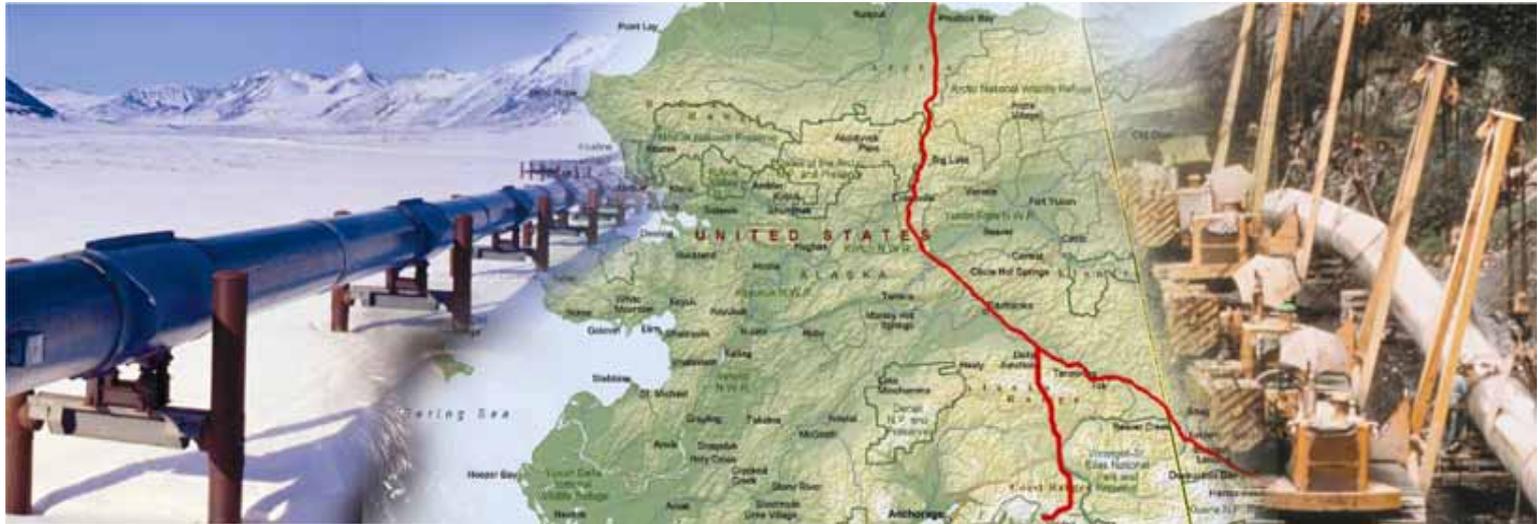


# The Alaska Natural Gas Project

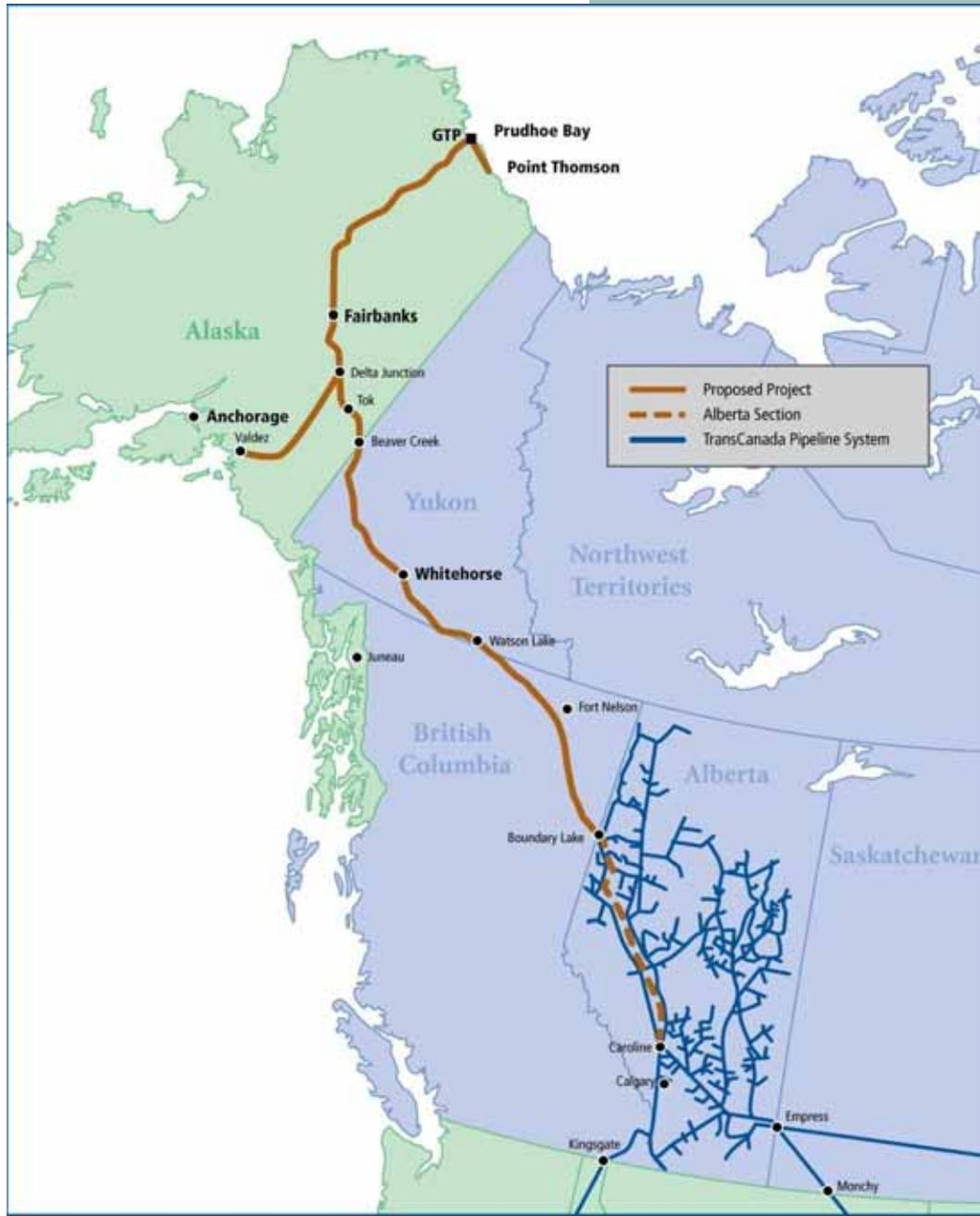
What the Future Holds







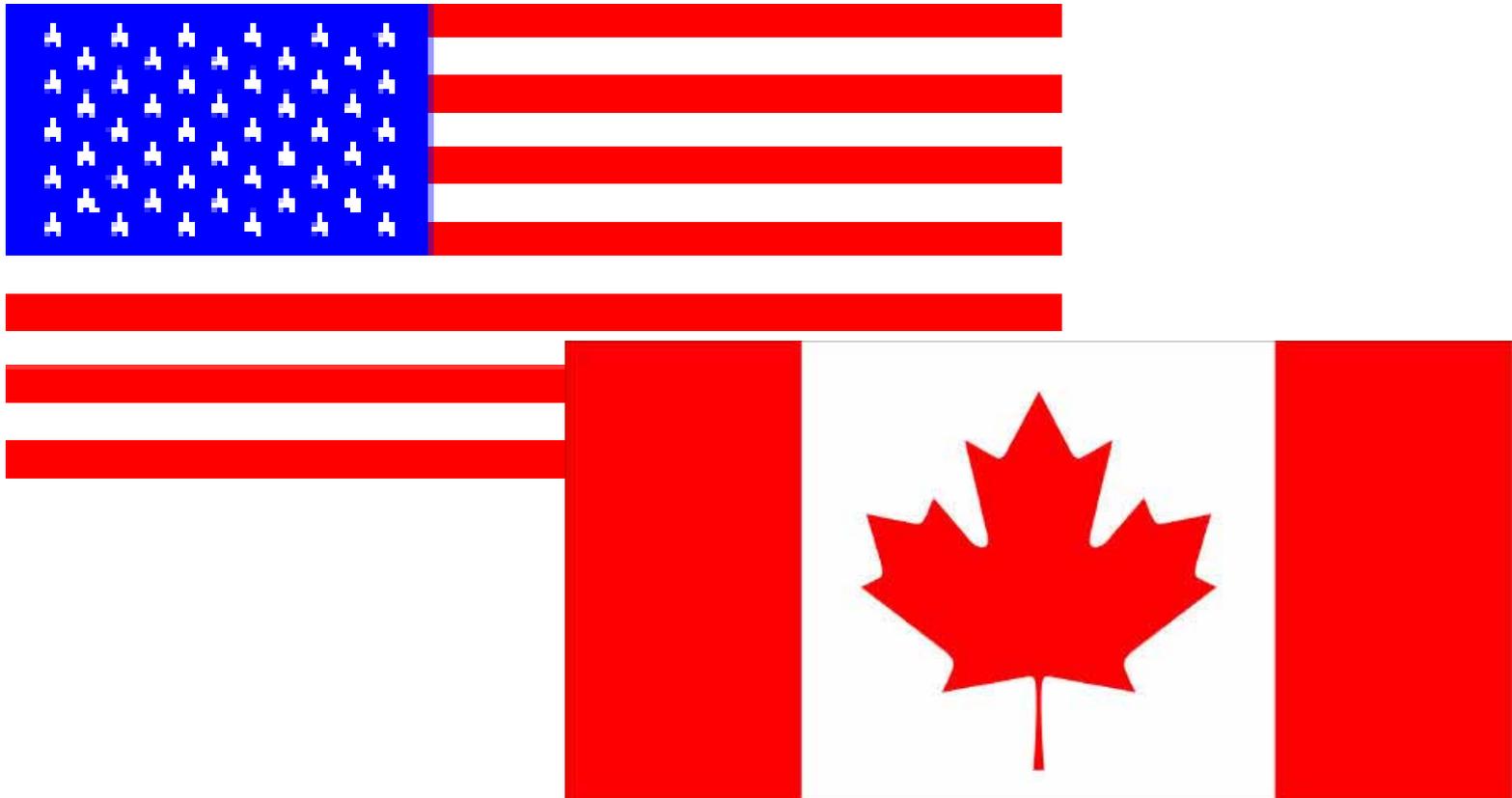




# Jobs



# INTERACTING WITH CANADA



# Trans Alaska Oil Pipeline



# President Carter signs ANGTA



# ANGTA



# AGIA LEGISLATION

- **August 2008 AGIA is signed into law**
- **Trans Canada selected**
- **\$500 million financial partnership**
- **Denali granted right to proceed**
- **Joins forces with ExxonMobil**



DENALI

the alaska gas pipeline



# THE OFC



ALASKA NATURAL GAS  
TRANSPORTATION PROJECTS  
OFFICE OF THE FEDERAL COORDINATOR

# OFFICE OF THE FEDERAL COORDINATOR

- **Congressional Mandate to manage project**
- **More than 20 federal agencies involved in pipeline**
- **Develop strategies to overcome roadblocks**
- **Develop Surveillance and Monitoring Agreement with Alaska**
- **Works with Canadian Government**

# CHALLENGES

- **Collaboration with many parties**
- **2.5 million tons of steel needed**
- **A trained workforce**
- **Lower tariffs**

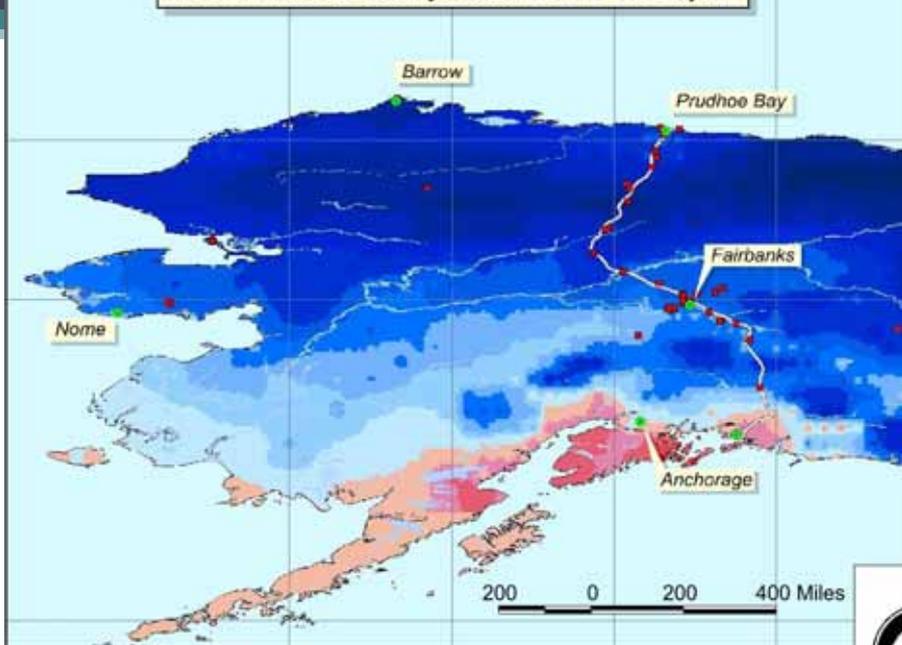


# TECHNICAL ISSUES

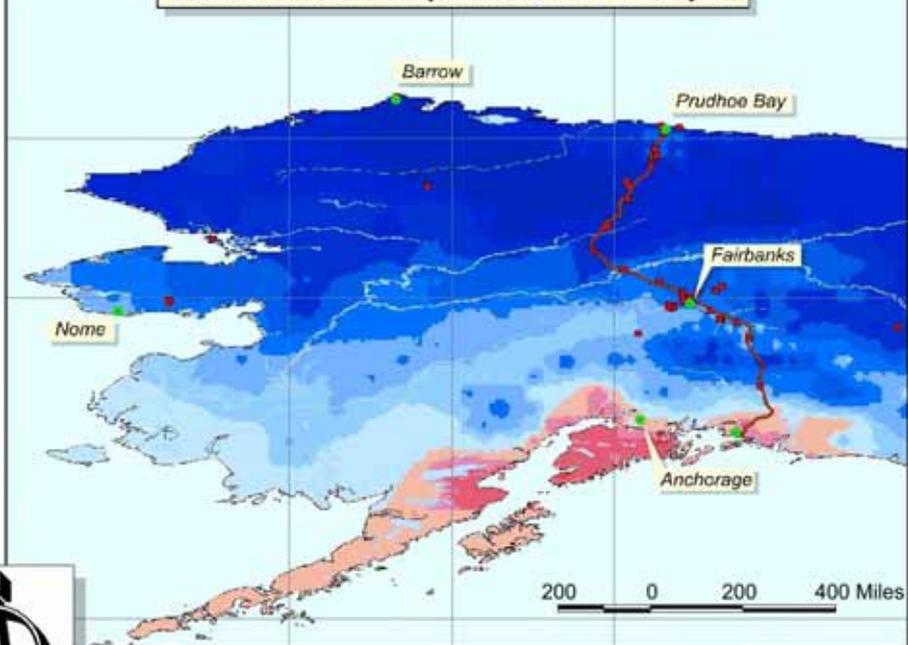
# Permafrost Construction Challenges



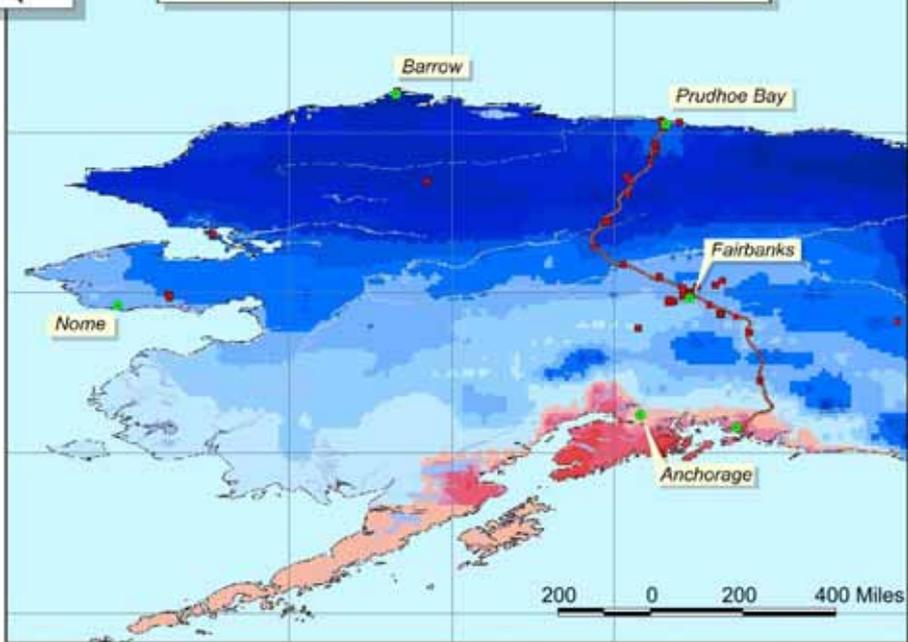
Mean Annual Temperature at 2 m Depth



Mean Annual Temperature at 5 m Depth

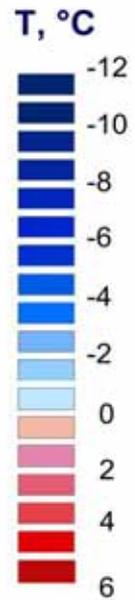


Mean Annual Temperature at 20 m Depth

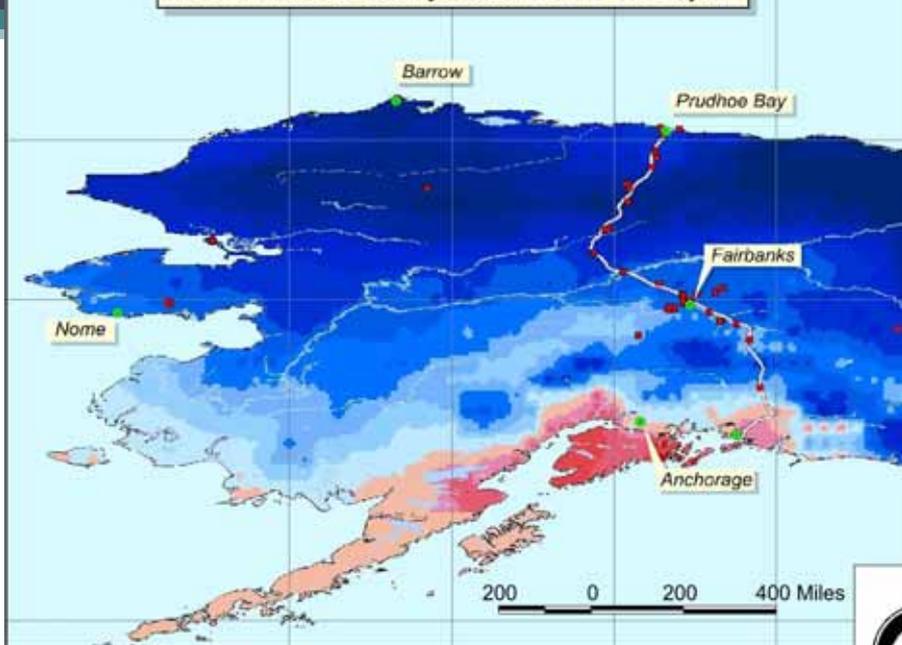


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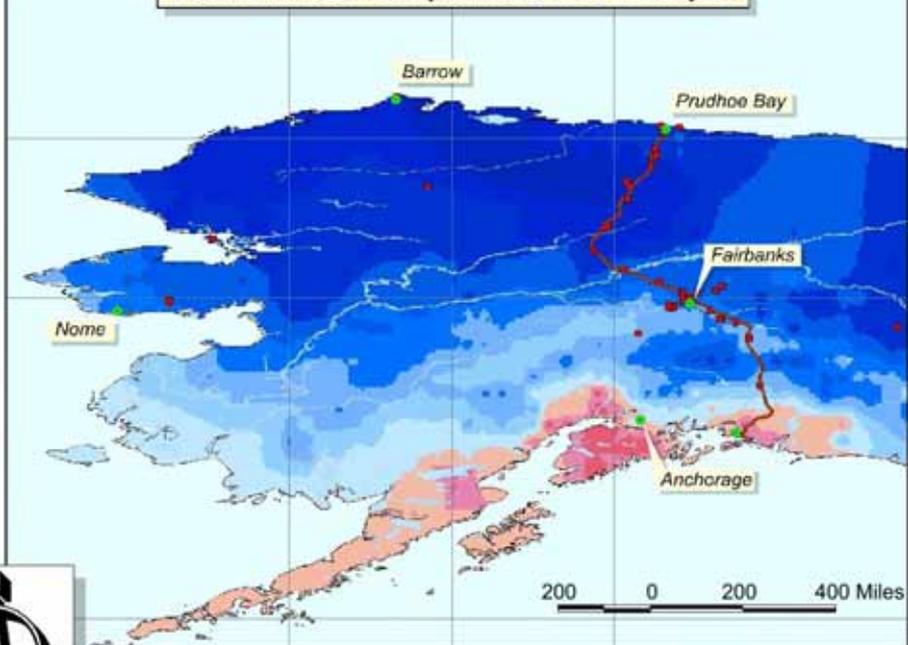
# Spatially Distributed Model of Permafrost Dynamics in Alaska



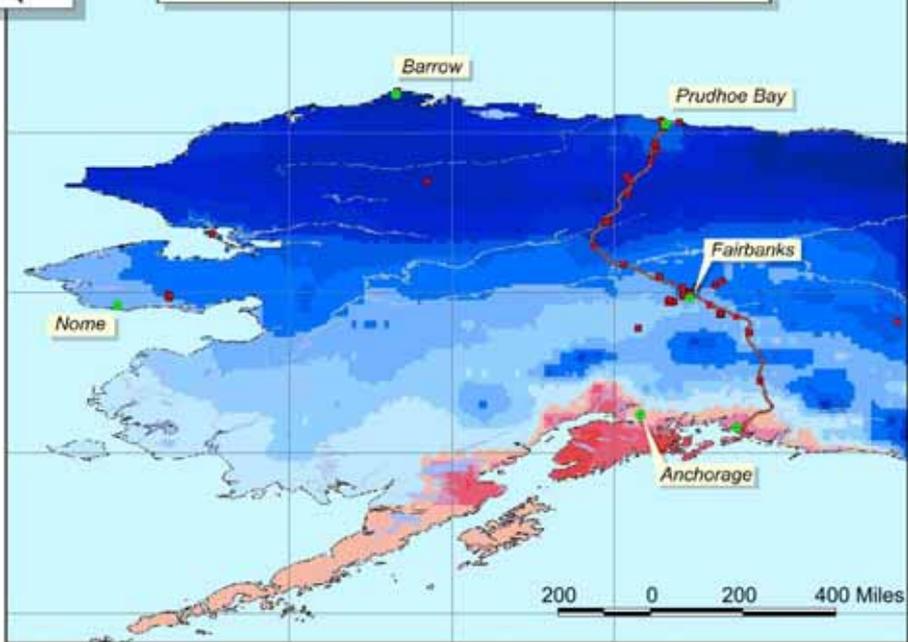
Mean Annual Temperature at 2 m Depth



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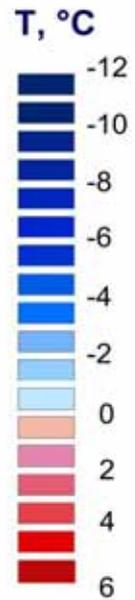


