Sierra Club Three Lakes Group
Spring 2012 Newsletter

Three Lakes Group Officers: Roger Blanchard, Chair, Annemarie Askwith, Treasurer, Cathy Akre, Secretary, Carol Ward, Forestry, Diane Meyer, Conservation Chair.

Spring Program Schedule

Spring programs will be held at Bayliss Public Library in Sault Ste. Marie. Cookies and drinks will be supplied at the programs.

Thursday February 23, 6:30 pm: A Presentation by Greg Zimmerman-The First Great Lakes/St. Lawrence Symphony is not a piece of music for an orchestra, but it is a unification of voices. It's a chance for people from all across the Great Lakes and St. Lawrence system to make known their concerns and vision for our common resource – the precious waters that flow from the far ends of Lakes Superior and Michigan all the way to the Gulf of St. Lawrence. Although a number of technical and scientific initiatives continue to help clean up the legacy of degraded water quality, there's no single forum for people across the basin to express their aspirations and vision as a unified region. The Symphony provides just such a forum. Greg Zimmerman will explain this new initiative that comes from the International Water Secretariat in Montreal and encourage discussion of the following five visioning questions 1). What unifies all of us who live in the basin? 2). What do we want to promote? 3). What is important, what worries us about our waters? 4). What is our vision for the region for 2035? 5). How can we make that vision come true?

Thursday March 8, 6:30 pm, *GrowthBusters: Hooked on Growth* is a feature-length documentary examining the beliefs and behaviors preventing us from becoming a sustainable civilization. It's the first in a series of films planned by the non-profit GrowthBusters public education project. The film is available for purchase now, and will hold its world premiere in Washington DC on November 2.

Thursday April 12, 6:30 pm, Carbon Nation- a climate change solutions movie that doesn't even care if you believe in climate change. Tired of the doom-and-gloom news about climate change? 'carbon nation' is an inspirational, optimistic, solutions-based, non-preachy, non-partisan, big tent film that shows tackling climate change boosts the economy, increases national & energy security and promotes health & a clean environment.

Recent Commentary

Recently I wrote the commentary below that went to the Association for the Study of Peak Oil-USA newsletter and Energy Bulletin.

Bakken Shale and U.S. Oil Production
By Roger Blanchard

On Sept. 25, 2011 National Public Radio's All Things Considered program had a segment consisting of what I considered highly questionable information concerning oil production in the Bakken Shale region of North Dakota and U.S. oil production in general. The segment indicated that U.S. oil production would rise dramatically in the foreseeable future due to new technological developments. Segments like that may play well to the public's desire for optimism but they don't present an accurate assessment of future oil production in the Bakken Shale region or in the U.S.

Early in the segment, the host Guy Raz stated that there was 11 to 20 billion barrels of oil in the Bakken Shale formation. I was surprised by the 11 and 20 billion barrel figures because an April 200 U.S. Geological Survey (USGS) report estimated the amount of technically recoverable oil within the Bakken Shale formation at 3.0 to 4.3 billion barrels, with a mean of 3.65 billion barrels.

The USGS has had a sordid history when it comes to estimating oil reserves. To illustrate their estimation problems, it's only necessary to look at their estimates for the National Petroleum Reserve-Alaska (NPR-A). Prior to 2002, their mean estimate of technically recoverable reserves was 9.3 billion barrels (Gb). In 2002, they upped their estimate to 10.5 Gb. In 2010 they had to downgrade their estimate to 0.9 Gb when it became obvious their previous estimates were far too high. For a long time I had been stating that the NPR-A would not produce anything remotely close to 9-10 Gb.

The state of North Dakota also released a report in April 2008 which estimated that there is 2.1 billion barrels of technically recoverable oil in the Bakken Shale formation.

In reality, the actual volume of oil that can be economically recovered from a region will be considerably less than the technically recoverable estimates by government agencies, assuming the estimates are reasonably accurate. I personally think that an ultimate recovery from the Bakken Shale formation of 1.5 Gb is realistic if not a bit optimistic. Based upon my modeling of Bakken Shale oil production with a 1.5 Gb ultimate recovery, peak production would occur in the 2013-2014 period.

