

**Isi Askiwan—The State of the Land:
Prince Albert Grand Council Elders' Forum on Climate Change**

**Final Research Project Report to the
Prairie Adaptation Research Collaborative**

By

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ACKNOWLEDGMENTS

The authors would like to acknowledge the funding from the Prairie Adaptation Research Collaborative and Natural Resources Canada (Climate Change Impacts and Adaptation Directorate) in support of the Prince Albert Grand Council Elders' Forum on Climate Change. Additional funding support came from the Indigenous Peoples Health Research Centre. IPHRC is a joint project of the First Nations University of Canada, the University of Regina, and the University of Saskatchewan with funding provided by the Canadian Institutes of Health Research—Institute of Aboriginal Peoples Health and Saskatchewan Health through the Saskatchewan Health Research Foundation.

The authors would like to acknowledge and thank the Elder delegates who participated in this forum: Pierre Robillard, Ernest Skull, and Senator Simon Robillard from Black Lake; Madeline Goulet and Tom Pelly from Cumberland House; Alfred Naldzil and Pauline Sanger from Fond du Lac; George St. Pierre and Sylvia Tsannie from Hatchet Lake; Lawrence Marion and Riley Burns from James Smith Cree Nation; Catherine Charles, Elizabeth Charles, and Doris Halkett from Lac La Ronge Indian Band; Caroline Nelson, Lawrence Ballantyne, and Senator Allan Bird from Montreal Lake; Allan Longjohn and Norman Henderson from Prince Albert urban area; Oscar Beatty, Jean Beatty, Phillip Ratt, and Adolph Cook from Peter Ballantyne Cree Nation; Barnabas Head and Hector Head from Red Earth; Clara Whitecap and Lillian Lathlin from Shoal Lake; Howard Bighead, Robert Ermine, and John James Daniels from Sturgeon Lake; and Kenneth Crowe and Velma Buffalo from Wahpeton. Ceremonial direction was provided by Jacob Sanderson, Shirley Sanderson, Bill Ermine, Baptiste Turner, and Lorne Waditaka. Thanks also go out to the many volunteers and support personnel from the Prince Albert Grand Council Department of Health and Social Development and the First Nations University of Canada Northern Campus.

This report is dedicated to the memory of Elder Phillip Ratt of Pelican Narrows
(Peter Ballantyne Cree Nation)

ABSTRACT

This report provides an overview of the findings from the Prairie Adaptation Research Collaborative project, *Isi Askiwan - The State of the Land: Prince Albert Grand Council Elders Forum on Climate Change*. First Nations perspectives about the natural world can enhance western scientific research and understanding of the impacts of climate change on quality of life and community health. Elders and other First Nations knowledge holders from the Prince Albert Grand Council area in Saskatchewan came together to discuss the impacts of climate change on population health within their traditional territories. The Elders' forum was based on respectful learning and traditional protocols in which Elders could share information about climate change with one another and with members of the scientific community. Three basic objectives guided the Elders' discussion: To identify what has been experienced or observed by the Elders in regards to climate change; to identify the impacts of these changes on the health and quality of life of Aboriginal communities; and for the Elders to communicate the capacity of communities in adapting to these changes, both in the past and in the future. Elder responses to this issue are identified and discussed in this report, along with a number of broad themes such as the connection between the natural and social environment, and the conciliation of Elder knowledge and western scientific perspectives on climate change. This information is placed within the broader context of the growing literature on traditional environmental knowledge. To date, discussions of this kind have been dominated by western science. By engaging in these issues, Aboriginal communities, under the leadership of Elders, have the opportunity to contribute knowledge to the broader Canadian society concerning alternative approaches to climate change, and in particular to the relationship between health and the natural environment.

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EXECUTIVE SUMMARY

The purpose of this final report is to highlight the contribution of Elders and other traditional knowledge holders to the discussion of the impacts of climate change. It is argued that First Nations perspectives of the natural world can enhance western scientific research and understanding about the natural forces of climate change. It should be noted that, for the most part, the observations of the PAGC Elders reinforced, confirmed and animated scientific observations on climate change in Saskatchewan. The Elders' forum was an appropriate and important venue for documenting this knowledge and for developing a better understanding of the relationship between healthy communities and healthy environments. Elders can bring forward the collective wisdom of countless generations living in particular geographic locations, adding considerable depth to society's view of climate change and human adaptation.

Of all the southern regions in Canada, the Prairie Provinces are likely to experience the greatest increase in temperatures. This will likely result in increased aridity over a larger area in Saskatchewan, and more frequent and severe periods of drought, especially in the southern region. The availability of water will be a significant concern, as run-off from glaciers in the Rocky Mountains declines. In more northern regions, the increase in frequency and intensity of forest fires will likely be a concern. Compared to southern regions, the northern region of Saskatchewan has fewer historical weather monitoring stations that have recorded temperature, rainfall and wind. This information gap can be filled in part by proxy environmental measures, as well as by the oral histories that have been passed on from generation to generation in Indigenous communities. One of the main goals in assembling the PAGC Elders for this Forum was to draw on that source of oral knowledge. In addition, PARC has recognized the importance of researching the social, as well as physical, impacts of climate change in the Prairie Provinces. As observed by the Elders, there is a deep connection between the health of the physical environment, and the holistic health of individuals, families and communities.

Increasingly, western scientists and academics are recognizing the importance and value of the traditional ecological knowledge (TEK) held by Elders and other members of Indigenous communities. As the issue of climate change has become a growing concern, Indigenous people, and Elders in particular, have begun to add their voices and observations to the body of knowledge about this issue. This has particularly been the case in northern regions where livelihood activities often remain tied to the land. Recent initiatives in this area point to the growing need for collaboration between western scientists and Indigenous communities to understand and address climate change issues. The PAGC Elders' forum on climate change is one contribution to this process.

The primary objective in hosting this event was to create an open forum based on respectful learning and traditional protocols in which Elders from the PAGC area could share information about climate change with one another and with members of the scientific community. A secondary objective in hosting this forum was to develop a positive working relationship between the PAGC, the Indigenous Peoples Health Research Centre, and the Prairie Adaptation Research Collaborative. In addition, the forum aimed to raise awareness at the community level around issues of climate change.

The Elders' forum was semi-structured and focused on three questions: 1) What has been experienced or observed by the Elders in regards to climate change? 2) What have been the impacts of these changes on the health and quality of life of Aboriginal communities? 3) What is the capacity of communities to adapt to these changes, both in the past and in the future? To explore these issues, a First Nations traditional learning tool—an Elders' forum—was identified as the most appropriate methodology. This method was chosen not only because of the solid foundation laid by previous PAGC initiatives, but also in recognition of a number of important benefits. First, by following traditional protocols and incorporating cultural events, the Elders' forum provided an appropriate setting in which the Elders could share their information. Second, the forum brought together knowledgeable Elders from a wide range of geographically and culturally diverse First Nations. Third, this format allowed information to be shared among communities as well as between First Nations and academic people. Finally, the Elders' forum provided a foundation for future initiatives such as focused case studies and/or further development of the Elders' forum as determined by the interests of the Elders.

Following the completion of the forum, the audio recordings were translated and transcribed. These transcripts were analyzed using the qualitative data analysis software package *Atlas.ti* in order to tease out the broader themes and connections. Careful and thoughtful work is needed to bring different knowledge traditions together on common issues such as environmental change and health. As much as western knowledge gathering is guided by principles of knowledge production and reproduction, the First Nations knowledge tradition similarly operates under a set of guidelines or protocols. The development of the forum was guided by principles of ownership, control, access, and protection of information where intellectual property rights are weighted to the advantage of the Elders.

The value of the Elder perspective is that they have a holistic interpretation of the climate change concept and therefore relate to climate change as a broader process that goes beyond western scientific hypotheses and measurements. For the Elders, the discussion of climate change encompasses the socio-cultural aspects of their lifestyle, along with the environment and the physical climate that is often the focus of scientific inquiry. Most of the Elders approached the discussion at the three-day forum from the touchstone of their traditional life and understandings. Many of the Elders' lifestyles are tightly connected to the natural environment through trapping, hunting, fishing, and other means of northern livelihood. They spoke of the land with passion that in many ways was like an honouring to a lifestyle that provided for their health and well-being. The traditional way of life in the northern forests was marked by self-sufficiency. The Elders described a dynamic and flexible use of the environment for their survival as well as for their material culture. Traditional life included the possession of cultural skills that not only ensured food for the table, but also facilitated “value-added” use of the natural provisions acquired from the land.

Elders' perceptions of the natural environment are important in understanding the complex array of challenging questions presented by global climate change. The Elders believe that by understanding the spiritual world, society can more readily understand the functioning of the natural world. This fundamental principle of First Nations thought is often discounted in western scientific circles. However, understanding its value can lead to insights about the various profiles of climate change just it would on many other important issues. Accordingly, one of the

emergent results from the Elders forum relates to the way the issue of climate change is framed. In the western scientific perspective, climate change is largely a physical phenomenon that is observable and can be documented and presented in highly organized ways even if its causes and impacts are not clearly understood yet. There can be no doubt that scientific data collection and instrumentation is valuable in charting an understanding of the various phenomena that would induce climate change. The issue for the Elders, it would seem, is that these observable global changes have been singularly isolated and been prematurely labelled by western scientists as the primary dimension of “climate change.” The central issue from this western perspective has been the observation of physical changes in global weather and climate both in temporal and spatial manner with the effect that the human realm has been largely removed. The value of the Elders’ perspective is to reprioritize the human element – both in terms of impacts and responsibility.

It is certain that the Elders have experienced a range of weather and climate patterns in their own lives. Each of the Elders tempered their discussion of climate and weather changes with their experiences and observations about natural forces. The Elders had trust that the weather changes or even the patterns of climate, in and of themselves, were part of ‘existence.’ They could adapt to these local changes because they had always had to live within the patterns of nature. Based on this adaptive response to the exigencies of living in nature, under differing conditions, the Elders recognized that weather changes from year to year are part of the normal pattern of nature. However, Elders talked about observations of extreme seasonal weather events like tornadoes and hailstorms that, for many, were a seldom occurrence in their regions in the past. Some Elders spoke of the changing patterns of the seasons observed in recent times. These shifts in seasonal character were perhaps more worrisome and foretold of the more serious nature of climate change compared to isolated events. For example, summer and autumn seasonal conditions were observed to extend further into the traditionally “winter” months. Recently, the summers were also observed as being abnormally dry with no appreciable effect on moisture levels even after rainfall. The Elders said that these seasonal shifts and sudden extreme conditions contributed to the unpredictability of weather. These observations also converged with the western scientific projections.

A recurring observation made by the Elders, though one that took on specific characteristics in particular geographic locations, was around the quality and quantity of water in their territories. Elders from all regions of the Prince Albert Grand Council area discussed water in terms of its importance to their livelihoods. The Elders have clear memories of an abundance of pristine water sources in their territories. Over time, the Elders have noticed the quantity and quality of water deteriorating in their territories. Water quality was often mentioned in relation to industrial activities. The Elders emphasized that water is the source of life for all living things. Yet, human activity is seriously impacting the availability and quality of that water.

The Elders at the Prince Albert Forum continually expressed a sincere regard for the wildlife with whom they shared the landscape. This concern extended to an anxiety about the possible implications any change of climate might have on wildlife in their areas. The Elders observed that there was a general imbalance in nature reflected in the condition of wildlife, and probably resulting from human influence. This imbalance in nature was deduced from the abnormal ways that wildlife behaved and extended to the changes in wildlife migration patterns and population ranges within their territories, as observed by the Elders. New species are starting to inhabit areas

where they were not previously seen. Birds not commonly seen in specific regions were observed and animals were wandering into areas far from their usual range. For example, species such as cougars, pelicans, and white-tailed deer were observed in northern regions where they were not previously known.

In regards to the impacts of climate change, the Elders made several observations concerning population health. The extreme conditions of both summer and winter were a particular source of worry. For example, the immediate effect of increased summer heat on the health of the people (especially children and the elderly) was a concern brought out by the Elders. Unpredictability of weather due to changing patterns in climate was catching people off guard in terms of their preparedness for outdoor activities. The Elders also noted that the heat of the summer impacts the natural world. Plants (including trees and berry-producing shrubs) are showing the effects of heat and associated drought conditions, and useful products from these sources are no longer as abundant. The temperature and climate changes may also have a bearing on other changes taking place. For instance, in an economic sense, the quality and thickness of the winter coats of fur-bearing animals are affected by changes in the weather. In this sense, the livelihood of northern people engaged in trapping is affected.

The Elders clearly see the importance of sustaining connections to the land and environment as a foundation for maintaining cultural continuity and as the basis for healthy individuals and communities. In their view, when the people become disconnected from the land, the lines of communication between the natural and social worlds are severed resulting in less influence on the depersonalized universe. How well society understands and acts upon the human-nature relationship may have a bearing on how well it can come to grips with issues of climate change. As partners in the forum, the Elders challenged each other, the western scientific community, and society at large to adopt a consciousness about the living natural world and to recommit to personal relationships and efforts to understand its natural rhythms and patterns. For the Elders, the scientific response to climate change, with a focus on adaptation, suggests an acquiescence to society's failure to hold an environmental ethic. Some Elders suggested that perhaps "adaptation" was not the best response – that perhaps action would be more appropriate to halt some of the changes that are occurring.

Prophesies regarding significant changes and events happening to the land was a reoccurring theme in the Elders' discussion of climate change. These prophesies would have been a traditional mechanism for adaptation, as they prepared people for the future. The prophesies that the Elders discussed served to emphasize the importance of paying attention not only to traditional teachings but also to the land.

Perhaps one of the most fundamental and promising adaptive strategies that the Elders suggested was a return to native science in dealing with natural phenomenon. Native science stems from an intricate knowledge of the environment through a history of close connection with the land and its order. From this study came the acute knowledge about nature and its various messages, much of which is passed down through the oral tradition. As an example, an Elder recounted behaviors of bees that presaged the kind of winter to expect. According to the Elders, the display of northern lights had meanings. Animal behavior was also acutely observed and predicted upon.

The Elders at the forum linked the natural environment to human responsibility. There was a strong sentiment expressed by the Elders that it was their responsibility to keep and protect the land for future generations, but that society as a whole would have to re-establish its priorities and respectful attitudes towards the land to bring things back into balance. The Elders expressed a wish to take action, but were concerned about their ability to influence the activities of industrial corporations. Some Elders felt that additional research would be beneficial in gaining a better understanding of the state of the land and the issues that are currently facing society. Cooperation between sectors of society was strongly emphasized by the Elders because all people have to live together on this Earth. According to the Elders, the forum itself was a part of the solution and Elders expressed particular appreciation for the involvement of western scientists in the discussion of climate change.