Mean Annual Temperature at 20 m Depth

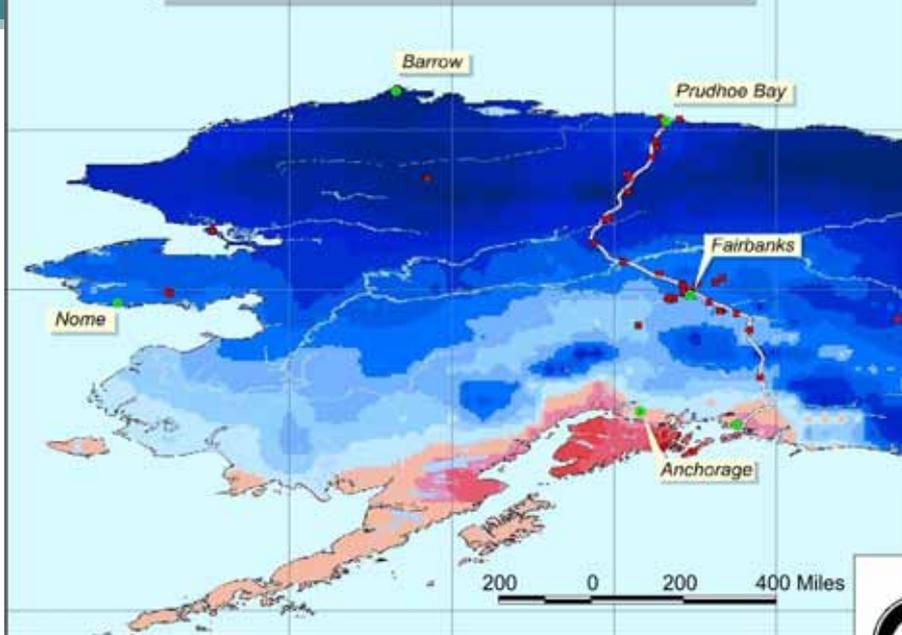


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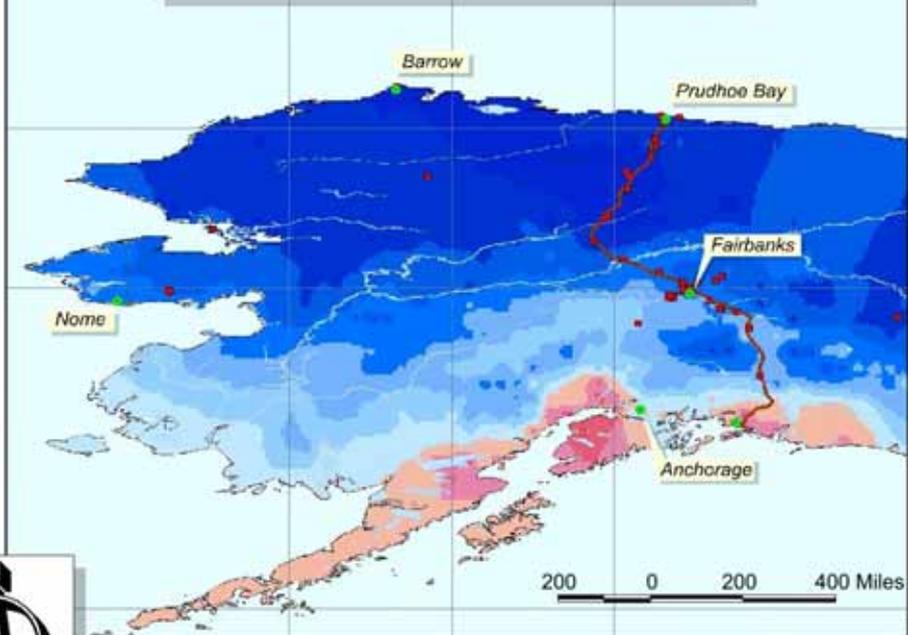
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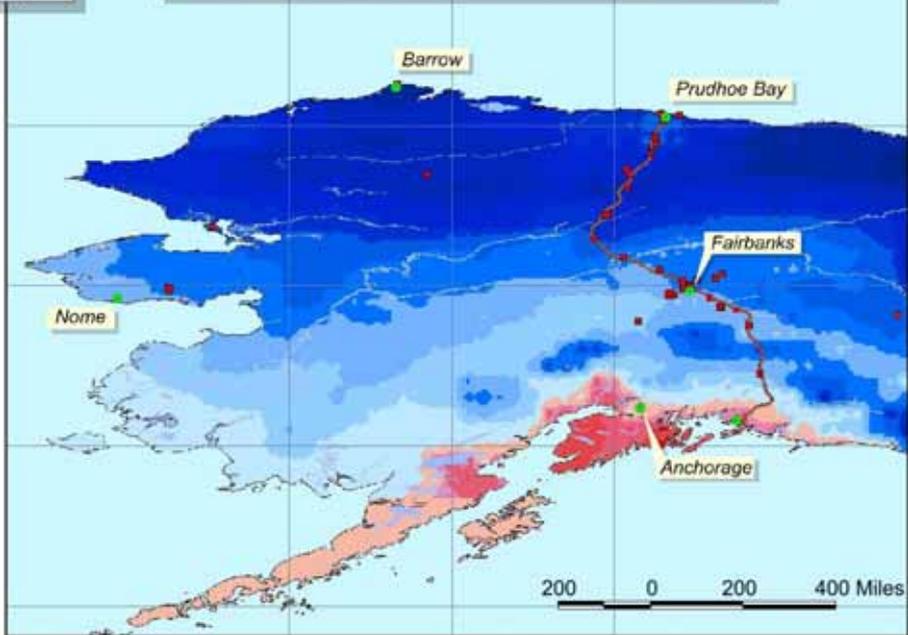
Mean Annual Temperature at 2 m Depth



Mean Annual Temperature at 5 m Depth

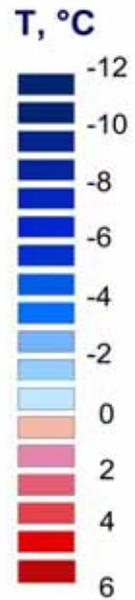


Mean Annual Temperature at 20 m Depth

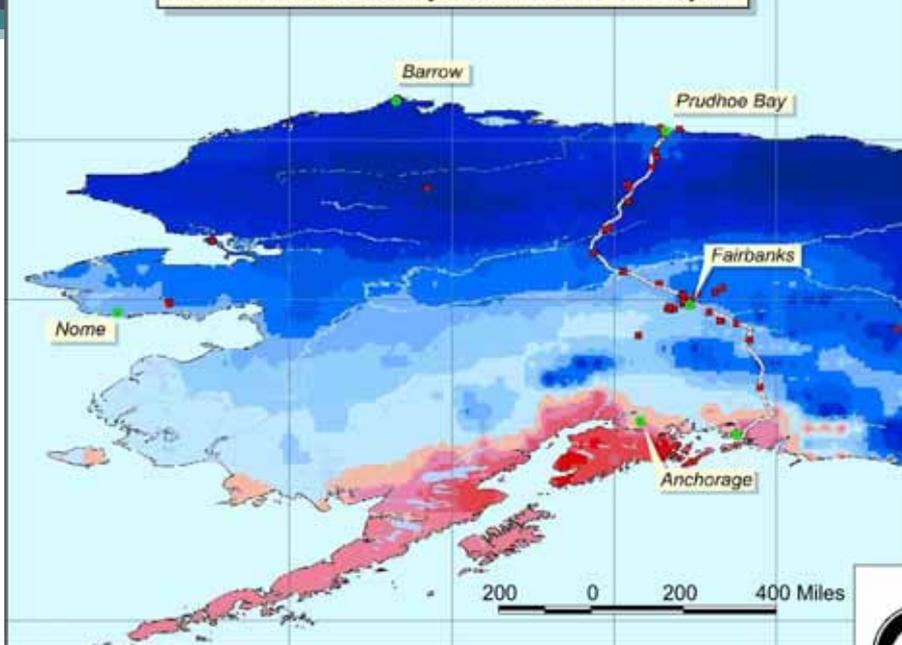


1970

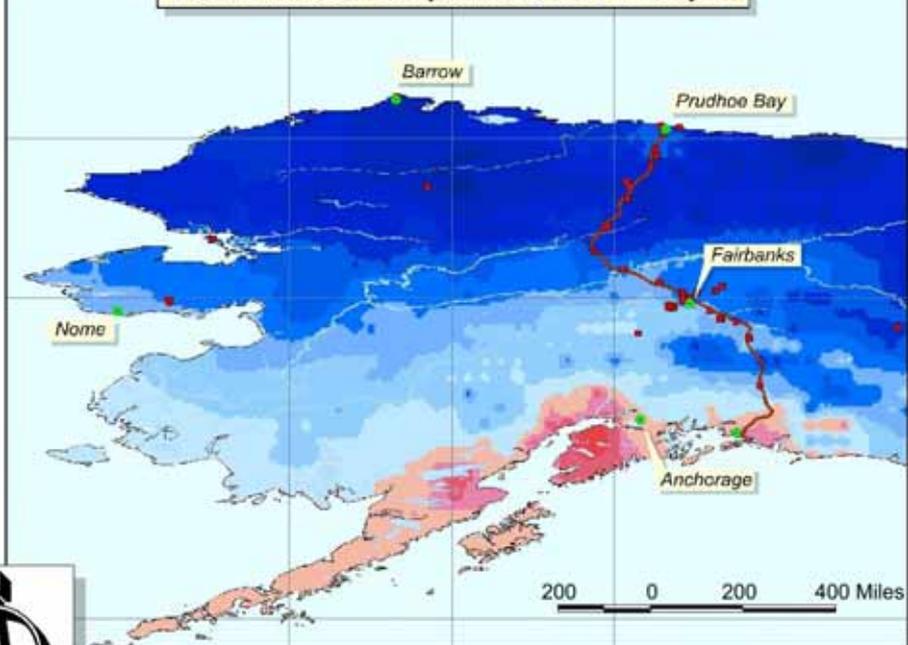
**Spatially Distributed Model of Permafrost Dynamics in Alaska**



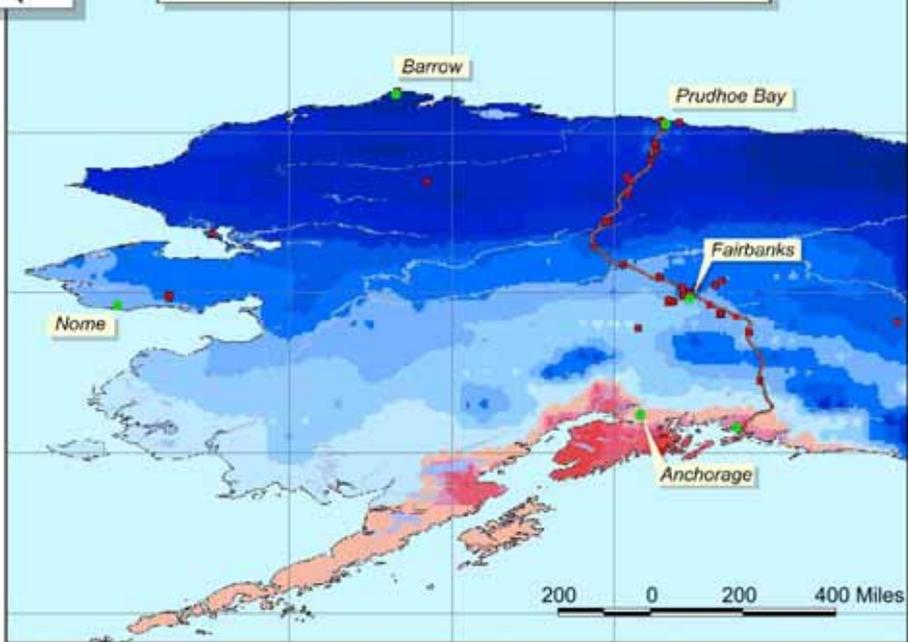
Mean Annual Temperature at 2 m Depth



Mean Annual Temperature at 5 m Depth

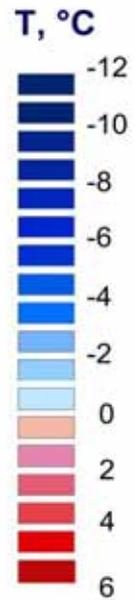


Mean Annual Temperature at 20 m Depth

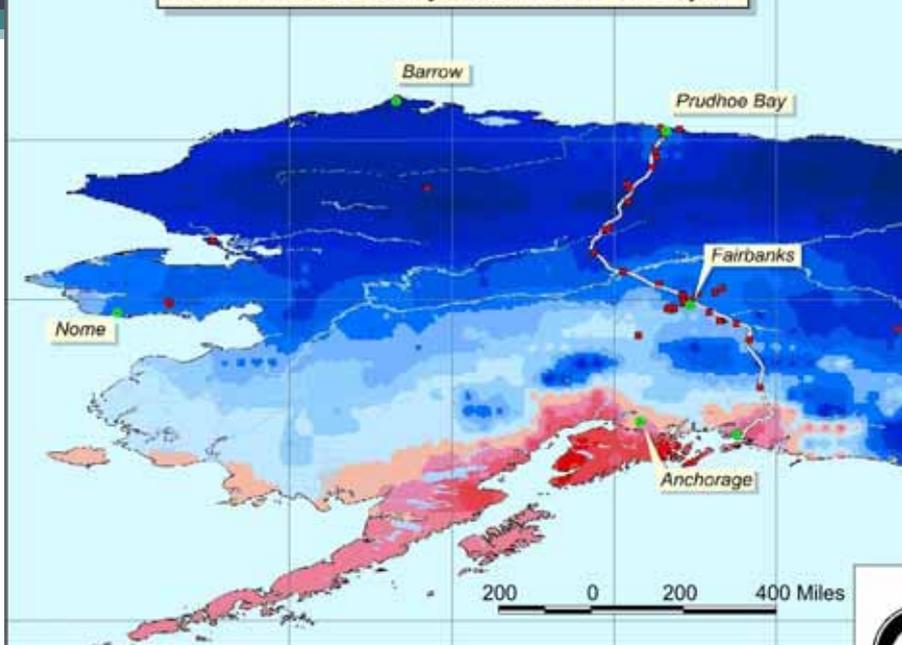


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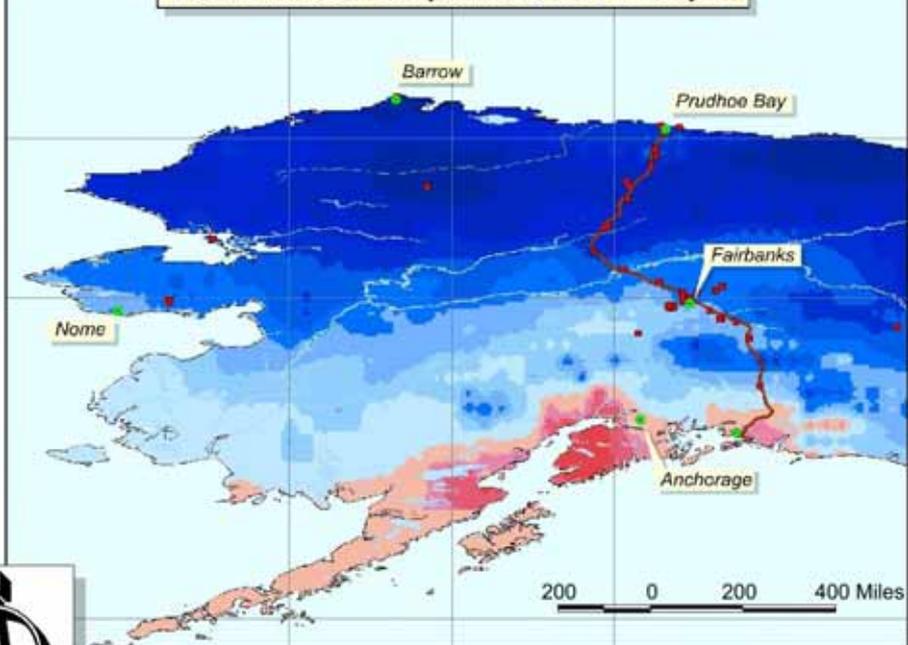
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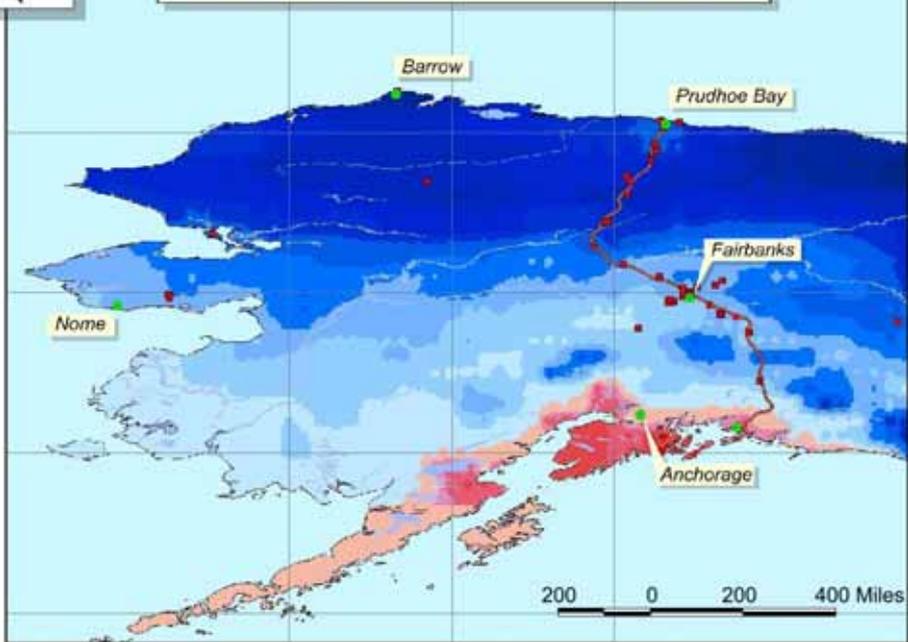
Mean Annual Temperature at 2 m Depth



Mean Annual Temperature at 5 m Depth

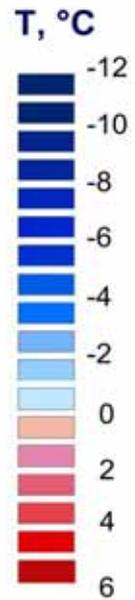


Mean Annual Temperature at 20 m Depth



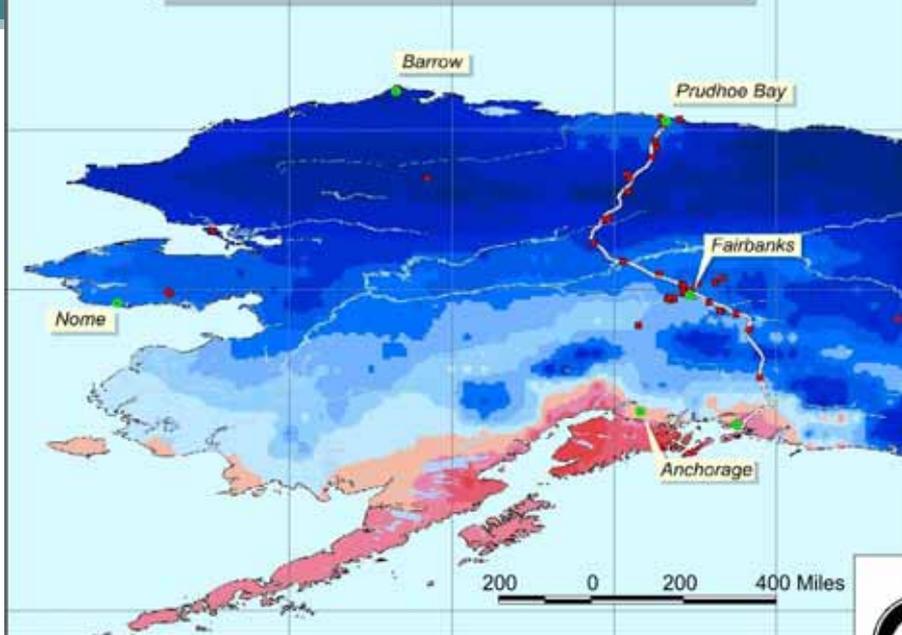
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# Spatially Distributed Model of Permafrost Dynamics in Alaska

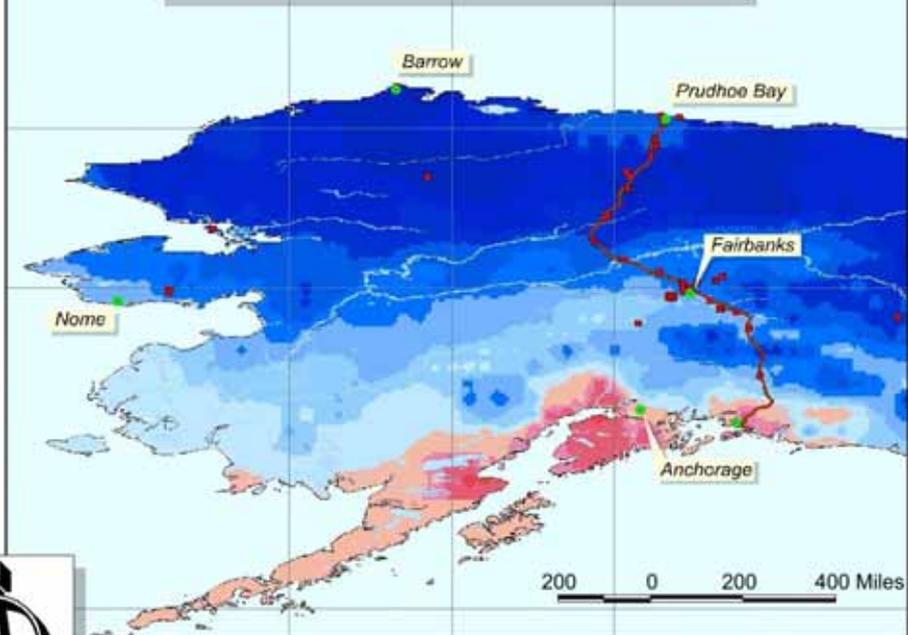


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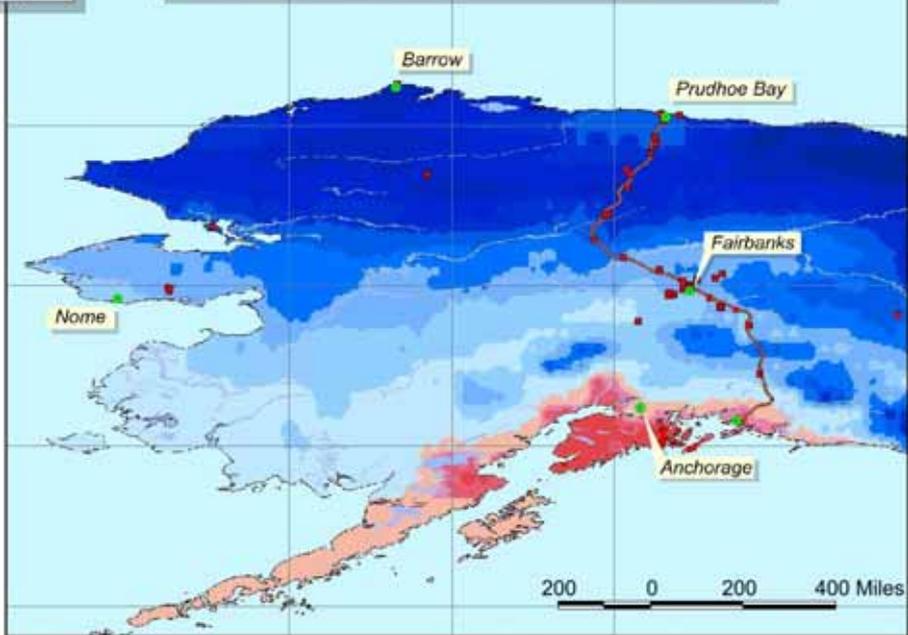
Mean Annual Temperature at 2 m Depth



