

Science, Earth & Spirit



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‘This Sacred Earth’

Green Mountain College

October 24, 2014

Outline



- Interplay of science, nature and truth
- Climate system and life
- Our responsibility, our choices
- *Discussion*
 - *Akwesasne world-view*

"I do not know what I may appear to the world, but to myself I seem to have been only like a boy playing on the sea-shore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me."

Isaac Newton, c 1700

(Apt for its time: the early Western scientific synthesis)

Science gathers facts and thinks it knows

but wisdom as she walks
hears the echo of her solitary tread
on the shore of an infinite ocean

Sri Aurobindo, c. 1920

(Apt for early 20th century, reflects the split between science and spirit)

“The difficulty is that with the rise of the modern sciences we began to think of the universe as a collection of objects rather than a communion of subjects

The Great Work: Our Way into the Future
Thomas Berry, 1999

Our Present Challenge

- **How to reintegrate
all that we know and understand**
 - ***given the deep interconnectedness
of life & climate on Earth***

Earth's climate sustains life

- Burning fossil fuels is increasing greenhouse gases
- **Climate is warming: ice is melting, extreme weather is increasing**
- Water plays crucial amplifying role
- *The Water of Life*
 - Ice, water, vapor, storms



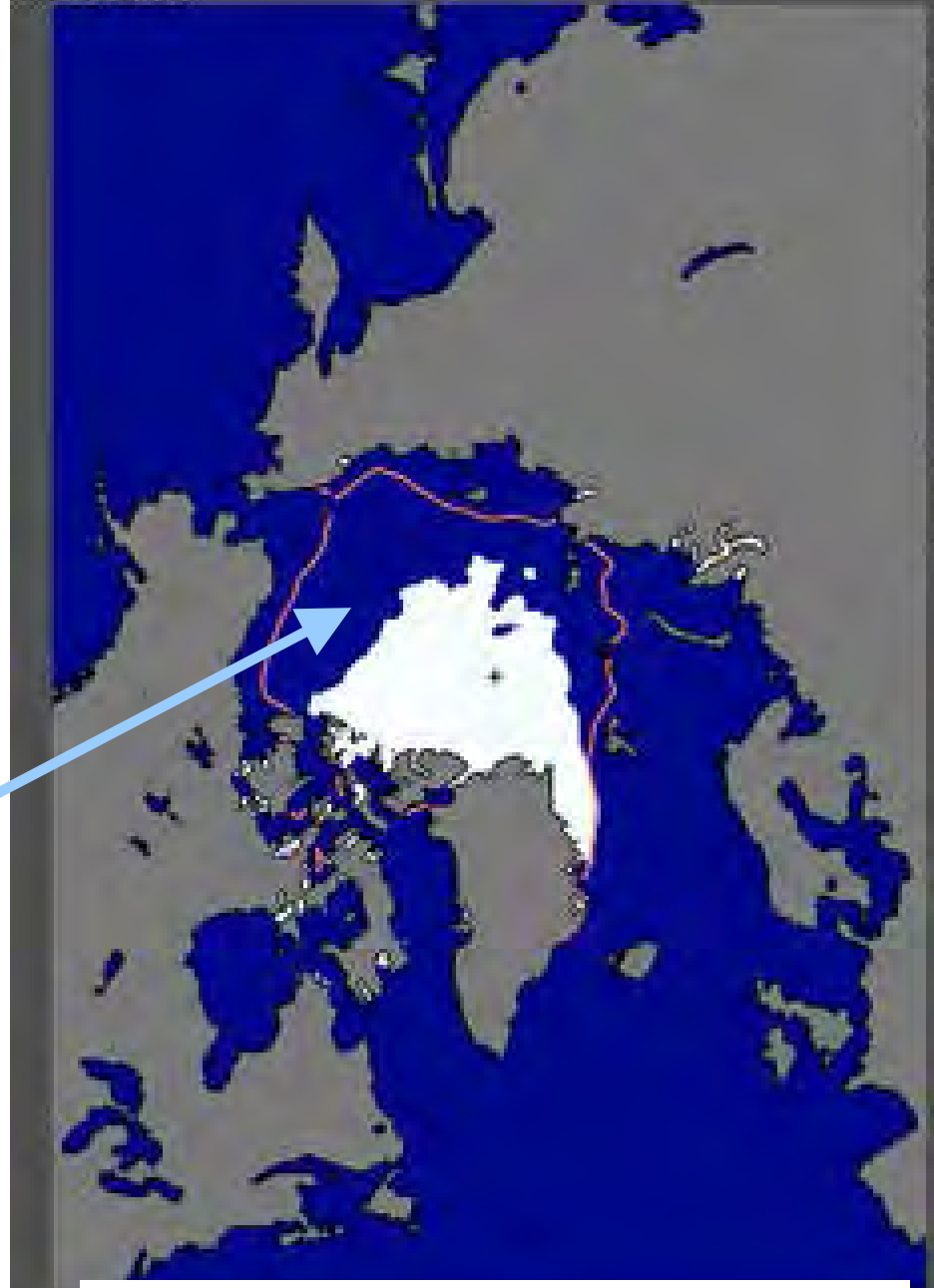
January 2, 2012: NASA

Climate Change has Lots of Details & Complexity

- Increasing greenhouse gases are driving rapid climate change
- Feedbacks amplify: melting snow and ice
 - Arctic and winter
- Energy, water, CO₂ and life are interwoven everywhere with climate

- Half the Arctic Sea Ice Melted in 2012
- Open water in Oct. Nov. gives warmer Fall in Northeast

- Positive feedbacks:
- *Less ice, less reflection of sunlight*
- *More evaporation, larger vapor greenhouse effect*
- Same feedbacks as in our winters



