## ADAPTING TO A CHANGING CLIMATE

Alaska is at the forefront of climate change, experiencing impacts faster than the rest of the United States.

### Since 2000...

<table>
<thead>
<tr>
<th>Event</th>
<th>Details</th>
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| **WILDFIRES**  | 29 million acres of land burned in over 5,000 fires  
- Over 10,000 structures were threatened and 492 were destroyed.  
- Total spending suppression costs have reached a 10-year total of more than $725 million, including $188 million in the record setting 2015 fire season. |
| **MELTING ICE**| 25% decrease in Arctic sea ice extent in September  
- In the 40-year period since satellite measurements began, the annual minimum sea ice extent has decreased by 33%.  
- Arctic winter sea ice maximums were at record lows in 2015-2018.  
- Permafrost thaw has impacts on transportation and infrastructure statewide.  
- Alaska has some of the fastest glacial melt rates on the planet. |
| **COASTAL STORM DAMAGE** | $200 million spent on disaster relief and storm damage  
- 16 state/federal disaster coastal storm events have occurred.  
- Some coastal communities have had to relocate.  
- While average rates of erosion on Alaska’s coasts are nearly 5 ft/year, some areas are seeing erosion rates as high as 70 ft/year. |
| **FLOODS**     | $227 million spent on disaster relief and property damage from flooding  
- 13 state/federal disaster flood events related to ice jam flooding and summer/autumn rain storms have occurred. |

### Making Climate Models Relevant to Alaska

Global climate models are often too coarse for local or regional decision making. Therefore, the AK CASC creates detailed models of future climate trends for communities.

Local climate data is available online through the Scenarios Network for Arctic + Alaska Planning at: [snap.uaf.edu/tools/community-charts](http://snap.uaf.edu/tools/community-charts)
WE INFORM communities through research

The Integrated Ecosystem Model project helps communities and resource managers understand the impacts of climate change on moose and caribou habitat and subsequent impacts to subsistence and sport hunters.

Tribal Resilience Planning collaborates with communities addressing local climate issues and concerns, and encourages adaptation efforts through workshops on available tools and climate models.

WE RESPOND to stakeholder needs

The AK CASC manages applied research projects with state and federal agencies to respond directly to critical natural resource management needs.

Streamflow Models in Southeast Alaska predicts future flows and extreme events to better evaluate management actions like culvert and bridge replacement, floodplain restoration, and hydropower development.

Arctic Landscape Change assesses the vulnerability of Arctic and western Alaska landscapes to future climate change.

Wildfire Projections in Interior Alaska informs seasonal and multi-year fire weather forecasts to guide land management and operational decision making.

Glacier Outburst Flood Modeling projects the size and timing of peak streamflow for glacial outburst flood events to evaluate and forecast future events.

WE PREPARE tomorrow’s scientists and leaders

In 2017 the AK CASC hosted a leadership workshop for early-career women in science that focused on skill building, networking, motivation, and mentorship.

Since 2010, AK CASC has supported...

- 11 Postdoctoral fellows
- 11 PhD students
- 14 MSc students
- 6 Undergraduate students
- 70 Girls on Ice students

Girls on Ice Alaska

The AK CASC is a key supporter of the Girls on Ice Alaska wilderness science education program for high school girls.

casc.alaska.edu | casc.usgs.gov

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