An interesting feature of the Elders' forum was the inclusion of a presentation by the PARC research co-ordinator. The presentation gave the western scientific perspective on climate change in Saskatchewan. This presentation sparked a lively exchange between Elders and researchers. It provided them with a rare opportunity to ask questions of one another and share observations. The Elders' forum attempted to reconcile how academics and Elders can work together and how cultural knowledge traditions, guided by differing worldviews, can co-operate and form partnerships in the pursuit of knowledge. The academic writers who are linked to the Elders' forum are perceived as *oskapiwis*—a Cree word which translates loosely as “servant”—to the First Nations knowledge system. The facilitators, academics, and writers associated with the Elders forum need to work from a position that is reflective and respectful of both knowledge systems. This kind of work must be carefully crafted to foster a mutual appreciation for working together and to pave the way for future endeavours. The Elders' forum described in this paper initiated an exchange, a discussion between the First Nations and western community regarding the importance of knowledge from different perspectives. The Elders' forum contributed to the process of bringing together traditional environmental knowledge and western scientific understanding in attempts to understand the complexity of climate change.

The Elders at the PAGC Elders forum clearly recognized a need for changing the status quo—in terms of revitalizing the relationship between people and the land—as a way of addressing climate change and other environmental issues. However, the Elders decided by consensus at the forum that their role was not a political one. They purposefully refrained from making resolutions and formal recommendations. The Elders identified that their role in response to the current situation was to strengthen their own local communities and cultural connections to the land, particularly through working with the youth. By implication, it is the role of western scientists, and in particular those present at the Elders' forum, to share the information from the forum to the broader society and to decision-makers as a way of motivating and influencing change in the western sphere.

1.0 INTRODUCTION

The issues and implications of climate change, particularly in terms of global warming, have moved beyond the academic sphere and have entered the public consciousness as real and pressing concerns.¹ For many years, scientists have been tracking trends in temperatures and precipitation levels to try and understand the nature and degree of change we are experiencing in our climate and the implications of these changes for the future.²

The scientists of the First Nations communities—the Elders—have also been tracking these changes within their traditional territories. The Elders recently came together in Prince Albert, Saskatchewan, to share their observations and insights with each other and with members of the academic community. From Feb. 3 to 5, 2004, more than 30 Elders from the 12 First Nations that comprise the Prince Albert Grand Council (PAGC) attended an Elders' forum entitled *Isi Askiwan—The State of the Land*. This forum was organized by the PAGC Department of Health and Social Development in co-operation with the Indigenous Peoples' Health Research Centre (IPHRC) of the First Nations University of Canada, and with funding support from the Prairie Adaptation Research Collaborative (PARC).

The purpose of this report is to highlight the contribution of Elders and other traditional knowledge holders to the discussion of the impacts of climate change. It is argued that First Nations perspectives of the natural world can enhance western scientific research and understanding about the natural forces of climate change. This holds true regardless of whether First Nations observations and knowledge of the environment agree with western scientific data and findings (providing confirmation and/or clarification) or appear to contradict those findings (pointing out possible flaws or shortfalls in scientific data collection or suggesting an alternate foundation for knowledge and conclusions).³ It should be noted that, for the most part, the observations of the PAGC Elders reinforced, confirmed and animated scientific observations on climate change in Saskatchewan. The Elders' forum was an appropriate and important venue for documenting this knowledge and for developing a better understanding of the relationship between healthy communities and healthy environments. Elders can bring forward the collective wisdom of countless generations living in particular geographic locations, adding considerable depth to society's view of climate change and human adaptation.

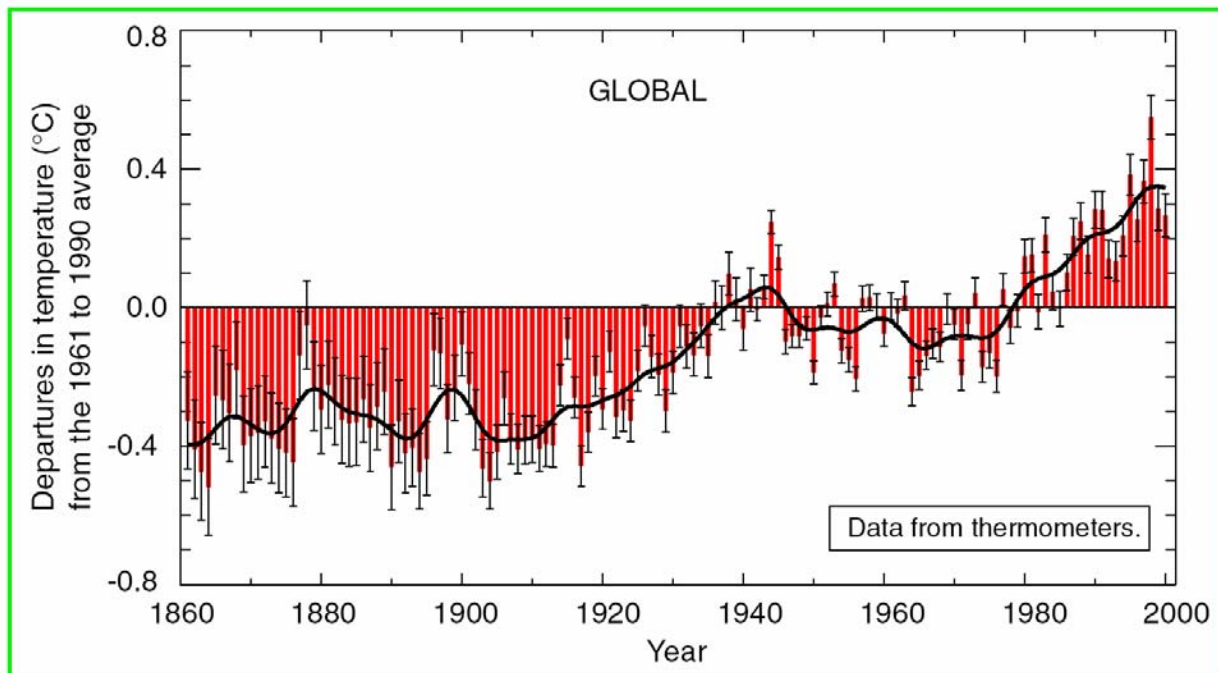
Before describing the results of this initiative, some background will be provided on climate change issues in Saskatchewan, based on scientific evidence, along with an overview of the growing field of traditional ecological knowledge research. This information sets the context for this particular initiative with the PAGC Elders.

1.1 Climate Change in Saskatchewan – The Scientific Evidence⁴

The Prairie Adaptation Research Collaborative (PARC) was a key partner in implementing the PAGC Elders Forum on Climate Change. Staff from PARC were involved in planning the event, and also actively participated in the forum itself. PARC was established in March 2000 through funding from the Government of Canada's Climate Change Action Fund. PARC is based at the University of Regina, and is an interdisciplinary research network which focuses on understanding the potential impacts of climate change in the Canadian Prairie Provinces and

conducting research necessary to develop appropriate adaptation strategies. Adaptation can be defined as the degree to which adjustments are possible in practices, processes, or structures of systems in response to projected or actual changes of climate. These adjustments are aimed at minimizing the potential negative impacts of climate change. There is ample scientific evidence to show that the climate is changing. In fact, the climate has always changed, as can be traced through physical evidence in plants (fossil remains, tree rings, pollen analysis, etc) and other environmental measures. That being the case, the primary concern today is the rate and scope of those changes. As indicated in Figure 1 below, the 1960s saw a marked increase in annual measured temperatures, compared to the one hundred years previous.

Figure 1: Global Measured Temperatures, 1861 - 2000⁵



Casting the net a bit wider, Figure 2 shows the change in temperature in the Northern Hemisphere for the last one thousand years. Until approximately 150 years ago, there was fairly regular fluctuation in temperatures; however, after that time, the temperatures increased steadily and sharply. In fact, 1998 was the warmest year on record out of the past 1000 years in the Northern Hemisphere. Recent increases in average global temperatures have been linked to increased amounts of greenhouse gases (mostly carbon dioxide which is produced from the burning of fossil fuels) present in the atmosphere.

Taking this analysis one step further, computer models have been developed to predict the climate change trends of the future. There are several possible scenarios which depend, in large part, on the actions that human societies choose to take. As indicated in Figure 3 below, the worst case scenario predicts a 5.5 degree change in temperature by 2100. The best case scenario predicts a 2 degree change in average temperature by 2100. Specifically, in northern Saskatchewan, models predict that average temperature throughout the year will increase by 3 to 4 degrees between 2040 and 2069.⁶

Figure 2: Northern Hemisphere Temperatures (Divergence from 1961-1990 Average Temperatures)⁷

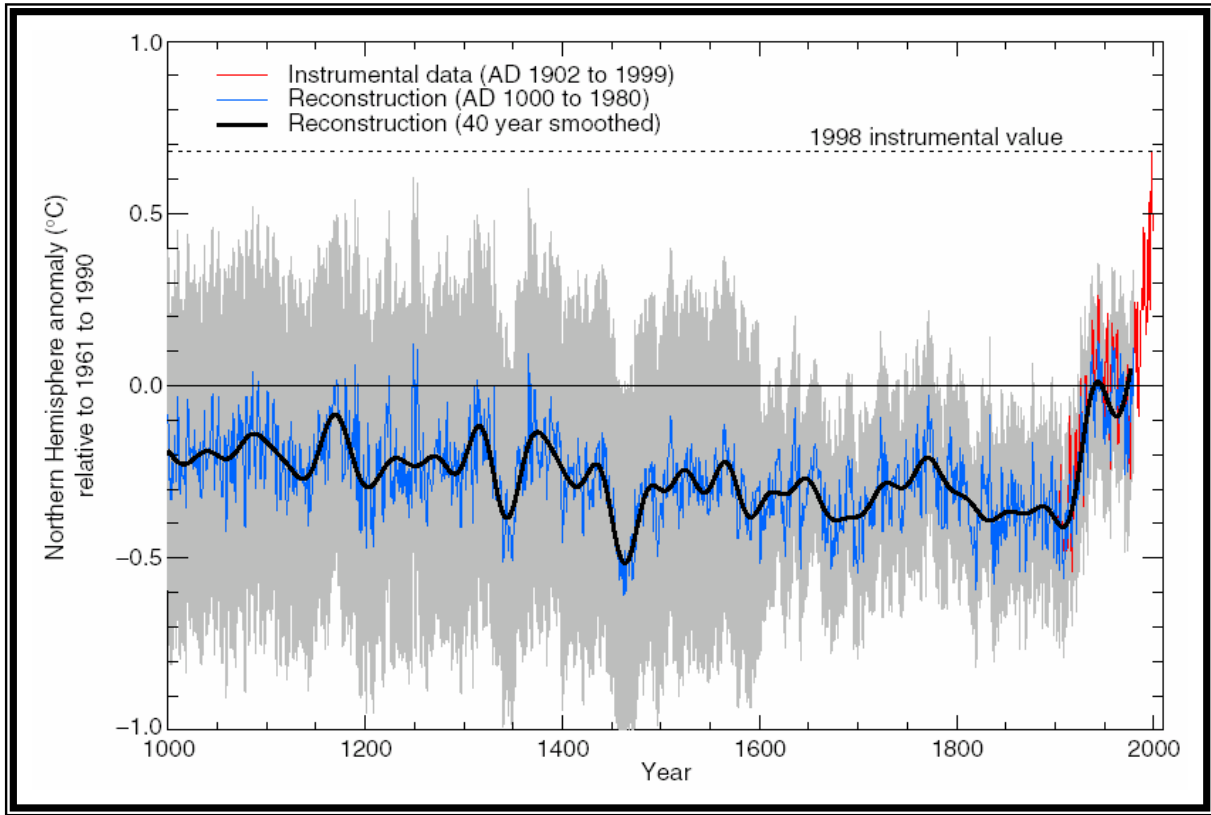
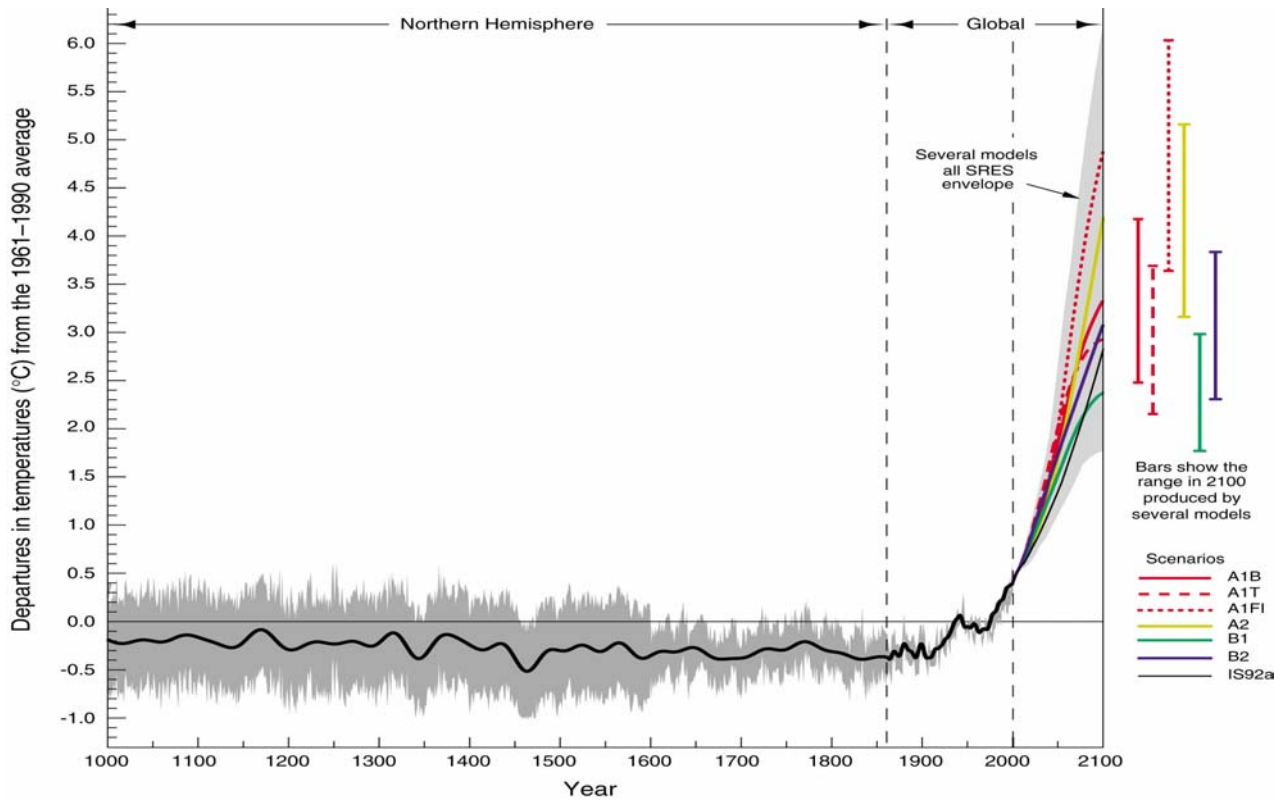


Figure 3: Models for Predicting Future Climate Change⁸



Based on these scenarios, a number of potential issues can be identified that will likely impact the Prairie Provinces in the next 50 – 100 years. These changes and issues are highlighted in Table 1 below.