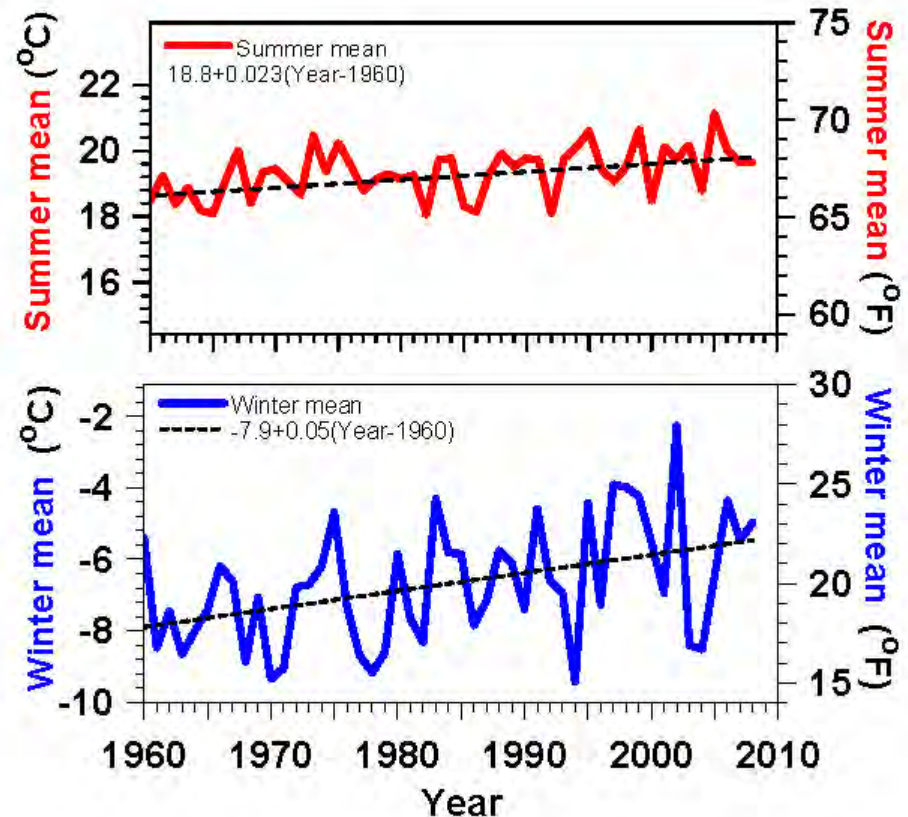
Vermont Winter 2006



- **Sun is low; and snow reflects sunlight, except where there are trees!**
- **Sunlight reflected, stays