Mean Annual Temperature at 5 m Depth

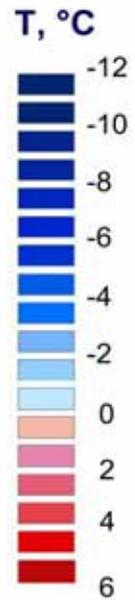


Mean Annual Temperature at 20 m Depth



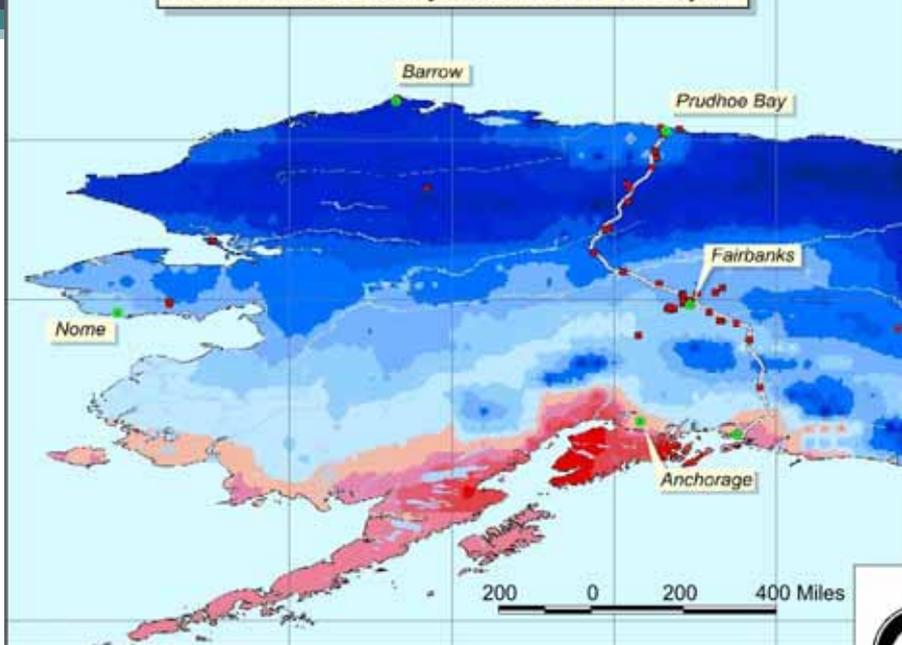
2000

# Spatially Distributed Model of Permafrost Dynamics in Alaska

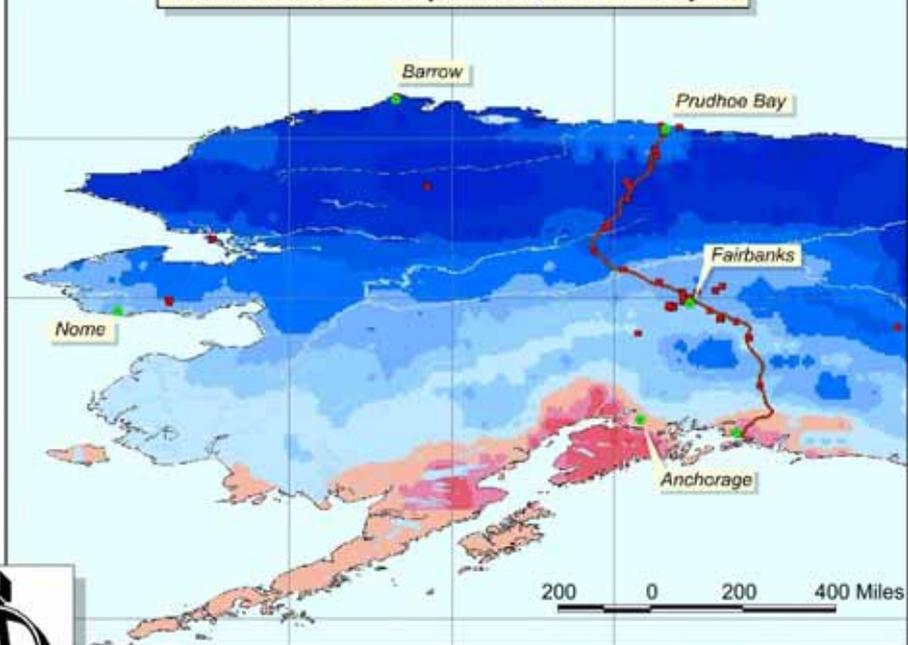


200 0 200 400 Miles

Mean Annual Temperature at 2 m Depth

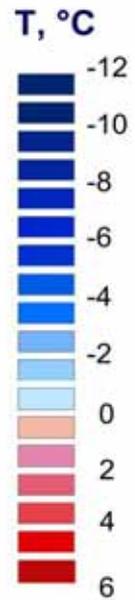


Mean Annual Temperature at 5 m Depth

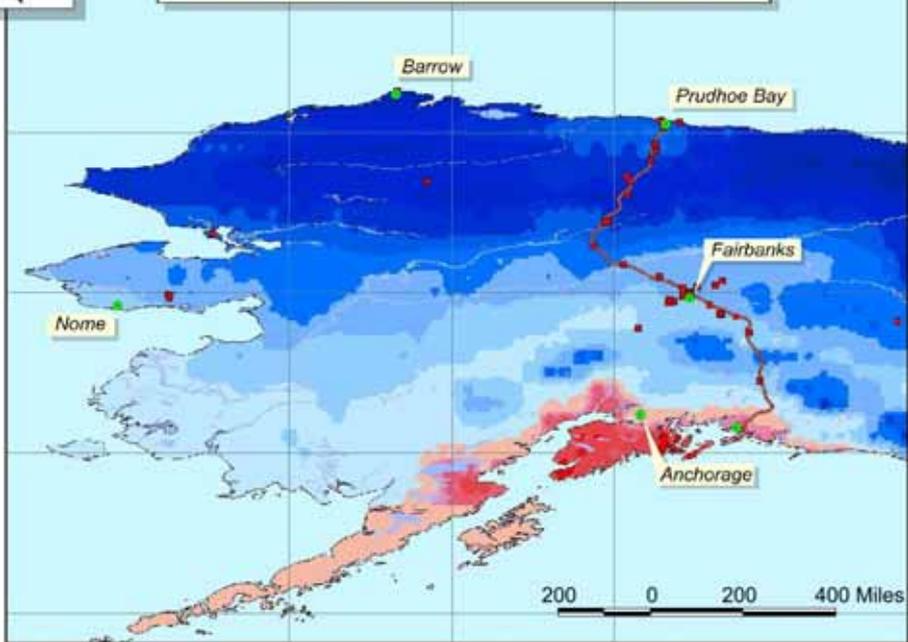


2010

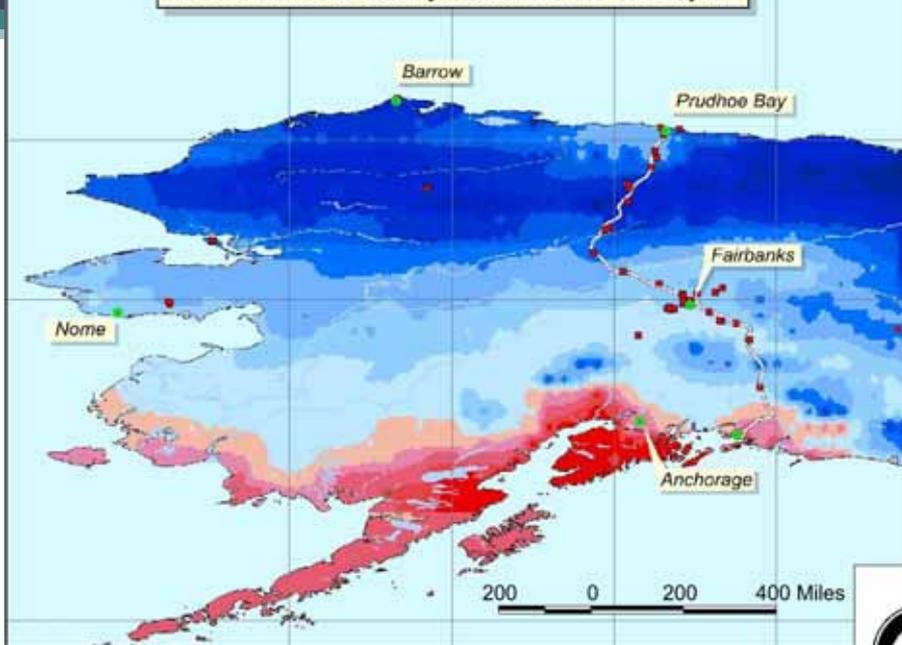
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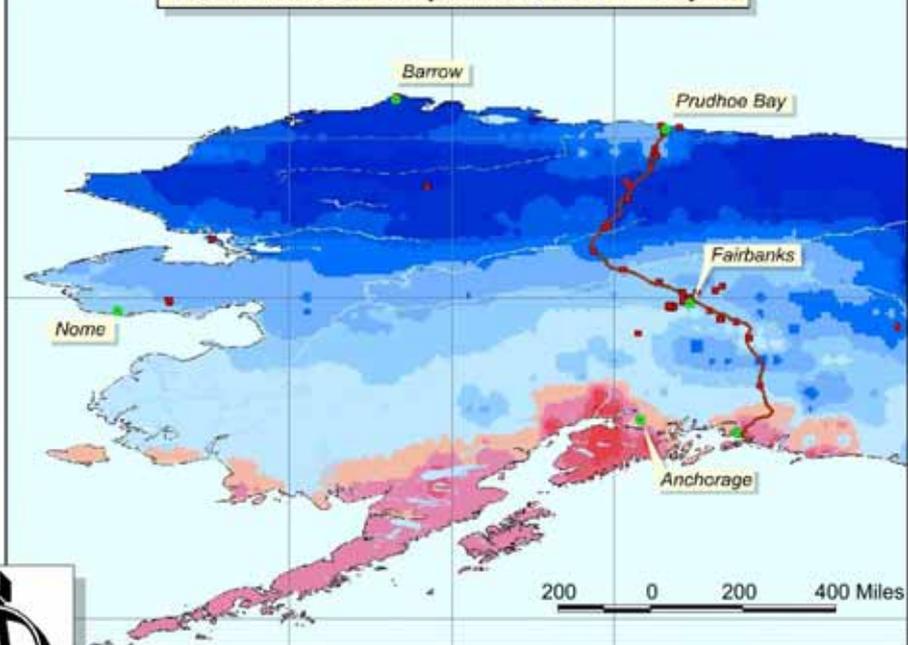
Mean Annual Temperature at 20 m Depth



Mean Annual Temperature at 2 m Depth

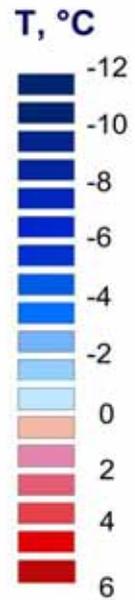


Mean Annual Temperature at 5 m Depth

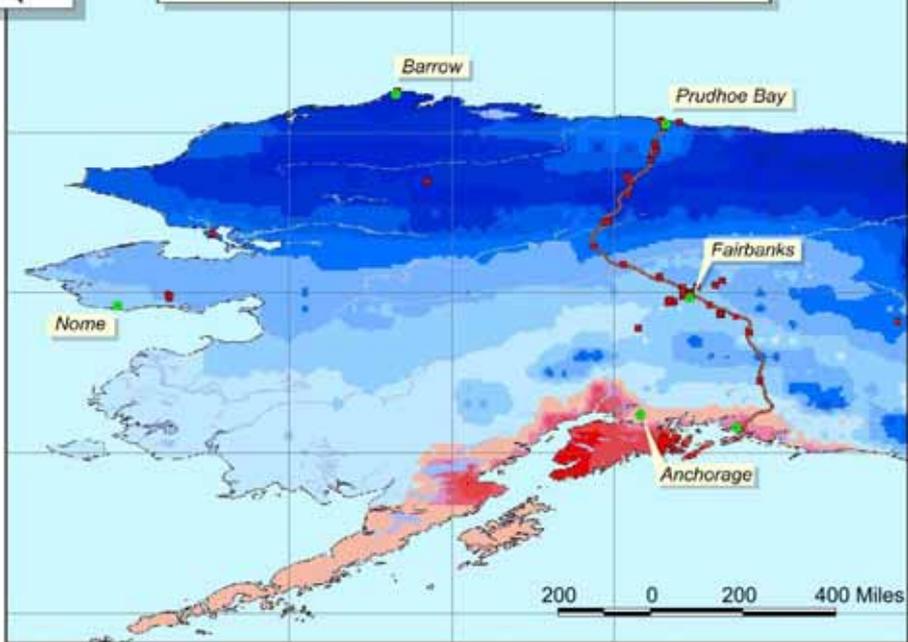


2020

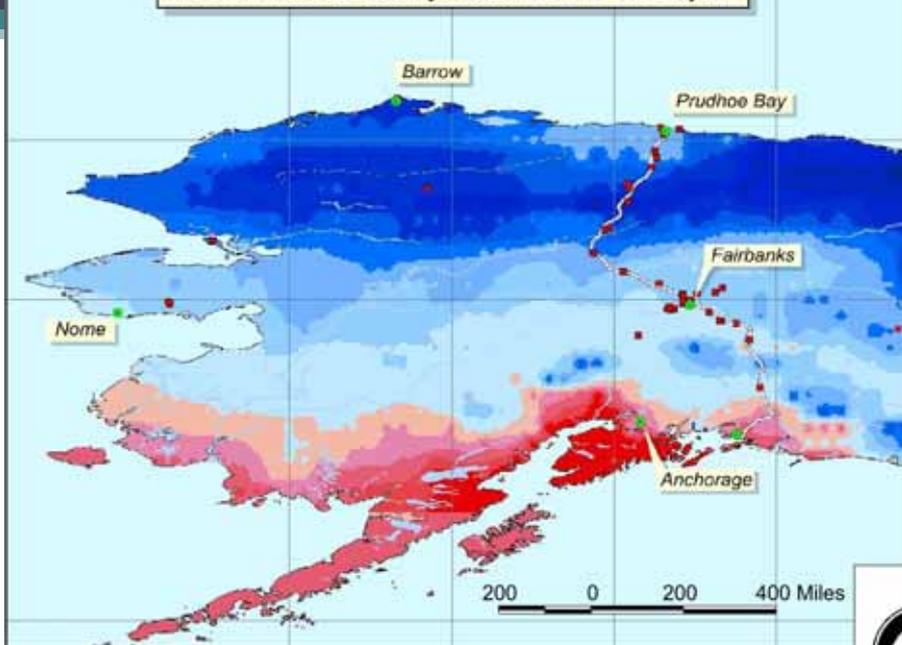
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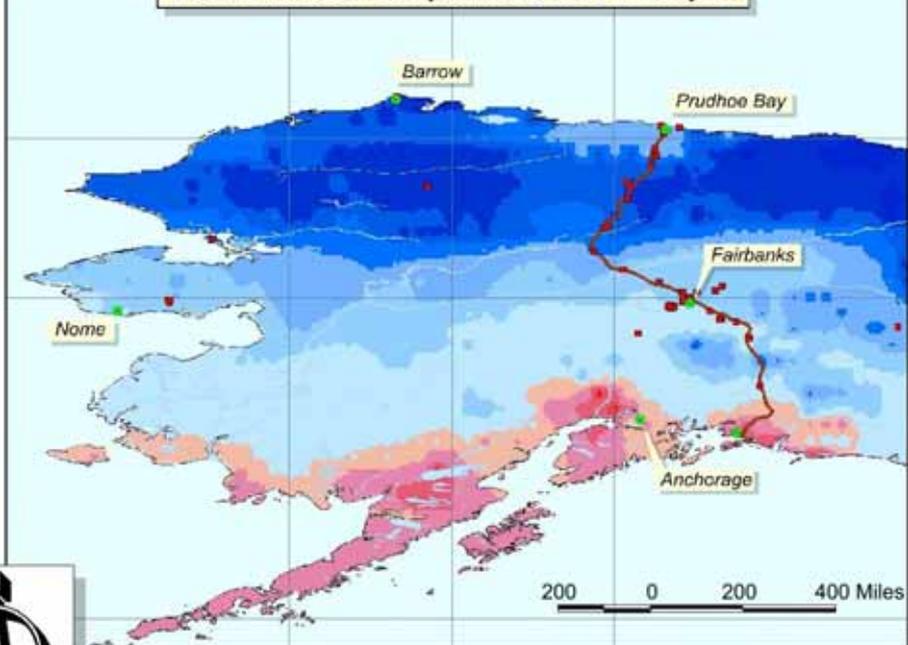
Mean Annual Temperature at 20 m Depth



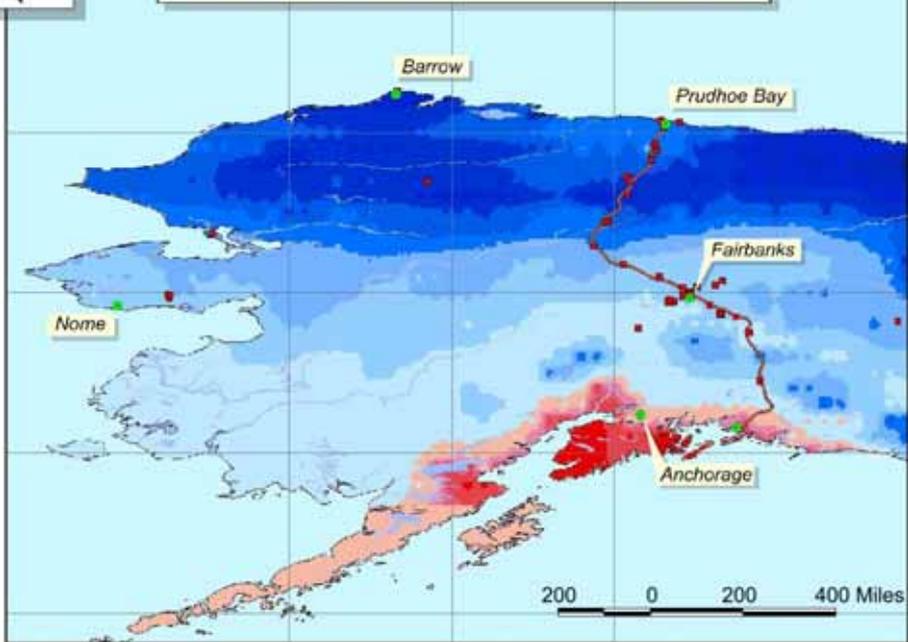
Mean Annual Temperature at 2 m Depth



Mean Annual Temperature at 5 m Depth

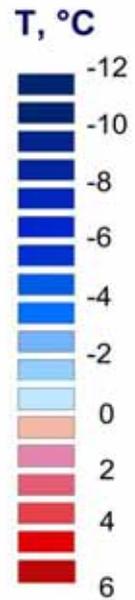


Mean Annual Temperature at 20 m Depth

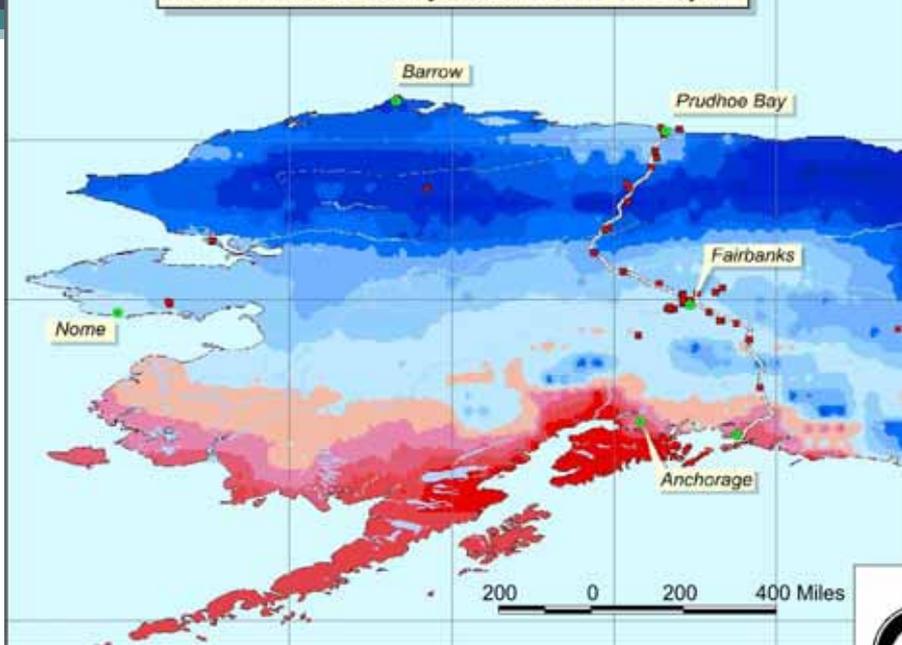


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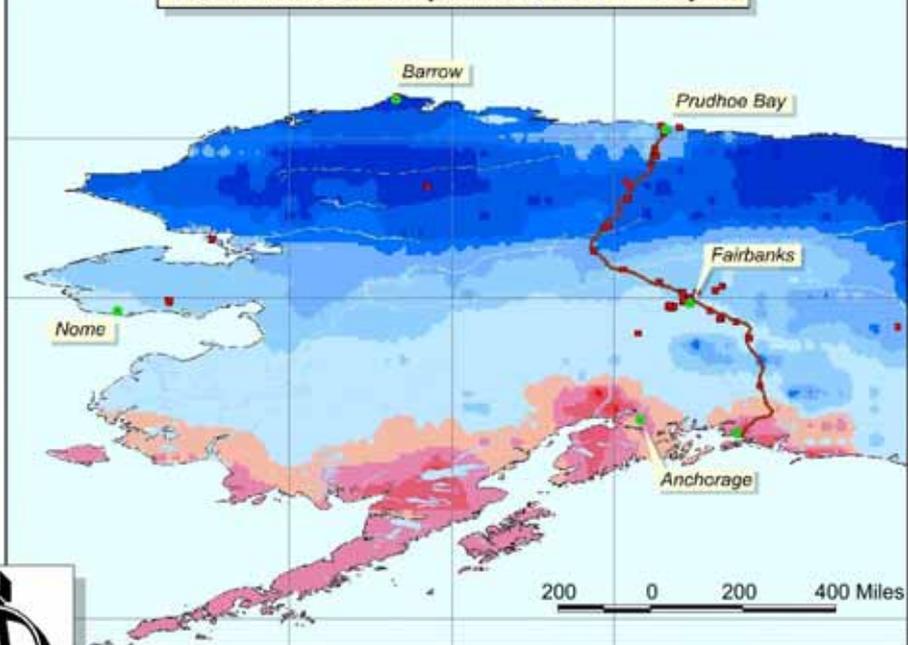
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Mean Annual Temperature at 2 m Depth

