



NWS Nashville Presents

Weather 101

Rip Currents 101

VICTORIA OLIVA – NWS WILMINGTON, NC



What are rip currents

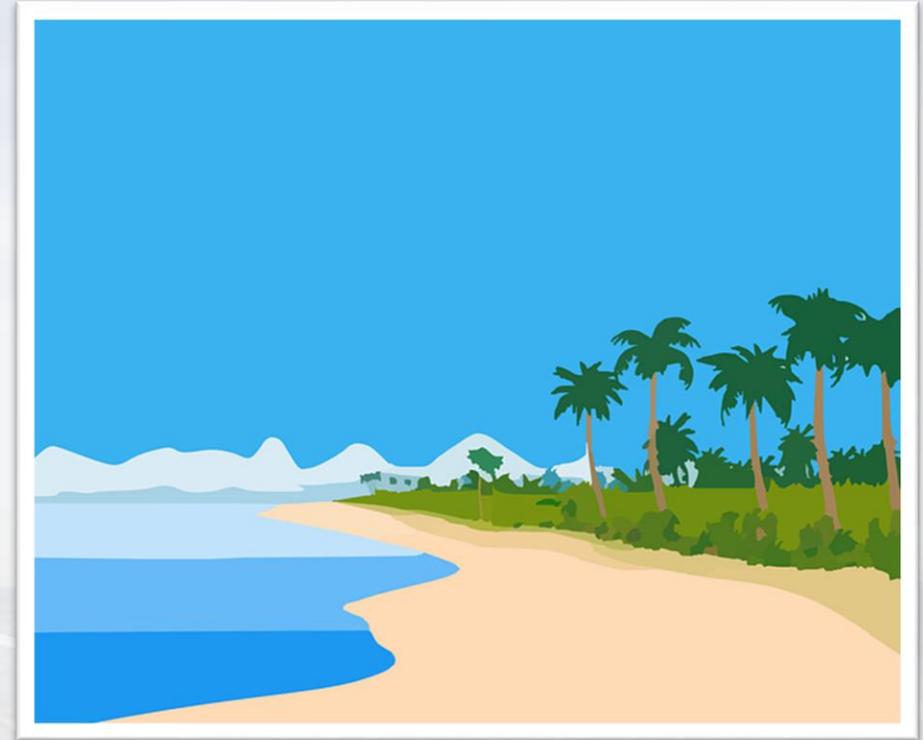
How do they form

How to escape a rip current

How to spot them

Tropical cyclones & rip currents

NWS Surf Forecast



RIP CURRENTS

3RD

**Deadliest
Weather Hazard
in the U.S.**

#1

**Weather-Related
Killer in the
Carolinas**

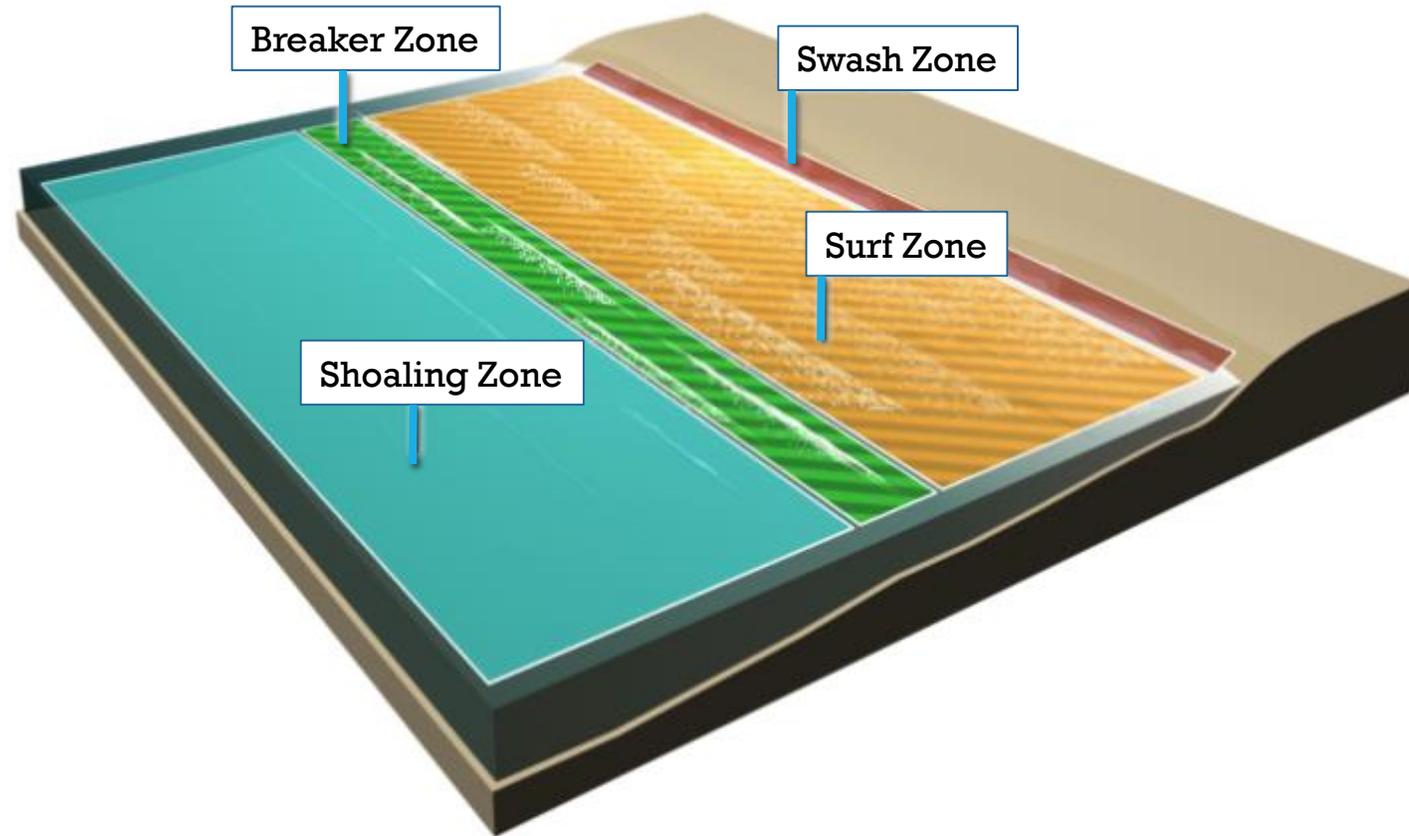
What Are Rip Currents



- ★ Rip currents are channelized currents of water that flow back into the ocean from the shoreline
- ★ Typically form at breaks in the sandbars, and near structures such as jetties & piers
- ★ Rips are commonly found along all surf beaches, including Great Lake beaches

