



April 2008

A newsletter for Alaska river and ice observers

## Please Note....

**RFC will be staffed  
weekends beginning  
April 26-27**

### A Note About Breakup Information Kuigmek

#### Observer Spotlight

Zero is Better than Nothing  
for Precipitation Reports

#### Katie Returns!

Deep Cold Grips Interior Alaska  
**Alaska Center for Climate  
Assessment and Policy**  
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Clues About Breakup  
**Spring Breakup Outlook**

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River Forecast Center  
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Anchorage, Alaska 99502-1845  
<http://aprfc.arh.noaa.gov>**

**Observers: Please don't forget to mail in your 2008 Breakup Forms**

### A Note About Breakup Information:

We request your assistance in obtaining information on breakup on rivers and lakes in your area for the 2008 season. We would appreciate it if you would complete the enclosed River and Lake Breakup Information Form to the best of your knowledge and return the form to us. If you have any comments, please include them in the remarks area. The information we receive from you helps contribute to a more complete record of breakup data for Alaska and is greatly appreciated.

**Use the link below to view the progress of breakup on rivers across Alaska.  
The breakup map will be updated as information becomes available.**

[http://aprfc.arh.noaa.gov/data/maps/brkup\\_map.html](http://aprfc.arh.noaa.gov/data/maps/brkup_map.html)

### Kuigmek by Larry Rundquist

When we started producing a newsletter for our river observers over a decade ago, we wanted to have a title that was uniquely Alaskan. We also wanted the title to relate to our observers task of monitoring river levels. We did a little research and were told that the term kiugmek means "one who watches river" in Yupik. Following our fall issue of the newsletter, we were informed that the correct spelling of the term should be Kuigmek.

So we did some more research by contacting Professor Steven A. Jacobson at  
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### Observer Spotlight



June Taylor and her husband Larry have reported weather and river observations from the Fortymile country for more than ten years. They take daily river readings on both the Fortymile River and O'Brien Creek during open water season, and ice thickness measurements during the winter months.

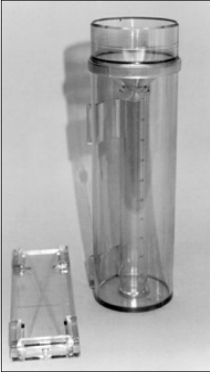
They have lived in their home on the banks of O'Brien Creek along the Taylor Highway for over 30 years. The highway is not maintained during the winter, so the only way to access their home is by a 40 mile snowmachine trip from Eagle or from the Alaska Highway 113 miles to the south. The deeply cut valleys of the Fortymile River drainage experience some of the coldest temperatures in Alaska. This past winter, on February 9th, the temperature plummeted to a bone chilling -72° F at the Taylor's little piece of paradise. And speaking of paradise, the Taylor's enjoy vacations far from the Fortymile country, destinations like Bora Bora, Tahiti, and the Cook Islands to name a few.

The Taylors make a living by operating a business that provides cabin rentals, and boat tours on the Fortymile River, and gold panning.

Photo courtesy of the Taylor's

## Zero is Better than Nothing for Precipitation Reports

For those of you who have rain gages, we want to again emphasize that reporting the precipitation amount every day, even when the amount is zero, is important information to us. It helps us to figure out the areal extent of rainfall that does occur, and sometimes alerts us to such events as a glacier-dammed lake outburst. When no rainfall has occurred and a glacial stream starts to rise sharply, we know that there has to be another explanation for that behavior. So please remember to provide zero or non-zero precipitation measurements when you call in an observation or enter it through the web. It helps to make what can be a very fuzzy picture come into a little better focus for us here at the RFC. And if there are observers out there that would like a rain gage, let us know and we will get one to you.



4 inch plastic rain gage

*Kuigmek....continued from Page 1*

the Alaska Native Language Center at the University of Alaska in Fairbanks.

The Alaska Native Language Center was established in 1972 by state legislation as a center for documentation and cultivation of the state's 20 Native languages. Professor Jacobson replied that the word should be spelled "kuigmek: and our old title of "kiugmek" isn't a word. He further pointed out that "kuigmek" means "from a/the river" or "a river" (as an indefinite object), so our title is not grammatically correct. To say "one who watches a/the river" we would need a two-word phrase: "kuigmek murilkesta".

Now that we have explained our title and how it relates to your task of monitoring river conditions, we should perhaps explore this topic further. We have addressed only one of Alaska's 20 Native languages, and there are countless other languages from other countries. If you want to share your version of a title for your task of monitoring the river in any language (including English), feel free to include it with your observation form or send it by e-mail ([nws.ar.aprfc@noaa.gov](mailto:nws.ar.aprfc@noaa.gov)) and we will share it with others in future newsletters.

