Under the Big Sky

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Inside this issue:

Glasgow, MT Meteorologist Receives National Award

Montana Governor Judy Martz presented NOAA meteorologist Tanja Fransen of Glasgow, Montana, with a letter of commendation during the 36th Annual Montana Disaster and Emergency Services Conference, held in February in Helena. Fransen, Warning Coordination Meteorologist at the NOAA National Weather Service office in Glasgow, was also one of eight national winners of the weather service's highest honor, the Issac M. Cline Award.

"Tanja Fransen's effort to improve our services for the American people is a testament to her selfless dedication," said NWS director retired Air Force Brig. Gen. Jack Kelly. In citing Fransen's accomplishments, Gov. Martz said, "Particularly noteworthy has been our close coordination with Montana customers in the emergency management profession. You have clearly demonstrated the excellent service that all Montana citizens receive from the weather service."

Article from Access NOAA Newsletter, February 25, 2003

Tanja Fransen, Warning Coordination Meteorologist in Glasgow, MT, at the National Weather Service exhibit at the Governor's Conference.

No Need to Touch That Dial for Emergency Weather News

When severe weather conditions or other natural disasters may be imminent, many Americans rely on special radios that automatically sound an alarm and speak an alert. That technology, which relies on a service of the National Oceanic and Atmospheric Administration (NOAA), will soon be available in a new version for televisions as well.

Beginning this May, RCA will offer six Alert Guard television models, in 20-, 27-, and 32-inch screen sizes, that will double as all-hazards alert systems. More information about the sets, which are expected to sell for $299 to $1,000, will be available soon at www.rca.com.

The sets would interrupt the program to sound an alarm and either display or speak a written or verbal warning of an impending weather emergency, a missing-person broadcast, or a terrorist or military attack. The NOAA's National Weather Service decides which of more than 30 climatic emergencies should be broadcast; local governmental agencies handle the other alerts.

If they wish, owners of the sets can hear a customizable audio alarm while they are watching television or using a connected VCR, DVD player or video game console. The alarm can also be set to work even if the set is turned off.

For more information and a demonstration, check out www.rca.com. Click on "AlertGuard" in the left-hand menu.

Cooperative Observer Program by D. Adam Futterman, Intern

What is the mission of the (COOP) Cooperative Observer Program?
The COOP program was formally created in 1890 under the Organic Act. Its mission is two-fold: 1. To provide observational meteorological data, usually consisting of daily maximum and minimum temperatures, snowfall, and 24-hour precipitation totals, required to define the climate of the United States and to help measure long-term climate changes. 2. To provide observational meteorological data in near real-time to support forecast, warning and other public service programs of the National Weather Service.

Why is the Cooperative Observer Program so important to the National Weather Service?
The Cooperative Network has been recognized as the most definitive source of information on U.S. climate trends for temperature and precipitation. These data are invaluable in learning more about the floods, droughts, heat and cold waves affecting us all. The data are also used in agricultural planning and assessment, engineering, environmental-impact assessment, utilities planning, and litigation. COOP data plays a critical role in efforts to recognize and evaluate the extent of human impacts on climate from local to global scales. More data uses...management of water resources, the design and maintenance of buildings, predictions of crop yield, used in economic decision making, flood and drought monitoring and forecasting and the study of climate variability.

If I receive hail or strong winds at 3 am, should I contact the National Weather Service?
Yes, please contact us shortly after severe weather strikes. Spotter reports are essential for issuing accurate and timely thunderstorm warnings. Even with new advances in Doppler radar, ground truth is still the best method of finding out what is happening at your location. Your reports help save lives and property. It is a policy for us not to contact our Cooperative Observers between 10pm and 7am, except in rare cases. To report severe weather, please dial 1-800-775-5771.