Where Are Rip Currents Found

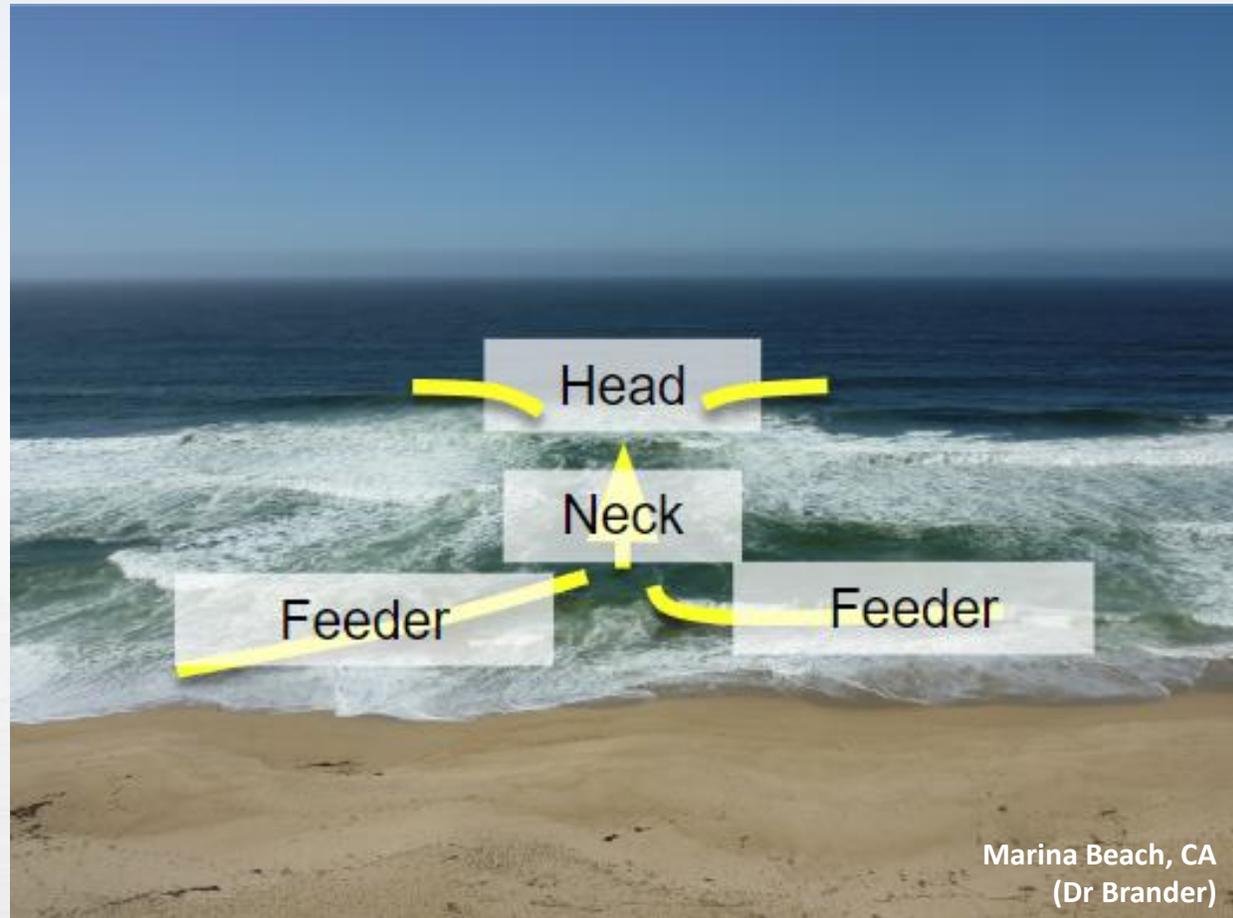
The Nearshore Environment



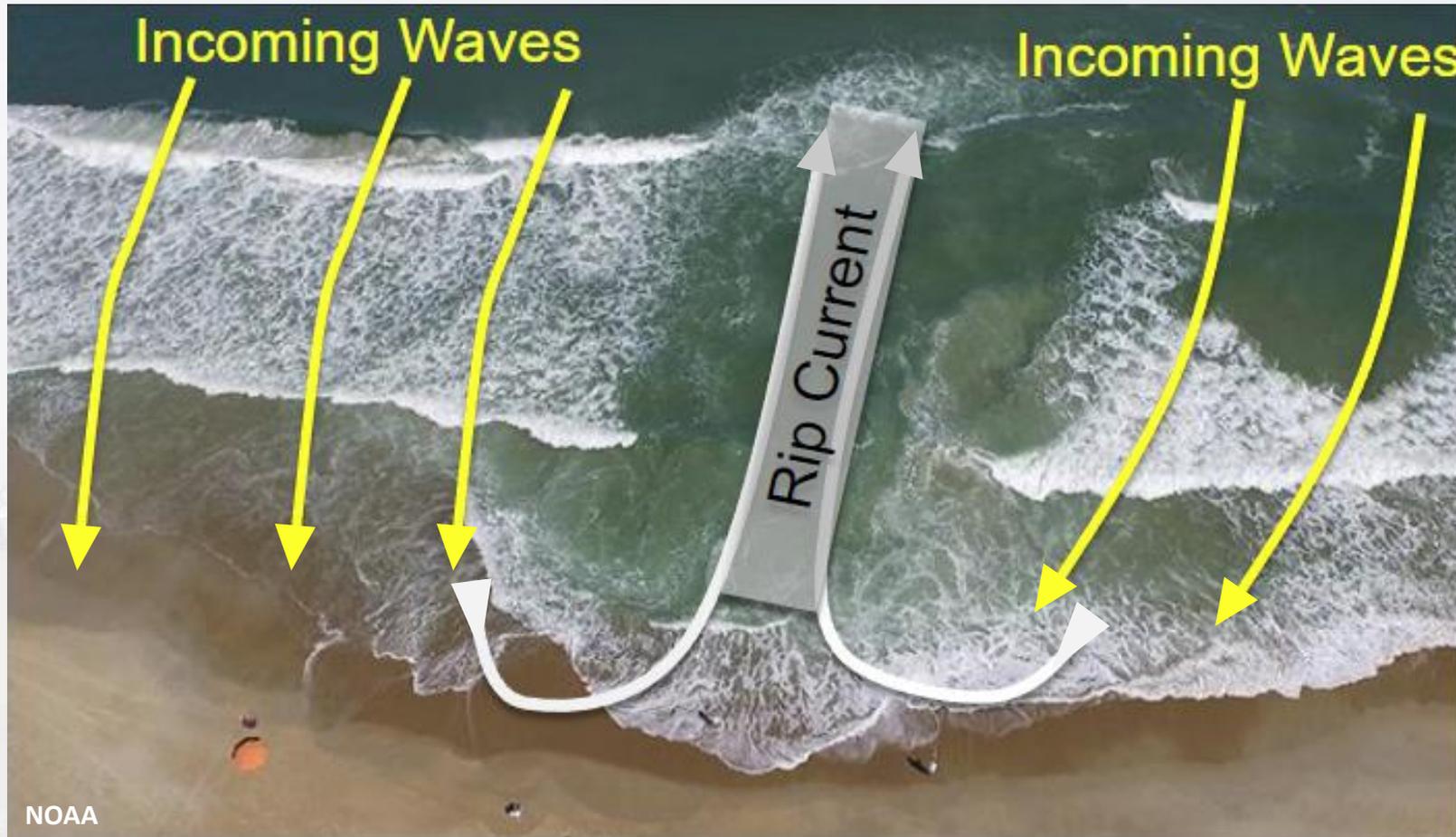
©The COMET Program

Rip Current Structure

- ★ Speeds are strongest in the neck, and they weaken beyond the breakers
- ★ Rip current speeds have been measured as fast as 8 ft per second – **faster than an Olympic swimmer!**
- ★ The length and width of rip currents can vary dramatically



How Do Rip Currents Form



How Do Rip Currents Form



- ★ Rip current formation is more favorable with:
 - ★ Incoming wave direction perpendicular to shore
 - ★ Larger wave heights
 - ★ Longer wave periods
- ★ Rip currents are most common within a few hours of low tide, but can still form during all hours of the day

Why Are Rip Currents Dangerous

