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SADCO SADSO

SADCO receives large amount of time series data

The main contents of this edition of the Newsletter are reports on the huge amount of time series data that has been submitted to SADCO. At this stage only the submission (and in some cases loading) of the data is acknowledged.

The sources of this data are:

Weather data:

- *South African Weather Service: data from registered coastal weather stations. This is the first time this type of data has been received. This is a huge data set.*
- *Marine and Coastal Management: data from stations along the west coast, augmenting data submitted before*
- *Institute for Maritime Technology: data from Roman Rock. This is the first time IMT has submitted this type of data.*

Temperature time series:

- *Marine and Coastal Management: data from underwater recorders of sea temperature. This, too, is an enormous amount of data.*

This data has considerable scientific value. It illustrates the large amount of data that continues to be "discovered" that could be of value to oceanographers. It is also reflects the support that SADCO enjoys over a wide spectrum of marine/maritime stakeholders and disciplines.

Future editions of the Newsletter will report more extensively on the exact amount of data, the completion of the loading process and the data's accessibility.

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Weather data submitted to SADCO

The weather data sets described below, together with the data previously collected by MCM off the west coast and submitted to SADCO, now represents the most extensive set of AWS data (hourly readings) of wind speed and direction around the coast of South Africa.

IMT: Weather station data from Roman Rock

Sanette Gildenhuys and Carl Wainman of the Institute for Maritime Technology (IMT) submitted to SADCO the set of weather data collected on Roman Rock (just off Simonstown). This data should be especially useful for studies of circulation events in False Bay.

As far as we know, the previous continuous weather data set in False Bay (excluding the weather station at Cape Point and short data collections elsewhere) was collected on Seal Island in the middle and late 1980s. This data set was used in conjunction with current meters deployed in False Bay to study the circulation of the Bay, characteristics of the thermocline and the residence time of the water in the Bay.

The data from Roman Rock extends from April 2002 to December 2005 and will be loaded in due course.

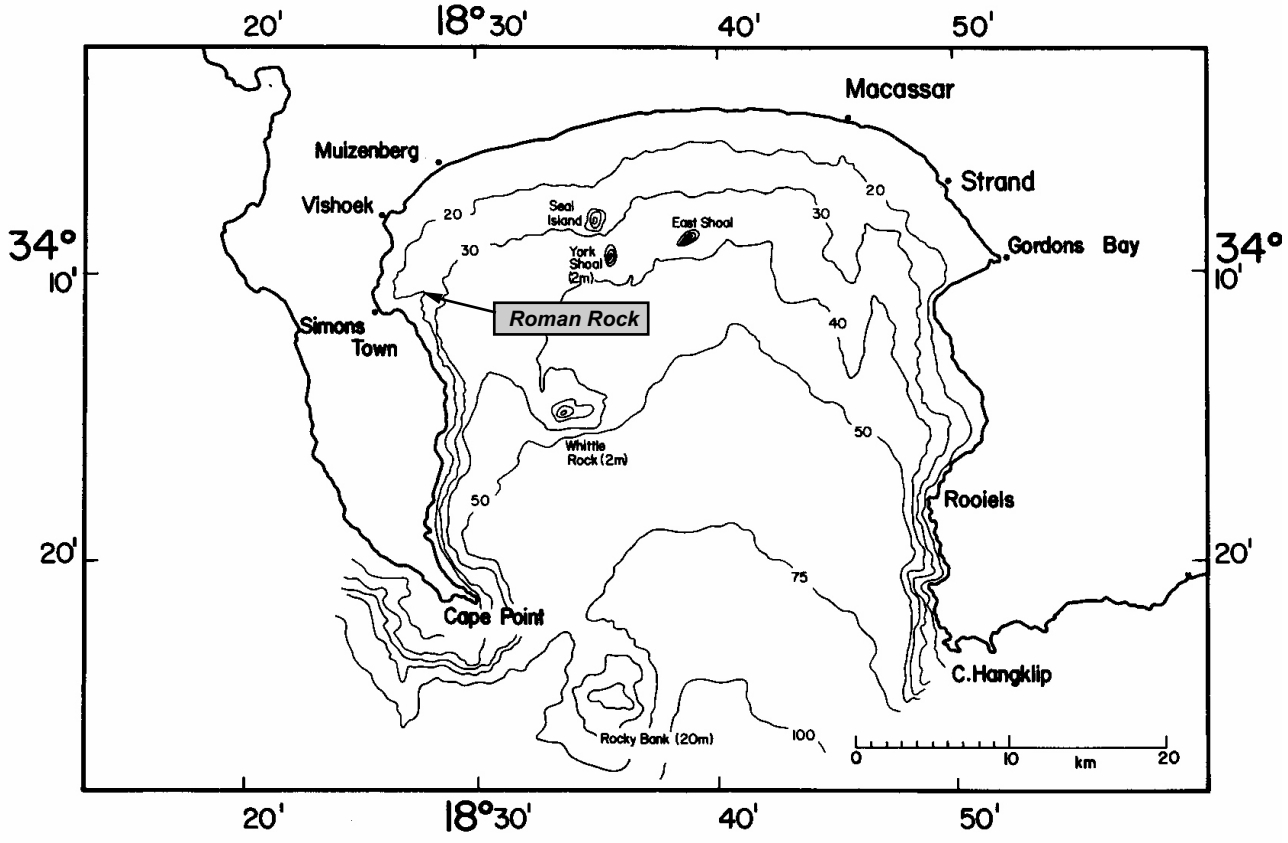


Chart of False Bay, with the position of Roman Rock indicated

SAWS: Automatic weather station data around the coast

One of the key aspects of the coastal circulation is the forcing of currents by the weather. Oceanographers are therefore continuously looking for quality, relevant wind velocity data collected at coastal sites to assist with such analyses.