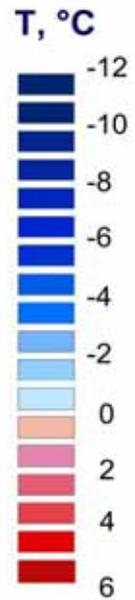


Mean Annual Temperature at 5 m Depth

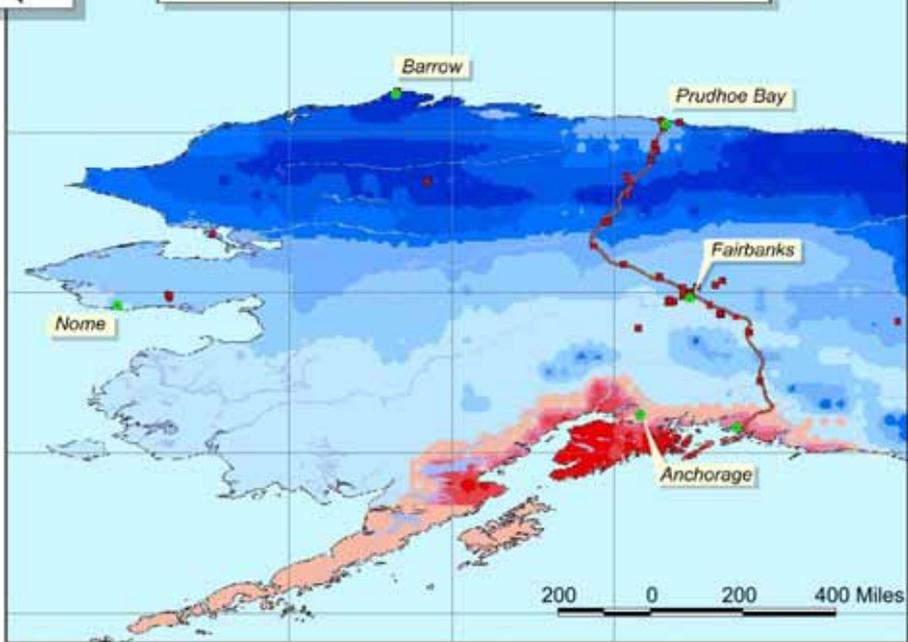


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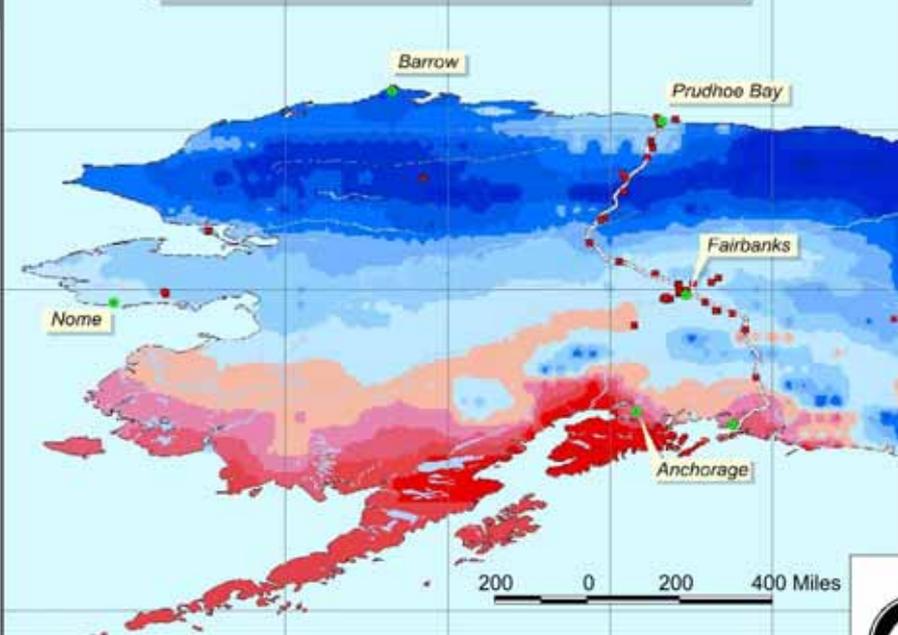
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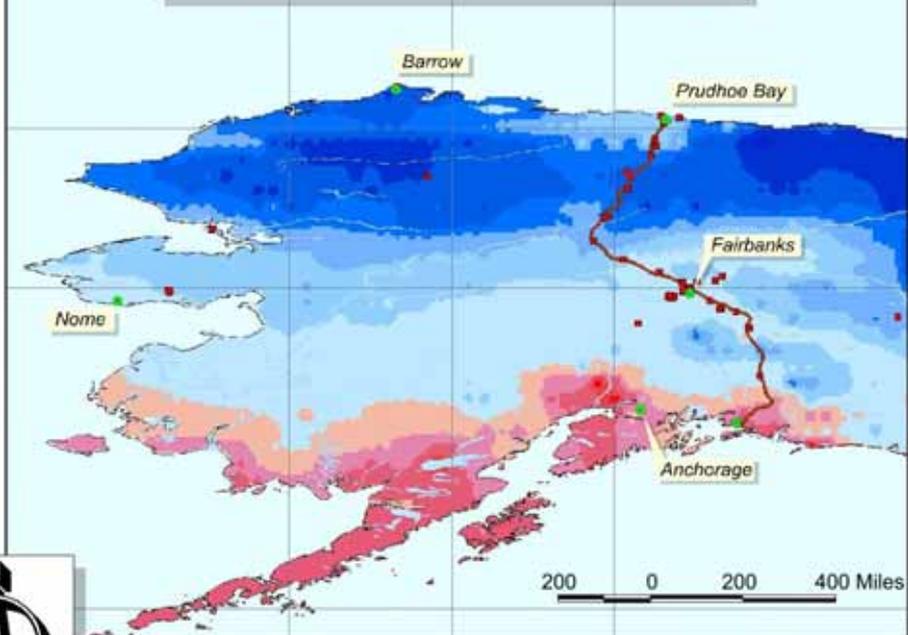
Mean Annual Temperature at 20 m Depth



Mean Annual Temperature at 2 m Depth

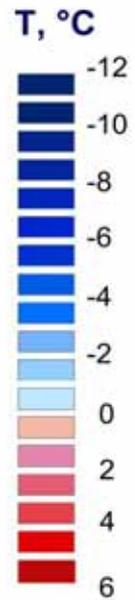


Mean Annual Temperature at 5 m Depth

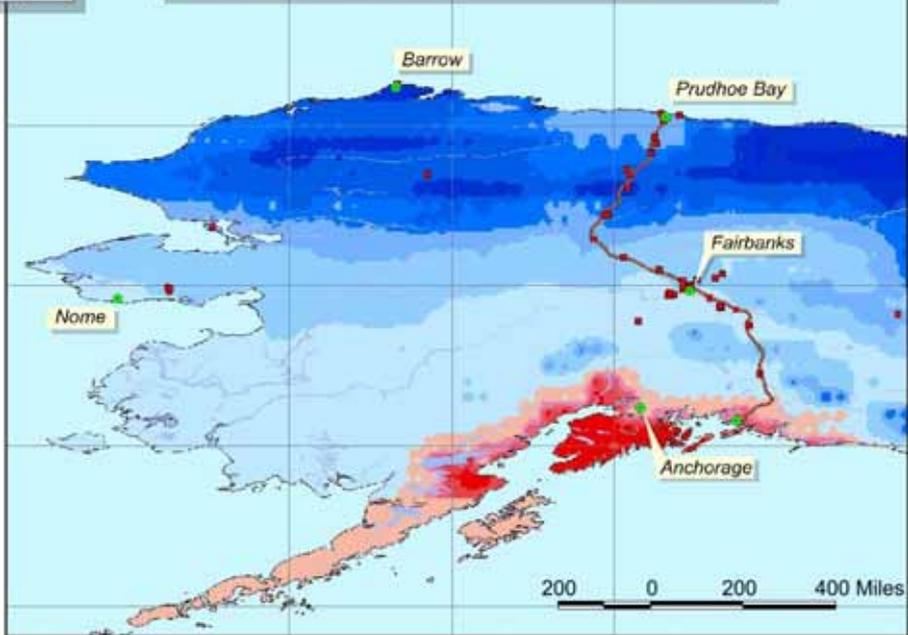


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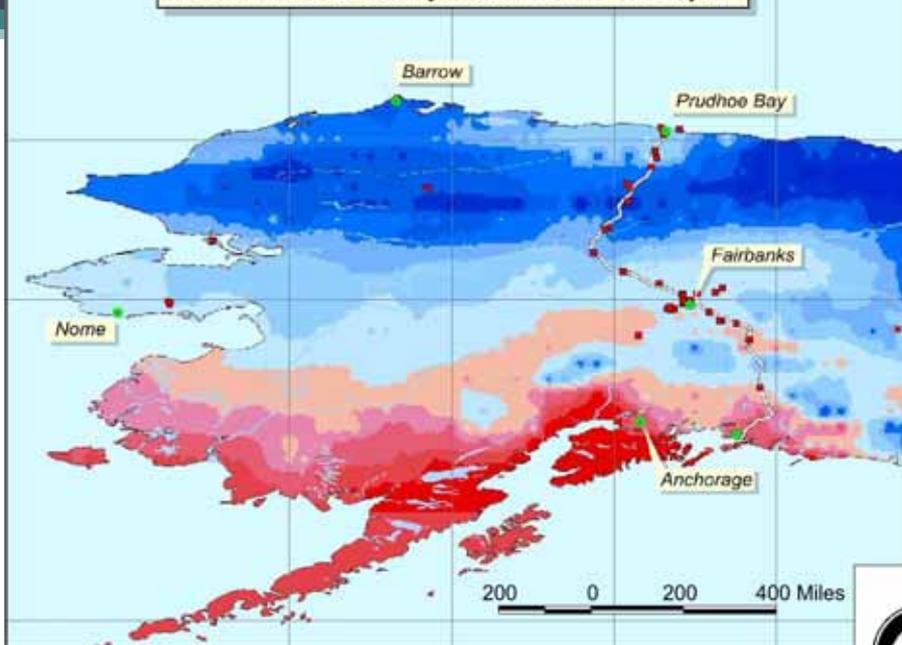
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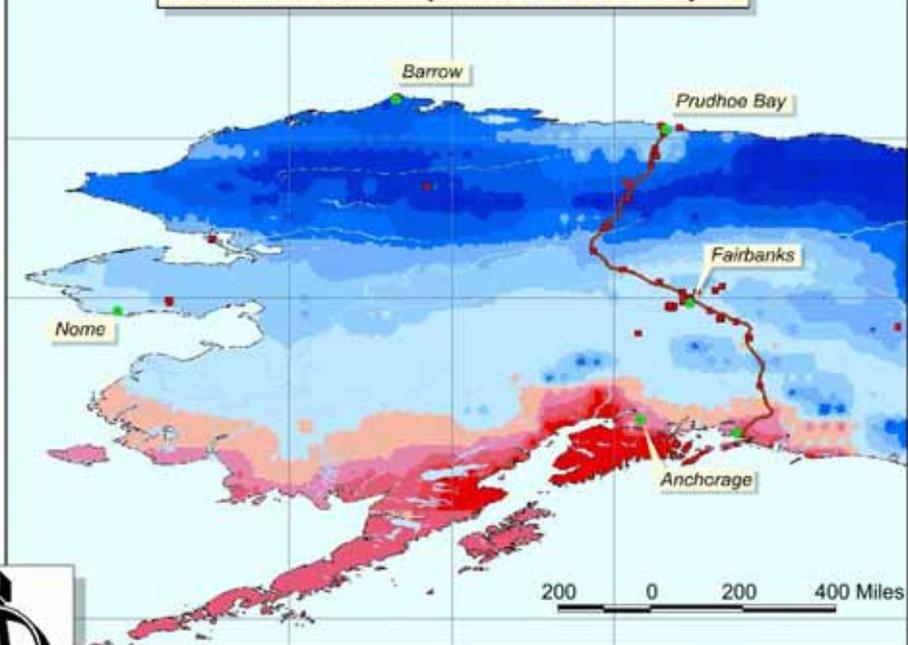
Mean Annual Temperature at 20 m Depth



Mean Annual Temperature at 2 m Depth

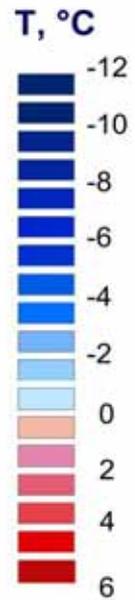


Mean Annual Temperature at 5 m Depth

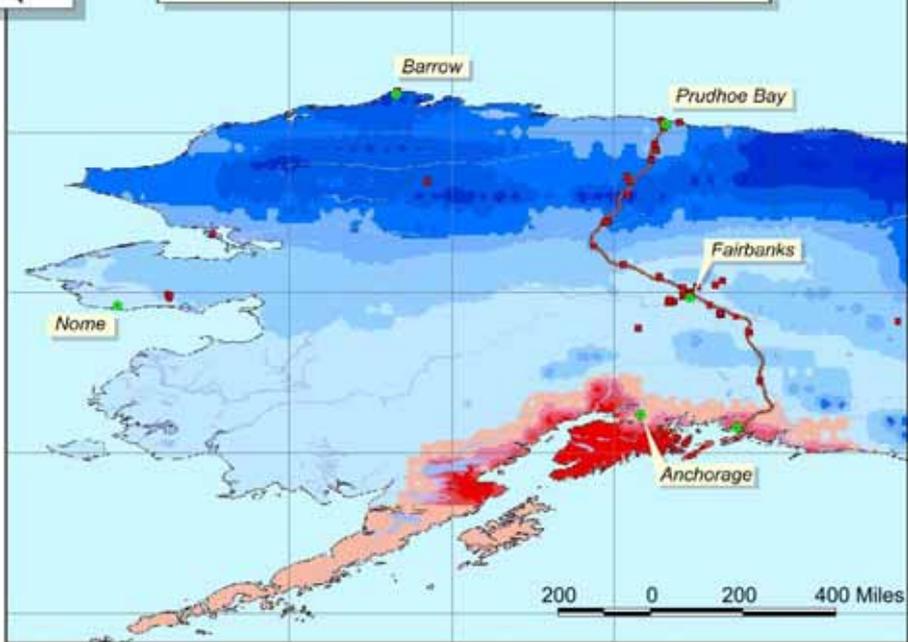


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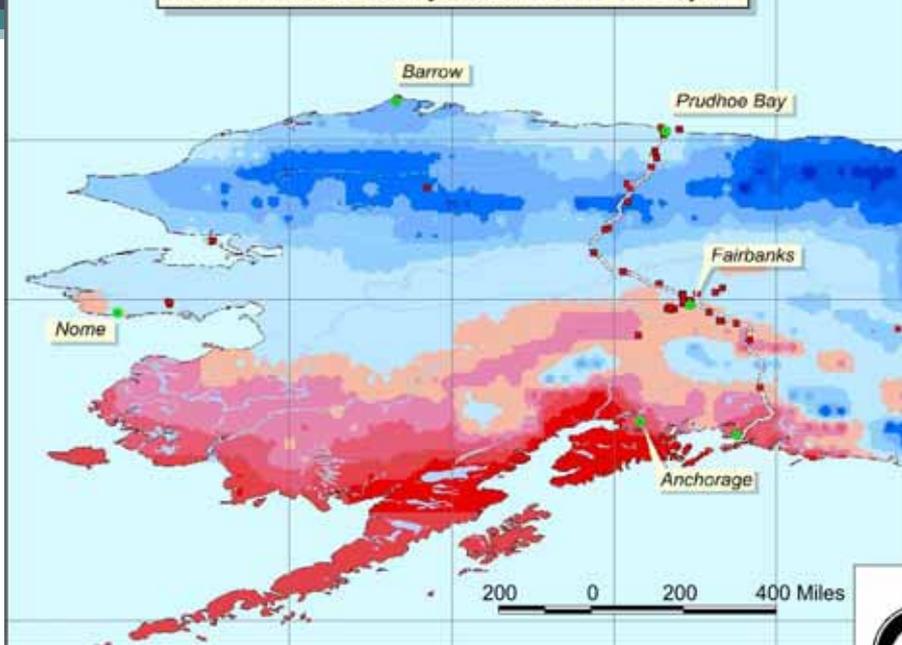
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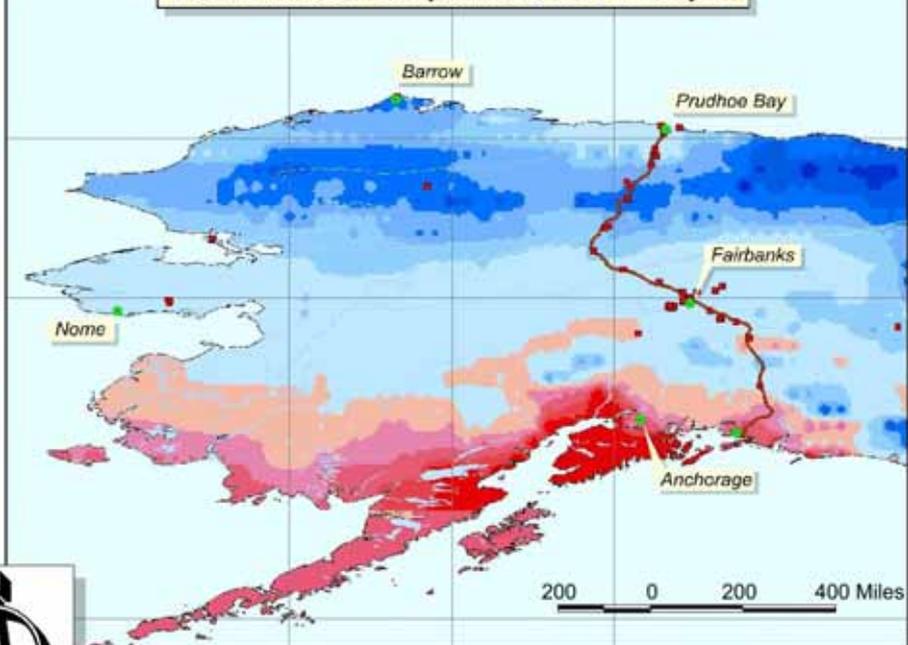
Mean Annual Temperature at 20 m Depth



Mean Annual Temperature at 2 m Depth

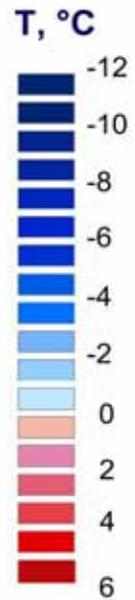


Mean Annual Temperature at 5 m Depth

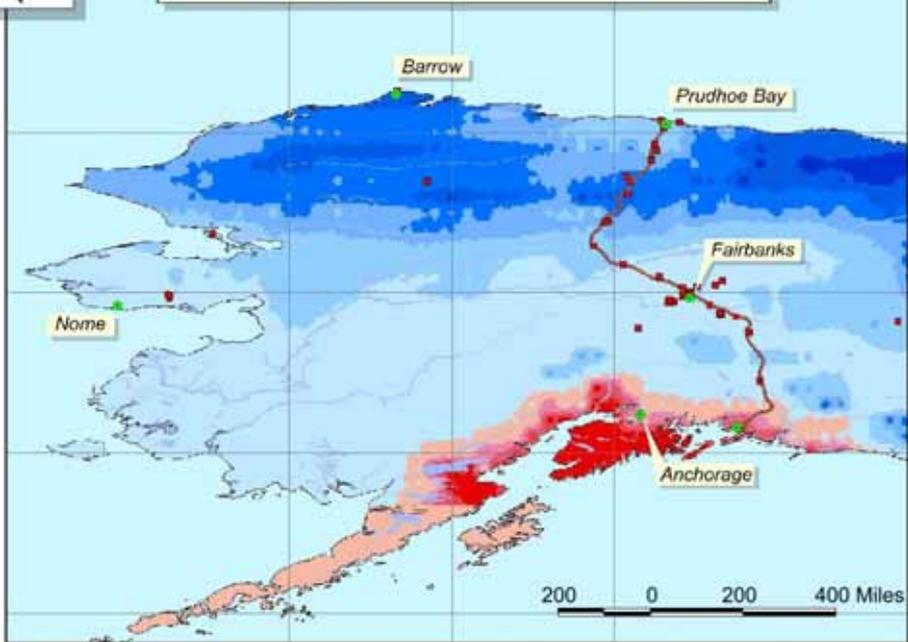


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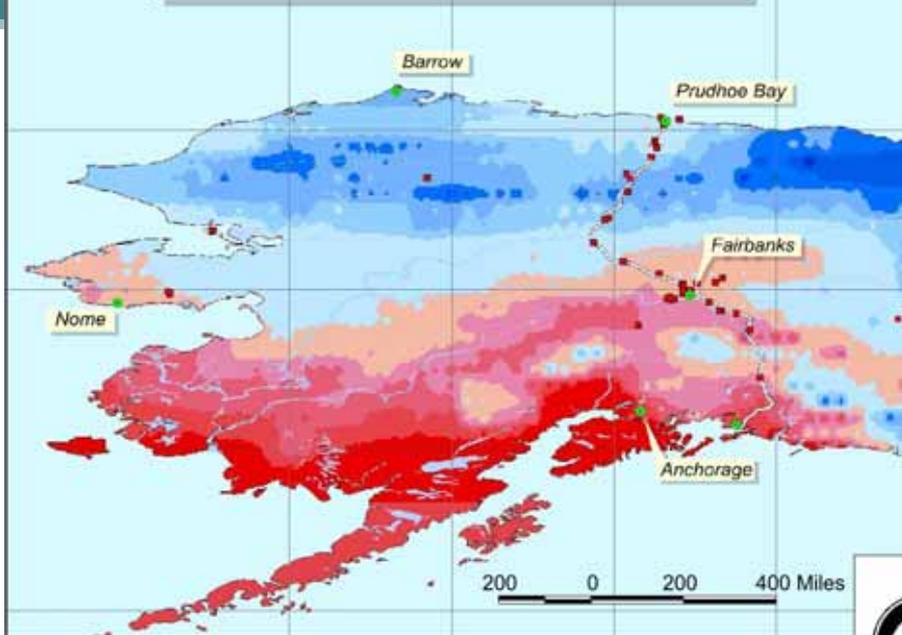
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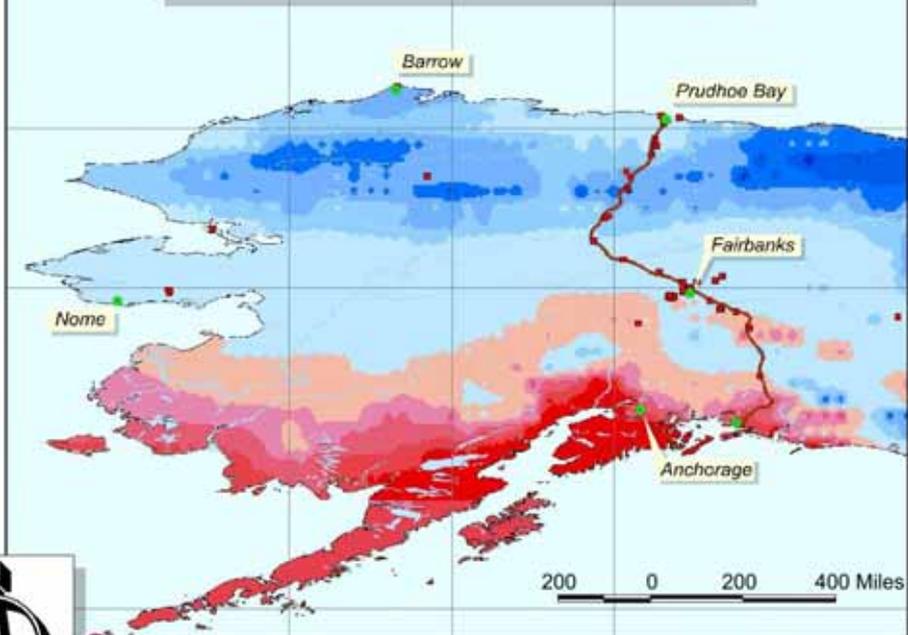
Mean Annual Temperature at 20 m Depth