Rip currents pull people away from shore

Often hard to identify in the surf

Not everyone knows about rip current dangers

Sometimes the worst rip events happen with the best weather

People don't know how to escape a rip current

How Do You Spot A Rip Current

Look for these clues when trying to spot a rip current:

- A narrow gap of darker, seemingly calmer, water between areas of breaking waves and whitewater
- A channel of churning, choppy water
- A difference in water color
- A line of foam, seaweed, or debris moving seaward
- Narrow section of turbulent whitewater heading away from the beach (flash rips)

How Do You Spot A Rip Current



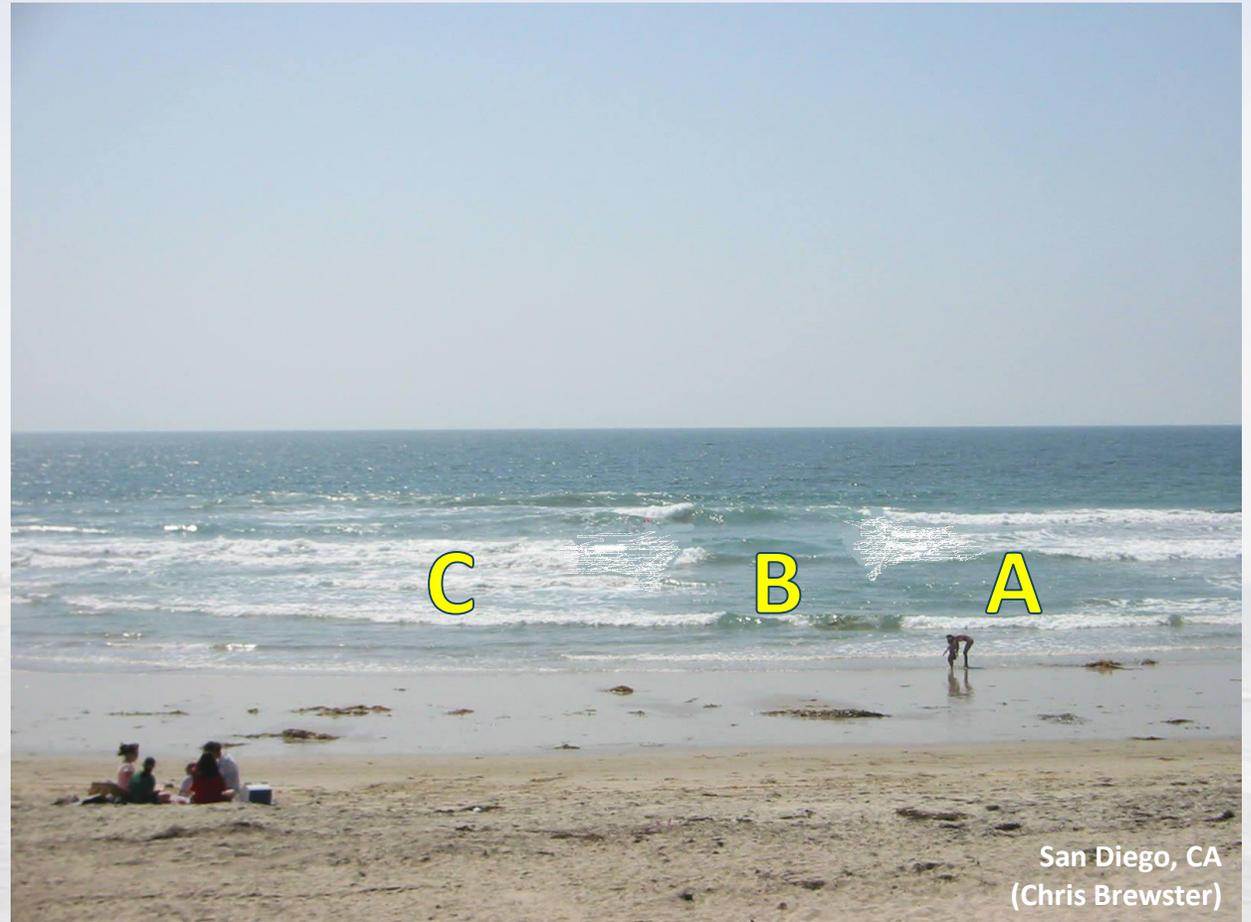
How Do You Spot A Rip Current



POLL QUESTION #1

Where is the rip current?

