Bay Breezes

Serving the San Francisco and Monterey Bay Areas

Late Winter 2008 March 2008

Inside this issue:

A Stormy Start to 2008

by Matt Mehle *General Forecaster*

A stormy and turbulent weather pattern helped ring in the New Year as an unprecedented low pressure system impacted much of the West Coast. The active weather pattern began on January 3rd and ended on January 6th as a series of storm systems moved through the San Francisco and Monterey Bay areas. Computer forecast models began to predict this active weather pattern ten days in advance. As confidence grew and the forecast was fine tuned, the forecasters in the Monterey office quickly realized this weather pattern was going to greatly affect the region. The strongest storm made landfall on January 4th and happened to be one of the strongest storms in the last ten years. A wide variety of weather was observed during this period including wind gusts in excess of 100 mph that brought trees and powerlines down, flooding due to local heavy rainfall, high surf at the coast with seas over 30 feet and even snow over the higher peaks. When it was all said and done, the Monterey Forecast Office issued over 30 non-routine products to highlight hazardous weather.

(Continued on page 2)

Dam/Levee Break Warning Program

by Jeff Kopps *Hydrologist*

In the event of a known or potential dam or levee failure which could pose a threat to life and property, NWS San Francisco Bay Area is responsible for issuing watches and warnings for locations downstream of the dam or levee. As part of the monitoring process, all dam and levee locations within our warning area of responsibility are loaded into our NWS computers and are available for quick call-up and review. Also, alarms are set for various sites to alert us if there is a significant short-term drop in water level (for example, a drop in less than 30 minutes of two feet of water level). This would prompt us to investigate whether it is real or a false alarm. Picture #1 (pg 8) is an example of a screen capture of data on our computers of a dam location.

(Continued on page 8)

A Stormy Start to 2008 *continued from page 1*

Storm Data from the January 4th Storm

Highest Wind Gusts

110 mph Kregor Peak (Contra Costa County)
105 mph Los Gatos RAWS (Santa Clara County)
88 mph Angel Island (SF Bay)
83 mph Big Rock RAWS (Marin County)

Pebble Beach Damage *photo courtesy of Larry Smith*

Wind Reports from the Area

G=Gust
S=Sustained

San Francisco
-G70 mph Golden Gate Bridge
-G65 mph Ft Funston

North Bay Coast
-G81 mph Pt Reyes Lighthouse
-G72 mph Inverness

North Bay Valleys
-G58 mph Barnaby RAWS

San Francisco, Noe & 20th *photo courtesy of Michael Polanksy*

SF Bay Shoreline
-G67 mph SFO Airport
-G58 mph OAK Airport

East Bay Valleys
-G69 mph Sunol
-G60 mph Bethel Island

East Bay Hills
-S71 mph Kregor Peak
-G79 mph Calaveras RAWS

Santa Clara Valley
-G51 mph San Martin

Santa Cruz Mountains
-G60 mph CW19 Los Gatos
-G56 mph Ben Lomond RAWS

Monterey Bay / Big Sur Coast
-G63 mph Carmel Middle School AWS
-G55 mph Santa Cruz Boardwalk AWS
-G53 mph Aptos AWS
-G52 mph MRY Airport
-S45 mph Pt Sur Lightstation

Santa Lucia Mountains
-G76 mph Chew's Ridge
-G62 mph Highlands Peak

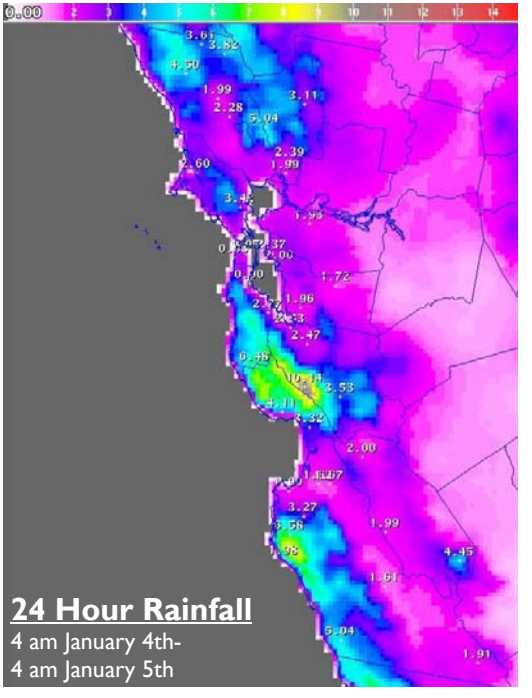
San Benito Mountains
-S38 mph Hernandez RAWS
-G65 mph Santa Rita RAWS
-G62 mph Hernandez RAWS