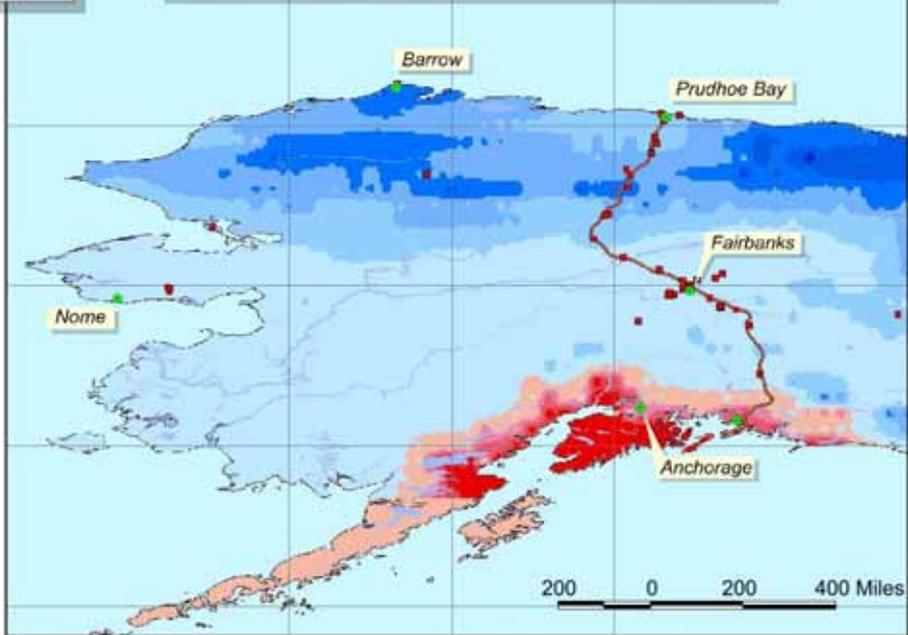
Mean Annual Temperature at 2 m Depth



Mean Annual Temperature at 5 m Depth

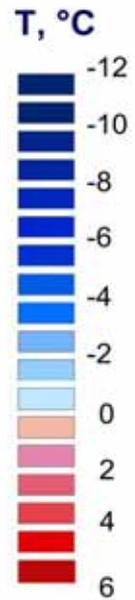


Mean Annual Temperature at 20 m Depth

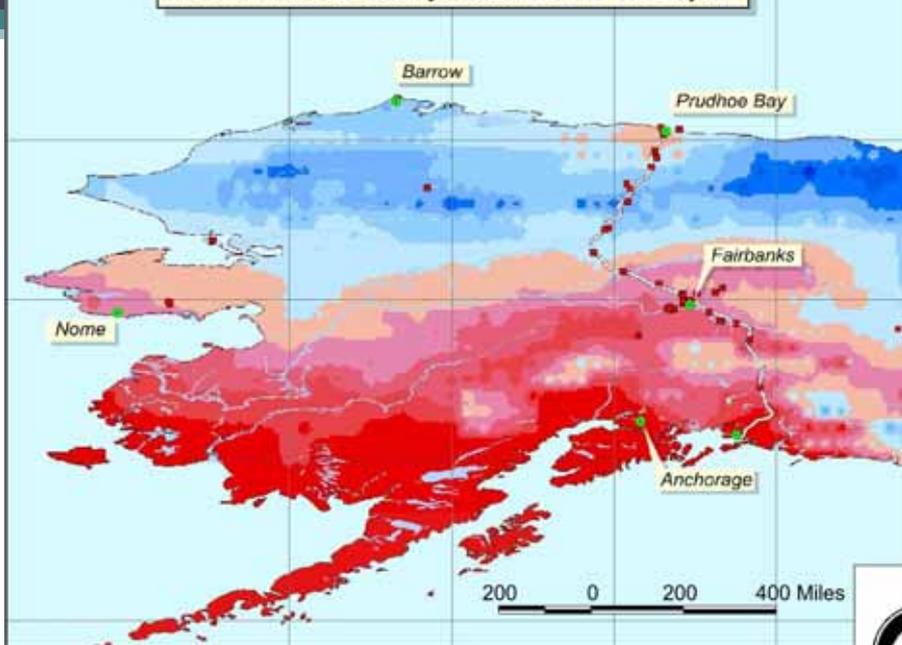


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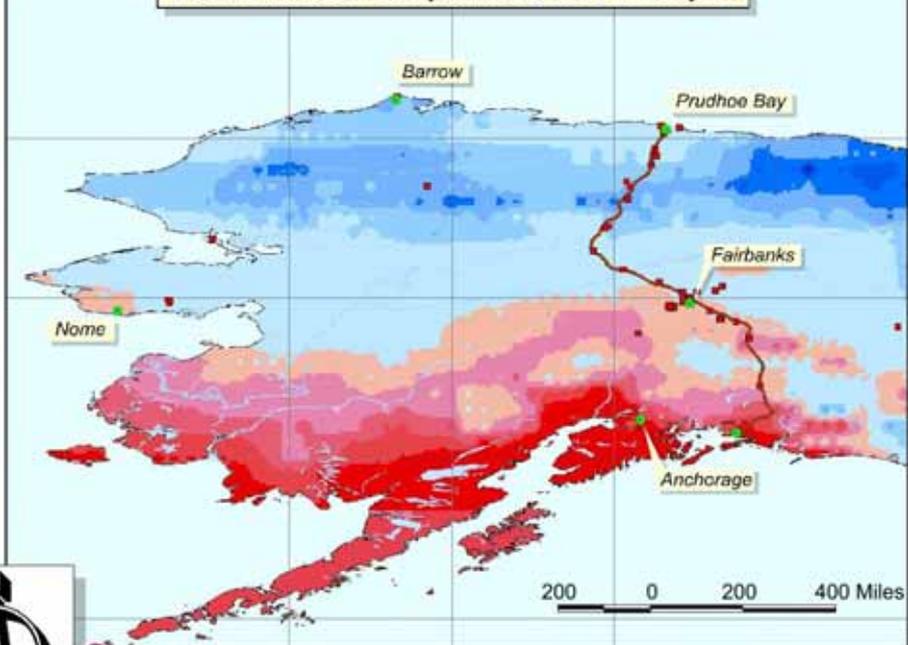
Spatially Distributed Model of Permafrost Dynamics in Alaska



Mean Annual Temperature at 2 m Depth

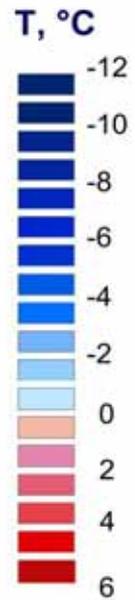


Mean Annual Temperature at 5 m Depth

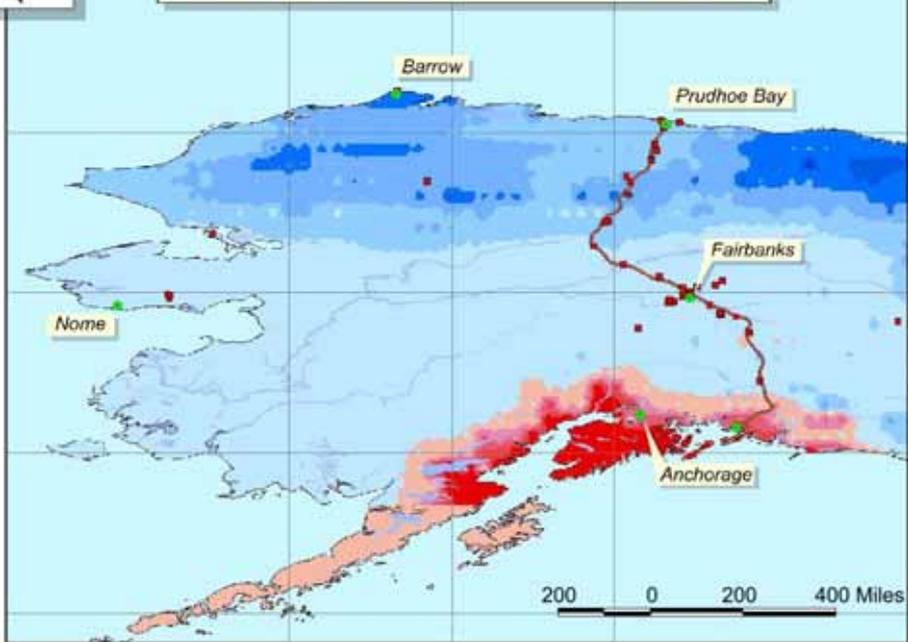


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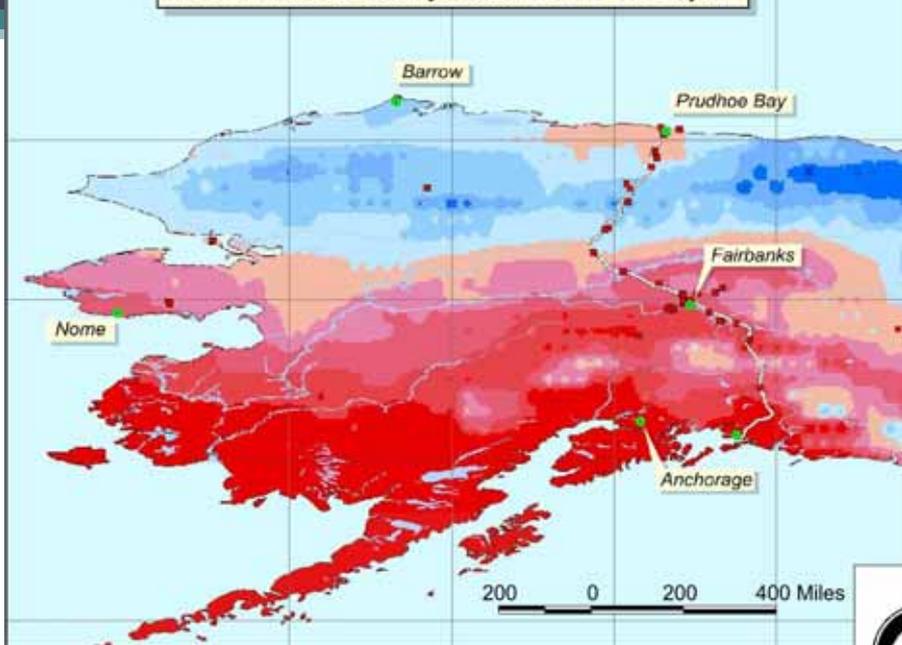
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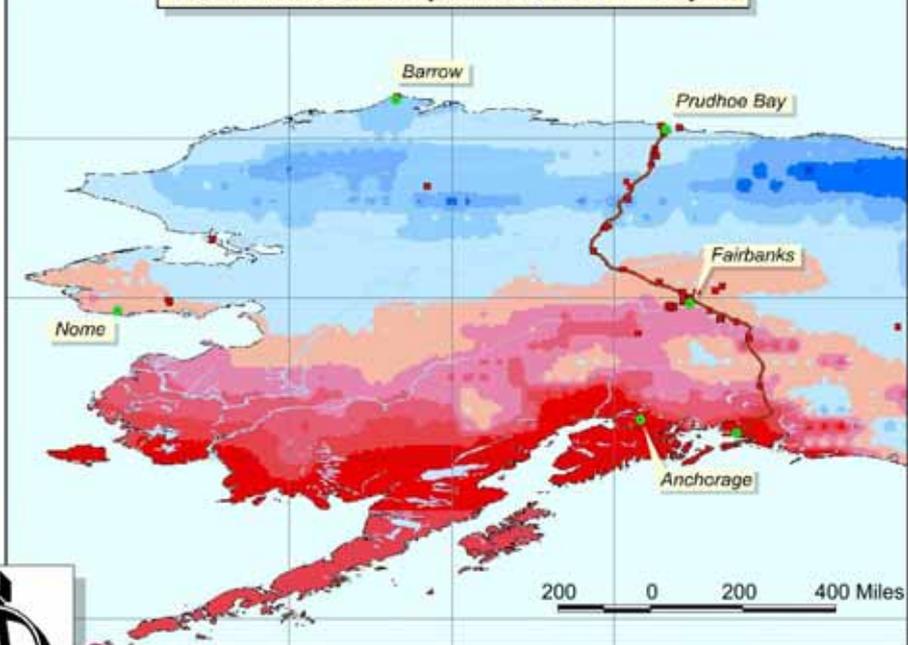
Mean Annual Temperature at 20 m Depth



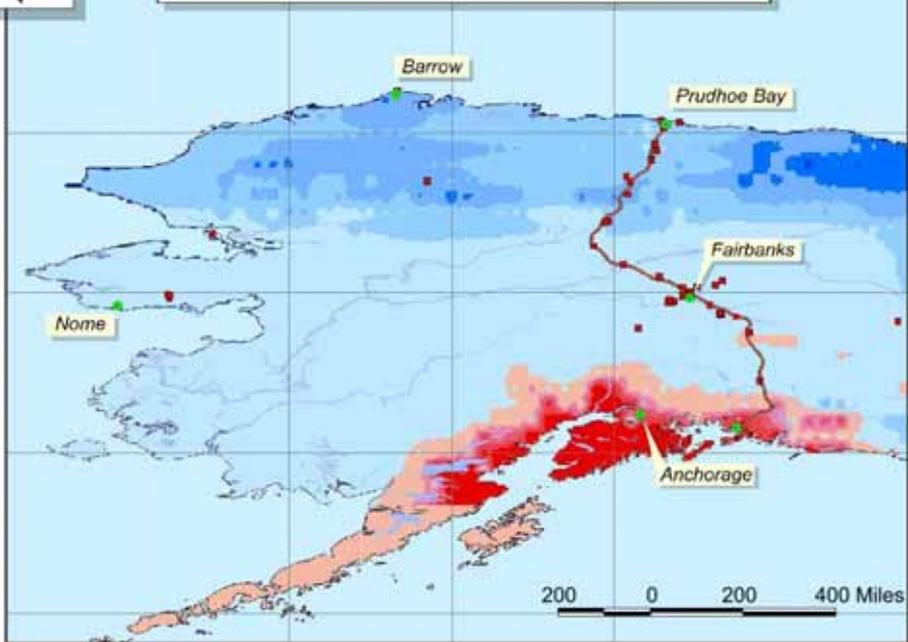
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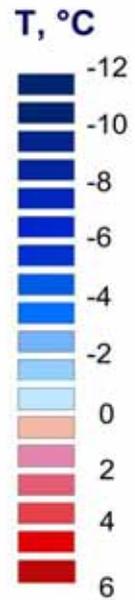


Mean Annual Temperature at 20 m Depth

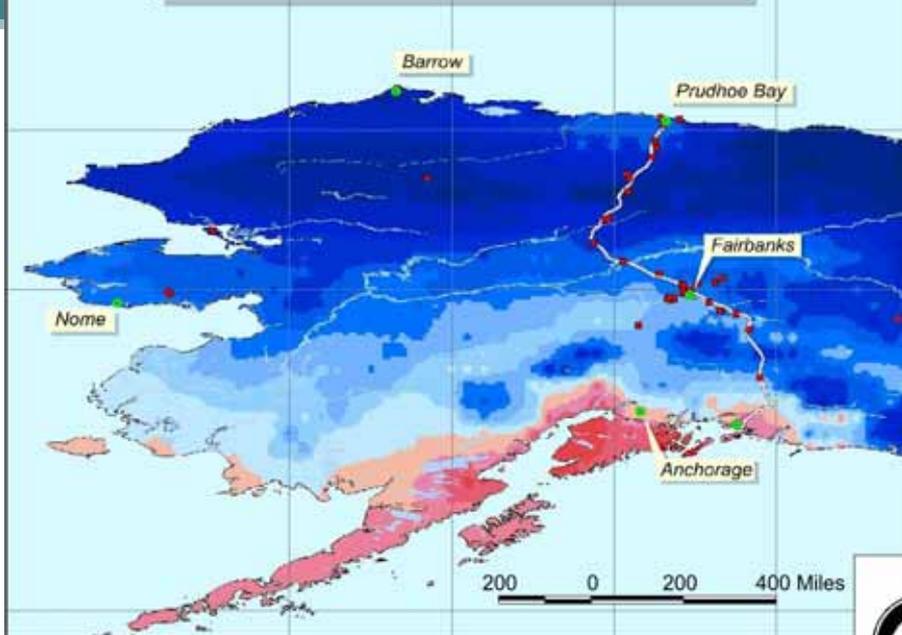


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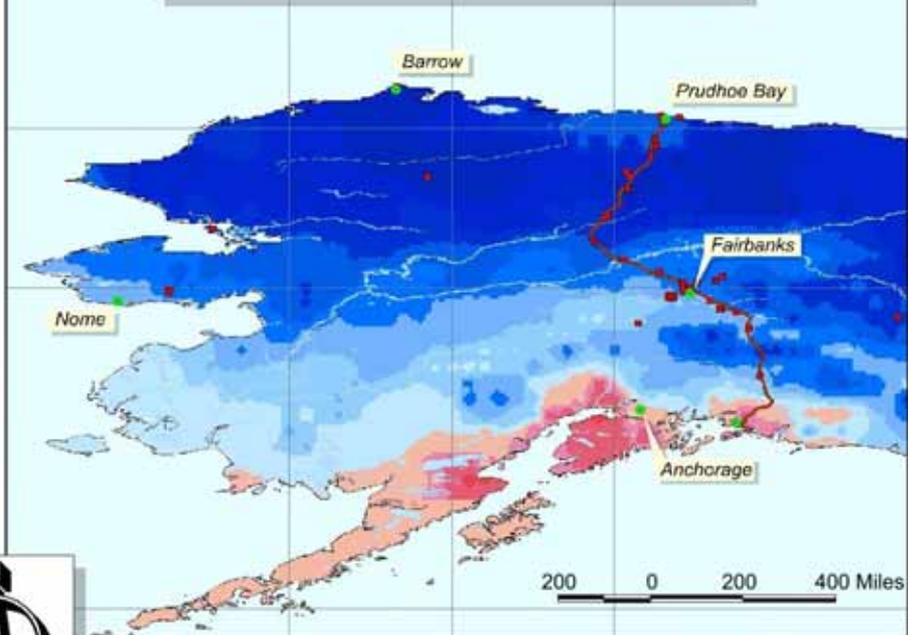
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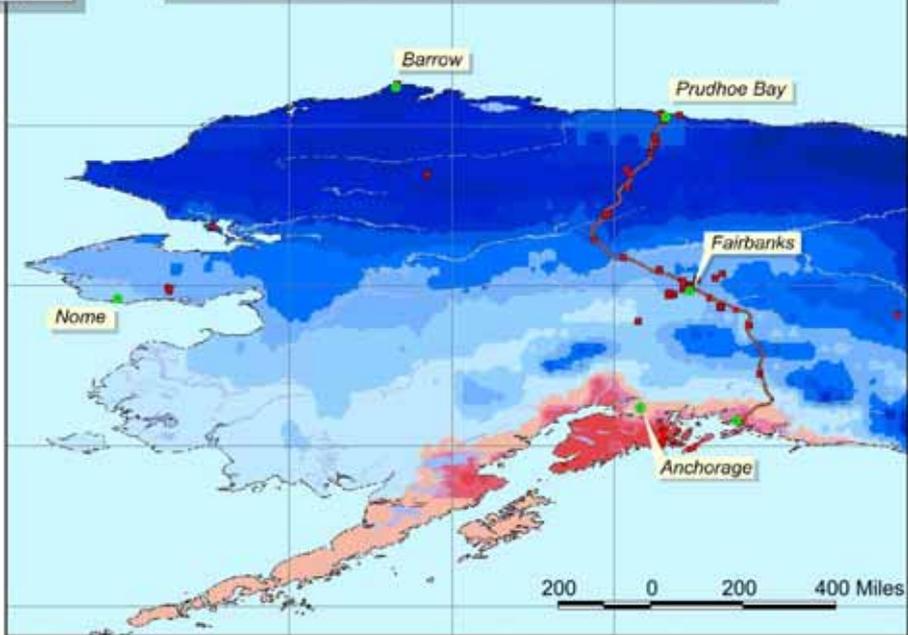
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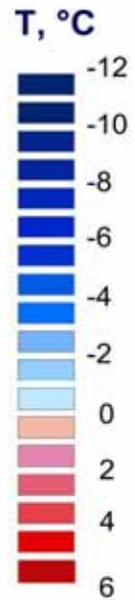


Mean Annual Temperature at 20 m Depth

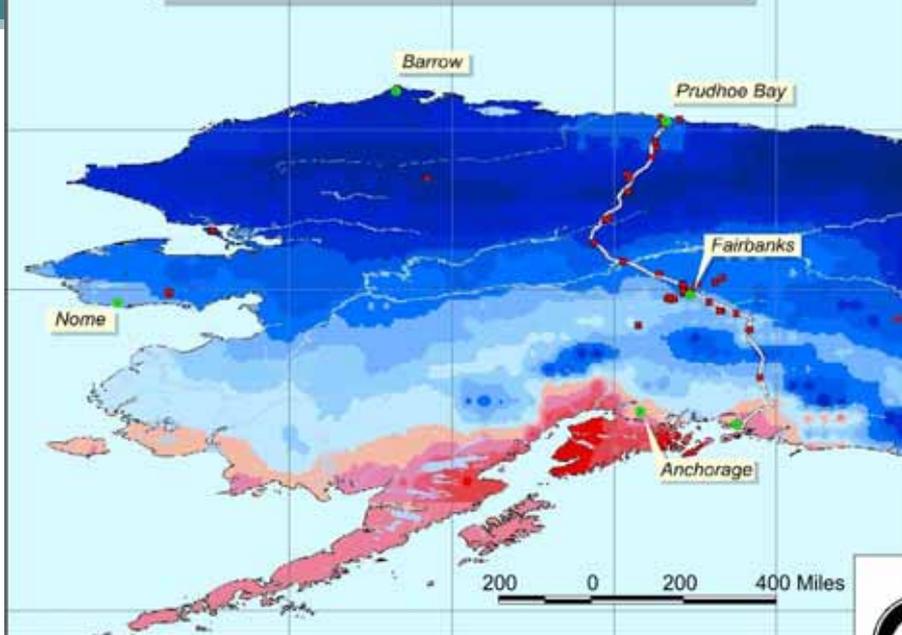


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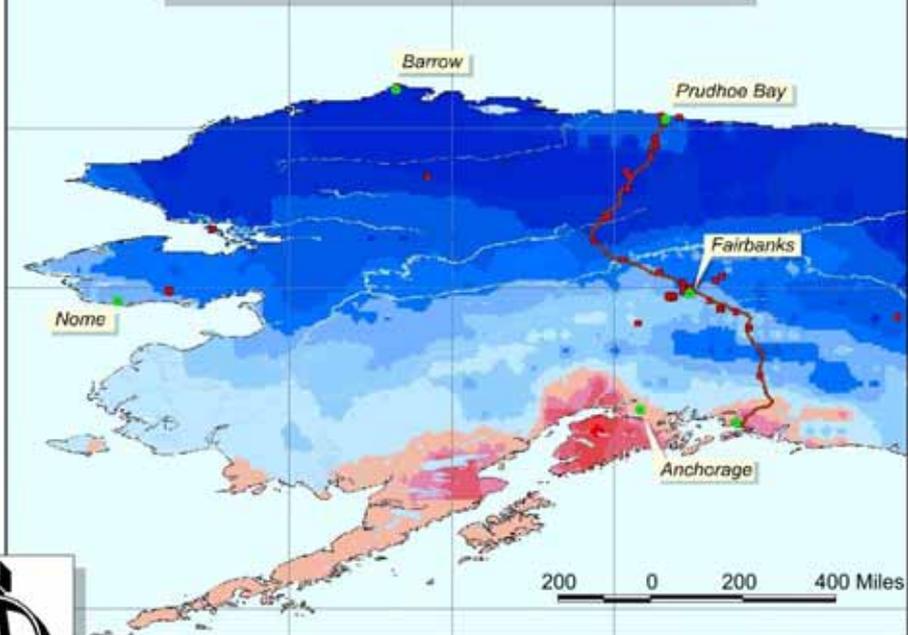
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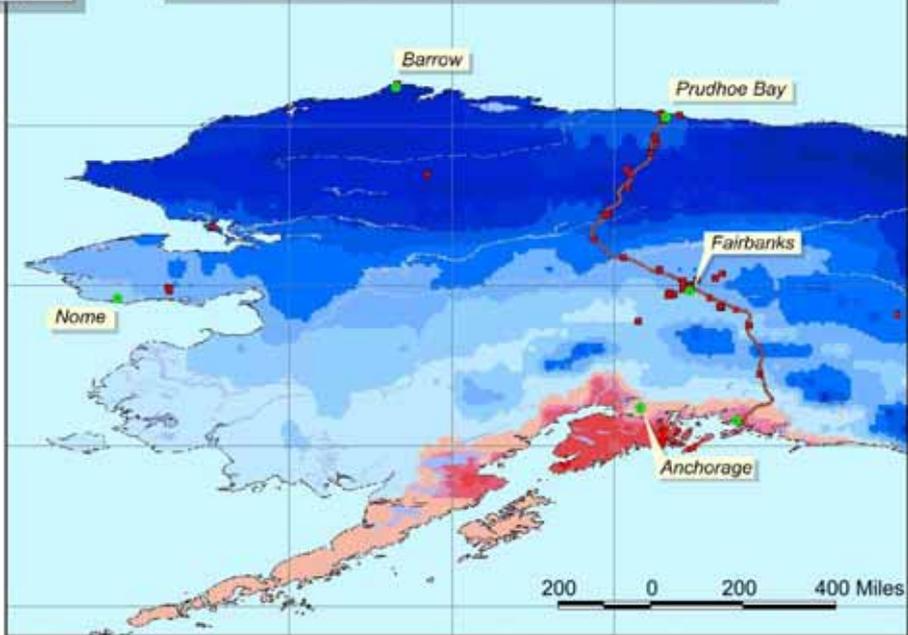
Mean Annual Temperature at 2 m Depth



