

***“This Shouldn’t  
Be Happening”***



Photo from an actual BSAR  
Mission

March 31, 2019:  
BSAR members crawl across  
rotting ice to reach survivors

**3 rescued**

**2 recovered**

*There should have still been  
almost a month of safe travel  
remaining on the Kuskokwim  
River*

*BSAR Presentation on the Need for a Rescue Airboat in Our Region*

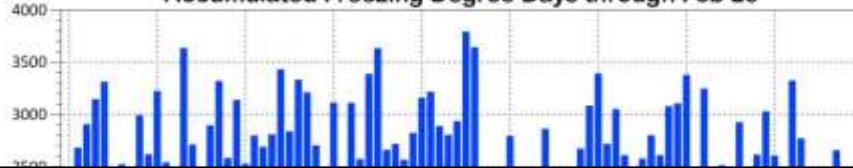


*“Working & Adapting So Others May Live”*

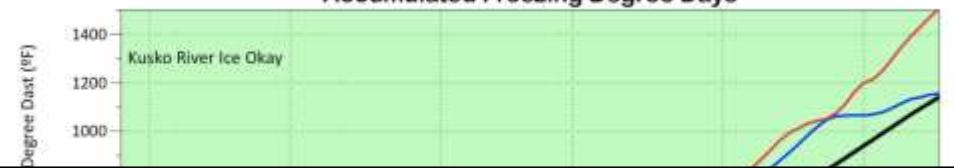
# Climate Change & Its Effect on Safe Winter Travel in Our Region

*“We Don’t Give Up... We Adapt” - BSAR Membership 2019*

Bethel, Alaska 1930-2019  
Accumulated Freezing Degree Days through Feb 23



Bethel, Alaska  
Accumulated Freezing Degree Days



**February and March 2019 – Back to Back Record Warm Months – Not just record by a few degrees – February was 18 degrees above normal!**



- *With Longer Freeze Ups & Warmer Winters Our Overland Trails are Becoming More Important – the River Ice less Reliable*
- *But some are longer than the River and they are often rough, so People start using the River as soon or as late as they can – often in marginal conditions*



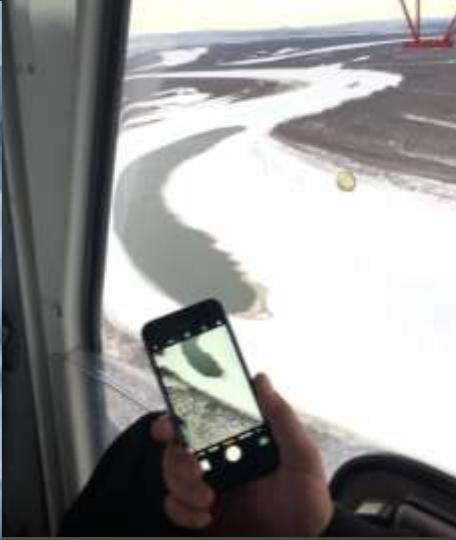
*Chuathbaluk Crew Chopping a Safe Route for Travelers  
Through the Rough Ice Near Their Village*

