ADVANCEGeo Partnership
Empowering geoscientists to transform workplace climate

BU Earth & Environment

Improving Our Work Climate: Responding to Sexual Harassment

ALL ARE WELCOME

Monday, May 7th
9:00-11:00AM
CAS 132

With the support of the National Science Foundation, this project aims to improve work climate conditions by developing bystander intervention workshops for department heads, chairs, faculty, and students to appropriately respond to and prevent sexual and other types of harassment on campus and in the field as well as include awareness and prevention training of harassment in the teaching of ethical conduct in research.

At this pilot training session, we will:
- Learn about behaviors and attitudes that impact co-workers and co-learners
- Learn about the different types of harassment and how they are experienced
- Empower bystanders to make our department safe, inclusive, and welcoming
- Brainstorm proactive action plans promoting positive culture change in our department

Brought to you by ADVANCEGeo, an NSF ADVANCE Supported Project

Future modes

What can we expect for NE precipitation in the future?

Future of winter (Nov-Apr) precipitation over New England?

- **What modes of climate variability influence NE winter precipitation?**
- **How would you go about testing this? How certain are we?**

Impact on NA precipitation

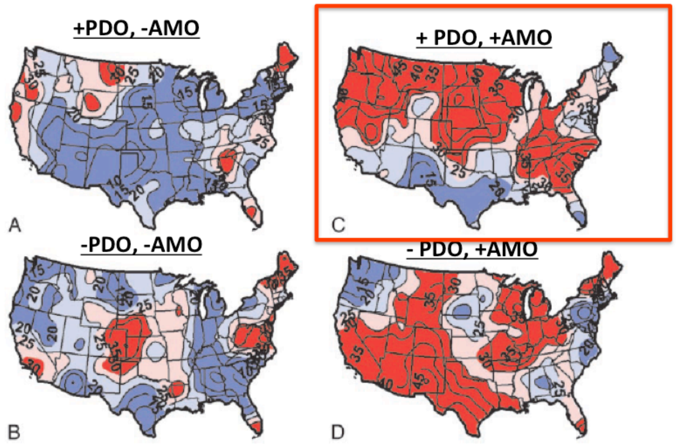
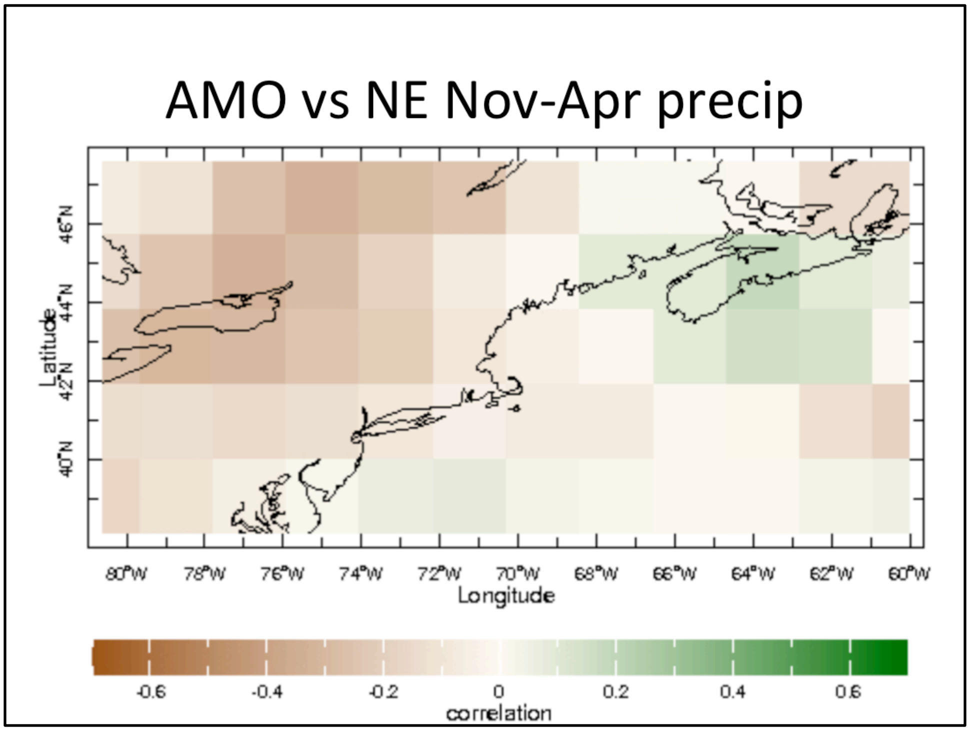


Fig. 5. Drought frequency (in percent of years) for positive and negative regimes of the PDO and AMO. (*A*) Positive PDO, negative AMO. (*B*) Negative PDO negative AMO. (*C*) Positive PDO, positive AMO. (*D*) Negative PDO, positive AMO.

McCabe et al. 2004

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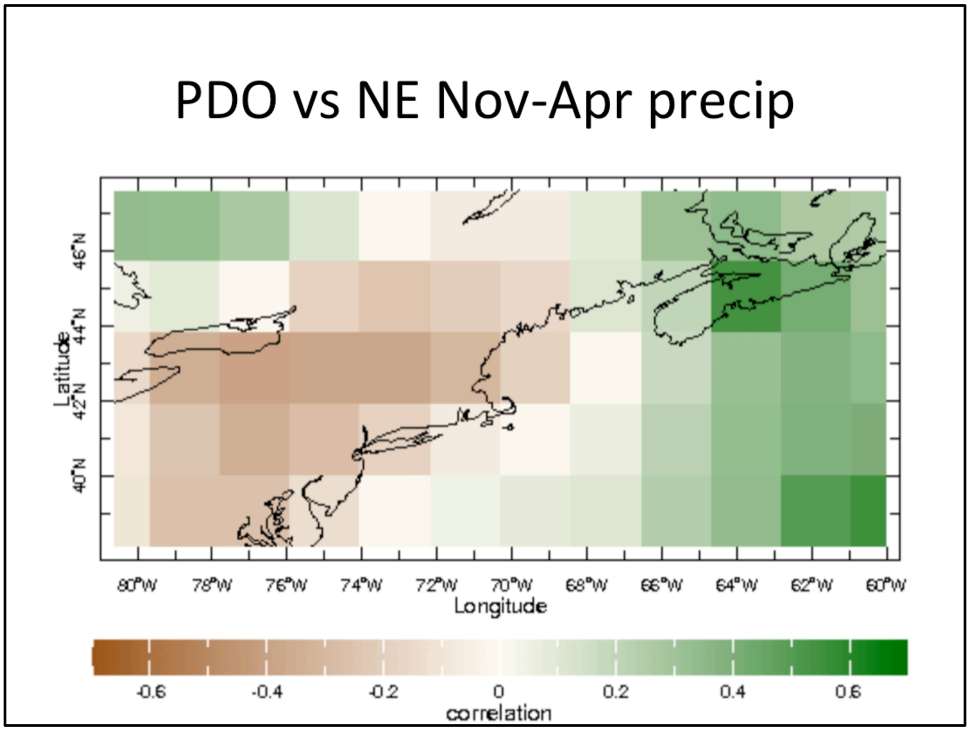