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January Temperature Jump

by Jennifer Stroozas, General Forecaster

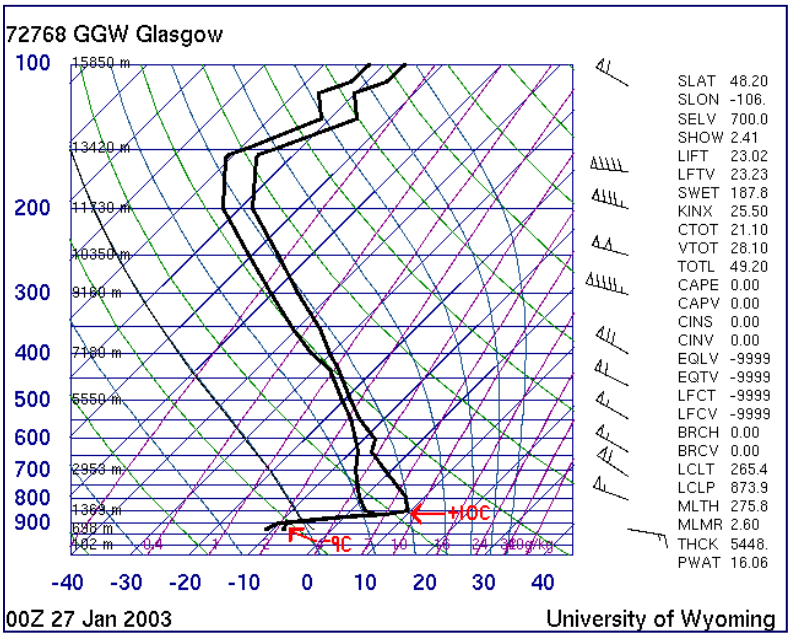

Image 1: Temperature profile in Glasgow on the afternoon of January 26, 2003. Note the temperature spread of –9 degrees C at the surface to +10 degrees C at approximately 6600 ft.

During the late night hours of January 26, 2003, an unusual thing happened in Glasgow. In a matter of only an hour between midnight and 1 a.m., the temperature rose from 25 degrees Fahrenheit to a balmy 44 degrees Fahrenheit. How can a 19 degree temperature rise occur in only an hour, and at night? The answer lies in the vertical distribution of the temperature in the atmosphere.

Images 1 and 2 are meteorological graphs that represent the temperature profile of the atmosphere. The data plotted on the graph is collected in a weather balloon run which occurs twice a day. Temperature increases from left to right on the graph, and height increases from bottom to top. Image 1, a profile of the atmosphere from the afternoon of the 26th, shows a temperature inversion in the lower part of the atmosphere. With an inversion, the temperature actually increases with increasing altitude. In a normal situation, temperatures fall with increasing height. For example, mountain locations are usually much cooler on a summer day due to higher altitude. In an inversion situation, the mountain location would actually be warmer. Again looking at Image 1, the coldest temperature in the lower atmosphere is found at the surface. Just 2000 m (6600 ft) above the surface, the temperature is 19 degrees C or 66 degrees F warmer.

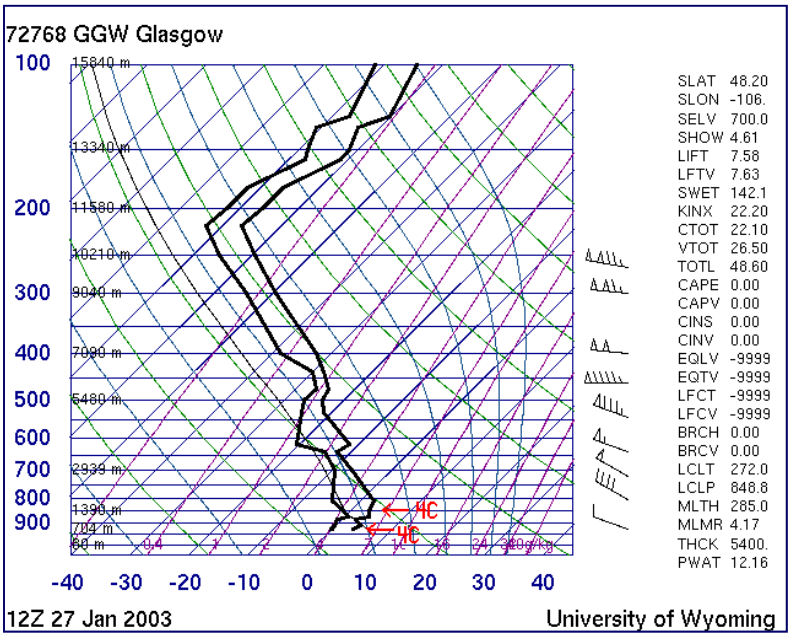

Image 2: Temperature profile in Glasgow early morning on January 27, 2003. Note that now the temperature is 4 degrees C at both the surface and aloft.

