

2012 Annual Fire Weather Report WFO Riverton, WY

Kelly Allen, Fire Weather Program Manager
January 2013

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From: Kelly Allen, NWS Riverton
Fire Weather Program Manager

Subject: 2012 NWS Riverton Fire Weather Program Summary

Please find attached the 2012 NWS Riverton Fire Weather Program Summary which also includes Red Flag Warning Verification and Statistics, the number of Fire Weather Watches issued, Spot Forecast Statistics, and information on IMET Dispatches

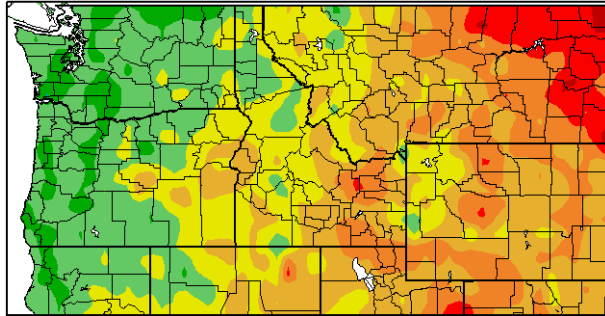
WFO Riverton Fire Weather Program Summary - 2012

Month to Month Climate and Operations:

January, February, March

Climate:

Departure from Normal Temperature (F)
1/1/2012 - 3/31/2012

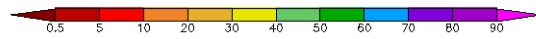
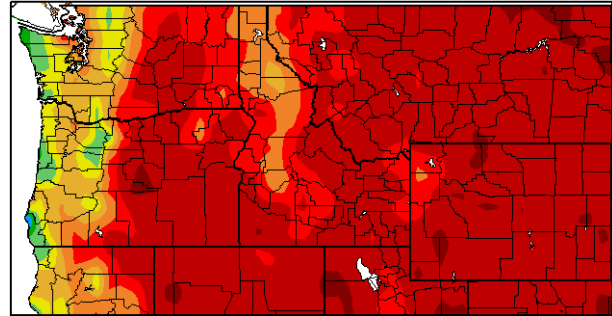


Generated 6/22/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 1

Precipitation (in)
1/1/2012 - 3/31/2012



Generated 6/22/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 2

Water Year 2011 - 2012, February, Wyoming,
Percent of Average Precipitation, PRISM Analysis.

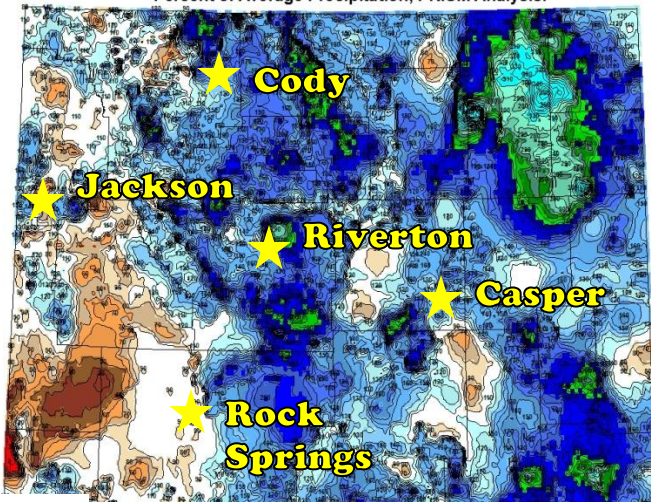


Fig. 3

Water Year 2011 - 2012, March, Wyoming,
Percent of Average Precipitation, PRISM Analysis.