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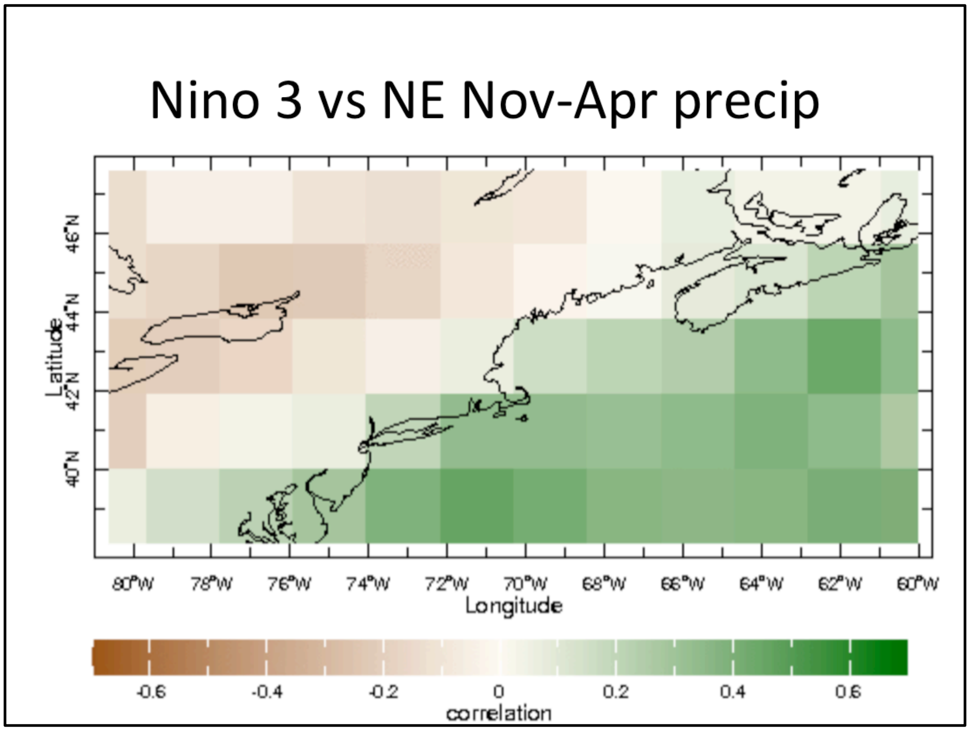


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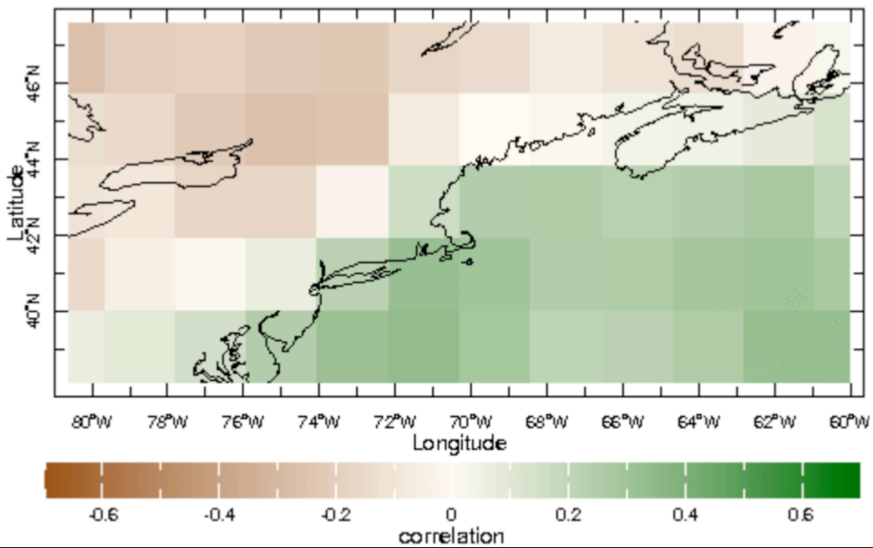
Nino 4 Nov-Apr precip