## Katie Returns!

For the fourth summer now, our observers who call the River Forecast Center (RFC) will have the opportunity to report their observations to Katie Lindsey. Katie was born in Logan, Utah, and after a few years of living in Utah and Maryland, she moved to Anchorage with her family at the age of 5. She first began working at the RFC the summer after her junior year of High School, and has returned each summer since. After beginning college at Brigham Young University with the intention of majoring in Marine Biology, her educational goals have changed to becoming a high school history teacher. Katie has handled many of clerical duties during her time at the RFC and has also had a few chances to do field work. She hopes to have more chances to visit the field and do surveying and flow measurements this summer. We are happy to have Katie with us again this summer and look forward to her cheerful and friendly voice answering the phones at the RFC, as well as all of the other tasks that she has learned to handle over the years.



## Deep Cold Grips Interior Alaska by Ed Plumb

Some of the coldest air in nearly a decade settled in over interior Alaska in late January and early February. Temperatures plummeted well below zero across most of the region, with the coldest readings occurring in the eastern interior. In the valleys of the Fortymile River drainage temperatures bottomed out below  $-70^{\circ}$  F. The NWS cooperative observers along the Taylor Hwy at O'Brien Creek and Chicken reported bone chilling readings of  $-72^{\circ}$  F during the first week of February. These are the coldest official temperatures reported in Alaska, and in the entire US, since January 2000 when Chicken last fell to  $-72^{\circ}$  F. In fact, the low temperature observed at O'Brien Creek and Chicken was only 3 degrees shy of the all-time US record low for February, which was an icy  $-75^{\circ}$  F set back in 1947 at Tanacross.

A crisp mid-winter morning at O'Brien Creek  
Photo courtesy of Larry Taylor



## Alaska Center for Climate Assessment and Policy

The Alaska Center for Climate Assessment and Policy (ACCAP) has as its mission to assess the socio-economic and biophysical impacts of climate variability in Alaska, make this information available to local and regional decision-makers, and improve the ability of Alaskans to adapt to a changing climate. Climate changes affect us in Alaska more significantly than other places and ACCAP is striving to study and present information on how those impacts will change our lives. The Center organizes a regular Climate Teleconference that is broadcast on the internet dealing with various aspects of Climate in Alaska. Past topics have included:

- **THE IMPACTS OF CHANGES IN WATER RESOURCES ON NORTHERN COMMUNITIES**
- **PERMAFROST DEGRADATION AND MONITORING IN ALASKA**
- **SEA ICE CHANGE AROUND ALASKA AND IMPACTS ON HUMAN ACTIVITIES**
- **FIRE AND CLIMATE CHANGE IN ALASKA**

Topics in the coming months include:

- **CLIMATE CHANGE IMPACTS ON RENEWABLE ENERGY IN ALASKA**  
Tuesday, May 13, 2008; 10:00-11:00am Alaska Local Time
- **UNCERTAINTY IN THE ARCTIC WATER CYCLE**  
Tuesday, July 29, 2008; 10:00-11:00am Alaska Local Time

All interested parties are welcome to attend. Information on how to view the internet broadcast is available on the ACCAP web page at:

<http://www.uaf.edu/accap/teleconference.htm>

The Alaska Weather and Climate Highlights website is collaboratively produced by ACCAP, the Alaska Climate Research Center and NOAA, National Weather Service, Alaska Region.

The web site also has information on climate highlights throughout the state for each month at:

<http://www.uaf.edu/accap/awch/index.htm>

A few recent highlights from around the state:

- Ketchikan had the 5th wettest October on record with 32.51 inches during the month (12 inches above average!).
- Galena reported 19.5 inches of snow in October (10 inches more than normal), making 2007 the 4th snowiest October on record.
- Fairbanks maximum temperature on Thanksgiving was 43° F, the 2nd warmest Thanksgiving of record. The record is 46° F, set in 1943.
- It was the second warmest December in Barrow. The mean monthly temperature of -0.4° F represents a positive anomaly of 10.2° F and is only 1° F behind the record warmest December of 1983.
- A high of 48° F on January 19th set a new high temperature record for that date in King Salmon.
- Anchorage had the 4th highest snowfall total for January with 27.2 inches, about 18 inches more than normal.
- In Bettles, the high temperature of 37° F on February 19th set a new record for that date. The previous record high was 33° F, set in 2006.
- Fairbanks reported a 1-day snowfall total of 2.6 inches on February 24th. This is a new daily high snowfall record for this date and breaks the previous record set in 1990 of 2.3 inches.