Mean Annual Temperature at 5 m Depth

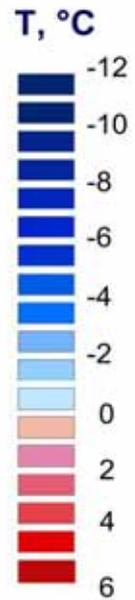


Mean Annual Temperature at 20 m Depth

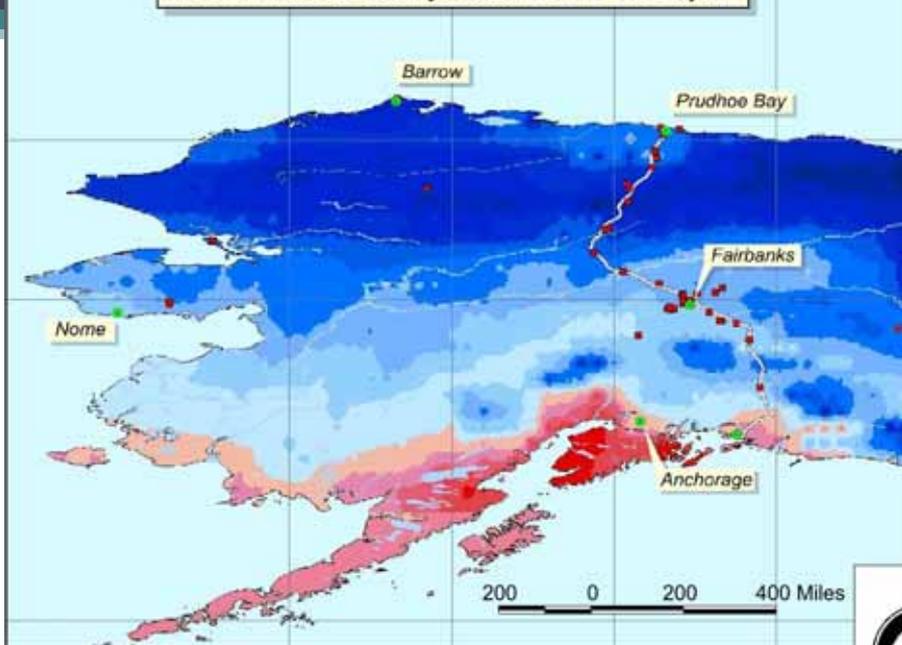


2005

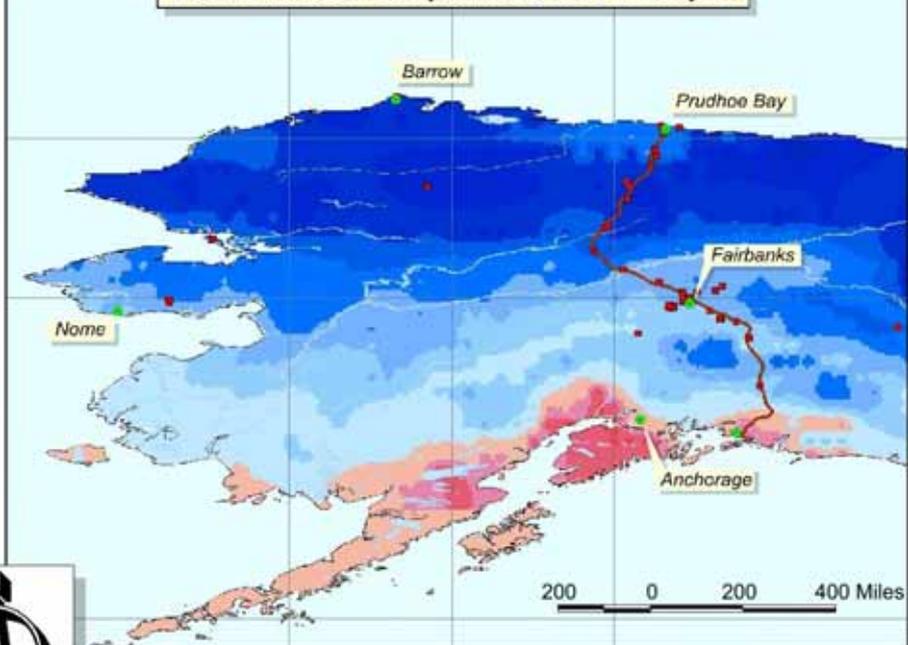
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Mean Annual Temperature at 2 m Depth

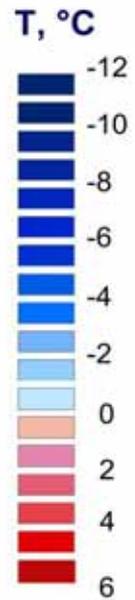


Mean Annual Temperature at 5 m Depth

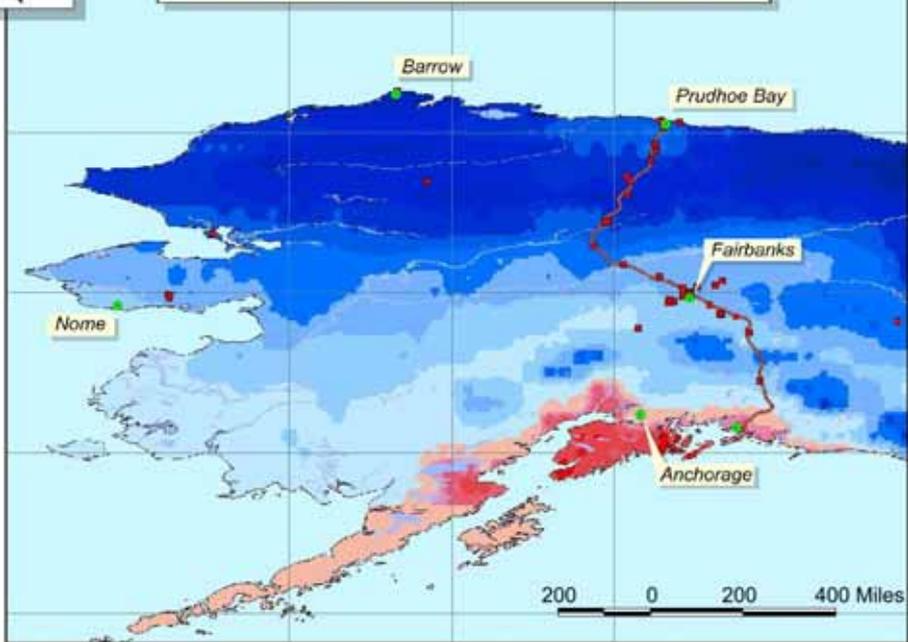


2010

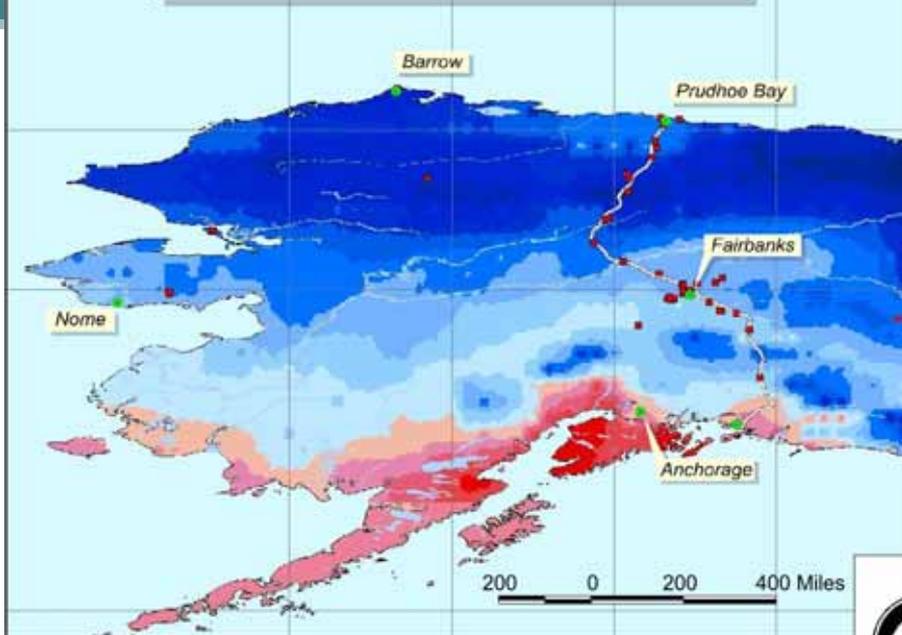
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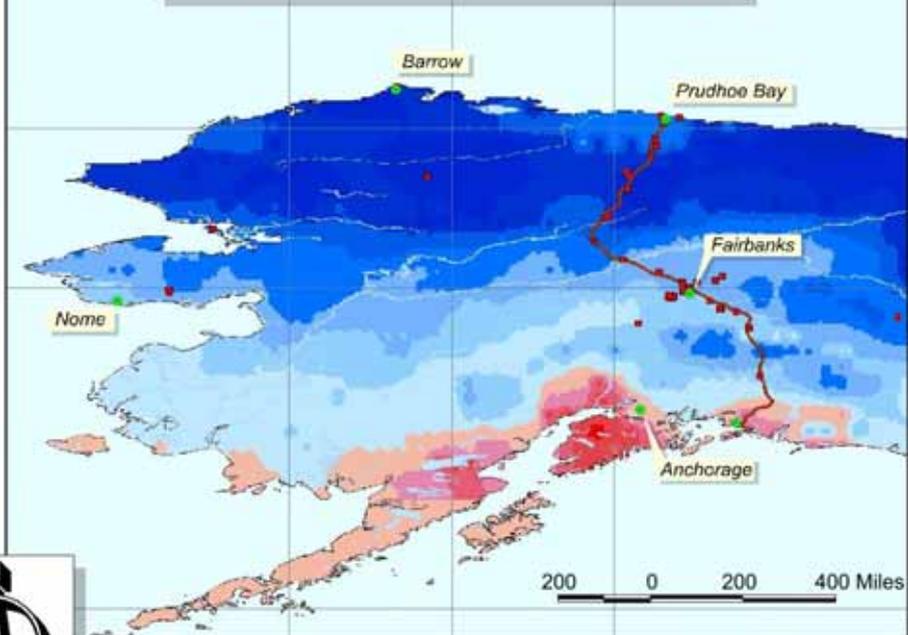
Mean Annual Temperature at 20 m Depth



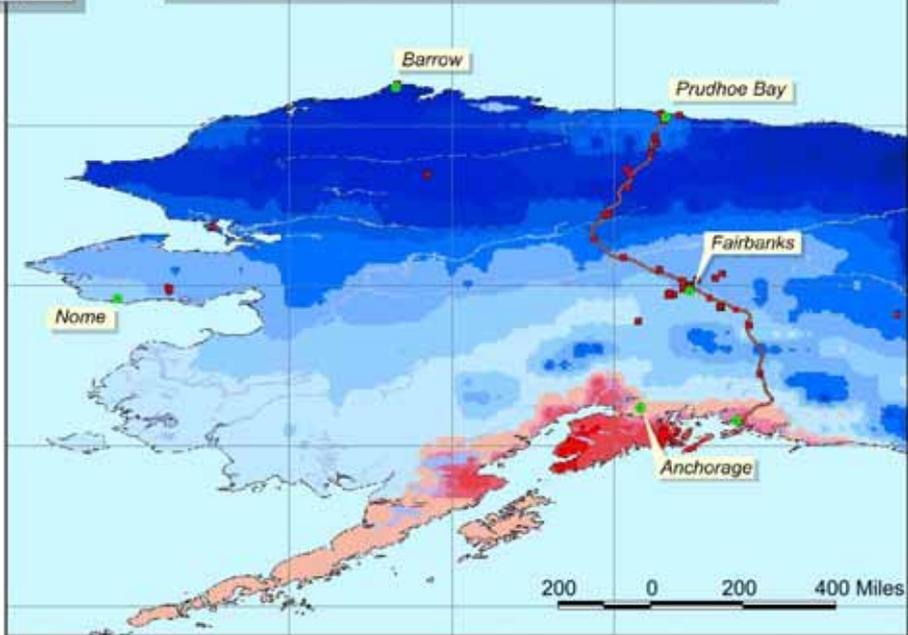
Mean Annual Temperature at 2 m Depth



Mean Annual Temperature at 5 m Depth

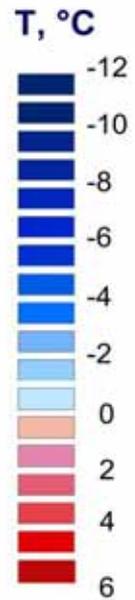


Mean Annual Temperature at 20 m Depth

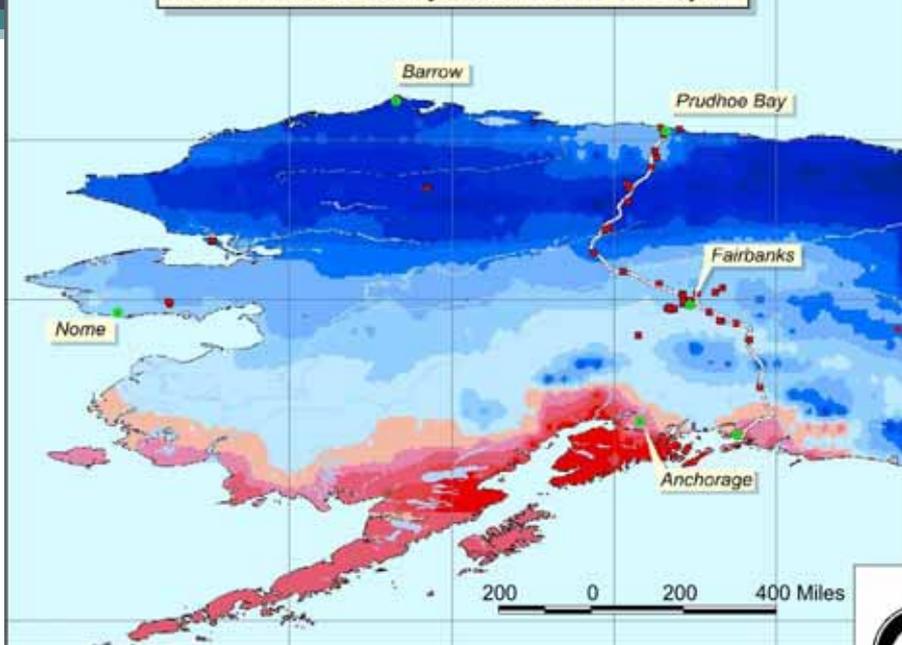


2015

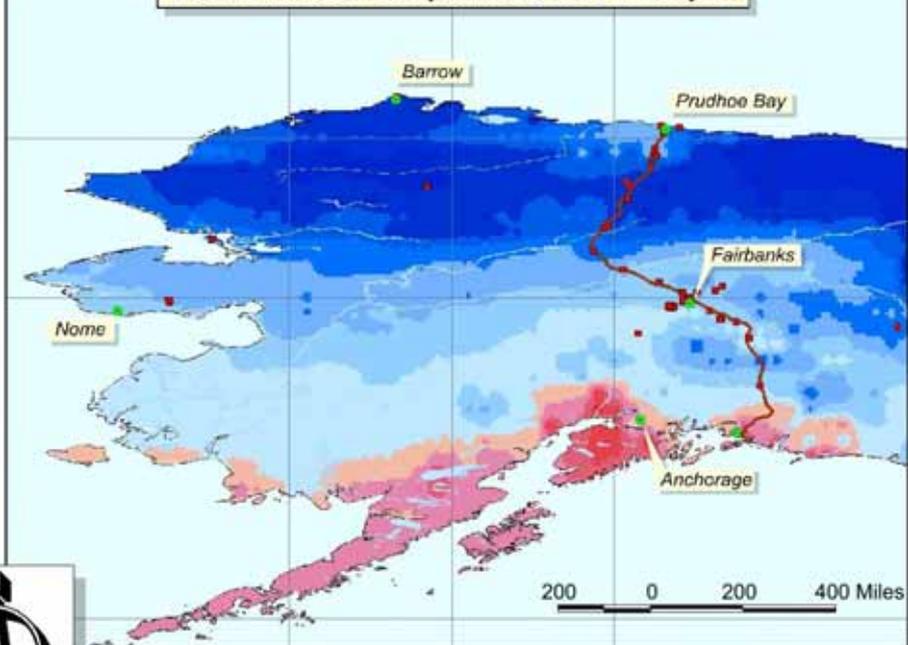
# Spatially Distributed Model of Permafrost Dynamics in Alaska



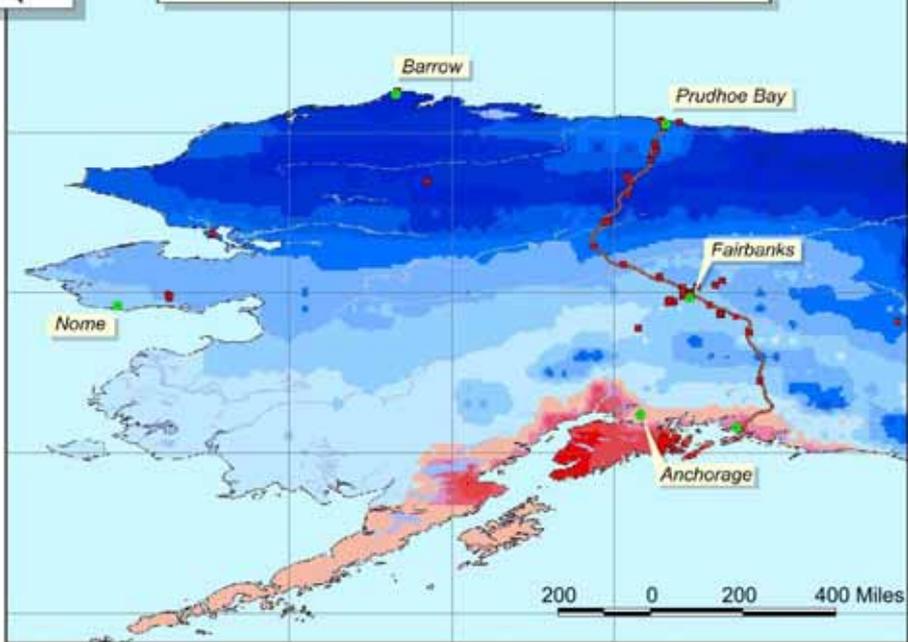
Mean Annual Temperature at 2 m Depth



Mean Annual Temperature at 5 m Depth

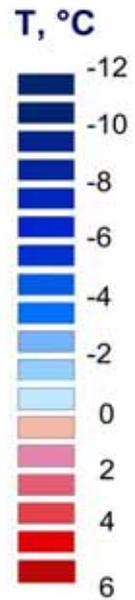


Mean Annual Temperature at 20 m Depth



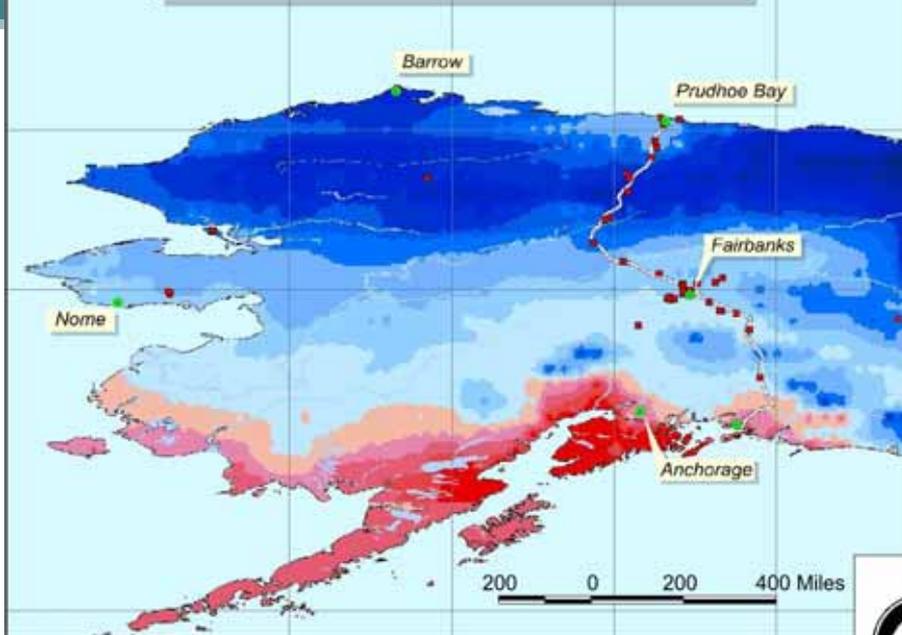
2020

# Spatially Distributed Model of Permafrost Dynamics in Alaska

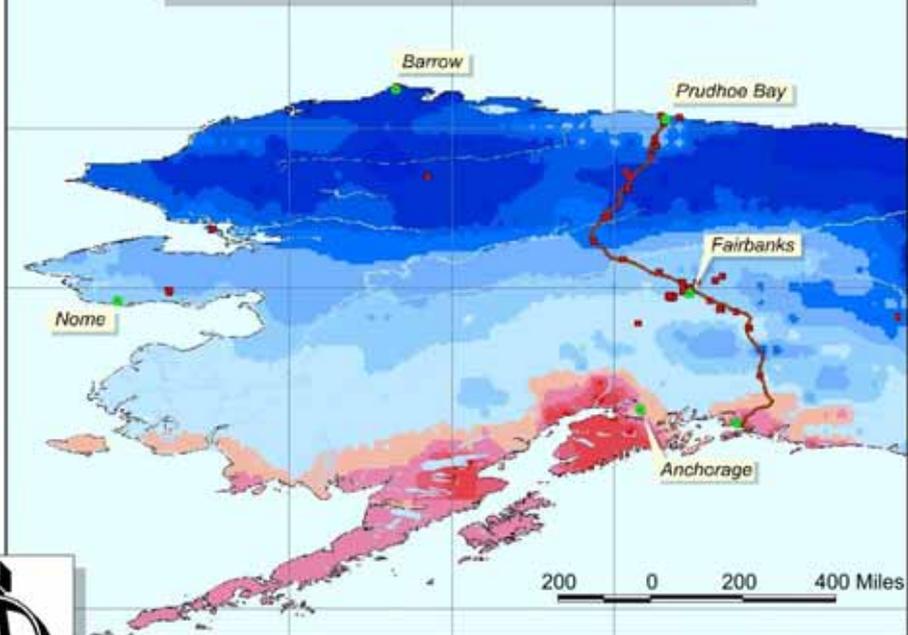


200 0 200 400 Miles

Mean Annual Temperature at 2 m Depth

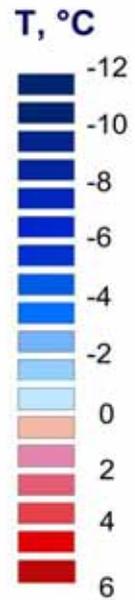


Mean Annual Temperature at 5 m Depth

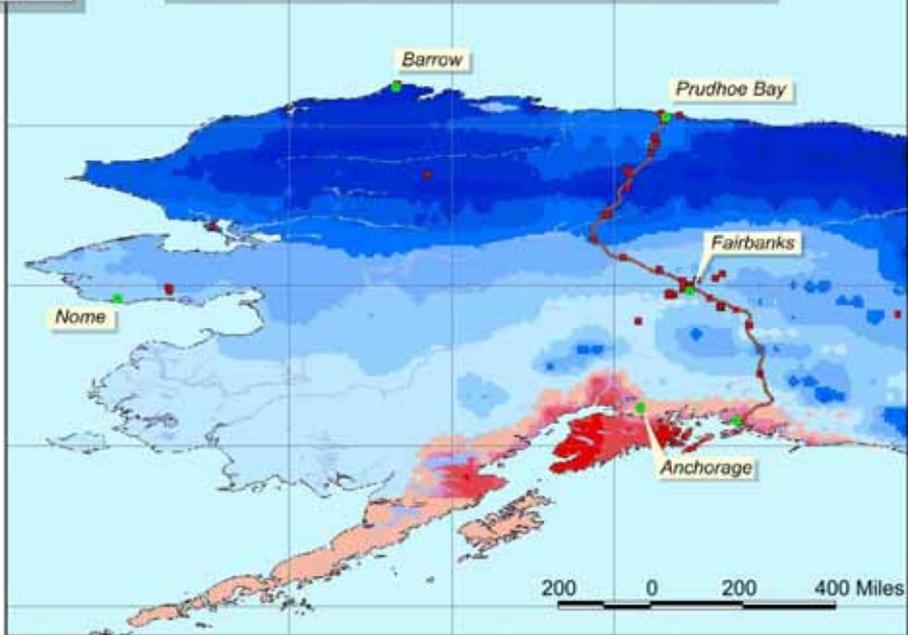


2025

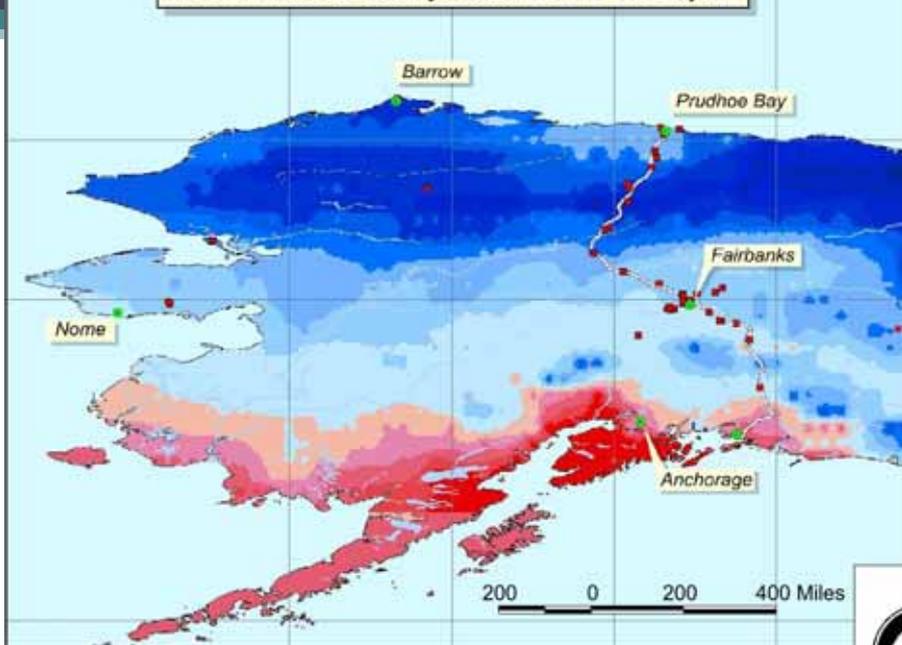
# Spatially Distributed Model of Permafrost Dynamics in Alaska



