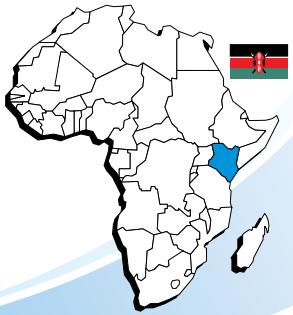
7.13 Namibia



Anja Kreiner [1]*, *Deon Louw*,

1 Ministry of Fisheries and Marine Resources
P.O. Box 912, Swakopmund, Namibia
E-mail: akreiner@mfmr.gov.na,
dclouw@mfmr.gov.na
* corresponding author

Capital city	Windhoek
Population (2005 est.)	2,000,000 (1.2% growth)
GDP per capita (USD 2007 est.)	$5 200 (CIA, 2008)
Life expectancy at birth (2005 est.)	51.6 years (male - 50.9, female - 52.2)
Total Area	825,418 km^2
Length of coastline	1 572 km
Highest point of elevation	Königstein 2,606 m
Coral reef area (2001 est.)	None
Mangrove area (2005 est.)	None
Marine protected areas (2007 est.)	51.07 km^2 (0.15% of total territorial waters)
Capture fisheries prod. (2006 est.)	509,395 metric tones
Aquaculture fisheries prod. (2006 est.)	50 metric tones

Coastal Climate: Namibia has an arid climate with rain fall of 15 - 20 mm per year and temperature between 10 - 40˚C.

Coastal Geomorphology: The littorial and sublittorial substrata on the Namibian coast are predominantly sandy with the only continuous rocky coast occurring between Lüderitz and Bogenfels (80 km south of Lüderitz). South of this the coast is sandy with a few rocky outcrops. The occurrence of rocky outcrops becomes less frequent in a northerly direction (Molloy, 2003). The continental shelf is widest at the Orange River, then off central Namibia (Walvis Bay area), and narrow at Lüderitz and at the Kunene River mouth at the northern border.

Coastal Currents and Tides: The dominant surface current is the cold north-north-west highly productive Benguela current. During late summer the warm nutrient poor Angola current intrudes into Namibian waters. The Angola current feeds into the northern Namibia system as a poleward undercurrent with a strong seasonal signal (strongest in summer/autumn). Namibia has semidiurnal tides with a tidal amplitude of about 1.8 m.

Coastal Observations: Namibia has four coastal weather stations (Cape Frio, Möwe Bay, Swakopmund and Lüderitz). A tide gauge is installed and operational at the Walvis Bay harbour. Regular in situ sampling off the jetty in Swakopmund is done for Sea Surface Temperature, oxygen, H_2S, Chlorophyll-a and phytoplankton.

Coastal Economy: There are four major towns on the coast, which support the majority of the coastal economic activities including fisheries, tourism and the import and export of goods. Major fisheries include: pilchard, horse mackerel, hake, monk, rock lobster, red crab, line fish, seals, kingklip, west coast sole, orange roughy, and tuna.

Mineral and Agricultural Resources: Mineral resources are an important part of the national economy including: uranium, gold, tin, copper, diamonds, semi precious stones, zinc, and lead. Agricultural products include: cattle, sheep, maize, and game.

Other marine resources: Other resources include diamonds, guano, mariculture (oysters, abalone), and salt.

ADDRESSING KEY COASTAL ISSUES

Ninety percent of the coastline is conservation area with controlled access including almost the entire coast of the Namib desert. Namibia is one of the first countries to include environment protection within its constitution (CIA, 2008). Three RAMSAR sites exist at: the Orange River mouth, Walvis Bay lagoon and Kunene River mouth. Sandwich Harbour is another important coastal area and under special protection. This said, Namibia faces challenges in coastal and marine management. These include the management of small recreational areas around towns, urban development, and tourism and recreational use of the coast such as quad-biking. Diamond mining in closed areas in southern Namibia is also an issue of potential environmental degradation of resources, as well as industrial fishing

DEVELOPMENT AND ACHIEVEMENTS OF THE NODC

Namibia does not have online access to the NODC. However, there is

Figure 1. Jetty in Swakopmund where measuring equipment are attached for daily water samples for temperature, oxygen and phytoplankton (photo taken by Deon Louw).

an in-house data base at the Ministry of Fisheries & Marine Resources where oceanographic data is archived and available on written request. In addition, Conductivity, Temperature and Depth (CTD) data is also provided and archived at the Southern African Data Centre for Oceanography (SADCO).

The main objectives of the NODC are to support national:

1) monitoring of the coastal and ocean environment; and
2) fisheries management using the Total Allowable Catch approach.

Figure 2. CTD which is used on the "R.V Welwitchia" for oceanographic measurements (photo taken by Deon Louw).

The beneficiaries of the products and services include national and international scientists, managers and members of the public.

