

# Science, Earth & Spirit

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***'This Sacred Earth'***

***Green Mountain College***

***September 23, 2011***

# Outline



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

"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 20<sup>th</sup> 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*

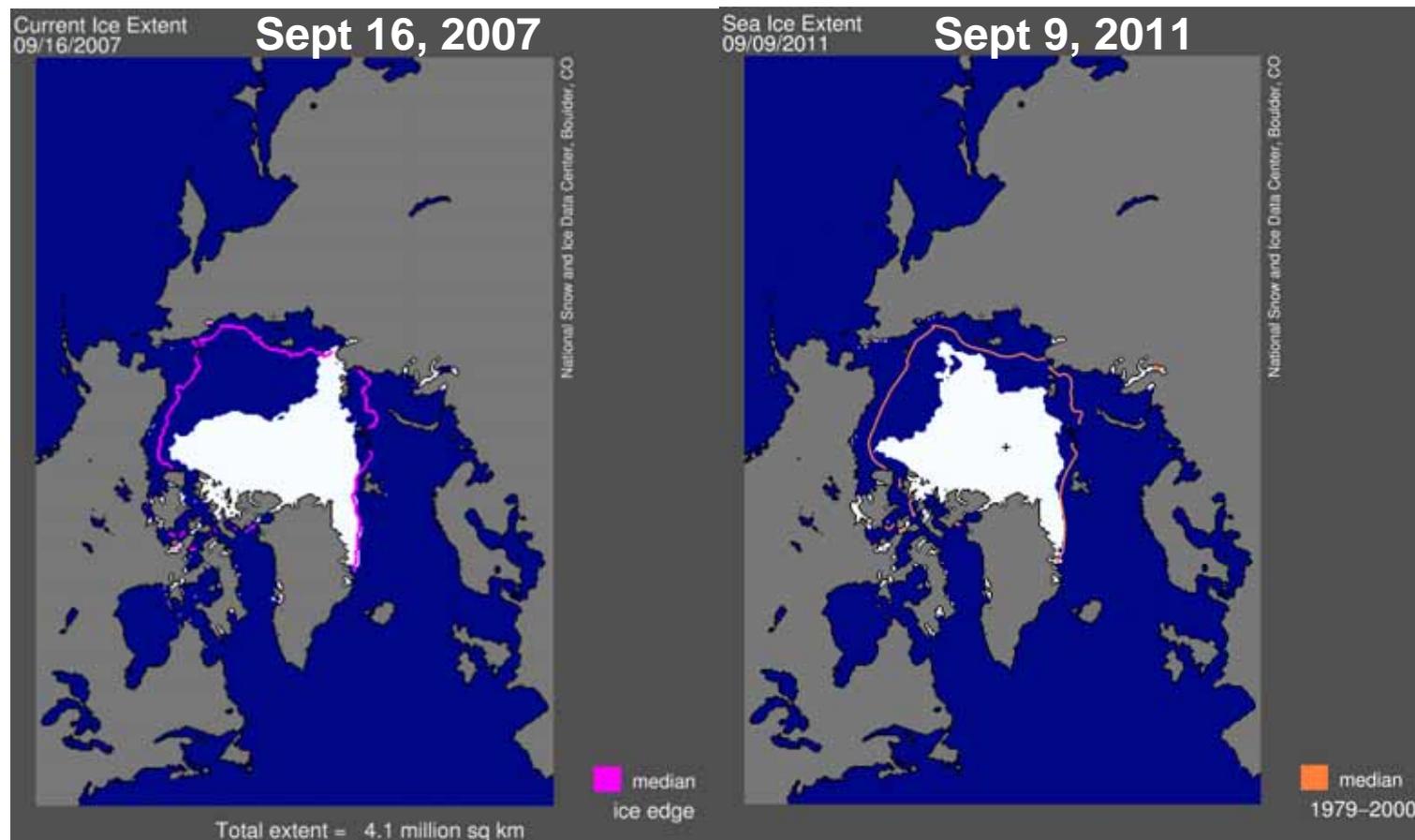
# Our Present Challenge

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

# 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, CO<sub>2</sub> and life are interwoven everywhere with climate**
  - **Take Fall as example**

# Arctic Sea Ice Loss Has Accelerated



- **Feedbacks speed melting**
- **Less ice, less sunlight reflected**
- **More evaporation, larger water vapor greenhouse effect**

([www.nsidc.org](http://www.nsidc.org))

- **Record ice loss in 2007**
  - most ice now only 1-2 years old
- **Open water in October contributes to warmer Fall**