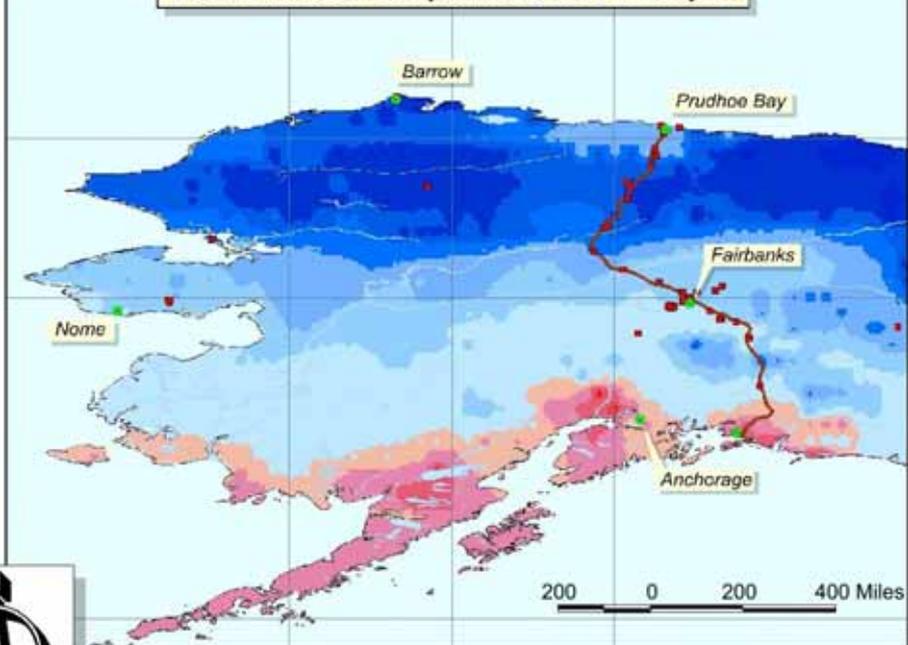
Mean Annual Temperature at 20 m Depth



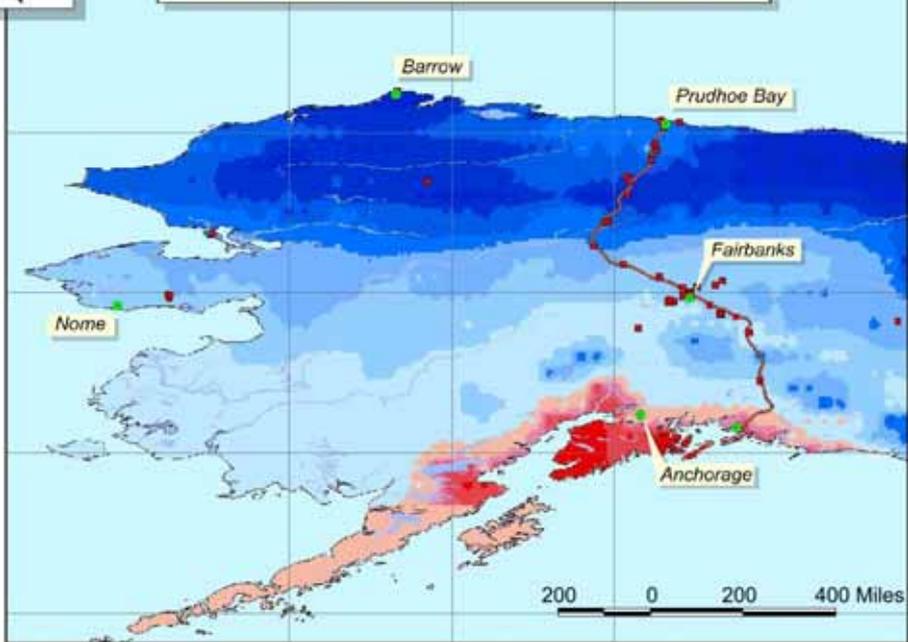
Mean Annual Temperature at 2 m Depth



Mean Annual Temperature at 5 m Depth

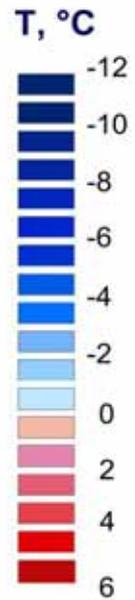


Mean Annual Temperature at 20 m Depth

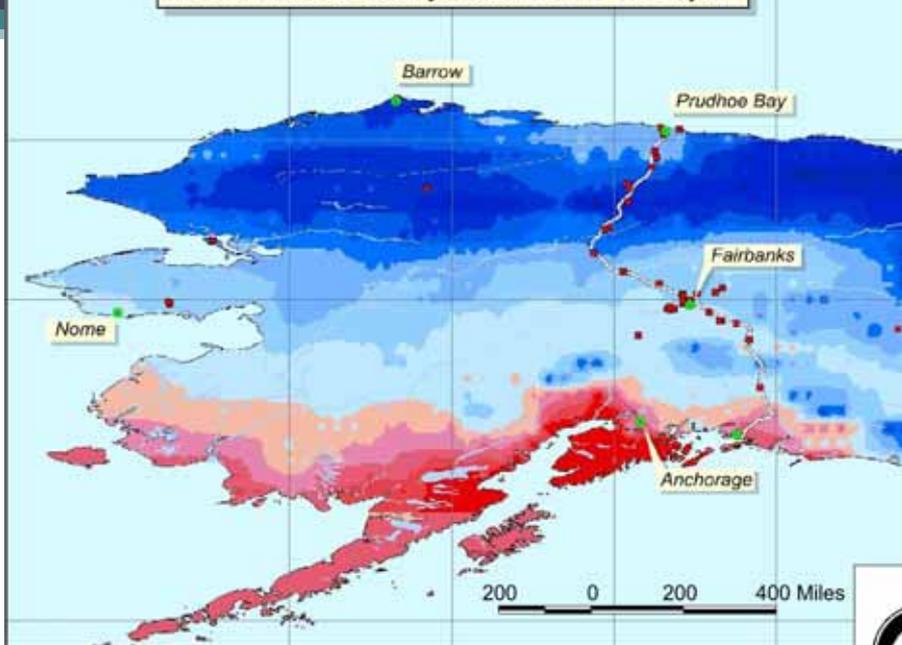


2030

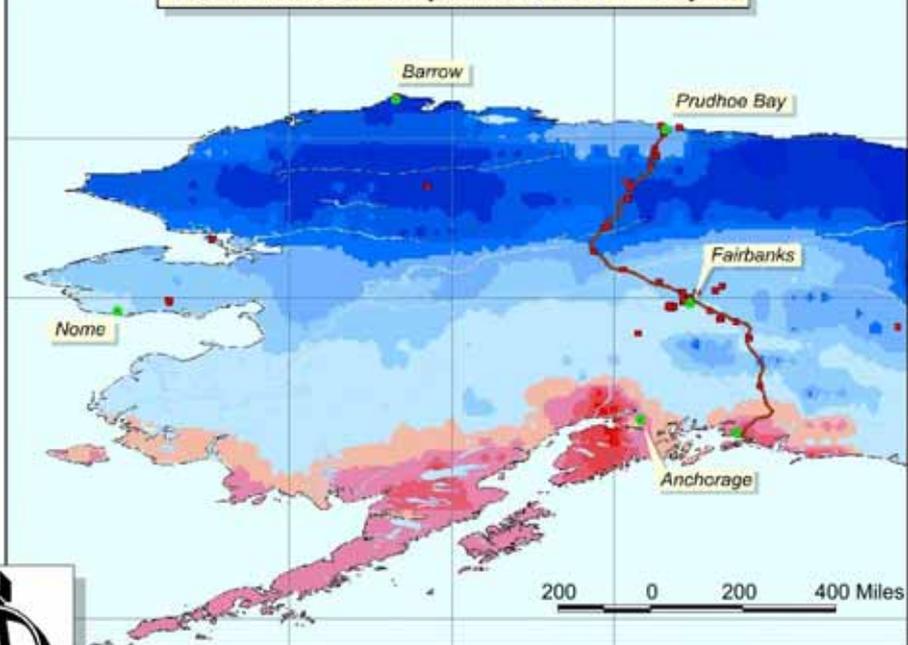
# Spatially Distributed Model of Permafrost Dynamics in Alaska



Mean Annual Temperature at 2 m Depth

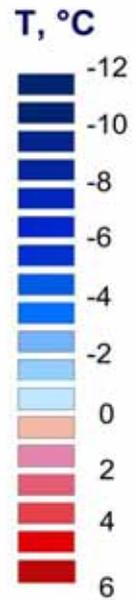


Mean Annual Temperature at 5 m Depth

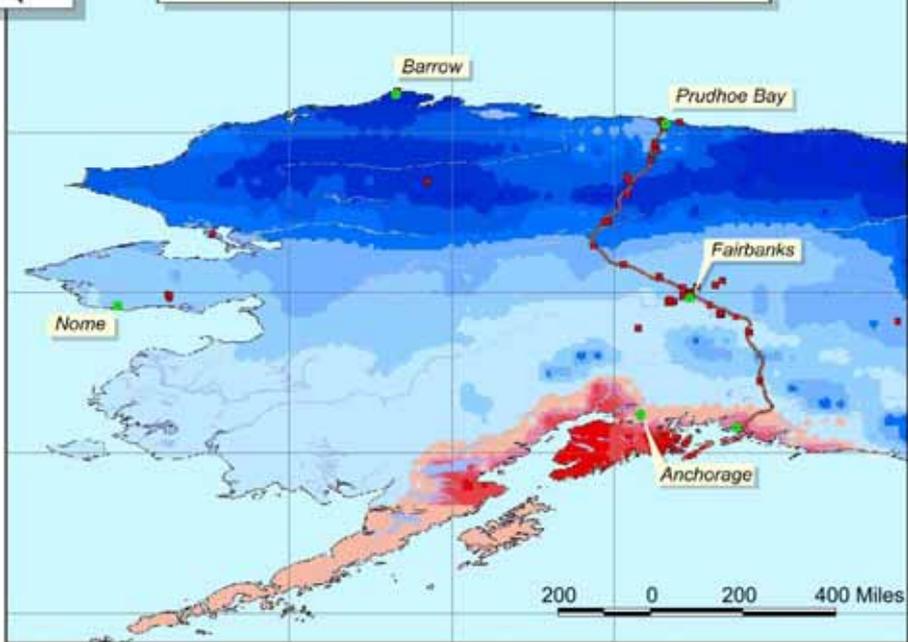


2035

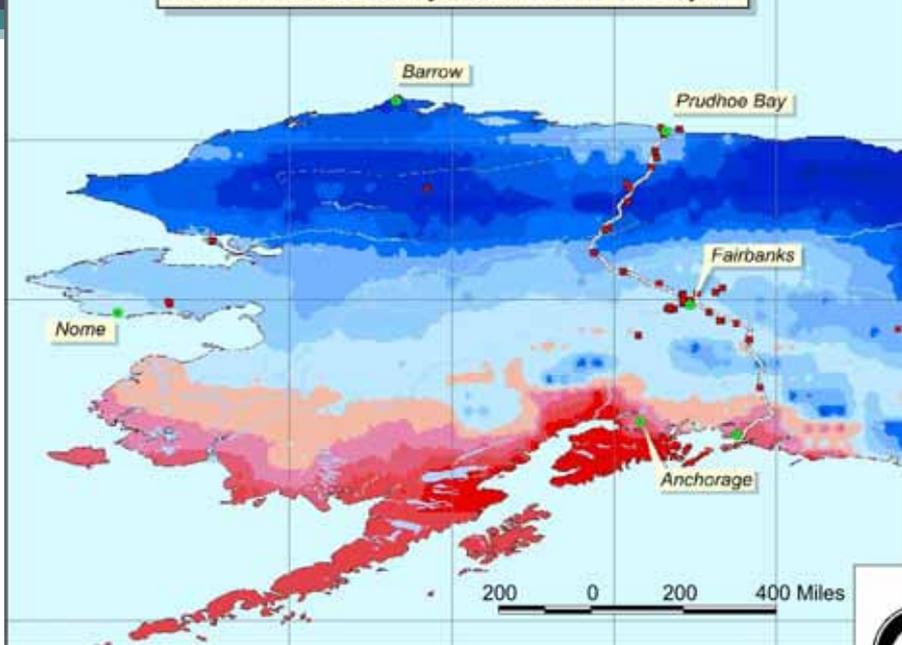
# Spatially Distributed Model of Permafrost Dynamics in Alaska



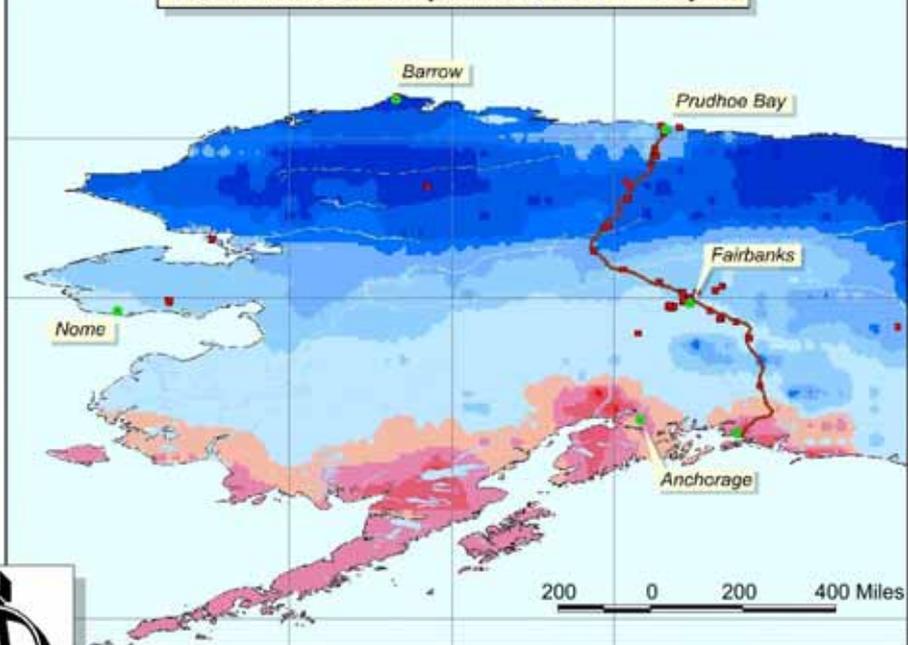
Mean Annual Temperature at 20 m Depth



Mean Annual Temperature at 2 m Depth

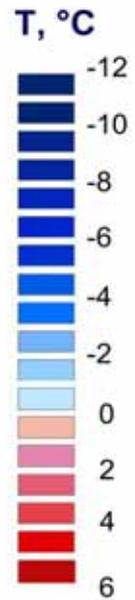


Mean Annual Temperature at 5 m Depth

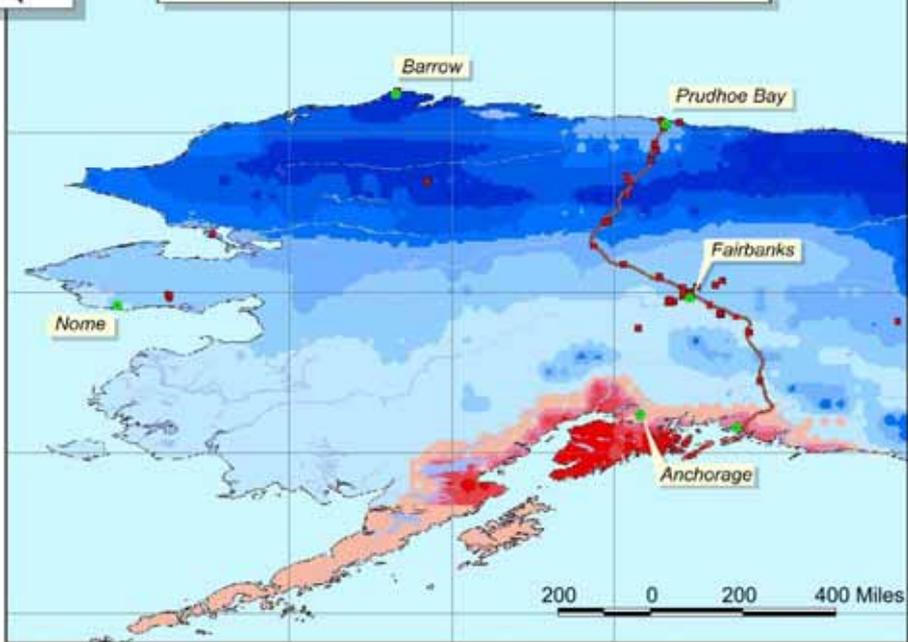


2040

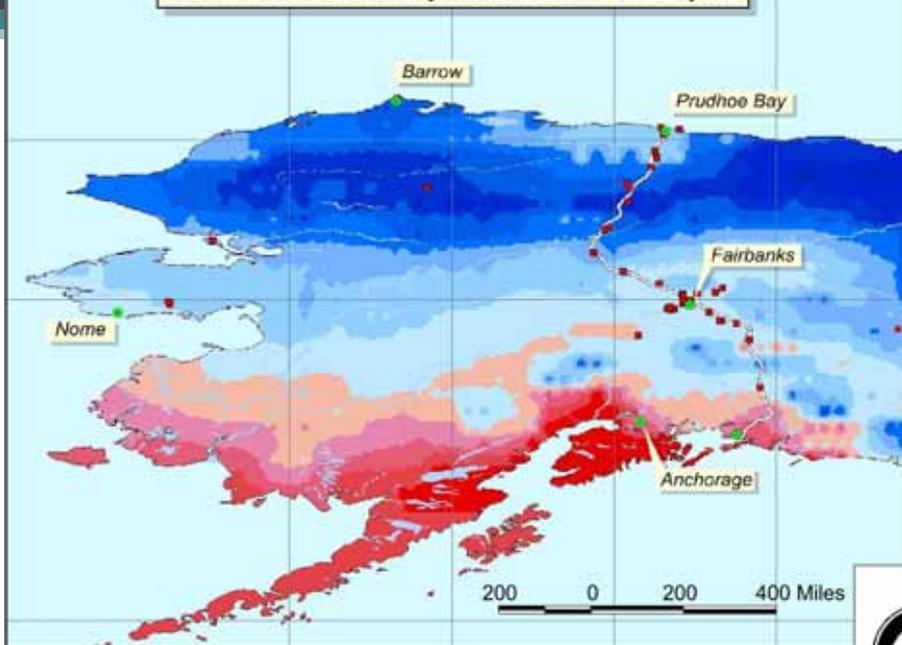
# Spatially Distributed Model of Permafrost Dynamics in Alaska