A Stormy Start to 2008

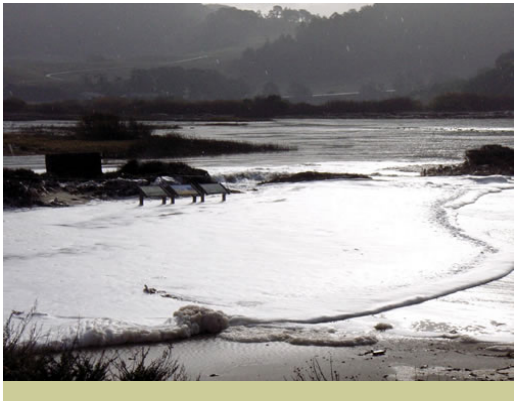
continued from page 2

Assorted Rainfall Totals

Contra Costa County	
Walnut Creek	5.38”
Danville Library	5.93”
Mt. Diablo Peak	5.55”
Napa County	
Angwin	6.32”
Dry Creek Fire	6.86”
St. Helena@Sulphur Ck.	5.79”
St. Helena 4WSW	5.64”
Marin County	
Kentfield	6.42”
Novato Creek	11.23”
Sonoma County	
Petaluma Lichau Creek	4.45”
Petaluma Middle Two Rk.	5.00”
Petaluma La Cresta	4.69”
Monterey County	
Black Cone	10.35”
3-Peaks	13.11”
Central	9.69”
Ponciano	13.03”
Chews Ridge	7.35”
Los Padros Dam	10.75”
Mining Ridge	15.99”
Anderson Peak	9.29”



Flooding in Carmel *photo courtesy of Larry Smith*



Carmel River Beach Parking Lot *photo courtesy of Steve Markkanen*

(continued on Page 11)

Rain Totals Right on Target

by Duane Dykema *Climate Focal Point*

The first half of the current rain year, which began on July 1, 2007, was drier than normal. Through December 31st rainfall totals across the San Francisco and Monterey Bay Areas stood at only 60-80% of normal. But thanks to a very wet January, when monthly rain totals were about 175% of normal, rain season totals rapidly made up ground and even surpassed year-to-date totals by February 1st. The weather pattern reverted back to drier than normal during February. Even so, year-to-date rainfall totals across the region were very close to normal at the end of February (see table below). Our region is definitely doing better in the rainfall department this year compared to last year at this time when rainfall totals were generally only 70 percent of normal.

Location	Year-to-date rainfall (as of Feb 29)	Normal rainfall July-Feb	Percent of normal
Santa Rosa	23.38	23.61	99
San Francisco	16.96	16.96	100
SFO Airport	15.29	15.18	101
Oakland	16.00	17.32	92
San Jose	11.10	10.83	102
Livermore	11.30	10.87	104
Monterey	14.01	14.18	99

A dry pattern has continued into the first week of March and year-to-date rainfall totals are beginning to slip below normal as of this writing. In a typical year, about 25% of yearly rainfall falls between March 1st and June 30th. So there is plenty of time to make up any rainfall deficits. On the other hand, if the pattern remains dry, there is plenty of time to continue falling below normal.

SKYWARN Recognition Day 2007

by Matt Mehle *SKYWARN Focal Point*

Best year yet, the Monterey Forecast Office made almost 150 contacts on December 1st, 2007 utilizing many forms of amateur radio communications . These contacts were in over 10 countries, 35 states and 29 Weather Forecast Offices. This year's success would not have been possible with out support from the members of NPSARC (K6LY).

Members of NPSARC working the radios

NWS Technology Infusion Project

by David Soroka, *WCM*

Your local National Weather Service Office is in the process of upgrading its dissemination services to include the latest technology. While we will still continue to provide forecasts/watches/warnings and advisories over conventional means such as NOAA Weather Radio, commercial radio and television, we are exploring a myriad of new ways to provide real-time, life-saving information. Recent studies have shown that the younger generation relies more on cell phones and computers than televisions to receive news/weather and general information. As such, the National Weather Service must adapt its way of doing business. Long past are the days of waiting for your local evening news to find out the day's weather or the newspaper. Instead, people are receiving real-time weather warnings over their mobile devices, laptop and desktop commuters only seconds after they are issued.

