

Web Questions and Answers
NOAA-USLA Rip Current Media Conference
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National Weather Service

How do rip current fatalities rank with respect to other weather-and ocean-related fatalities?

Over the past 10 years (1994-2003) the average, annual number of fatalities for a number of hazards is as follows:

Heat	237
Rip currents	100
Flood	84
Tornado	58
Lightning	53
Hurricane	18
Shark	0.6

Sources:

- Heat, Flood, Tornado, Lightning, Hurricane statistics from NWS
- Rip current statistic is from the USLA. See the related USLA Q and A.
- Shark statistic is from Florida State University.

What is the mission of the National Weather Service?

-The NWS is part of the National Oceanic and Atmospheric Administration (NOAA). The NWS provides weather, hydrologic, and climate forecasts and warnings for the US, its territories, adjacent waters, and ocean areas for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, and the global community.

What Marine and Coastal Forecast Services are provided by the NWS?

-The NWS issues marine warnings and forecasts for the protection of life and property, to promote economic benefits, and to enhance the quality of life for coastal residents and governmental, commercial, and maritime operations.

What is the Weather Service's history of providing rip current information?

-In the early 1990s forecasters in Florida NWS offices identified correlations in high frequency rip current rescues/fatalities with certain oceanic and atmospheric conditions. The Miami Weather Forecast Office (WFO) led the first NWS efforts at providing the public with rip current information on a daily basis.

What is the "Surf Zone"?

-The Surf Zone is the area between the high tide level on the beach to the seaward side of the breaking waves.

What is the NWS Surf Zone Forecast?

-The Surf Zone Forecast provides valuable and lifesaving information on the hazards of the surf zone to the greater beachfront community, to include the general public and the providers of beachfront safety services, such as lifeguards.

What information is typically provided in the Surf Zone Forecast?

-The SRF typically describes the following parameters and hazards: Sky condition, precipitation, visibility, air temperature, wind speed and direction, wave height, surf temperature, tide information, rip currents, lightning, severe thunderstorms, and the ultraviolet index.

When is the Surf Zone Forecast produced?

-The SRF is generally issued at least once a day from Memorial through Labor Day by WFOs whose forecast area of responsibility includes surf beaches. Depending on the WFO and the region, the SRF may be issued on a year-round basis, such as in southern Florida.

- Many NWS Forecast Offices issue a Surf Zone Forecast during the traditional summer season from Memorial through Labor Day. On the Atlantic Coast the forecast is produced from New Jersey and all points south. Many offices issue the forecast along the Gulf of Mexico. Our Los Angeles and San Diego offices issue the forecast for their surf beaches.

How can a person obtain this Surf Zone Forecast?

-The Surf Zone Forecast product is available through the NWS Family of Services (FOS), NOAA Weather Wire Service, the Emergency Manager's Weather Information Network (EMWIN). It is also available over NOAA WeatherRadio. The SRF product began in Summer 2003 at many coastal WFOs.

-We recommend you take a look at our NOAA Rip Current web page, at www.ripcurrents.noaa.gov

This page lists the coastal NWS Forecast Offices providing rip current forecasts. It provides links to the latest research in the area of rip currents. The page also provides a link to download the NOAA-USLA Rip Current Brochure.

My local Weather Forecast Office does not produce a Surf Zone Forecast. Why not?

Technical concerns, such as limited nearshore data, have resulted in local NWS decisions to not provide the Surf Zone Forecast. Future Sea Grant research and additional data sources will enable all coastal WFOs with surf beaches to issue the forecast in the future.

What data/inputs do forecasters integrate in developing this Rip Current Outlook?

-Specifically, persistent onshore wind (near normal wind waves), swells, and reports from lifeguards are three of the main "signals" that NWS forecasters identify when preparing a Rip Current Outlook.

--NOAA forecasters utilize the latest in wave modeling - the NOAA WaveWatch III model and other high resolution regional wave models aid forecasters in determining when wave conditions support rip current development. These models are also show when large swells approach from distant tropical cyclones.

--Forecasters rely on the network of realtime NOAA Weather Buoys positioned along our nation's coastal and offshore waters. The buoys are maintained by the National Data Buoy Center.

--Forecasters now have access to numerical guidance products for 120 buoy and CMAN sites, based on the Global Forecast System model, to better understand sea states.

