

09
AJAHN
SURF

COASTAL CURRENTS IN PHUKET

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This article explores 4 types of ocean currents found at 5 beaches in southern Phuket. The purpose of the article is to clarify and map problematic areas where tourists and residents alike get into trouble in the water. When ocean currents become especially strong, they are normally identified as Rip Currents. There are mainly 4 types of ocean currents found at Phuket beaches, namely fixed currents, headland currents, flash currents, and longshore currents. When these currents combine, the affects are additive and very strong rip currents may occur.

This article does not discuss swell types and other phenomena related to ocean currents or safety in Phuket (see the Ajarn Surf article in TSM issue # 3 for insights on the implications of swell types, such as windswell and groundswell, on coastal currents). Please see the **PHUKET OCEAN SAFETY GUIDE** in this issue of TSM for surf beach safety tips and what to do if you get caught in a rip current.

WHAT IS A RIP CURRENT

A rip current is a strong nearshore ocean current.

A rip current is a nearshore ocean current which can carry a person out to sea.

A rip current is any strong nearshore ocean current caused by THE SURF!

4 TYPES OF RIP CURRENTS AT PHUKET BEACHES

FIXED CURRENTS

Most beaches in Phuket have specific areas where ocean currents are strongest. Fixed currents generally occur around the same area and direction from day to day.

For example: all beaches!

HEADLAND CURRENTS

Many headland areas at Phuket beaches have rip currents. These currents can permanently occur at one particular end of a beach, where the sand meets the rocks and jungle. They are especially strong when there is SURF.

For example: the southern end of Kata Beach; the northern end of Kata Noi Beach; the southern end of Nai Harn Beach.

FLASH CURRENTS

Strong nearshore currents can suddenly and unexpectedly appear in Phuket, especially after a series of waves. Flash rips in Phuket can be caused by a mixture of wave types and conditions which combine with additive affects.

For example: All beaches! Especially during high tides at Karon Beach, the southern end of Kata Beach, and the southern end of Nai Harn Beach.

LONGSHORE CURRENTS

Long-straight beaches have year-round currents which move parallel to the shore. These currents may increase in speed and power as wave activity increases. Normally, longshore currents are found inside of the surf zone.

For example: Karon Beach.

*In the following diagrams, arrows mark the various ocean currents. Larger-sized arrows indicate the predominate currents. **Red arrows** mark areas that are infamous for **flash rips**.*

FIXED RIP CURRENTS AT SURIN BEACH AND KARON BEACH

(Red arrows mark areas which are notorious for flash rips)



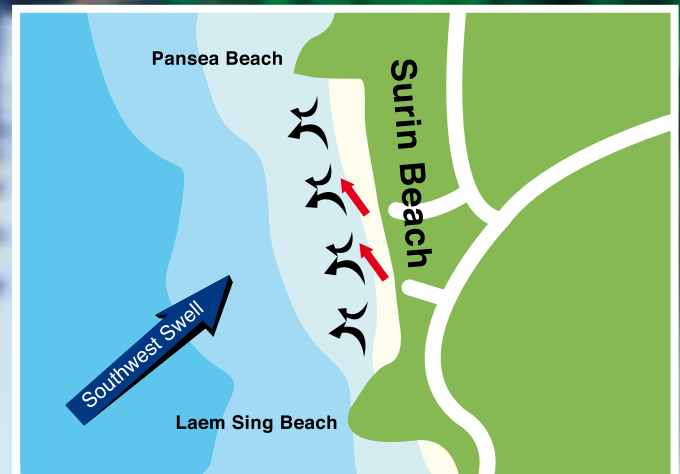
KARON BEACH

This long-sweeping beach is especially open to wave and wind activity from the south, the west, and the north. Unique to Karon Beach, and at the onset of the monsoon season, the sand bars shift into 'sand channels' which form perpendicular to the beach. Sand channels are areas of shallow water which act as obstacles, directing the water carried in by the surf to return to sea between them, resulting in rip currents. Karon beach rip currents can be of considerable intensity depending on the wave height, frequency and tides. Fixed rip currents at Karon can be found just north of the lifeguard tower at the Karon circle and park area. Furthermore, as Karon is some 3 kilometers long, it is akin to strong longshore currents. Longshore currents may build up strength as the water moves parallel to the beach in the direction of the waves (i.e. southwest swell direction may produce northerly longshore currents).

Karon Beach lifeguard Dhartree Promnoon identifies that during the southwest monsoon, there are as many as 18 distinct rip currents (fixed rips) and a pervasive inshore ocean current which flows from south to north along the beach (2010 personal communication). Thompson (2010 personal communication) notes that inshore currents at Karon Beach may suddenly shift or change direction, posing precarious dangers for tourists who are unfamiliar with surf beaches.

Raab (2010 personal communication), who grew up surfing the big waves of Hawaii's 'North Shore', attests to the strong currents associate with the sand channels at Karon Beach: "I got caught in a rip once while swimming at Karon. I used to go back frequently to Hawaii, so the head-height waves at Karon looked small to me, yet I still got in a little trouble and had to swallow my pride and swim across the rip for a long time and try to body surf in with the waves. Imagine if you weren't used to the ocean and the waves."

Sand channels and associated currents may be difficult to recognize for individuals without significant ocean experience and local knowledge of the area. In Hawaii, county lifeguards place red flags to mark these channels and keep the swimmers out of the area (Davis, 2008 personal communication). Lifeguards at Karon are doing this now as well (Dhartree Promnoon, 2010 personal communication).



