

Native Skywatchers and the *Makoçe Wiçañłipi Wowapi* – D(L)akota Star Map – Building Community Around Native Star Knowledge

Annette S. Lee

*St. Cloud State University, 314 Wick Science Building, 720 Fourth Avenue South,
St. Cloud, Minnesota 56301, USA*

Jim Rock

Augsburg College, 2211 Riverside Ave., Minneapolis, Minnesota 55454, USA

Abstract. In D(L)akota the Big Dipper is known as *To/Ton Win* – Blue/Birth Woman. She lives at the center of the scoop in the Big Dipper and is the doorkeeper between the star world and the Earth. The same group of seven bright stars is also known as *Wiçakiyuhapi*, the Stretcher and *Wasihdapi/Wasigłapi*, the Mourners. This is the beginning of the journey back into the spirit world for those leaving the Earth.

Embedded in the native constellations are teachings that help guide and inspire native peoples. This workshop will present the D(L)akota Star Map and constellations of the current night sky. *The Native Skywatchers* research and programming seeks out elders, culture teachers and community members to discuss the Ojibwe & D(L)akota star knowledge. Together we have created *Makoçe Wiçañłipi Wowapi* - D(L)akota Star Map. This map and related curriculum was published and disseminated to regional educators at our *Native Skywatchers Middle School Teacher* workshops June 2012 & 2013. We are building community around the native star knowledge

1. Introduction

In Ojibwe the Big Dipper is *Ojiig* – the Fischer (Morton & Gawboy 2000; Gawboy 2005) and in D(L)akota star knowledge the same group of stars is seen as *To Win/Ton Win* – Blue Woman/Birth Woman (Goodman 1992). In each there are stories and teachings that help guide and inspire native peoples. The *Native Skywatchers* research and programming focuses on understanding the Ojibwe and D(L)akota importance of this and other celestial connections.

There is urgency to this project for two reasons: the native star knowledge is disappearing as elders pass and state standards. MN State Science Standards K-12 requires “Understanding that men and women throughout the history of all cultures, including Minnesota American Indian tribes and communities, have been involved in engineering design and scientific inquiry....For example Ojibwe and Dakota knowledge and use of patterns in the stars to predict and plan.” (Minnesota Department of Education, 2010) And yet there is a complete void of materials.

This research, *The Native Skywatchers Project*, seeks out elders and culture teachers to discuss the Ojibwe & D(L)akota star knowledge. From these sources and working with the elders we have created an astronomically accurate, culturally important D(L)akota star map, *Makoçe Wiçanł̥pi Wowapi*. This valuable map was disseminated to regional educators at the *Native Skywatchers Middle School Teacher* workshop June 2012. In addition, hands-on curriculum that combines astronomy, culture, language and art has been developed. The goal of the *Native Skywatchers* programming is to build community around the native star knowledge.

2.0 Methods

2.1 Funding and Motivation

The *Native Skywatchers* programming is funded by: NASA-MN Space Grant, North Star STEM Alliance, St. Cloud State University and Fond du Lac Tribal & Community College. This project represents a unique collaboration between a large state university, a tribal and community college and a federal agency. The strategy of the project was to combine astronomical expertise, cultural knowledge and artistic talents to create an Ojibwe star map that currently does not exist. Regional teachers requesting information relating to the native star knowledge also motivated the map and related curriculum. This was clearly an outcome of the MN State Science Standards K-12, in particular benchmark 3.1.3.2.1 “Understand that everybody can use evidence to learn about the natural world, identify patterns in nature, and develop tools.” (Minnesota Department of Education, 2010)

2.2 Collaborators

Travel and interviews were conducted to consult with various D(L)akota cultural experts and community members such as Jim Rock (Sisseton), Charlene O’Rourke (Pine Ridge), Arvol Looking Horse (Cheyenne River) and Albert Whitehat (Rosebud). The finished map is a collaborative work between Annette Lee and Jim Rock.

Annette Lee is an astrophysicist and an artist. Currently an assistant professor of Physics and Astronomy and the Planetarium Director at St. Cloud State University. Annette is mixed race Dakota-Sioux and is a former faculty member at Fond du Lac Tribal & Community College. The *Native Skywatchers* programming is the focus of her research which combines twenty years of education and community involvement with both D(L)akota and Ojibwe communities. Recently awarded a Bush Fellowship to continue and expand the *Native Skywatchers* programming.