So how does this apply to the fast temperature jump in Glasgow? An inversion was in place with much warmer temperatures aloft. A front quickly moved through the area late on the night of the 26th. The front helped to stir up the atmosphere thus allowing the warmer temperatures aloft to finally reach the surface. Image 2 is the temperature profile at Glasgow after the front passed through, early on January 27, 2003. The diagram shows a very different picture from Image 1, now with a uniform temperature distribution in place. The inversion was broken and temperatures warmed dramatically.

COOP Observer Awards **by Matthew Moorman, HMT/COOP Pgrm Mgr**

Awards are an important aspect of the COOP observation network. Giving COOP observers awards for length of service or special recognition is a small way for the Weather Service to show their appreciation for the service that each COOP observer provides to the National Climate Program. Five awards were given to observers in Weather Forecast Office (WFO) Glasgow's twelve county responsibility area for the year 2002.

Dennis and Mary Honrud were each given a 10-year service award for maintaining their station at Baylor that consists of a mechanical Fischer Porter rain gauge. Bennie Albus, an observer who reads the river level near Hinsdale, received a 15-year service award. Don Mastvelton was also given a 15-year service award for maintaining his station located in Savage. Dwight Freeman, an observer located near Saco, received a 20-year service award for his station. Both Don and Dwight's stations report daily rain and snowfall amounts, snow levels and maximum and minimum temperatures.

Meteorologist-in-Charge Julie Adolphson (left) and Hydro-meteorological Matthew Moorman (left) present the Holm Award to Richard Efta (center).

Richard Efta received a 40-year service award and the prestigious Holm award for his station located near Carlyle. The John Campanius Holm award is an award given to a COOP observer for consistent and continuous outstanding service, with only 25 given a year nationwide. Richard's station was established in 1962 at his parents ranch, then moved two miles to it's present location in 1967. The station consists of daily rain and snow fall amounts, snow levels, and maximum and minimum temperatures. Richard's B-91 reports are always received at WFO Glasgow within the first five work days each month, barring northeast Montana weather, and are filled out neatly as he takes full advantage to report every weather element that he can.

Cooperative Observer Program (*Continued)*

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What is required to become a Cooperative Observer for the National Weather Service?
Becoming a NWS Cooperative observer volunteer requires the following: 1. Dedication to public service. 2. Attention to detail. 3. Ability to learn and perform daily duties. 4. Willingness to allow NWS to place measuring instruments on your property. 5. Willingness to allow at least one visit per year from a NWS representative. Additionally, the following capabilities are useful but are not mandatory: 1. Ownership of a personal computer with modem and familiarity with its basic uses. 2. Established internet access.

If you are selected to become an official NWS Cooperative station, NWS will provide you with the training, supervision, materials and instrumentation necessary to perform your duties. Depending on your station's instrumentation, your site will be visited once or twice every 12 months, more if unscheduled maintenance or training updates are required.

Observer in the News: Erling Dohlen by Andy Kleinsasser, Intern

Cooperative observers are extremely important for accurate and up to date weather records. For this reason, we are planning on highlighting a different observer each newsletter issuance. The selection process will be random. Focus items may include how long the observer has been observing, any awards received, and memorable weather events or extremes he/she remembers.

In this issue, the *Observer in the News* is Erling Dohlen. He lives on a farm 12 miles southeast of Opheim. His father started the observing duties when he lived in the town of Opheim in 1930. His father moved to the present-day farm southeast of Opheim in 1943. After 28 years as an observer, Erling's father assigned his observing duties to his son in 1958. Up until 1958, he shared observing duties with his father. Mr. Dohlen has been an observer for 45 years at the farm. In 1991, he received the John Campanius Holm Award for outstanding observing performance over a period of 20 years or more. The Holm Award is an extremely competitive award, as only 25 recipients are chosen nationwide each year.

