



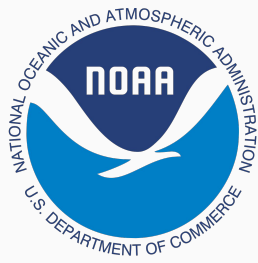
# Monitoring plan for the Barry Arm Landslide Tsunami Risk

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National Tsunami Warning Center

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[tsunami.gov](http://tsunami.gov)

# Working together for Prince William Sound communities



## **Well-known risk:**

Landslides in glacial fjords within Prince William Sound may create local tsunamis.



**FEEL**

a very strong earthquake?

**SEE**

the water withdraw or advance  
an unusual distance?

**HEAR**

a strange rumble or roar?

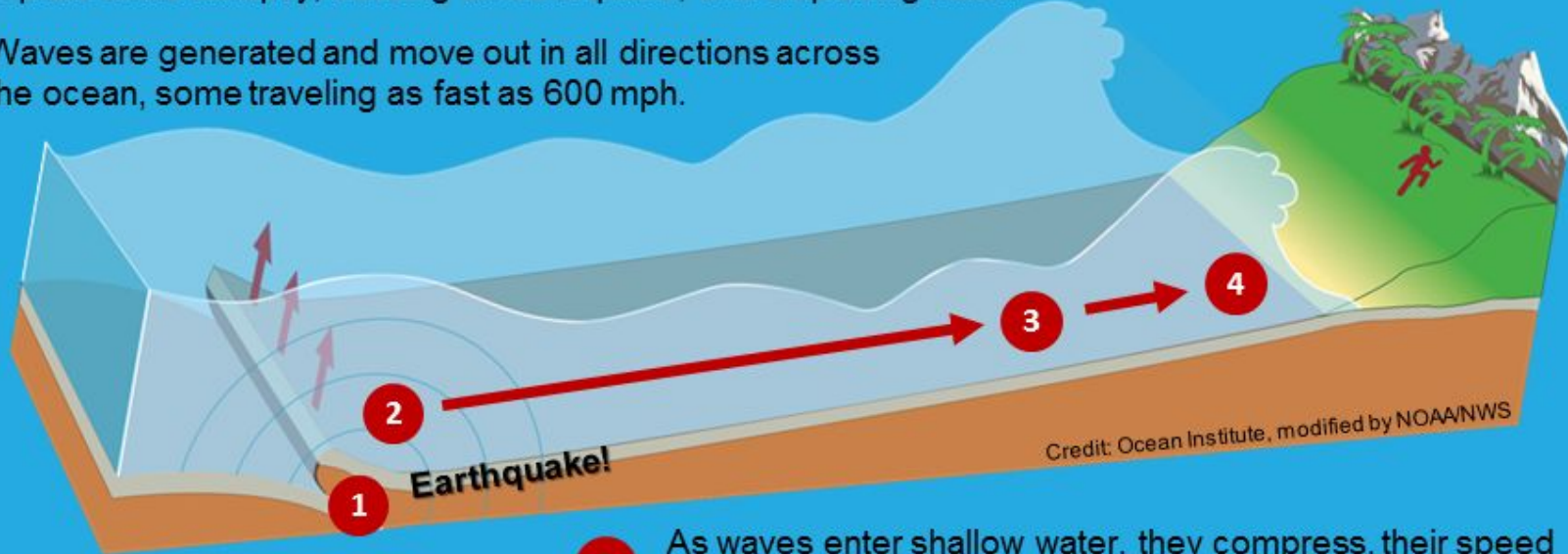
**MOVE TO HIGH  
GROUND!**



# How a Tsunami Works

Most tsunamis are caused by large earthquakes below or near the ocean floor.

- 1 A plate shifts abruptly, causing an earthquake, and displacing water.
- 2 Waves are generated and move out in all directions across the ocean, some traveling as fast as 600 mph.