Jim Rock has a Master’s degree in education and has taught astronomy, chemistry and physics for thirty years for thousands of students in universities and high schools from urban, suburban and reservation communities. He currently teaches a Native Skywatchers course at Augsburg College offering indigenous cosmology lessons to teachers throughout Minnesota in collaboration with Annette Lee at St. Cloud State University and Fond du Lac Tribal & Community College. Jim is currently a consultant with both NASA and NOAA using satellite visualization and storytelling, and he had an experiment on the last space shuttle STS-135.

2.3 Current Night Sky

An important framework that has been developed alongside of the *Native Skywatchers* research and programming is called “*Four Directions Stargazing – Follow the Seasons, Follow the Stars*”. In native culture the four directions are seen as spiritual and physical guideposts. The current night sky can be easily divided into the four cardinal directions: north, east, south/overhead, and west. We can think of the south and overhead directions as the ‘center stage of the night sky’. Whatever season we are currently experiencing, those stars will be located in the south/overhead a few hours after sunset. The previous season will be seen setting in the west and the following season will be seen rising in the east. This instructional approach builds on a sense of place that often native peoples are aware of (Semken 2005). This technique grounds the complexity of the current night sky in the tangible and the simple, and yet allows for a multi-layered, circular learning approach. The *Makoçe Wiçañłipi Wowapi – D(L)akota Sky Star Map* is best presented by transforming the discussion into an experiential, hands-on event. This highly visual, holistic and cooperative learning environment is more consistent with a traditional native learning style (Cleary and Peacock 1997). Following this approach allows for the widest range of participants to take part in the learning experience. The current night sky is accessible to everyone, it anchors the learner in the here-and-now and yet will propel them into the multi-layered teachings of the D(L)akota star knowledge.

3. Results

3.1 *Makoçe Wiçañłipi Wowapi – D(L)akota Sky Star Map*

The D(L)akota map, *Makoçe Wiçañłipi Wowapi* was painted by the author, Annette Lee and the Dakota language consultant was Jim Rock. The map is based on the chart found in the book “Lakota Star Knowledge” by R. Goodman and his interviews with many Lakota elders (Goodman 1992, 65). The star map, *Makoçe Wiçañłipi Wowapi*, was painted in reference to D(L)akota beadwork. It is said that each bead is a prayer. Beads are traditionally used to beautify sacred items like medicine bags and pipe stems. Also beadwork is used to adorn clothing or accessories, like on an outfit to wear to a special occasion. Beaded items are worn with great pride, for example, a pow-wow outfit. The pinpoints of colorful dots in beadwork are reminiscent of starlight. The process of doing beadwork is meticulous and disciplined; it requires stillness. This stillness is echoed in the night sky. Beadwork and stars both sparkle.

The map is organized with Polaris –the North Star in the center. This is to emphasize the closeness of Polaris to our current north celestial pole (NCP) and circumpolar motion. Because of circumpolar motion, we appear to see all the stars in the night sky revolve around the North Star in a counter-clock wise motion as the hours pass each night into day. Because of this motion, in some native cultures the North Star is seen as one of the leaders of the star nation. Stars near the North Star do not set below the horizon. These are referred to as North/Circumpolar Stars.

All other stars will rise in the east and set in the west at regular times throughout the year. They are seasonal stars. The *Makoçe Wiçanłipi Wowapi – D(L)akota Sky Star Map* is arranged in order to show the constellations that are most visible each season. This assumes a viewing time of about three hours after sunset. In the actual night sky these stars would be seen overhead or in the south. For example if you look at the stars in the early summertime, a few hours after sunset you will see Hercules overhead and Scorpio low on the southern horizon. These are early summer stars.

The four directions are seen as spiritual and physical guideposts. Often seven directions are used which includes the four cardinal directions plus above, below and center. Many ceremonies and everyday prayers use the directions to focus and send the prayers. Albert White Hat explains the four directions as *Tatuye topa* - the four winds. The cardinal direction North in particular is associated with the wintertime and stillness. Trees and plants appear 'dead' on the outside in the winter, but they are still alive and growing on the inside, especially the roots. Each of the solstices and equinoxes mark the beginning of a season and are considered sacred days and good times to pray and have ceremony. Albert White Hat explains, "The seasons are described as births. Every season is a new birth" (White Hat Sr. 1999, 93-94).