# *A New Role For BSAR: Watching Our Changing Environment Closely...*





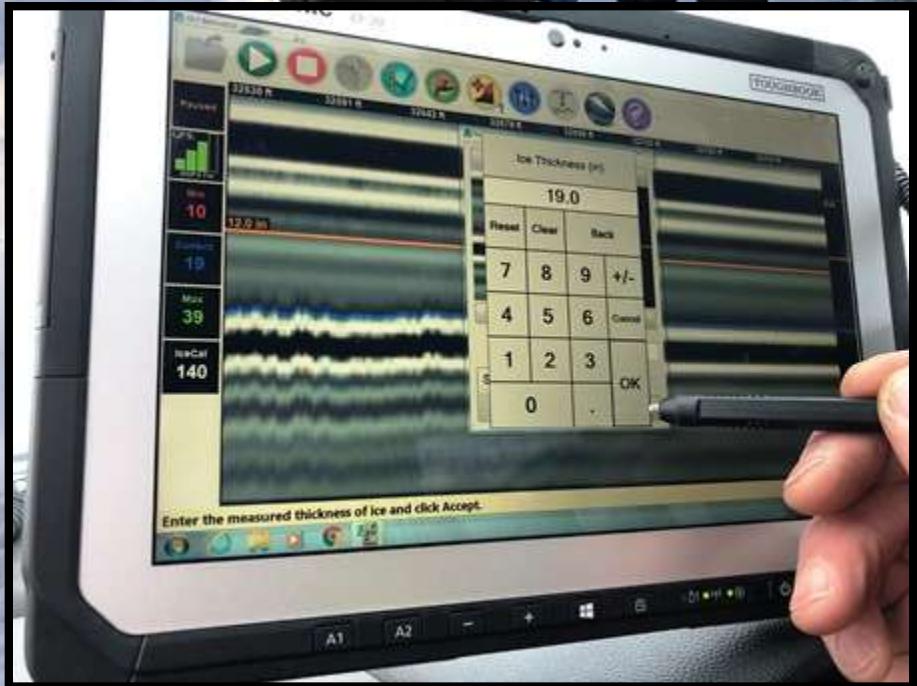
***Documenting What We see...***



# *Using a Combination of Traditional Knowledge...*



# And New Technology to...





To Report a Missing or Overdue Person Call 911 or 907-545-HELP (4357)



Miles of open water on the Kuskokwim River gleam in the sunlight as it briefly breaks through the fog

**11.19.18 BSAR Aerial Survey**

*"Way Behind Schedule"*

**Summary:**

Today BSAR did an aerial survey of the Johnson and Kuskokwim Rivers up to Kalskag. **The purpose of the flight was not to determine if it was safe to travel. With the extended warm weather everybody should already understand that it's not safe.** There is very little ice that is well frozen. The purpose of today's flight was to document the late extended freeze up conditions that are becoming the "new normal" for our region and the effect it is having on our way of life. There are over 15,000 People living along our River. With the current unsafe travel conditions we are all almost 100% dependent on air travel to get where we need to go. But the warm moist weather and associated fog is effecting the reliability of air travel as well.

The National Oceanic and Atmospheric Administration (NOAA) tells us that the temperature of the Bering Sea is very warm. The effects of this was easy to see as we flew today—especially in the Lower River. Conditions improved slightly as we flew inland...but not much. The following pictures tell the story.



*The Swiss Cheese: this is how most of the ice in the Johnson River & Lower Kuskokwim looks.*



*From: 9 miles below Akiachak upstream to Kalskag the ice is packed in rough with at least four areas where the River is wide open almost bank to bank—this picture is taken from 500' up in the air*



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**DANGER: Can you tell the difference? Which is the water and which is the sky?**

This picture has been flipped upside down—the water is on the top and the sky is on the bottom. This was taken today at the Upper End of Straight Slough. It is rainwater sitting on top of 2" or less of ice!

**12.4.18 BSAR Kuskokwim River Survey**

*"Slowly Healing"*

**Summary:**

Today a BSAR team flew an aerial survey of the Johnson and Kuskokwim Rivers from Atmautuak to Tuluksak. They also did a short ice survey of the immediate Bethel area. This is what they observed.

