISH POPULATIONS MAY BE REDUCED.



REMANANTS OF ZEBRA MUSSELS, AN INVASIVE SPECIES, ARE WASHED UP ON THE SHORE OF LAKE WINNIPEG. INVASIVES HAVE A GREATER CHANCE OF SURVIVAL IN A WARMING CLIMATE. THANKFULLY, FEW ADULTS WERE FOUND ON THE EASTERN SHORE OF LAKE WINNIPEG BECAUSE CALCIUM LEVELS IN THE WATER ARE VERY LOW, UNLIKE THE CALCIUM RICH WATERS FLOWING INTO LAKE WINNIPEG FROM THE WESTERN REGION.



AN OXYGEN SATURATION TEST IN MID-WINTER SHOWED THAT THE SAMPLE WAS 66.4% SATURATED



STUDENTS TRAVEL ALONG BLACK RIVER DOCUMENTING EVIDENCE OF SHORELINE EROSION. SEVERE STORMS OVER LAKE WINNIPEG HAS INCREASED THE EXTENT OF DAMAGE.



STUDENTS COLLECT DATA FROM ONE OF OUR 2 FOREST RESEARCH PLOTS. DATA COLLECTION HELPS MONITOR FOREST GROWTH, VIGOUR, AND CHANGES IN FOREST HEALTH DUE TO WINDTHROW, ICE STORMS, AND THE PRESENCE OF INSECTS AND DISEASE. HERE AN INCREMENT BORER IS USED TO DETERMINE THE AGE OF THE TREE.

STUDENTS COUNT THE TREE RINGS TO DETERMINE AGE OF THE TREE. VARIATIONS IN THE RATE OF GROWTH CAN ALSO BE OBSERVED.





GRADE 9 STUDENTS TAKE ICE THICKNESS MEASUREMENTS AND WATER SAMPLES.

BE CAREFUL OUT THERE!