We hope that any of our observers who have an interest in the climate of Alaska will take advantage of these resources.



## Winter Measurements Provide Clues about Breakup

Even though most of Alaska is buried in snow and ice for many months of the year, important data about the snow pack and ice conditions is collected throughout the winter by the NWS and many of our river observers, as well as other agencies. Snow surveys are performed around Alaska during the spring in order to determine the amount of water locked up in the winter snowpack. As above freezing temperatures arrive in the spring, all of this water in storage as snow will start to melt and begin its long journey down the river systems and eventually to the sea. Knowledge of the amount of water stored in the snowpack is important for river and flood forecasting because this will help determine the likelihood and/or severity of spring flooding. In the western US, this type of snowpack information is especially important for water supply planning and determining potential drought conditions. Ice thickness measurements taken throughout the winter also aide in forecasting the timing of spring break-up and the potential for ice jams and flooding.

Ed Plumb, Service Hydrologist at the Fairbanks Weather Forecast Office, had the opportunity to travel up the Taylor Hwy to assist the Bureau of Land Management (BLM) with monthly snow surveys earlier this winter. They measured snow depth and snow water equivalent



Ben Kennedy (BLM) measures the weight of a snow core in order to determine the amount of water in the snowpack.

(the amount of water in the snow if it were melted) at 5 points in a line at what is called a "snow course." There are other snow courses scattered around the state, and most of these are measured by the Natural Resource Conservation Service during the spring. The snow water equivalent can also be measured remotely from aircraft. NOAA operates planes which use airborne gamma radiation detectors to calculate the snow water equivalent along specified flight lines. The photo at right was



Ed Plumb measures the thickness of the ice on the Salcha River near Fairbanks. Staff at the Fairbanks Weather Forecast Office take monthly ice measurements on lakes and rivers around Fairbanks at the beginning of each month during the winter.

taken by NOAA Corps Officers from a National Operational Hydrologic Remote Sensing Center (NOHRSC) Airborne Snow Survey airplane.

Airborne snow water equivalent measurements are used by NWS Weather Forecast Offices and River Forecast Centers when issuing river and flood forecasts, water supply forecasts, and spring flood outlooks.

Susitna River north of Talkeetna  
Photo taken on April 9, 2008



### Spring Breakup Outlook for Alaska

The following table gives an estimate of flood potential and basin runoff volumes for various locations around the state. The table was created from our Spring Breakup Outlook dated April 18. Check our web site for the most current product. The potential for minor flooding is not reflected in the table.

**Snowmelt Runoff Volume**...expected water volume from snowmelt during the melt season.

**Flood Potential**...the likelihood of flooding from snowmelt and/or ice jams.

Average Breakup Dates are for 1970 through 2007, and are calculated for locations with at least five years of data.

RIVER - REACH	SNOWMELT RUNOFF VOLUME	FLOOD POTENTIAL	AVERAGE BREAKUP DATE	NO. OF YEARS RECORD	FORECAST BREAKUP DATE
Southeast Panhandle	Above				
Kenai River	Average				
Anchor River	Below				
Matanuska River	Below				
Susitna River Gold Creek Sunshine	Below	Low Low	05/03	18	04/30-05/06
Yentna River Lake Creek	Average	Low	04/30	17	04/27-05/03
Skwentna River Skwentna	Average	Low	04/30	14	04/27-05/03
Copper River Basin Gakona River Gulkana River	Average	Low Low	04/30 04/29	22 20	04/25-05/05 04/25-05/03
Chena River Chena Lakes Project Fairbanks	Below	Low Low	04/25	22	04/21-04/29
Tanana River Northway Salcha Fairbanks Nenana Manley	Below	Low Low-Mod Low Low Low	04/23 04/28 05/02 05/03	22 8 34 16	04/18-04/29 04/25-05/01 04/29-05/05 04/26-05/09
Kuskokwim R (Upr) Nikolai McGrath	Average	Low Low-Mod	04/23 05/07	23 34	04/20-04/26 05/04-05/11
Kuskokwim R (Lwr) Stony River Sleetmute Red Devil Crooked Creek Aniak Kalskag Tuluksak Akiak Kwethluk Bethel Napakiak	Average	Low Low-Mod Low-Mod Low-Mod Low-Mod Low-Mod Low-Mod Low-Mod Low-Mod Low-Mod Low-Mod	05/06 05/05 05/06 05/07 05/07 05/07 05/09 05/10 05/12 05/12	20 19 22 22 25 19 16 22 37 14	05/02-05/10 05/01-05/08 05/02-05/09 05/03-05/10 05/03-05/10 05/03-05/11 05/05-05/13 05/06-05/14 05/09-05/16 05/08-05/16
Yukon River (Upr) Eagle Circle Fort Yukon Beaver Stevens Village Rampart	Below	Low Low-Mod Low Low Low	05/05 05/09 05/10 05/11 05/12 05/13	28 26 25 13 13 14	05/02-05/08 05/06-05/12 05/07-05/13 05/08-05/14 05/09-05/15 05/10-05/16