Twenty four hour cable news channels and The Weather Channel are also continuously providing weather, water and climate information. Others are scanning the internet to view satellite imagery, Doppler radar and numerical weather models to help them make plans and/or vital decisions related to their business and/or pleasure schedules. Airlines and other travel industries provide current weather observations and forecasts on their internet pages to warn passengers of possible delays. None of this was possible even five or so years ago. As the information technology superhighway continues to speed along, it is either jump aboard or be left in the dust!

Here are just two of our newest applications. MAMA provides weather and all hazards alerts and forecasts to cellular phones and mobile devices. The MAMA program allows the user to scroll across the entire United States with an overlay of either satellite or radar imagery. You can then zoom into your area of interest and get either current observations or a 5 day forecast. In addition, the user can setup "alert areas" by drawing a box anywhere in the United States and then selecting the type of information they wanted to be alerted for. So for instance, if you lived in Palo Alto – you could make a square from about Sausalito southward to near Santa Cruz – eastward to Morgan Hill and then northward to around Oakland. This would encompass your general area and you could then ask to be alerted for high winds, winter storms, flash floods, severe thunderstorms, tornadoes, etc. Mobile devices are key to the future of communications and information sharing. At this time, MAMA is only available on a test basis to some Emergency Managers and other officials, but will should soon be available for the general public. Stay tuned!

The other new information technology recently developed is called FLARE – and stands for Fully Localized Atmospheric Research Environment. It is a desktop computer application that provides real time satellite and radar imagery, obser-

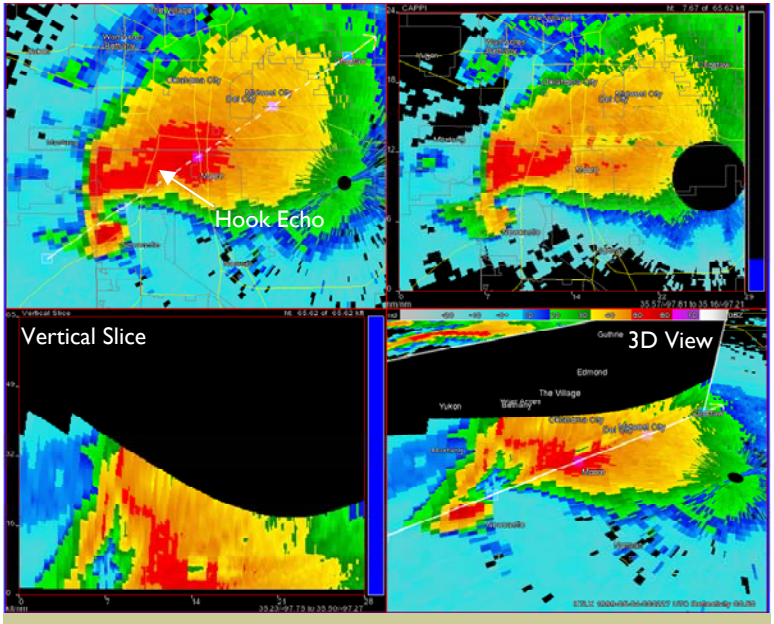
(Continued on page 7)

Improved Radar Analysis Tools

by Matt Mehle *Radar Focal Point*

The National Weather Service is always looking for better ways to meet its mission, the protection of life and property. In doing so, the National Weather Service has to be at the forefront of forecasting technologies and techniques. This year local forecast offices across the country will have a newer technology to better analyze radar imagery and possible severe weather. The FSI or 4-Dimensional Stormcell Investigator was developed to allow the radar operator to better analyze storm structures which could lead to earlier warnings.

