Please Note:

Observers, don’t forget to send in your Break-up Forms! These can now be completed on the web at https://www.weather.gov/aprfc/breakupForm or let us know if you need a paper copy. Also note that the web form can be submitted multiple times if you want to submit the timing of ‘unsafe’, ‘breakup’, and other events separately.

In This Issue:

- Send us your photos and videos
- Breakup Outlook 2018
- Spring cleaning and water runoff pollution
- Anchor River Ice Jams
- Winter flood hazards: Ptarmigan Creek Outburst
- Eye in the Sky: Satellite Flood Product
- Winter Construction: Lowell Creek
- Kuskokwim Highway
- IDSS In Action: Hydropower
- What are the Chances? A move toward probabilistic forecasting
- Collaboration with Students
- Pacific Sector: April Flash floods on Kauai
- Flood Awareness Week
- APRFC and NWS Service Hydro Staff

Send Us Your Photos and Videos

Many thanks to those of you who have sent us pictures and videos of river ice conditions, flooding, erosion or other hydrologic phenomena. We welcome those anytime at nws.ar.aprfc@noaa.gov and please let us know if we can use your photo or video in our own publications (with credit, of course). If you use a gps-enabled phone or camera, we can typically read the coordinates from the image file, otherwise please tell us where the photo or video was taken. Thanks for being our eyes and ears in the field! You can also Tweet us at #AKriverwatch and #AKwx.

Breakup Outlook 2018

Alaska-Pacific
River Forecast Center
6930 Sand Lake Road
Anchorage, AK 99502-1845
907-266-5160
1-800-847-1739
http://weather.gov/aprfc
Breakup Outlook 2018 (continued)

Spring Cleaning and Water Runoff Pollution

Remember that when spring snows melt, accumulated winter waste can be blown and washed into waterways, clog storm drains, and end up in the ocean. Picking up pet waste and trash in yards and along roadways helps keep our waters clean. Tuning up your vehicles can prevent oil and gas leakage. Participate in local cleanup efforts. Many communities in Alaska have social spring cleanup days. Thanks for doing your part to keep our water clean! Example events:

- Akiak Cleanup Greenup: TBD
- Anchorage Waterways Council: May 10-14
- Anchorage Dog Parks: April 28
- Fairbanks Clean-up Day: May 5
- Juneau Community Wetlands Cleanup: April 28
- Tanana Valley Watershed Association: TBD

Anchor River Ice Jams

The Anchor River is a small, unglaciated catchment near Homer that is typically one of the first to break up in spring. Small ice jams are relatively common here. This year, our field team arrived for routine data collection just as an ice jam formed and the river moved toward minor flood stage. The Cook Inletkeeper group also did a flood impact survey with remotely powered aircraft.
Winter flood hazards: Ptarmigan Creek Outburst

Just because it's winter doesn't mean there are no flood risks. The image here was part of a video taken on Ptarmigan Creek near Kenai Lake at the end of January, 2018. It shows a fast-moving wave of water coming down what had been an almost dry creek bed. The source of the water was probably an upstream ice/snow dam that suddenly burst, which also happened on Ptarmigan Creek the previous winter. Beware of hiking in creek beds, any time of year.

Eye in the Sky: Satellite Flood Product

We here at the National Weather Service can't be everywhere at once. Our observational network is especially sparse here in Alaska. Increasingly, we depend on a satellite-based flood product generated by NOAA’s Joint Polar Satellite System and project scientist Dr. Sanmei Li. Dr. Li and her collaborator, Dr. Donglian Sun, designed the algorithm, which is applied to satellite imagery as it’s downlinked in Fairbanks at NOAA’s Satellite data receiving station, and is then pushed to the NWS by the University of Alaska. This partnership allows us to get a map of the likelihood of flood conditions in any given 375m pixel, several times a day when the sky is clear.

Winter Construction: Lowell Creek Project

Lowell Creek used to routinely flood the city of Seward. In 1940, a tunnel was built that diverts the creek away from downtown. Like all infrastructure, this tunnel needs routine maintenance. With low flows in winter, this was the best time for the maintenance team to ‘dewater’ the tunnel and finish their work. Our Anchorage Service Hydrologist, Andy Dixon, has been a point of contact for the project, helping alert team members when heavy precipitation is forecasted.
Kuskokwim Highway

Dozens of communities dot the Kuskokwim River landscape and when the river freezes solid, it becomes an essential transportation corridor in winter. This year the Kuskokwim faced one of its latest freeze-up dates on record. Despite this, heavy equipment was able to get in and plow the ice road all the way to Crooked Creek, making this the longest Kuskokwim Ice Road in history. More than ten different communities collaborated to make this record-breaking road happen.

Impact Decision Support Services (IDSS) In Action: Southeast Alaska Hydropower

In each newsletter, we try to cover case studies of how the National Weather Service (NWS) provides what we call Impact-based Decision Support Services (IDSS) to our core partners: this spring, hydropower power is a hot topic. For much of the winter, Southeast Alaska has been dry (see Table 1). So dry, in fact, that the Swan Lake reservoir that powers the hydroelectric plant for Ketchikan has been drawn down to its lowest levels since construction. While Ketchikan can utilize some power from the Tyee Lake project near Petersburg and Wrangell via an intertie, it also must use expensive diesel fuel to make up for hydropower shortcomings. Recent precipitation in mid-April helped alleviate the shortage in Ketchikan, but the extra costs of running the diesel generators have impacted the project. The abnormally dry conditions in the temperate rainforest of the panhandle did not just affect hydropower generation, but also drinking water availability. During the month of March, and into early April, the city of Wrangell issued water use restrictions as water levels in their reservoir was very low.