Erling remembered extreme meteorological events, but like most had a difficult time recalling specific dates. He recalled more cold and snowy winters than hot summers. He remembered the late 40s and early 50s being bitterly cold winters, and numerous livestock perished due to the cold and snow. He recalled the winter of 1950 being the worst with quite a bit of snow, and an average January temperature of 17 degrees below zero. As many of you already know, there was not the luxury of snowmobiles; a heavy snowfall could strand a farm house for six weeks or more.

The Glasgow Basketball Tournament in March 1951 was an interesting time for Erling and some friends. A powerful winter storm hit while they were in Glasgow, stranding him and his friends for about three weeks. His friends eventually attempted to get back to their homes in Opheim. However, their vehicles became stranded in a snowdrift along present day highway 24, about 30 miles north of Glasgow. They decided to walk to a truck parked about 5 miles north of their location and drove the rest of the way back to Opheim. Eventually, they returned to the original stuck vehicle to find that it was covered by more than three feet of snow.

Erling's recollection that the early 1950s were colder and wetter than normal was correct. 1950 was on of those years. The average temperature for the year was 37.7 degrees. This was the coldest average annual temperature since 1916. January 1950 was extremely cold, with an average daily temperature of -16.7 degrees which was 24.7 degrees below normal. January 15th was the coldest day of the year with a high temperature of -23 degrees and a low temperature -42 degrees. At present, January 1950 is the coldest month in northeast Montana on record. Also in 1950, Glasgow received 19.03 inches of moisture. The total snowfall recorded that year was 49.9 inches of which 15.5 inches fell in January. During the winter of 1949-50, Valley County was one of 12 counties designated as a winter disaster area. This enabled the county to receive additional snow removal equipment.

During March 1951, Mr. Dohlen's Cooperative southeast of Opheim recorded 16 days where overnight temperatures dropped below zero. The average monthly temperature of 6.6 degrees was 19.3 degrees below normal. In addition, 16.3 inches of snow fell at Erling's farm. This amount was 10.3 inches above normal for the month of March during that year. Presently, March 1951 stands as the 4th coldest and the 2nd snowiest March on record.

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http://www.wrh.noaa.gov/Glasgow

Get a detailed forecast with just one click of the mouse! Check out our new prototype digital forecasts on our website, http://www.wrh.noaa.gov/Glasgow. Click on "Prototype Digital Forecast" in the left-hand menu.

What is an Inverted Trough? By Tom Salem, Science Operations Officer

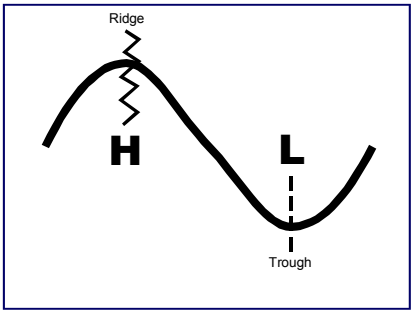

Figure 1. Typical ridge and trough pattern in the northern hemisphere at mid-latitudes.

An inverted trough is a line of low pressure that extends from the low center toward the north, or an upside down trough. Highs and lows are similar to a wave pattern where the high pressure bulges northward and low pressure bulges southward, similar to Figure 1. However, occasionally the low pressure system will have a trough that extends toward the north. Since most weather occurs along lines of low pressure, fronts and troughs, it is important to note where the troughs are. Another important reason to note the location of an inverted trough is that at first glance it looks to be a ridge; of course the winds in an inverted trough are in the opposite direction from a ridge--counterclockwise in a trough and clockwise in a ridge.

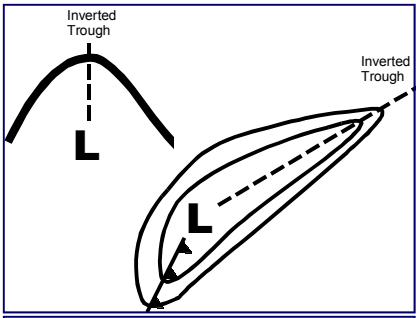

Figure 2. Examples of inverted troughs (dashed lines).

Articles contributed by WFO Glasgow staff. Edited by Jennifer Stroozas and Tanja Fransen.