

# Long term coastal monitoring along the Yukon Coast indicates acceleration of coastal retreat in the last 20 years



Anna M. Irrgang (formerly Konopczak)<sup>1,2</sup>, Gavin K. Manson<sup>3</sup>, Hugues Lantuit<sup>1,2</sup>, Pier Paul Overduin<sup>1</sup>, Guido Grosse<sup>1,2</sup> Frank Günther<sup>1</sup>

<sup>1</sup> Department of Periglacial Research, Alfred Wegener Institute Helmholtz Centre for Polar- and Marine Research, Potsdam, Germany

<sup>2</sup> Institute of Earth and Environmental Science, University of Potsdam, Germany

<sup>3</sup> Geological Survey of Canada-Atlantic, Dartmouth, Canada

# Background



- **1/3 of all coasts** consist of permafrost
- Permafrost **2 x more carbon** than atmosphere
- Arctic coasts erode up to **30 meters per year**



# Study Area



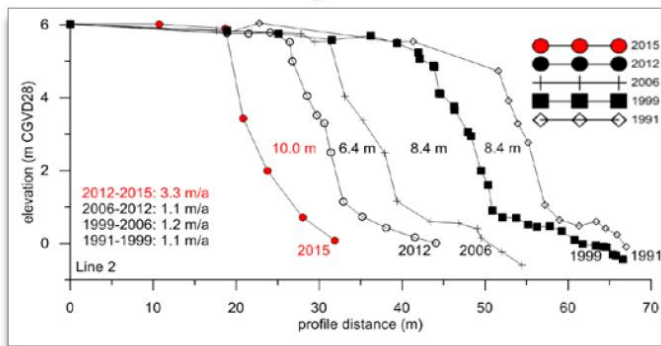
# Methods

## Field work

1991 - 2015

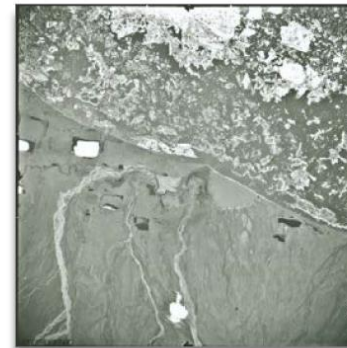


- Theodolite measurements
- RTK & DGPS measurements



## Remote sensing

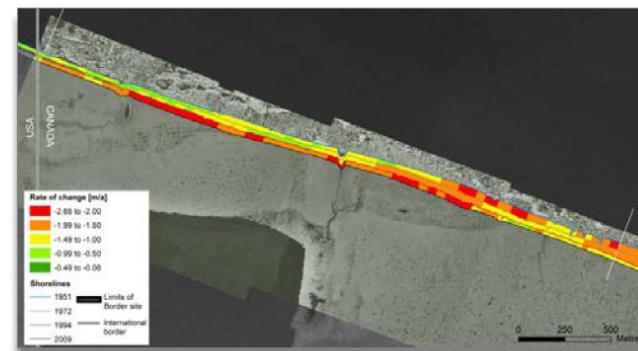
1952 - 2011



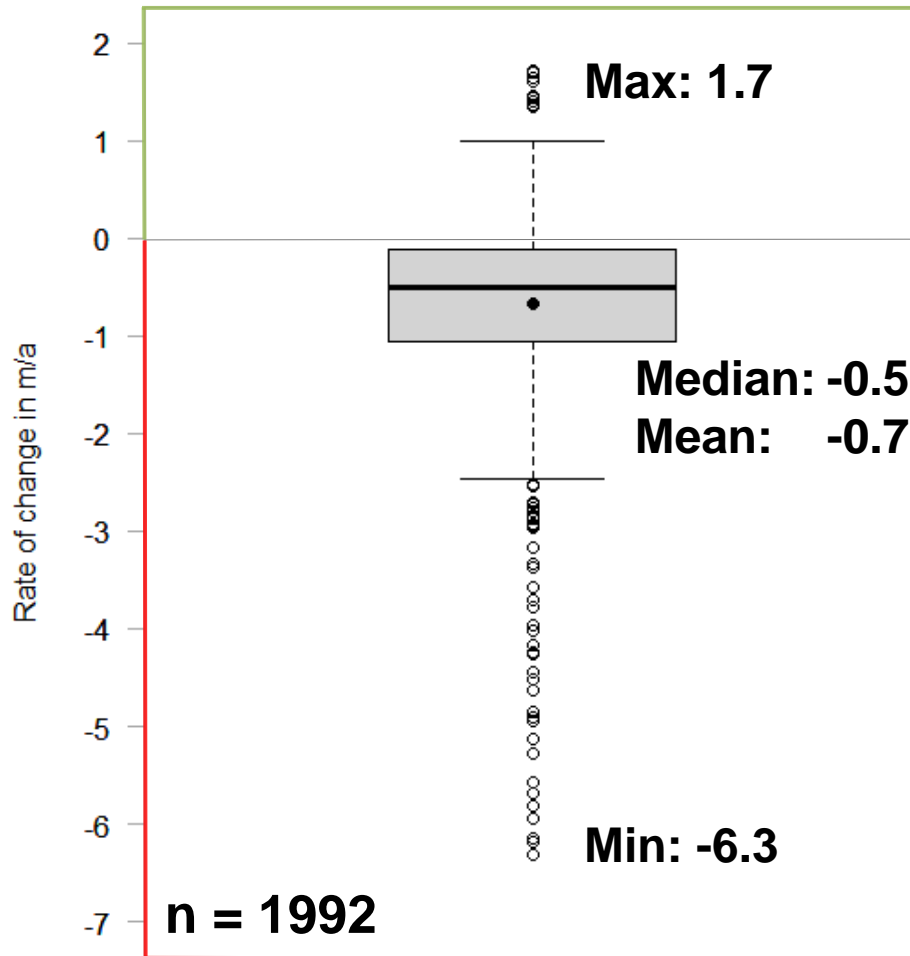
- Aerial imagery
- Satellite pictures
- DEMs



DSAS



# Results: temporal analyses



DSAS statistics:

**1952 – 2011**

**Accumulation: 13 %**

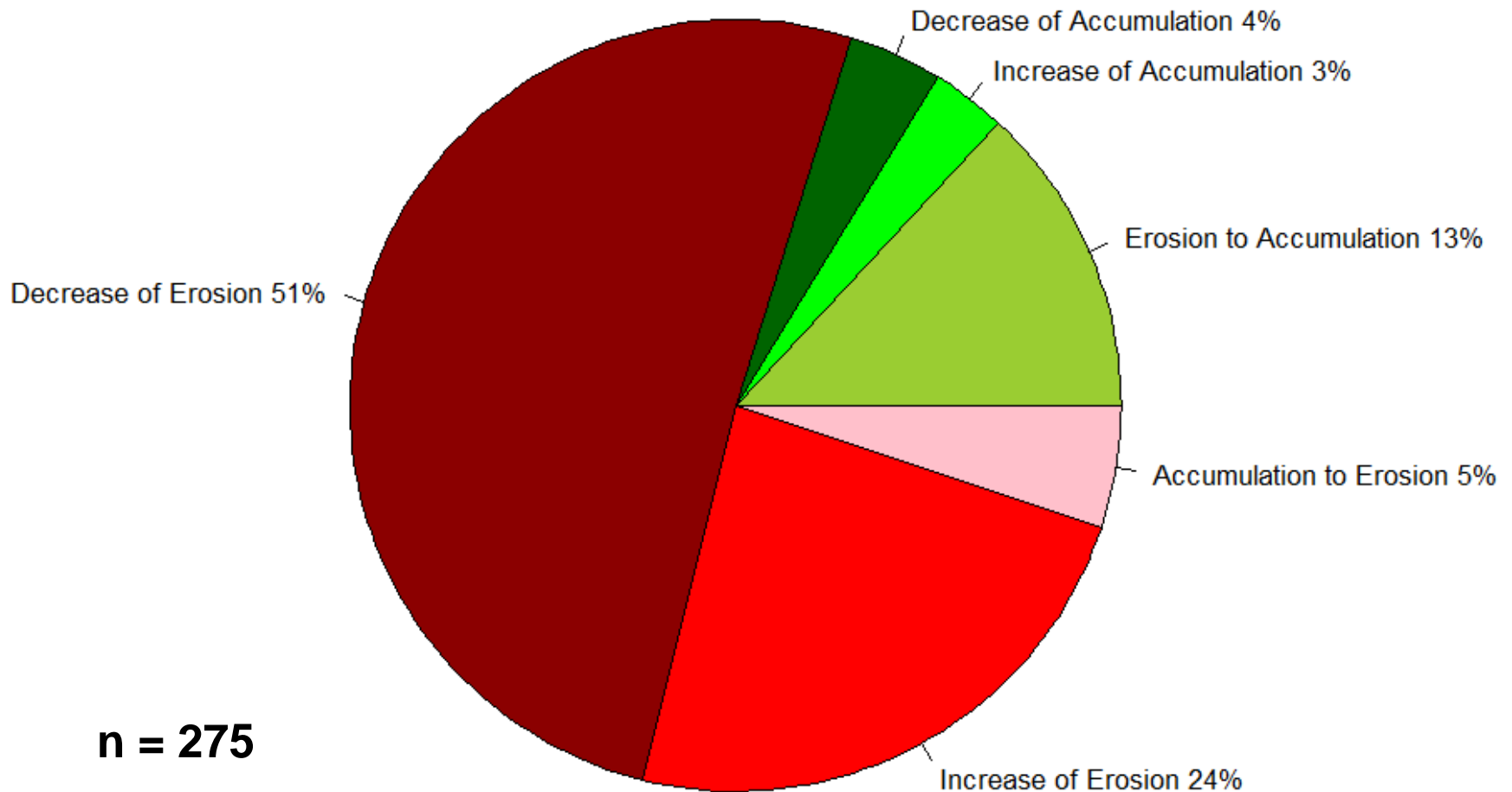
**2 %  $\geq 1$  m/a**

**Erosion: 87 %**

**30 %  $\geq 1$  m/a**

# Results: temporal analyses

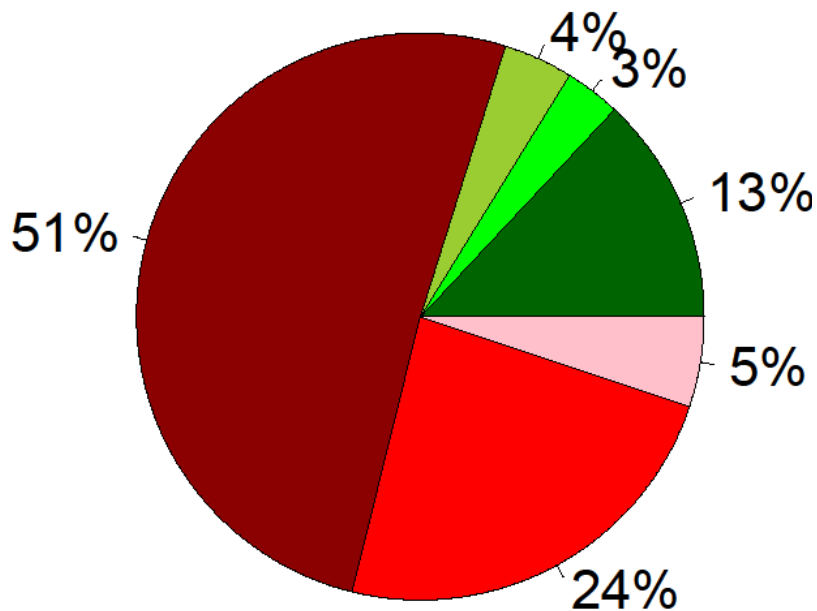
1950 - 1970, 1970 - 1990