cold; little evaporation, clear sky; earth cools to space**

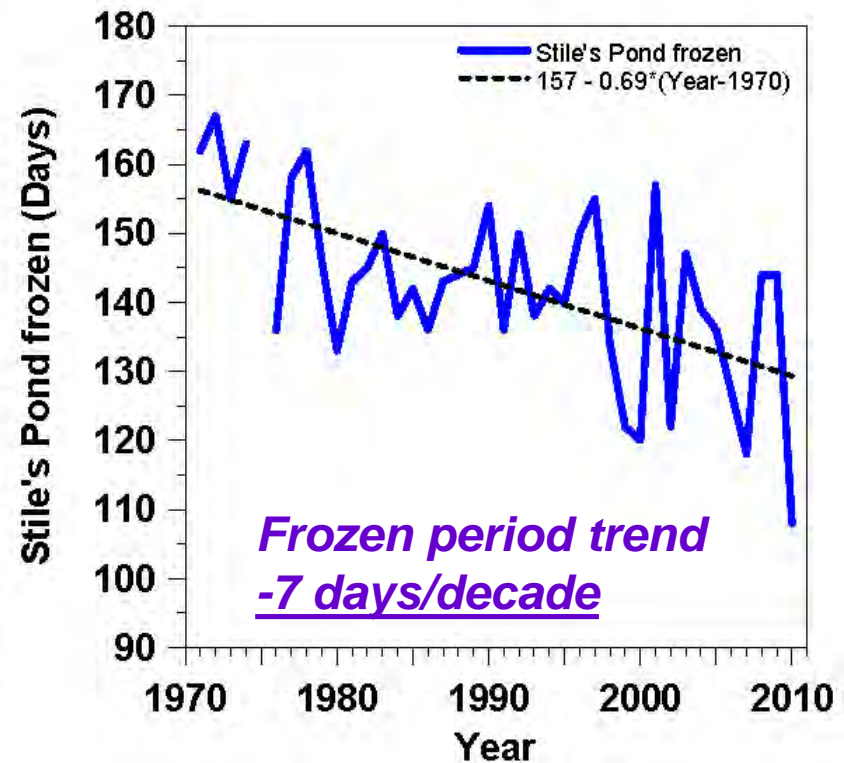
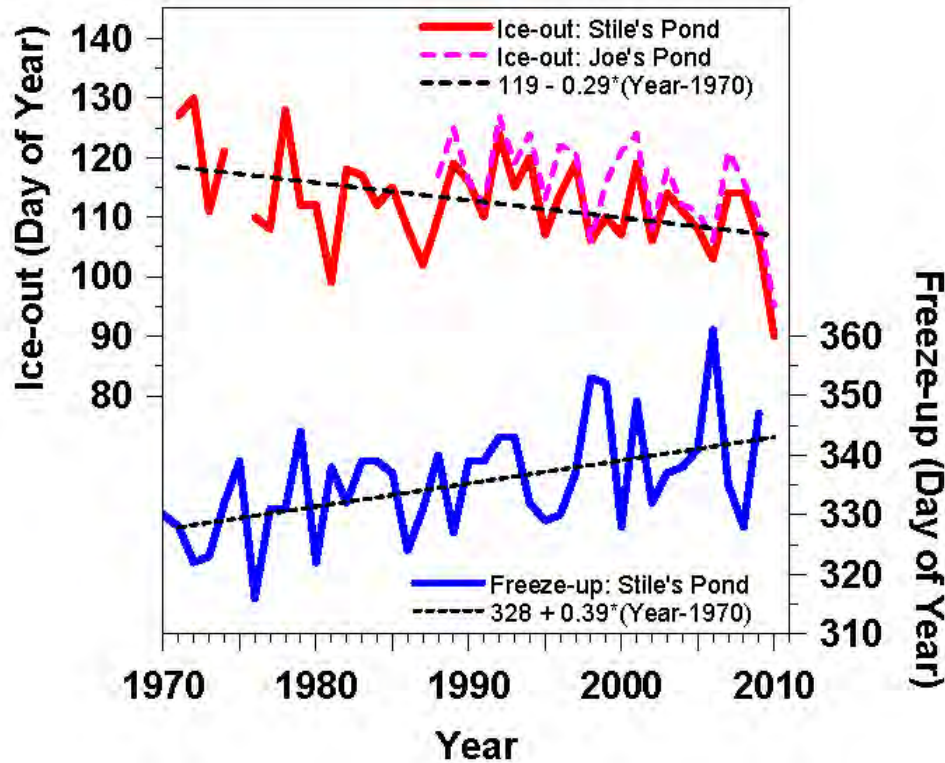
Vermont Temperature Trends

