Reducing spring flood impacts for wellbeing of communities of the North through stakeholder engagement

Katia Kontar, PhD student

International Arctic Research Center (IARC)
University of Alaska Fairbanks

RISA 2016 Annual Meeting
23-25 February 2016
Tucson, AZ

Acknowledgments

Dr. Sarah Trainor

ACCAP
Alaska Center for Climate Assessment and Policy

Dr. Scott Rupp

AK CSC
Alaska Climate Science Center

ATM 697, Spring 2015

Dr. Uma Bhatt, UAF/GI
Ed Plumb, NWS/NOAA
Rick Thoman, NWS/NOAA
Dr. Scott Lindsey, RFC/NOAA

Comparative Analysis

The project is part of the Peer-to-Peer Program of the United States Embassy in Moscow, U.S. Department of State.

Edeytsy, Sakha Republic - May 2013

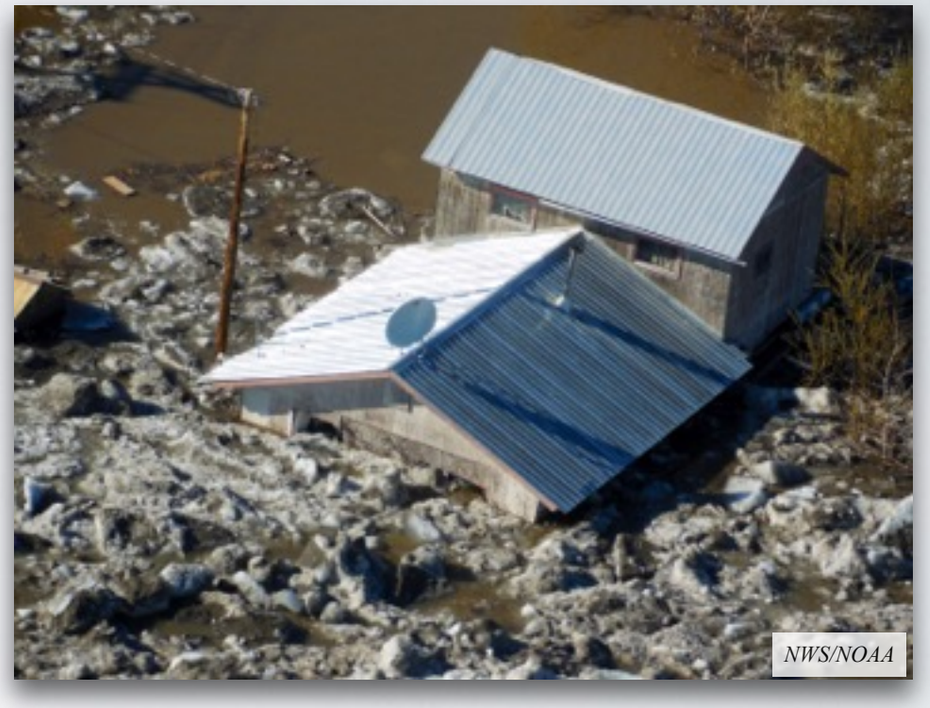
Edeytsy admin

Galena, Alaska - May 2013

NWS/NOAA

Socio-Economic Effects

- Injuries
- Displacement
- Loss of means of livelihood