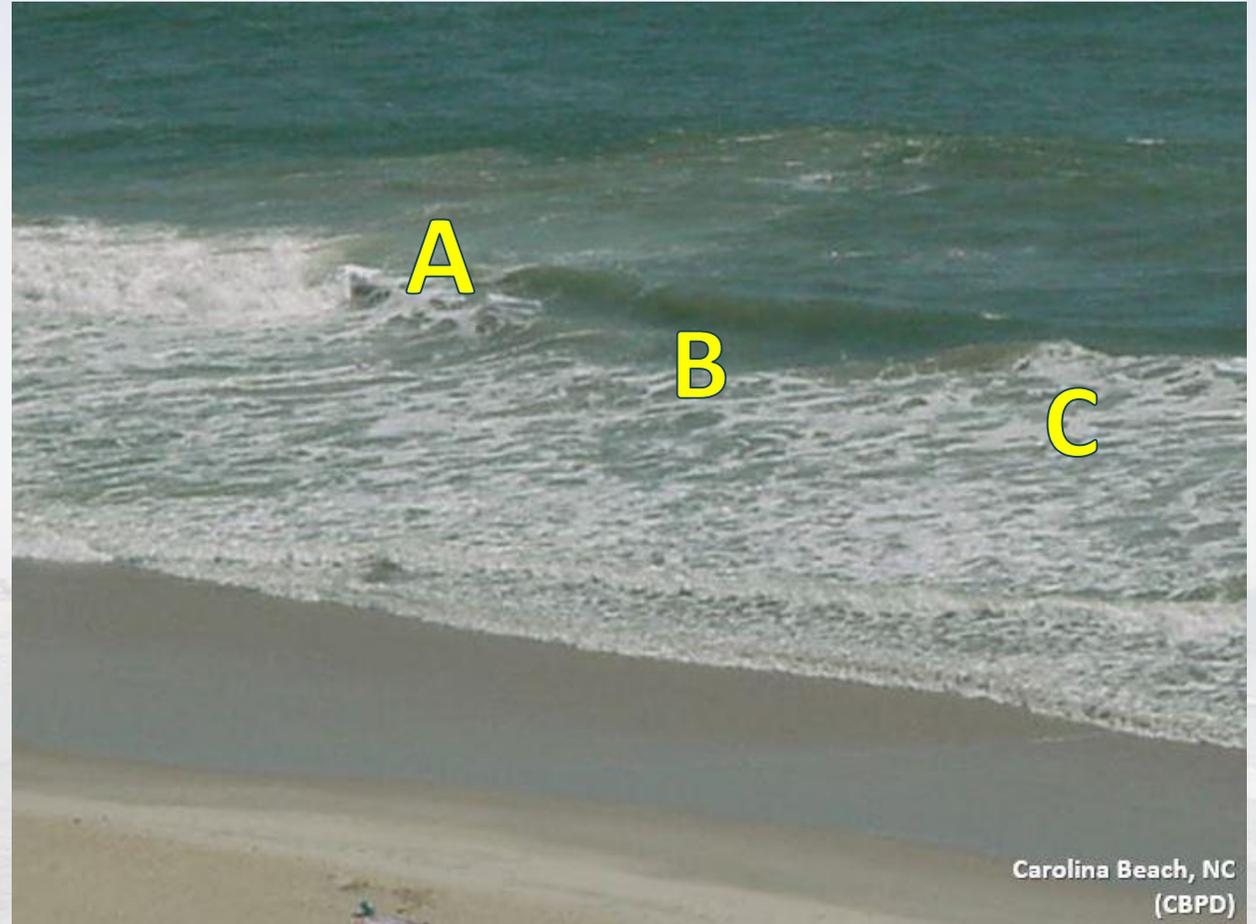
A, B, or C



POLL QUESTION #2

Where is the rip current?

A, B, or C



How Do You Know You Are In A Rip



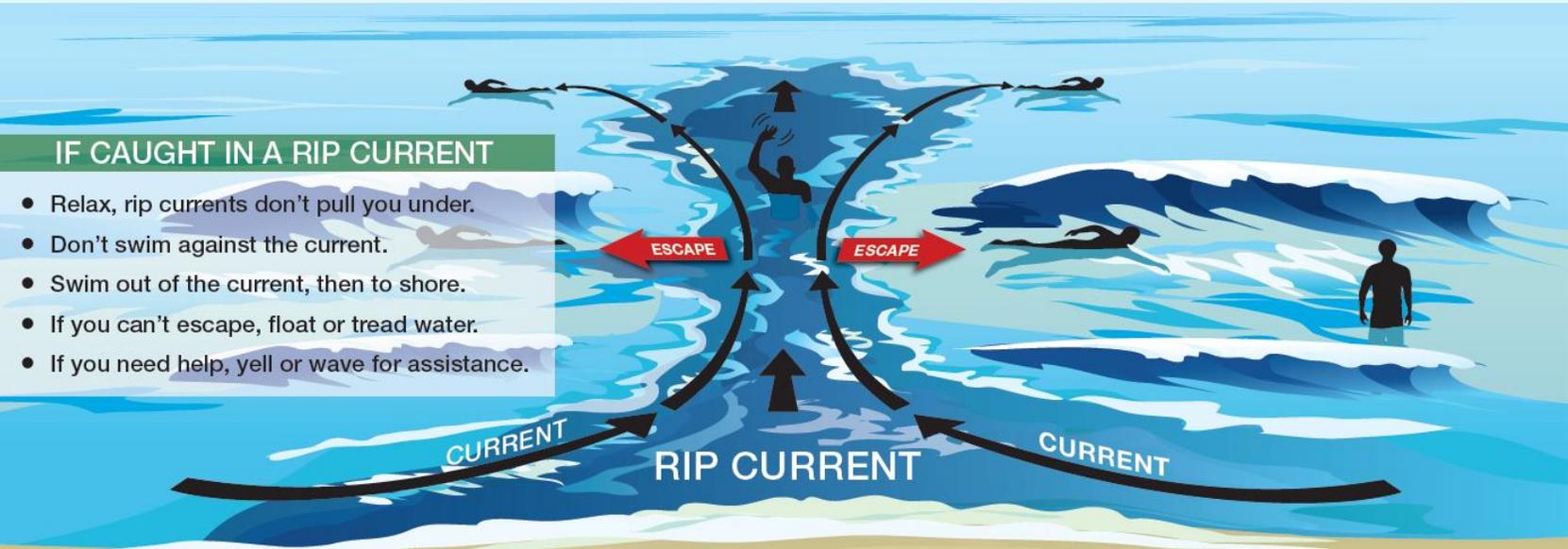
Wrightsville Beach, NC
(WBOR)

- ★ As you try to swim towards shore, you are not making any progress and are becoming tired.
- ★ With stronger rips, you may feel that you are being pulled away from the beach.