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expert
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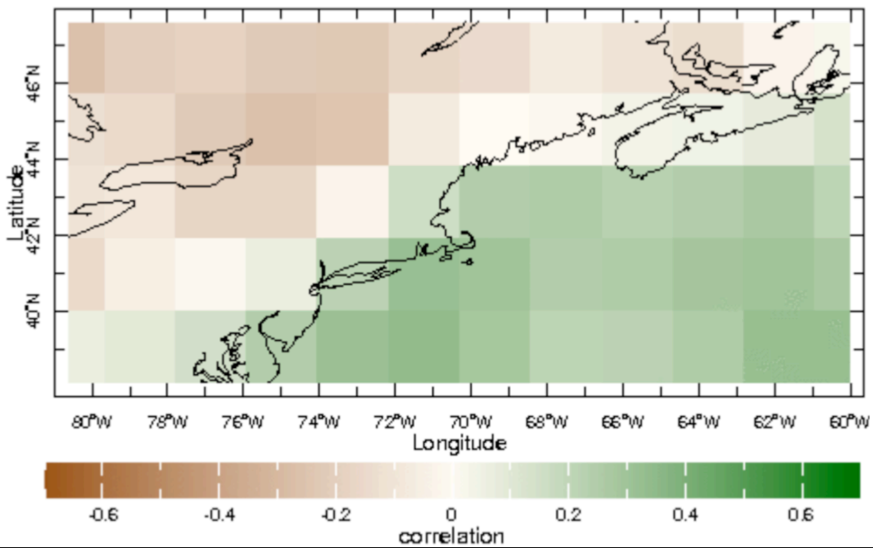
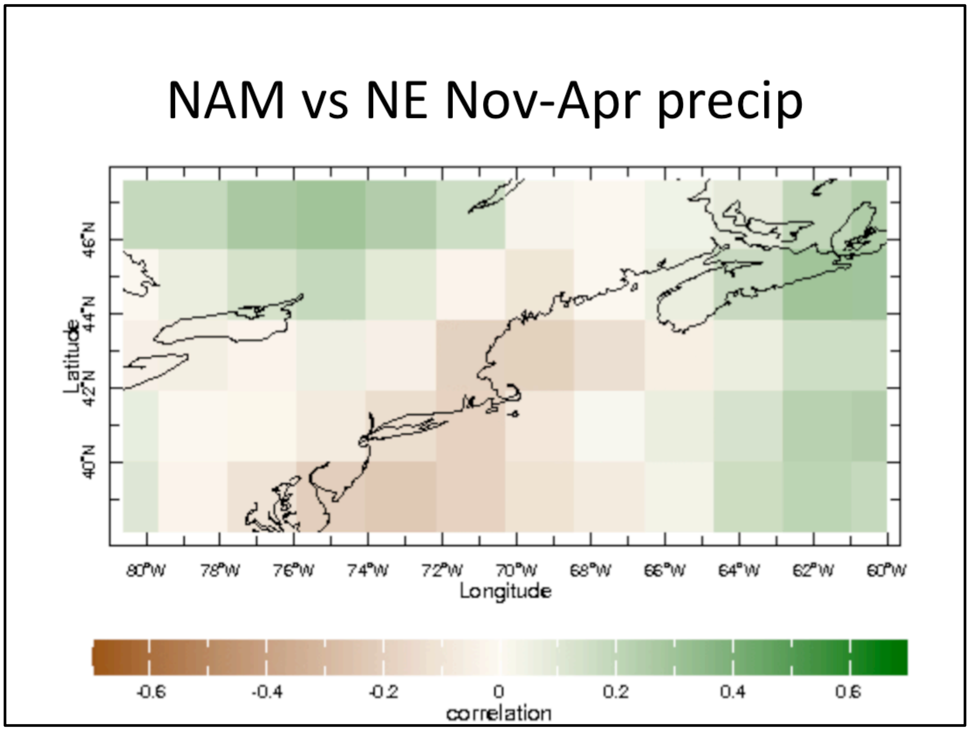
NAO Nov-Apr precip



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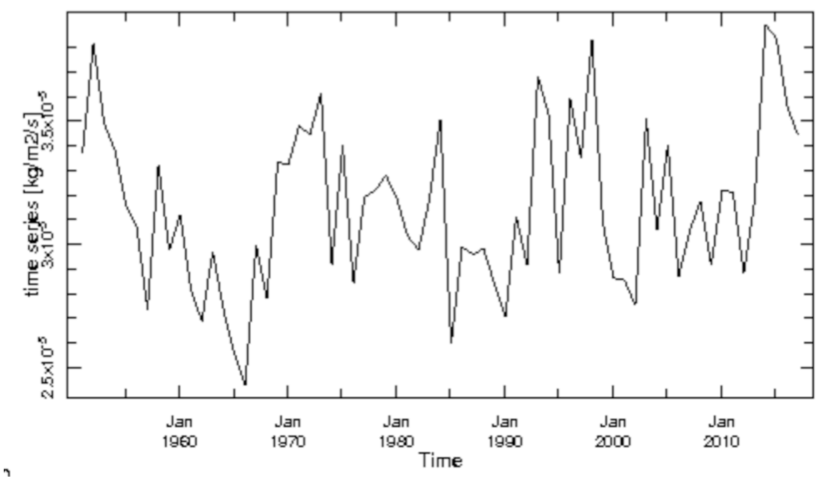
EOF 1 of NE precip



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T (Nov 1960) (April 2017) RANGE
T (Nov-Apr) seasonalAverage
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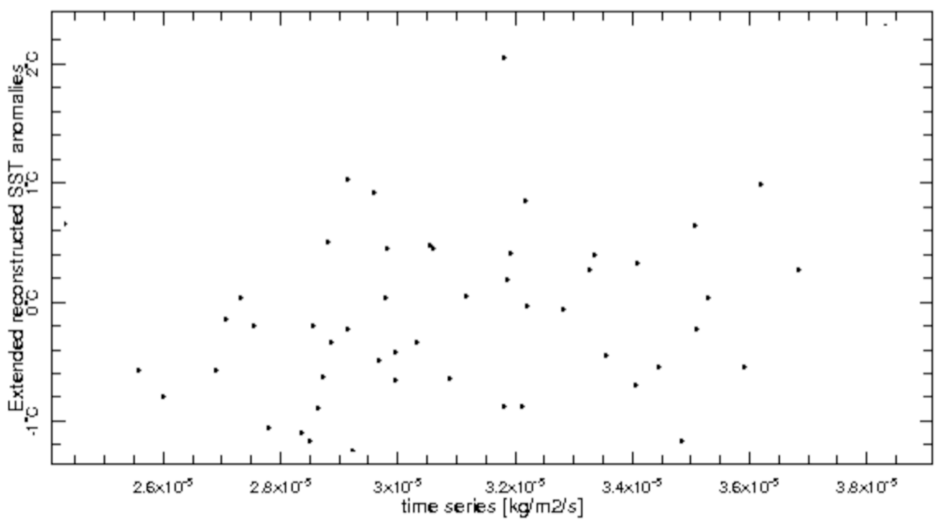
ev (1) VALUES
.Ts

PC1 vs ENSO (r= 0.31)

