

A presentation by
Richard Gibson, MAAA, FCAS
Senior Property and Casualty Fellow
American Academy of Actuaries

Tulane Environmental Law and Policy Summit
Tulane University

March 23, 2019 – New Orleans, Louisiana



AMERICAN ACADEMY *of* ACTUARIES

Objective. Independent. Effective.[™]

Copyright 2019

Agenda

- Actuaries Climate Index (ACI)
 - Sponsors
 - Background
 - Composition: six components, 12 regions (7 in the USA + 5 in Canada)
 - Recent index findings
- Actuaries Climate Risk Index (ACRI)—status report
- Q&A



ACI—Sponsors

- Actuaries Climate Index (ACI) Sponsors
 - American Academy of Actuaries
 - Canadian Institute of Actuaries
 - Casualty Actuarial Society
 - Society of Actuaries
- www.ActuariesClimateIndex.org



ACI—Background

- ❑ An educational tool providing information about weather trends in the United States and Canada
- ❑ Retrospective analysis of data as opposed to a forecast of future trends
- ❑ Updated quarterly using publicly available data from the National Oceanic and Atmospheric Administration and the Permanent Service for Mean Sea Level
- ❑ Covers rainfall, temperature, dry spells, wind speed, and sea level



ACI—Background (cont'd)

- ❑ Breaks North America into 12 regions, and analyzes each region separately
- ❑ Breaks time into monthly units
- ❑ Spans the period from 1961 to the present (with a reporting lag of 6 to 12 months)
- ❑ Uses 1961–90 as a reference period



ACI—Components

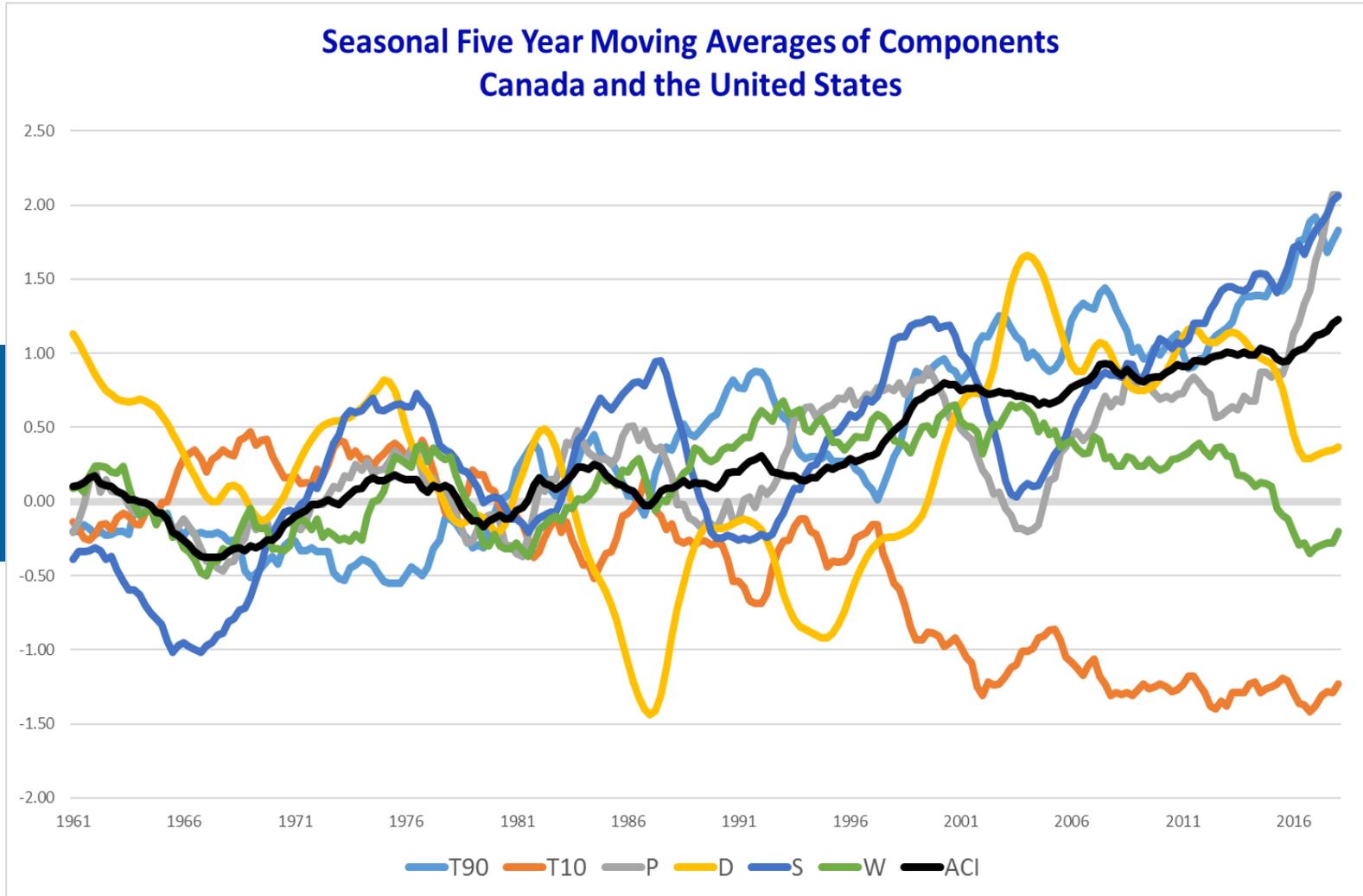
- ❑ Covers rainfall, temperature, dry spells, wind speed, and sea level
 - Frequency of temperatures above the 90th percentile (T90)
 - Frequency of temperatures below the 10th percentile (T10)
 - Maximum rainfall per month in five consecutive days (P)
 - Annual maximum consecutive dry days (D)
 - Frequency of wind speed above the 90th percentile (W)
 - Sea level changes (S).