How To Escape A Rip Current

RIP CURRENTS

KNOW YOUR OPTIONS



The diagram illustrates a rip current flowing away from the shore. A central channel of water is labeled 'RIP CURRENT'. Two side channels are labeled 'CURRENT'. A swimmer is shown in the rip current, with two red arrows labeled 'ESCAPE' pointing outwards towards the side channels. A lifeguard is shown on the shore to the right, and another swimmer is shown further out in the water.

IF CAUGHT IN A RIP CURRENT

- Relax, rip currents don't pull you under.
- Don't swim against the current.
- Swim out of the current, then to shore.
- If you can't escape, float or tread water.
- If you need help, yell or wave for assistance.

Rip currents are powerful currents of water moving away from shore. They can sweep even the strongest swimmer away from shore. If at all possible, swim near a lifeguard.

Myths & Misconceptions



Rip currents **do not** pull people under the water – they pull people away from shore

RIP CURRENTS ARE NOT

~~**Rip Tides**~~

~~**Undertows**~~

Bystander: How Can You Help

Know Your Options if you see someone in trouble in the water:

- **Do not** put yourself at risk
- Get help from a lifeguard or call 911
- Try to direct the victim to swim following the shoreline
- If possible, throw the rip current victim something that floats
- **Never** enter the water to help someone without a flotation device



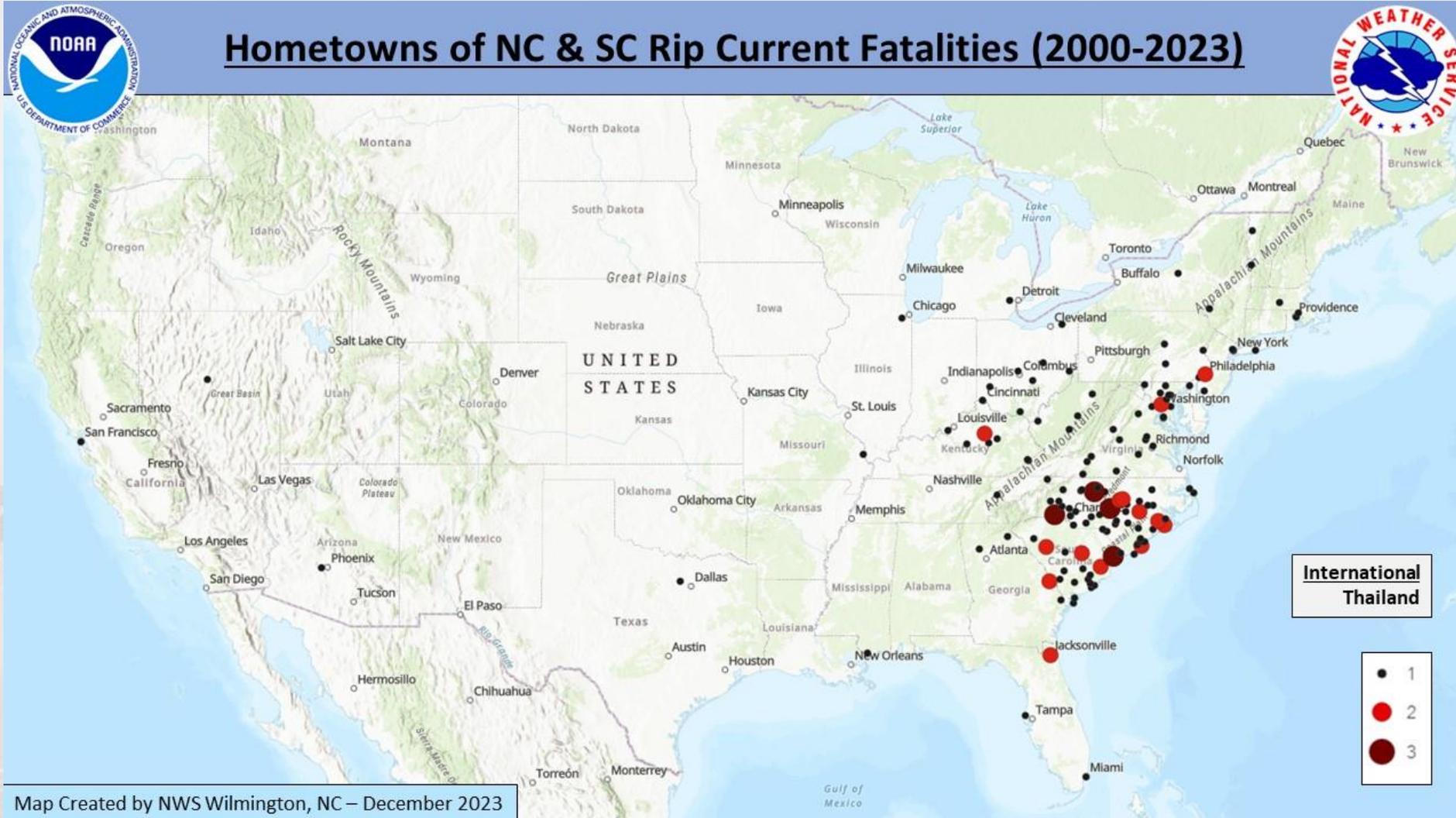
POLL QUESTION #3

Where do you live?