SURIN BEACH

A characteristic of the ocean currents at Surin Beach is that they may change dramatically depending on tides and swell directions, making it difficult to identify hazards associated with surf activity. Wave activity tends to focus on the central and northern areas of the beach. According to Remmers (2009 personal communication), during periods of average to high surf, there are normally four distinct fixed currents directly off of Surin Beach. During especially high surf, the four currents illustrated combine into two large rip currents (ibid.).

Anthropogenic changes at Surin Beach

Thai elders who live in the Surin Beach area recount that the coral reefs which once spanned from the shoreline to the surrounding waters have all but vanished due to the tin mining industry (Aiyarak, 2008 personal communication). It is plausible that coastal currents were considerably altered due to the loss of these reefs. Given the deeper seafloor bathymetry of Surin (in comparison with nearby beaches) it may be more susceptible to the aforementioned effects of groundswell which can produce flash rips.



Please see our **PHUKET OCEAN SAFETY GUIDE** in this issue for surf beach safety tips as well as what to do if you get caught in a rip!

FIXED AND HEADLAND RIP CURRENTS AT KATA YAI BEACH, KATA NOI BEACH, AND NAI HARN BEACH

(Red arrows mark areas which are notorious for flash rips)



KATA YAI BEACH

Kata Yai Beach is indisputably Thailand's number one surf beach. Although the berm of the beach is less steep than Surin and Karon, it is reasonably similar in nearshore bathymetry. During the monsoon season, sand banks develop offshore (mainly at the southern half the beach) and the bay becomes shallower. Wave activity tends to focus around the southerly end of the beach and correspondingly, the ocean currents around the south end of the beach are normally the strongest.

Currents at Kata Yai Beach are more predictable than those occurring at Surin and Karon. During wave activity, a headland current develops along the rocky shoreline at the southern end of the beach which pulls directly out to sea. This current is often utilized by surfers as a method of getting out to the open ocean quickly, but for a novice or average beachgoer, this current may move faster than that of a strong swimmer. Approximately 200 meters to the north of the southern headland, flash rip currents are common, particularly during high tides. This is especially problematic given the volume of swimmers in correlation with the rapid onset of these fast-moving flash currents.

KATA NOI BEACH

Kata Noi Beach is unique in Phuket in that it receives even the smallest wave activity, including southwest groundswells during the shoulder and high seasons. This is to say that at a time when other beaches in Phuket may have little or no wave activity or rip currents, Kata Noi Beach may indeed have surf and associated currents. Rip tides at Kata Noi Beach are defined by a perpetual strong current at the north end of the beach which follows the rocky shoreline directly out to sea (a headland current). This area should be avoided by swimmers.

During periods of the slightest wave activity, the current can without doubt move faster than even an experienced swimmer. Local Thai surfer Tongooni (2008 personal communication), who has surfed the area for the previous decade indicates that tourists repeatedly have difficulties in this area.

NAI HARN BEACH

Nai Harn Beach is somewhat similar to Surin and Karon beaches in as much as the nearshore sand bars give way to deep water. However, the large bay fronting the beach is much deeper than most other Phuket surf beaches. Therefore, a characteristic of wave activity at Nai Harn Beach is 'punchy' waves (called plunging breakers) associated with strong nearshore currents. The predominate rip currents occur at the southeastern end of the beach near the rocky headlands (headland currents) where the best surfing waves are propagated. Rip currents occur along the rocky headland may take swimmers directly off shore and into the surfing area.

A second rip current results from the backwash which drains off the sand banks associated with the estuary at the southeastern end of the beach and pulls parallel to the beach and then bends toward the open sea. This area is notorious for tourist drowning and is the most common area where surfers rescue-assist swimmers in distress. Furthermore, a large rip current (fixed rip current) normally forms near the center of the beach and extends well offshore into particularly deep water.

ANTIQUATED TERMS

Rip tides: Rip currents are not tides! This term is no longer used in ocean safety vocabulary.

Undertow: There is no such thing as 'undertow'! This term is no longer used in ocean safety vocabulary.

References

- Martin, S. A. (2010). *The Surfer-Lifesavers of Phuket. Thailand Surfrider.* (3) 40-42. Thalang, Phuket: Purple Diamond Ltd.
- Aiyarak, C. (2008, January 29 & September 30; 2009, March 18; 2010, June, 26). Phuket Boardriders Club. (Personal communication).
- Chayangkanon, S. (2010, January 8). Royal Phuket Marina, Phuket, Thailand. (Personal communication).
- Davis, L. (2008, September). Sugar Palms Hotel, Kata Beach. (Personal communication).
- Jubrik, T. (2009, June 12). Kalim Beach, Phuket, Thailand. (Personal communication).
- Pawinnaporn, J. (2009, March 12). Kata Noi Beach, Thailand. (Personal communication).
- Promnoon, D. (2010, July 24). Karon Beach, Thailand. (Personal communication).
- Raab, M. (2010, February 20). Telephone communication, Phuket, Thailand. (Personal communication).
- Remmers, L. (2008, September 15; 2009, March 19). Bang Tao Beach; Kamala Beach, Phuket, Thailand. (Personal communication).
- Tachiban, H. (2010, February 25). Kata Beach, Thailand. (Personal communication).
- Thompson, L. (2009, August 16; 2010, August 21). Kathu, Phuket, Thailand. (Personal communication).