- Summer $+0.4^{\circ}\text{F}$ / decade
- Winter $+0.9^{\circ}\text{F}$ / decade
- Less snow drives larger winter warming



Lake Freeze-up & Ice-out Changing

Frozen Period Shrinking Fast



- Ice-out earlier **by 3 days / decade**
- Freeze-up later **by 4 days / decade**



January 2, 2012



March 11, 2012

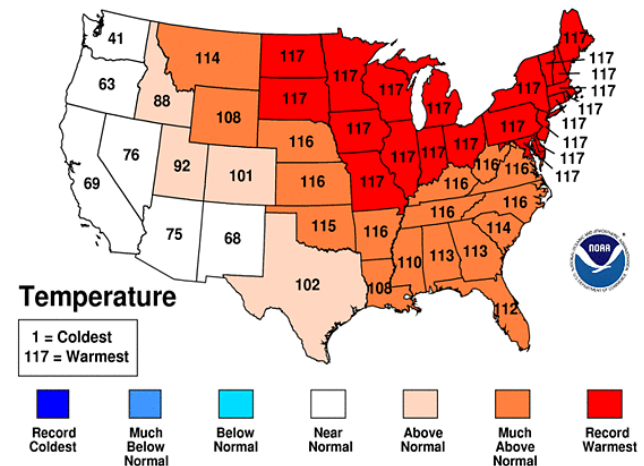


October 2011– March 2012

- **Warmest 6 months on record**
- **My garden frozen only 67 days**
- **No permanent snow cover west of Green Mntns**
- **Contrast snowy winter 2013-14**

Oct 2011-Mar 2012 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



Morning Walk - Sunrise



I Watch the Seasons Daily



Fog prevents frosts



I Am Part of the Natural Scene



The Fall Transition



- Rain, soil, trees - evaporation - clouds – greenhouse reduces cooling
- Trees delay frost as long as possible
- With frost, leaves fall, evaporation shuts down, and earth cools to space
 - Humanity is now largely outside this web of life