<table>
<thead>
<tr>
<th>Site</th>
<th>Current water year precip (inches, Sept-March)</th>
<th>Normal precip (inches)</th>
<th>Percent of normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annette Island</td>
<td>38.70</td>
<td>65.77</td>
<td>59</td>
</tr>
<tr>
<td>Ketchikan</td>
<td>61.95</td>
<td>90.66</td>
<td>68</td>
</tr>
<tr>
<td>Klawock</td>
<td>30.49</td>
<td>59.74</td>
<td>51</td>
</tr>
<tr>
<td>Sitka</td>
<td>34.65</td>
<td>54.37</td>
<td>64</td>
</tr>
<tr>
<td>Juneau</td>
<td>30.52</td>
<td>34.86</td>
<td>88</td>
</tr>
<tr>
<td>Haines</td>
<td>20.09</td>
<td>33.84</td>
<td>59</td>
</tr>
<tr>
<td>Yakutat</td>
<td>58.51</td>
<td>91.87</td>
<td>64</td>
</tr>
</tbody>
</table>

Swan Lake reservoir showing record low water. Photo courtesy of Southeast Alaska Power Agency (SEAPA)
The NWS Weather Forecast Office (WFO) in Juneau provided IDSS to water managers and hydropower facilities across Southeast Alaska by sending out climate outlooks for one and three months, along with the current state of rainfall and snowpack deficits. The water managers and hydropower operators forwarded information on the state of their facilities to the NWS, and that information was passed on to the National Drought Information group. This sharing of information between core partners and NWS was instrumental in increasing the drought severity for the southern half of Southeast Alaska from abnormally dry (D0) to a moderate drought (D1). The NWS Juneau office also put out social media posts so that the general public was more aware of the drought situation across the region. These efforts by the Juneau NWS WFO are helping to make Southeast Alaska communities ready, responsive, and resilient to weather and climate impacts, which is the goal of IDSS.

New Forecast Points Coming Online in 2018

The APRFC will forecast five new points during the summer of 2018. These points are the Indian River at Sitka, Wulik River at Kivalina, Kobuk River at Ambler, Kobuk River at Kiana, and Knik River at Palmer. The Kobuk and Wulik River locations will be the first forecast points at the APRFC in the extreme northwest part of the state. The Indian River forecast point will operate at a 1 hour time step and have a shorter forecast horizon due to its small basin size.

Collaboration with Students and Researchers

We here at NWS and the APRFC welcome opportunities to work with students and other researchers. This summer, Dina Abdel-Fattah, a PhD student at the University of Alaska Fairbanks, will be working with us to study the communication of forecast information and risk. Abdel-Fattah has a background in technology, process engineering, and communication, and is part of the Arctic Domain Awareness Center, a collaboration between NOAA, the Department of Homeland Security, and the University of Alaska.
What are the Chances? A move toward probabilistic forecasting

Weather and water modeling is starting to move towards what we call probabilistic approaches. After a period of testing, some of our hydrologic forecasts will include not just a single water height or flow volume, but a range of possible outcomes and some probability assigned to those ranges. This will help stakeholders who could be impacted by extreme high or low water, and want to prepare, even if those outcomes are unlikely.

Image: Experimental output from the new Hydrologic Ensemble Forecast System (HEFS) shows an envelope of possible stage and discharge values for Staney Creek during one sample forecast period.

Pacific Sector: April Flash floods on Kauai

The APRFC provides some modeling support to the NWS WFO in Honolulu, but responsibility for flash flooding falls with the WFO because of the speed at which it occurs and the localized nature of the impacts. From April 14-16 heavy, persistent rain led to significant flooding on the island of Kauai. Impacts included flooded roads, homes and other buildings, landslides, air rescues, and water service outages in some communities. Governor David Ige issued an emergency proclamation and cleanup is ongoing.
Flood Awareness Week

Staff at the APRFC and NWS WFOs work together with the State of Alaska and other Federal agencies each year to promote Flood Awareness Week, just prior to spring breakup season. We use social media and in-person meetings to convey messages about flood hazards. This year’s dates were April 23-27, 2018.

Current APRFC Staff and NWS Service Hydrologists

Scott Lindsey, Hydrologist-In-Charge
David Streubel, Development and Operations Hydrologist
Crane Johnson, Service Coordination Hydrologist
Jessica Cherry, Senior Hydrologist
Eric Holloway, Hydrometeorologist
Arleen Lunsford, Hydrometeorologist
Edward Moran, Senior Hydrologist
Celine van Breukelen, Hydrologist
Rebecca Perry, Hydro Tech and Administrative Support
Vacant, Computer Programming and Administration
Vacant, Senior Hydrometeorologist

WFO Service Hydrologists: Andy Dixon (Anchorage), Karen Endres (Fairbanks), Aaron Jacobs (Juneau), Ed Plumb (now the Warning Coordination Meteorologist in Fairbanks)

Contact information:
nws.ar.aprfc@noaa.gov
907-266-5160
1-800-847-1739
http://weather.gov/aprfc