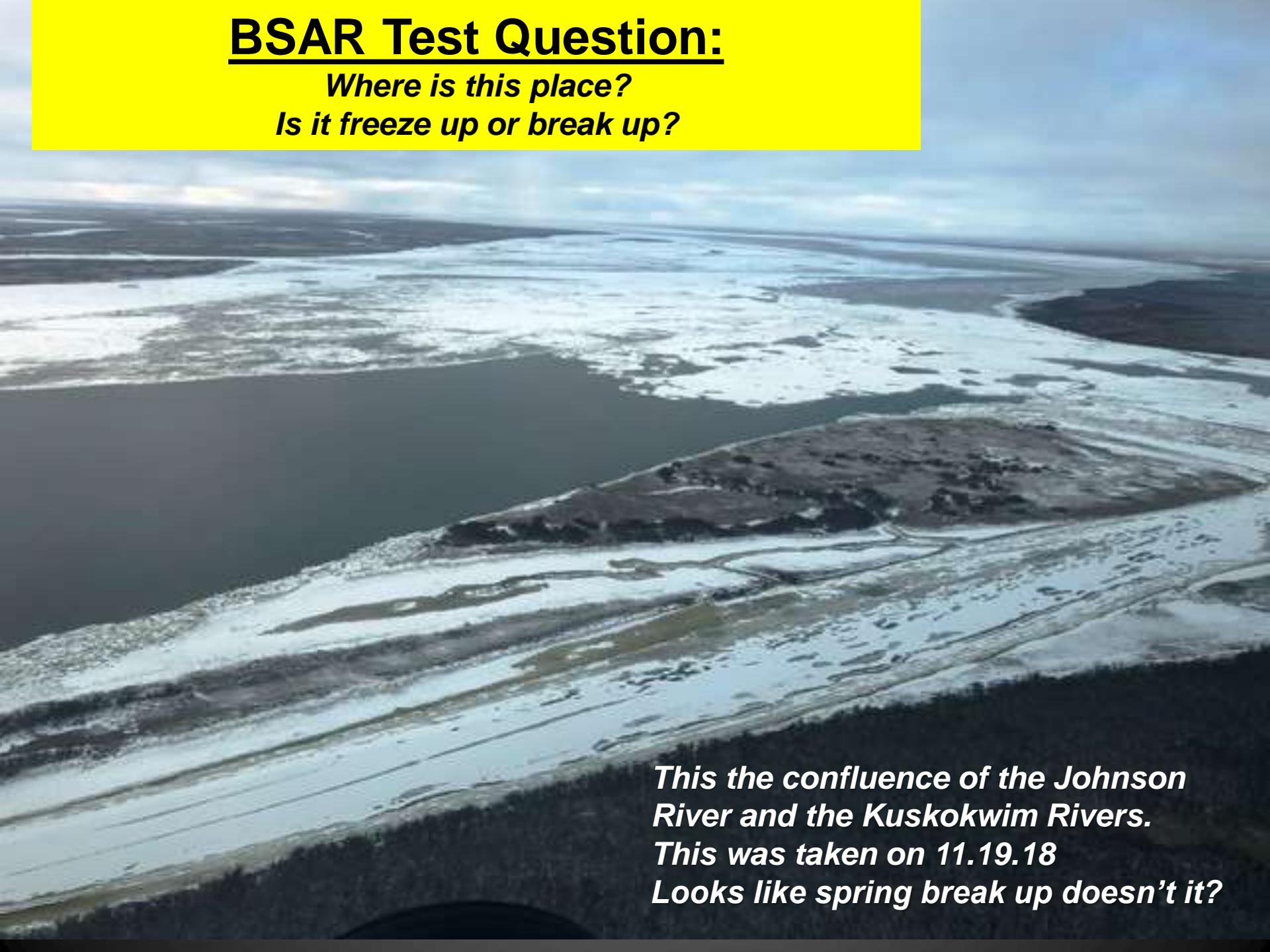
- Even with continued mild weather River conditions have improved significantly since our 11.19.18 Survey
- **However there are still many, many open holes and thin ice areas**
- Despite multiple warnings—there are still many People still traveling out there
- No open water was seen in the Johnson River from the Lake to the mouth
- Ice in the immediate Bethel area ranges from 8" in front of town to 2" or less in Straight Slough
- The nearest open water to Bethel that we observed is 9 miles upstream—in the main channel near the Gweek
- Akiachak SAR has been busy marking the many open holes in their area
- When comparing our records from the same time in 2017 it appears that River conditions this year are slightly better—but we are still below normal