Table 1: Potential Impacts of Climate Change in Saskatchewan

Temperature	Increasing (increases greater in the winter compared to the summer, and greater increases in night temperatures compared to daytime temperatures)
Precipitation	Great uncertainty – could be a small decrease to significant increase
Evaporation	Significant increase
Soil Moisture	Decrease
Growing Season	Increased length
Water Resources	Increased variability
Extreme Events	Increased frequency and magnitude

In fact, of all the southern regions in Canada, the Prairie Provinces are likely to experience the greatest increase in temperatures. This will likely result in increased aridity over a larger area in Saskatchewan, and more frequent and severe periods of drought, especially in the southern region. The availability of water will be a significant concern, as run-off from glaciers in the Rocky Mountains declines (some of these glaciers are even expected to disappear altogether in the next 100 years). In more northern regions, the increase in frequency and intensity of forest fires will likely be a concern.

Compared to southern regions, the northern region of Saskatchewan has fewer historical weather monitoring stations that have recorded temperature, rainfall and wind. This information gap can be filled in part by proxy environmental measures (for example, tree ring data, ice core sampling, etc), as well as by the oral histories that have been passed on from generation to generation in Indigenous communities. Scientific evidence suggests that there have been times in the past, prior the colonization of the prairies by European settlers, when temperatures and precipitation levels were similar or even warmer and drier than they are today. That being the case, First Nations communities may have insights and wisdom to offer regarding potential impacts and adaptive strategies to these kinds of weather patterns that their ancestors experienced in the past. One of the main goals in assembling the PAGC Elders for this Forum was to draw on that source of oral knowledge and wisdom. In addition, PARC has recognized the importance of researching the social, as well as physical, impacts of climate change in the Prairie Provinces. As observed by the Elders, there is a deep connection between the health of the physical environment, and the holistic health of individuals, families and communities.

1.2 Traditional Ecological Knowledge

Increasingly, western scientists and academics are recognizing the importance and value of the traditional ecological knowledge (TEK) held by Elders and other members of Indigenous communities. TEK has been defined as “a body of knowledge built up by a group of people through generations of living in close contact with nature. It includes a system of classification, a set of empirical observations about the local environment, and a system of management that governs resource use.”⁹ The word “traditional” does not imply static. Like any other knowledge system, TEK is dynamic and constantly evolving through new experiences and observations.¹⁰

Western science and TEK are often viewed as two contrasting knowledge systems. In this comparison, western science is characterized as tending to reduce and simplify complex systems, focusing on numbers and data, and considering natural systems as frozen in time and removed from any social framework. In contrast, TEK is described as holistic, descriptive, and connected to long-term timeframes and specific cultural settings. While this comparison may provide some basis for general understanding, it simplifies the nature of both knowledge systems. The term “western science” encompasses a broad range of theoretical and methodological approaches. These approaches can strive for holistic and long-term understandings, as in the case of ecology, and may be directed towards specific social goals, as in the case of conservation biology. In turn, TEK may include quantitative observations and generalized understandings of environmental processes.

Some of the earliest studies on TEK in Canada took place in the Arctic. They were directed towards documenting traditional land use and occupancy to support land claim negotiations.¹¹ These studies brought to the forefront the extensive knowledge held by Indigenous communities about their traditional territories. They provided the foundation for the growing literature on the application of TEK to the management of resources and the development of co-management regimes,¹² environmental impact assessments,¹³ conservation and sustainable development,¹⁴ and environmental history.¹⁵

More recently, as the issue of climate change has become a growing concern, Indigenous people, and Elders in particular, have begun to add their voices and observations to the body of knowledge about this issue. This has particularly been the case in northern regions where livelihood activities often remain tied to the land. For example, in 1999 the International Institute for Sustainable Development in Winnipeg undertook a project in partnership with the Inuvialuit community of Sachs Harbour in the Northwest Territories to record Inuit observations on climate change.¹⁶ In March 2001, the Nunavut Tunngavik Incorporated hosted a two-day workshop in Cambridge Bay bringing together Elders and hunters from the region to discuss climate change issues.¹⁷ In 2003, the Department of Resources, Wildlife and Economic Development of the Northwest Territories attended the Dene Nation Elders Gathering in Rae-Edzo to initiate discussions on climate change and develop a series of regional workshops with Elders around this issue.¹⁸ Further south, the Model Forest Association hosted a workshop on climate change at the Little Black River First Nation Community Hall in Manitoba in January 2003.¹⁹ All of these initiatives point to the growing need for collaboration between western scientists and Indigenous communities to understand and address climate change issues. The PAGC Elders’ Forum on climate change is one contribution to this process.

2.0 METHODS

In recent years, the Prince Albert Grand Council (PAGC) in Saskatchewan has been developing a format for bringing together Elders from the PAGC communities so the Elders’ voices and knowledge may be focused on important issues such as health, wellness, and education. The PAGC hosted three such Elders’ forums between 2001 and 2003. The February 2004 forum on climate change was an expansion of this format. Rather than being an internal process to inform PAGC policies and initiatives this process was aimed at informing public policy on an issue

PAGC and the broader Canadian society have identified as significant – that of climate change. The primary objective in hosting this event was to create an open forum based on respectful learning and traditional protocols in which Elders from the PAGC area could share information about climate change with one another and with members of the scientific community. A secondary objective in hosting this forum was to develop a positive working relationship between the PAGC, the Indigenous Peoples Health Research Centre, and the Prairie Adaptation Research Collaborative. In addition, the forum aimed to raise awareness at the community level around issues of climate change.

The Elders' forum was semi-structured²⁰ and focused on three questions:

1. What has been experienced or observed by the Elders in regards to climate change?
2. What have been the impacts of these changes on the health and quality of life of Aboriginal communities?
3. What is the capacity of communities to adapt to these changes, both in the past and in the future?

The questions were provided to the Elders six weeks in advance in respect of First Nations elderly protocol, and also to allow sufficient time for the Elders to incubate the questions and to formulate their responses.

To explore these issues, a First Nations traditional learning tool—an Elders' forum—was identified as the most appropriate methodology. This method was chosen not only because of the solid foundation laid by previous PAGC initiatives, but also in recognition of a number of important benefits. First, by following traditional protocols and incorporating cultural events, the Elders' forum provided an appropriate setting in which the Elders could share their information. Second, the forum brought together knowledgeable Elders from a wide range of geographically and culturally diverse First Nations. These ranged from Cree and Dakota communities occupying the transitional zone between the parklands and boreal forest to Dene communities located in the northernmost regions of the province. Third, this format allowed information to be shared among communities as well as between First Nations and academic people. Finally, the Elders' forum provided a foundation for future initiatives such as focused case studies and/or further development of the Elders' forum as determined by the interests of the Elders. As noted by Huntington and colleagues, “the process of exchanging information effectively and collaborating on interpretation... is often overlooked in the effort to incorporate TEK into research and management.”²¹ Huntington and others found the workshop could be an effective mechanism for sharing information – particularly at the end of a large project, or as a starting point for future work. Time constraints and logistics generally preclude detailed and in-depth discussion of specific TEK held by individuals; however, the workshop provides an excellent forum for building relationships and enlivening collective knowledge. This outcome was certainly observed at the PAGC Elders Forum, which went beyond the scope of an academic workshop (for example, by observing traditional protocols for knowledge sharing and incorporating cultural activities).

According to protocols established in previous PAGC Elders' forums, the elected Chiefs of the individual First Nations within the PAGC were asked to nominate two Elders from their

communities to attend the gathering. The two largest First Nations within the PAGC (Lac La Ronge Indian Band and Peter Ballantyne Cree Nation) were asked to nominate three Elders to better reflect the diversity of their multiple communities. Four additional Elders were invited to conduct the ceremonial aspects of the gathering, such as the pipe ceremonies that were held each day, and to implement the necessary protocols for the transfer of knowledge. Other support personnel for the Elders' forum included a master of ceremonies, two translators (one Cree and one Dene), and four facilitators to direct the sector group discussions.

The physical format of the Elders' forum incorporated a central table around which all the Elders gathered for initial discussions and presentations. Simultaneous translation was provided at the central table between Cree, Dene, and English. For one of the afternoon sessions, the Elders broke into smaller discussion groups to talk about the issues in more depth. These discussion groups were based on four sectors identified by the PAGC—the Plains Cree/Dakota, Swampy Cree, Woodlands Cree, and Dene. Each of these sector groups had a facilitator fluent in the dialect of the group. This allowed Elders the opportunity to talk freely in their Indigenous languages. Summaries from these small discussion groups were then shared at the central table.

The Elders' forum was based on a spiritual foundation of daily pipe ceremonies, prayers, songs, and a traditional feast and giveaway for the Elder delegates. The Elders' forum was open to the public in general, and in particular to staff and students of the First Nations University of Canada, staff of the PAGC, members of PAGC communities, and PARC members.

Following the completion of the forum, the audio recordings were translated (from Cree and Dene into English) and transcribed. These transcripts were analyzed using the qualitative data analysis software package *Atlas.ti* in order to tease out the broader themes and connections. A grounded theory approach was taken in the analysis of the information; the theories and ideas were developed and built from the data itself. The various themes and ideas discussed below emerged through careful reading and analysis of the transcripts.

2.1 Cross-Cultural Ethics

Careful and thoughtful work is needed to bring different knowledge traditions together on common issues such as environmental change and health. It is important that the difference between the First Nations and western knowledge systems be clearly defined in the beginning of this discussion. Cajete cautions that “Western and Native science traditions are very different in terms of the ways in which people come to know, the ways in which knowledge or understanding is shared, how knowledge is transferred from one generation to another, and how knowledge is handled legally, economically, and spiritually.”²² This distinction will provide some perspective to the different views and approaches taken relative to the issue of climate change.

As much as western knowledge gathering is guided by principles of knowledge production and reproduction, the First Nations knowledge tradition similarly operates under a set of guidelines or protocols. The Elders' forum is presumed to operate under the protocols of the participant First Nations. The development of the forum is guided by principles of ownership, control, access, and protection²³ of information where intellectual property rights are weighted to the

advantage of the Elders. Philosophically speaking, the Elders' forum as a methodology does not need validation from any other knowledge institution nor is it presumed that the western conventions of knowledge production apply in the First Nations' cultural context. While it may overlap to some degree with qualitative research methods in the social sciences (such as oral history research, participatory action research, and other methods being developed in the field of TEK studies), it takes its ultimate authority and validation from First Nations cultural traditions and protocols for knowledge production and transfer.

For the Elders, the gathering format is a traditional learning process that is a central feature of First Nations knowledge systems. It is important for the centre of control to remain with First Nations communities. This was demonstrated in practical terms, for example, in the alteration of the PAGC Elders forum agenda according to the wishes of the participant Elders. Such a gathering creates a forum for cultural and social exchange between experienced and knowledgeable people within their own traditional setting. As such, it is helpful in bringing about the re-establishment of a First Nations institution. The Elders are scholars in their own right within the First Nations knowledge system. A primary goal of the Elders forum is to provide supportive conditions for that knowledge system to function and flourish. These conditions include spiritual and cultural observances, open dialogue, and appropriate technology for the use of First Nations languages. As Roberto Unger has stated, if an environment allows people to move within it to discover everything about the world freely, it is a natural setting. If the environment does not allow such movement, it is artificial.²⁴

The implementation of the Elders' forum relies on the direction and contribution of leaders within First Nations communities. It cannot be created solely within the academic sphere. This was demonstrated in the Elders' forum on climate change where leadership from the PAGC, individual communities, and the Elders organized the necessary cultural and political resources to achieve the objectives of the forum. From this position of leadership, the Elders were positive about sharing the results of the gathering so that it could benefit society as a whole.

3.0 BACKGROUND

Moving beyond the academic discussion on TEK to a deeper level, more reflective of community realities, requires a thoughtful consideration of the location from which the Elders' voice comes. The First Nations' world view, as represented by the Elders, is formed and guided by a distinct history, knowledge, tradition, values, and interests as well as social, economic, and political realities.

There are other important differences between First Nations and western knowledge systems beyond culture. The value of the Elder perspective is that they have a holistic interpretation of the climate change concept and therefore relate to climate change as a broader process that goes beyond rigorous western scientific hypotheses and measurements. For the Elders, the discussion of climate change encompasses the socio-cultural aspects of their lifestyle, along with the environment and the physical climate that is often the focus of scientific inquiry. These themes are interrelated in complex patterns with each reciprocally affecting the other in some manner.

The fundamental insight of the Elders is that all existence is connected and that the whole encompasses and includes the individual. Joseph Couture has described this immanence as “the pervasive, encompassing reality of the life force, manifest in laws - the laws of nature, the laws of energy, or the laws of light.”²⁵ This perspective suggests an inviolable connection that the people have to the natural environment and that impacts from any changes would be acutely felt within their immediate community and family. These impacts of change in their environment and their responses to change and the coping strategies would therefore be measurable within their socio-cultural contexts.

3.1 Traditional Life – Benchmarks for Climate Change

It is important at the outset to provide a glimpse into the traditional past and the accompanying experiences as a reference point for the Elders’ observations on climate and environmental change. The Elders at the forum brought with them their vast knowledge of their landscapes and wealth of experience about humanity that in some individual cases would span three quarters of a century. The accumulation of such a rich history was not lost on Elder Bill Ermine of Sturgeon Lake who made the following observation:

Look at all of us sitting around in this room. There is over 2,000 years of life sitting around here and an average of 55 years; there is 2,000 years of life experience and knowledge here. I think it is only proper that everyone speaks because after all, we have been asked to gather to talk about our experience and how we were raised, what we have seen in life, to try to find ways on where we are ‘trapped’.

Most of the Elders approached the discussion at the three-day forum from the touchstone of their traditional life and understandings. A number of the Elders spoke of traditional livelihoods, some spoke of their cultural understandings, and most spoke on the status of their environments, both in reference to their own experiences, and to the information passed on to them by their parents and grandparents. Many Elders spoke of the traditional respect accorded to the land, animals, birds and other life forms. This affection was the foundation for the relationship between people and their environment.

For many of the Elders, their own learning process—and subsequently their beliefs about the continuity of their community’s ordered existence—was inherently rooted in the land, the environment of their traditional territories, that was the basis of their traditional lifestyle. The natural environment was the setting in which the transmission of culture and values took place while out on the land. The community codes that protect and maintain the language, cultural norms, and the collective spirit of the people represents the combination of many people’s experiences and knowledge derived from living off the land. This kind of background allowed the people to collectively negotiate the future and to adapt to the changing circumstances imposed by time. Therefore, the natural environment is the framework for maintaining the continuity of the social environment. One is necessarily impacted by and reflected in the other.

