

SPC's Oceanic Fisheries Programme studies the effects of El Niño-Southern Oscillation on South Pacific albacore catches

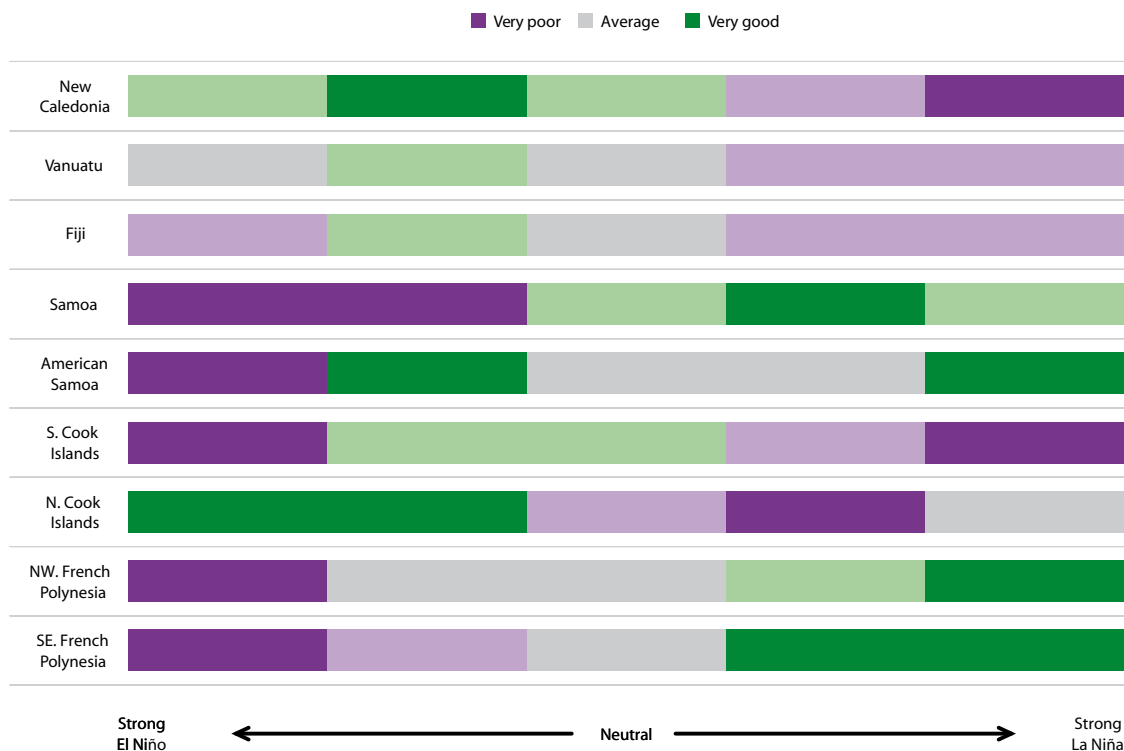
SPC's Oceanic Fisheries Programme (OFP) is currently completing analyses on environmental impacts on South Pacific albacore catches. The work is being led by Graham Pilling, Karine Briand, Shelton Harley and Simon Nicol from OFP, in collaboration with a team of physical oceanographers from the French Institute of Research for Development (IRD). One of the focus areas for this work is to better understand the impact of the El Niño-Southern Oscillation (ENSO) phenomenon on albacore fisheries in the South Pacific Ocean.

This analysis is being undertaken in several parts. The first step has been to standardize historical catch data to minimize the impact that different vessels have on albacore catch rates. These standardized data were then used to construct an index of abundance, which has, in turn, been modelled against ENSO to determine its influence on catch rates and recruitment.

An example of the analyses is provided in the figure below. Using the Southern Oscillation Index (SOI) as a measure of ENSO, the influence of SOI state on catch rates by exclusive economic zone (EEZ) area is shown. In western EEZs, an El Niño state has a positive influence on albacore catch rates (shown in green). In contrast, in eastern EEZs, a La Niña state has a positive influence on catch rates. For more centrally located regions, the impact is less consistent. This pattern of higher catch rates in the western and eastern regions of the South Pacific

Ocean, in association with different phases of ENSO, is partially explained by the oceanographic conditions that each ENSO phase generates in each area. During an El Niño state, the depth of the 20°C thermocline deepens in the east and shallows in the west. During La Niña conditions the reverse patterns is observed: the thermocline is deeper in the west and a shallower in the east. It is likely that the decreased depth of the thermocline constricts the preferred habitat for albacore and consequently improves the catchability of longline equipment, whereas when the thermocline deepens, the reverse occurs with the volume of preferred habitat for albacore increasing and catchability subsequently decreasing.

Outputs from these analyses are expected to be completed in 2012 and will be provided to SPC member countries as part of the new Specific National Reports produced by OFP.



South Pacific albacore catches in relation to the El Niño Southern Oscillation (ENSO) phenomenon