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 ev (1) VALUES
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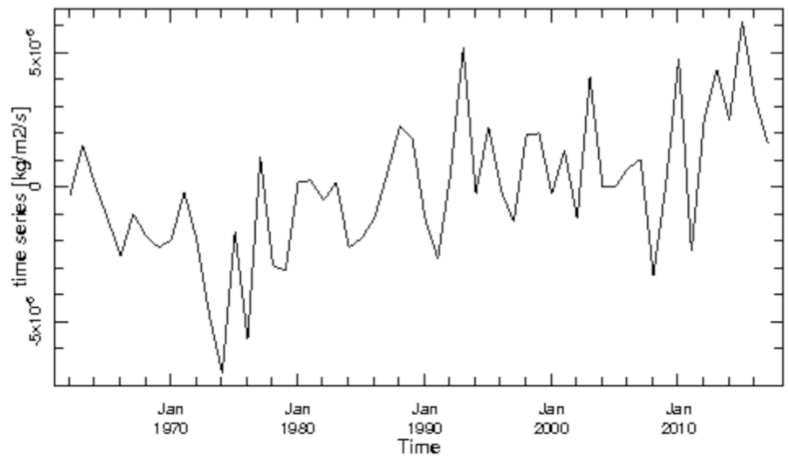

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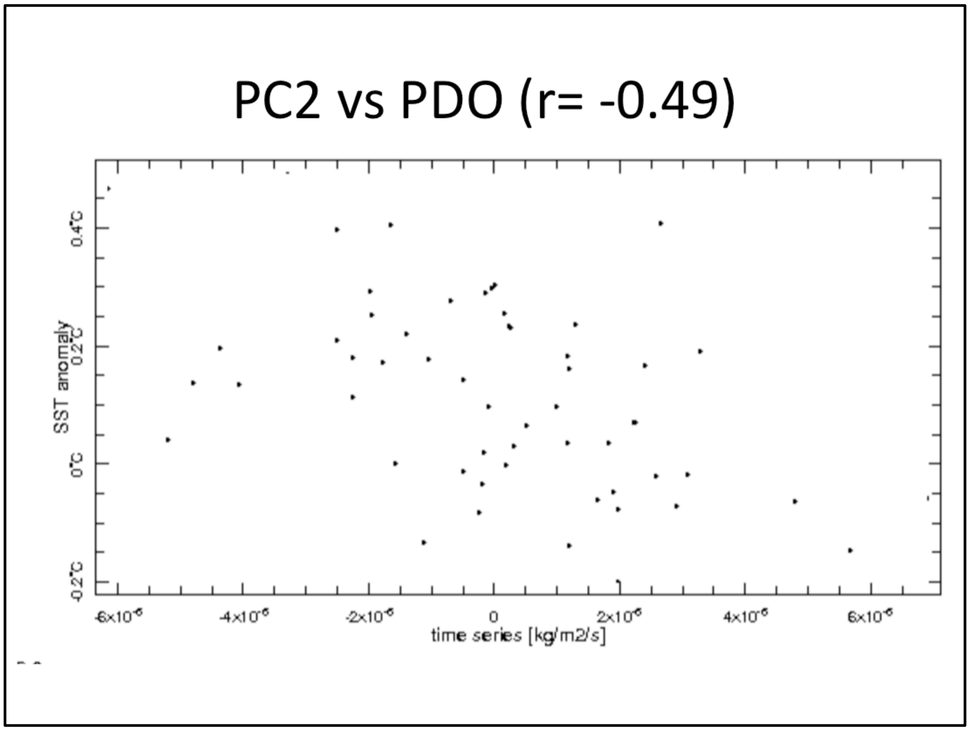
ev (2) VALUES
.Ts



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.Ts
ev (1) VALUES
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Y (20N) (90N) RANGE
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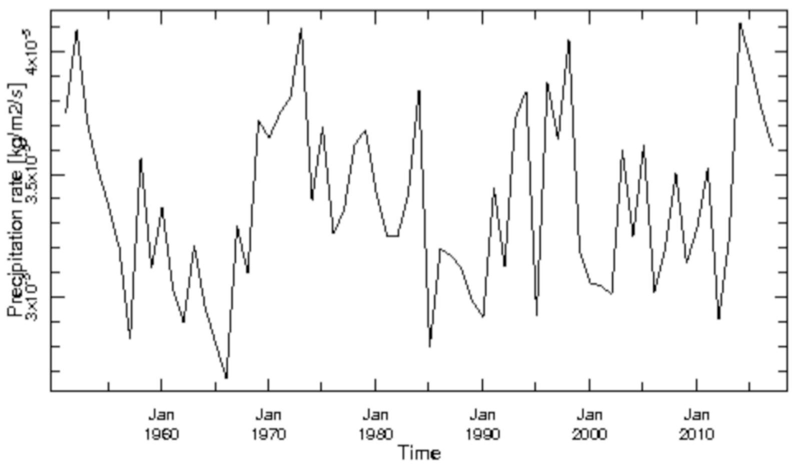
T (Nov 1960) (April 2017) RANGE
T (Nov-Apr) seasonalAverage
{Y cosd}[X Y]weighted-average
fig: scatter :fig

Future of winter (Nov-Apr) precipitation over New England?

- **What modes of climate variability influence NE winter precipitation?**
- **How would you go about testing this? *How certain are we?***

Winter precipitation time series



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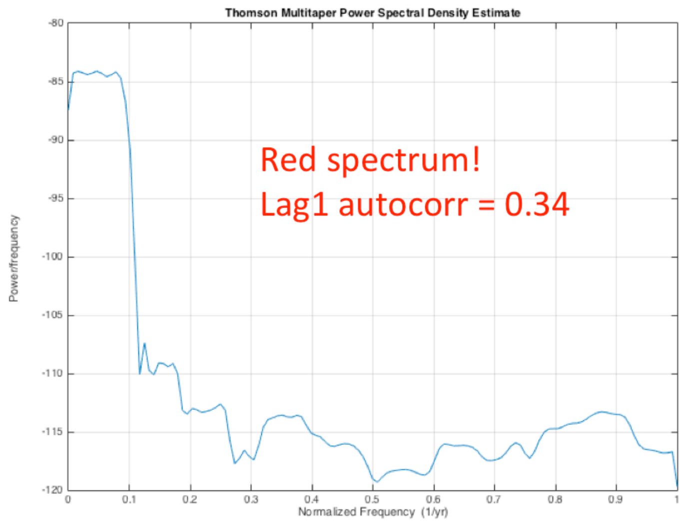
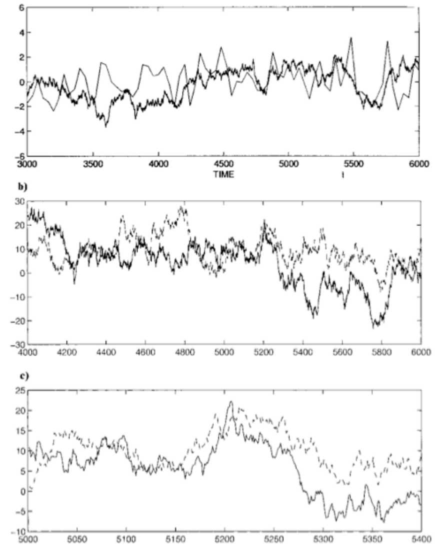
T (Nov-Apr) seasonalAverage
[X Y] average