NWS/NOAA

NWS/NOAA

ADHSEM

Flood Causes

River Channel Morphology

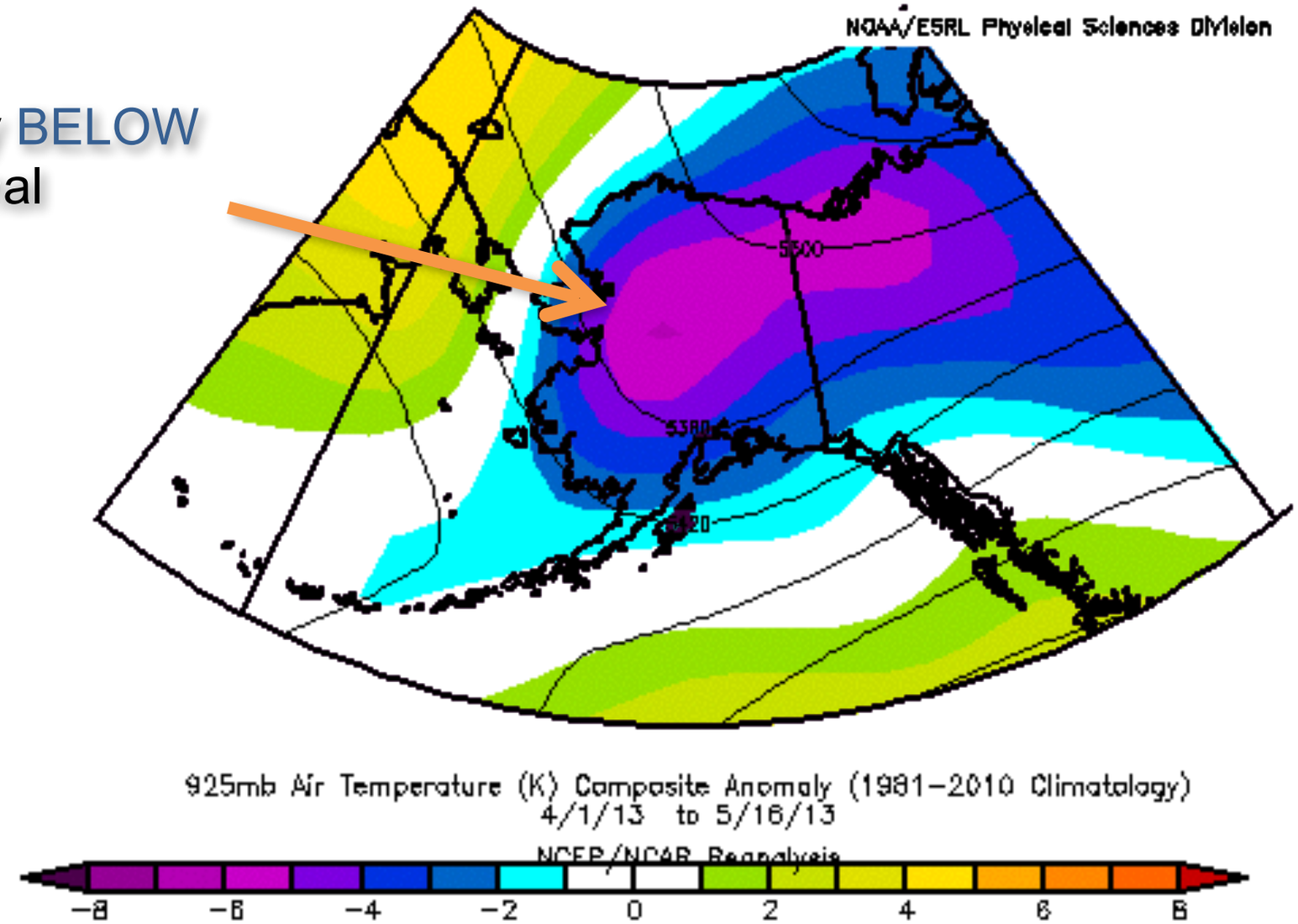
NWS/NOAA

NASA/earthobservatory

Flood Causes

Average Temperature Departure
April 1 - May 16, 2013

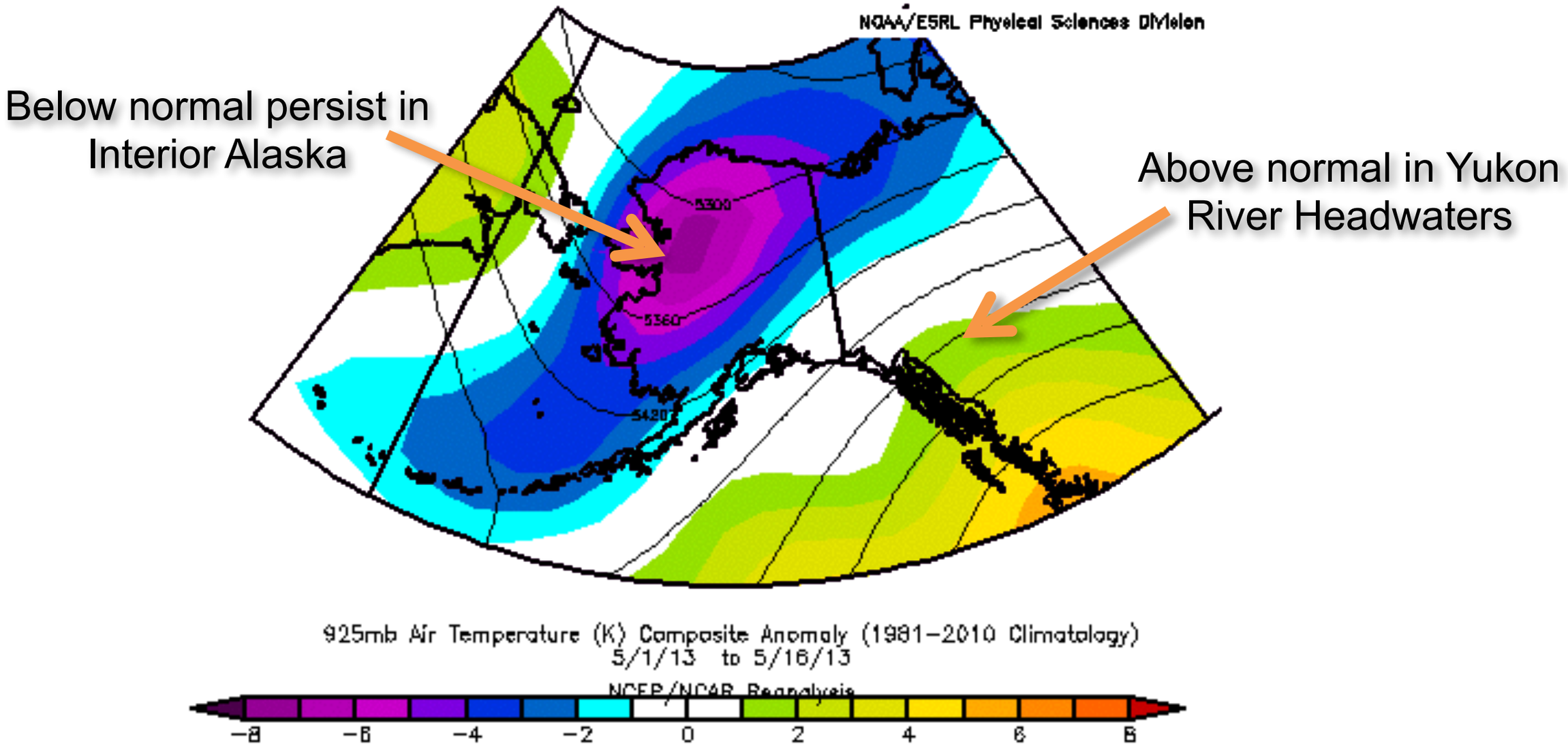
Significantly BELOW normal



COLDEST spring (Apr 1 – May 16th) on record at all long-term observation stations in Interior AK. Previous records being 1924 and 1964.