Figure 1. *Makoçe Wiçanłipi Wowapi– D(L)akota Sky Star Map* created by Annette S. Lee and Jim Rock

3.2 D(L)akota Constellation Guide

Accompanying this map is the "D(L)akota Constellation Guide", written by Annette Lee and Jim Rock. The guide is arranged in order of the seasons. The northern constellations are circumpolar and therefore do not set below the horizon (as seen from mid-northern latitudes). They are seen all seasons.

3.3 Waniyetu – Winter Stars

Figure 2. Close up of *Nape* – Hand constellation

Nape – Chief's Hand – Orion, Eridanus.

This constellation refers to the story of the Chief who lost his hand. His trouble started when he became tired of sacrificing. The *Wakinyan* (Thunderbeings) hid his hand/arm in the sky. The constellation teaches the importance of sacrifice as part of the balance of life. The word *waçanłohnaka* means 'modeling extreme generosity' which the Chief failed to do for his people and he felt the consequences which we still see annually in the stars. *Nape* (hand) is overhead in the wintertime, and rises in late fall. Winter is the season that is hardest to survive and requires the most sacrifice.

Figure 3. Close up of *Mało Tipi/Mało Tipila* - Bear's Lodge

Maṭo Tipi/Maṭo Tipila - Bear's Lodge.

This constellation is connected with the Bear. It is overhead in the winter a few hours after sunset. The Bear's Lodge is paired with/mirrors with the sacred site, *Pṭe He Ġi* - Grey Buffalo Horn (Butte) - Devil's Tower. Traditionally *Wi Wanyanḡka Waḡipi*, the Sundance ceremony was held at Grey Horn Butte when this constellation is overhead during the day, i.e. summertime, particularly summer solstice. The Bear is strong and smart and helps lead us to the medicine plants. They are four-legged and sometimes two-legged like us.

Figure 4. Close up of *Ki Inyanḡka Oḡanḡku* – Racetrack constellation

Ki Inyanḡka Oḡanḡku - Racetrack - Wintercircle & *Ḡaḡ Hd/Gleška Wakaḡ* - Sacred Hoop – Wintercircle.

The Racetrack constellation is tied to the story of the Great Race between the four legged and the winged-ones to determine the fate of the two-legged, i.e. humans. The sacred racetrack can be seen in the red clay surrounding *Paha Sapa* - the Black Hills. The red color is the blood trail of the animals in the race.

Figure 5. Close up of *Tayamni* - Buffalo (three parts of)

Tayamni -Buffalo (three parts of) - Orion, Canis Major, Pleiades

The *Tayamni* constellation is a spirit animal that has characteristics of a buffalo embryo. There are three parts: *Tayamni Pa*- the head, *Tayamni Ḡaḡkahu* - backbone, *Tayamni Tuḡuhu/Ḡutuhu*-the ribs, and *Tayamni Siḡte*- the tail. The head is the Pleiades open star cluster. The backbone corresponds to Orion's Belt stars. The ribs are formed by connecting the backbone to Betelgeuse on the left and Rigel on the right. The brightest star in the night sky, Sirius, marks *Tayamni siḡte*- the tail. The buffalo embryo emerges from the Sacred Hoop or Womb constellation - Winter Circle.

Figure 6. Close up of *Zuzeca* - Snake

Zuzeca - Snake- Columbia, Puppis, Canis Major

The snake is sometimes portrayed as swallowing an egg which represents protecting the culture. The snake constellation may be represented on earth by the Serpentine Mounds in Ohio or other similar mounds.

3.4 *Ptanyetu* – Fall Stars

Figure 7. Close up of *Keya* – Turtle

Keya -Turtle – Pegasus

When a baby girl is born the umbilical cord is cut from the mother and placed in a beaded leather pouch in the shape of the turtle. It is said that when the physical connection with the mother is severed, the connection to the stars is renewed. The

turtle carries its home on its back, it lives long with a strong heart and therefore is connected to wisdom and perseverance.

Figure 8. Close up of *Caŋšaša Pusyapi/Ipusye* – Dried Red Willow

Caŋšaša Pusyapi/Ipusye -Dried Red Willow - Aries, Triangulum

The Red Willow constellation relates to one of the sacred plants used to pray with the pipe. The Red Willow constellation is seen at night in the Fall, but the 'Pipe Ceremony in the Stars' happens each year at sunrise on the Spring Equinox as the Sun, the Red Willow constellation and the Big Dipper line up along the eastern horizon.

Figure 9. Close up of *Heŋiaka* – Elk

Heŋiaka - Elk –Pisces

The Elk constellation is seen in the Fall a few hours after sunset. This is the same time that the elk lose their antlers to grow new ones i.e. rutting. The elk constellation symbolizes love, romance and fertility.