--In addition, collaborative efforts between NWS offices and the local lifeguards complete the forecast process. Lifeguards and other beach partners play a critical role in the success of the program by providing real time feedback for inclusion in the rip current outlook. The reports from trained observers provide forecast verification, which will lead to improved forecasts in the future.

What are the data needs of the National Weather Service for improving Surf Zone Forecasts and Rip Current Outlooks in the future?

National Weather Service forecasters require additional nearshore and offshore buoys, with the addition of wave direction sensors to buoys. Additionally, long-range Weather Service planning includes the need for forecasters to have ready-access to high-resolution, nearshore wave models. These models will help improve Surf Zone Forecasts and Coastal Waters Forecasts.

What is the Rip Current Outlook?

-A **NWS Rip Current Standardization Team** of marine forecasters from across the nation recognized a need to nationally standardize rip current information provided by the NWS to our customers and partners. This information is provided in our Rip Current Outlook.

-The **Rip Current Outlook** portion of the SRF provides our customers and partners with standardized terminology for describing the rip current hazard. With our increasingly mobile society, it's important that the words used to describe the rip current hazard in North Carolina be the same as the words used to describe the rip current hazard at a surf beach in California.

Failure to use consistent terminology leads to confusion for our surf zone partners and customers.

What are the three tiers of the Rip Current Outlook?

Low, Moderate, and High

-A "Low Risk" means wind and/or wave conditions are not expected to support the development of rip currents. However, rip currents can sometimes occur, especially in the vicinity of groins, jetties, and piers. Know how to swim and heed the advice of the beach patrol/lifeguards.

-A "Moderate Risk" means wind and/or wave conditions support stronger or more frequent rip currents. Only experienced surf swimmers should enter the water.

-A "High Risk" means wind and/or wave conditions support dangerous rip currents. Rip Currents are life-threatening to anyone entering the surf.

Does the NWS issue Rip Current Advisories or Rip Current Warnings?

-The NWS **does not issue, and will not issue,** Rip Current Advisories or Warnings. That action within a given jurisdiction is the responsibility of the local beach patrol, local lifeguards, or local law enforcement officials.

Is there a connection between the Rip Current Outlook and the colored flags I see on the beaches?

-The Rip Current Outlook is a forecast of expected rip current conditions.

-The colored flags posted on surf beaches are the purview of the local beach patrol, lifeguards, or local law enforcement officials. These colored flags refer to one of any number of surf zone hazards. The colored flags reflect actual, current surf zone hazards.

What role does the media play with this rip current education program?

-The media is an important partner in the dissemination of our Rip Current Outlooks. We're hoping more coastal television and radio stations will report the Rip Current Outlook in their weather broadcasts each day. The media will play a valuable role in increasing the public's rip current awareness, just as they have in NWS safety campaigns for other weather hazards, such as lightning.

What are the rip current outreach efforts underway by local NWS Forecast Offices?

-The Warning Coordination Meteorologist (WCM) at each office is a primary link between the WFO and the community.

-Many WCMs will be dialoging with local lifeguards, Chambers of Commerce, local governments, and community groups to establish those partnerships critical to a successful rip current education program, which must include local scientists from Sea Grant universities, rip current outlooks from the NWS, and the protection and warnings provided by lifeguards to beachgoers.

Why have I seen days when there was a "moderate" rip current risk and the ocean looked almost flat?

-Long period swells sometimes result in minimal wave action where the ocean surface is hardly perturbed, yet there is a greater than normal transport of wave energy into the surf zone which may result in an elevated rip current risk.

Why don't you issue outlooks during the winter because strong rip currents certainly exist?

-Rip Current Outlooks are issued during the "swimming season" which is defined by the local National Weather Service Office. In the mid/northern latitudes the waters are simply too cold for any swimmers during the winter.

When I go out surfing in strong onshore wind events, you mention that there is a high rip current risk. Why can't I find these rip currents so they can help pull me through the choppy surf?

-Good question. Sometimes the amount of water crashing into the surf zone can overwhelm many of the seaward flowing currents in the near shore ocean circulation. Very strong rip currents can still occur in these conditions, but they might be more widely spaced along the coast and hence more difficult to locate.

If it is true that rip currents occur everyday to some degree on beaches, then shouldn't there be an elevated rip current risk at all times?

-Swimming in the ocean is not the same as swimming in a swimming pool. We are providing people with guidance to help them make educated decisions. We encourage all persons to consult with on-duty lifeguards about all surf zone hazards for the day.