Indeed, the fundamental value of including the Elders’ perspectives into the discussion about climate change and population health is their unique experience, their knowledge base, and how

they perceived the natural environment. Many of the Elders' lifestyles are tightly connected to the natural environment through trapping, hunting, fishing, and other means of northern livelihood. The traditional lifestyle described by the Elders had an aesthetic value that drove their emotions in how they linked the past with the present. They spoke of the land with passion that in many ways was like an honouring to a lifestyle that provided abundance for their health and well-being. Elder Madeline Goulet of Cumberland House provides the following description:

When my father used to trap, he would take us all out. In the winter, he used snowshoes because the snow was deep. In the spring, we did the same. We all went out and the woman would cook the fresh kill. Everywhere we went the land was beautiful. We stayed along rivers and they would be overflowing from the rain and it was pure and clean. This used to happen in July and we would move and live in the wild. You could hear the muskrats all over. They used to kill about 500 muskrats to sell the fur. You used to see lot of rabbits. The men used to help each other out by building cabins along the river.

The above description of an almost carefree existence with a life of abundance was also tempered by comments about the harsh reality of living in nature. There had to be sustained effort to acquire the needs of the family and to keep the sustenance flowing as seasons shifted from one to another. This natural existence required creativity and perseverance. Elder Clara Whitecap from Shoal Lake recalls the following:

Our parents used to work hard to raise their children. They could live all over the forest in those days. Only cabins. They were flat and there was no flooring. People had drums, no guitars. We never had radios, just nothing. People had to survive. They cooked outside on bonfires, water was hauled from the lake, even slough water was clean for drinking. In the winter, we melted snow for drinking, cooking. In the summer, the woman made preparations for winter, storing food because there weren't any fridges. People had to work everyday. The men would go hunting to prepare for the winter. The men were never lazy.

The traditional way of life out on the vast expanse of the northern forests was marked by self-sufficiency where Elders describe a dynamic and flexible use of the environment for their survival as well as for their material culture. Traditional life included the possession of cultural skills that not only ensured food for the table, but also facilitated "value-added" use of the natural provisions acquired from the land. Elder Pierre Robillard from Black Lake relates that this traditional way of life and survival was valuable in itself, and distinct from the modern and mainstream way of living. He states:

Life on the trap-line was good; we learned not to take advantage of the things that were available. For example, when I would go hunting for a moose or caribou, nothing from the hunt was wasted. The meat is for survival. My wife would make dry meat, tan the hide, so she would make clothing such as mukluks, jackets, mitts, hats for all of the family. We, the Dene people, have our way of survival just as much as our non-first nations people have their own way.

This way of life was memorable and important for the Elders because it was the foundation for the development of values that were deemed essential for the cohesion and continuity of their communities. The Elders described various community values that were a vital part of their traditional lifestyles. Senator Simon Robillard from Black Lake states:

In the old days when we were growing up we have no knowledge about police, there were no police for us. All the Elders who are sitting here are all like that. Our parents were like our policemen. They were the ones who taught us the moral values, respect, survival skills and listening skills.

This way of life was an experience as it was a way of knowing and understanding about the human condition. The Elders spoke of common values that attach significance to the relationships between people and between communities. Elder Oscar Beatty from Deschambault Lake (Peter Ballantyne Cree Nation) stated that, “the people respected each other’s home areas where they lived and there was mutual respect. They lived in and had many different communities, with their own respective place names like the rapids, and towards the South lived people, who spoke Cree a little different. We knew that and again there was common respect shown by all.”

The Elders spoke of the valuable meanings they derived from traditional teachings passed on to them by their old people. These teachings gave them the understanding and the guidance in how they would shape and conduct their own lives. Elder Riley Burns from the James Smith Cree Nation tells how he juxtaposes the respect taught to him by his grandfather to the way he develops his mind and his attitude towards life in general. He states:

We went camping and he always made sure he put everything away, piled the sticks he used for the tent. You leave the place like you found it especially if nobody was living there. That is how he taught me and to look after the things in life. Even in my home, when I look out at my yard, I think of my grandfather. My yard is clean. When you wake up in the morning, you have a clean mind when you look outside at your yard. If you see garbage, it makes you feel small and ugly inside. This is what my grandfather used to teach me. In the same way, when you look at your fellow man, you have to look at him with a clean mind.

These relationships with nature and practices of virtue allow opportunities, perhaps not fully understood or appreciated by western society, for Elders and other First Nations knowledge holders to establish intimate and personal contact with the living forces that surround their communities. The intergenerational values and beliefs that the Elders conveyed had elements of this ongoing communion with the natural forces. Nature was teeming with conscious and responsive entities.

Elder Catherine Charles from Lac La Ronge speaks about this connection to nature:

As Elders, we are early risers because we are eager to see the sun that is coming into view and also to see the sunset. That is one of the most beautiful things that I want to see. It is the way, that when the sun is visible, one can know what kind of

days are ahead. That is how the old people in the past used to know what kind days will come forth. That is what they used to relay to each other - the kind of days that are coming.

The values of gratitude, respect and reverence for nature that the Elders spoke about were acquired in dynamic interaction with natural entities and from the culture of accumulated knowledge of a people long on the land. As David Suzuki and Peter Knudtson write in their book, *The Wisdom of the Elders*:

[F]rom this attitude of respect, gratitude and humility, aboriginal people have acquired an understanding of their ‘relatives’ that is far more extensive than the unidimensional kind of information that is gleaned by scientists.”²⁶

In turn, these foundational philosophies and practices teach that existence is a subjective experience of the world. The attachment to and understandings of the land provides the grounding necessary to speak meaningfully about these relationships and about the various contours of climate change.

3.2 A Conscious Natural Environment

The Elders at the Prince Albert forum presented a picture of a culture that had an inviolable connection to the natural environment of their territories. This suggests that a culture based on personal relationships with the natural world had mechanisms for influencing forces beyond the physical reality. Indeed, the insight of the Elders is that the plants, animals, rocks, elements, and everything in nature, including humans, exhibit an intelligence that is perceptible to Elders as the scientists of Aboriginal communities. Dividing the universe up into living and non-living things has no meaning in that known context. First Nations knowledge contains the idea that even a rock is in some way alive because life and intelligence are present not only in all of matter, but also in energy, space, time, and the fabric of the entire universe. The Elders understand that coming to grips with issues of climate change would entail discussion around perspectives about the living environment. Cajete states in his book *Look to the Mountains* that:

[First Nations] perceived multiple realities in Nature—that experienced by our five senses was only one of many possibilities. In such a perceived “multiverse,” knowledge could be received directly from the animals, plants, and other living and non-living entities . . . All life and nature have a “personhood,” a sense of purpose and inherent meaning that is expressed in many ways and at all times.²⁷

The Elders at the Prince Albert Forum provided glimpses of their insight into this intelligence and the responsiveness of nature. Elder Clara Whitecap from the Shoal Lake Cree Nation states,

As we see rivers flow, as it swirls, it is also giving thanks that it is still flowing on this earth. It is giving thanks as we give thanks for movement. That is the way it is for their movement as well. Giving thanks to the force.

These perspectives of nature having a ‘personhood’ and being responsive to human endeavours played a significant role in traditional lifestyles. As Elder Jacob Sanderson stated “the animals are our brothers and sisters that give life to us.” Respect and care for nature ensured a reciprocity that would secure livelihoods and probability of survival. As Kenneth Crowe from the Wahpeton Dakota Nation relates:

A long time ago we the Cree people and the Sioux people were here, and we were natural people. I was told. We took care of nature, we worked with nature, and we lived with nature. A long time ago we took care of large herds of buffalo, elk, we took care of the animals as we understood them. The people of long ago understood them, they got to where they even understood the animals, when they spoke, when they sang. The coyote’s howl or yelp was understood and they only took the animals they needed... We have been here for so long on this land, taking care of it.

Elders’ perceptions of the natural environment are important in understanding the complex array of challenging questions presented by global climate change. The Elders believe that by understanding the spiritual world, society can more readily understand the functioning of the natural world. With this understanding, knowing becomes possible. Peggy Beck and Anna Walters, in their book *The Sacred* state:

[A] knowledgeable human being was one who was sensitive to his/her surroundings. This sensitivity opened him/her to the Grand mysteries and to the possibility of mystical experiences, which was considered the only way to grasp certain intangible laws of the universe.”²⁸

This fundamental principle of First Nations thought is often discounted in western scientific circles. However, understanding its value can lead to insights about the various profiles of climate change just it would on many other important issues. In this instance the Elders gave heart and soul to the western scientific constructs of data and figures that would represent the state of art in climate change mapping. As Jeremy Hayward has stated, “it is just that the modern description leaves out so much—it leaves out the sacredness, the livingness, the soul of the world.”²⁹

Accordingly, one of the emergent results from the Elders forum relates to the way the issue of climate change is framed. In the western scientific perspective, climate change is largely a physical phenomenon that is observable and can be documented and presented in highly organized ways even if its causes and impacts are not clearly understood yet. Karl and Trenberth, for example, state that scientific instrumentation like global climate models, are “fully coupled, mathematical computer-based models of the physics, chemistry, and biology of the atmosphere, land surfaces, oceans and cryosphere and their interaction with each other and with the sun and other influences.”³⁰ There can be no doubt that scientific data collection and instrumentation is valuable in charting an understanding of the various phenomena that would induce climate change. The issue for the Elders, it would seem, is that these observable global changes have been singularly isolated and been prematurely labelled by western scientists as the primary dimension of “climate change.” The central issue from this western perspective has been the

observation of physical changes in global weather and climate both in temporal and spatial manner with the effect that the human realm has been largely removed. Western science has therefore given focus to the results and impacts of changes, with an eye to adaptation, rather than on applying their influential weight in society to mitigating the destructive forces that are already known to cause climate change. The value of the Elders' perspective is to reprioritize the human element – both in terms of impacts and responsibility.

Based on this holistic perspective, the Elders at the Prince Albert Forum gave a broader interpretation to the concept of climate in contrast to the largely quantitative context provided by contemporary biological and physical sciences. For the Elders, the issue of climate encompasses three primary categories. These categories are social/cultural dimensions of climate change; impacts on the natural environment; and atmospheric weather patterns. The Elders framed the issue of climate change around these three different categories in complex but interrelated patterns with each category reciprocally affecting the others in some manner. Perhaps another category that can be interpreted from the Elder discourse is the 'mental climate' that contributes to the manner in which humans think about and behave towards nature. This philosophical underpinning provides a sophisticated matrix for the examination of the human influence and impacts towards climate change. For the Elders the issue of climate change is as much about a declining humanity as it is marked by the loss of ecological values. For the Elders, the central issue in climate discussion is about the injury and destruction to nature caused by resource-based economics and how this has impacted their socio-ecological contexts. These factors collectively contribute to the overall climate of changes taking place in the Elders' territories in central and northern Saskatchewan.

4.0 RESULTS

4.1 What has been experienced or observed by the Elders in regards to climate change?

4.1.1 *Changes in Climate, Seasonal and Weather Patterns*

It is certain that the Elders have experienced a range of weather and climate patterns in their own past. The Elders tempered their discussion of climate and weather changes with their experiences and observations about natural forces. The Elders had trust that the weather changes or even the patterns of climate, in and of themselves, were part of 'existence.' They could adapt to these local changes because they had always had to live within the patterns of nature. As Elder Oscar Beatty observed, "they too were not particularly paying much heed to the fluctuations of the weather although it was extremely cold at times. These [fluctuations in the] old days were not uncommon and people did not pay much attention to them." Based on this adaptive response to the exigencies of living in nature, under differing conditions, the Elders recognized that weather changes from year to year are part of the normal pattern of nature. Elders acknowledged that change is normal pattern in nature. Elder Elizabeth Charles from Stanley Mission (Lac La Ronge Indian Band) reached out to her past and recounts her own Elders' experience. She states:

There have been changes as far back as they can remember. They used to say that there were times when it would be really warm during the winter. The elders used to say that this was a pattern in between moons and the cold would once again

resume. This was the pattern. It was a pattern of changes. That is it.

Some Elders also spoke of the changing patterns of the seasons observed in recent times. These shifts in seasonal character were perhaps more worrisome and foretold of the more serious nature of climate change. For example, the extended overlap of seasonal conditions was observed. Elder Phillip Ratt from Pelican Narrows (Peter Ballantyne Cree Nation) noticed this variability. He states, “presently, the autumn season is extending. Presently, it is not until Christmas that the seasonal warmth of autumn is ending.” Recently, the summers were also mentioned as being abnormally dry with no appreciable effect on moisture levels even after rainfall. This decrease in soil moisture converges with the western scientific projections for the Province. Elder Jean Beatty of Deschambault Lake (Peter Ballantyne Cree Nation) describes it in the following way:

This summer, as the thunder rolls by, it is not uncommon that there will be fires started. It is the fire that falls and the land is thoroughly dry. Even if it should rain, the land is not soaked enough. As my son John was saying, even with the rain, there is still no water. It just soaks right down, he said. It is still very dry even with this much rain, he said. I don’t know why it is like that. It must be that it is thoroughly dry because of the heat this summer.

Some Elders attribute this lack of rain to the clear cutting of forest in the area. Riley Burns states that, “the more trees they cut down, the less rain we will have and the affects are because trees draw a lot of rain. Now there is no rain.”

Elders also talked about observations of extreme seasonal weather events like tornadoes and hailstorms that, for many, seldom occurred in their regions before. Elder Clara Whitecap from Shoal Lake recounts her experience with tornadoes. She states, “the tornado traveled through our territory but it did not touch down completely on our land. It went through the air.” These extremes of weather phenomenon included the extreme temperatures experienced during various seasons. As an example, Elder Oscar Beatty recounted the unpredictable and frigid cold temperatures and said that, “it is in a very sudden manner that the cold has set in. It is extremely cold air that descended.” Elder Norman Henderson (Montreal Lake/Prince Albert Urban Elder) similarly describes the summer heat he experienced. He states, “the heat of the sun also causes sunstrokes. I know of children at Montreal Lake, my relatives that have been affected by the heat of the sun. It was too hot. The Elders are also seriously affected by the heat.” Elders also talked about less rain and less snow marking these changes in seasonal conditions. The Elders said that these seasonal character shifts and sudden extreme conditions contributed to the unpredictability of weather. These Elder observations also converged with the western scientific projections for the increased frequency and magnitude of extreme events.