*Report on What We See*

# BSAR Test Question:

*Where is this place?  
Is it freeze up or break up?*



*This is the confluence of the Johnson  
River and the Kuskokwim Rivers.  
This was taken on 11.19.18  
Looks like spring break up doesn't it?*

## Western Alaska Sea Ice Outlook for 2018-19

Updated December 14, 2018

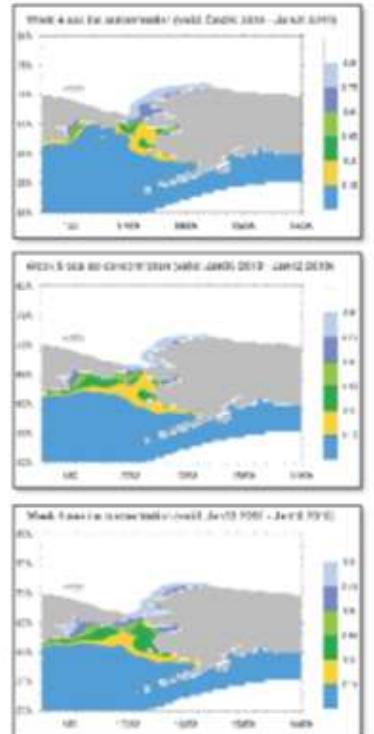
Sea ice growth has been substantial during the second week of December as major storm centers have tracked along the Aleutians and in the Gulf of Alaska and high pressure has dominated over Siberia and the high Arctic, resulting in persistent cold northerly winds over the southern Chukchi and eastern Bering Seas.



The experimental weekly sea ice outlook through mid-January calls for continued ice growth into the new year, though the ice is not forecast to have reached as far south as St. Matthew Island. The forecast does develop some, but not a much ice in upper Bristol Bay but has not spread down the Alaska Peninsula through mid-January.

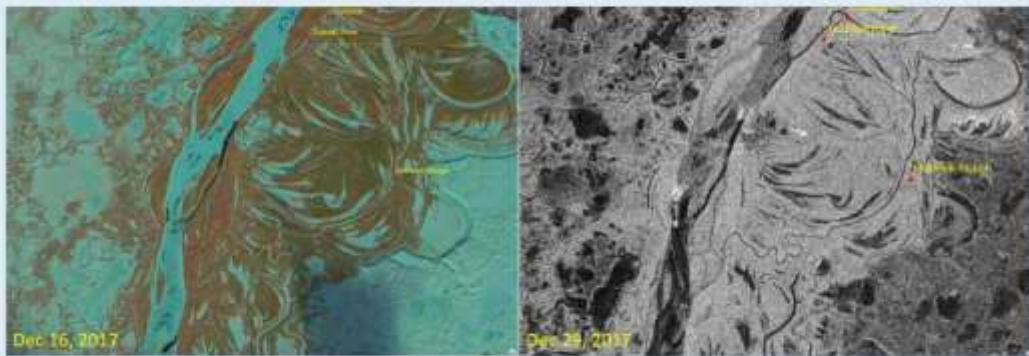


Compiled by Rick Thoman at ACCAP as a service to Alaska. For more info contact: [rthoman@alaska.edu](mailto:rthoman@alaska.edu) and visit <http://accap.usfs.gov>