In the early days of radar imagery interpretation, radar operators would have to manually sample storms of interest in the vertical and horizontal direction via the WSR-77 radar. By doing so, the radar operator would be able to monitor storm development and evolution while looking for radar signatures indicating possible severe weather. In the early 1990's, WSR-88D or NEXRAD radars were deployed across the country. Unlike the older radars, the improved NEXRAD radars are more automated and are not only capable of detecting precipitation, but also movement with in the atmospheric. Despite these improvements, displaying vertical slices from a storm became a little more cumbersome. This is where the FSI comes in. The FSI allows the radar operator to create a cross-section on any storm of interest and 'slice and dice' it any way they see fit including improved vertical cross-sections with no gaps that a radar operator would be able to pan, zoom, pitch, yaw and virtually 'fly' through.



The above image is what the destructive tornadic storm that impacted Oklahoma City, OK on May 3rd, 1999, would have looked like using the FSI.

Source for article and more information can be found at: http://www.nws.noaa.gov/mdl/fsi

NWS Technology Infusion Project

continued from page 5

vations, forecasts and watches/warnings in effect for your area. The program can be tailored for your specific location, down to the nearest airport observation site. To download the free FLARE program go to: http://www.wrh.noaa.gov/wrh/ssd/flare.msi

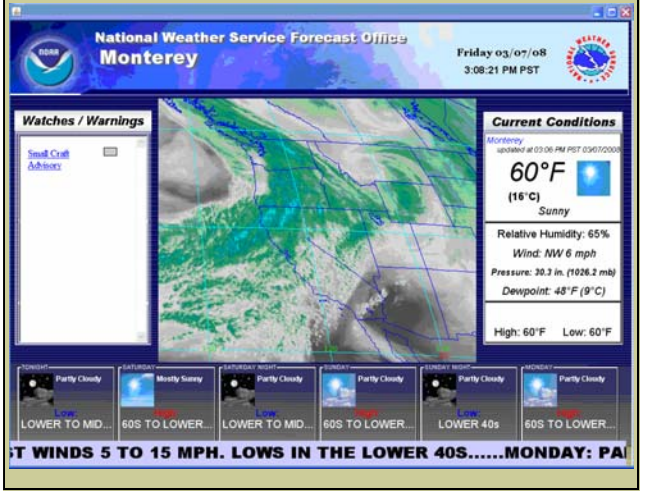
We hope you find our new technology useful and enjoyable as we continue to expand our dissemination services.

If you have any questions regarding these new services, please contact Warning Coordination Meteorologist David Soroka at: 831-656-1713 x 223 or david.soroka@noaa.gov

Quick Example for FLARE:

- When prompted for your ***CWA***--type in (Your CWA identifier – *KMTR* for Monterey/San Francisco Bay Area)
- When prompted for your ***METAR***--type in (The closest METAR in the Kxxx Format, *KSJC for San Jose Airport or KMRY for Monterey Airport*)
- Find your ***County Code*** from link below or type in as follows - CACXXX: where XXX is 3 letter code – for *Santa Cruz County: CAC087* or lookup http://eas.oes.ca.gov/PDF/FIPS_Codes.pdf
- When prompted for your ***Zone Number*** enter one of the numbers below, depending on where your city/town is located (eg. *CAZ514 – Santa Cruz Coast or CAZ512 Mountains*) or lookup http://www.wrh.noaa.gov/mtr/new_zone_map.php
- When prompted for your ***Radar Site*** type in (Your radar site's identifier - ex *MUX* for Monterey)
- Click **Finish**

Finished Product
Example for someone living in Monterey,CA



For the real tech savvy, the National Weather Service produces numerous products in GIS Format.
more info:
http://www.weather.gov/gis/