Credit: Ocean Institute, modified by NOAA/NWS

- 3 As waves enter shallow water, they compress, their speed slows, and they build in height.
- 4 The wave height increases, and associated currents intensify, becoming a threat to life and property.



[weather.gov/tsunamisafety](https://weather.gov/tsunamisafety)



# NATURAL Tsunami Warning Signs



Feel a strong or  
long earthquake



See a sudden rise  
or fall of the ocean



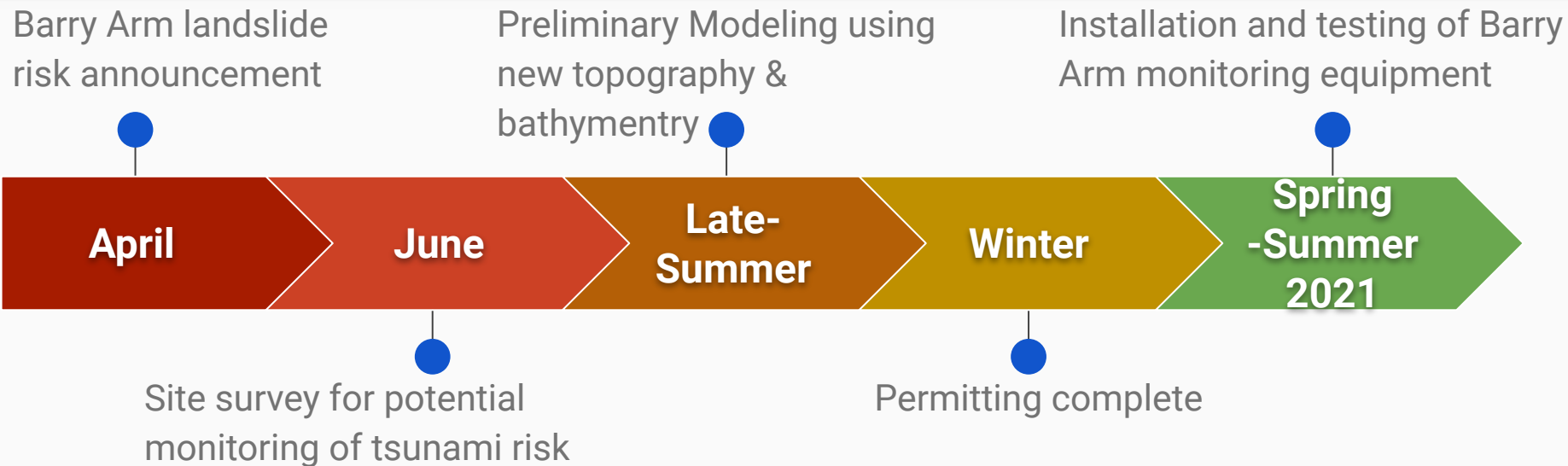
Hear a loud roar  
from the ocean

Any of these could mean a tsunami is coming.  
Get quickly to high ground or inland!