NWS/NOAA

Average Temperature Departure
May 1-16, 2013

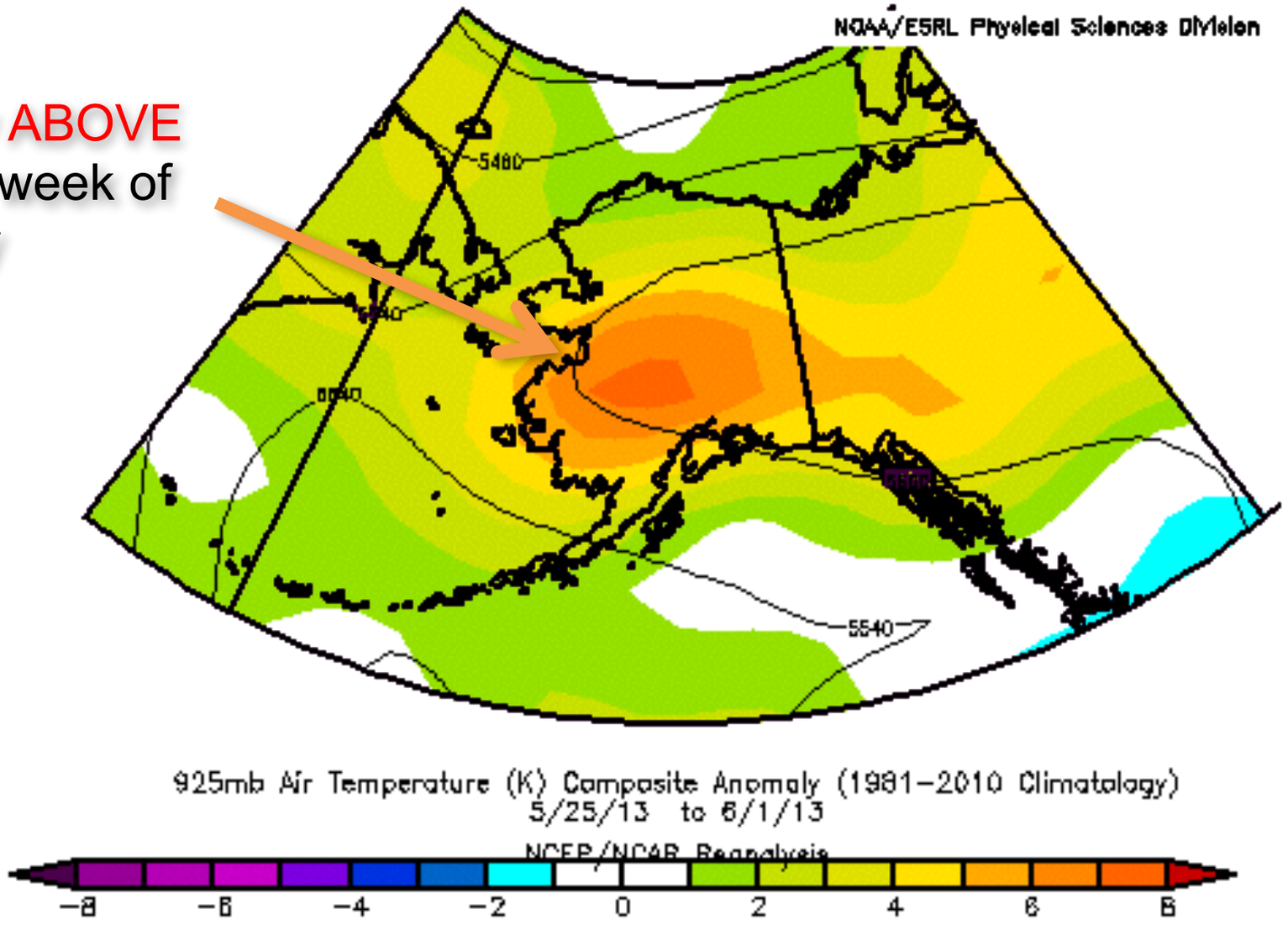


- In early May, readings in 50's and 60's in the Yukon River headwaters resulted in significant melting.
- BUT in Alaska below normal temperatures persisted through mid-May.

NWS/NOAA

Average Temperature Departure
May 25 – Jun 1, 2013

Significantly ABOVE normal last week of May



- Temperatures were EXTREMELY warm the last week of May with widespread 80's across the Interior.
- This pattern persisted into June and resulted high water and flooding due to snowmelt in some locations after breakup.

NWS/NOAA

Flood Causes

Floodplain Management

Ice Jam and Flood Risk Reduction Strategies

- Community preparedness
- Disaster response and recovery
- Ice jam and flood mitigation


NWS/NOAA

FEMA


Korta, J., Galena

Logistical and Cultural Challenges

- Remoteness
- Limited Infrastructure
- Long winters
- Complicated history
- Limited coordination and communication

Graduate Research

- **Comparative analysis**
  - Community flood preparedness
  - Ice jam and flood risk mitigation
  - Disaster response and recovery
- **Community-based participatory research**
- **Interdisciplinary research**
- **Stakeholder engagement**

Research Methods

Roundtable discussions

- Federal and state emergency managers
- Local and tribal leaders
- Scientists

Surveys

- Population at risk

Lit review

- Historical analysis
- Documents/reports
- Academic publications
  - Höppner, C, et al (2010) Risk Communication and Natural Hazards CapHaz-Net WP5 Report, Swiss Federal Research Institute WSL.