Products and services available at the NODC are based on the following sources:

- *Biological parameters* – Chlorophyll-a, phytoplankton species, zooplankton species and biomass
- *Physical parameters* - temperature, salinity, wind speed & direction, tide, air pressure, dissolved oxygen
- *Chemical and nutrient parameters* - phosphate, nitrate, nitrite, silicate, ammonium, hydrogen sulphide
- *Satellite derived data:* Sea Surface Temperature and Chlorophyll-a

Figure 3. During winter months Namibia has berg winds (warm desert winds) and sand particles can be blown more than 150 km into the sea (satellite image by Oceans-pace on 24 June 2003).

MARINE RELATED PROGRAMMES AND ORGANIZATIONS

The following are organizations that work in collaboration with the NODC:

- Benguela Current Commission
- Namibia Coast Conservation and Management Project (www.nacoma.org)
- South East Atlantic Fisheries Organization (www.seafo.org)
- Commission for the Conservation of Antarctic Marine living Resources (www.ccamlr.org)
- Southern African Data Centre for Oceanography (www.sadco.csir.co.za)
- International Commission for the Conservation of Atlantic Tunas (www.iccat.es)

Figure 4. African penguins on Mercury islands off southern Namibia (photo taken by Deon Louw).

Figure 5. NatMIRC (National Marine Information and Research Centre) offices in Swakopmund. The National Aquarium as well as the following research section are situated here: Environment, Demersal, Pelagic and Aquaculture (Mariculture) (photo taken by Deon Louw).

Figure 6. Research vessel "R.V. Welwitchia", named after the famous desert plant the Welwitschia mirabilis (photo taken by Deon Louw).

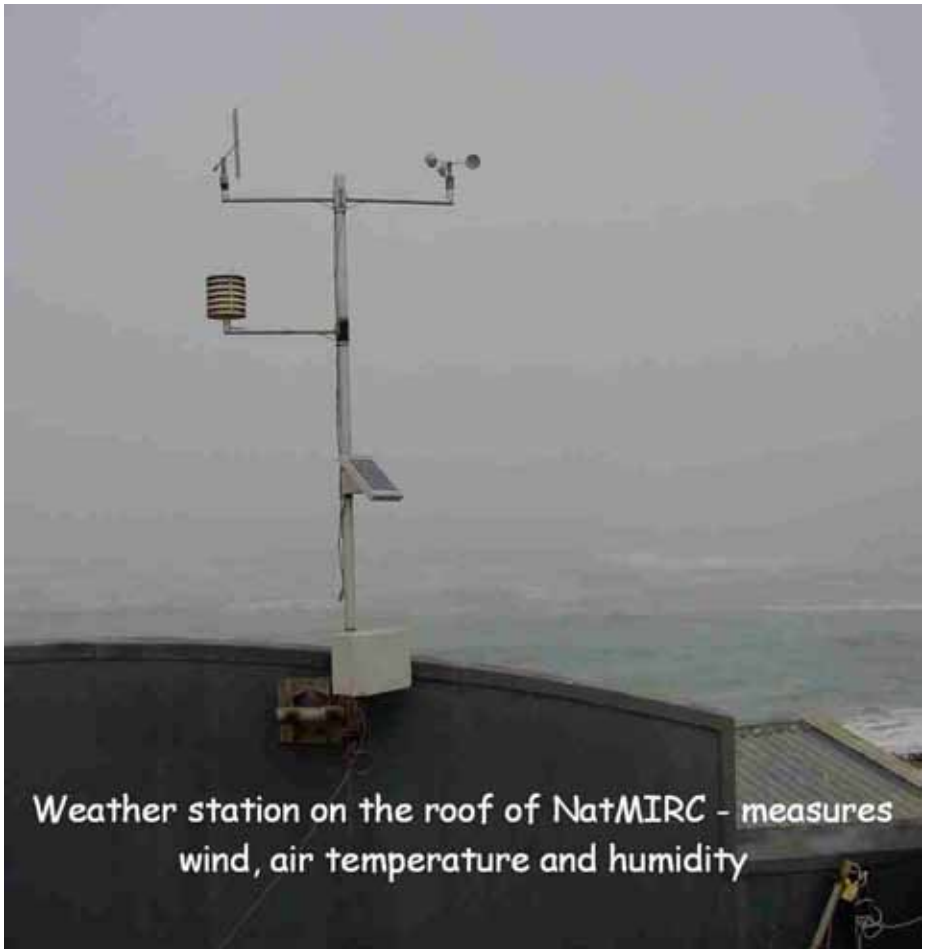


Figure 7. The weather station on the roof of NatMIRC in Swakopmund (photo taken by Deon Louw).

Contacts:

Anja Kreiner
Senior Marine Scientist
Ministry of Fisheries and Marine Resources
P.O. Box 912, Swakopmund, Namibia
E-mail: akreiner@mfmr.gov.na