# 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**

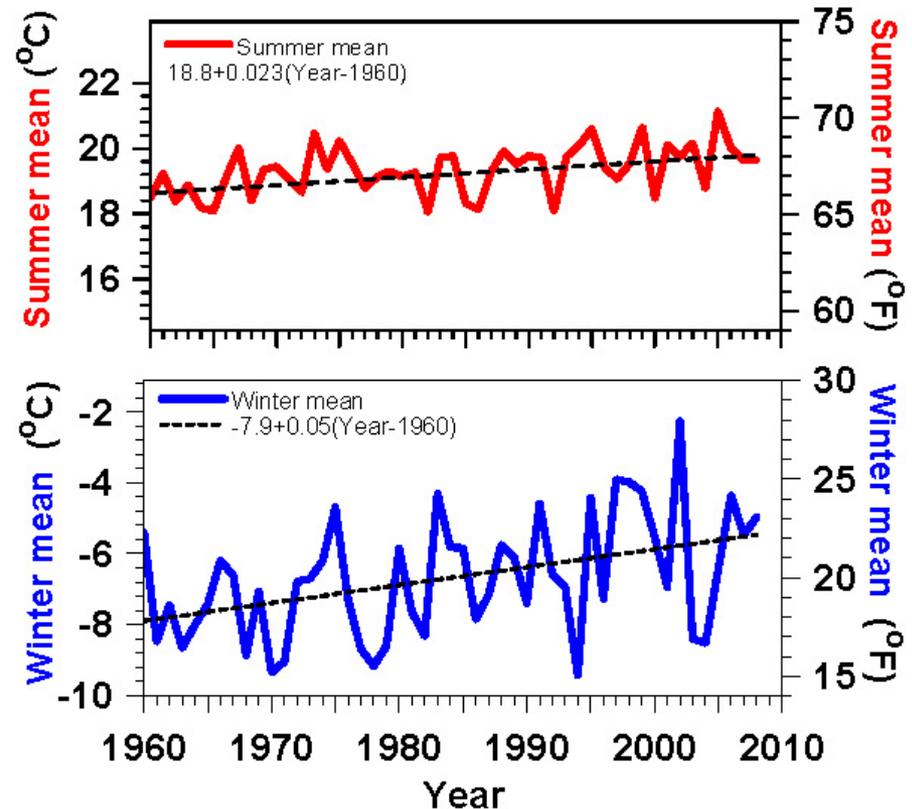
# The Fall Transition



- **Water - 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**

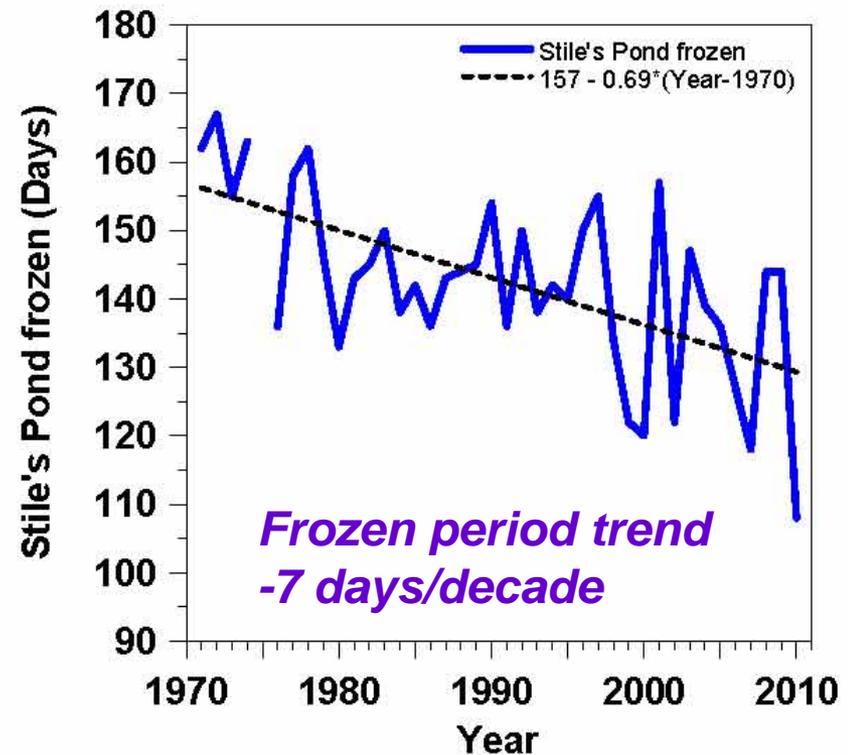
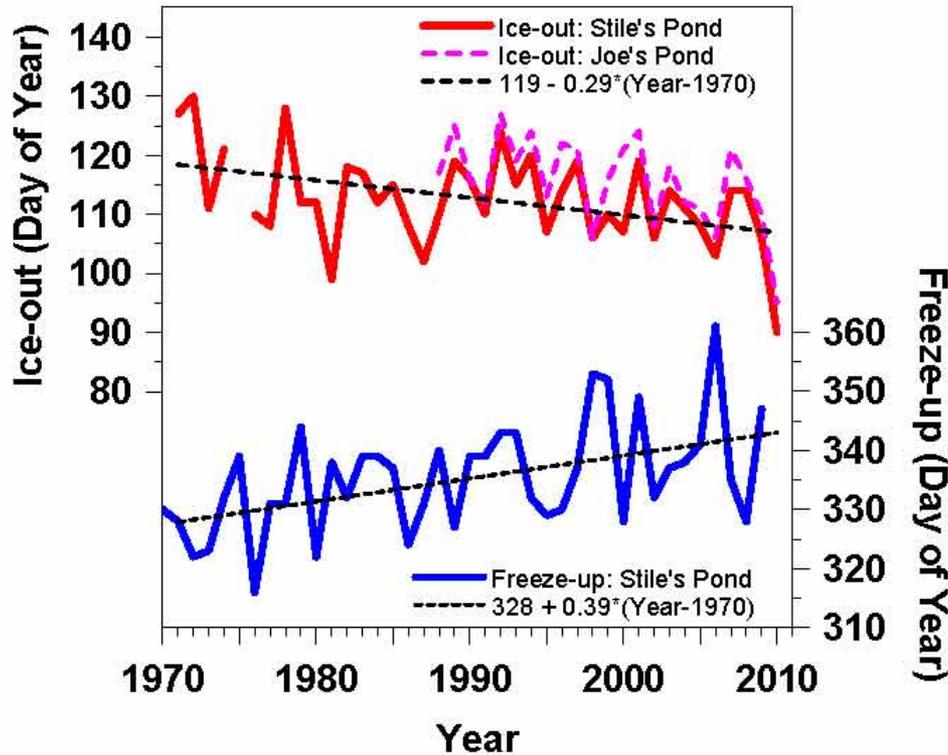
# Vermont Temperature Trends

- **Summer +0.4°F / decade**
- **Winter +0.9°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**

# Climate is Changing Fast

- **What is our response?**
  - **largely denial of responsibility**
- **Why is it so difficult for us?**
- **Can technology save us?**

# 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 have no workable paradigm to guide and manage technology — so the result is tremendous successes and catastrophic failures**

# Surely Technology Can Save Us?

- We have lost sight of the **critical distinction** between the human-made world and the natural world
- **We understand the human-made world, the world of computers & technology—because we made it—it is predictable and controllable, except when we are careless (& earthquakes)**  
[E. F. Schumacher (1977). *A Guide for the Perplexed*]
- **The same is not true of the natural world – which is far more complex and alive. Our understanding is limited; prediction & control are not possible**

# **Surely Technology Can Save Us?**

- **Now our world of technology is having a global impact on the natural world and it must be carefully managed**
  - **But this is incompatible with our ideology**
  - **And we are slipping into virtual worlds disconnected from the earth's ecosystem that we depend on**

# **'Rules' to Minimize Impacts (we know what to do...)**

- **Minimize the lifetime of human wastes in the Earth system and eliminate waste with critical biosphere interactions**
- **Maximize the efficiency with which our society uses energy and fresh water**
- **Maximize the use of renewable resources**
- **Maximize recycling and re-manufacturing to minimize use of non-renewable raw materials**

- **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*

# Perspective for the 21<sup>st</sup> Century

- **Much of western thinking formed when humanity had a limited understanding of its place in the creation; but the beliefs mattered little because our impact was small.**
- **All this changed with the industrial revolution powered by fossil fuels. Now humanity has a global impact on the natural world, and understanding our place in it is paramount.**
- **Science and technology created this situation, and must help us find a way out, by helping us understand the earth as a global system – but science is not enough.**

# Science Has Become 'Valueless'

- Centuries-old split of science from ethics/religion
- Science preserved its factual integrity, but makes no value choices
- Theology and politics feel free to choose doctrine over 'reality'
- No-one accepts responsibility for the earth
- Climate change is a social & spiritual challenge

# 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**

# Hope versus Despair

- People ask “Why are you so hopeful?”
- This is a deeper question than understanding and responding to climate change.
- **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 opens doors and frees us to be creative and joyfully work with each other and with the Earth.**
- **Despair closes us off from the real world of possibilities into a dark and isolated 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>)