A. Near the beach or the Great Lakes

B. Inland (i.e., far from the beach)

Inland Impact



Tropical Cyclones & Rip Currents



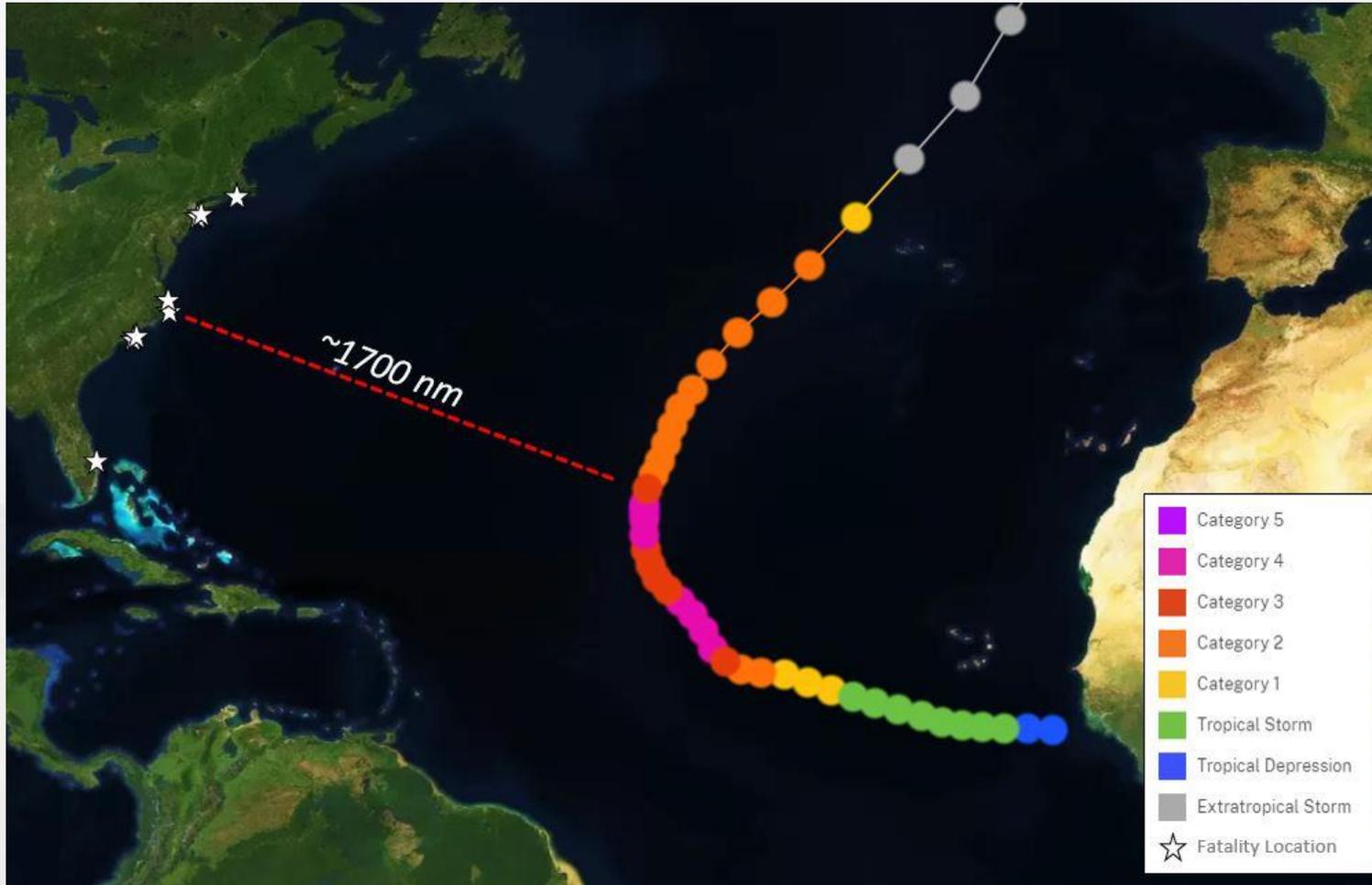
Hurricanes that are far away
can still create deadly rip
currents and waves



Never assume the ocean is
safe, even if the weather is nice



Hurricane Lorenzo (2019)



- ★ Powerful major hurricane for several days
- ★ Remained over 1,700 nautical miles from the U.S.
- ★ Generated a significant swell event that created a rip current outbreak along East Coast
- ★ **Eight drownings** occurred due to Lorenzo swells

NWS Surf Zone Forecast

- ★ Surf Zone Forecast (SRF) issued daily by all coastal NWS offices (including Great Lakes) during local beach seasons
- ★ Contains a full 2 day forecast for local beaches – rip current risk, surf height, weather, tides, etc.

```
Surf Zone Forecast
National Weather Service Wilmington NC
405 AM EDT Thu Jul 20 2023

NCZ106-202015-
Coastal Pender-
Including the beaches of Surf City and Topsail Beach
405 AM EDT Thu Jul 20 2023

.TODAY...
Rip Current Risk*.....Low.
Surf Height.....2 to 3 feet.
Thunderstorm Potential**....Moderate.
Waterspout Risk**.....Moderate.
UV Index**.....Extreme.
Water Temperature.....In the lower 80s.
Weather.....Mostly sunny. A chance of showers and
                    thunderstorms.
High Temperature.....In the upper 80s.
Max Heat Index.....Up to 103.
Winds.....Southwest winds 10 to 15 mph.
Tides...
    Topsail Inlet.....High at 09:55 AM EDT.
                    Low at 03:39 PM EDT.
Remarks.....Moderate south to north longshore current.
```

Rip Current Risk

<i>Risk Level</i>	<i>Description</i>
Low	The risk of rip currents is low. However, life threatening rip currents may still occur, especially near structures.
Moderate	Life threatening rip currents are possible. Use caution.
High	Life threatening rip currents are likely. The surf zone is dangerous for all levels of swimmers. Stay out of the water.
<i>All risk levels: Heed the advice of local beach patrol and flag warning systems.</i>	

Beach Forecast Webpage

Experimental Beach Forecast Webpage

[Weather.gov](#) > Beach

Beach

National Program

Click on an umbrella to get the beach forecast. Greyed umbrellas do not have a forecast at this time, and can be clicked for details.

View the [product description document](#) for more information. [Comments](#) are currently being accepted.