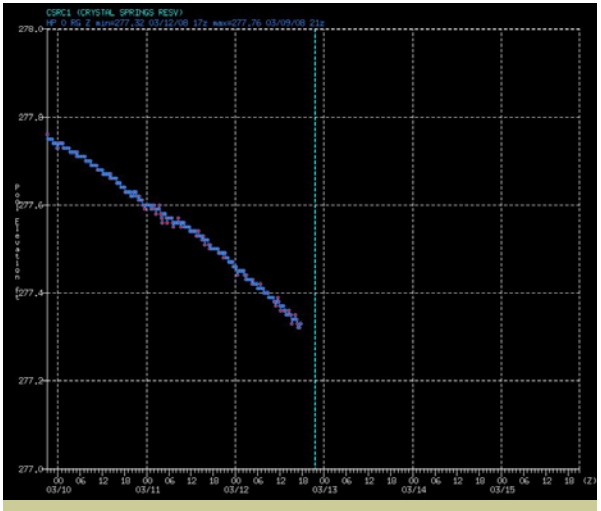
Dam/Levee Break Warning Program

continued from page 1

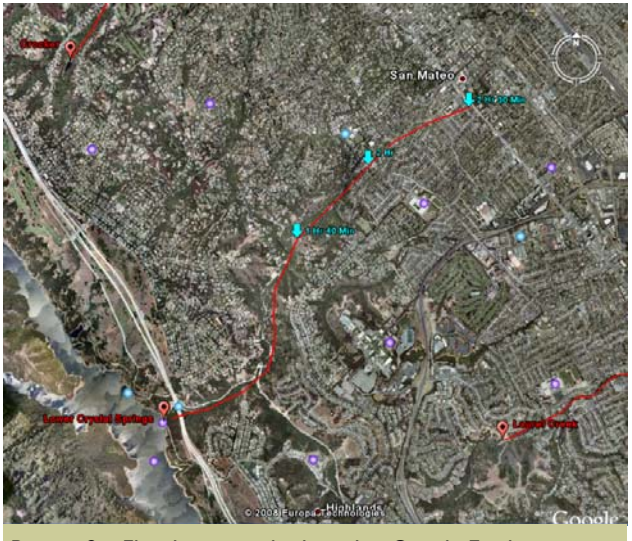
If a dam break became a reality, our easiest way to quickly familiarize ourselves with the dam location and downstream problem areas is to utilize Google Earth. We have all of our dam and levee locations highlighted for quick review. Picture #2 is an example of this functionality with the Crystal Springs Reservoir.

California Dam Database

http://cdec.water.ca.gov/cgi-progs/damSearch



Picture 1—Height of water at a particular dam



Picture 2—Flood wave path plotted in Google Earth

Once we have confirmed an actual dam or levee break we issue the appropriate watch or warning product and notify the local government emergency services personnel (If time allows, we run a simplified dam break model to more accurately project the downstream potential of the flood wave). Then we continue to monitor the situation and issue additional watches or warnings as needed. Once the local government gives the all clear we issue a final product stating this.

Did you know the most common cause of dam failure in California is due to overtopping?

National Weather Service in the Community

National Weather Service OUTREACH!

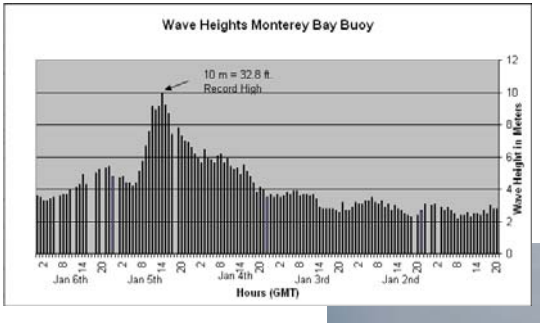
Over the next several months, your Weather Forecast Office in Monterey will be participating in several outreach events. If your schedule happens to take you in these directions – please come over and say "hello."

Event	Date/Time	Location
StormReady Ceremony	March 18th/7pm	Half Moon Bay
Pilot Talk	March 20th/7pm	Hollister Straw Hat Pizza
Skywarn Training	April 10th/7pm	Santa Rosa EOC
Earth Day Celebration	April 20th/10am-4pm	SF Zoo
Power Boat Show	April 24th-27th	Jack London Square/OAK
Wind Festival	May 10th	Marina
Contra Costa Fair	May 30th	Antioch
Salmon Aid	May 31st/June 1st	Jack London Square/OAK

For more information on any of these events, please contact Warning Coordination Meteorologist David Soroka at 831-656-1713x223 or david.soroka@noaa.gov
Hope to see you there!