Figure 10. Close up of *Wiçinŋaŋna Šakowiŋ/Wiçinčala Šakowiŋ* – Seven Girls

Wiçinŋaŋna Šakowiŋ/Wiçinčala Šakowiŋ -Seven Girls – Pleiades

The Seven Girls constellation is a story about how small girls were taken from camp by a red eagle. The people could not kill the spirit bird so they called on Fallen Star to save them. He placed the seven little girls in the night sky. Remember that the Pleiades/Seven Girls is also the Buffalo's head.

3.5 *Bdocketu/Bloketu* – Summer Stars

Figure 11. Close up of *Ahdeška/Agleška* – Salamander

Ahdeška/Agleška -Salamander – Cygnus

When a baby boy is born the umbilical cord is cut from the mother and placed in a beaded leather pouch in the shape of the salamander. It is said that when the physical connection with the mother is severed, the connection to the stars is renewed. The salamander has characteristics of recovering from injury, agility and speed.

3.6 *Wetu* – Spring Stars

Figure 12. Close up of *Oçeti/Peta* – Fireplace/Fire

Oçeti/Peta -Fireplace/Fire - Leo

The Fire/ the Fireplace constellation is the sacred fire built to heat the sacred stones for the sweat lodge ceremony. The Winter Circle is also seen as the Sweat lodge/Womb in the stars and so the Fire/Fireplace opens to face the direction of the Winter Circle/the Sweat lodge.

Figure 13. Close up of *Wiçanłipi Sunkaku /Itkob u* – Younger Brother of Morning Star

Wiçanłipi Sunkaku /Itkob u, Ihuku Kigle, Anpo Wiçanłipi Sunkaku (younger brother of Morning star) - Younger Brother of Morning Star/Going toward/Under went it - Arcturus in Bootes

This is a very bright star at the bottom of Bootes, the Kite. It can be found by following the bend in the handle of the Big Dipper. It is seen overhead in the Spring-time sky a few hours after sunset.

3.7 Waziyata – North/Circumpolar Stars

Figure 14. Close up of *To Win/Tuŋ Wiŋ* – Blue Woman/Birth Woman

To Win/Tuŋ Wiŋ - Blue Woman/Birth Woman - Big Dipper/Ursa Major

Midwives and others pray to the Blue/Birth Woman Spirit so newborn babies will enter this world safely. She is a doorkeeper between worlds.

Wiçakiyuhapi - Stretcher -Big Dipper - Bowl & *Wasihdapi/Wasigłapi* - Mourners - Big Dipper - Handle

The Stretcher carries a person that has passed away into the spirit world. These are the four stars on the bowl of the Big Dipper. The Mourners are the three handle stars that are carrying the deceased.

Oçeti šakowiŋ - Seven sacred rites/council fires - Big Dipper/Ursa Major

The Big Dipper also represents the *Oçeti Sakowin*-Seven Council Fires of the Dakota, Lakota and Nakota nations.

Wiçakiyuhapi/ÇanÇinska - the dipper/wooden spoon - Big Dipper/Ursa Major

The Big Dipper is part of the 'Pipe Ceremony in the Stars' each year at sunrise on the Spring Equinox.

Figure 15. Close up of *Wiçanłipi Waziyata/Wiçanłipi Owanjila* – Star that stands in one place

Wiçanłipi Waziyata/Wiçanłipi Owanjila - Star which stands in one place - North Star –Polaris

According to Victor Douville (Rosebud Lakota), one story tells of how the North Star married *Tonwinj*, a human woman. She lived in the star world with him but missed her home. One day she dug up a turnip (even though she was told not to) and there was a hole. Through this hole she could see everyone back home. She fell threw the hole. Her son survived and later became the hero, Fallen Star. North Star was so sad from loosing his wife that he froze in the same spot.

According to Madeline White, (Sisseton Dakota), *Wiçanłipi Cekpa* or Twin Star is the mother of the Fallen Star hero. She and her beautiful twin sister both married handsome star men and were taken into the star world above. While there she dug up the turnip, which made the hole, through which she unsuccessfully tried to lower herself back down to Earth.