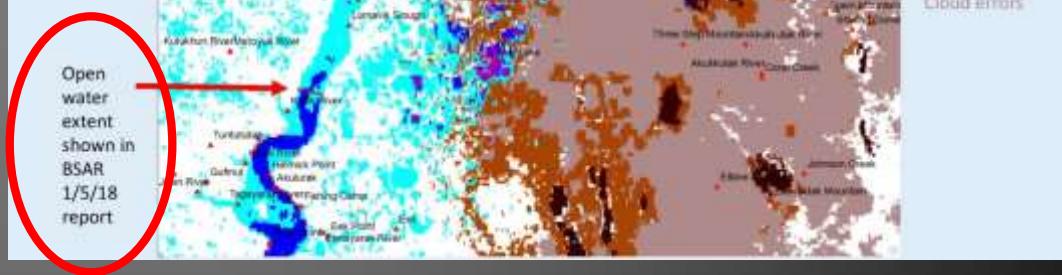
Sea Ice Analysis from NOAA/NWS Alaska Region  
Experimental Sea Ice Outlook issued Dec. 13, 2018  
by NOAA/NWS Climate Prediction Center

Example area of interest: just below Tuluksak River



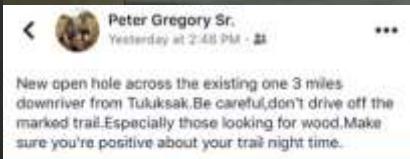
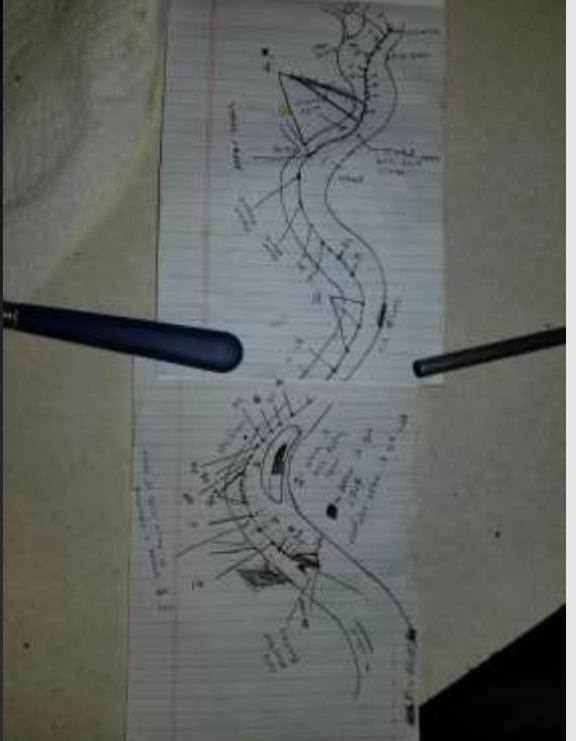
Suomi NPP VIIRS Sensor Flood Product: Jan 7, 2018

VIIRS  
Satellite  
Product is  
available  
daily but  
only useful  
in cloud-free  
conditions



Open  
water  
extent  
shown  
in  
BSAR  
1/5/18  
report

*The Observations Made By BSAR are Distributed Widely and  
Used By Scientists Who Are Trying to Predict the Affect of the  
Changing Climate on Our Region*



**Our Cell Phones Have Become One of Our Most Important Tools for Gathering & Distributing Information – Each Year We Find New Ways to Use Them to Help Keep Travelers Safe**



# *Adapting Our Search & Rescue Strategies in the Face of the Changing Climate*

*We continue striving to  
acquire new technology to  
combine with the vast  
traditional knowledge of our  
membership in our ongoing  
mission to keep local  
travelers safe*



**BSAR's  
New  
Drone!**



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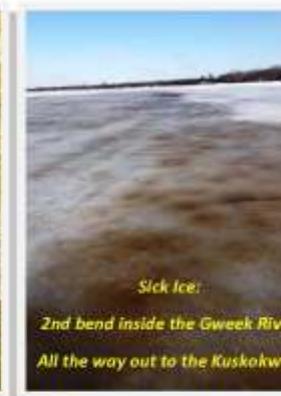
**3.29.19 BSAR River Report:\*****"May in March"****Summary:**

