MIAMIBEACH
RISING ABOVE

KING TIDES

King tides are the Highest and most extreme tides of the year. Gravitational forces and the alignment of the sun and moon cause the tides to change throughout the year.

WHAT ARE KING TIDES?

The king tide is the highest predicted high tide of the year. During this period water levels are higher than that on an average day. In Miami Beach, the king tides usually occur during the months of September, October, and November. King tides provide a preview of the normal tidal variations we will see in the years to come as sea levels continue to rise.

HOW ARE KING TIDES PREDICTED?

In the United States, tides are predicted by the National Oceanic and Atmospheric Administration (NOAA). The NOAA Tides and Currents station map can be used to locate stations that provide water levels, meteorological observations and current observations. The Virginia Key station is the closest NOAA Monitoring Site. The city has also deployed two tide gauges to monitor tides.

WHAT CAN INFLUENCE THE TIDES?

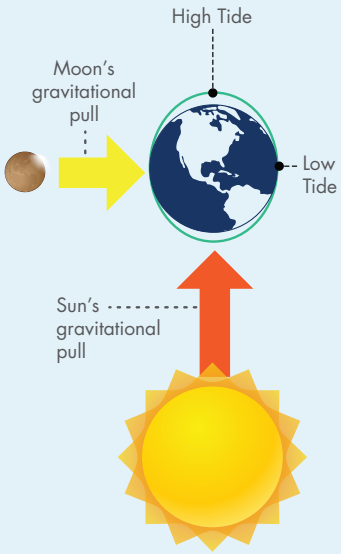
The relative distances and positions of the sun, moon and Earth all affect the size and magnitude of the Earth's two tidal bulges. On a smaller scale, the magnitude of tides can be influenced by the shape of the shoreline and the gulfstream current. According to the NOAA OCean Service Education local wind and weather patterns can also affect tides. King tides can reach over 12 inches above the average high tide for the year.

THE MOON

When the moon is closest to the Earth, also known as the perigee, its gravitational pull is the greatest. The moon has more influence on the tides than the sun does.

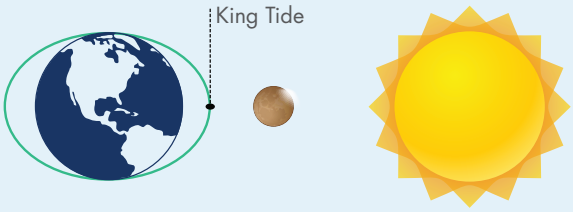
THE SUN

The sun also plays a key role to create king tides. When it's closest to the Earth, it exerts its peak gravitational pull on the Earth. This is known as the perihelion.



KING TIDES

When the Sun, Moon and Earth align at the perigee and perihelion, solar gravity combines with lunar gravity. This creates king tides.



King Tides generally occur during the months of October, November and December.

Perigee: The point when an object in orbit is closest to the earth.
Perihelion: The point when an object in orbit is closest to the sun.

WHAT IS THE OVERALL PLAN?

Miami Beach is installing new pump stations throughout the City that will drain about 7.5 inches of water in 24 hours and have a capacity of up to 30,000 gallons per minute. In addition, dune restorations and public seawall improvements are ongoing to make the City more resilient to sea level rise and climate change.

WHAT CAN YOU DO?

- Do not drive through flooded areas. Turn around and find another way. It can be a threat to your life as well as cause short and long term damage to your vehicle.
- Do not put yourself and others at risk of injury by walking or driving through flood water – six inches of fast flowing water can knock you off your feet and less than a meter of water can float a car.
- If you drive through tidal floods, wash the undercarriage of your car to remove the salt water. You can go through a car wash equipped with an undercarriage sprayer.
- Avoid coming into direct contact with flood water as it may be contaminated with sewage and other pollutants.
- Internal and external flooding can result in hazards below the surface you cannot see that could cause injury (e.g. nails, broken glass, debris and displaced manhole covers).
- Do not allow children to play in or near flood water and encourage them to wash their hands regularly.
- If you are a boater, check the tides before leaving the dock. These high tides cause lower clearances under fixed bridges.
- Landscaping inundated with water should be rinsed off. If your landscape encounters salt water flooding, make sure the area is rinsed off and/or rained on thoroughly before adding fertilizer or pesticides.

WHICH AREAS ARE PRONE TO FLOODING?

This map illustrates flood-prone coastal areas using predicted water levels exceeding specific tidal heights as issued by local National Weather Service Weather Forecast Offices.

To the right is what a visualization of a 3 foot sea level rise may look like for South Florida. Blue represents water depth and green denotes area of low elevation.

Source: http://noaa.maps.arcgis.com/apps/MapJournal/index html?appid=dddff4fa30bb4a91bfd1d9e758a56929#map