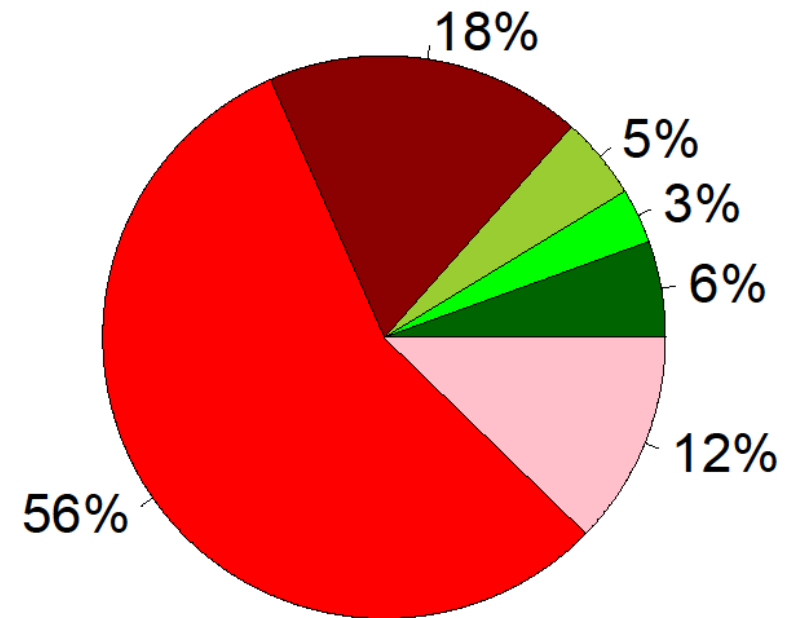
# Results: temporal analyses

1950 - 1970, 1970 - 1990  
Acc = 20% Er = 80%

1970 - 1990, 1990 - 2011  
Acc = 13% Er = 87%

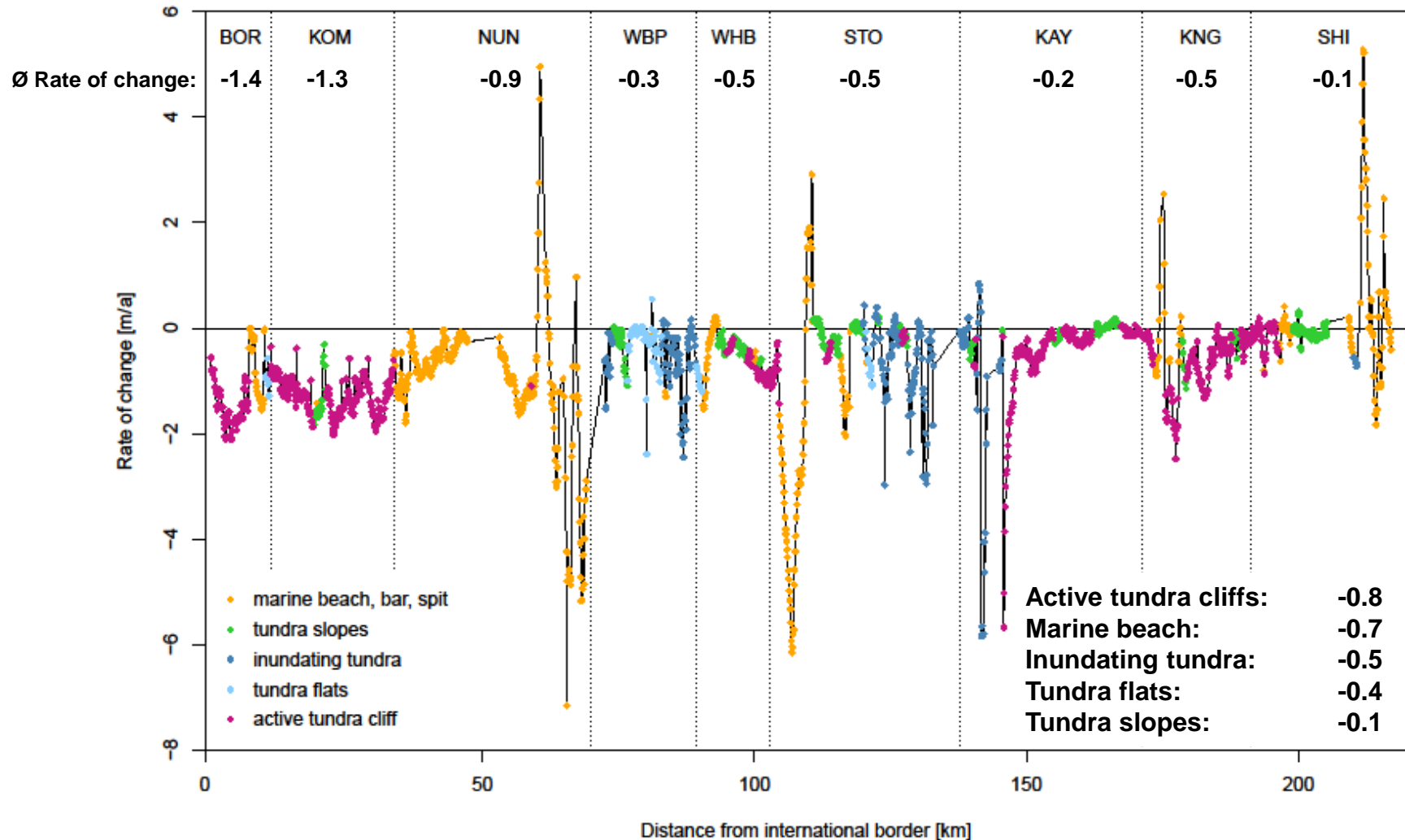


n = 275



n = 275