Figure 16. Close up of *Wakinyan* – Thunderbird

Wakinyan -Thunderbird - Draco, Ursa Minor& Precession Circle

The Thunderbird constellation lies at the center of the precession circle. The heart of the thunderbird is the center of the circle. Because the Sun and Moon pull on the Earth, it wobbles like a top as it orbits. It is a small effect, but is noticeable over thousands of years. One complete wobble is 26,000 years. This means that Polaris is above the North Pole today and for the next 1000 years, but this will change. For example, 5000 years ago the star Thuban (in our Thunderbird) served as the 'North star' for the Egyptians when they built the pyramids.

3.8 D(L)akota Star Vocabulary

Presented here is the D(L)akota Star Vocabulary that accompanies *Makoçe Wiçanłipi Wowapi*– D(L)akota Sky Star Map. Jim Rock, a Dakota language speaker and cultural consultant, led the compilation of this section.

Table 1. D(L)akota Constellations

	D(L)akota	Related Greek Constellations
Winter	<i>Waniyetu</i>	
Hand	<i>Nape</i>	Orion, Eridanus
Bear's Lodge	<i>Maṭo Tipi/Maṭo Tipila</i>	Gemini
Racetrack	<i>Ki Iṇyaṇka Oçaṇku</i>	Winter Circle
Sacred hoop	<i>Çaṇ Hd/Gleška Wakaṇ</i>	Winter Circle
Sweat lodge	<i>Inipi/Initipi</i>	Winter Circle
Buffalo (three parts of)	<i>Tayamni</i>	Orion, Canis Major, Pleiades
Buffalo embryo head	<i>Tayamni pa</i>	Pleiades
Buffalo embryo ribs	<i>Tayamni cutuhu</i>	Betelgeuse & Rigel
Buffalo embryo backbone	<i>Tayamni caṇkahu</i>	Orion's belt
Buffalo embryo tail	<i>Tayamni siṇte</i>	Sirius
Snake	<i>Zuzeca/Zuzuheça</i>	Columbia, Puppis, Canis Major
Fall	<i>Ptaṇyetu</i>	
Turtle	<i>Keya</i>	Pegasus
Dried Red Willow	<i>Caṇšaša Pusyapi/Ipusye</i>	Aries, Triangulum
Elk	<i>Heḥaka/Upaṇ</i>	Pisces
	<i>Wiçinṇaṇna Šakowiṇ/Wiçinçala</i>	
Seven Girls	<i>Šakowiṇ</i>	Pleiades
Summer	<i>Bdoketu/Bloketu</i>	
Salamander	<i>Ahdeška/Agleška</i>	Cygnus
Spring	<i>Wetu</i>	
Fireplace/Fire	<i>Oçeti/Peta</i>	Leo
	<i>Itkob u (going toward), Ihuku Kigle</i>	
	<i>(Under went it), Aṇpo Wiçaṇḥipi</i>	
	<i>Suṇkaku (younger brother of Morn-</i>	
Arcturus	<i>ing star)</i>	Bright star in Bootes
North	<i>Waziyata</i>	
Blue Woman/Birth Woman	<i>To Win/Tuṇ Wiṇ</i>	Big Dipper - inside Bowl
Stretcher	<i>Wiçakiyuhapi</i>	Big Dipper - Bowl stars
Mourners	<i>Wašihdapi/Wašigłapi</i>	Big Dipper - Handle stars
Skunk	<i>Maṇka/Maka</i>	Big Dipper
Dipper/Wooden Spoon	<i>Wicakiyuhapi/Can cinksa</i>	Big Dipper
Seven sacred rites/Council		
fires	<i>Oçeti šakowiṇ</i>	Big Dipper
	<i>Wiçaṇḥipi waziyata/Wiçaṇḥipi</i>	
	<i>Owaṇḥila (Star which stands in one</i>	
North Star	<i>place)</i>	Polaris
Thunderbird	<i>Wakiṇyaṇ</i>	Draco, Ursa Minor

The following table, Table 2, presents selected D(L)akota vocabulary related to celestial objects. There are stories and additional teachings that are contained in many of these words that will be presented in subsequent disseminations.