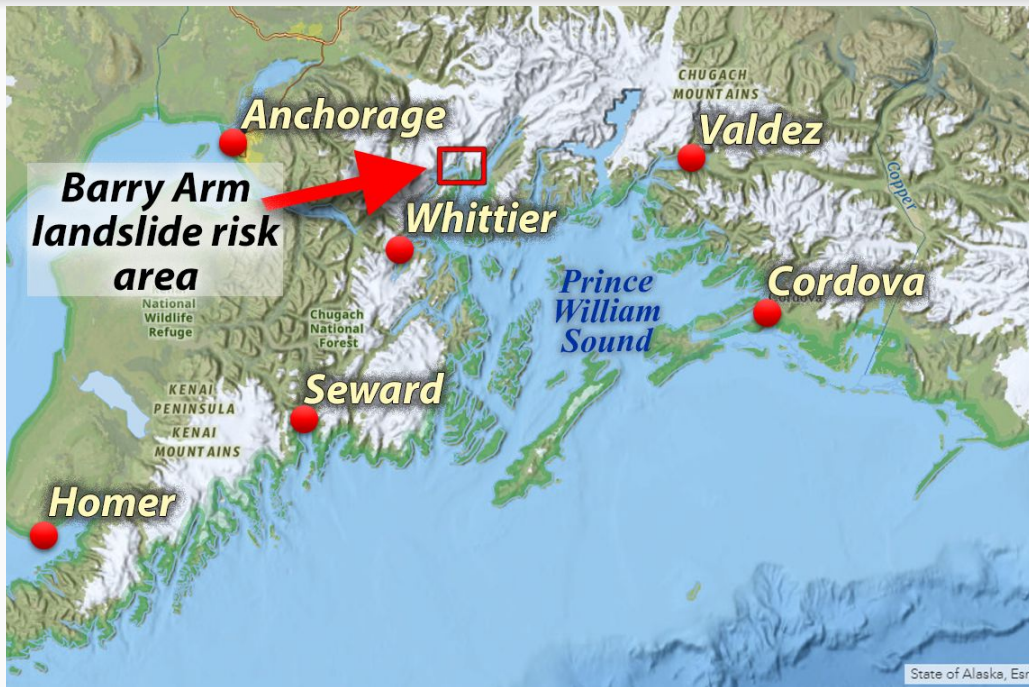


[tsunami.gov](https://tsunami.gov)

# NTWC monitoring plan for the Barry Arm Landslide Tsunami Risk



# Tsunami Tide Gauges



If a wave leaves Barry Arm, the initial water-level change could reach

- Whittier in about 20 minutes
- Chenega in about 30 minutes
- Tatitlek in about 40 minutes
- Valdez in about 45 minutes
- Cordova in about 60 minutes



# Tsunami Tide Gauges



NTWC will install a series of gauges between Whittier and Barry Arm.

These gauges will help NTWC know a wave has left Barry Arm after a landslide occurs.

**\*\***This is a new process and unlike what NTWC is designed to do.



# Planned gauge sites

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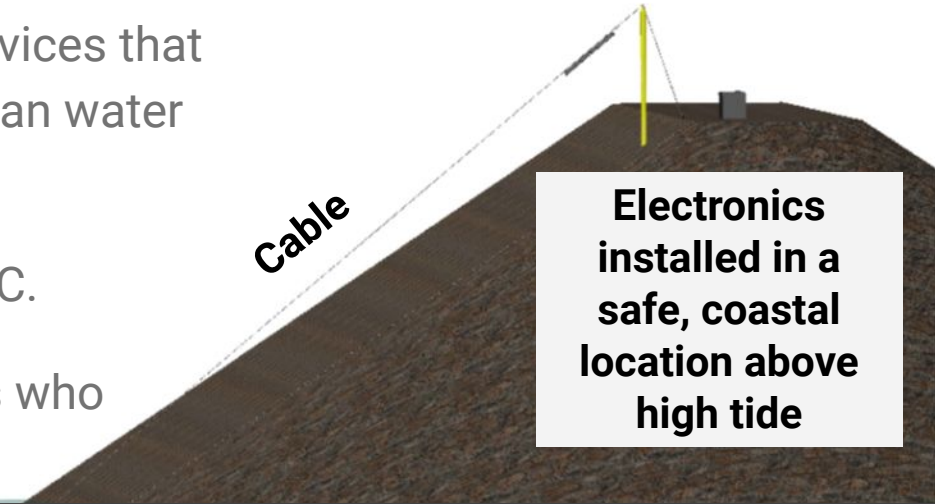
# Tsunami Tide Gauges

Tsunami tide gauges are simple, durable devices that measure the weight -or pressure- of the ocean water on top of the sensor.

The information is relayed back to the NTWC.

Sudden changes in pressure alert scientists who decide if an tsunami alert is necessary.

