YOUR NATIONAL WEATHER SERVICE SPOKANE QUARTERLY REPORT

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The Weather Watcher

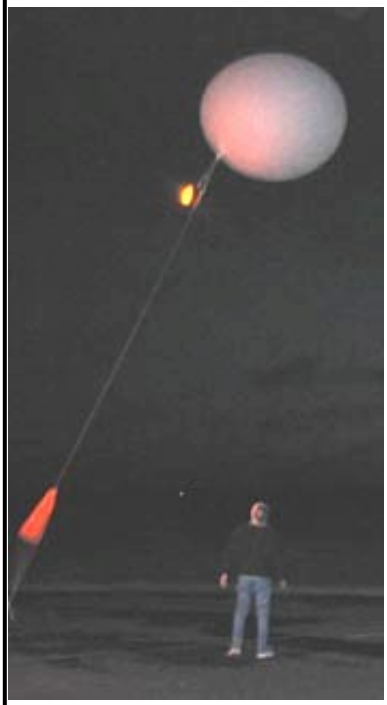
of the Inland Northwest

www.weather.gov/Spokane

New Technology in Weather Balloon Instruments

During the week of May 15-19, 2006, the National Weather Service (NWS) in Spokane upgraded the technology used to take upper air, or radiosonde observations. The new equipment is known as the Radiosonde Replacement System (RRS). This is part of a nationwide effort to replace the NWS's current network of the legacy radiosonde observing systems. This modern system will be more accurate, efficient and easier to operate and maintain.

The term radiosonde is short for radio wind sounding device. It is an instrument housed in a white Styrofoam box that measures air pressure, temperature and moisture. When attached to a weather balloon filled with lighter-than-air-gas, radiosondes can attain heights in excess of 30 km or over 18 miles high! Winds are determined from changes in the radiosonde position in flight. The radiosonde transmits its meteorological data to a ground-based antenna and receiver, which is passed to a computer that collects the data. When the balloon reaches its elastic limit and bursts, a parachute slows the instrument's descent to the ground. Recovered instruments can be returned to the factory for reconditioning and re-flown, thereby reducing the operating costs of the program. So if you happen to find a used radiosonde, please return it to the nearest NWS office or simply give it to your local postman!



The first weather balloon launch by with the RRS upgrade at 4 am on May 22nd by Robert Bonner.

The ground-based antenna, otherwise known as the radiotheodolite, is used to track the radiosonde as it ascends and receives the instrument's signals. Some of Spokane's old equipment was vintage World War II technology and was one of the oldest operating systems in the country originating from the late 1940s. In the 1980s, a computer aided tracking and recording device was added to the upper air observation system, but little has changed in the last 20 years. The updated RRS is a welcome change. With the use of 21st century technology, it incorporates the Global Positioning System (GPS) to track the position of radiosondes. This will yield to more accurate wind speed and direction data.

Radiosondes launched by weather balloons are the primary source of upper air data for the meteorological community and will remain so into the foreseeable future. A large network of upper air data sites span the globe. Various space and ground based remote sensing systems exist to compliment the radiosonde network by providing additional weather data.

Weather balloons are launched twice daily at 00 and 12 UTC. At the Spokane office, the launch begins by 4 am and 4 pm every day during the summer, rain or shine; and then an hour earlier in the winter. The meteorological data acquired from upper air observations is used as valuable input for the computer-based weather prediction models, which help forecasters predict the day to day weather. This data is also used locally to determine the thunderstorm potential, air stability, dispersion, and it provides valuable research in weather and climate.

For more information on the upper air observation system, please visit the following web pages: http://www.nws.noaa.gov/rrs/index.htm and http://www.wrh.noaa.gov/otx/photo_gallery/RRS.php

☼ *Robin Fox*

Out with the old and in with the new, here is the new RRS antenna being installed within the domed upper air building at the NWS Spokane office.

INSIDE THIS ISSUE:

Editor's Notes

Lightning is dangerous and the number #2 killer of weather hazards. It is important to be "Lightning Smart" before thunderstorms arrive.

When you hear thunder, find a safe shelter—don't go or stay outside. Get out of water, away from trees, off the ball field or golf course, as these are prime areas for lightning to strike.

Lightning Awareness Week is June 18-24th.