WWW.WEATHER.GOV/BEACH



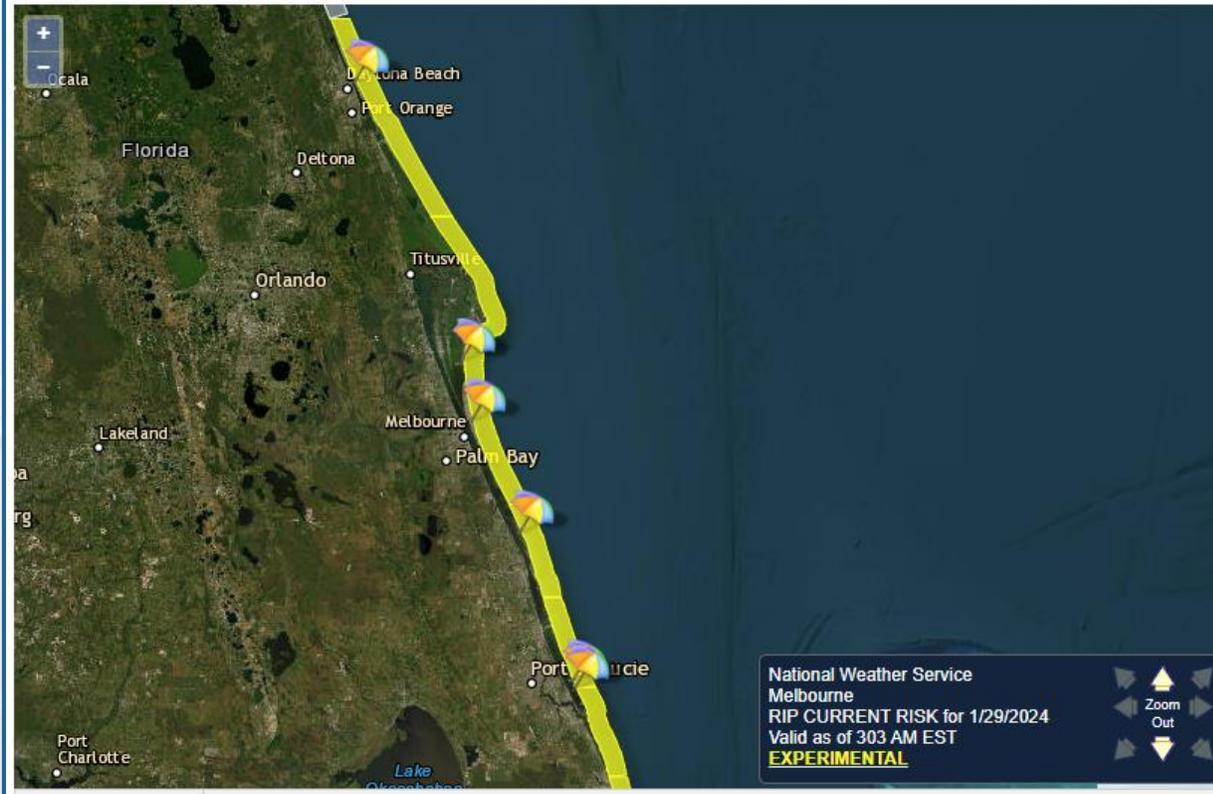
Beach Forecast Webpage

Experimental Beach Forecast Webpage

[Weather.gov](#) > [Beach](#) > Experimental Beach Forecast Webpage

The map below is color-coded to indicate the forecast rip current risk level. Click on the beach area of your choice for more information, or click a beach umbrella for the detailed, beach forecast.

View the [product description document](#) for more information on the rip current graphic. [Comments](#) are currently being accepted.



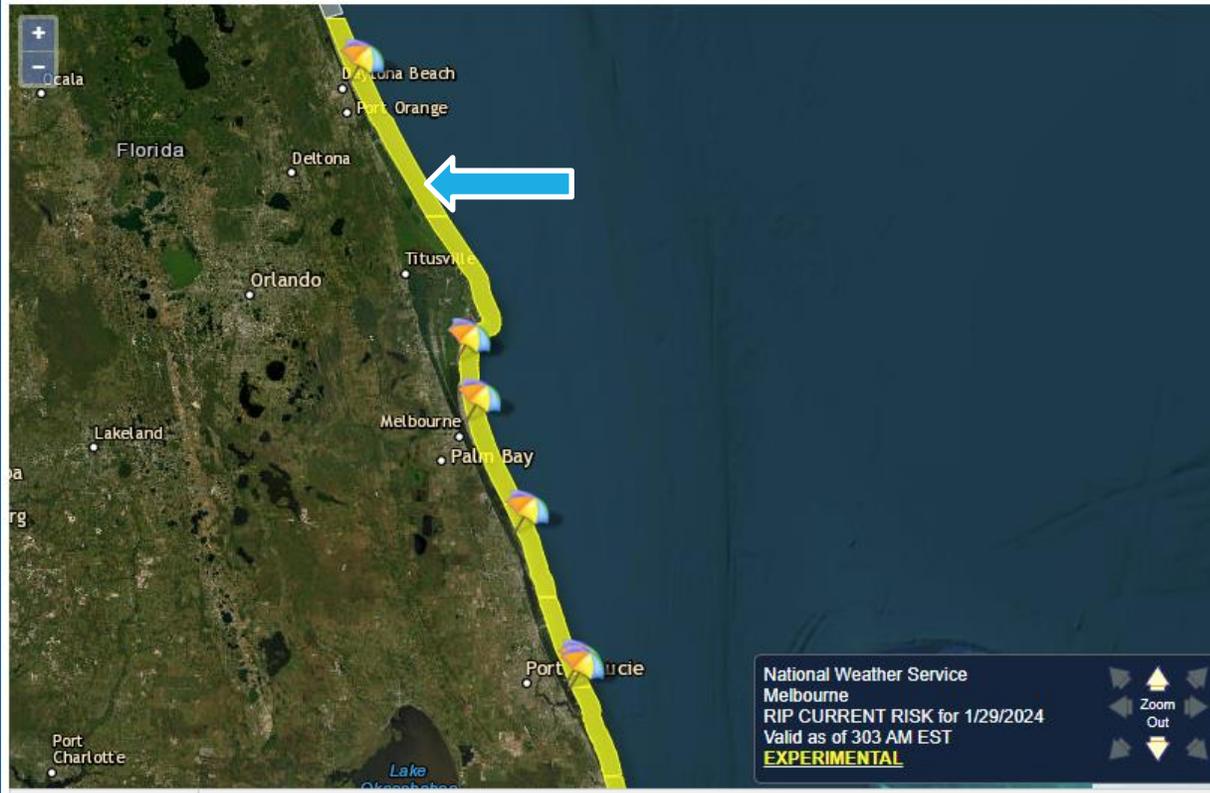
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National Weather Service Melbourne

National Weather Service
Melbourne

303 AM EST MON JAN 29 2024

Coastal Volusia Area Beaches

The rip current risk is **MODERATE**

Life-threatening rip currents are possible in the surf zone. Swim near a lifeguard. Remember to heed the advice of the local beach patrol and flag warning systems.

The UV Index is Moderate

The surf height is 2 to 4 feet.

The water temperature is in the mid 60s

Northwest winds 10 to 15 mph and gusty.

Partly cloudy until 7 AM, then sunny.

The high temperature is in the lower 60s.

Tides...