The Elders juxtaposed changes in seasonal norms and the onset of unpredictable weather patterns to the observations made about human practices that degrade nature. As Elder Robert Ermine of Sturgeon Lake reminds us, these human causes of degradation, such as clear cuts of forests and harm to the ozone, have a bearing on the conditions we experience in nature. Elder Ermine states,

When we take the protective sources of Mother Earth, the extreme begins to happen because we eliminate that which is supposed to protect us. Presently, an old person discussed this in a different way. The ozone layer that is being damaged resulting in unbalanced weather. We see the extreme weather conditions that are happening. At odd times presently, tornadoes may have gone by. Hurricanes. In our lands here. Very rarely, presently, three-four, I don't know how many in one year. Those events do happen. These are the things I am talking about. When we take the protective sources of Mother Earth, the extreme begins to happen. These we see. Winters are also extremely cold. Extreme weather. Sickesses arrive. All possibilities.

4.1.2 Water Quantity and Quality

A recurring observation made by the Elders, though one that took on specific characteristics in particular geographic locations, was around the quality and quantity of water in their territories. Elders from all regions of the Prince Albert Grand Council area discussed water in terms of its importance to their livelihoods. The Elders have clear memories about pristine water quality in their territories. Hector Head from the Red Earth First Nation provides a vivid memory of this water quality as he now contemplates the change. He states:

Water was good. It was good for drinking and cooking. Animals were healthy where they were. The rainwater was very good quality. We drank that rainwater, we collected that water and it was good. That time. We were happy. Everything was in good growth. Trees were good. The earth was healthy at that time. The animals were healthy. Even the snow, we used that as drinking water in the wintertime because there were no wells at that time.

Elder Bill Ermine from Sturgeon Lake recalls the Saskatchewan River in the Prince Albert area was at once a clean source of drinking water. He recalls:

I remember clearly walking to the river with pails to collect water. I can still see the water flowing clear and you could see the bottom. I used to take my shoes off and wade in the water to collect water and my mother would boil that and cook with it. It was clean.

The abundance of good quality water extended throughout the region from the lakes to the sloughs in the forest. The Elders had memories of drinking water from various sources without fear of any ill effects. Elder Allan Longjohn (Prince Albert Urban / Sturgeon Lake) recalls:

At the time we were growing up, with my fellow old people sitting here with me. That time, one could go to the lake and scoop the water to drink from. There were no effects that time. I could have been anywhere where one walked in the forest, there was always water. There was always rain.

In time, the Elders started noticing the quantity and quality of water was deteriorating in their territories. The sentiment expressed by Elder Tom Pelly of Cumberland House was a common

refrain from Elders. He said that “today, we hardly see any rains and things are different with the water.” Water conditions had changed from a pristine drinking quality to a situation where it was no longer fit to drink. Lillian Lathlin of Shoal Lake expresses this sentiment. She states:

Our water is polluted. Even though we have running water, we were told not to drink it unless we boil it thoroughly. Our rivers don't barely flow anymore...we used to drink that water. Now they are stagnant and not fit for drinking.

Water quality was often mentioned by the Elders in relation to industrial activities in their territories. For example, Elders living near Saskatchewan's border with Manitoba expressed concerns about the pollution from industrial activity along the border. Air born chemicals from Flin Flon Smelter were specifically signalled out as concern to the communities in this region. Elder Phillip Ratt outlines its significance. He states:

There is one thing that I am suspicious of where I am living presently. The smelter at Flin Flon is approximately 80 miles from there. The smoke stack of that smelter is about 800 feet long. It is long. The smoke drifts off for about 50 miles from there before it falls to the ground as fall out. Our lakes and ponds are in the vicinity of the fallout. That fallout continues like that every year, for 24 hours of the day. Our lakes are located in the fallout area. That fallout therefore affects and impacts the life, our communities, our drinking water, all within that distance.

Dene Elders from northern Saskatchewan were concerned about the impacts of mining activities on water quality. Elder Pierre Robillard from Black Lake asserted the following at the forum:

We, the Dene peoples of the Athabasca area do not want a factory of any kind built on our land. Our resources are so rich with water where we could fish commercially or guiding in the summer and it is good drinking water.

The Elders emphasized that water is the source of life for all living things. Yet, human activity is seriously impacting the availability and quality of that water. Elders noted that forestry practices of clear cutting in particular caused a series of chain reactions that inevitably resulted in harm to the water. These changes are accelerated by human activities in complex nexus of cause and effect. Elder Oscar Beatty provides the following:

I have been a commercial fisherman for a number of years. When I was growing up, I watched how it changed with the times. That lake told me that things are changing and things are not what they used to be. There was a lot of forestry cutting along the hills, Narrow Lake road on the Hanson Lake road. All that clear cutting was done by Weyerhaeuser. When they finished cutting there, the forest fire went through and opened it more. The water climate changed so fast on that lake, fast run-off and anything that comes from the air to the ground washes into the lake.

4.1.3 Changes in Animal, Bird and Plant Life

The Elders at the Prince Albert Forum continually expressed a sincere regard for the wildlife with whom they shared the landscape. This concern extended to an anxiety about the possible implications any change of climate might have on wildlife in their areas. Elder Phillip Ratt said that, “we are not the only ones to be impacted by this. The animals are also affected. They live by nature and they are the ones that really rely on nature, the fluctuations of weather. They are dependent on the weather.”

On an ominous note, the Elders observed that there was a general imbalance in nature reflected in the condition of wildlife, likely resulting from human influence. Elder Lorne Waditaka of the Wahpeton Dakota Nation said that, “what is happening is that everything is unbalanced in the way that I see it. Our water is contaminated, the animals are getting sick, the birds are getting sick and falling from the skies.” This imbalance in nature was deduced from the abnormal ways that wildlife behaved. Elder Robert Ermine from Sturgeon Lake made a startling observation about birds. He states:

I found it surprising how often the birds fly and hit our house just like they were blind. They would kill themselves or they get wounded. In one week alone, there were many. I don’t know what it is but that is the experience I had for the last two summers where I live.

This general imbalance also extends to the changes in wildlife migration patterns and population ranges within their territories, as observed by the Elders. New species are starting to inhabit areas where they were not previously seen. Birds not commonly seen in specific regions were observed and animals were wandering into areas far from their usual range. The general trend is that the more southerly animals are venturing further north. For example Elder Pierre Robillard from Black Lake points out:

Other than that, even the animals are starting to venture out of their territory also. It is because of changes started to occur in their environment. There are many changes going on with us. Last summer in our Black Lake community, people had seen some cougars around there. There never used to be any pelicans in the Lake Athabasca area and now there are some pelicans in the far north region. The people had seen the white-tailed deer around the Big Bear Lake and polar bear in Saskatchewan. I have been on a Caribou Management Board for twenty-five years and we meet with the scientists every so often. They say it is the weather that affected the animal’s habitat and they started to roam other territories for survival. It is not our fault these things are happening.

The concern the Elders have with the impact of climate change on wildlife is because of the dependency on these life forms for sustenance. Elder Jacob Sanderson of the Chakastaypasin Nation states that, “when we talk about global warming, it affects the animal life, too. The animals are our brothers and sisters that gave us life.” The Elders also noticed changes in the flavor of the animals that they depended so heavily upon for sustenance. Elder Clara Whitecap from Shoal Lake tells us that “the animals too, those that we eat, those are tasting different as

well. Even the moose we ate, it tastes different. I taste it clearly. The meat I eat tastes different.” Plant life such as berries, are also being affected by changes. Elder Jean Beatty tells us that, “berries are also burnt and where there are some they are very little. They will grow good in the shade and they are quite big. I miss those berries very much.” Elder Lillian Lathlin from the Shoal Lake area also said that, “even berries don’t grow that abundant and do not grow some years. Now I seldom see blueberries, those berries we used to pick on the hills.”

4.1.4 Changes in Mental Climate

The Elders mentioned many instances of a degrading humanity where negative values such as greed are seen as the driving forces for much of the destruction that goes on in their territories. A comment made by Elder Velma Buffalo of the Wahpeton Dakota Nation is a common refrain made by the Elders regarding the destruction occurring in nature: “it is greed versus nature and that is one of the biggest points made [by the Elders].” The resource economy and in particular the pursuit of profit by industry gives rise to the decline of positive social values about humanity and about the natural environment. Elder Oscar Beatty points to the following:

Today, I said that when there is discussion on the environment, because this [lack of structure] contributes to that decline in humanity. It is not only the land that has changed, the people have too. That is environment too. He has created another environment too from which arises negative consequences, such as greed because there is too much money.

Very often, the Elders pointed to government and its policies as the source of concern. Allan Longjohn from Sturgeon Lake relates the following:

I don’t know what went into the minds of leaders, the provincial and federal government, when they released substances here. I am seeking to see that as long as they line their pockets with money, they do not care how we live and how we see things. They do not care nor look after anything how things will be into the future. It is going to get difficult. We have been left severely injured.

On the global scale, the Elders relate that the declining humanity, or the changing mental climate, is the cause of the various afflictions besetting the world. Lawrence Marion from the James Smith Cree Nation provides the following description:

That is why our lives have changed so much in the last 40 - 50 years... You hear about the sicknesses that are moving in. You hear about the bird flu that is killing people, you hear about the mad cow disease and it is spreading to our environment; to our source of food, our moose, elk, deer, ducks, rabbits, you name it. Ask yourself where are those diseases coming from. They are man-made.

Changes to mentality have also manifested in the way the youth have taken on different values and behaviours from the cultural norms of their communities. Elder Madeline Goulet relates that, “today, our young people do not follow that way. What they share now, one has to buy from them. That is the poorer quality of our life on Earth. That is how it is changing.” These changes

point to a declining humanity with severe impacts on the youth from the communities.

4.1.5 Increased Industrial Activity

The Elders observed an increase in all forms of industrial activity in their respective territories. They identified the proliferation of industry through forestry, mining, farming and the building of dams and how these activities were related to the magnitude of changes they were seeing in their areas. The practice of clear-cutting forests was perhaps the most ubiquitous of the industrial activities that concerned the Elders. The Elders clearly linked the loss of forests and natural areas to the climate changes that were happening. As Elder Oscar Beatty states,

Destroying the forestry is one of the contributing factors in ruining our environment and to sudden tremendous changes in the weather patterns. That is the reason why we are lacking rain in the summer and the heat is very intense.

The Elders were obviously distressed by the loss of forested areas and the impacts of the machines that are used to harvest the trees. Senator Allan Bird of Montreal Lake describes the carnage he saw: “There is a story that the machines that clear-cutters use are like beasts. It is right. They clear cut everything, they leave nothing to stand.” Elder Howard Bighead of Sturgeon Lake also observed the devastation caused by clear-cuts. He states that, “right after there was cutting at Pipperal Lake. It is just like a desert, all the sand was overturned and there was just sand with a few trees along the road to hide what they were doing.” The geography of the Elders’ territories may be different but the emotional effect left by the loss of forests is similar in all. In the northern woodland areas, Elder Jean Beatty tells us:

The land now looks pitifully destitute, even the young trees are killed. This again makes me wonder at the sense of it all as I like to think that the trees will grow back again. Even what they plant and try to replace will take along time before they are seen again and can be of purpose again.

In the eastern areas towards Cumberland House, Elder Tom Pelly reminds that “today, there are no trees because of the clear-cutting. Our land is getting bare where I come from.” In the southern portions of the Prince Albert Grand Council area, Elder Allan Longjohn tells us that “as I got older, I realized that I lived in the prairies. The bush around is all brush cut and [we] couldn’t hunt close like before. What has happened is everything is damaged.”

Farming practices involving the use of pesticides and herbicides were also on the radar screen of the Elders at the forum. In particular, chemical spraying was highlighted as a concern for its possible effect on the environment, especially where there was the potential for chemicals to enter the water supply. According to the Elders, farming practices such as spraying of chemicals on fields can be a major contributor to the degradation of the water quality. Norman Henderson states:

In the summer, when the farmers are seeding, they put something in that is supposed to kill the weeds and for the crop to really grow well. That is the way they set things up. Those are the only things that will get killed they think. However, that kills much more than those. When it is fall, they also do that same procedure. In the spring time, when the snow melts, the spring run-off, that is when these go to the lake. Those are the poisons that were put on the land on the fields.

The farm chemicals would not only contaminate the water but also extend into the food chain as the animals and birds consume the water. As Elder Allan Longjohn said,

Then all of a sudden, farmers that were farming on our reserve, they started using chemicals to spray their grain, to spray the fields and all the run-off went to the sloughs that the animals drank. Even the ducks and prairie chickens eat the grain that's been treated.

However, the gravest concern the Elders had regarding chemicals is the long-term health effects they can have on people. The Elders are concerned of links between the chemicals and various unhealthy conditions that arise such as asthma and other ailments. Elder Norman Henderson reminds us of this concern and how it manifests:

Many are sick in the lungs, in the kidneys, things like that. Over a period of years, there may not be much poison that may accumulate, but over a period of ingestion, over a period of years of that particular chemical, that particular water they have been drinking, affects them. As they get older, that is when that substance will get them sick, that chemical laced on the land and that flowed into the water.

The concern about population health is particularly acute in reference to the youth and future generations that will inevitably be affected by chemical pollution. Elder Riley Burns has this particular concern. He states:

I am scared that our kids will have nothing. Maybe every one of our kids will be walking around with puffers sticking out of their mouth because it attacks our immune system. The doctors are finding out that the medicine we take for TB does not work anymore. We are back to square one again, because our bodies are used to it. How many more medicines are we going to get used to that we keep building all these chemicals in the ground.

An additional anxiety associated with industrial activity is its potential contamination of water and the environment from chemicals and pollutants. Elder Oscar Beatty provides a vivid description of the fall out from the Flin Flon smelter that he observed. He states:

It was in the spring and the lake was thawing. I was approaching that lake and I noticed what looked like a snow-drift at the edge of the lake. It was the foam. There were large waves at the time and the incoming waves splashed that foamy

sludge up on to the land for a distance. That was the collection of that material that had fallen from the air. I watched that, at the time. Whatever had arrived had fallen from the air and it was filthy.

Another related activity that was observed and that greatly disturbed the Elders was the construction of dams in the northeast part of the province. With the advent of dam construction the land in those areas was described as becoming dead and dry. Elder Tom Pelly states:

[T]hey ruined my trap line. They put water on that land and the water is black and now there are no animals in that area. Instead of trying to help nature, the land is dry. Once they are finished ruining the land, they go away.

Air traffic in the northern regions was also a concern for the Elders at the Prince Albert Forum. A large part of the problem was that the people were mystified by what the aircraft carried as cargo considering the industrial activity being carried out in the north. Elder Catherine Charles relates:

As well, those planes that fly around frequently in the north are largely very mysterious for us. Nobody has told us what they are for. We do not know what they are intended for, what they carry, and nobody is telling us. If we are told, we could at least feel comfortable about them.