For any questions or comments on the newsletter, please contact Robin at (509)244-0110 extension 221 or email nws.spokane@ noaa.gov.

The main purpose of this publication is to keep our readers informed about our services and programs, and to recognize those who help us with our mission, including weather spotters, coop observers, media, and emergency management.

All articles are written by the NWS staff. A special thanks to Ron Miller, John Livingston, Kerry Jones, Charles Ross & Bob Tobin for their contributions.

Staff News

Our new Warning Coordination Meteorologist (WCM) Kerry Jones will arrive in late June. He will succeed long-time WCM Ken Holmes who retired in April. Kerry comes to Spokane from the NWS office in Albuquerque, NM, where he served both as a general and then a lead forecaster during the past 12 years. Prior to that, he graduated from the University of Oklahoma and spent some time in the Norman NWS office. Kerry was active in the fire weather program before he shifted his focus to areas he is especially passionate about—spotter training and community/educational outreach. He and his wife Julie have two daughters and a newborn son. When Kerry is not chasing after his kids, he enjoys outdoor recreation including hiking, backpacking and golf. He and his family are thrilled to be moving to Spokane and look forward to working with the many partners and customers from the Spokane NWS office. Kerry can be reached at (509) 244-0110 extension 223 or at *kerry.jones@noaa.gov*.

After six years of forecasting in the Inland Northwest, Claudia and Tracy Cox moved to Salt Lake City, UT in early June. Claudia will be working in the Regional Headquarters as a Regional Outreach and Planning Scientist. Tracy has accepted a position as a hydrologist at the Colorado River Forecast Center. Tracy and Claudia arrived in Spokane from Monterey, CA. Both are excited to begin their next adventure in their careers.

Forecaster Todd Lericos has recently received a promotion as a Science and Operations Officer in Caribou, Maine. Todd has been forecasting weather in the Inland Northwest for over 4 years, after he arrived in Spokane from Tallahassee, FL. He and his wife Amanda, and their three cats will set off on their cross-country journey in early July.

We congratulate Tracy, Claudia and Todd on their achievements and wish them the best of luck on their latest career moves. ☼ *Robin Fox*

Answer: 92 in North America with an additional 10 in the Caribbean.

Spotter Notes

MIC John Livingston and Service Hydrologist Charles Ross had a fascinating and enjoyable time when they paid a visit to retired NWS employee Bob Wing in Lewiston, ID on April 26, 2006. Bob retired from the NWS in 1978 after a distinguished 30+ year career serving at various Western Region NWS offices. The majority of his career was spent at the Weather Service office in Lewiston, ID. Previous to joining the Weather Bureau, Bob served in the US Navy during WWII. One of the first stories he shared was how he missed the bombing of Pearl Harbor by less than a day because the he was on the carrier Enterprise which was delayed in returning to port by the same storm that hindered the Japanese attackers!
Bob is well known in the Lewiston area. He established

Bob Wing and MIC John Livingston at their visit on April 26th.

close ties with the daily newspaper and became very involved in local politics. At age 85+, he remains an articulate and well spoken man in addition to being an accomplished grape grower and wine maker. He is still known as the weather expert for the Lewiston area, a reputation he earned through the years he worked at the Lewiston weather office. Recently, he has served as a weather spotter and as the official Lewiston snow measuring site.

Bob contacted the Spokane NWS to pass on a research project that he has decided he will not be able to finish due to health reasons. The project concerns the winters of 1949 and 1950 and their toll on the Pacific Northwest. Bob was stationed at the Weather Bureau office in Ellensburg, WA at that time and he remembers the hazardous winter weather that affected the region. The project is well over half done with details on the surface and upper air conditions along with newspaper reports from around the four state region of Washington, Oregon, Idaho and Montana. Despite his regret on not completing the project himself, he was grateful and excited that he could hand this project off to other "weather nuts."

