



Co-development of operational rip hazard forecasts for the Cape Peninsula of South Africa

Millions of people worldwide reside in coastal regions, where they are exposed to various hazards. The Weather and Climate Science for Service Partnership South Africa (WCSSP-SA) program has played a crucial role in deepening the understanding of coastal risks in South Africa. This collaborative effort has not only spurred growth but also led to the development of life-saving services. Among the hazards prevalent along the South African coast are rip currents—powerful seaward-flowing currents near the shore. Globally rip currents cause hundreds of drownings each year and constitute 50-80% of all beach rescues made by lifeguards. In the beach-going seasons of 2017/18 and 2018/19, the City of Cape Town, South Africa recorded 30 fatal drownings, with a notable portion linked to rip currents. To mitigate these risks, the University of Plymouth in the UK, and the South African Weather Service and other local partners, developed a pilot operational rip hazard forecast using rip incident data, in-situ measurements, and met-ocean model data from the Cape Peninsula of South Africa. The system harnesses operational wave, tide, and surge forecasts to deliver risk warnings, thereby enhancing coastal safety through crucial insights into marine conditions. This collaborative endeavor translates scientific research into practical services and is hoped to empower coastal communities and equip lifesaving organizations to make informed decision-making during prevention and rescue operations. The success story of this collaboration underscores effective partnerships, highlights challenges encountered, explores solutions for implementing impactful research, and aims to foster a shared vision for expanding and establishing an operational system. Building on the achievements of the initial service, there is a vision for expanding it into an operational service that covers a wider range of South African beaches, thereby further enhancing coastal safety and resilience.

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