- ❑ Breaks North America into 12 regions, and analyzes each region separately



Overall ACI and Components

Reference
Period
Standard
Deviations



AMERICAN ACADEMY of ACTUARIES

Objective. Independent. Effective.™

© 2019 American Academy of Actuaries. All rights reserved.
May not be reproduced without express permission.

ACI Components—Climate Regions

Region Name	Region
Central Arctic	CAR
Northeast Atlantic	NEA
Northeast Forest	NEF
Northern Plains	NPL
Northwest Pacific	NWP
Alaska	ALA
Central East Atlantic	CEA
Central West Pacific	CWP
Midwest	MID
Southeast Atlantic	SEA
Southern Plains	SPL
Southwest Pacific	SWP

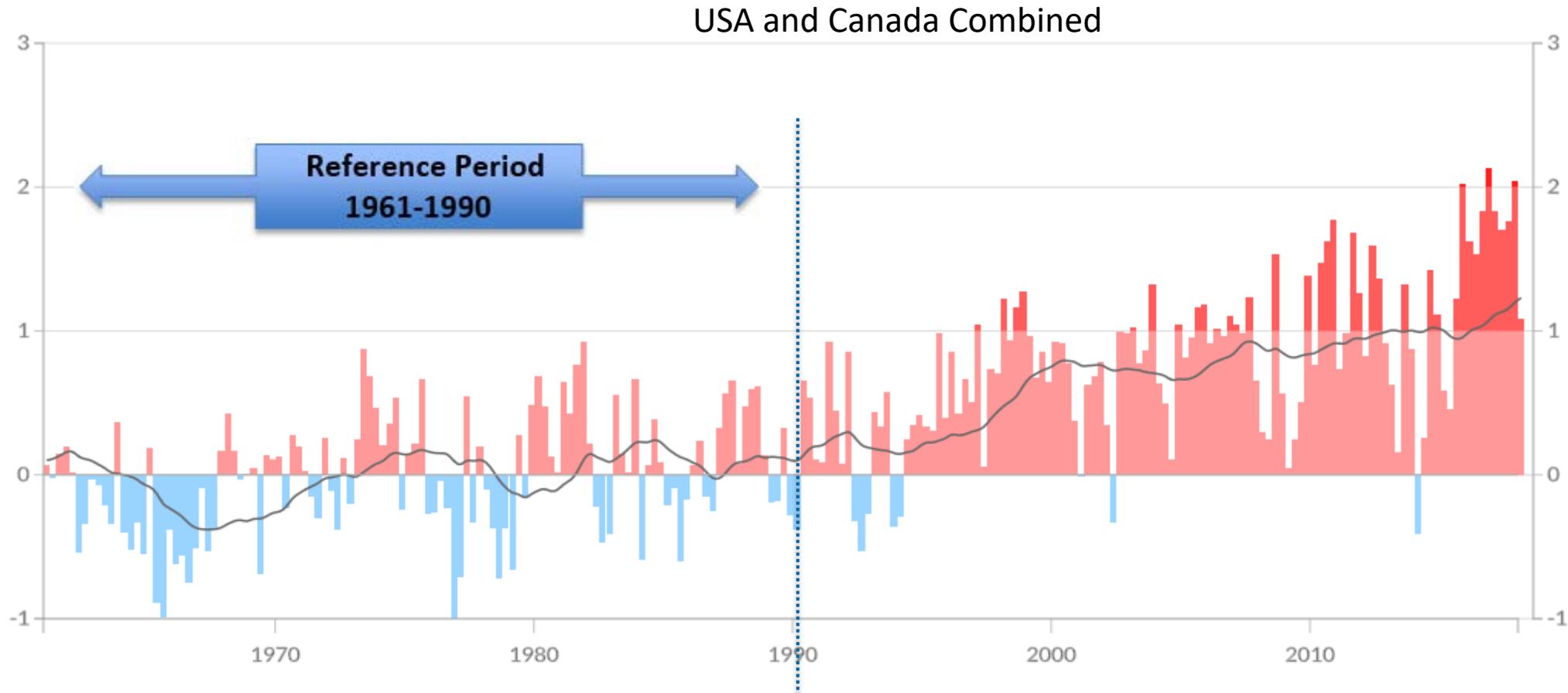


ACI—Recent Index Findings

- ❑ Latest press release: November 15, 2018.
- ❑ “Rising sea levels and more frequent high temperatures are sustaining the long-term trend of higher ACI values.”
- ❑ Based on data through the winter of 2017–18.
- ❑ Measured with the new data, the five-year moving average of the ACI increased to 1.23 from the 1.19 prior season average.