Winter precip power spectra

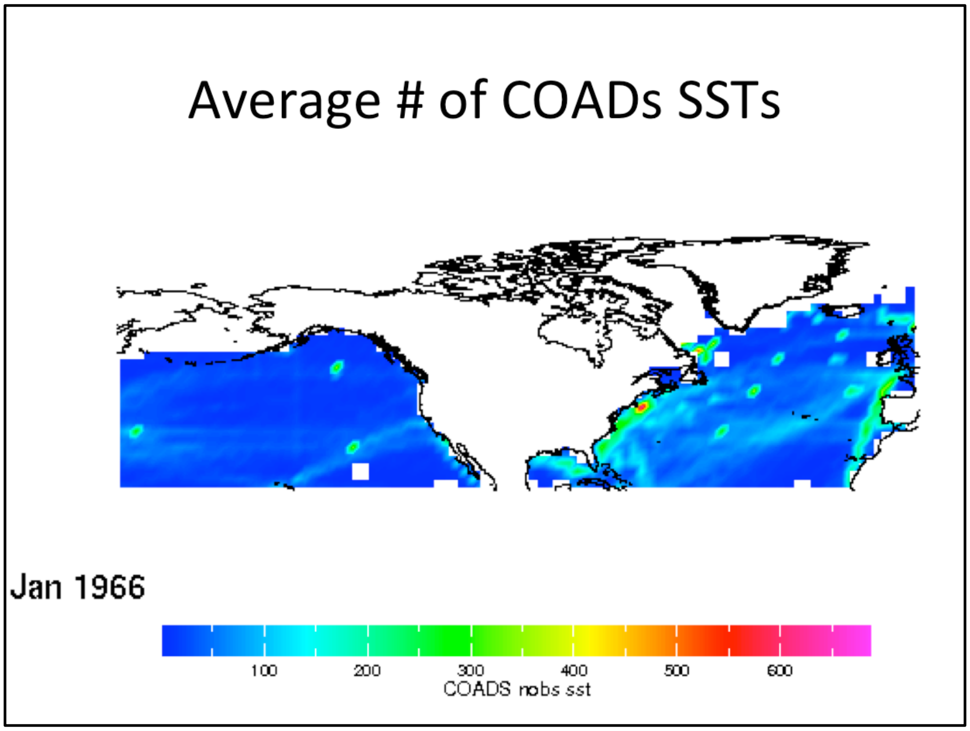


Danger of visual correlations?

For systems with long memory, larger deviations from the mean ***are expected*** as the record length grows



Wunch 1999

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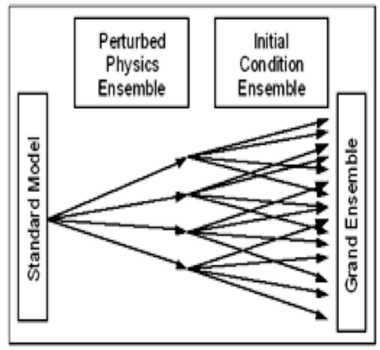
Future of winter (Nov-Apr) precipitation over New England?

- What modes of climate variability influence NE winter precipitation?
- How would you go about testing this? How certain are we?
- **How are these modes expected to change? How do we go about answering this? How certain are we?**

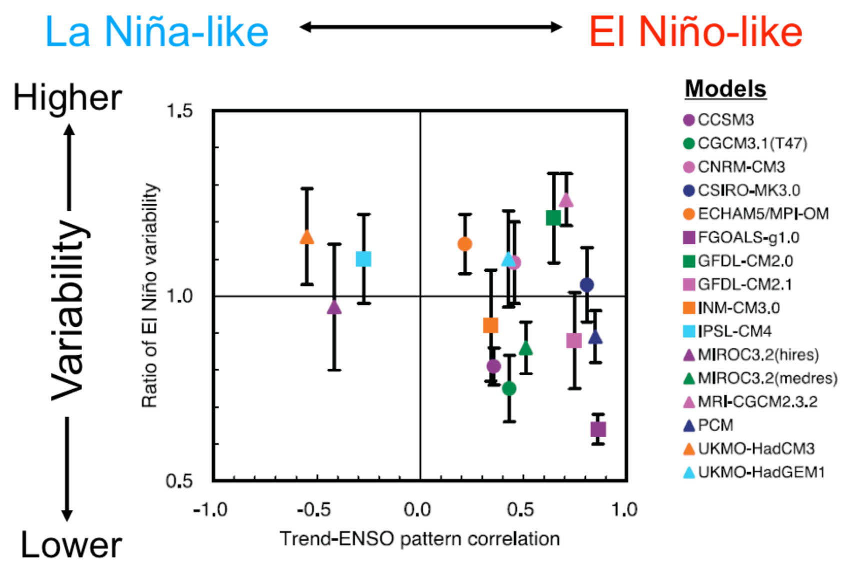
Goldilocks ensemble: appropriate for RQ?