**Sensor is ground anchored and tensioned below low tide line.**



**Electronics installed in a safe, coastal location above high tide**



# A weather buoy is not a Tsunami buoy



Wind Dir.  
Wind Speed  
Wind Gust  
Air Temp.  
Pressure  
Sea Surface Temp.  
Rel. Humidity  
Wave Height  
Wave Period  
Wave Spectra  
Wave Dir.  
Dew Point  
Solar Radiation  
Water Level  
Visibility  
ADCP  
Rain Accumulation  
10-Minute Rain Rate  
24-Hour Rain Rate





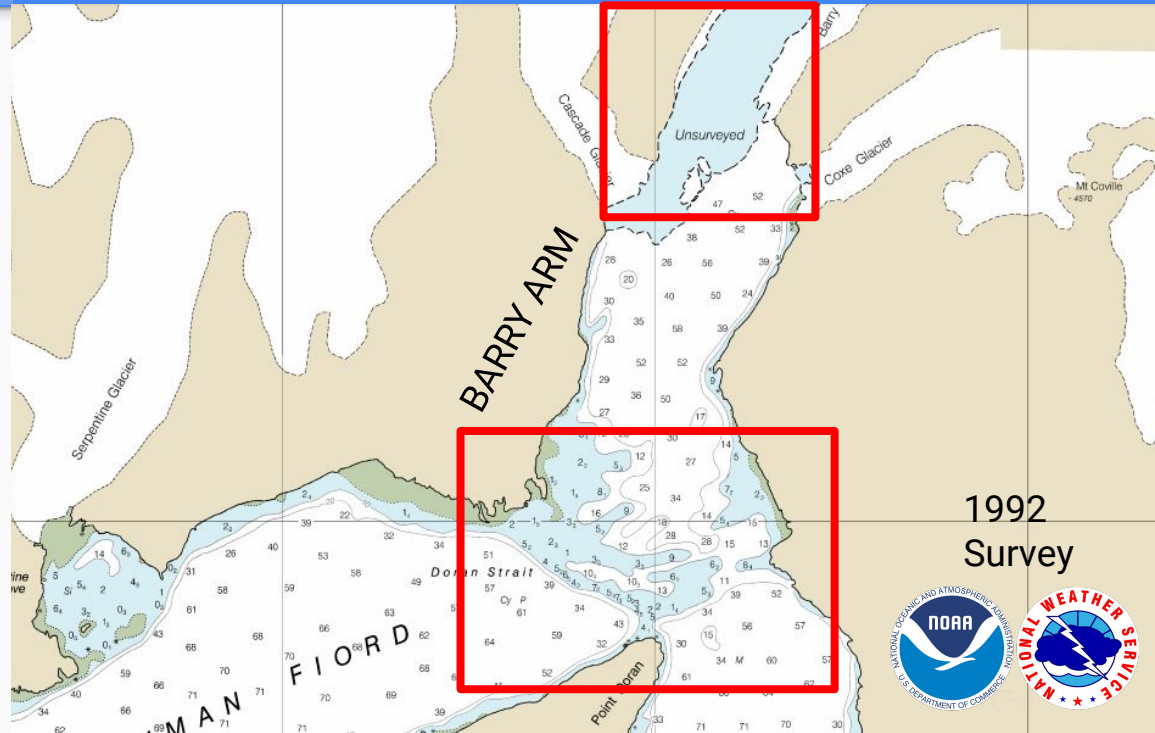
# Is the water deep enough in Barry Arm for a tsunami to occur?

**We think so.**

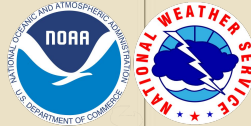
Barry Arm has changed since the glacier retreated.

A new bathymetric survey was completed this summer thanks to NOAA Coast Survey and the USGS.

How the landslide enters the water could make a difference on the size of any resulting tsunami.