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RIVER - REACH	SNOWMELT RUNOFF VOLUME	FLOOD POTENTIAL	AVERAGE BREAKUP DATE	NO. OF YEARS RECORD	FORECAST BREAKUP DATE
Yukon R (Mid) Tanana Ruby Galena Koyukuk Nulato Kaltag Anvik	Below	Low Low Low-Mod Low-Mod Low-Mod Low Low	05/10 05/12 05/12 05/13 05/14 05/17	23 24 25 12 32 21	05/07-05/13 05/09-05/15 05/09-05/15 05/10-05/16 05/11-05/17 05/14-05/21
Yukon R (Lwr) Holy Cross Russian Mission Pilot Station Mountain Village Alakanuk/Emmonak	Below	Low Low Low Low Low-Mod	05/15 05/15 05/17 05/18 05/22	21 23 11 21 25	05/12-05/18 05/12-05/19 05/13-05/21 05/14-05/22 05/19-05/26
Koyukuk River Bettles Allakaket Hughes	Average	Low Low Low	05/10 05/11 05/11	26 21 20	05/07-05/14 05/08-05/14 05/08-05/14
Buckland River	Above	Mod	05/19	16	05/15-05/23
Kobuk River Kobuk Shungnak Ambler	Above	Mod Low Low	05/17 05/19 05/19	27 17 24	05/14-05/21 05/16-05/23 05/16-05/23
Noatak River	Above	Low	05/20	13	05/16-05/24
N Brooks Range Colville River at Umiat at Colville	Below	Low Low-Mod	05/25 05/31	10 11	05/21-05/29 05/27-06/05

The flood potential from snowmelt and ice jams this spring breakup season is currently rated as average throughout Alaska. This forecast is based on ice thickness reports, observed snowpack, and long range temperature forecasts.

**Ice** - April 1 ice thickness data are available for a limited number of observing sites in Alaska. Measurements indicate that ice thickness ranged from below normal in Southwest and Southcentral Alaska to above normal in the north central Interior and the North Slope. Accumulated freezing degree days during April have generally been accumulating at a normal rate for this time of year and are now between 78% and 113% of normal, with the highest percentage in Southeast Alaska. Generally ice thicknesses are greater in areas of the state with less snowpack.

**Snow** - An analysis of the April 1 snowpack by the Natural Resources Conservation Service (NRCS) indicated normal to above normal snowpack throughout much of the western half of the state, the Kenai Peninsula, and Southeast Alaska. Some basins in southern Southeast Alaska had greater than 150% of normal snowpack. The eastern half of the state including the Susitna, Copper, Tanana, the Yukon above Tanana, the upper Koyukuk and North Slope drainages were below to well below normal snowpack. Snow and rain during March and early April have been heaviest along the Gulf of Alaska coastal mountains. In the last week the Fairbanks area has received almost 9 inches of snow, causing a substantial increase in the snowpack at a time when the snowpack typically starts to decrease. Cool temperatures throughout Alaska have also caused snowpacks in most areas to either maintain or build through mid-April, thus increasing the likelihood of a mechanical breakup as temperatures begin to rise. The combination of snowpack and cool April temperatures has elevated the risk of flooding in northwest Alaska (Buckland and Kobuk) and on the Kuskokwim River downstream of Stony River. Regardless of climate averages there is enough snow in most areas to produce significant snowmelt runoff peaks if subjected to a rapid warming pattern.

**Weather** - Most of Alaska was cooler to much cooler than normal during the first half of April. The latest forecasts for the remainder of April indicate warmer than normal temperatures over most of the state. The greatest factor in determining the severity of breakup remains the weather during April and May. The 90 day outlook for April through May calls for greater chances of above normal temperatures throughout Alaska.