1. Initial condition ensemble (e.g., CESM large ensemble)
2. Perturbed physics ensembles (PPEs)
3. Multimodel ensembles (MME) (e.g., CMIP3/5)



The AOGCMs featured in Section 10.5.2 are built by selecting components from a pool of alternative parametrizations, each based on a given set of physical assumptions and including a number of uncertain parameters. In principle, the range of predictions consistent with these components could be quantified by constructing very large ensembles with systematic sampling of multiple options for parametrization schemes and parameter values, while avoiding combinations likely to double-count the effect of perturbing a given physical process. Such an approach has been taken using simple climate models and EMICs

1. ENSO?

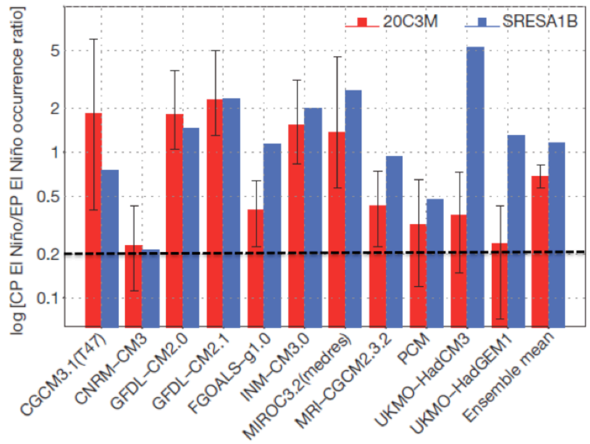


IPCC 2007

1. ENSO?

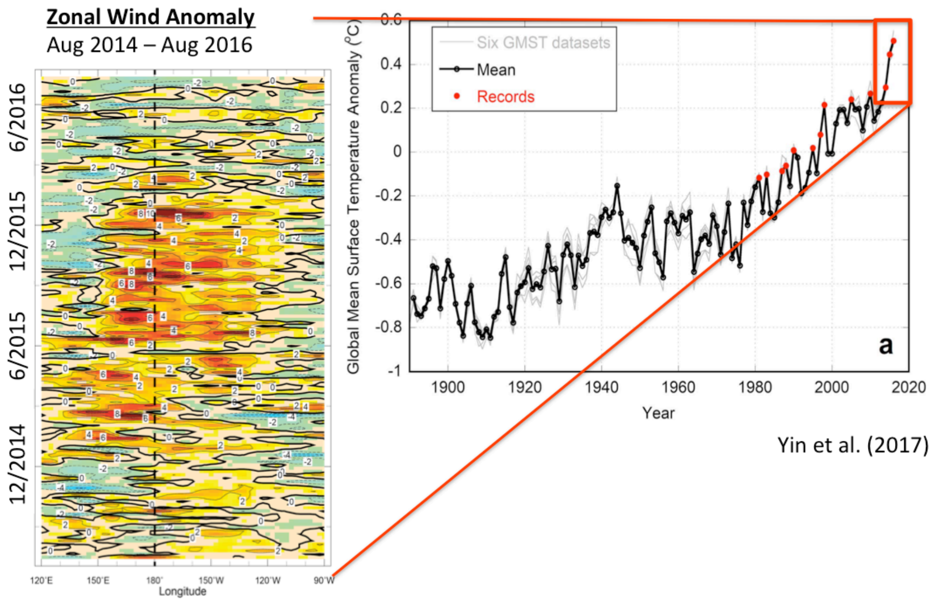
ENSO diversity

Increased freq. of CP-type ENSO events?



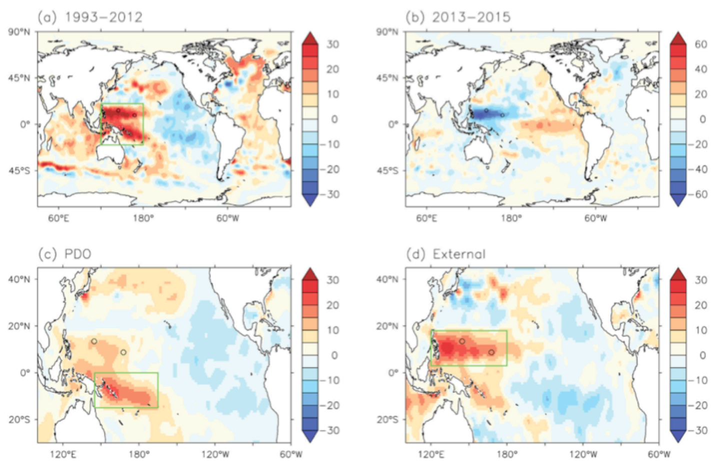
Yeh et al. 2009

2. PDO?



Yin et al. (2017)

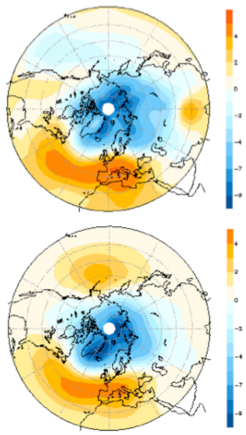
2. PDO?



Yin et al. (2017)

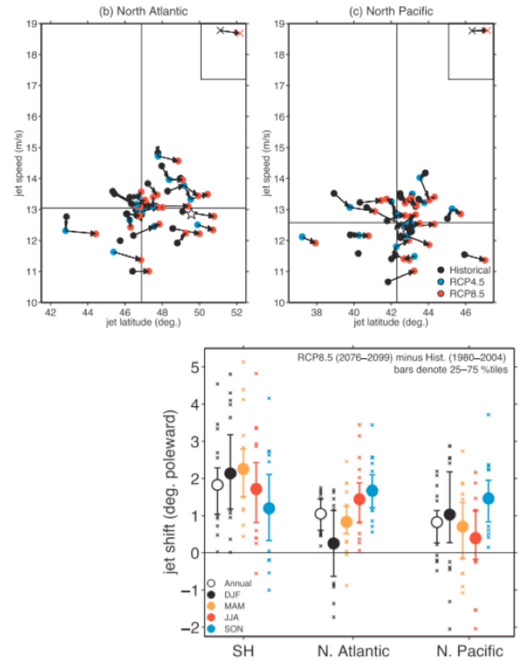
Interdecadal accumulation and rapid release of ocean heat in the upper 700 m (10^{18} J, Levitus data). (a) Total heat accumulation during 1993–2012 based on the linear trend. (b) Ocean heat release (negative values) during 2013–2015. Notice the different scale. (c) The 1993–2012 ocean heat accumulation due to the transition of PDO/IPO to their negative phase. (d) Difference between Figures 2a and 2c indicating the ocean heat accumulation due to factors external to the Pacific. The green boxes in Figures 2a, 2c, and 2d indicate WP (120°E–180°E, 20°S–20°N), SWP (145°E–195°E, 0°–15°S), and NWP (120°E–180°E, 3°N–18°N), respectively. The circles mark Kwajalein and Guam (Figure 3c). See Figure S6 for similar analysis with the Ishii data.