Stakeholder Engagement

Goal: to initiate an ongoing and interactive dialogue between those responsible for managing annual breakup flood risk and those who are affected by floods

Stakeholder Engagement

Objectives:

- To identify relative stakeholders
- To provide ***all*** stakeholders with equal access and capacity to participate in the dialogue

Stakeholder Engagement

Next Steps: dialogue continues in Alaska, March 11-21

Nat Haz and Risk Management in the Arctic
Open to the public

ARCTIC SCIENCE SUMMIT WEEK
12-20 March 2016

Invited Speakers:

- University scientists
- National Weather Service scientists
- Local and tribal leaders
- Tanana Chiefs Conference
- Alaska Division of Homeland Security and Emergency Management
- American Red Cross of Alaska
- Alaska District, U.S. Army Corps of Engineers
- Alaska Dept. of Environmental Conservation
- Cold Climate Housing Research Center

Stakeholder Engagement

Next Steps: dialogue continues in Alaska, March 11-21

Cross-disciplinary seminar ***Northern Perspectives***, hosted by UAF Dept. of Alaska Native Studies and Rural Development

Tanana Chiefs Conference annual convention, ***Arctic Athabascan Council and Climate Change Readiness and Emergency Preparedness*** session

Trip to Galena, Alaska

- Surveys
- Roundtable discussions
- Visits to historical and recent flood sites

Stakeholder Engagement

Developing engagement *Existing engagement*

Alaska, USA	Sakha Republic, Russia
Federal Agencies • National Weather Service • River Watch Program (NWS with Alaska Division of Homeland Security and Emergency Management). • U.S. Army Corps of Engineers	**Federal Agencies** • Lena Basin Water Management • Russian Ministry of Emergency Situations • Russian Federal Service for Hydrometeorology and Environmental Monitoring
State Agencies and Programs • Geographic Information Network of Alaska • Alaska Dept. of Environmental Conservation	**State Agencies and Programs** • Spring Breakup Flood Response and Recovery Operations • State Committee to Ensure Health and Safety of the Population of Sakha Republic
Local and Regional Agencies • Galena Village Council • Fairbanks North-Star Borough **Tribal Agencies** • Tanana Chiefs Conference • Louden Tribal Council	**Local Administration** • Namsky Region • Edeysky District • Yakutsk Borough
Academic and Research Institutions • ACCAP, AKCSC • University of Alaska Fairbanks • International Arctic Research Center • Cold Climate Housing Research Center **Humanitarian and Faith-Based Organizations** Red Cross	**Academic and Research Institutions** • North-Eastern Fed. University (Yakutsk) • Russian Academy of Sciences - Siberian Branch • Northern Arctic Fed. University (Arkhangelsk)

Preliminary Conclusions

- Ongoing and interactive dialogue among stakeholders is crucial in reducing the impacts of breakup floods for wellbeing of Northern communities
- Many logistical and cultural challenges arise when initiating and maintaining this dialogue
  - Stakeholder groups have different goals, requirements, and communication strategies

Recommendations

- Create an environment appropriate for the exchange of information, knowledge, and opinions

- ***All*** relevant stakeholders should be equally represented in the process

- Take into account cultural and socioeconomic features of ***all*** stakeholders