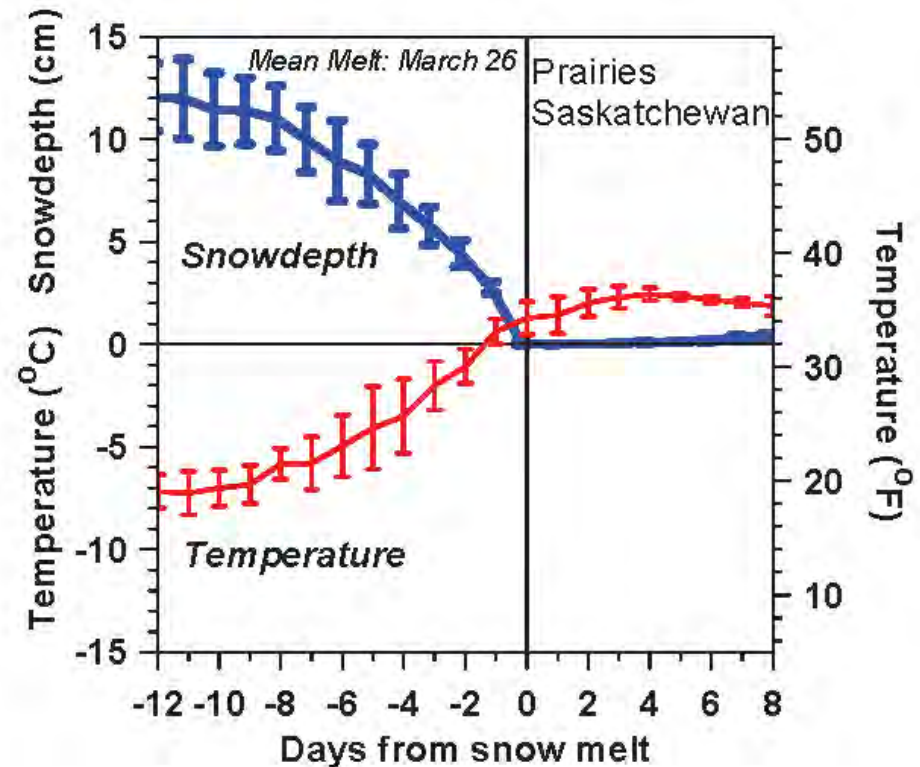
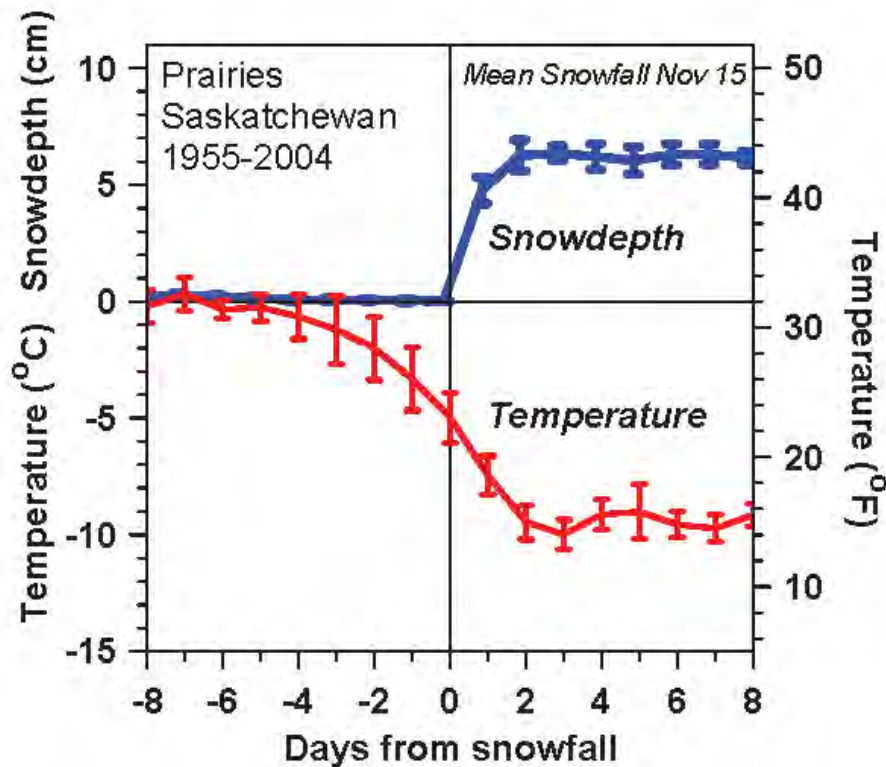
Winter Ice and Snow