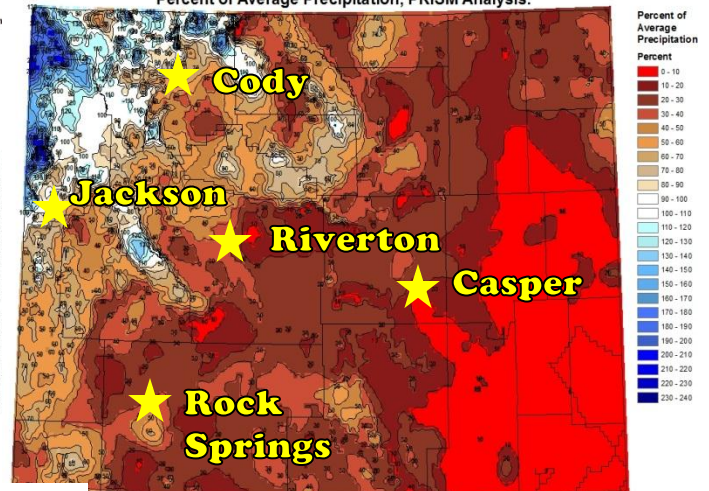


Fig. 4

January 2012 was generally much warmer and drier than normal, while February came roaring in with higher than normal precipitation (blue shades – Fig. 3) and near normal temperatures. However, March made up for the bounty of precipitation that occurred in February with well below normal precipitation (red shades – Fig. 4) across most of the state and the warmest March on record for much of central Wyoming.

Operations:

- Normal off-season Fire Weather AOP discussion and coordination took place between surrounding WFO Fire Weather Program Leaders
- Newly formed Fire Weather Team's first meeting took place. The Fire Weather team consists of Kelly Allen (Team Lead), Dave Lipson (IMET), and Chris Jones (WCM)

- The first spot of the year was completed on January 9th for a burn pile near the community of Dubois
- The first Red Flag Warning was issued on March 17th, there were 30 total Red Flag Warnings issued in March
- The first fire weather partners' meetings were held in Lander and Cody in March
- Routine Planning Forecasts (1 per day) began March 22nd with the morning issuance
- There were 2 spots completed in January, 1 in February, and 40 in March. All were for prescribed burns
- First meeting took place with the Cheyenne office about statewide Multimedia Fire Weather Briefing service implementation on March 23rd
- Two forecasters attended the S290 Course taught at the Wyoming Fire Academy, Dave Lipson helped instruct this course

April and May

Climate:

Departure from Normal Temperature (F)
4/1/2012 – 4/30/2012

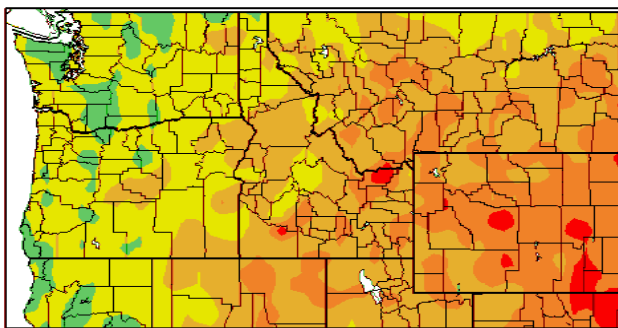


Fig. 1 2012 at HPRCC using provisional data. Regional Climate Centers

Departure from Normal Temperature (F)
5/1/2012 – 5/31/2012

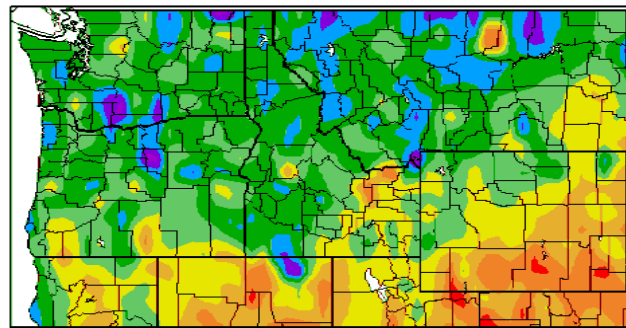


Fig. 2 2012 at HPRCC using provisional data. Regional Climate Centers

Departure from Normal Precipitation (in)
4/1/2012 – 4/30/2012

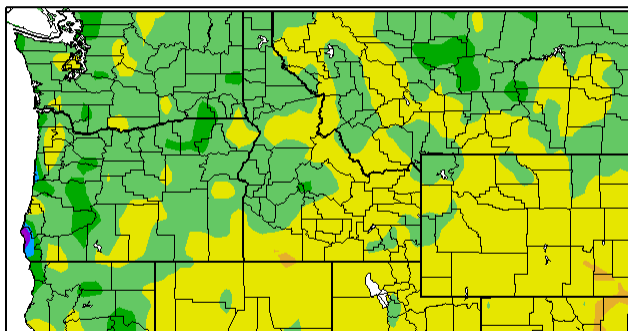


Fig. 3 2012 at HPRCC using provisional data. Regional Climate Centers

Departure from Normal Precipitation (in)
5/1/2012 – 5/31/2012

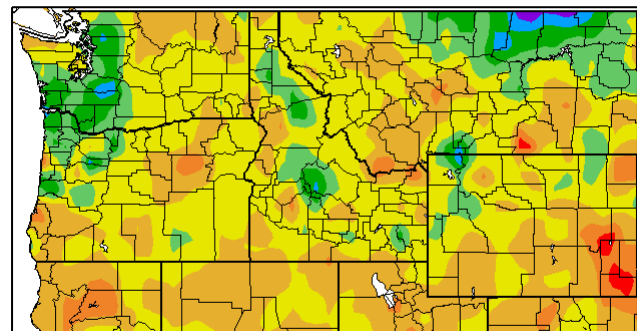


Fig. 4 2012 at HPRCC using provisional data. Regional Climate Centers

Normal to above normal temperatures continued through April 2012 (Fig. 1) with several daily record highs set with some all-time record highs for the month eclipsed or tied. There were a couple of storms that moved through during the month, dropping some snow in the mountains with some light

precipitation east of the Divide; however, there was not enough to tip April into the “at or above normal” category for most of the state (Fig. 3). May was an active month as well with a few cold fronts dropping south out of Montana, providing relief for northern and western Wyoming (Fig. 2); most of these fronts washed-out over central Wyoming. Persistent high pressure nosing into the southern portion of Wyoming kept the southern half hot and dry. At this point, drought started to become a real concern across the south (Fig. 4). It was apparent that some of our fire weather zones would completely skip spring green up. Many zones had critical fuels from March through October. Riverton and Rock springs shattered their all-time records for the warmest spring ever recorded; Casper, Lander, and Worland all landed in the top 5 warmest springs on record.

Operations:

- Five partner meetings took place in April and May in Worland, Casper, Kaycee, and Jackson; met with BLM, Helitac Support, State Forestry, Dispatchers, local Fire Chiefs, among others
- First spot for a wildfire was issued for the season on April 2nd for the “Swamp Railroad” fire in the Bighorn Basin
- 68 Spots were issued in April and May, 4 of which were for wildfires
- 5 Red Flag Warnings were issued, one watch was issued that was not upgraded to a warning
- A Fire Weather Drill was issued to the staff in early April, those were completed by May 18th
- The first multimedia fire weather briefing was issued on April 10th by the Cheyenne office. The Riverton office issued their first briefing on April 17th. These briefings continued to be issued every Tuesday through October 10th.
- A Fire Weather Brownbag was held for the staff covering the preseason partner meetings, the changes for 2012 (implementation of multi-day red flag warnings, non-highlight headline usage, the multimedia fire weather briefing, and HYSPLIT), and covering the Wallman method of forecasting Dry Lightning with an emphasis on forecasting critical lightning over very dry fuels
- Regular 2-a-day issuance of the Fire Weather Planning Forecasts, Dispatch Area Forecast, NFDRS Point Forecasts began on May 1st

June

Climate:

Departure from Normal Temperature (F)
6/1/2012 – 6/30/2012

Departure from Normal Precipitation (in)
6/1/2012 – 6/30/2012

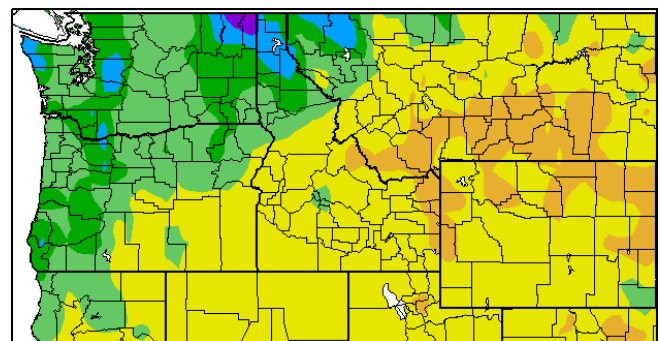
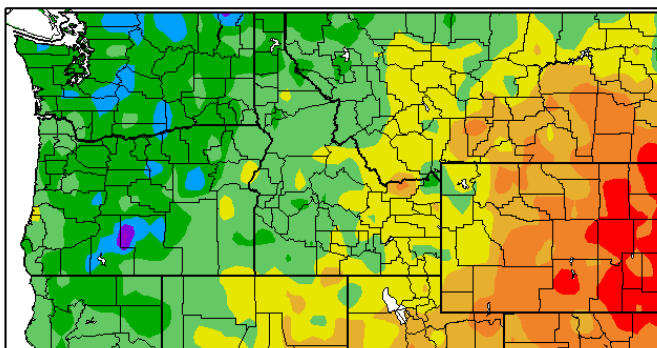


Fig. 1 2/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 2 112 at HPRCC using provisional data.

Regional Climate Centers

The warm and dry trend continued into June with all climate stations registering in the top 10 driest Junes on record, with Worland and Rock Springs tying or breaking the record for the driest June ever recorded. All climate stations registered within the top 5 warmest Junes on record with an average of 5 degrees above normal. June was also a smoky month across the region as wildfires began raging across the region and the state (Fig. 3). The first Red Flag Warning for dry thunderstorms was issued for the June 25th outbreak, 2 large fires were started during this event.

Operations:

- 60 Routine Narrative Planning Forecasts issued.
- 30 NFDRS Point Forecasts issued.
- 34 Spots issued; 30 of which were for wildfires, 2 for prescribed burns
- The Fontenelle Fire was started on June 24th, cause unknown, it was the largest wildfire of the season burning over 64000 acres
 - Bob Hoenisch (PIH) was the first IMET deployed in our CWA for this fire; he took over spot forecasts for this fire on June 29th
- The Cato Fire started on June 25th by lightning on private land, it burned over 27,000 acres
- The Otter Creek/Upper Bee Fire started on June 25th as well, also by lightning consuming nearly 5,000 acres
- RIW IMET, Dave Lipson was dispatched to the Camp Guernsey Fire in eastern Wyoming on June 1st – 3rd
- RIW IMET, Dave Lipson was dispatched to the High Park Fire in Colorado on June 10th - 25th
- Kelly Allen provided fire weather outreach for the “Lights on Fire” program for elementary school children where she taught them about what the NWS does for firefighters and how fire weather is different from public forecasting. The IMET program was also introduced to the kids. The group then went out (in the Wind River Mountains) and discussed fuel types and terrain effects on fire weather and fire behavior.
- The first heads-up DSS Email was sent to our partners on June 4th