The staff at the Spokane office feels honored to take on this amazing project and hopes to make Bob proud with the final results. ☼ *John Livingston*

NWS Spokane

Meteorologist In Charge
John Livingston

Administrative Assistant
Meg Layh

Warning Coordination Meteorologist
Kerry Jones

Science Operations Officer
Ron Miller

Data Acquisition Program Manager
Robert Bonner

Service Hydrologist
Charles Ross

Information Technology Officer
Todd Carter

Lead Forecasters
Jon Fox
Robin Fox
Matt Fugazzi
Bob Tobin

General Forecasters
Rocco Pelatti
Paul Bos
Laurie Koch
Jeremy Wolf

Hydro-Meteorological Technicians & Intern
Stan Savoy Milt Maas
Verne Ballard
Jeffrey Coté

Electronic System Analyst
Dwight Williams

Electronic Technicians
Robert Sumpter
Paul Kozan

Facilities Technician
Mike Belarde

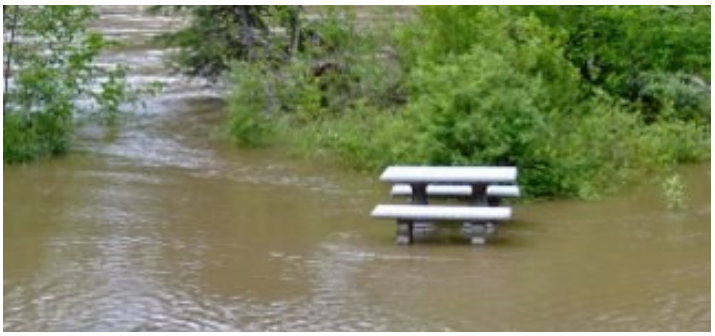
Spring 2006 across the Inland Northwest

Taken as a whole, the Spring of 2006 was climatologically fairly close to a normal spring. But as most folks know, spring is best defined as the average of two extremes. It's those rapid changes in the weather that make spring an interesting season.

March started off in normal fashion, but a cold storm on the 8th changed all that. While most snowfall in March is confined to the late night/early morning hours, this storm was impressive because the snow started at noon and continued until midnight. While the Spokane area picked up 2 to 4 inches, 6 to 8 inches of snow fell in the valleys north and east of the Spokane area. High temperatures on both the 8th and 9th struggled to make it above freezing. Another cold storm in the middle of the month again brought snow to the valleys of northeast Washington and the Panhandle, but amounts were generally only around 1 to 2 inches. Kellogg did manage to pick up 4.5 inches. That was essentially winter's last gasp as temperatures warmed into the 50s for the remainder of the month.

April was somewhat lacking in exciting weather. Throughout most of the month, temperatures generally stayed in the 50s and 60s, which is pretty close to normal. A cool and wet storm during the middle of the month brought an impressive 10.8" of snow to the town of Winchester, located southeast of Lewiston at an elevation of 4000 feet. After this event the weather was a bit warmer and drier. The warmth continued right up until the 29th when the mercury reached around 80° for the warmest day of the month. Strong thunderstorms rumbled through the area that evening.
Aside from that final day of April, the weather would continue to be uncharacteristically dry for this time of year. The first half of **May** saw very little if any rain. Temperatures continued to be slightly on the cool side of normal, so it didn't really feel like things were abnormally dry. This changed in a hurry. A strong ridge of high pressure developed over the western U.S. sending temperatures well above normal. Highs on the 15th through the 18th rose well into the 90s, with the mercury hitting the triple digits at Priest Rapids Dam near Hanford. While it's not unusual to have one hot day in May before a cold front arrives, the longevity of this hot spell was very unusual for the month of May. Many high temperature records were broken during this period, and some were smashed by nearly 10 degrees! This heat led to rapid snowmelt in the mountains, causing swollen rivers and streams and areas of flooding, especially in the Cascades and the northern border.
The heat wave came to an end in a big way. A low pressure trough approached the area very slowly from the west, putting out area in moist southerly flow. This produced showers and severe thunderstorms for 4 days from the 19th through the 22nd. The strongest thunderstorms were generally found in southeast Washington and the Idaho Panhandle. Strong winds and 1 inch hail produced damage in several areas, while heavy rain flooded Lewiston. Temperatures which had been in the 90s on the 18th were only in the 60s and lower 70s two days later. As luck would have it, after a warm middle of May, the weather turned markedly cooler for the Memorial Day weekend. From Friday through Monday, temperatures were in the 50s and lower 60s with widespread showers and some thunderstorms, making for less than desirable camping conditions.

The long range summer outlook from the Climate Prediction Center indicates near seasonal temperatures and a better chance for dry conditions through August. For details, see *http://www.cpc.noaa.gov* . ☼ *Ron Miller*



Flooding occurred on the Kettle River at Beale Park in Curlew, WA.. The Kettle River reached its highest crest since May 1948.