Intuitive Experience, Knowledge and Science Connect

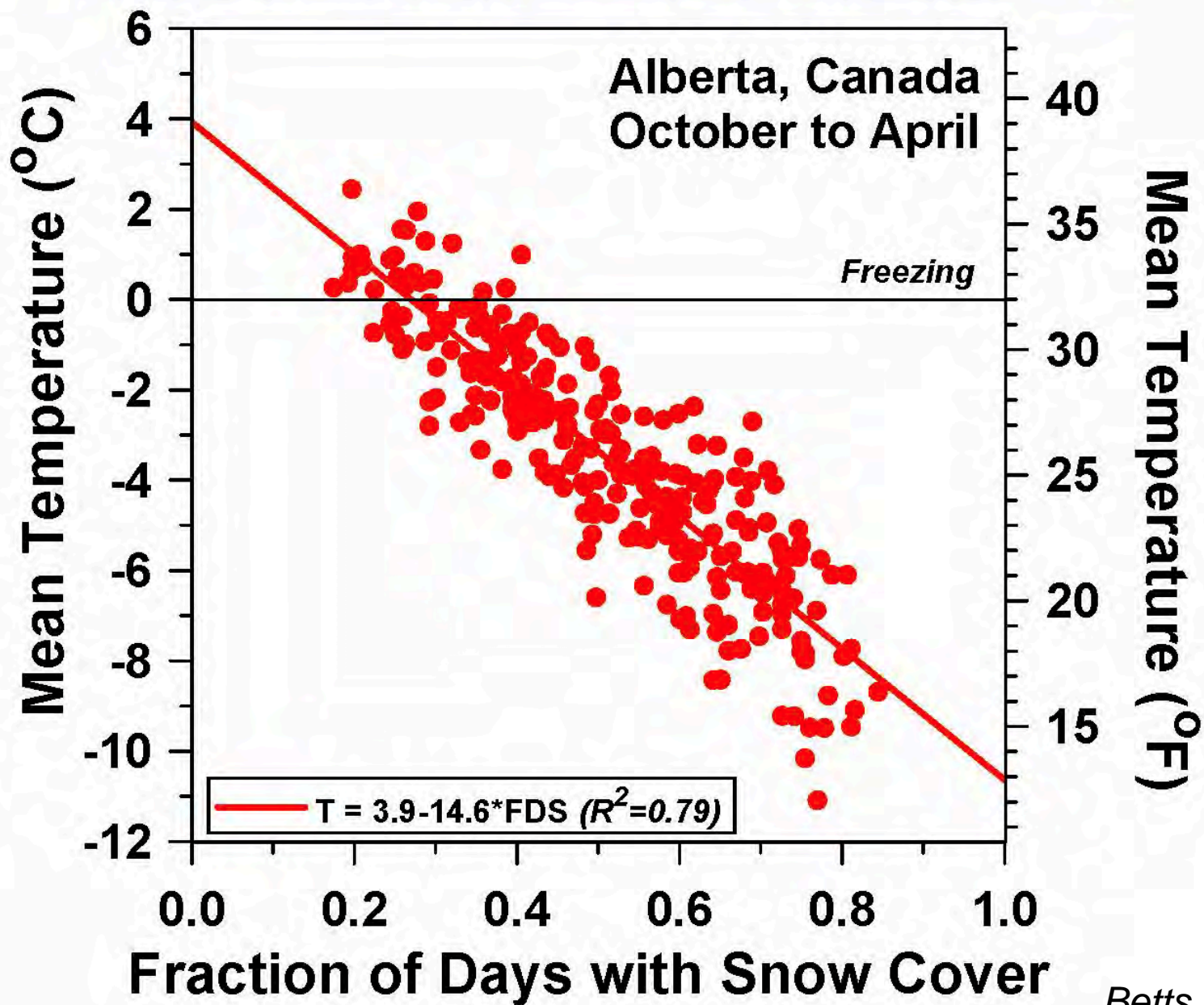
- For years I have studied clouds and snow
- August 2012 – call from Agriculture-Canada
 - Help us understand the changing Prairie Climate
- Christmas: data arrives – a *gift* that answers questions I have had for years
 - Clouds: daily cycle of temperature and humidity
 - Crops and summer climate
 - Winter climate transitions with snow
 - Climate, rain and clouds in growing season
- Responsibility comes with understanding