1992  
Survey



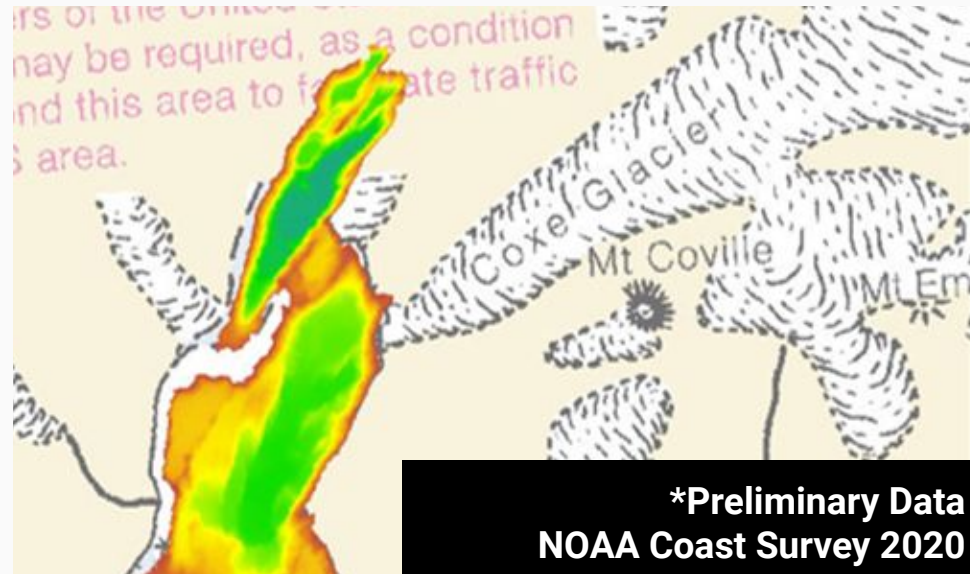


# 2020 Barry Arm bathymetry

NTWC believes there is enough water in the vicinity of the landslide to support a tsunami leaving Barry Arm and moving into Prince William Sound.

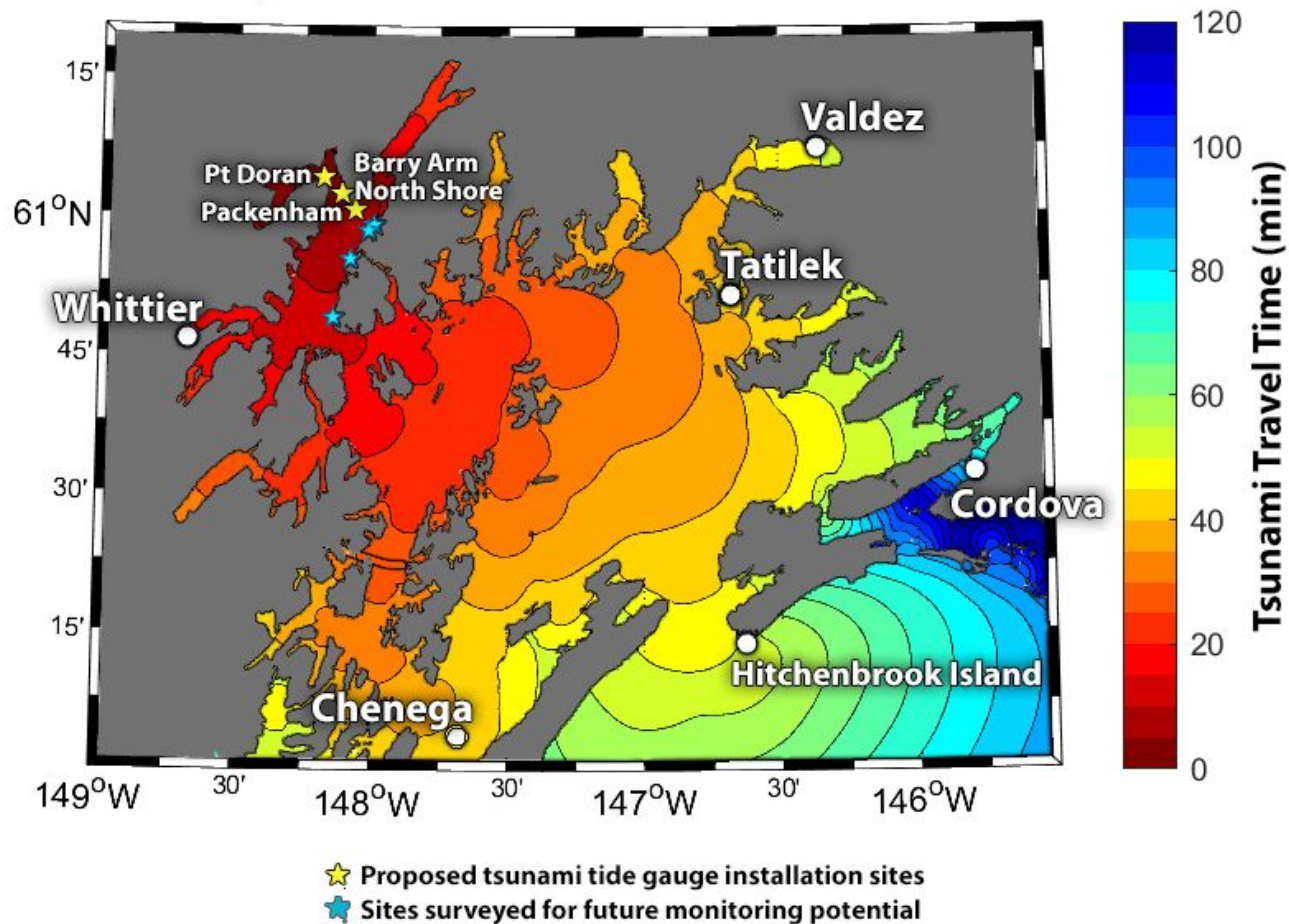
A series of waves of 2 to 3 feet may put water into unusual places- but may not cause significant damage in or around Valdez.