Table 2. D(L)akota Star Vocabulary

Celestial Object	D(L)akota
Star	<i>Wiçaŋłipi</i>
Star Nation	<i>Wiçaŋłipi Oyate</i>
Moon	<i>Haŋhepi Wi /Hanyetu Wi/Haŋwi /Haŋwi (Night Sun)</i>
Moon	<i>Anog Ite (Double Faced Woman)</i>
Sun	<i>Wi, Anpetu Wi (Day Sun)</i>
Venus - Morning Star	<i>Anpo Wiçaŋłipi /Anpetu D/Luta</i>
Ecliptic	<i>Çaŋku Wiçaŋłipi Omani/Malıpiya Maka Iciyagle</i>
Milky Way	<i>Wanaŋi Taçaŋku (Road of the spirits/Ghost trail)</i>
Meteor/Falling star	<i>Wiçaŋłipi Hiŋłipaya/Wiahpihinhpaya/Wolipe Wakan</i>
Universe	<i>Wamakohnaka/Wamakhognaka/Makasitomni</i>
Aurora Borealis (Northern Lights)	<i>Wanaŋi Tawaçipi (Spirit Dancers)/Malıpiyataniŋ/Wiyosaya</i>
Comet	<i>Wiçaŋłipi Sintetuŋ/Wiçaŋłipi Sinŋe Yukan/Wicanpisintetuŋ</i>
Star map	<i>Makoçe Wiçaŋłipi Wowapi</i>
Planet	<i>Wiçaŋłipi Omani/Wiçaŋłipi Nuni/Wiçaŋłipi Sa/</i>
Sundogs	<i>Wiaceic' iti (sun making fire)</i>
Solar Eclipse	<i>Witha Wit' e (Sun dies)</i>
Lunar Eclipse	<i>Haŋwitha</i>
Constellations	<i>Wiçaŋłipi Tiospaye (Extended family)</i>
Galaxies	<i>Okakše Taŋka Wiçaŋłipi Ota/Wiçaŋłipi Optaye Taŋka</i>
Groups of galaxies	<i>Wiçaŋłipi Oyate (Nation)</i>
Summer solstice	<i>Bdoke cokaya/Bloke cokaya/Anpawi (morning sun)</i>
Winter solstice	<i>Waniyetu cokaya/Nahomni (Swing around)</i>
Spring Equinox	<i>Wetu Anpa Hanyetu Iyehaŋtu</i>
Fall Equinox	<i>Ptaŋyetu Anpa Hanyetu Iyehaŋtu</i>
Seasons	<i>Omaka/Makonçage (Earth grows with time change)</i>
North	<i>Waziyata</i>
South	<i>Itokagata</i>
East	<i>Wiohinyanpata</i>
West	<i>Wiyolıpeyata</i>
Above	<i>Wankantu/Waŋkatika</i>
Below	<i>Kutakiya/Kutkiya</i>
Center	<i>Çokata/Çokaya</i>
Buffalo embryo head	<i>Tayamni pa</i>
Buffalo embryo ribs	<i>Tayamni cutuhu</i>
Buffalo embryo backbone	<i>Tayamni çaŋkahu</i>
Buffalo embryo tail	<i>Tayamni sinŋe</i>

4. Conclusions and Future Directions

The methods presented here are interdisciplinary. Astronomy, culture, art, language, are all represented. And yet the delivery of such an in-depth, interdisciplinary topic like indigenous astronomy can be overwhelming to students, adults or youth, that have grown up with light pollution, tall buildings, and computers. It is important to retain a cultural context and respectfulness when using this material.

Some teachings related to the D(L)akota star knowledge were not received by current mainstream, academic ways of knowing, but were received through traditional practices such as ceremony, giving tobacco to elders, vision quests, etc. When developing a framework of native star knowledge that can be shared with both native and non-native participants protocol is an essential part of the discussion. For example there are certain cultural stories that relate to the stars and the traditional protocol is that these sacred stories are only to be told “when there is snow on the ground”. We are respectful of this protocol and will not tell the stories at the inappropriate times. Educators must bear the burden of learning of these protocols and respecting them in order to proceed with authenticity and integrity.

This map and related materials were presented at the *Native Skywatchers Middle School Teachers Workshops* June 2012 & 2013 held at St. Cloud State University, St. Cloud, MN and Fond du Lac Tribal and Community College, Cloquet, MN. The *Native Skywatchers* workshop (June 2012, 2013) and the *Native Skywatchers* course (Spring 2012, 2013) at St. Cloud State University were funded by NASA-MN Space Grant and St. Cloud State University in collaboration with Fond du Lac Tribal and Community College.

Visit the *Native Skywatchers* website for upcoming events and downloads: http://web.stcloudstate.edu/planetarium/native_skywatchers.html

Lastly, *Native Skywatchers* is a collaborative approach. Users of these materials are urged to seek out elders and native community members to bring into the classroom. Materials represented here should be viewed as a beginning.

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