Snowfall and Snowmelt



- Temperature falls 18F (10C) with first snowfall
- Similar change with snowmelt
- *Snow reflects sunlight; reduces evaporation and water vapor greenhouse – changes 'local climate'*

More snow cover - Colder temperatures



Winter Ice and Snow



Managing Our Relation to the Earth System

- Our technology and our waste-streams are having large local and global impacts on the natural world and **must be carefully managed** — *because we are dependent on the natural ecosystems*
- **We need new ‘rules’ because**
 - Our numbers and industrial output are so large
 - Maximizing consumption and profit have led to present predicament

Accept Responsibility?

- **We have ‘technical’ solutions**
 - Manage waste streams
 - Double/triple energy efficiency
 - Escalating fossil carbon tax
 - Shift to renewable sources of energy
- **Climate change is now a moral issue**
 - Will we share this sacred Earth with our children?

Why Is It Difficult for Us?

- The “American dream” is crumbling
 - “Economic growth” based on **fossil fuels, debt, and consumerism is unsustainable** — and a disaster for the planet!
- Individual “rights” and the needs of humanity must be **balanced** against the needs of the earth’s ecosystem
- We don’t know how to **guide and manage technology** — so the result is tremendous successes and catastrophic failures

Surely Technology Can Save Us?

- Critical for transition **but real issue is**
- Our world of technology is having a global impact on the natural world, which is alive, complex and beyond our 'control'
- **So technology must be carefully managed — particularly our waste-streams — because we are dependent on the natural world**
 - **But this is challenging for our ideology**

- **Strengths of science:**
 - integrity, honesty and communication
 - *particularly valuable in a society lost in ignorance and deceit*
- **Limits of science:**
 - tangible, measurable and communicable
 - *hard to deal with the complexity and interconnectedness of the living natural world*

The Future Is Not Our Past

- *Collectively, we create the future*, so we need to plan for a transition to a sustainable society
- Face the future with an attitude of “**Bold Humility**”

(Frances Moore Lappé: RAFFL, Rutland, 2007)

- **Efficient society with renewable technologies**
- **Balance community solutions and government interventions**
- **Ask**
 - **Is this an efficient and sustainable way of doing this?**
 - **How deep is my understanding and connection to Earth?**

Attitude Matters

(Hope versus Despair)

- People ask “Why are you so hopeful?”
 - For human beings, hope opens doors to possibilities that expand our vision, hope connects us to each other and deepens our sense of communion
 - Hope frees us to be creative and work joyfully with each other and with the Earth
 - Hope is a choice and a spiritual connection
- *Despair closes us off from the real world of possibilities into a dark and isolated world*

Consider

“Thy will be done on earth”

requires that people of faith have a deep understanding of the earth and the whole creation, so that acceptance of our responsibility for stewardship is possible.

- Take the Earth into our spiritual practice**
- Sit and meditate with the natural world**

Reconnect with Nature & Spirit



Discussion

The Future Is Not Our Past

What will it take to reconnect us

To the natural world?

To the Earth?

So we can accept responsibility

(Resources: <http://alanbetts.com>)