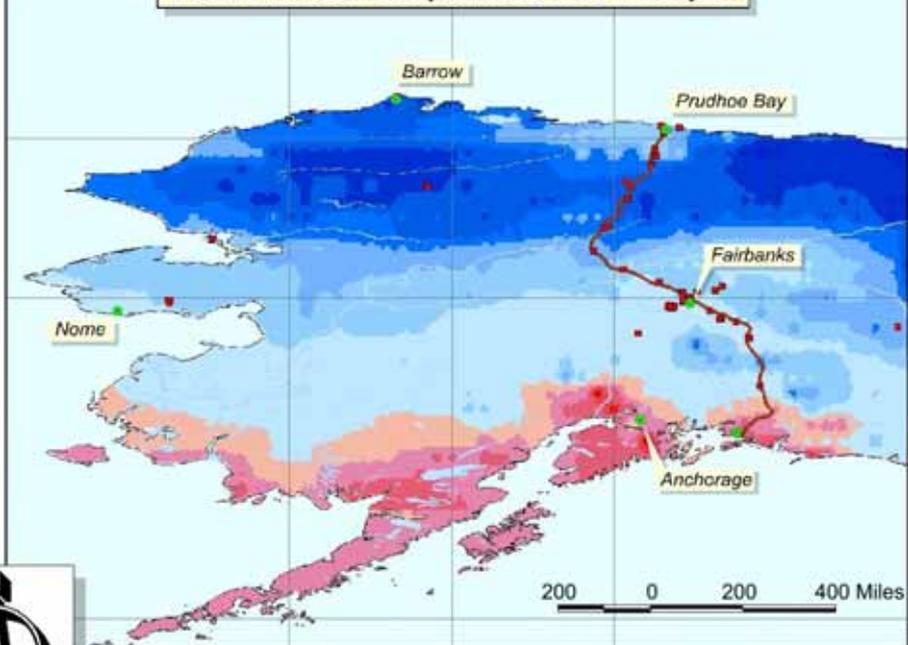
Mean Annual Temperature at 20 m Depth



Mean Annual Temperature at 2 m Depth

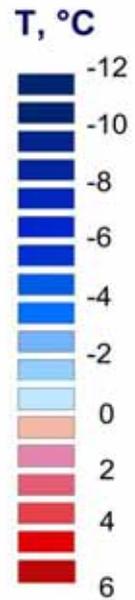


Mean Annual Temperature at 5 m Depth

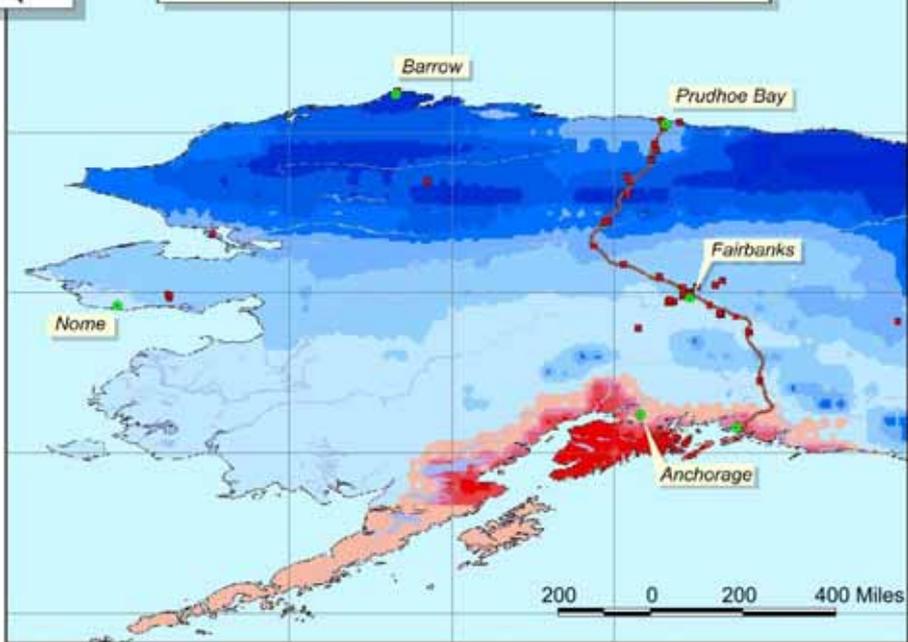


2045

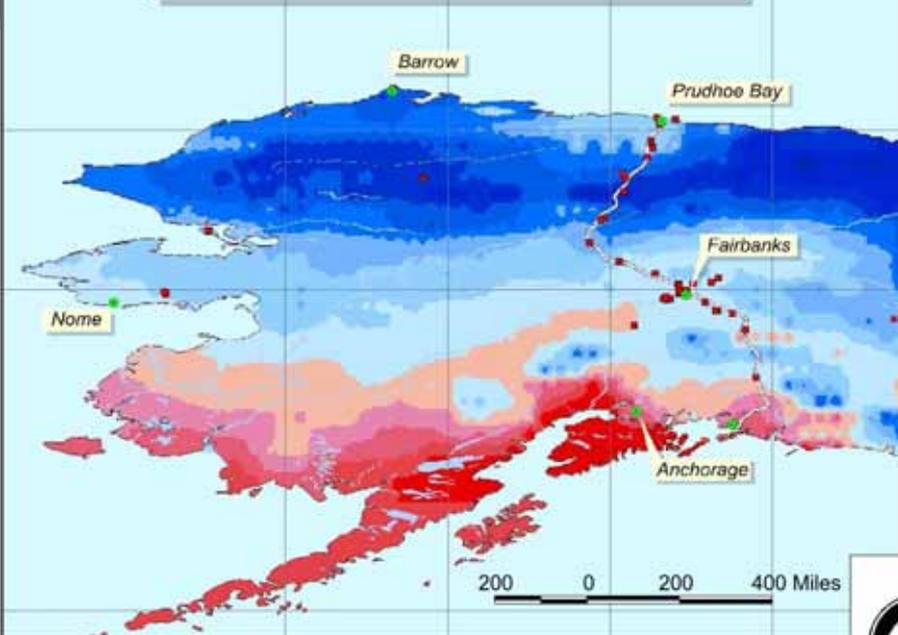
# Spatially Distributed Model of Permafrost Dynamics in Alaska



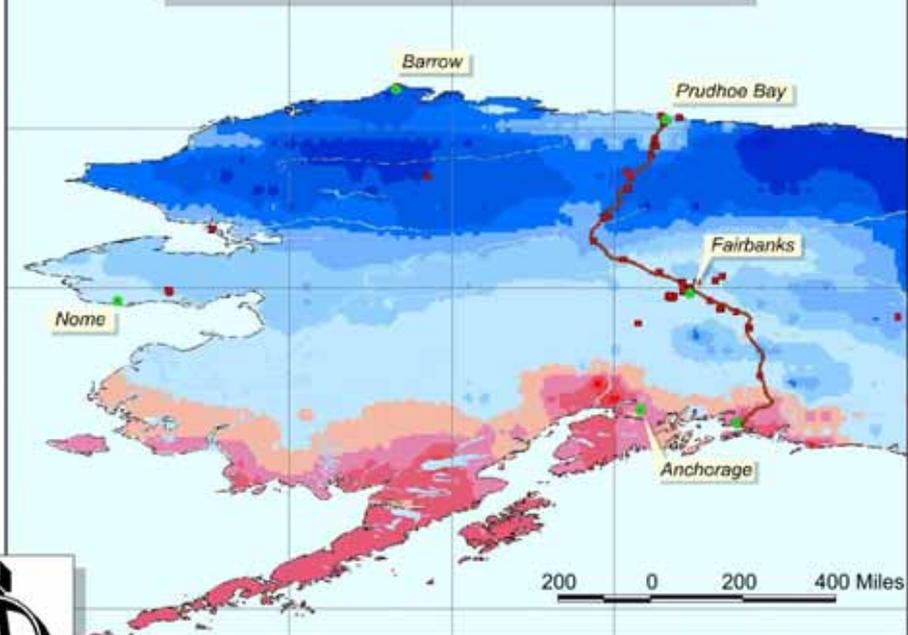
Mean Annual Temperature at 20 m Depth



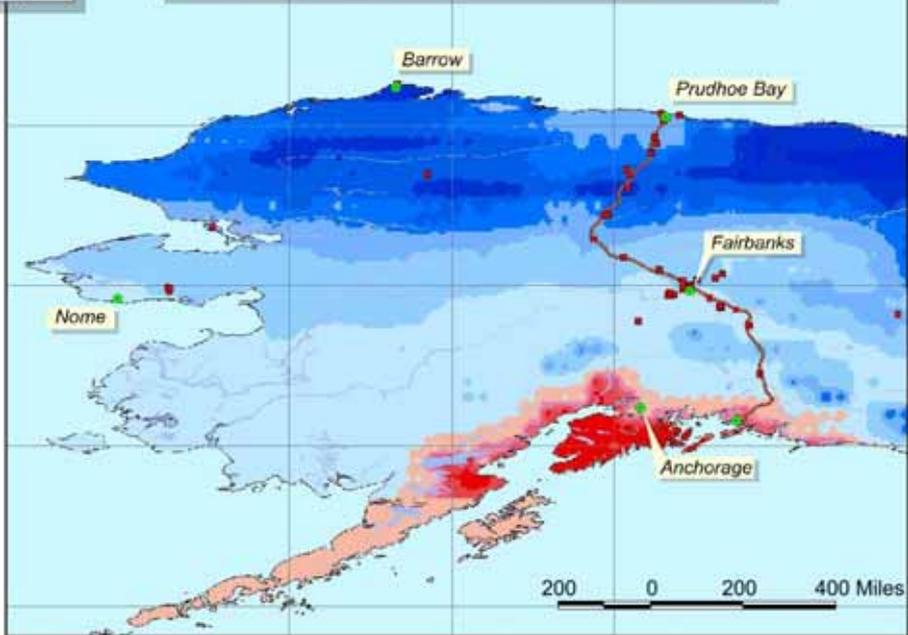
Mean Annual Temperature at 2 m Depth



Mean Annual Temperature at 5 m Depth

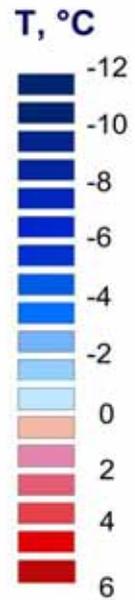


Mean Annual Temperature at 20 m Depth



2050

# Spatially Distributed Model of Permafrost Dynamics in Alaska



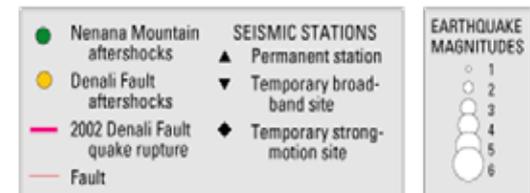
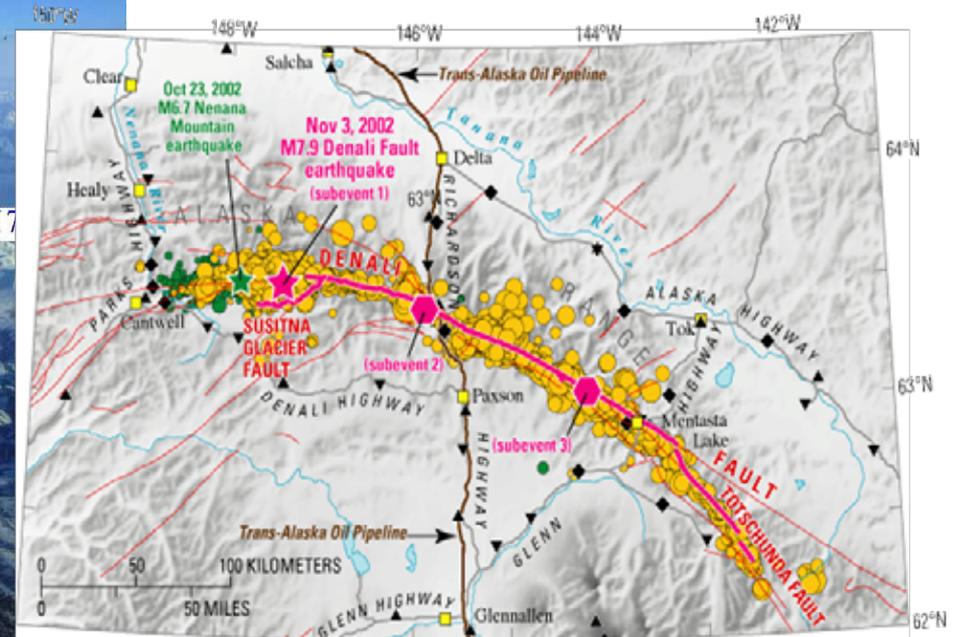
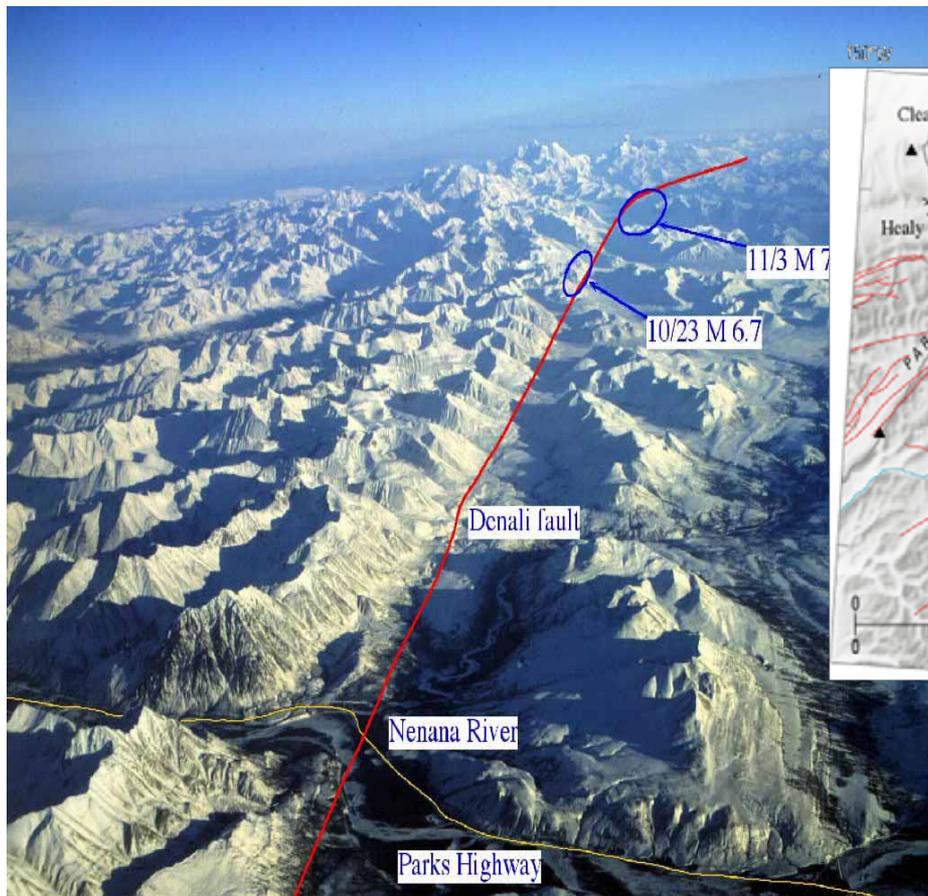
200 0 200 400 Miles

# Arctic Construction and Engineering

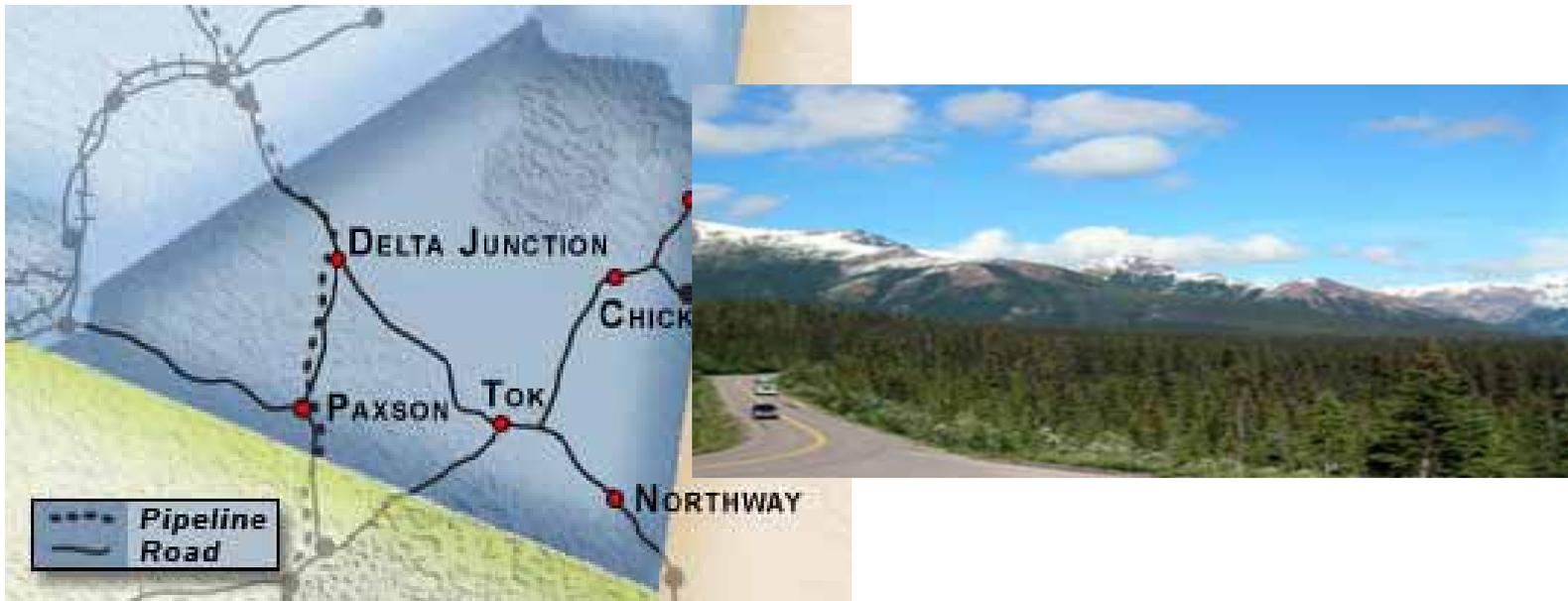




# Seismic



# Delta Junction/Alaska Highway



# Congressional Action



# Arctic Warming



# Rights-of-Way





# ECONOMIC CHALLENGES

# Economic Challenges

- **Financing a \$26 billion project**
- **Potential Infrastructure for Alaska:**
  - 4-6 years to complete
  - 52 Highway Projects
  - 6 Airports
  - 14 Bridges
  - 15 Facilities

# Steel Needs

- ❖ Estimated 1.1 million tons in U.S.
- ❖ Estimated 1.4 million tons in Canada

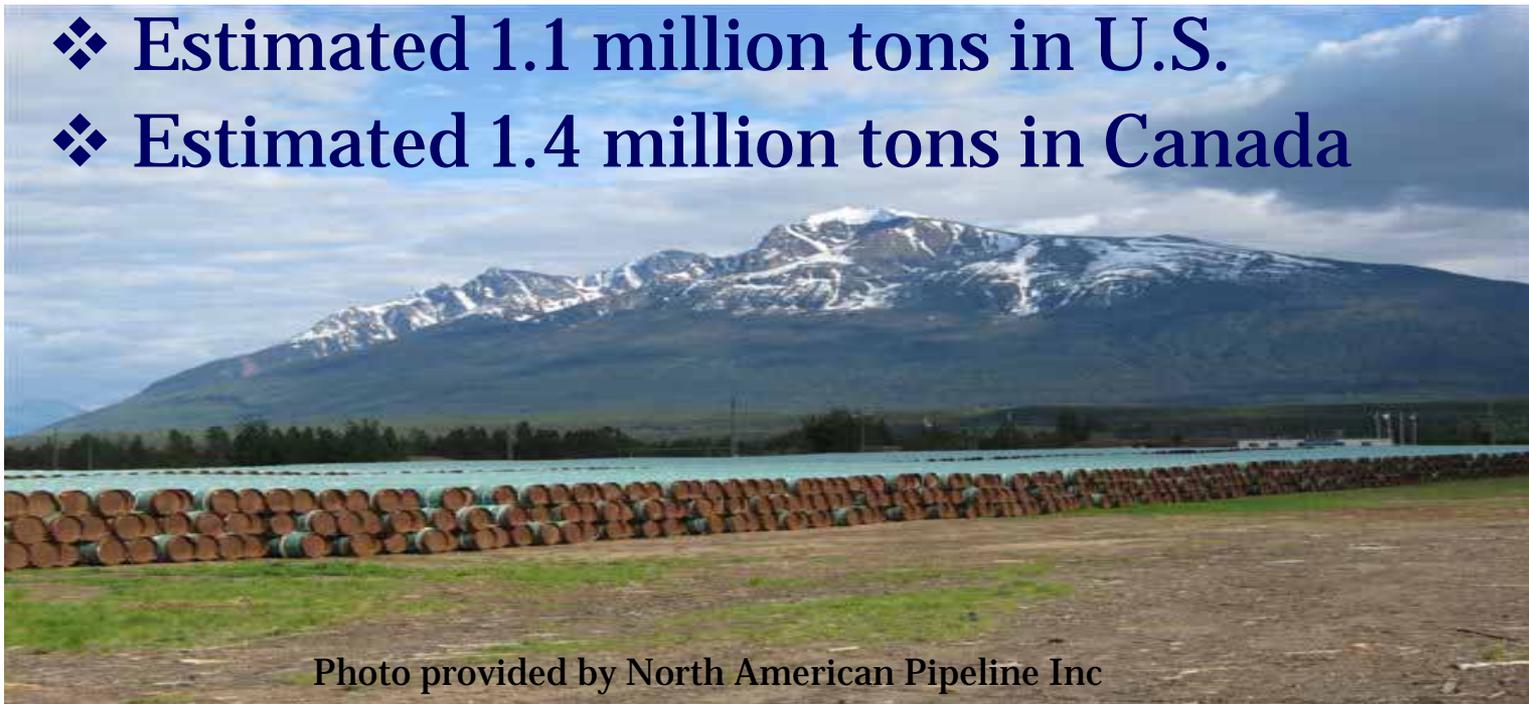
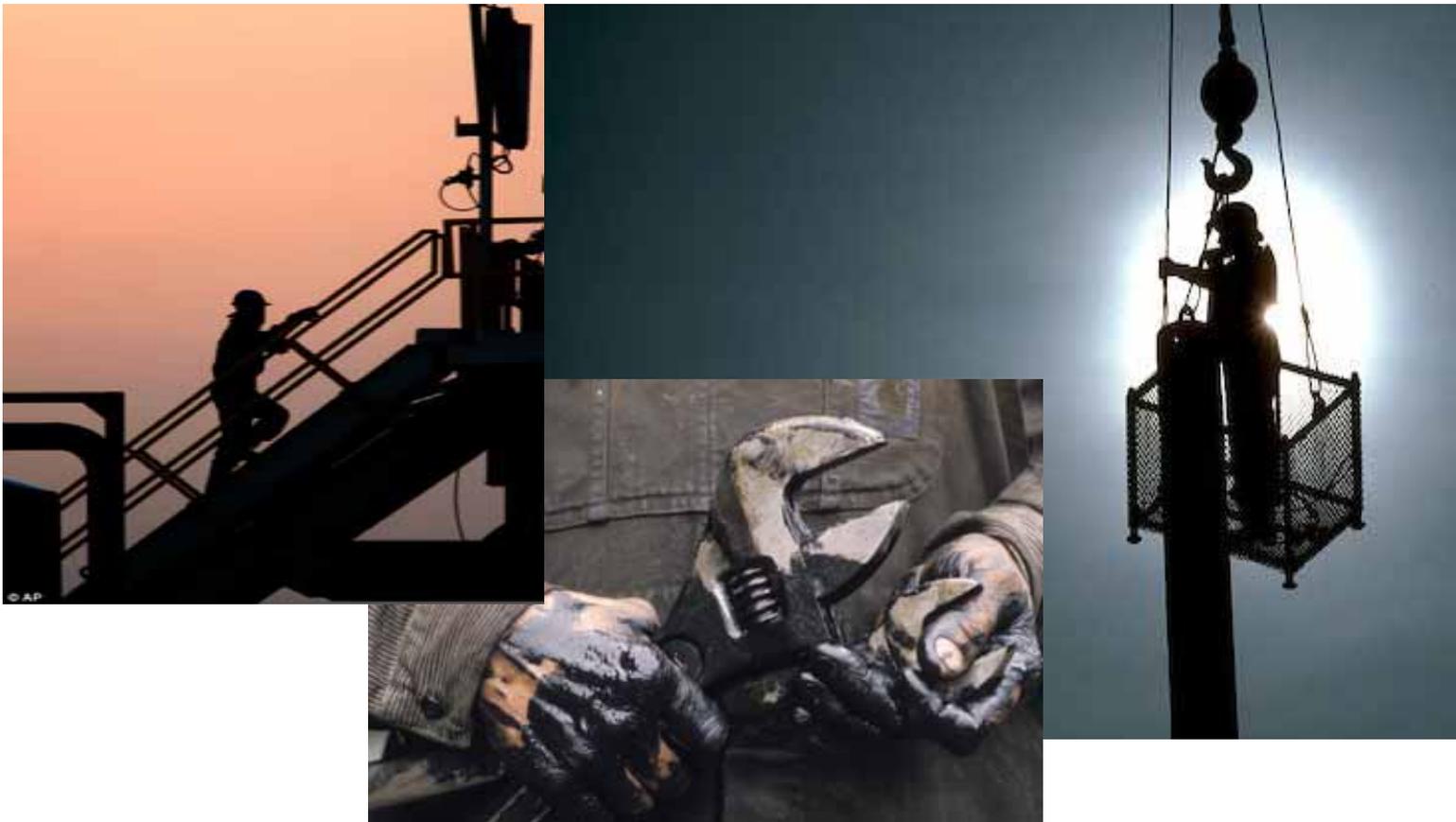


Photo provided by North American Pipeline Inc

# Qualified Labor Pool



# Pipeline Applicants



**TransCanada**  
*In business to deliver*

# Winston Churchill



## Churchill Said:

**“ Success is not final, failure is not fatal:  
It is the courage to continue that counts.”**



**Office of the Federal Coordinator  
Alaska Natural Gas Transportation Projects**

**Washington, DC Location:  
1717 H St., NW, Suite 801  
Washington, D.C. 20006  
(202) 478-9750**

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**Anchorage, AK Location:  
411 W 4<sup>th</sup> Ave. 2<sup>nd</sup> Floor  
Anchorage, Alaska 99501  
(907) 257-1364**

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[info@arcticgas.gov](mailto:info@arcticgas.gov)**