

## *Across the Fence*

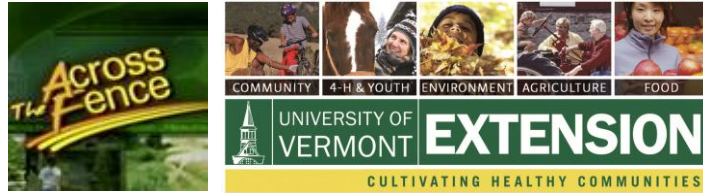
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## TRANSCRIPT

EPISODE DATE: 8/31/11

EPISODE NAME: Climate Change in Vermont

Good afternoon and thanks for joining us I'm Judy Simpson. If there's one subject higher I heard a lot about has its climate change. This afternoon we're going to learn about some of the basics of climate change or global warming and we're going to discuss some of the climate changes occurring in a region. Joining me are Dave Kestenbaum from the University of Vermont extension and Alex Galler of the Vermont agency of natural resources. Welcome to both of you. Dave climate change is kind of a touchy subject to some people we're not here to change anybody's mind you're just talking about some of the facts.

Dave.: No Alex and I are not here to change anyone's minds or convince them. For me I find the science speaks for itself. Most folks don't need much convincing all. Much like the science behind smoking has linked smoking to cancer the science behind climate change has done a very good job about linking human activity to increased greenhouse gases in the atmosphere to warming climate. What Alex and I are here to talk about today are some of the documented impacts of karma change we've seen in Vermont. Some of the basics behind the science of climate change as well as some of the adaptation strategies we as Vermonters can embrace in order to deal with the realities of the changing climate.

Judy.: Two you tell us a little bit of the background as to why science and researchers are concerned about climate change?

Dave.: Believe that are not as far back as 1890 there was a researcher studying the ice ages and he speculated that lower levels of carbon dioxide in the atmosphere may have caused cooler planet and induce the ice ages. Then fast forward to 1938 there's another group of scientists and they speculated that humans are beginning to burn large quantities of fossil fuel in these fossil fuels are hitting carbon dioxide into the atmosphere. They wondered that us as humans might alter the ecosystem increase levels of Co2 in the atmosphere and that might in turn cause the planet to warm. In the 1970s and eighties researchers began to see those large scale increases of Co2 in the atmosphere and begins to notice a warming climate. That concerned a lot of people including governments from around the world and that sparked a whole rush of folks trying to gather more data and information on climate change. There were thousands upon thousands of scientific studies that occurred. Those studies really began to draw a stronger link and the most famous of those studies is the intergovernmental panels on climate change report which was released in 2007. With that report shows is that warming of the climate is unequivocal and it's predicted that if morning persists these changes are going to put the health and safety of billions of people around the planet at risk. This was an interesting report in fact it was a compilation of hundreds of reports from scientists around the globe.

Judy.: There's some important numbers in the climate change discussion as will show we have a slide that explains the numbers of atmospheric carbon.

Dave.: Sure at the top of the slide there's three numbers the first number is 280 the next number is 315 in the final number is 392.5 of those numbers represent the levels of carbon dioxide in the atmosphere in parts per 1,000,000. The first number 280 me is from 1750 and that final number 392.5 is from today. You noticed that's a pretty drastic increase of over 100 parts per 1,000,000. It shows a trend of more carbon dioxide in the atmosphere over time through the industrial revolution when people are using more fossil fuels. Most scientists agree that we need to stabilize greenhouse gases at 350 to 450 parts per 1,000,000 in order to avoid the catastrophic impacts of climate change. What that means we might be over the threshold already and have pretty serious work to do in order to bring ourselves back from the threshold.

Judy.: If we could take a look at that still again there's another graphic in the corner they might want to explain.

Alex.: As Dave just explained there's a relationship between the concentration of Co<sub>2</sub> carbon dioxide in our atmosphere and the rise in global temperature. This relationship can be explained by what is called a greenhouse gas effect. With the greenhouse gas effect you have the sun a mating rays or energy into our atmosphere as these raise enter our atmosphere they hit the contents inside and making it much as and a greenhouse where you have sun that enters a greenhouse wall through the glass and heats the contents. However a greenhouse when it becomes too warm you can open event or turn off and to regulate that temperature. Unfortunately in our atmosphere we don't have a Co<sub>2</sub> trap door and it's the Co<sub>2</sub> that trapping this energy in our atmosphere. Making matters worse we keep pumping more Co<sub>2</sub> into our atmosphere and we're doing it faster than forests can convert the Co<sub>2</sub> and soak it up. Be the result of this is seen it in a warmer climate and you can like in that increase in Co<sub>2</sub> to affect your glass wall that a greenhouse. Ultimately what we'll see is what we are seeing is global rise in temperature.

Judy.: People often confuse climate change in the terms of weather and climate and there's an important difference.

Alex.: Yes there is. Weather is a short term event. We can see there's an individual snowstorm. This could be a snowstorm or rain event but the key is is that a short term. Climate is long-term. As you can see in the picture to the right there's a man measuring the annual snow depth. This is an average taken over many years and combined. But the best analogy I've come across so far comes from a six grader. He says when you wake up in the morning and you look outside the decide what you want in on for the day that's the weather however when you go to the store and you buy your wardrobe your dressing or buying close for the climate.

