

Alan Betts: On seasons and climate change

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(HOST) *Commentator Alan Betts has been thinking about the effect of climate change on our fall weather.*

(BETTS) It is October, and I am still picking fresh basil, because my garden on a hillside overlooking the flood plain of the Otter Creek has yet to see a frost. Yes, there were a couple of frosts at higher elevations and on valley floors in the last week of September - but the year 2000 was the last time my garden had a frost before October 1st. In the past decade, the last spring frost has come around the first of May, so my growing season between frosts is now about 150 days long, several weeks longer than when I started gardening in Vermont 30 years ago.

In the far north, a large area of Arctic sea-ice again melted by September. This open Arctic water in fall, where 10 years ago there used to be ice, as well as warmer temperatures in Canada, contributes to our later frosts and our milder winters.

The transition that occurs in fall with the first hard frost illustrates how life and climate are linked together. The first frost kills some plants and reminds the trees to shut down photosynthesis for winter. But as long as plants are alive, they take in carbon dioxide and evaporate water vapor into the air. Water vapor is a powerful greenhouse gas, which traps heat radiation and prevents the ground from cooling rapidly at night to space. More water vapor in the air also produces more clouds, which also trap heat at night. So, through evaporation, our forests can delay that first frost in the fall - until one night cool dry air sinks down from the north and the temperature falls enough by sunrise that frost forms.

After a hard frost, evaporation from plants and trees is greatly reduced, and the skies become clearer and drier. October often brings some pleasant sunny days.

But this fall we are still in a weather pattern of clouds, rain and storms. The soil is still wet from our very rainy summer. Heavy downpours flooded downtown Rutland for the second year in succession. As the climate gets warmer, the longer growing season in Vermont will help us, but we should expect heavy rainfall more often.

Clouds and water, life and carbon dioxide, weather and climate are all connected on our planet. As we go on burning fossil fuels as our primary energy source, CO₂ in our atmosphere is increasing faster than the forests and oceans can absorb it; and the climate shifts towards a new warmer state, full of surprises for humanity. This December in Copenhagen, the nations of the world will meet to draft a new global treaty to slow and then reverse the growth of CO₂ in the atmosphere. Every year that we delay will make it more difficult for us to adapt to a warming climate and rising seas. Yes, it is hard for us to face change. But it is time to think deeply about our shared common purpose - the preservation of this planet that is our home.