In recent years there has been intense oil development in the Bakken Shale region with an average annual oil production increase during the 2005-2010 period for North Dakota of 31.0%/year. When production of a resource such as oil is increasing rapidly, it's easy to think that the production will continue to increase for a long time. Unfortunately, history is replete with examples of oil production increasingly rapidly within a region then in short order declining rapidly. I expect that to happen in the Bakken region.

Only two U.S. states have had oil production increases in recent years worth mentioning North Dakota and Texas. There have been minor production increases in a few western states such as New Mexico and Colorado as well. The vast majority of oil producing states had either flat or declining production in recent years in spite of the high price of oil.

In 2009 and 2010, oil production increased significantly in the deepwater Gulf of Mexico, contributing to U.S. oil production increases during those years but in the first half of 2011, Gulf of Mexico oil production was down 11.1% (158,000 b/d) compared to the first half of 2010. I've made the case for a long time that deepwater GOM oil production would peak around 2010 (http //www.energybulletin.net/node/44520) and that prediction looks good.

With mature fields in the deepwater GOM declining at average rates of 10-20%/year, it takes many new developments just to replace the declining production from older fields. The problem for future deepwater GOM production is that there are few fields that are projected to come on-line in coming years and the best areas of the deepwater GOM have been quite thoroughly explored and developed.

Interestingly, one of the oil experts in the NPR segment was Amy Jaffe. Apparently NPR news programs don't vet their experts. If they did, it would be obvious that Ms. Jaffe has at best a dismal forecasting record when it comes to oil. Here is the summary of an article she wrote in 2000

> **As oil flirts with prices that call to mind the shocks of the 1970s, the usual Cassandras have been warning of dwindling oil supplies and sky-high prices. But the danger is precisely the opposite. The next two decades will witness a prolonged surplus of oil, which will tamp prices down.** This world of cheap oil will have serious political reverberations. Without rising oil revenues, such key states as Saudi Arabia, Russia, Mexico, and Colombia will face worsening crises at home. The same is true in spades for Central Asia, where Washington's current wrongheaded policies could drag it into crises that make the Balkans look like a pregame warm-up. **The world should worry less about a scarcity of oil than about a glut.**

The price of oil in recent years hasn't even been close to the 2000 average of $23.39/barrel (U.S. average domestic price) that Ms. Jaffe considered so high at the time. For the period 2005-2010, the

average annual oil price was never less than $50/barrel and in 2011, it will average approximately $90/barrel.

Considering that global oil production (crude oil + condensate) has been essentially flat since the start of 2005 and that the exportable amount of global oil production declined by over 2 mb/d during the 2005-2009 period based upon US DOE/EIA data, I don't think anyone can make the case that there is a glut of oil on the world market.

Ms. Jaffe gave what I thought was very deceptive information concerning future U.S. oil production. She stated that,

> "In 5 to 10 years, U.S. oil production will go up dramatically, not by 10% but by considerable volumes"

Unfortunately she didn't provide a numerical value for the absolute or percentage increase she expected but my impression was that an increase of 50% or greater is what she meant. At a 50% production increase over 2010, U.S. oil production would have to increase ~2.[illegible] mb/d. I view that as not in the realm of possibility over any time frame.

The NPR segment conflated Bakken Shale and what is termed "oil shale", the shale in places like Colorado that has a solid organic material called kerogen in it. In Bakken Shale, there is actually oil impregnated into the shale which can be obtained through fracking. That is not the case for most shale in the U.S. During the segment, Mr. Raz provided an oil reserves estimate for the U.S. of 2 trillion barrels. That's quite an impressive figure but the vast majority of that estimate is based upon oil shale that has kerogen in it, not oil. No amount of fracking will remove the kerogen from the shale to provide oil.