After the warmest February in 95 years for our region, March is working towards setting a new record as well. With weeks of above normal temperatures, rain, and the sun growing stronger by the day Kuskokwim River ice conditions have been deteriorating rapidly. BSAR has been working overtime to monitor the changing conditions. On Sunday, March 24th BSAR put out an advisory that no further truck/car travel was recommended on the River. **Just four days later, BSAR recommends that even travel by snow machine and ATV be done with: EXTREME CAUTION.**

**Ice thickness was only about half of what it normally should be for late March, and it is getting thinner by the day.**

Today a BSAR team made the Big Loop through Straight Slough, around the main channel, into the Gweek River, past Kwethluk through Kuskokwak Slough, down the Akiachak Channel, and through Church Slough back to Bethel to assess River ice conditions. This is what they observed:

- The Upper End of Straight Slough has gotten 5" thinner since Saturday. It is only 7" thick.
- All ice that was drilled is SOFT
- The Gweek River Ice is thin, rotten, and opening up from the second bend all the way out to the lower tip of the big (Pavilla's) cut slough.
- The east side of the Kuskokwim below the Y and across from the upper end of Church Slough is only 4" to 6" thick. The ice however is deceiving—it looks white but is very thin and full of small open holes.
- Kuskokwak Slough above Kwethluk is only 6" - 8" thick through most of its length.
- The Akiachak Channel just above the Y has gotten 4" thinner since Saturday. It is only 8" thick in this area.
- The lower end of Church Slough below the little short cut slough is wide open with strong current
- Traveling near the beaches along the tide crack appeared to be safe but there are many small open drain holes along the crack.

**Closing:**

At tonight's meeting a local Elder reminded us that, "The trail you went out on in the morning will not be the same when you return later in the day". With River ice way below normal, conditions rapidly deteriorating and no cool weather in the short-term forecast this is especially true this year. We may be seeing things we haven't seen before. If you must travel do so with extreme caution. And please, please don't let anyone drink and travel.

Thank you and Happy....Spring? From BSAR

\*Please note that this report is for informational purposes only and is not an advisory that it is safe to travel

**March 29: two days before the tragic incident in the 1<sup>st</sup> slide BSAR puts out a warning about that very area**