Judy.: Interesting. You brought along another slide that shows two different scenarios.

Alex.: Yes the first scenario. Let's start off by saying right now our energy sector is very fossil fuel intensive and fossil fuels such as natural gas or coal they omit a lot of Co<sub>2</sub>. Also our lifestyle is that of a personal lifestyle. Individual transportation. So if we take the first scenario and look at the map you'll find in 50 years Vermont's climate could increasing temperature by about 3°. That translates to car and a West Virginia. If we extend that to 100 years we might end up in Georgia. If we change the way we do things and rely more on renewable energies and we change our habits to a more of collective culture where we use public transportation then we might change things and that projection is a second case scenario on the slide. That shows after 50 years we might only end up in Pennsylvania type Weather and West Virginia after hundred years but there's also the potential and 100 years we could reduce Co<sub>2</sub> omissions so much that we might actually have the possibility of restoring our climate to car and a Vermont.

Judy.: Dave some of the impacts are measurements of climate change that can be shown in Vermont what are they?

Dave.: From the period of 1976 to 2005 the study was done on the Champlain valley within the Champlain valley we saw 2.1°Fahrenheit increase in temperature. We saw a 3 inch increase in the precipitation from rain and snowfall from the previous 80 year period. We've also seen later icing of the lake and less icing of the lake throughout the whole season. Other impacts also include a shorter maple sugar season as well as even earlier blooms of certain flowers on each year. The big take away picture is what we have seen over the last 30 years in the Champlain valley is a warmer climate and a wetter climate. This is also seen by a 1 foot increase in average lake level at the king street ferry docks from 1976 to 2005.

Judy.: Some of the data for the past 30 years scientists are able to make predictions about our future. What do we have in store?

Dave.: It continues our trend. Folks are looking at a warmer weather climate with more extreme storm events. One scientist I know describe it as global weather weirdness. Where regular patterns of the past might not occur as we've known them. In the Champlain valley what folks are predicting is a 1-11° increase in temperature. A 10-15% increase in precipitation which translates into about 4 to 6 inches more precipitation following a snow and rain but a greater percentage of that for precipitation falling as rain. What that might mean for Vermonters is that if we're going to need to prepare for these more extreme weather events.

Judy.: What kind of other impacts will that have? Even to crops and such.

Dave.: As far as crops go a farmer will start planting crops and will adapt to a warmer weather with a longer growing season and would be more resilient to deal with flash flooding or long periods of rain long dry spells those extreme weather events. We might actually lose our maple forests which means that Vermont might not be able to produce Maple Syrup our forests might change to the type of forests that you see in southern Appalachian.

Judy.: Alex people will be watching this and wondering what they can do and how much are Vermonters omitting?

Alex.: The agency of natural resources have actually conducted and inventoried over greenhouse gas emissions and in 2008 we omitted 8.4 million metric tons of Co2 into our atmosphere. If you break this down we're looking at about 14 metric tons per capita and this comes in various forms whether that's transportation or electricity generation agriculture home heating fuel those types of things.

Judy.: So where's the bulk of our missions come from?

Alex.: The bulk of our missions if you bring up a slide comes from transportation sector. This is the case largely because our energy sector is so clean. We rely heavily on hydro Quebec as many people know this and also we've had Vermont Yankee which doesn't submit any Co2. This shifts the focus to our transportation sector and we live in a very rural state. As such a lot of the populace in our state lives far from major thoroughfares so they cannot access public transportation in such.

Judy.: The second biggest contributor though is heating.

Alex.: Yes we live in one of the colder states obviously so we do rely on heating clothes a lot. A lot of the problem and that is we use or oil and natural gas and propane and he our homes. Those are fossil fuels and our carbon intensive.

Judy.: Overall Vermonters are doing a pretty good job in reducing greenhouse gases?

Alex.: Yes. In 2008 we actually Vermonters omitted 40% last Co2 than your average American. Since 2004 we've been reducing our greenhouse gases.

Judy.: You touched on mitigation and adaptation one of those terms mean?

Dave.: Sure adaptation is about planning for the future adapting to a Vermont that is warmer. Mitigation is about us as a society collectively making a theft to try to minimize the impacts of climate change. Examples of medication might be Vermont setting a goal of reducing greenhouse gas emissions by 80% and then us as Vermonters taking steps such as moving away from fuel oil to heat our homes. Insulate our home so they're more efficient. Watching how much we drive really living a lower impact lifestyle.

Judy.: And what people do individually to make a difference?

Dave.: Sure what each of us do collectively us that a simple as changing the incandescent all in your home to a compact fluorescent or an led light will increase the efficiency of how you light your home by 80 to 90%. And those small steps make a difference.

Judy.: And working viewers get more information?

Dave.: The state of Vermont has the Vermont climate change information web site they can go to [WWW.VT climate change.us](http://WWW.VT climate change.us).

Judy.: I know we've talked about a lot of big issues but I think it is as important to sort of bring it all back down to an individual contribution can make a difference home.

Dave.: Absolutely.

Judy.: And also we talk about gasoline driving smaller cars would help.

Alex.: Yes you really should only by a car that's as big as you need. It's very important to pay attention to the fuel economy figure.

Judy.: All right I would like to thank both of you for joining me today. That's our program for today I'm Judy Simpson all see you again next time on across the fence.

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