A number of Elders felt that increased air traffic in northern regions could have a deleterious effect on northern environments. The emissions from the aircraft are a source of concern to the Elders. Elder Norman Henderson points to the particular concern of the possible effect the residue from the emissions can have on health. He states:

I think it has much to do with the air pollutants and the planes that fly overhead. There is a vapor trail that is left and I wonder where that vapor eventually goes to. It is similar to the wood fire that we make. We see the smoke rising and we also notice the micro ashes that fall down from that. This is what I see could be happening with the vapor as well.

4.1.6 Changes in Community Youth

Perhaps the most profound and passionate statements that came from the Elders during their three-day forum concerned the youth from their communities. On a deep level, the Elders seemed to co-relate the state of the youth, and the state of the land. The following comment by Elder Madeline Goulet is an example of the discourse where nature and youth are correlated in discussions about the changes taking place. She states, “everything is different. Today, the youth are very vulnerable. The balance of nature is being affected by the prolonged drought.” Elder Hector Head from Red Earth uses the growth of children as a simile for changes taking place in the land:

But since the changes took place, there have been many storms, in a slow way, just like as children grow in a slow way, that is the way it was for us. Changes were slowly taking place in our land.

Changes in community youth commonly involved behavior and attitudes not in keeping with the cultural norms long established and observed in the communities. Sylvia Tsannie from Hatchet Lake remarks:

For a very long time since I remember ... it seems like the young people have just started to change quite recently. The young peoples' behaviour and attitudes either by hearing about it or by seeing it for yourself burdens and saddens your heart heavily. Then it makes you think and wonder on how the Elders feel or deal with these drastic situations.

These changes in attitudes were often a result of modernity advancing into the communities and the youth adopting or succumbing to various influences. Elder Madeline Goulet tells that:

From there, I have seen how things got worse. They had everything like radios, cars, TV's, things we never seen before. That's when things reversed. We went to school there and the children were being taught English and life was different. There was running water in new houses. Alcohol was introduced. I have seen how it affects the people.

These conveniences of modern urban lifestyles had an impact in the way the youth lived and the general health they experienced as a result. Elder Barnabas Head from Red Earth observed the following:

Presently, the young people are not active. The young people are getting diabetes, high blood pressure. I see young people getting sick, not as before. Babies cannot get breastfeeding now. They cry a lot. That is one of the conditions.

A very distressing observation made by Elders is that the youth are not giving heed to Elder advice on matters of behaviour and culture. Elder Shirley Sanderson states that, "when you try and tell this to the young kids, they tell you that was history. We don't want to hear that." The Elders are frustrated by these responses from the youth and recognize that counseling speeches are not having an immediate impact. Elder Riley Burns tells us:

The more I counsel them not to drink, the more I drive them into the ground. That is what I did to my parents. They have pressures in the social environment that they live in today.

This frustration is felt in common by the Elders and leads to the collective cry for a resolution to this dilemma. Elder Lawrence Marion sums it up for us. He states:

This is why I say, I too am afraid because I pity my children. I pity my grandchildren. I pity my great grandchild. I have one great grandchild. What can we do for the future? It is these children we need to help.

4.2 What have been the impact of these changes on the health and quality of life of Aboriginal communities?

The Elders at the forum emphasized their own understandings about what makes healthy individuals and communities. They stated that the continued health of their communities is rooted in their relationships with the land and natural environment.

Elders at the forum made a clear and passionate connection between industrial activities and the changes they observed with the natural environments. To a certain degree, climate change may be considered a natural process as the Earth's climate has always changed and gone through cycles as evidenced in the natural history available to us. However, present concerns stem from the degree to which human activities are altering or accelerating these natural rhythms to a point where the impacts become unpredictable or impossible to absorb. Elders and western scientists alike share these concerns.³¹ For the Elders, the idea of change happens in a complex nexus of social and environmental disruptions that destabilize the well-being of the Elders' world. The industrial activities and their impacts on the environment are particularly distressing because of the personal relationships the Elders have with their lands. For many of the people connected with the land, maintaining relationships with the natural world is part of their being and any harm done to the land and water that contributes to their livelihood is a personal assault to their existence. As Mrs Jean Beatty says, the assault on the land "causes me great stress and frustration...I cannot speak too much as to how we relied on the land."

4.2.1 Impacts of Climate Change

In regards to the impacts of climate change, the Elders made several observations concerning population health. The extreme conditions of both summer and winter were a particular source of worry. For example, the immediate effect of increased summer heat on the health of the people was a concern brought out by Elders Beatty and Henderson. Oscar Beatty states that, "a lot of us old people will not live very long because of the heat" while Norman Henderson states that, "I know of children at Montreal Lake, my relatives that have been affected by the heat of the sun."

The Elders also said that the heat of the summer impacts the natural world. Plants, for instance, are showing the effects of heat and associated drought conditions. Madeline Goulet informs us that "our parents used the maple trees for syrup, now you see the trees are all rotted and the people can't use them anymore... It is so sad for us to be watching our land slowly dry up." The heat also contributes to likelihood of increased forest fires and, as Oscar Beatty states, "Mother Earth will heat up a lot more and the rivers, we know they will evaporate."

Another perspective of the impact of increased heat is its effect on algae and weeds in the lakes and rivers. Elder Oscar Beatty informs us that:

The other thing will happen is a lot of vegetation will grow on the lake because of the warm climate. Sure enough, there is a lot more weeds, the anglers will not go there because there is too many weeds that tangle their hooks. When we commercial fish during the day, we get in trouble with these weeds. So these are the changes I have seen and what the warm climate will do.

The temperature and climate changes may also have a bearing on other changes taking place in nature. As noted by Elder Phillip Ratt of Pelican Narrows, the animals are dependent on and impacted by the weather. For instance, in an economic sense, the quality and thickness of the winter coats of fur-bearing animals are affected by changes in the weather. In this sense, the livelihood of northern people engaged in trapping is affected. Elder Lillian Lathlin observed that songbirds and other wildlife were getting scarce in her area. She recounts that, “there is starting to be less and less of summer birds, birds of all kinds. Also those animals that run around all over, those are also becoming less and less.” The ultimate concern for the Elders is that the quality of food derived from nature is diminishing. Clara Whitecap relates a difference in taste with the wildlife. She informs us that, “it is the same with ducks, those birds that we eat, those are tasting different as well.” This sentiment is also expressed by Elder Barnabas Head who states that prevalent sickness in wildlife is a new and troublesome phenomenon. He states:

I see things are different from when I was young. Animals were in good condition. Even the farmers’ animals were healthy. Now those animals are given injections in order to get fat. Even the ravens are carrying diseases. That was not so in the past. Birds are getting scarce as well. They are being killed by some thing. I went to a meeting at Red Earth. Mosquitoes and crows are carrying sicknesses. It is not a good sight.

Elder Riley Burns observed that the availability of natural medicines has been impacted by the changes leaving their potency to question. He wondered, “Where do you find clean ground to get medicines?”

4.2.2 Impacts of Industrial Activities

The Elders recognized the far reaching impacts of industrial activity on the environment and human health. Clear-cutting of forests is perhaps the most acutely felt assault to the Elders and their communities in the north because of the chain reaction of negative impacts it leaves in its wake. For example, Mrs Jean Beatty observes that a way of life is destroyed when the forests are depleted, and that all the associated livelihood activities in that environment are altered. The dual and interrelated effects of clear-cutting and the increasing incidents of drought and large-scale fires have resulted in a significantly reduced forest ecosystem. Mrs Beatty states:

Our way of life has changed such that traditional activities, such as trapping, are no longer possible as there are now huge clear-cuts in these areas. There is no place to trap now and even the rabbits have no place to live with all the trees being cut down. This is where and how we survived as there was moose that could even be killed close by. We ate the meat from the moose and it fed many. Now today, that is not the way it is.

A number of the Elders from the parkland region also noted that a reduction in forested area due to farming and other activities had forced a movement in wildlife from their usual ranges. Elder Allan Longjohn relates that, “all of a sudden, the duck, rabbits, prairie chickens, deer are moving away to places where there is bush because we have none on the reserve. This has been happening year after year.”

The impacts of chemicals such as pesticides and herbicides used in farming were a particular concern to many Elders. Farming activities, such as crop production, in the southern territories of the Prince Albert Grand Council were seen as a major source of environmental pollution in the region. The immediate impact of water contaminated by chemicals is seen in the health of the fish populations in the lakes and rivers. Where dry rivers and lakes may diminish fish numbers, pollution from chemicals accumulatively seeping into the water may have more serious consequences. Elder Howard Bighead recounts an incident he experienced. He states:

A few years ago, I went down to the bridge after a heavy rain in the spring, after spraying time. What I saw there was shocking. I looked at the river and I could see fish there turned over, about the size of a foot. They were all dead and they were floating down the river. So that tells you something that the water is damaging to our people and what ever is in there, the fish and animals that drink from there.

The boreal forest further north is not immune to the effects of chemicals. The impacts of air pollution from industrial activity on wildlife, fish populations, and human health are perhaps most acutely felt in the eastern sectors of the Prince Albert Grand Council area where there is significant industrial activity. Elder Tom Pelly states that “spraying chemicals affects the willows that the moose eat and this is the cause. It will also kill animals. This has happened since spraying chemicals started.” The Elders from the northeast observe that the berries and other natural materials are adversely affected by the pollution. For example, many kinds of berries that formerly grew in abundance can now scarcely be found. In addition, the loss of permafrost underneath some areas of muskeg was observed by individuals from the northeast sector.

The construction of dams in the northern part of the province clearly had an impact on the surrounding environment. The effects of these dams on the natural environment are a particularly harsh reality for the Elders. Senator Allan Bird comments with consternation that these dams “are no damn good. They destroy everything. Trap lines, hunting trails, animals, they destroy things.” On the east side of the province in particular, the Campbell Dam, formerly known as the Squaw Rapids Dam, along with different projects by Ducks Unlimited, created a completely different environment for the people that were still living off the land. The dams not only caused a change in water levels but also produced a profound alteration of the landscape. For example, the lakes in the area around Cumberland House are now filled with islands and surrounded by large brush. This has negatively impacted fishing opportunities in the area.

4.2.3 Impacts on Population Health

Unpredictability of weather due to changing patterns in climate was catching people off guard in terms of their preparedness for outdoor activities. For example, unpredictable weather led to people catching more colds through not being prepared for the outdoors. Elder Hector Head states the following:

There is a big difference in the effects to all our people. The young are getting sick because of the weather patterns. They get the flu. The old people have troubles with their bones because of the cold weather. It is so, since that time. They used to be healthy but now they are sickly on account of changes.

Where heat and cold may induce flues and associated illnesses, the Elders suggested that the impact of industrial pollutants may contribute to the more serious long-term illnesses such as asthma and diabetes. Allan Longjohn relates the following:

Then all of a sudden, farmers that were farming on our reserve, they started using chemicals to spray their grain, to spray the fields and all the run-off went to the sloughs that the animals drank. Even the ducks and prairie chickens eat the grain that's been treated. That is when, all of a sudden, all kinds of sickness came to the people especially to the Elders. Today, they have high blood pressure, diabetes, asthma, all kinds of sickness that you can find.

A change in lifestyle, often brought about because of environmental disruption, also brought about changes in diet. In the past, diets based on natural foods contributed to the health of the population. As livelihood activities have been disrupted (due to changes in the environment, as well as other colonial processes) and the dangers of contamination have increased, people have switched to a diet of largely store-bought and processed foods. Elder Kenneth Crowe relates:

We didn't have that before. Long ago, when we went hunting and eating the muskrat, deer, beaver, ducks would dive for plants in the water. All these things had medicinal values. Today, we buy steak at Superstore and it has been injected with antibiotics and growth medicines. We didn't have that and now we get sick.

A number of Elders suggested that changes in the weather and environment have lead to increased, and in some cases new forms of illnesses. They observed this occurring at the local and at the global levels (for example, in the emergence of new diseases, which they linked to environmental damage and human activity). Elder Norman Henderson provides the following:

I too have noticed those matters that are being discussed here. It was only recently that these things have happened. There is a sudden severe cold during a warm period. As well, there is warming during a severe cold spell. I see my grand children getting various colds quite often. Many others are like that as well. These things are happening because of the weather and climate. These strange sickness and diseases, many of which are in the news, like the one that is called the bird

flu. It is quite often that we hear of new diseases and sickness being mentioned on T.V.

4.2.4 Impacts of Change on the Quality of Life of Youth:

The Elders clearly see the importance of sustaining connections to the land and environment as a foundation for maintaining cultural continuity and as the basis for healthy individuals. The sentiment expressed at the forum was that the movement away from these natural settings and the subsequent shift in philosophy to the mainstream urban lifestyle affects the continuity of cultural stability and population health within their communities. The full impact of this shift in consciousness on the future generations is a distressing prospect for the Elders. There was therefore a serious concern with the way in which these changes have impacted the community. The common refrain of the Elders was that youth no longer have ties to the land because of various influences that impede this connection. They attributed this disconnection with the land to the disconnection and alienation with their cultural roots. In their view, when the people become disconnected from the land, the lines of communication between the natural and social worlds are severed resulting in less influence on the depersonalized universe.

4.3 What is the capacity of communities to adapt to these changes, both in the past and the future?

How well society understands and acts upon the human-nature relationship may have a bearing on how well it can come to grips with issues of climate change. The Elders said keeping the integrity of those natural environments calls for society's increased awareness about the links between human action and its capacity to influence the environment. As a partnership in the forum, the Elders challenged each other, the western scientific community, and society at large to adopt a consciousness about the living natural world and to recommit to personal relationships and efforts to understand its natural rhythms and patterns.

It becomes increasingly clear that the focus of the Elders' attention was not the same as the western scientific discourse on applied concepts such as adaptation. To reiterate, the Elders were more concerned with the present-day human element rather than focusing on futuristic responses, as the word "adaptation" would connote. For the Elders, the scientific response to climate change, with a focus on adaptation, suggests an acquiescence to society's failure to hold an environmental ethic. Adaptive strategies are the ways in which individuals, households, and communities change their productive activities and modify local rules and institutions to secure livelihoods. Generally, the term would mean any response that increases a population's probability of survival. Some Elders suggested that perhaps "adaptation" was not the best response – that perhaps action would be more appropriate to halt some of the changes that are occurring. Elder Beatty from Deschambeault Lake clearly brought this point out. He states:

The only thing I heard from you was how we can adapt to this change of climate. A lot of us old people will not live very long because of the heat... Forest fires will grow because of the heat, that's a fact, cold evenings, thunderstorms, man-made fires and this type of thing. This will happen with Mother Earth continuously and Mother Earth will heat up a lot more and the rivers, we know

they will evaporate. It didn't cost us money to know that.

For the Elders, survival was completely dependent on the land and the relationships they forged with nature. Nevertheless, the Elders did suggest some adaptive strategies that reflect their holistic understanding of the climate change concept.