A Stormy Start to 2008

continued from page 3



Data Compiled by: Jeff Kopps, Warren Blier, Steve Anderson

Big Surf at Rockaway Beach

photo courtesy of Scott Archer

Current SKYWARN by the numbers…

Total Number of Spotter as of March 2008

Alameda	72
Contra Costa	45
Marin	52
Monterey	45
Napa	24
San Benito	17
San Francisco	49
San Mateo	67
Santa Clara	134
Santa Cruz	64
Sonoma	82

Total number of trained spotters	305
Total number of spotters	651

Larry Smith

Larry Smith

General Forecaster

Prior to being a weather forecaster for the national weather service my career path was highly dependent upon the weather. During the summer months I managed a kite shop in Ocean City, MD and managed a ski shop at a local ski resort in Western PA during the winter months. These early career choices depended greatly on the weather of which I already had a great interest in. So, I decided to pursue a bachelor's degree in atmospheric science with a minor in math at a small school in western PA called California University of Pennsylvania(Cal-U). I started my Weather Service career in Elko, NV as a student employee. While in Elko, I learned many things including how to take upper air observations.

After Elko I moved to MO to pursue my Masters degree in atmospheric science at the University of Missouri. My research was focused on meso-scale meteorology primarily dealing with convective snow fall associated with the occurrence of lightning.

Upon receiving my master's degree I was hired on as an intern at the Medford WFO in Medford, OR. This is where I honed my skills with marine and mountain meteorology

As of November 2007 I have been performing duties at the Monterey weather forecast office. It is quite exciting forecasting for this area since there are numerous local effects over a broad range of topography. My focus here in Monterey is marine meteor-

Duffy Johnson

I recently arrived here from the Reno Office, where I worked for about five years. Before that, I was at the NWS Western Region Headquarters in Salt Lake City, UT, for about six months and Salt Lake City Office for about 3 years. I was in the Air Force for nine and half years and then worked for them in various capacities for another 17 years or so. I have always worked in or around electronics and computers. When I started, computers filled rooms not your pocket. I started in 1973 as a Teletype Mechanic after nine months of school. Over the years I have worked on telephones, crypto, radios, radar computers and lots of other electronics.

My hobbies include golf, tennis, fishing, hiking and bike riding, none of which I have been able to devote much time to. The hobby I spend the most time at is making sawdust. That is another way of saying woodworking. The main thing I make is Electric Bass Guitars. I have made several but it is an expensive hobby and I can't do as much as I would like.

I am joined here by my wife of almost 35 yrs. Paula and our Rat Terrier Max. We are looking forward to enjoying our selves her for many years to come.

Duffy Johnson

Electronics Technician

Charles Bell

Over the past thirteen years, I have had the pleasure to work at a wide variety of National Weather Service offices. In 1995, my career began as a student hire at the Missoula Weather Office. While working at Missoula, I got to experience a wide variety of weather from thunderstorms to blizzards. After the Missoula Office, I returned back to the University of North Dakota to complete a Master's of Science and then went to Chicago to work as an Internet programmer. Three years later, I returned to the Weather Service and was stationed in Anchorage, Alaska.

For the next three years, I had to deal with virtually every type of weather from 60 degree temperature difference and winds that would range from calm to hurricane force over a small area. After another three, it was time for a little warmer weather so I headed to Las Vegas, NV. I got to experience more wild weather in Las Vegas. My first week there we were hit with numerous monsoonal thunderstorms and winds that appeared to defy the laws of physics. After two years of summer temperatures near 120, I decided it was time for a more temperate climate. At the end of 2007, I moved to the Monterey Office as a lead forecaster.

Outside of work, I am a fan of outdoor activities. Living here in Monterey will give me many opportunities for outdoor adventures. I have already been able to take three hikes in the area while geocaching. I also enjoy biking and hope to hit a few nearby trails.

Storm Prediction Center
Norman, Oklahoma

For the Latest Severe Weather: spc.noaa.gov

Charles Bell

Lead Forecaster

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Mailing Address

Goes Here

Check us out online at: http://www.weather.gov/sanfrancisco

Spotter Criteria

- **TORNADO (on the ground) or FUNNEL CLOUD (not touching the ground)**
- **THUNDERSTORM (lightning seen/thunder heard)**
- **HAIL of any size**
- **WIND estimated or measured at 35 mph or more**
- **RAINFALL one-quarter inch (.25) or more in one hour or two inches in 6 hours**
- **FLOODING of any kind**
- **VISIBILITY less than 1/4 mile, for any reason**
- **SNOWFALL of any amount**
- **Weather related DAMAGE and/or DEATHS and/or INJURIES**

San Francisco/ Monterey Bay Storm Spotters:

Anytime you observe any of the adjacent weather conditions, please call us with your report.

Please include your name and spotter number when calling.