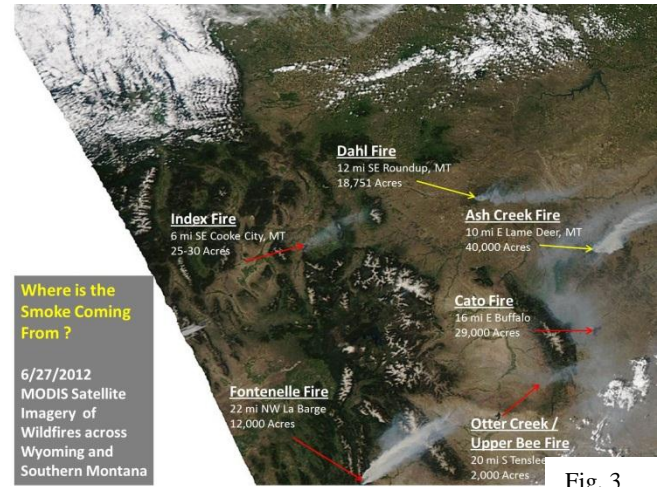


Fig. 3

July

Climate:

Departure from Normal Temperature (F)
7/1/2012 – 7/31/2012

Precipitation (in)
7/1/2012 – 7/31/2012

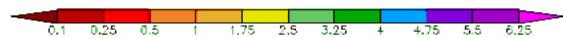
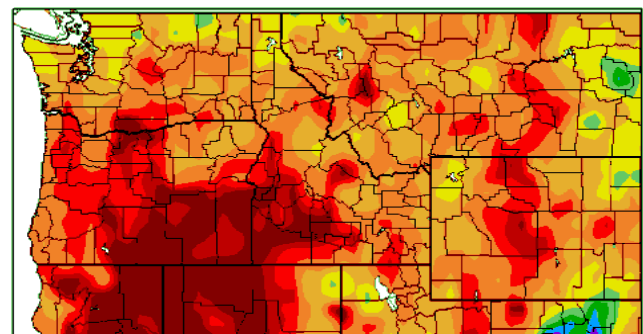
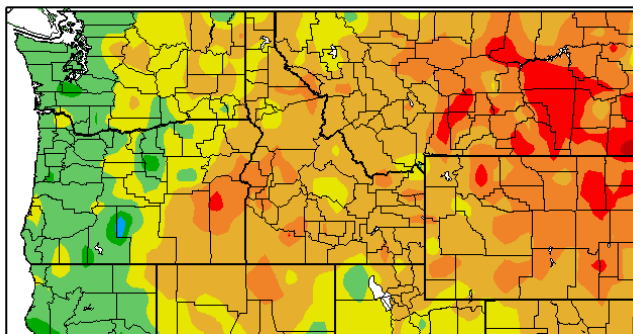


Fig. 1

2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 2

12 at HPRCC using provisional data.

Regional Climate Centers

July 2012 ranked as one of the warmest on record for stations across west and central Wyoming. Lander and Rock Springs registered the warmest July on record. Many locations shattered daily record high temperatures as daily highs soared above the century mark east of the Divide and across the Red Desert. Additionally, all major climate sites registered one of the top 10 driest Julys on record with Worland experiencing their driest July ever recorded. The monsoon started early this year; however, the low level moisture was just not there to allow much precipitation to reach the surface. Luckily, most monsoon surges were not accompanied by the typical amount of instability, limiting the number of thunderstorms. The first (of three) large dry lightning busts were on July 11th.

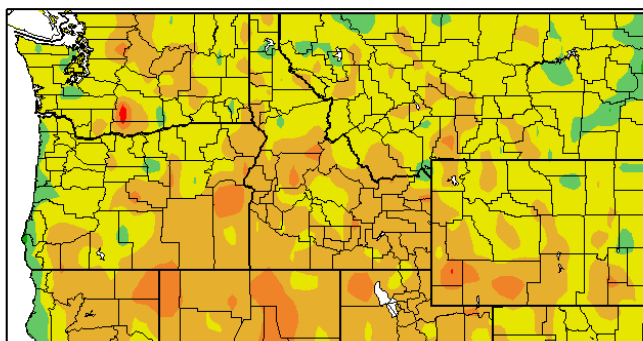
Operations:

- 62 Routine Narrative Planning Forecasts issued
- 31 NFDRS Point Forecasts issued
- 66 Spot forecasts were issued, 64 of which were for wildfires, 2 were SAR
- 97 Red Flag Warnings were issued, there were 9 missed events, and 1 unverified warning
- The first DSS web page was created for the Fontenelle Wildfire
- The Bear Cub Fire was started by lightning on July 1st, it consumed over 6000 acres
- Bob Hoenisch demobed from the Fontenelle fire on July 12th, WFO RIW resumed Spot forecasts for the Fontenelle Fire on July 13th
- Many burn bans were issued prior to July 4th because of the extremely dry fuels
- All zones had critical fuels by July 2nd

August

Climate:

Departure from Normal Temperature (F)
8/1/2012 – 8/31/2012



Precipitation (in)
8/1/2012 – 8/31/2012

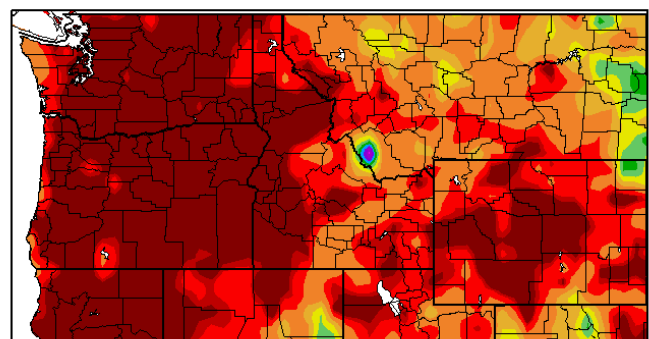


Fig. 1 2012 at HPRCC using provisional data. Regional Climate Centers

Fig. 2 2012 at HPRCC using provisional data. Regional Climate Centers

The warm and dry trend continued into August. The 90 degree plus temperatures were relentless with many climate stations breaking records for the number of consecutive days with temperatures over 90 degrees. There was another dry lightning bust on August 10th with several new, but small fire starts. There were also several dry cold fronts dropping south out of Montana during the month, these brought little or no precipitation and more smoke into the area from the fires in Montana and Idaho; however, they were accompanied by a brief break in the hot temperatures and very low humidity.

Operations:

- 62 Routine Narrative Planning Forecasts issued.
- 31 NFDRS Point Forecasts issued.
- 91 Spot Forecasts were issued, all for wildfires
- 135 Red Flag Warnings were issued, 3 events were missed, 3 watches were not followed up by warnings, and 8 warnings could not be verified
- The Alpine Lake Wildfire was started on by lightning August 9th, it consumed over 46,000 acres a decision support page was created and hosted on Riverton's website
- A DSS web page was created for the Cygnet Complex in Yellowstone National Park – a collection of small lightning caused fires
- The DSS web page for the Fontenelle Fire was frequently updated throughout the month
- Dave Lipson attended and presented at a town hall meeting in Fort Washakie regarding the Alpine Lake Fire on the 21st
- RIW IMET, Dave Lipson was dispatched to the Powell SBW Complex in ID from August 31st through September 17th

September

Climate:

Departure from Normal Temperature (F)
9/1/2012 – 9/30/2012

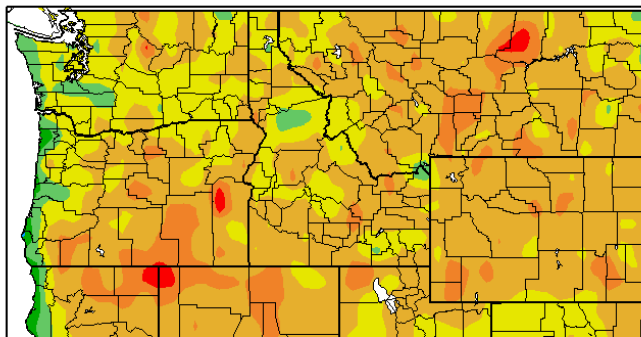


Fig. 1 /2012 at HPRCC using provisional data.