4.3.1 Role of Prophecy

Prophecies regarding significant changes and events happening to the land was a reoccurring theme in the Elders' discussion of climate change. In the old days, there were some people who were able to predict the future. This kind of knowledge could only come from a people with close relationship to and understanding of nature. A number of Elders at the forum spoke of these prophecies which had been shared with them. Madeline Goulet spoke of these prophecies in the following way:

My grandfather used to predict that in the future that there would be changes to our land. In the spring, he used to tell us to give thanks for another season. But even now, you scarcely hear the birds singing. It is because they are dying off due to their food being contaminated. My grandfather predicted all these things. He said, we will eventually lose the trees, the animals, some things on Mother Earth. Even thunderstorms may have a connection to these factors like change in temperatures and climate.

The Elders' discussion of climate change at the Prince Albert forum also reminded some of the Elders about the counselling they received from their own old people in the past. Barnabas Head recalls:

Presently, there are many things that bother us. However, the words of the old person that counseled us remind me. At that time, he told us that when we get old, we would see those events. Presently, that is what I see because I am old now at 77.

Some of the Elders who had heard the predictions related that they were just now starting to see them coming to pass. Elder Robert Ermine from Sturgeon Lake tells us:

I heard old people say how the future is going to unfold. That way, a person can look at these spoken words (teachings). We can see the unsettled weather showing in the horizon. We can see the storm clouds gathering because of the things happening with Mother Earth.

These prophecies would have been a traditional mechanism for adaptation, as they prepared people for the future. The human factor that would contribute to nature degradation was clearly a part of these predictions. Elder Ermine spoke of a family prophecy stemming three generations back that foretold of changes happening in his territory. These changes involved farming and although the Elders knew of the coming changes, they had not realized the full impact of these changes until very recently. According to Elder Ermine:

Before there were many white people on our lands, her grandfather used to tell her, “in the future, you will not see any trees here and our land will rumble all around us” he had said to her then. She did not understand at the time what he was talking about. It then happened that there was clear-cutting on our land. Farmers started moving in and surrounded our land. There, she understood those words and meanings. When she saw the open land. Also, surrounding our land, tractors and everything else was rumbling. That was what he had mentioned it would be. The rumble in our lands.

The Elders Forum itself seemed part of a destiny that would help Elders prepare for the changes. Clara Whitecap relates the following:

As we meet here, we do not control our selves, our lives. We have been destined to all meet here collectively to discuss how we are progressing. What can benefit our children, to discuss that. To try and find those benefits.

The prophecies that the Elders discussed served to emphasize the importance of paying attention not only to traditional teachings but also to the land. In turn, this promoted (and promotes) the importance of close and respectful ties between people and the land. In the past, the people took care of the land and wildlife and reciprocally the land took care of the people. What the prophecies seem to stress is that the people have to go back to land and to learn, live and communicate respectfully with nature. In this regard, Elder Lorne Waditaka states that “these are the kind of things that we have to try and change. We have to go by our traditional foods like the berries, plants, medicine, the four legged, etc., we have to go back there.” For the Elders, one of the responsive measures that people can take is to go back to a science of the land that sustained the people since time immemorial.

4.3.2 Native Science

Perhaps one of the most fundamental and promising adaptive strategies that the Elders suggested was a return to native science in dealing with natural phenomenon. Native science stems from an intricate knowledge of the environment through a history of close connection with the land and its order. Elder Bill Ermine reminds us that “the perfect order in life ... the perfect order...our Creator placed this land on earth for us to keep alive. Every living thing runs in that perfect order.” Observation and study of nature was common. Elder Velma Buffalo reminds us that:

A lot of our old people would watch everything about the environment, atmosphere, and climate. We had old people who were able to predict the weather and they were able to go out there and tell you what the weather was going to be like. We had people who can predict the season, actually all year. We had people like that because they used to watch what was happening.

From this study came the acute knowledge about nature and its various messages, much of which is passed down through the oral tradition. As an example, an Elder recounted behaviors of bees that presaged the kind of winter to expect. According to the Elders, the display of

northern lights had meanings. Animal behavior was also acutely observed and predicted upon. Elder Bird relates that, “there is such a thing as animal medicine...in the springtime, when the female moose is going to have a baby, we know what kind of medicine it is going to take. These things are not in the books, but we have them here.” Elder Riley Burns also relates:

My nephew is a good hunter. One day, his grandfather told him, they are killing too many old bulls. You will see these young ones calling and it will be out of season. Their mating season cycle was disrupted. There are not enough old animals to teach them the way. He came to visit me and he told me, they were calling already and it was in July because they had no bulls to teach them. We disrupted that as humans.

The knowledge extended to observations about plants and their properties. Elder Bill Ermine tells us:

We have to understand the healing process of the natural medicines and the natural herbs. We have to understand the beginning of growth until they are ripe and need to be picked. That takes anywhere from 5 to 7 months. And that is how long it takes for the body to heal from the natural medicines and there are no side effects. They could never be addicted to them. We are part of that road and that is where we belong. That is what we have to understand. We want to talk about the environment and climate, these are the things we need to understand and start living in harmony.

In addition, there were traditional mechanisms for shaping the landscape to meet human needs. For example, in the old days, people would burn the brush growing on islands in Cumberland Lake in the effort to ‘herd’ the moose freely between islands for their benefit. Conservation regulations no longer allow these prescribed burnings, and the moose are no longer as abundant in that area. Another strategy used by people in the Northeast in times of drought involved making a dam to collect water. These strategies suggest that there is some room for human influence on the environment, if done in the proper way.

For the Elders, the land, and indeed the universe, is alive and therefore must be approached in a personal manner. First Nations Elders and spiritual people meditate about the relations between individuality, the natural world, and the mysterious life force that permeates creation. The Elders at the forum linked the natural environment, as the natural background of human thought and society, with human responsibility for the maintenance of that perspective and order. The transmission of these insights benefits humanity as a whole.

4.3.4 Spiritual Response

The Elders at the forum linked the natural environment to human responsibility. The Elders said keeping the integrity of those natural environments calls for society’s increased awareness about the links between human action and its capacity to influence the environment. The Elders recognized the value of native science as method in enhancing nature / human interaction. They

also conveyed the spiritual response that is linked to this knowledge base and how Elders have a role to play in influencing nature / human synergy. Elder Lorne Waditaka relates the process:

The future of Mother Earth doesn't look good and we are supposed to be keepers of Mother Earth like we heard here this morning. We have to go back to our ways. We have to go back to our medicines. We have to go back to our way of life. The way that our grandparents had lived. We have to respect Mother Earth, We have to respect the wind, the fire, the animals, the food, the water. We have to ask forgiveness for all that is happening with Grandmother Earth for what is happening. As far as the investors, the scientists, we have to that. We have to make offerings, we have to offer tobacco, or what ever it is. For the ones that keep their ceremonies, you are the helpers. The ones that look after the sweat lodges, you are the helpers. Those ways have been given to us by the Creator.

Beyond the individual and the community initiative, Elder Jacob Sanderson also suggested the need for nations to work together to heal the damage done to the environment, and of the central role that Indigenous peoples (and Elders in particular) might play in this process:

Today, we talked about the pollution of air, rivers, everything that is hurting the globe of Mother Earth and our life. I bring this message because we talk about and explain something to you on how to prevent this. It takes people like you who come to the circle and it takes people to heal each other, but it takes nations to heal Mother Earth. Prevention of these disasters is what people come together for. June 21 was recognized as global healing of Mother Earth and for all people to come together. That door to heaven was opened at 12 o'clock and every country prayed for world peace. When we do this, we create an energy shift to the world itself, to the climate, it changes, it can be healed again. But it takes people like you today. That is the understanding we talk about and what we have today within the Indian Nation; it is the pipe that was the core of Mother Earth. The stem was the father and the tree of life and the connection. In the scientific world, the Indigenous people knew what is today and what they can see in the future in the global sense. We stand in the crossroads today with our relatives.

There was a strong sentiment expressed by the Elders that it was their responsibility to keep and protect the land for future generations, but that society as a whole would have to re-establish its priorities and respectful attitudes towards the land to bring things back into balance.

4.3.5 Cooperative Response

The Elders expressed a wish to take action, but were concerned about their ability to influence the activities of industrial corporations. Many had had experiences with industrial development being introduced into their territories in spite of protests and concerns on the part of community members. Even those that had had some success in protesting unwanted activities felt that they were facing forces beyond their control. Elder Riley Burns worries about the future:

These corporations are huge, how do we go against them? One time, they were going to spray trees north of Little Bear Lake and do tests. People came to that area and camped right under the spray area. They stopped them anyway. That is just a small portion that is happening. I wonder what will happen in the future.

Some Elders felt that additional research would be beneficial in gaining a better understanding of the state of the land and the issues that are currently facing society. Elder Oscar Beatty makes this point. He states:

Those are things that are visible. People are taking on a different nature even though they speak to everything. These things will not take it easy on us if we do not seek to find out how we are to be self-dependent. As the biologist said, we have to find out what is happening. We have to stop certain things so that nothing worse will happen. That is what I wish for.

In fact, many Elders observed that the world was moving “too fast” and that it would be important to slow things down; in particular, the rate of development and industrial activity. The Elders advised patience and a respect for natural cycles. Elder Bill Ermine advises:

One of the problems that we have in mind is we want immediate action and results. We want to be like that instant coffee, hot water. We have to let nature have its process, its cycle of growth. It is us that have to understand that and we have to get that message to our white brothers. We have to allow that healing process [to] take its course and that the forest will heal itself in time. We have to have patience and let it grow.

Cooperation between people was strongly emphasized by the Elders because all people have to live together on this Earth. Elder Shirley Sanderson expressed the following sentiment:

The environment we live in today is hard. We have to work together because the Indian people are the scientists to their own land. We need to work together... We can talk to our relatives, the white man, to slow down on these things.

According to the Elders, the Prince Albert Elders Forum itself was a part of the solution and Elders expressed particular appreciation for the involvement of western scientists in the discussion of climate change. According to the words of Elder Jean Beatty:

I was really thinking about those people that came here today. That is the proper attitude that they have to be able to think about these things as they were showing the visuals. I don't really deny any of it because that understanding is a result of the education that they have received. It is also from that format that I can understand as I watched the visuals.

5.0 DISCUSSION

5.1 Connections Between the Natural and Social Environment

Elders observed that the changes taking place in nature are co-related with the changes that are taking place within their social environments. Through the discussions at the forum, the Elders emphasized the connections between the natural and social environments. Simply stated, the natural environment is the foundation for the social environment. According to the Elders, this link is most clearly expressed in the idea of community. The community is important because of its role as trustee and guardian for the collective tribal knowledge in the form of custom and culture. In each of the Elders' communities, the older generation holds the stories of the people and relates the narratives and teachings of good thought and action to the children. The Elders tell the children how the world and their people came to be and what it means to be part of the community. Community life revolves around the rhythms and patterns of the natural environment. Values, language and the other components of culture are taught within this natural setting. Traditional ways, songs, ceremonies, and insights of First Nations science are tied to the use of the land. The description and deeper understanding of those processes are embedded within the language. This knowledge traditionally held the community together as an integrated whole. It moulded the norms and collective cultural codes that explained how people should live and act within their natural and social environments. At the forum, the Elders spoke of these relationships and what it means to be a good human being.

The Elders challenged themselves to take ownership and act upon the conditions that would allow youth to reconnect with their natural environments. For the Elders, the shift of consciousness within their communities, particularly by the youth, affects the overall health of the population in more practical ways as well. Connections to the land traditionally meant that the natural environment provided for an array of health needs including clean air and water, natural foods, medicinal plants, and spiritual grounding.

The Elders tracked the parallel paths of the impacts of climate change and other industrial activities and the impacts experienced in the social environment with the urban mentality advancing into northern territories. The Elders' perspective concerning the state of the land, or *isi askiwan*, is rooted to their concerns with the community and particularly with the state of the youth. The Elders have attached or co-related the sensitive nature of the living land and environment to the degree of connection the people maintain with their land roots. Gregory Cajete states that:

. . . creative use of the environment guaranteed its continuity, and Indigenous people understood the importance of allowing their land its rich life because they believed their land understood the value of using humans. If humans could use the land, the land would also use them to enrich it and keep it alive. They and the place they lived were equal partners in life.³²

The Elders' role in maintaining cultural continuity, and in particular the ability to communicate the importance of maintaining respectful and on-going relationships with the land to the youth, is parallel to the degree of response a community can expect from the environment. The Elders see

a sacred responsibility to uphold a culture that is tied to the land. The practical fulfillment of that vision, by seeing communities becoming strong and vibrant from their connectedness to the land, would serve as a model for others to follow in maintaining ecological integrity.

5.2 Conciliation of First Nations and Western Knowledge

An interesting feature of the Elders' forum was the inclusion of a presentation by the PARC research co-ordinator. The presentation gave the western scientific perspective on climate change and shared information on climate change in Saskatchewan (summarized in Section 1.1 above). This presentation sparked a lively exchange between Elders and researchers. It provided them with a rare opportunity to ask questions of one another and share observations. The presentation showed how scientists have determined that the climate is always changing, that the current rate of climate change is unusually rapid, and that the impacts observed by the Elders (such as falling lake levels) agree with the results of global climate modeling. The principle of objectivity and the array of quantitative data produced by the scientific method can be compared with the Elders' perspective of a participatory mind towards the issue of climate change. The scientific perspective detailed the data collection process and the time span of climate change knowledge going back thousands of years using modern technology to analyze tree rings and sediment samples. The information presented from this perspective complemented the observations of the Elders who responded to the issue of climate change through their experience with nature. They emphasized the effects of change impacting the health and quality of life of their communities at the personal level. The Elders painted a picture of personal relationships to their environment and their dependency on it. It became increasingly apparent that for the Elders it is the experience of observing that is important and not just the observation itself.

The Elders' forum attempted to reconcile how academics and Elders can work together and how cultural knowledge traditions, guided by differing worldviews, can co-operate and form partnerships in the pursuit of knowledge. As noted by Henry Huntington and others, although there is widespread recognition of the value of incorporating traditional knowledge in environmental studies, little attention has been paid to the actual process of how holders of traditional and scientific knowledge can effectively communicate with one another to share information.³³ The forum provided the opportunity to bring together different groups. It highlighted the possibilities of advancing knowledge in pursuit of a common goal. An important question to grapple with is how the two knowledge systems can work together in an ethical manner from a place where both traditions are respected. As Cajete suggests, "a crucial first step in making the dialogue and its effects truly authentic and practical would be for the Western scientific establishment to validate the study of Indigenous science."³⁴ In the view of the authors, the latter does not need external validation. However, the respectful recognition of its validity by western scientists does open the way for a dialogue that will benefit both sides.