3. NAM?



Linear 30-year trend (top) and AO fitted contribution (bottom) for JFM monthly-mean SLP (hPa/30 years).

Wallace 2000

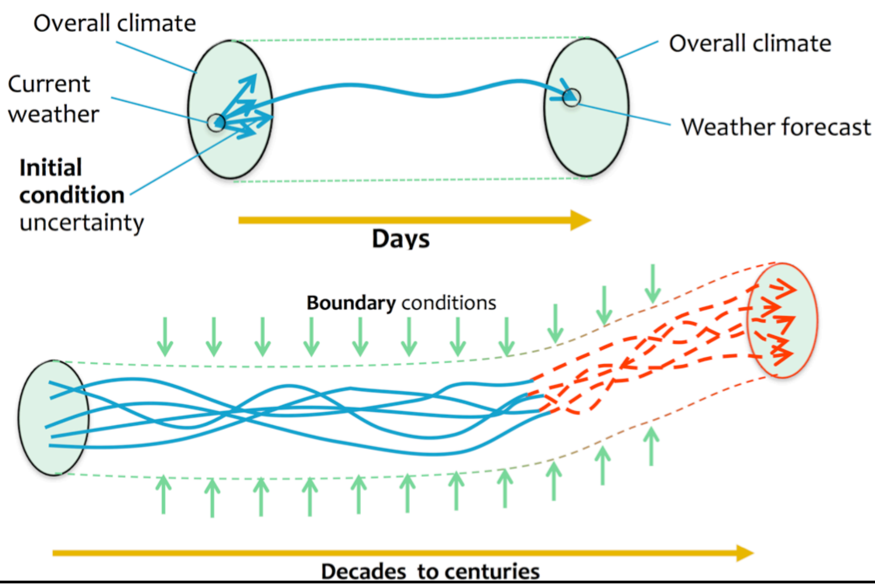


Barnes et al. 2013

Future of winter (Nov-Apr) precipitation over New England?

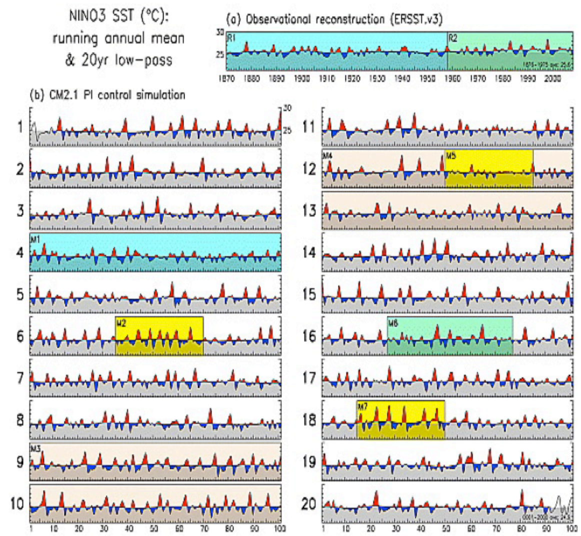
- What modes of climate variability influence NE winter precipitation?
- How would you go about testing this? How certain are we?
- How are these modes expected to change? How certain are we?
- **What are some of the uncertainties we need to consider? How certain can we predict precip next winter? Over the next 10 years? 100 years? Why does our confidence in these projections differ, if at all?**

Prediction vs projection



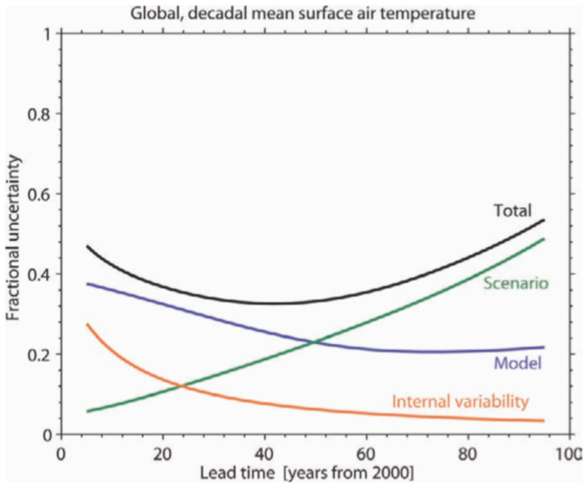
Detection and attribution challenges

- Internal variability: changes in the absence of forcing
- detection and attribution of forced changes over the short historical record difficult