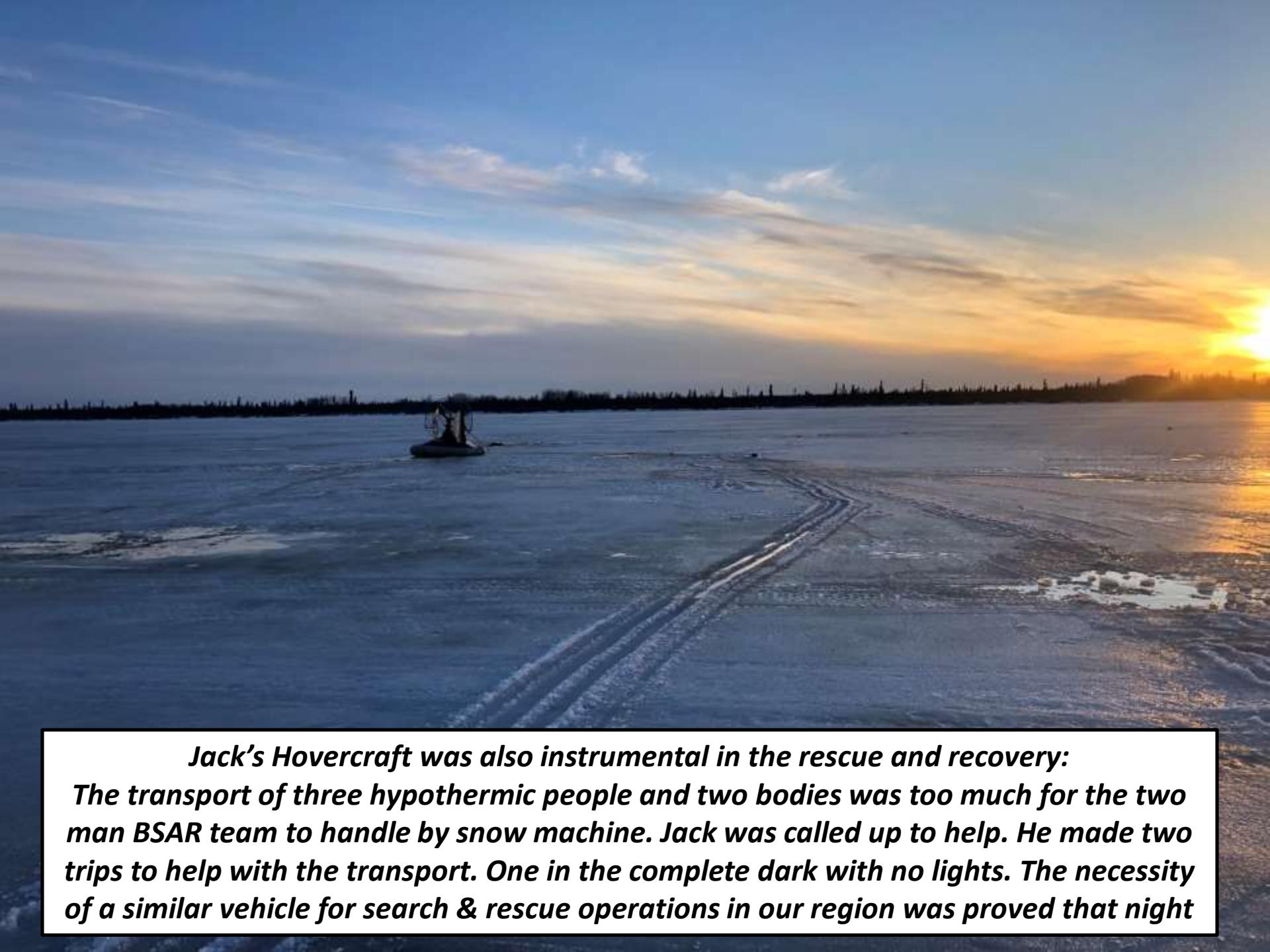
*Earlier in the day on March 31<sup>st</sup>  
BSAR begins to realize the value  
of a hovercraft/airboat for rescue  
operations in dangerous ice  
conditions while attempting to  
salvage a moose that had fallen  
through the rotten ice and  
drowned in Straight Slough*

*This little home-built hovercraft  
belongs to Jack Haroldson*



*While trying to get the moose out, two four wheelers with five people on board passed by heading upstream. We tried to stop them but they continued on by.*

*Within an hour two of them would be dead and three would most likely not survived without the quick response by two BSAR members on snow machines risking their own lives*



*Jack's Hovercraft was also instrumental in the rescue and recovery: The transport of three hypothermic people and two bodies was too much for the two man BSAR team to handle by snow machine. Jack was called up to help. He made two trips to help with the transport. One in the complete dark with no lights. The necessity of a similar vehicle for search & rescue operations in our region was proved that night*

*The following day, April 1<sup>st</sup> the necessity of a locally based search & rescue vehicle that can travel safely on water, ice or a combination of both is further proved:*

*A BSAR team waits all day at the scene under deteriorating ice conditions for an Alaska State Trooper helicopter to arrive from Anchorage to recover the bodies*

*By the time they arrived the area where the incident occurred was wide open water*





*Earlier in the year BSAR began learning about the value of airboats for ice & water rescue/recovery operations while assisting with a search in the Norton Sound area.*



# *Necessity Not Novelty:*

*With the changing climate and the related tragedies in our region BSAR begins the drive to acquire an ice/water rescue vehicle best suited to our needs*





*Our research has shown us that a Rescue Airboat is what we need:  
They are commonly used throughout Canada and the northern parts of the Lower 48.  
They operate comfortably on ice, water, any combination of the two, and even on land!*



*Thank You For Your Consideration!*