Daytona Beach.....High 3.6 feet (MLLW) 10:04 AM EST.
Low 0.1 feet (MLLW) 04:14 PM EST.

Port Canaveral.....High 3.2 feet (MLLW) 09:52 AM EST.
Low 0.1 feet (MLLW) 04:08 PM EST.

[Daytona Beach Forecast](#)

[KML](#)

[Surf Zone Forecast Text Product](#)

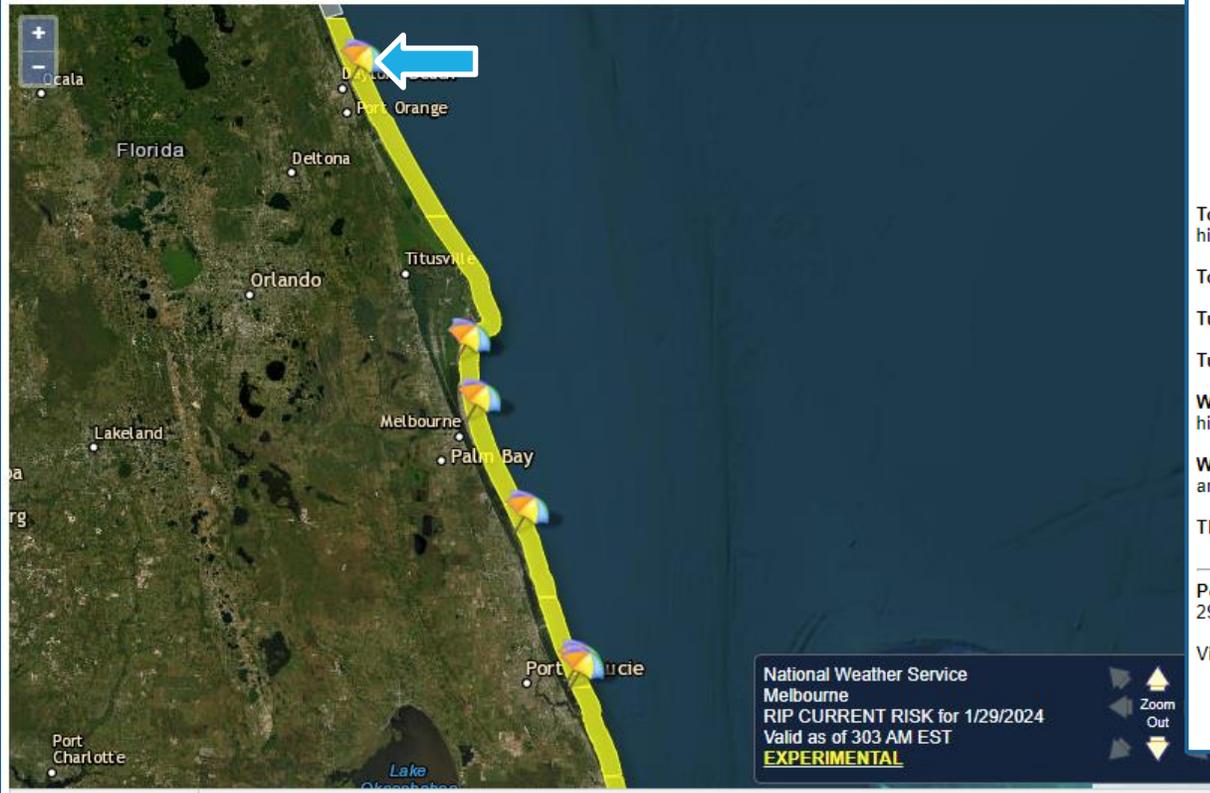
Beach Forecast Webpage

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National Weather Service Melbourne, FL
Last update on 29 Jan 08:53 am EST

Beach forecast for Daytona Beach

Today	Tonight	Tuesday	Tuesday Night	Wednesday	Wednesday Night	Thursday
Sunny	Clear	Sunny	Partly Cloudy	Sunny	Mostly Clear	Mostly Sunny
Hi 61 °F	Lo 46 °F	Hi 65 °F	Lo 44 °F	Hi 68 °F	Lo 49 °F	Hi 62 °F

Today: Sunny, with a high near 61. Northwest wind 10 to 15 mph, with gusts as high as 20 mph.

Tonight: Clear, with a low around 46. Northwest wind 5 to 10 mph.

Tuesday: Sunny, with a high near 65. Northwest wind around 5 mph.

Tuesday Night: Partly cloudy, with a low around 44. West wind 5 to 10 mph.

Wednesday: Sunny, with a high near 68. West wind 10 to 15 mph, with gusts as high as 20 mph.

Wednesday Night: Mostly clear, with a low around 49. North northwest wind around 15 mph, with gusts as high as 20 mph.

Thursday: Mostly sunny, with a high near 62. North wind 10 to 15 mph.

Point Forecast: 3 Miles SE Holly Hill FL
29.21 -81.01 (Elev. 3 ft)

Visit your local NWS office at <https://www.weather.gov/mlb>

Rip Risk / Moderate

Life threatening rip currents are possible. Always swim near a lifeguard and remember to heed the advice of the local beach patrol and flag warning systems.

UV Index / Moderate

Moderate risk of harm from unprotected sun exposure. Take precautions, such as covering up, if you will be outside. Stay in shade near midday when the sun is strongest.

Water Temperature

in the mid 60s



Other Beach Hazards



Heat & Sunburn



Lightning



High Surf



Longshore Current



Hazardous Swimming Areas

oceantoday.noaa.gov/every-full-moon/full-moon-wavesafe.html

POLL QUESTION #4

**True or False:
Lightning is attracted to
metal**

Other Beach Hazards



Heat & Sunburn



Lightning



High Surf



Longshore Current



Hazardous Swimming Areas

oceantoday.noaa.gov/every-full-moon/full-moon-wavesafe.html



Swim Near A Lifeguard

- The chances of drowning at a beach with lifeguards are 1 in 19 million.

Never Swim Alone

- Always swim with a buddy so that if one swimmer has a problem, the other can provide assistance and call for help.

Know How To Swim

- Swimming in a pool is not the same as swimming at a surf beach with crashing waves, winds, and dangerous currents.

Know Before You Go

- Check the local surf forecast before going to the beach.

If In Doubt, Don't Go Out!



QUESTIONS?

Victoria Oliva
victoria.oliva@noaa.gov



Rip Current Awareness & Safety

www.weather.gov/ilm/ripcurrents



United States Lifesaving Association

www.usla.org/page/ripcurrents

