MONTANA CLIMATE ASSESSMENT:
Findings & Feedback

Cathy Whitlock
Professor in Earth Sciences
Montana State University

MONTANA CLIMATE ASSESSMENT

http://montanaclimas.org

MCA PARTNERS

Stakeholder Driven
Stakeholders input throughout process
Listening sessions part of MCA strategy
- Critical decisions and issues impacted by climate
- What type of information they need
- How to disseminate useful information
Support of key state-level organizations
MONTANA CLIMATE ASSESSMENT

Approach for Montana:
- Build on national efforts
- Best-science available
- Build on university research, engagement & partnerships
- Focus on relevant topics
- Useful, updatable products

MCA “ROAD SHOW”

99% of Americans say CLIMATE CHANGE IS REAL

CBS News poll, released Sept 2019
WHY’S THIS HAPPENING...

- Existential issue for young people
- Better reporting & more discussion
- Near-weekly climate surprises
- Free market realities & our economic future (~$32.4 billion in weather-climate disaster losses in 2018, total $1.7 trillion since 1980; 10% of GNP by 2100)

IS CURRENT CLIMATE CHANGE UNPRECEDENTED?
CURRENT CLIMATE CHANGE IS DIFFERENT

LAST 800,000 YEARS

CO₂ LEVELS AS HIGH AS TODAY

THREE TALKING POINTS FOR MONTANA

1. Weather is different than climate.
2. We’re getting warming and that affects everything.
3. We must do something.
1. WEATHER & CLIMATE

Weather:
short-term changes in the atmosphere

Climate:
average conditions over a long period of time in a specific area.

EXTREME WEATHER EVENTS

CLIMATE FACTS

1980s-2018: -1.5°F increase in US and globally
2014-2018: warmest five years on record in US and globally
2018: 14 weather-climate disasters had losses, each exceeding $1 billion
(hurricanes, floods, drought, tornadoes, fires, severe weather (rescues, hail, dust, etc.))
2. Montana is getting Warmer

Between 1950-2018:

- Average temperatures have risen 2-3°F. Winter and springs have warmed the most.
- Growing seasons are 12 days longer.
- Slight changes in annual or seasonal precipitation.

---

Annual Temperatures by Mid-Century

- RCP 4.5 (2040-2060)
- RCP 8.5 (2040-2060)

4.5°F increase
(minimum: 1.7°F, maximum: 6.1°F,
model agreement: 100%)

8.0°F increase
(minimum: 0.0°F, maximum: 8.2°F,
model agreement: 100%)

---

Monthly Temperatures

Greater warming in:
- Winter: 4 to 5°F
- Summer: 5 to 7°F

100% model agreement
WHAT DOES IT MEAN FOR US?

LIVING WITH CHANGE

LIVING WITH WILDFIRES

- Fires have increased.
- Fire season is longer.
- Fires will increase (warmer weather & past management policies in some areas)
- Forest carbon is being lost.
**BEETLE & PATHOGENS (2000-2015)**

**LIVING WITH UNCERTAINTY**
- Shortened winter season
- Longer summer season
- Lower late-summer stream flows
- Climate surprises

**LIVING WITH HEALTH RISKS**

**LIVING WITH COMPLEXITY**

- Government Policies
- Expected Price Futures Market and Livestock
- Producer Inputs
- Fluctuations
MCA: WHERE ARE WE NOW?

MCA CONVERSATIONS

- Water & water storage
- Floods & droughts
- Wildlife & fisheries
- Wildfires
- Livestock & crop decisions
- Social-economic well-being
- Human health