**Main threat: long period of strong and unusual currents in Port Valdez and Valdez Arm, and throughout Prince William Sound.**



**\*Preliminary Data  
NOAA Coast Survey 2020**

## Modeled Barry Arm Landslide Tsunami in Prince William Sound, Alaska



# How will you be alerted if a tsunami occurs from Barry Arm?

- The National Tsunami Warning Center will issue a **Tsunami Warning.**
- You may receive this warning over
  - NOAA weather radio & Marine VHF
  - Cell phone WEA alerts
  - Radio / Television / Internet
  - Tsunami Siren in Whittier



**DO NOT RELY ON ONLY  
ONE TYPE OF WARNING**

**Warning**

Dangerous coastal flooding  
& powerful currents  
possible

Move to high  
ground or inland

**Advisory**

Strong currents & waves  
dangerous to those in/very  
near water possible

Stay out of water,  
away from beaches  
& waterways

**Watch**

Distant tsunami possible

Stay tuned for  
information  
Be prepared to act

**Information  
Statement**

No threat or very distant  
event & threat not  
determined

Relax

# Tsunami Alerts



[weather.gov/tsunamisafety](https://weather.gov/tsunamisafety)



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# Tsunami Alerts



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# The unusual event could last for hours

If a significant wave moves into the harbor, debris may interrupt normal operations.

Expect dangerous and unusual currents to continue for hours after the initial change in water level.



# Know how to go

Think about where you are in town at each point in your day.

Think about how you can get from your location to your safe evacuation point / high ground.

Make a plan with your family and friends.





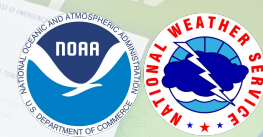
# Be ready to go

**Participate in community meetings about the Barry Arm landslide tsunami risk.**

**Make a “go bag” and keep it somewhere that’s easy to grab.**

**Review the ways you can receive Tsunami and Weather alert messages.**

**Practice your evacuation route.**





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