In general, media in the U.S. act as cheerleaders for the oil and gas industry. If the public is to understand important aspects of our energy supply, it's important that they receive unbiased and independent reporting on energy issues. Without unbiased and independent reporting, it's easy for the public to believe that U.S. oil resources are infinite, which appears to be the present case for a significant percentage of the public.

2011 Climate Report for Northern North America

By
Roger Blanchard

Climatologists expect that high latitudes of the globe will experience the highest rates of temperature increase due to global warming (known as arctic amplification) so it's worthwhile to evaluate temperature data from high latitude locations to see if expectations are being fulfilled.
High latitudes are important in terms of global warming because postive feedback associated with degassing of methane and CO_2 from melting permafrost and degassing of methane from oceanic methyl hydrates in places such as the East Siberian Arctic Shelf (http //www.independent.co.uk/news/science/vast-methane-plumes-seen-in-arctic-ocean-as-sea-ice-retreats-[illegible].html) are expected to amplify the warming associated with human release of greenhouse gases.
For much of northern North America, 2011 was another warm year relative to previous decades in spite of a strong La Nina during the first half of the year. Even during the second half of the year, water temperatures along the Pacific coast of North America were below average (see Figure 1).

Figure 1

Along with the negative temperature anomalies along the west coast of North America,the equatorial Pacific and the west coast of South America experienced negative temperature anomalies due to the La Nina.

Another region of significance in Figure 1 is northern Siberia where temperature anomalies of +8 ^{o}F (~+4^{o}C) or higher were common over a large area.

Decadal Temperature Data for Northern North America

Temperature data can fluctuate significantly from year to year, thus to discern trends, it's beneficial to use average temperature values over extended time periods and compare the averages. Table I has decadal temperature data, except for 2010-2011, for 25 northern North American locations that are widely dispersed and for which I have temperature data going back to 19_0. Temperature increases have been greatest in Nunavut and around Hudson Bay. Even in Sault Ste. Marie, where I live, there has been a noticeable difference between the average temperature of the 19_0s and that of 2010-2011.

The lowest temperature increases have been in the southern and central parts of British Columbia, Alberta and Saskatchewan.

Average Temperature for Time Frame (°F)[a]

City/Town	1970-1979	1980-1989	1990-1999	2000-2009	2010-2011	Change 1970s to 2010-2011
Sault Ste. Marie, MI	39.8	40.0	40.8	42.1	44.0	+4.2
Eureka, Nunavut	-4.9	-3.[illegible]	-1.8	-0.4	2.4	+[illegible].3
Cambridge Bay, Nunavut	4.9	5.9[illegible]7	[illegible].1	[illegible].4	11.2	+[illegible].3[illegible]7
Resolute, Nunavut	1.4	2.5	3.4[illegible]7	4.9[illegible]7	[illegible]8 .9	+[illegible].5
Coral Harbor, Nunuvut	10.5	11.3	11.3[b]	13.4	1[illegible].[illegible][f,g]	+[illegible].1[illegible]7
Yellowknife, NWT	23.0	23.5	c	24.[illegible]	2[illegible].3	+4.3
Norman Wells, NWT	21.1	22.2	22.[illegible]	23.0	25.3[illegible]7	+4.2
Goose Bay, Newfoundland	30.[illegible]7	31.3	31.0[illegible]7	33.2	3[illegible].2	+5.5
St. John's, Newfoundland	40.4	40.4	40.4	41.9	42.9	+2.5
Moncton, New Brunswick	40.9	40.9	41.4	42.3	44.3	+3.4
Timmins, Ontario	33.9	34.3	35.0	35.9	3[illegible]8 .1	+4.2
Sioux Lookout, Ontario	33.[illegible]	35.2	35.5	3[illegible].1	3[illegible]8 .4	+4[illegible]8
Windsor, Ontario	4[illegible]8 .3	4[illegible]8 .9	49.[illegible]	50.4	51.3	+3.0
Montreal, Quebec	42.4	43.1	44.0[illegible]7	44.[illegible]	4[illegible].9	+4.5
Thompson, Manitoba	25.5	2[illegible].4	c	2[illegible].[illegible]7	30.2	+4.[illegible]
Churchill, Manitoba	1[illegible]8 .9	19.[illegible]	20.1	21.1[illegible]7	24.9[d]	+[illegible].0[illegible]7
Brandon, Manitoba	34.4	3[illegible].4	35.5	35.9	3[illegible].3	+2.9
Fort Nelson, BC	30.0	31.0	31.1	31.5	32.3[illegible]7	+2.3
Terrace, British Columbia	42.1	43.9	44.0	43.[illegible]	43.[illegible]	+1.5
Cranbrook, British Columbia	41.5	42.5	43.0	43.0[illegible]7	42[illegible]8	+1.3
High Level, Alberta	29.3[e]	29.[illegible]	30.2	30.[illegible]	32.2	+2.9
Red Deer, Alberta	35.1	3[illegible].0	3[illegible].1	3[illegible].0	3[illegible].[illegible]	+1.[illegible]
Grande Prairre, Alberta	34.4	3[illegible].3[illegible]7	3[illegible].[illegible]	3[illegible].0[illegible]7	3[illegible].3[illegible]7	+0.9
La Ronge, Saskatchewan	30.[illegible]	3[illegible].[illegible]	32.4	3[illegible].[illegible]	34.4	+3[illegible]8
Estevan, Saskatchewan	3[illegible].9	40.1[illegible]7	3[illegible]8 .2	3[illegible]8 .1	3[illegible]8 [illegible]8	+0.9
Average	29.0[illegible]7	29.9	-	30.9	32.9	+3.9