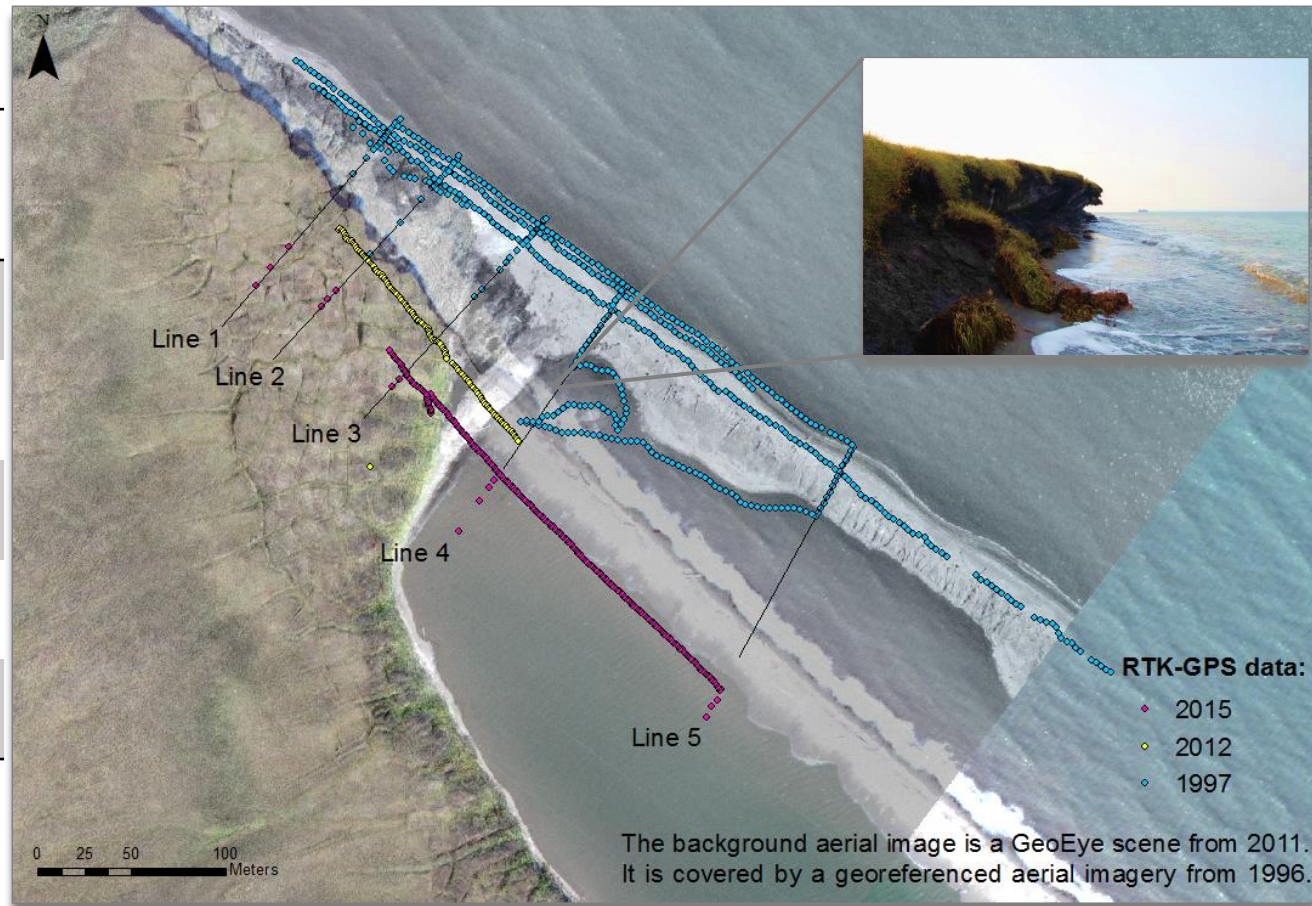
# Results: spatial analyses





# Results: Stokes Point west

Time period	Erosion rate [m/a]
2014-2015	8.9
2007-2014	8.8
2006-2007	0.5
1999-2006	0.2
1997-1999	1.1



# Conclusions



- Coastal changes along the Yukon coast show **very high spatial and temporal variability**
- Within the last two decades broad sections of the coast were experiencing **acceleration of coastal erosion**

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# Quyanaq for your attention