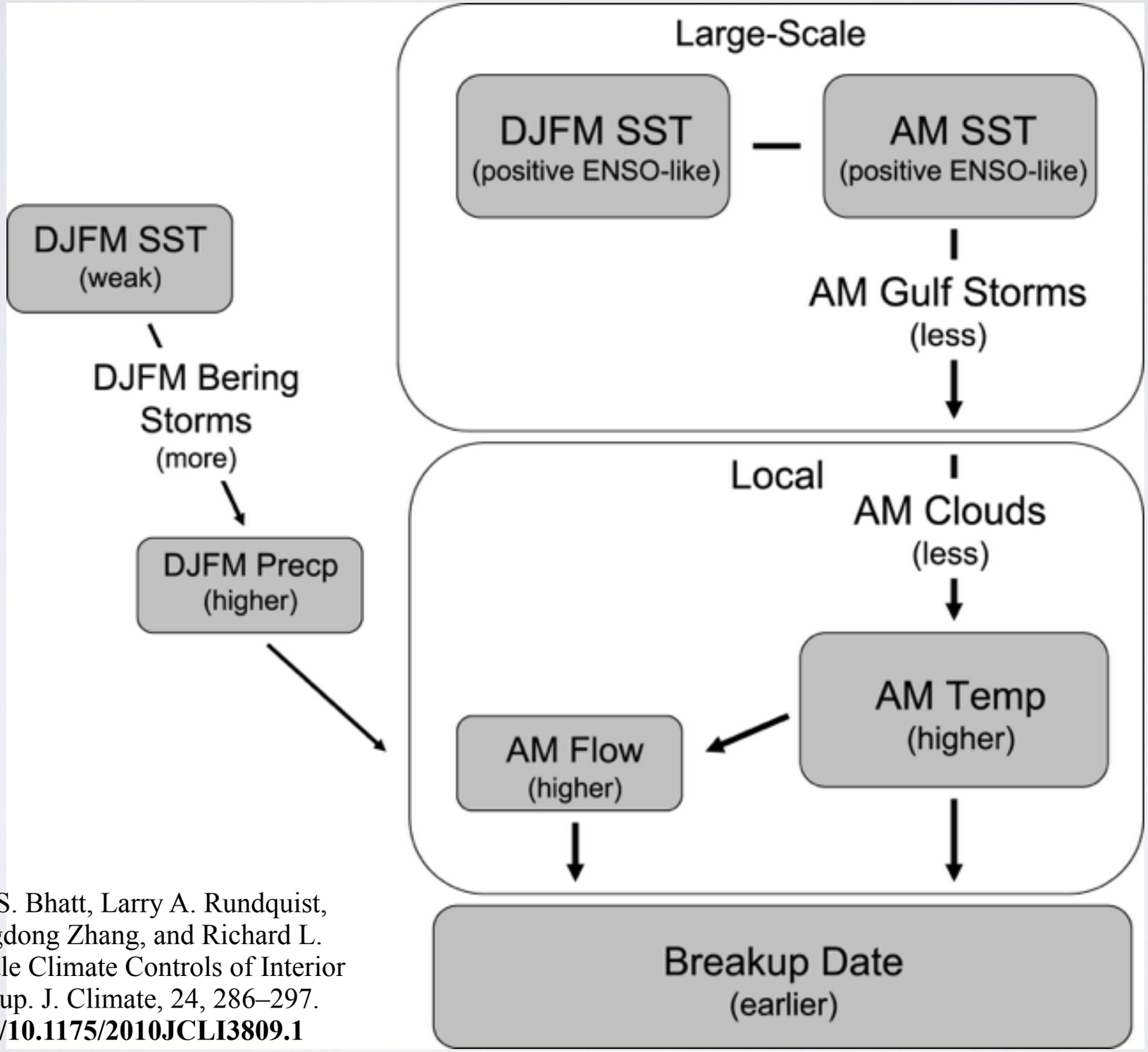
- Team up with key social leaders to gain trust among the population at risk
  - *Example: Alaska River Watch Program*
    - Over 40 years of collaboration between NWS hydrologists, AK emergency managers, and local and tribal leaders

Katia Kontar

International Arctic Research Center (IARC)
University of Alaska Fairbanks

ykontar@alaska.edu

El-Niño and Breakup Floods



Peter A. Bieniek, Uma S. Bhatt, Larry A. Rundquist, Scott D. Lindsey, Xiangdong Zhang, and Richard L. Thoman, 2011: Large-Scale Climate Controls of Interior Alaska River Ice Breakup. J. Climate, 24, 286–297.
doi: http://dx.doi.org/10.1175/2010JCLI3809.1