Wittenberg et al. 2009

Sources of uncertainty

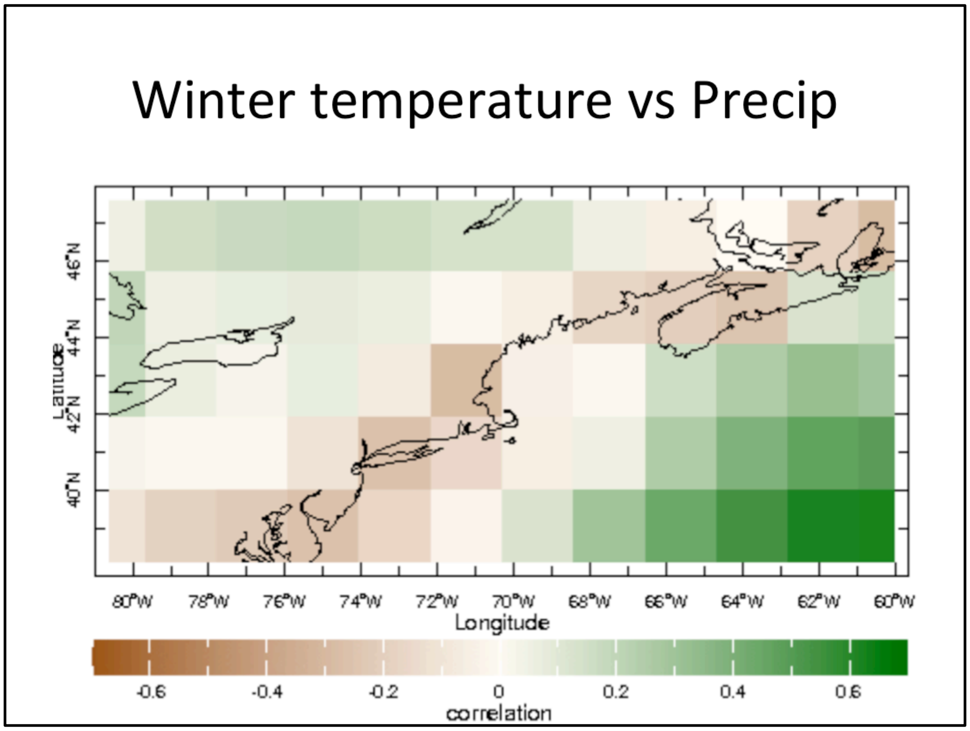


Meehl et al. 2009

In the decadal time range, at the confluence between dec-cen and SI, there may be a "sweet spot" for an enhanced signal-to-noise ratio of climate change information. The relative uncertainty in global-mean, decadal-mean surface air temperature predictions initially decreases with lead time as the predictions transition from initial state dependence to the forced response out to about 40 yr (Fig. 3). At longer lead times the emissions scenario uncertainty generally becomes dominant (Hawkins and Sutton 2009a).

Future of winter (Nov-Apr) precipitation over New England?

- What modes of climate variability influence NE winter precipitation?
- How would you go about testing this? How certain are we?
- How are these modes expected to change? How certain are we?
- What are some of the uncertainties we need to consider? How certain can we predict winter precip next winter? Over the next 10 years? 100 years? Why does our confidence in these projections differ, if at all?
- **How is warming impacting winter precip over NE? How would you test this?**

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 X (60W) (80W) RANGE
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 T (Nov-Apr) seasonalAverage
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      FloralWhite
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       DarkGreen
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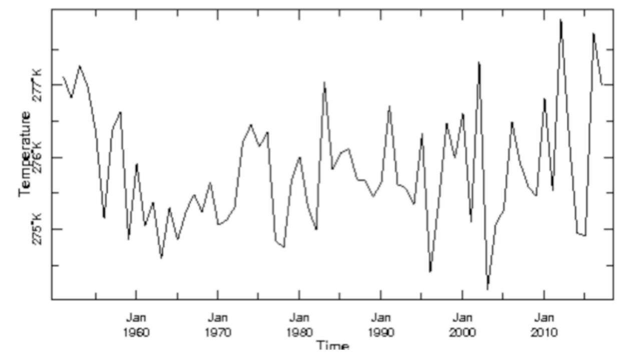
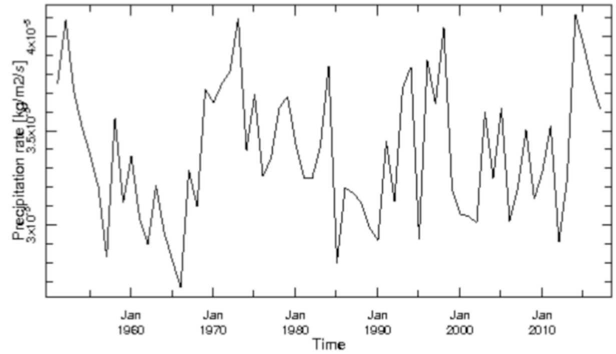
Winter temperature time series



Winter precipitation time series



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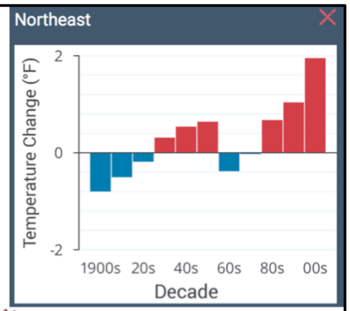
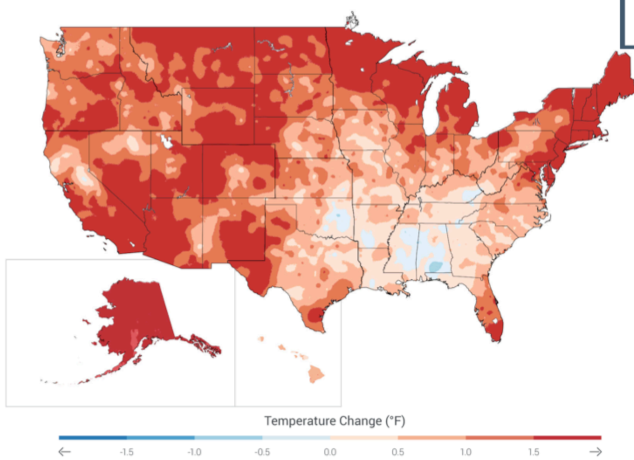
T (Nov-Apr) seasonalAverage
[X Y] average

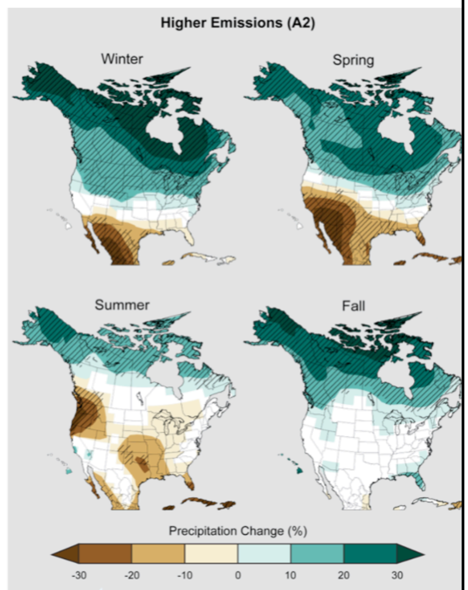
Recent temperature trends





National Climate
Assessment report

Projected Precipitation change by season



National Climate
Assessment report