Sea Grant

What is a rip current?

Rip currents are channelized currents of water flowing away from shore at surf beaches. They typically extend from near the shoreline, through the surf zone and past the line of breaking waves. (The surf zone is the area between the high tide level on the beach to the seaward side of breaking waves.)

Do rip currents pull people underwater?

No. A rip current is a horizontal flow of water moving in the offshore direction. Rip currents do not pull people under the water--they carry people away from the shore.

Is a rip current the same as an undertow?

-No! The rip current is typically the strongest about a foot off of the bottom, which can cause you to be knocked over. This could make it feel like something "under" the water was pulling you.

Why do some people use terms like runouts and rip tides when you are calling them rip currents?

-These terms were likely used for many years in local areas. The National Weather Service, Sea Grant, and the USLA are working together to use consistent terminology to provide a clear rip current safety message to the public.

What happens to people caught in a rip current?

People get in trouble when they are moved so far offshore that they are unable to get back to the beach. This may be due to any combination of fear, panic, exhaustion, or lack of swimming skills.

How do rip currents form?

Rip currents are formed when waves break near the shoreline, piling up water between the breaking waves and the beach. One of the ways that this water returns to sea is to form a rip current, a narrow jet of water moving swiftly offshore, roughly perpendicular to the shoreline.

Where should I look for rip currents?

Rip currents can be found on many surf beaches every day. Rip currents most typically form at low spots or breaks in sandbars, and also near structures such as groins, jetties and piers. Rip currents can occur at any beach with breaking waves, including the Great Lakes.

How big are rip currents?

Rip currents can be as narrow as 10 or 20 feet in width but some can be as much as ten times wider. The length of the rip current also varies. Rip currents begin to slow down as they move offshore, beyond the breaking waves, but sometimes extend for hundreds of feet beyond the surf zone.

How fast are rip currents?

Rip current speeds can vary. Sometimes they are too slow to be considered dangerous. However, under certain wave, tide and beach shape conditions the speeds can quickly become dangerous. Rip currents have been measured to exceed 5 mph, slower than you can run but faster than you or even an Olympic swimmer can swim. In some cases they have been measured as fast as 8 feet per second. This is faster than the speed at which an Olympic swimmer can swim a 50-meter sprint.

- Under most tide and sea conditions rip currents are relatively slow. However, under certain wave, tide, and beach profile conditions the speeds can quickly increase to become dangerous to anyone entering the surf. The strength and speed of a rip current will likely increase as wave height and wave period increase.

How can I identify a rip current?

Signs that a rip current is present are very subtle and difficult for the average beachgoer to identify. Look for differences in the water color, water motion, incoming wave shape or breaking point compared to adjacent conditions. Look for any of these clues:

- a channel of churning, choppy water
- an area having a notable difference in water color
- a line of foam, seaweed, or debris moving steadily seaward
- a break in the incoming wave pattern
- One, all or none the clues may be visible.

Are all rip currents dangerous?

Rip currents are present on many beaches every day of the year, but they are usually too slow to be dangerous to beachgoers. However, under certain wave, tide and beach shape conditions they can increase to dangerous speeds.

What is being done to study the science of rip currents?

Rip currents have long been an interest to scientists studying waves and beaches, but only in recent years have Sea Grant and National

Weather Service research searched for ways to identify the wave and sea conditions that create hazardous rip current velocities and to correlate the conditions with actual rescue data from local lifeguards. What we have learned to date is being used to identify those days when the potential for dangerous rip currents is higher, the Rip Current Outlook for your beach. Researchers around the country are actively searching for better prediction and warning methods.

What is Sea Grant and how is it unique?

Sea Grant is a nationwide network of 30 university-based programs supporting applied research, education and outreach programs to promote better understanding, conservation, and use of our coastal resources.

By coordinating university scientists with outreach specialists, decision makers, and stakeholders, Sea Grant synthesizes science-based information and gets it to those who need it. An example of this is the **rip-current technical workshop** that NOAA Sea Grant and the National Weather Service convened in Florida last month. The workshop was held to enhance communication and information sharing among National Weather Service forecasters, coastal engineering scientists, and Sea Grant outreach personnel. Each organization presented its latest rip-current research, forecasting methodologies, and hands-on data applications. The workshop also helped each organization identify data gaps, partnership opportunities and future research needs to enhance and improve rip-current prediction and forecasting.

How does Sea Grant outreach work?