Actuaries Climate Index—Overall

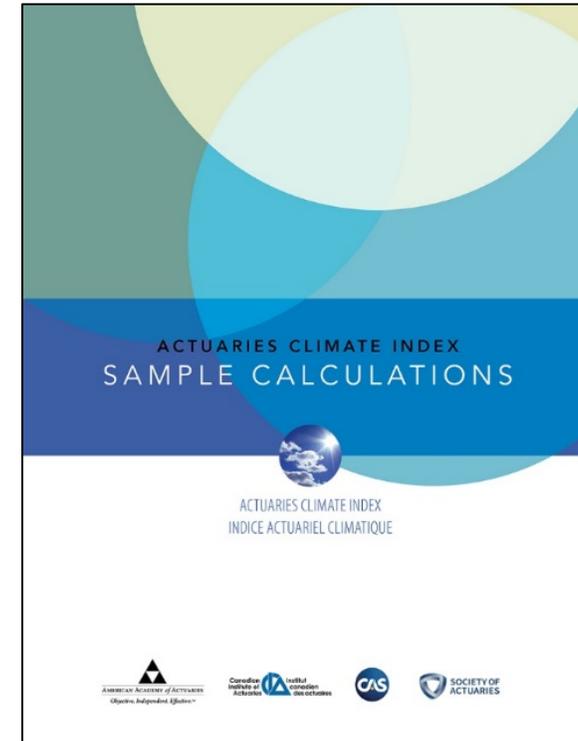
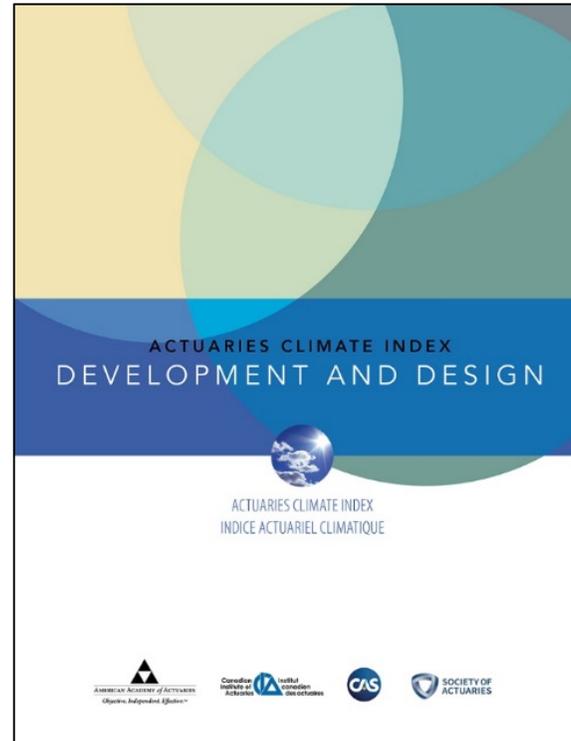
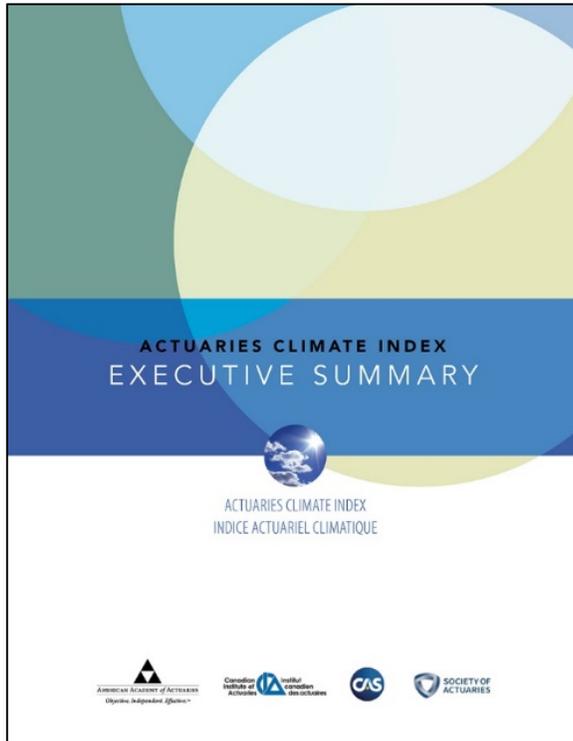


ACRI—Status Update

- ❑ Currently being developed by the sponsoring organizations
- ❑ Estimates relationships between the ACI's weather metrics and weather-related losses
- ❑ Initial model is undergoing peer review



Three Foundational Documents on the ACI Website



actuariesclimateindex.org

The Academy

- The American Academy of Actuaries is a 19,500-member professional association whose mission is to serve the public and the U.S. actuarial profession. For more than 50 years, the Academy has assisted public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.



Contact Info

For more information, contact:
Marc Rosenberg, Senior Policy Analyst, Casualty
rosenberg@actuary.org
202-785-7865