The academic writers who are linked to the Elders' forum are perceived as *oskapiwis*—a Cree word which translates loosely as "servant"—to the First Nations knowledge system. They are expected to perform their skills and duties under the support and direction of that system. The intellectual study of the oral tradition is enhanced by the cross-cultural dialogue of the Elders' forum. Western understanding is enhanced by the alternate perspectives presented by the Elders and by the work of the *oskapiwis* to facilitate the dialogue between First Nations and western

world views. In this respect, the facilitators, academics, and writers associated with the Elders forum need to work from a position that is reflective and respectful of both systems.

In the same vein, equality is necessary in building a mutually beneficial relationship. This kind of work must be carefully crafted to foster a mutual appreciation for working together and to pave the way for future endeavours. The Elders' forum described in this paper initiated an exchange, a discussion between the First Nations and western community regarding the importance of knowledge from different perspectives. It is conceivable that the First Nations community can respect western scientists for the work they do. It is also logical to assume that scientists in turn can learn to see themselves less as observers and more as experiencers. Indeed, this was demonstrated through the respectful exchanges at the Elders' forum. Both the Elders and the western scientists approached the forum with open minds and with respect for the information presented by the other. As Michael Talbot has said about scientific understanding, "a shift from objectivity to participation will also most assuredly affect the role of the [western] scientist."³⁵

The Elders forum itself is an experiment and therefore a learning experience on how knowledge can be advanced at the conjunction of Indigenous and western knowledge systems. Working simultaneously with two knowledge systems presents certain challenges beyond the technical exigencies for the translation and interpretation of language and knowledge protocols. The Elders' forum contributed to the process of bringing together traditional environmental knowledge and western scientific understanding in attempts to understand the complexity of climate change. The two knowledge systems are different and often do not understand each other. As a result, they have not worked together to address issues such as global climate change. The lack of understanding between western science and First Nations knowledge continues to persist. However, as David Peat suggests, "science is about understanding; it is one of the ways we attempt to answer the perennial questions about the nature of existence."³⁶ This definition of science has some resonance with First Nations perspectives and worldviews. It suggests a common ground on which to build a relationship.

5.3 Solutions and Key Players

The benefits of incorporating traditional knowledge into studies on climate change have been documented by a number of authors. For example, Patricia Langley Cochrane and Alyson L. Geller point out that Alaska Natives observed changes in weather patterns and thinning sea ice long before scientific studies in the region confirmed these observations.³⁷ A clear benefit in incorporating traditional knowledge is to highlight these early warnings of environmental change and direct research to key areas. Fikret Berkes and Dyanna Jolly have suggested that it is important to consider issues of resilience and adaptation to a changing environment. Such lessons can be learned from First Nations communities that have adapted and responded to changes in the past.³⁸ As global warming is a proven and progressing phenomenon, it will be necessary for human populations to adapt to, as well as attempt to lessen the impacts of, changing environments. Berkes and Jolly provide examples of adaptive strategies used by the Inuvialuit community of Sachs Harbour to cope with a changing Arctic environment. They highlight the importance of traditional knowledge, both in terms of understanding what is happening on the land and in developing adaptive responses rooted in specific cultural contexts.

As noted already, the Elders at the PAGC Elders forum clearly recognized a need for changing the status quo—in terms of revitalizing the relationship between people and the land—as a way of addressing climate change and other environmental issues. However, the Elders decided by consensus at the forum that their role was not a political one. They purposely refrained from making resolutions and formal recommendations. The Elders identified that their role in response to the current situation was to strengthen their own local communities and cultural connections to the land, particularly through working with the youth. By implication, it is the role of western scientists, and in particular those present at the Elders’ forum, to share the information from the forum to the broader society and to decision-makers as a way of motivating and influencing change in the western sphere.

6.0 CONCLUSION

The purpose of the Elders Forum was to draw on the knowledge and experience of First Nations Elders from the Prince Albert Grand Council area in Saskatchewan regarding climate change and human adaptation to these changes. This important source of information has the potential to significantly add to western scientific and public understanding of both the history of climate change on the prairies and the strategies used by communities – past, present, and future – to adapt to these changes. One of the most significant features of the Elders forum, beyond the collection of information specific to climate change, is the sharing of information between Elders and western scientists in a collective effort to address the issues of climate change. By engaging in these issues, Indigenous communities, under the leadership of Elders, have the opportunity to teach the broader Canadian society about alternative perspectives to climate change and in particular to the relationships between health and the natural environment. The forum enabled Elders and community voices to contribute to matters of global importance.

The fundamental value of including the Elders’ perspectives into discussions of climate change and population health is their unique experiences with their lands, their indigenous knowledge base, and how they perceive the natural and social environments. This perspective enhances the study of climate change. One of the emergent results from the Elders forum relates to the way the issue of climate change is framed. The Elders provided a comprehensive and holistic perspective to the issue thereby providing the human factor as the appropriate gauge by which emphasis and controls could be applied in climate change matters.

The Elders observed that the changes taking place within their social environments are co-related with the changes that are taking place in the natural environment. For the Elders, the shift of consciousness taking place in their communities, particularly with the youth, does not bode well for a continued environmental ethic in their communities. The Elders see a sacred responsibility to uphold a culture that is tied to the land. The practical fulfillment of that vision, by seeing youth become strong and vibrant from their connectedness to the land, is compromised by this shift in consciousness. Additionally, the impact of industry in their territories disrupted First Nations communities’ connections to the land. Connections to the land traditionally meant that the natural environment provided for an array of health needs including clean air and water, natural foods, medicinal plants, and spiritual grounding. For the Elders, these factors are important in the way that we understand climate change.

Adaptation for the Elders is a return to an environmental ethic by revitalizing relationships between people and the land. The Elders envisioned the practice of native science where nature is seen as active and responsive to human endeavor and where the sacredness of land is acknowledged.

ENDNOTES

- ¹ The term “climate change” refers to the long-term trend in climate patterns such as temperature and precipitation. The climate is always changing. The term “global warming” is usually reserved for the current climate change trend that is characterized by an increase in global mean temperature and has been attributed to human-induced increases in the concentration of greenhouse gases.
- ² Intergovernmental Panel on Climate Change [IPCC], *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change (Cambridge, UK: Cambridge University Press, 2001).
- ³ For a discussion of this point see: N. Witt and J. Hookimaw-Witt, “Pinpinayhaytosowin [The Way We Do Things]: A Definition of Traditional Ecological Knowledge (TEK) in the Context of Mining Development on Lands of the Attawapiskat First Nation and its Effects on the Design of Research for a TEK Study,” *The Canadian Journal of Native Studies*, Vol. 23, No. 2 (2003) p. 368.
- ⁴ The information in Section 1.1 is a summary of the material presented by Dr. Dave Sauchyn to the Elders as part of the Elders Forum.
- ⁵ IPCC, *Climate Change 2001: Impacts, Adaptation, and Vulnerability*.
- ⁶ <http://www.cics.uvic.ca/scenarios/> [accessed January 14, 2005]
- ⁷ M.E. Mann, R.S Bradley, and M.K. Hughes, “Northern Hemisphere Temperatures during the Past Millennium: Inferences, Uncertainties and Limitations,” *Geophysical Research Letters*, Vol. 26 (1999) p. 759-762.
- ⁸ <http://www.cics.uvic.ca/scenarios/> [accessed January 14, 2005]
- ⁹ M. Johnson and R. Ruttan, “Traditional Environmental Knowledge of the Dene: A Pilot Project,” *Lore: Capturing Traditional Environmental Knowledge*, M. Johnson (ed.) (Hay River, NWT: Dene Cultural Institute and the International Development Research Centre, 1992) p. 4.
- ¹⁰ Witt and Hookimaw-Witt, “Pinpinayhaytosowin [The Way We Do Things],” p. 364.
- ¹¹ M.M.R. Freeman (ed.), *Report: Inuit Land Use and Occupancy*, 3 vols. (Ottawa, Ontario: Department of Indian Affairs and Northern Development, 1976); and C. Brice-Bennet (ed.), *Our Footprints are Everywhere: Inuit Land Use and Occupancy in Labrador* (Nain, Labrador: Labrador Inuit Association, 1977).
- ¹² P. J. Usher, “The Beverly-Kaminuriak Caribou Management Board: An Experience in Co-management,” *Traditional Ecological Knowledge: Concepts and Cases*, J. T. Inglis (ed.) (Ottawa: International Program on Traditional Ecological Knowledge, Canadian Museum of Nature; International Development Research Centre, 1993); T. Campbell, “Co-Management of Aboriginal Resources,” *Information North*, Vol. 22, No. 1 (1996) p. 1-6; P. Cizek, *The Beverly-Kaminuriak Caribou Management Board: A Case Study of Aboriginal Participation in Resource Management*, Background Paper No. 1 (Ottawa: Canadian Arctic Resources Committee, 1990); H. A. Feit, “Self-Management and State-Management: Forms of Knowing and Managing Northern Wildlife,” *Knowing the North: Reflections on Tradition, Technology and Science*, W. C. Wonders (ed.), Occasional Paper No. 21 (Edmonton: Boreal Institute for Northern Studies, University of Alberta, 1988).
- ¹³ T. R. Berger, *Northern Frontier Northern Homeland: The Report of the Mackenzie Valley Pipeline Inquiry*, Revised edition (Vancouver: Douglas and McIntyre, 1988); B. Sadler and P. Boothroyd (eds.), *Traditional Knowledge and Environmental Assessment* (Canadian Environmental Assessment Research Council, 1993); Dene Cultural Institute, “Traditional Ecological Knowledge and Environmental Impact Assessment,” *Traditional Knowledge and Environmental Impact Assessment*, B. Sadler and P. Boothroyd (eds.) (Canadian Environmental Assessment Research Council, 1993); R. E. Johannes, “Integrating Traditional Ecological Knowledge and Management with Environmental Impact Assessment,” *Traditional Ecological Knowledge: Concepts and Cases*, J. T. Inglis (ed.) (Ottawa: International Program on Traditional Ecological Knowledge, Canadian Museum of Nature; International Development Research Centre, 1993); and M. G. Stevenson, “Indigenous Knowledge in Environmental Assessment,” *Arctic*, Vol. 49, No. 3 (1996) p. 278-291.
- ¹⁴ M. Gadgil, F. Berkes, and C. Folke, “Indigenous Knowledge for Biodiversity Conservation,” *Ambio*, Vol. 22, No. 2-3 (1993) p. 151-156; and F. Berkes, *Sacred Ecology: Traditional Ecological Knowledge and Resource Management* (Philadelphia, PA: Taylor and Francis, 1999).
- ¹⁵ J. Cruikshank, “Legend and Landscape: Convergence of Oral and Scientific Traditions in the Yukon Territory,” *Arctic Anthropology*, Vol. 18, No. 2 (1981) p. 67-93; N. White, and B. Meehan, “Traditional Ecological Knowledge: A Lens on Time,” *Traditional Ecological Knowledge: Wisdom for Sustainable Development*, N. Williams and G. Baines (eds.) (Canberra, Australia: Centre for Resource and Environmental Studies, Australian National University, 1993); and P. E. Minnis and W. J. Elisens (eds.), *Biodiversity and Native Americans* (Norman: University of Oklahoma Press, 2000).

- ¹⁶ G. Ashford and J. Castleden, *Inuit Observations on Climate Change—Final Report* (Winnipeg: International Institute for Sustainable Development, 2001).
- ¹⁷ T. Fenge, “The Inuit and Climate Change,” *Isuma*, Vol. 2, No. 4 (2001) p. 79-85.
- ¹⁸ Dene Nation, Elder Gathering March 2003—Fort Rae, Denedeh, <http://www.denenation.com/eldersrae.html> (accessed Aug. 24, 2004). Both the Denendeh Environmental Working Group of the Dene Nation and the Government of the Northwest Territories have organized workshops to discuss the issue of climate change with Elders, technical staff, and others in the region. They have hosted workshops at locations such as Fort Smith, Tlicho, and Inuvik.
- ¹⁹ Manitoba Model Forest, Climate Change Workshop: Little Black River First Nation Community Hall (Proceedings from workshop, Jan. 23, 2003).
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- ²¹ H. P. Huntington et al., “Observations on the Workshop as a Means of Improving Communication Between Holders of Traditional and Scientific Knowledge,” *Environmental Management*, Vol. 30, No. 6 (2002) p. 778.
- ²² G. Cajete, *Native Science: Natural Laws of Interdependence* (Santa Fe: Clear Light Publishers, 2000) p. 287.
- ²³ For a discussion of these principles as they apply to research see Brian Schnarch, “Ownership, Control, Access, and Possession (OCAP) or Self-Determination Applied to Research: A Critical Analysis of Contemporary First Nations Research and Some Options for First Nations Communities,” *Journal of Aboriginal Health*, Vol. 1, No. 1 (January 2004) p. 80-95.
- ²⁴ R.M. Unger, *Passion: An Essay on Personality* (New York: Free Press, 1984) p. 5.
- ²⁵ J. Couture, “The Role of Native Elders: Emergent Issues,” *The Cultural Maze* J. W. Friesen (ed.) (Calgary: Detselig Enterprises, 1991) p. 208.
- ²⁶ D. Suzuki and P. Knudtson, *Wisdom of the Elders: Honoring Sacred Native Visions of Nature* (New York: Bantam, 1992) p. xxxv.
- ²⁷ G. Cajete, *Look to the Mountains* (Colorado: Kivaki Press, 1994) p. 75.
- ²⁸ P. Beck, A. Walters, and N. Francisco, *The Sacred: Ways of Knowledge, Sources of Life* (Navajo Community College, 1992) p. 164.
- ²⁹ Cited in Cajete, *Native Science*, ix-x.
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- ³¹ See Karl and Trenberth, “Modern Global Climate Change,” 2000, pp.1719-1723.
- ³² Cajete, *Native Science*, 2000, 204.
- ³³ H. P. Huntington et al., “Observations on the Workshop as a Means of Improving Communication Between Holders of Traditional and Scientific Knowledge,” *Environmental Management*, Vol. 30, No. 6 (2002) p. 778.
- ³⁴ Cajete, *Native Science*, 2000, p. 286.
- ³⁵ M. Talbot, *The Holographic Universe* (New York: Harper Collins, 1991) p. 298.
- ³⁶ D. F. Peat, *Lighting the Seventh Fire* (New York: Carol Publishing Group, 1994) p. 55.
- ³⁷ P. L. Cochrane and A. L. Geller, “The Melting Ice Cellar: What Native Traditional Knowledge is Teaching Us About Global Warming and Environmental Change,” *American Journal of Public Health*, Vol. 92, No. 9 (September 2002) p. 1404.
- ³⁸ F. Berkes and D. Jolly, “Adapting to climate change: Social-Ecological Resilience in a Canadian Western Arctic Community,” *Conservation Ecology*, Vol. 5, No. 2 (2001) p. 18 [online] <http://www.consecol.org/vol5/iss2/art18> (accessed Aug. 24, 2004).