The national network of Sea Grant Colleges and institutional programs is committed to the transfer of research results not only to government agencies, but also to coastal communities and the public. Over the past 25 years, many Sea Grant programs have worked hard to increase public awareness of rip currents through the use of beach and boardwalk signs, brochures, videos, seminars, and Web sites. These outreach efforts are designed to help local residents and visitors familiarize themselves with rip currents, avoid these dangerous coastal hazards, and understand how to swim out of a rip current.

What can you tell me about Sea Grant's research nationwide?

Over the past 20 years, Sea Grant has funded rip-current research at many of the nation's premier universities. Coastal engineers and scientists have been working to increase our understanding of rip currents through a variety of techniques including field experiments in the surf zone, laboratory experiments in wave tanks, and mathematical and computer modeling. This research has ranged from GPS drifter studies in California's surf zone, to nearshore circulation analyses in the Great Lakes; from wave basin and computer modeling of rip-current behavior in Delaware, to detailed video analyses and placement of instruments in the surf zone for rip current measurements

in North Carolina. This research has not been limited solely to investigating the movement of water near the shoreline. For example, Florida Sea Grant is funding research that examines how rip-current rescue data correlate to certain wave conditions and characteristics.

United States Lifesaving Association

What is the mission of the United States Lifesaving Association?

-USLA's mission is to prevent drowning and other injuries in the aquatic environment through public education and the promotion of high standards in aquatic rescue.

Why is USLA partnering with NOAA?

-We're partnering with NOAA because together we can greatly increase the reach of our drowning prevention message.

How serious of a problem do rip currents pose?

-Each year America's surf lifeguards rescue over 60,000 people from drowning.

-Of these, over 80% are rescues of people caught in rip currents.

-In the absence of timely rescue, we believe that over 80% of the drowning fatalities at surf beaches are also caused by rip currents.

-We estimate that well over 100 fatalities a year are caused by rip currents.

What are some services of USLA?

-The National Certification Program promulgates minimum recommended standards for lifeguard agencies and certifies those which demonstrate compliance.

-Public education efforts through USLA and affiliated agencies reach an audience of over 240,000 per year.

-USLA's website (www.usla.org) provides public education and exchange of information among lifesavers worldwide.

-USLA sponsored competitions on the national and international level promote high levels of fitness and skill among lifesavers (www.uslanationals.org).

-USLA gathers and disseminates statistics on lifeguard rescues, beach attendance, and related issues annually.

-USLA is actively involved in encouraging the development of lifeguard services in areas lacking them, especially where drownings have occurred.

-USLA publishes Open Water Lifesaving - The United States Lifesaving Association Manual for the training of open water rescuers.

What is USLA's history of providing rip current information?

-Rip currents were first identified by lifeguards and information on the phenomenon was first published in the 1930's.

-USLA's website provides rip current information and USLA has published posters and brochures on rip currents for many years.

-USLA affiliated agencies provide on-site public education, much of it based on USLA educational materials. There were over 2.9 million preventive actions provided by lifeguards and reported to USLA in 2003.

Why is the hazard presented by rip currents so poorly recognized?

-Rip current deaths occur one or two at a time and usually attract little attention.

-They may only be a footnote in media reporting.

-One estimate suggests that only about 50% of drowning deaths are reported by the media.

-Unlike the drama of a hurricane or tornado, rip currents exist every day at surf beaches throughout the U.S.

What can this collaboration on public awareness hope to accomplish?

-Rip current fatalities are mostly preventable if people are educated about the phenomenon. We hope to significantly reduce death and injury in the surf environment by making beach users and beach overseers aware of steps they can take to avoid accidental death and injury due to rip currents.

How can people avoid rip current problems?

-Learn to swim

-If you'll be in surf, learn to swim in surf. It's not the same as a pool or lake.

-Never swim alone.

-Swim near a lifeguard.

-Look for posted signs and warning flags, which may indicate higher than usual hazards.

-Check with lifeguards before swimming.

-Obey all instructions provided by lifeguards.

-Be cautious. Always assume rip currents are present even if you don't see them.

-If in doubt, don't go out!

How do lifeguards make a difference”?

-Lifeguards are trained to: recognize rip currents, inform the public about rip currents, and rescue people caught in rip currents.

-The chance of drowning at a beach protected by lifeguards affiliated with USLA is 1 in 18 million.

What can people do if caught in a rip current?