Spring Weather Statistics

Wenatchee Airport	March	April	May	Total
Avg High Temp	51.5	61.9	72.8	62.1
Departure from Norm	-2.1	-1.0	+1.3	-0.6
Avg Low Temp	34.3	41.4	48.5	41.4
Departure from Norm	+0.7	+1.2	+1.2	+1.0
Total Precip	0.44	0.87	1.06	2.37
Departure from Norm	-0.24	+0.40	+0.45	+0.61
Lewiston Airport	**March**	**April**	**May**	**Total**
Avg High Temp	54.1	62.2	74.0	63.4
Departure from Norm	+0.3	+0.6	+4.1	+1.7
Avg Low Temp	35.3	41.7	48.5	41.8
Departure from Norm	-0.3	+1.1	+1.6	+0.8
Total Precip	0.94	2.25	1.65	4.84
Departure from Norm	-0.18	+0.94	+0.09	+0.85
Spokane Airport	**March**	**April**	**May**	**Total**
Avg High Temp	46.5	56.8	68.5	57.3
Departure from Norm	-2.1	-0.7	+2.3	+0.2
Avg Low Temp	31.1	37.6	44.1	37.6
Departure from Norm	+0.7	+2.1	+1.5	+1.7
Total Precip	1.17	1.66	1.09	3.92
Departure from Norm	-0.36	+0.38	-0.51	-0.49
Total Snowfall	3.7	T	0.0	3.7
Departure from Norm	+0.1	-0.9	-0.2	-0.3

SPOTTER REPORTS: please call the NWS at (509) 244-0435
Or send them online at http://espotter.weather.gov

Remember your Summer Spotter Checklist

Funnel Cloud or **Tornado**
Hail– pea size or larger
Reduced Visibility — under a mile due to rain, blowing dust, etc.
Any **Flooding**
Strong Winds— 30 mph+ or damage
Heavy Rain— Showery– 1/2+" an hour Steady Rain- 1" in 12 hrs or 1.5"+ in 24 hrs
Travel Problems or **Any Damage** due to hazardous weather.

Ten Year Anniversary at NWS Spokane

May 2, 2006 marked the ten year anniversary of the NWS Spokane office dedication and also the start of providing weather forecasts and warnings for most of eastern Washington and north Idaho. Much has changed in the past decade with several episodes of severe and memorable weather. The equipment and technology has gone through many updates. The legacy "baby blue" computer consoles of the Automated Forecast Operating System (AFOS) have given way to the faster Advanced Weather Interactive Processing System (AWIPS) workstations viewed on by several flat screen monitors. The broadcast for NOAA Weather Radio is now performed automatically through a computer, so long to the eight track tapes. Radar data has been upgraded to be incorporated on individual forecaster workstations, and now the upper air observations have been updated. Some of the faces and names have changed, although several still remain from the initial core staff, which include: MIC John Livingston, SOO Ron Miller, ITO Todd Carter, DAPM Bob Bonner, and the HMT group of Milt Maas, Stan Savoy and Vern Ballard. ☼ *Robin Fox*

Fire Season Outlook 2006

Precipitation across the Pacific Northwest varied by location and from month to month. Overall, the combination of low elevation rain and mountain snow was normal to a little above normal. So far this spring, we have seen some drastic swings in the weather. Record setting high temperatures at one point quickly changed to a cooler, wetter pattern. The upper level pattern is expected to remain progressive through the end of June, meaning anticipate a series of wet weather systems moving across the region. July and August should be typically warm and dry. Current fuel moistures are showing most areas well into the green up. Fuel moistures are expected to drop to near critical values by late June or early July depending on elevation, which should be about normal.

A normal to slightly above normal convective season is expected. One to two episodes of dry lightning are possible, with the first episode typically around the middle of July and next around the first week of August. Large timber fires will be possible in eastern Washington, even at higher elevations after the middle of July. The east slopes of the Cascades and Okanogan area will be especially susceptible. The Inland Northwest should experience the average number of fire starts. The northern east slopes of the Cascades east into the Okanogan Highlands will see normal to above normal starts. ☼ *Bob Tobin*

The Weather Watcher
Of the Inland Northwest

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Trivia: How many weather balloons sites are there in North America?