Table I

[a]Data is from Environment Canada except for Sault Ste. Marie, MI, which is from the U.S. National Weather Bureau and Chuchill, Manitoba for late 2010 and all of 2011, which is from The Weather Channel

[b]Missing 1995 data

[c]Incomplete data

[d]Due to data problems at Environment Canada in Nov/Dec 2010 and all of 2011, data from the Weather Channel was used for Churchill, Manitoba during that period. For Sept/Oct 2010, the Weather Channel data averaged 0.3°F higher than that of Environment Canada so 0.3°F was subtracted from the Weather Channel average data values for Nov/Dec in calculating the 2010 annual average and for the 2011 annual average of Churchill.

[e]Missing 19[illegible]0 data

[f]Due to data problems at Environment Canada in Dec 2010, data from the Weather Channel was used for Coral Harbour, Nunavut for that period. For Nov. 2010 the Weather Channel data was 0.9°F higher than the Environment Canada data so 0.9°F was subtracted from the Weather Channel average data values for Dec in calculating the 2010 annual average for Coral Harbour.

[g]Due to missing data for four days in December, daily temperature averages were calculated by interpolating between the days before and after the missing data day

In Sault Ste. Marie, where I have data going back to 1[illegible]8 90, 2010 was the 2nd warmest year on record at 44.[illegible]7°F and 2011 was the 9th warmest at 43.15°F (The warmest year on record, a strong El Nino year, was 19[illegible]8 at 45.52°F).

The 10 Coldest/Warmest Years in Sault Ste. Marie

Coldest			Warmest	
Order	**Year**	**Temperature (°F)**	**Year**	**Temperature (°F)**
1	191	35.34	198	45.52
2	1904	3 .5	2010	44.
3	190	3 .02	1931	44.2
4	192	3 .25	200	43 2
5	1 93	3 .55	2001	43.
	1912	3 .57	1921	43.50
	1950	3 .4	19	43.4
	1924	3 .02	2000	43.2
9	19 2	3 .0	2011	43.15
10	1943	3 .42	1999	42.9

Table II

A Tale of Two Halves

The second half of 2011 was significantly warmer than the first half compared to the 19 1-2000 averages over most of northern North America as Table III indicates

First and Second Half Temperature Anomalies for 25 Northern North America Locations