-Try to remain calm to conserve energy.

-Don't fight the current.

-Think of it like a treadmill you can't turn off. You want to step to the side of it.

-Swim across the current in a direction following the shoreline.

-When out of the current, swim and angle away from the current and towards shore.

-If you can't escape this way, try to float or calmly tread water. Rip current strength eventually subsides offshore. When it does, swim towards shore.

-If at any time you feel you will be unable to reach shore, draw attention to yourself: face the shore, wave your arms, and yell for help.

How can people assist others who are caught in a rip current?

-If you see someone in trouble, get help from a lifeguard.

-If no lifeguard is available, have someone call 9-1-1.

-Throw the rip current victim something that floats - a lifejacket, a cooler, a ball.

-Yell instructions on how to escape.

-Many have drowned trying to help others. Don't become a victim while trying to help someone else!

Where are the major trouble spots for rip currents in the US?

In California....

-The prevalence and severity of rip currents is apparently greatest in California, probably due to regular and strong surf conditions. However, with the notable exception of California State Parks, the hazard is fairly well managed by a network of lifeguard agencies that make a very large number of rescues each year (over 40,000 in 2003, of which over 80% are due to rip currents).

-Beaches without lifeguards: In California, for example, there were 31 drownings reported at unguarded surf beaches in 2003 and 4 at guarded surf beaches. Considering that attendance is typically far higher at guarded beaches (lifeguards are typically placed where the most people swim), the safety record is significant. For Florida in 2003, the number of drownings reported at unguarded versus guarded beaches was 17:1.

-California State Parks: California State Parks reported 71% of all drownings reported by California lifeguard agencies from Santa Cruz south in 2003. This was a total of 25, most of which were probably rip current related. Reason: Strong rips and lack of lifeguards.

In Florida....

-In Pensacola, where there has been a high incidence of rip current deaths over the past several years, the overseers of the beaches emphasize that no drownings have occurred where lifeguards are staffed.

-Florida, in general, has been a trouble-spot. There are extensive areas of the coastline with no lifeguards and beach users are often poor or nonswimmers unfamiliar with the hazard. Where lifeguard protection is provided, it typically ends at 5 p.m.

-The Florida Panhandle has been a serious trouble-spot over the past ten years or so as tourism has increased, but provision of lifeguard services has not increased in parallel. Some examples:

- Pensacola: Between April 2000 and the present, 21 people have died by drowning (in unguarded areas), per the Santa Rosa Island Authority's public safety manager.

- Panama City Beach to Pensacola: 23 people drowned in rip currents in the summer of 2003 per the Atlanta Constitution.

- Panama City Beach: 10 died by drowning in 1994 and the community continues to decline to provide lifeguard protection.

- Walton County: No lifeguards are provided, though several of the 2003 drowning deaths occurred place there.

Along the Great Lakes...

- Rip currents have been involved in a number of drowning deaths in recent years. From 2002 through 2003, 18 people died along the shores of Lake Michigan alone.

Where can people learn more about USLA and water safety?

The United States Lifesaving Association maintains a website at www.usla.org with tips on beach safety, including rip currents. Be sure to visit the site when you have questions.

How do rip currents result in the drowning of swimmers?

Drowning deaths occur when people pulled offshore are unable to keep themselves afloat and swim to shore. This may be due to any combination of fear, panic, exhaustion, or lack of swimming skills. Rip currents are a major hazard to all beachgoers. They can sweep even the strongest swimmer out to sea. Rip currents are particularly dangerous for weak and non-swimmers.

How did USLA arrive at the number of 100 when they state "The United States Lifesaving Association estimates the annual number of rip current deaths in the US exceeds 100."

- a. It is difficult to provide an exact number since:
 - the Centers for Disease Control does not maintain a national reporting system/national database for drownings along surf beaches
 - Most of the nation's coastline is outside the jurisdiction of surf lifeguard agencies.

- b. The USLA estimates that over 80 percent of surf beach drowning deaths (and surf beach rescues) are caused by rip currents. Applying this 80 percent estimate results in an estimated average of 64 rip current deaths within the jurisdictions of USLA surf lifeguard agencies. Since most of the nation's coastline is outside the jurisdiction of surf lifeguard agencies, it seems reasonable to postulate that the actual number of drownings caused by rip currents nationally is at least double the 64 number or higher. For the purposes of our education campaign we state the number of rip current deaths nationally exceeds 100 per year.