Regional Climate Centers

Precipitation (in)
9/1/2012 – 9/30/2012

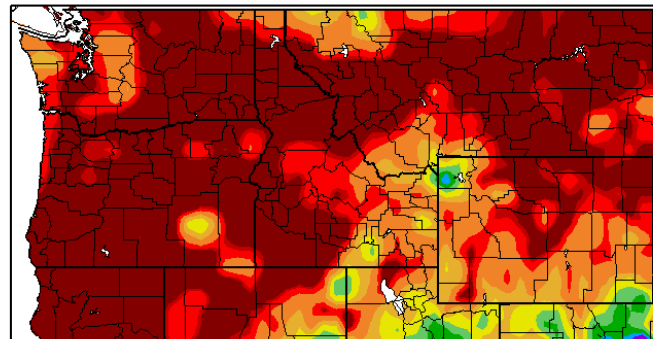


Fig. 2 /2012 at HPRCC using provisional data.

Regional Climate Centers

September continued to be hot and dry. Fuels remained critical, existing fires continued to burn, and two of our most densely populated wildland urban interfaces hosted very large fires at the same time. A few systems brought measurable precipitation into the west, especially toward the end of the month. This rainfall was not enough to bring fuels back to normal. There was a pattern change mid-month that effectively ended Red Flag Warnings for the next couple of weeks. The third and final dry lightning bust occurred on September 10th.

Operations:

- 60 Routine Narrative Planning Forecasts issued
- 30 NFDRS Point Forecasts issued
- 106 Spot Forecasts issued, all of which were for wildfires
- 90 Red Flag Warnings were issued, 2 events were missed, 5 could not be verified
- The Horsethief Canyon fire was started by human activity on September 8th southeast of the town of Jackson. This was the most expensive fire of the year, costing over \$9M

- IMET Jeff Colton (GJT) was dispatched to this fire on September 10th and began providing forecasts on September 11th
- A DSS Web Page was created the night this fire started
- The Sheep Herder Hill fire was started by human activity on the evening of September 9th on Casper Mountain, south of the highest populated city in our CWA, Casper, while a Red Flag Warning was in effect for strong wind and low humidity. The fire spread rapidly, forcing over 400 people to evacuate. The fire consumed over 5,000 acres before sunrise. The fire eventually consumed over 15,000 acres, 37 residences, and 23 outbuildings. In all, over 850 structures were threatened making this our highest impact wildfire of the season
 - IMET Rick Davis (TBW) arrived on September 11th
 - A DSS Web Page was created for this fire the night this fire started
- RIW IMET, Dave Lipson was dispatched to the Condon Mountain Fire in MT from September 21st through October 5th
- The Alpine Lake fire continued to rage this month, making it into the foothills and lower elevation grasses; an IMET, Joe Harris (AMA) was requested. Joe provided forecasts for the fire between September 6th and 10th

October, November, December

Climate:

Departure from Normal Temperature (F)
10/1/2012 – 12/31/2012

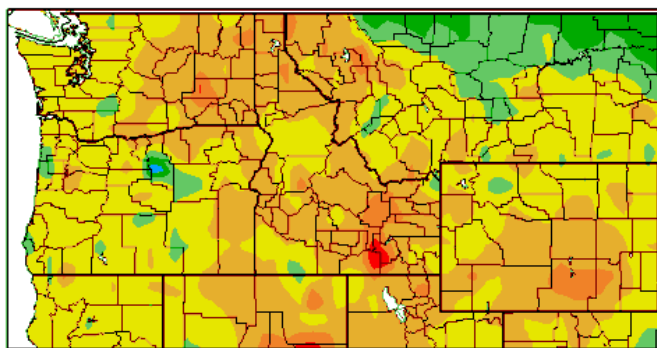


Fig. 1

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Regional Climate Centers

Departure from Normal Precipitation (in)
10/1/2012 – 12/31/2012

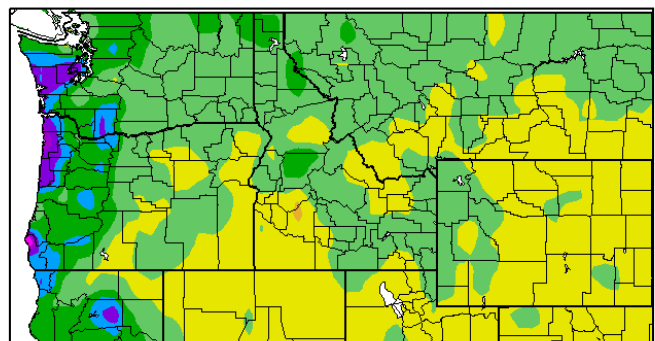


Fig. 2

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Regional Climate Centers

There was a stormy start to October with snow finally falling in the high country on the 5th and 6th. However, there were still a few critical days east of the Continental Divide as rain and snow fell in the west and strong winds and low humidity continued east of the Divide. The last Red Flag Warning of the season was issued on October 20th for the far eastern zones in the CWA. Above normal temperatures returned at the beginning of November but stormy conditions quickly followed. Overall, temperatures were near to slightly above normal across much of the region during the late fall/early winter months with precipitation coming in at near normal values, to slightly above in the west.

Operations:

- Routine Fire Weather Planning Forecasts and NDFRS Point Forecasts stopped for the season on November 2nd, 65 FWF forecasts were issued in October and November and 32 NDFRS Forecasts were issued

- 23 Spot Forecasts were issued in October, 15 of which were for wildfires and 8 were for prescribed burns; 15 Spot Forecasts were issued in November, 14 of which were for prescribed burns; 3 Spot Forecasts were issued in December, 1 of those was for a prescribed burn
- 26 Red Flag Warnings were issued in October, there were 3 missed events and 2 warnings could not be verified
- Kelly Allen gave a presentation at the Eastern Great Basin conference on October 29th about the 2012 Season including the top fires of the season, new programs, season stats, and best practices.
- Kelly Allen attended the Northern Rockies seasonal wrap up conference call on November 5th
- The Fire Weather Team met for a second time in November to wrap up the season and plan changes for next year and a brownbag seminar was planned for next spring
- Kelly Allen and members of management met with the Rocky Mountain GACC meteorologist, Tim Matthewson to discuss coordination of services
- Kelly Allen began working with a team made of three Fire Weather Focal Points (including myself), a Fire Operations Specialist from the BLM, a Fuels Specialist from the USFS, and the Eastern Great Basin GACC meteorologist to study the relationship between fuel dryness and critical lightning in order to standardize Red Flag Warnings issued for Dry or Critical Lightning

⚙ **NWS Riverton 2012 Red Flag Warning Events and Verification:**

- **Summary:**

A total of 487 RFW events occurred with at least 10 Red Flags occurring in each zone. The zone with the most Red Flags issued was Zone 279, Sweetwater County, with 48 Red Flags issued; the least warned zone was Yellowstone (Zone 140) with only 13 Red Flags for the season. Of the 487 warnings, 461 of them were verified. There were a total of 17 missed events. As far as I could go back in the records, this season had the most Red Flag Warnings – by far – over any other season on record. The Riverton staff did a tremendous job. The following represents our performance for these events:

POD:	0.96
FAR:	0.05
CSI:	0.95

The average lead time for the Red Flag Warning was 22 hours; nearly doubling last year's lead time of 12 hours. This can be attributed to a new local policy of issuing multi-day Red Flag Warnings.

⚙ **NWS Riverton 2012 Fire Weather Spot Forecast Archive:**

Spot forecasts issued for Wildfires:	310
Spot forecasts issued for prescribed burns:	131
Spot forecasts issued for other purposes:	10
Total Number of Spot Forecasts issued:	451

This is the second highest number of spots issued in a year from WFO Riverton. The seasonal record was made back in 2006 with 496 Spots issued during the year. 2011 now falls into third place with 439 spots issued.

⚙ **NWS Riverton IMET Dispatch Days:**

Dave Lipson was dispatched for a total of 52 Days during the 2012 fire season (this includes travel days)