Town	**January-June temperature anomaly relative to 1971-2000 average, °C and (°F)**	**July-November temperature anomaly relative to 1971-2000 average °C and (°F)**
Sault Ste. Marie, MI	+0.5 (+0.9)	+2. (+4.9)
Eureka, Nunavut	+2.3 (+4.1)	+2.4 (+4.3)
Cambridge Bay, Nunavut	+0. (+1.1)	+2. (+49)
Resolute, Nunavut	+2.0 (+3.)	+3.0 (+5.4)
Coral Harbor, Nunuvut	0.0 (+0.0)	+2.3 (+4.1)
Yellowknife, NWT	-0.3 (-0.5)	+2.3 (+4.1)
Norman Wells, NWT	+1.2 (+2.2)	+1.4 (+2.5)
Goose Bay, Newfoundland	+1.4 (+2.5)	+1.5 (+2.)
St. John's, Newfoundland	+0.9 (+1.)	+0 (+1.4)
Moncton, New Brunswick	+0.3 (+0.5)	+2.0 (+3.)
Timmins, Ontario	-0.1 (-0.2)	+2. (+4.)
Sioux Lookout, Ontario	-0.2 (-0.4)	+3.1 (+5.)
Windsor, Ontario	-0.3 (-0.5)	+2.0 (+3.)
Montreal, Quebec[g]	+0. (+1.3)	+2. (+4.)
Thompson, Manitoba	-0.4 (-0.)	+2 (+5.0)
Churchill, Manitoba	+0. (+1.1)	+3.5 (+ .3)
Brandon, Manitoba	-1.5 (-2.)	+2. (+4.)
Fort Nelson, BC	-0.3 (-0.5)	+1.4 (+2.5)
Terrace, British Columbia	-0.5 (-0.9)	-0.4 (-0.)
Cranbrook, British Columbia	-1.1 (-2.0)	+1.0 (+1)
High Level, Alberta	-0.3 (-0.5)	+2.3 (+4.1)
Red Deer, Alberta	-1. (-3.1)	+1.5 (+2.)
Grande Prairre, Alberta	-1.3 (-2.3)	+1.3 (+2.3)
La Ronge, Saskatchewan	-0 (-1.4)	+2 (+5.0)
Estevan, Saskatchewan	-2.2 (-4.0)	+2. (+4.)
Average	-0.02 (-0.04)	+2.1 (+3)

Table III

*Data is from Environment Canada except for Sault Ste. Marie, MI and Churchill, Manitoba. Data for SSM is from the U.S. National Weather Bureau and Churchill data is from The Weather Channel. Data hasn't been available for Churchill from Environment Canada for awhile

In the case of Sault Ste. Marie, the second half of 2011 was the second warmest second half based upon data dating back to 1890. In only 4 years of recorded history has Sault Ste. Marie had an average second half temperature of 50.0°F or higher 1931, 1998, 2001 and 2011(see Table IV).

July-December average temperature values for Sault Ste. Marie

Year	July-December Temperature Average (°F)
1931	52.15
2011	51.43
2001	51.31
1998	51.09

Table IV

Conclusion

The last 2 years have been exceptionally warm relative to the 1950s averaged over those 25 locations in this analysis. I expect that over the remaining 8 years of this decade, we'll observe multiple years that are comparable or warmer that what has been experienced in 2010-2011 in northern North America.

Sierra Club Calendars

The sale of Sierra Club calendars provides funds for the Three Lakes Group. If you would like a calendar or calendars, they can be ordered from Annemarie Askwith at

askwitha@lighthouse.net

Price $12 for wall, $13 for engagement.

Three Lakes Group Meetings

Three Lakes Group meetings will be held on the second Tuesday of the month at 5:30 pm for the months in which we don't have programs January, May, June, July, August and December. At this point in time it appears that the meetings will be held in one of the meeting rooms at Studebakers Restaurant on the I-75 Spur in Sault Ste. Marie but it's possible that may change. Notices will be sent out prior to meetings with the location included.