At the meeting of the SADCO Steering Committee in November, Chris Koch, representative of the South African Weather Service (SAWS) indicated that the SAWS would be prepared to contribute to the coastal weather station data holdings of SADCO. In January 2006 a huge amount of data, consisting of 32 stations' hourly observations were made available to SADCO. The extraction was kindly handled by Tracey Gill.

The chart below indicates the positions of these stations. For each station there is about 10 years of data.

This data is scheduled for loading in the near future.

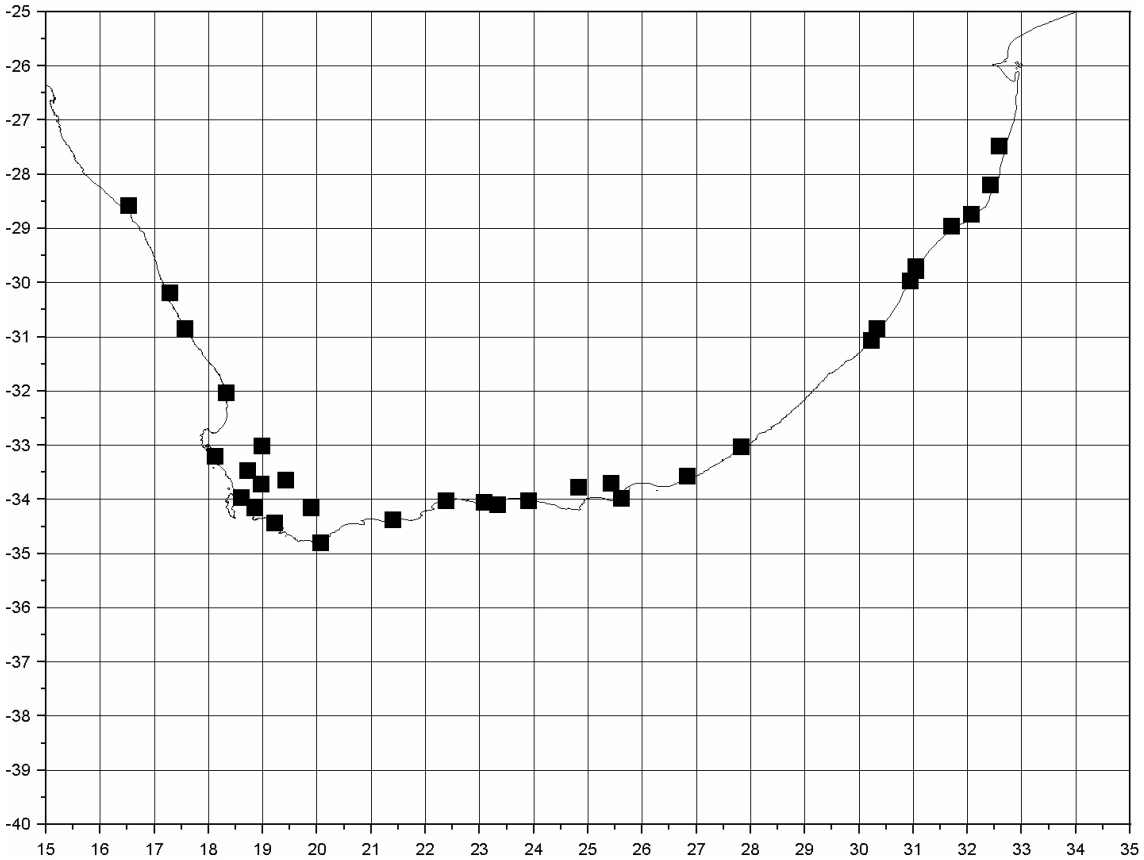
SADCO is grateful to the SAWS for sharing this large set of quality data with us.

MCM: Automatic weather station data

A set of data from automatic weather stations (AWS), deployed by MCM off the West and South coasts, was recently submitted to SADCO, and has now been loaded.

In previous editions of the Newsletter we have reported on the other AWS data submitted by MCM (Ashley Johnson). Altogether this is an extensive set of weather station data off the West Coast.

Location	Latitude	Longitude	Date Range	Records
Cape Columbine (CN01)	32.82667	17.84833	1996 09 27 to 2002 12 05	53693
Danger Point (DP01)	34.63	19.9	1997 01 01 to 2002 12 04	8737
Port Nolloth (PN01)	29.26333	16.86916	2001 12 04 to 2002 12 03	20288



Positions of the hourly weather station data kindly provided to SADCO by the South African Weather Service. The extraction was handled by Tracey Gill.

Time series of inshore temperature measurements

The time series of inshore sea temperature data is the first such measurements submitted to SADCO, and is the most extensive set of its kind in southern Africa.

At many beaches around the coast sea temperature is measured and recorded by municipal officers, life guards, nature conservation officers, etc.

In contrast to many other oceanographic parameters that require extensive measuring instruments and (often) even more extensive analyses (e.g. chemistry data), temperature can be recorded with an accurate thermometer (and some diligence).

While such surf measurements are often used to determine bathing conditions for holiday makers, the data is also an indication of larger-scale oceanographic characteristics of the coast (e.g. upwelling).

Temperatures from SAWS

The wide use that can be derived from surf temperature measurements has been illustrated by Chantal Greenwood in her M Sc thesis. Her source data consisted of once-a-day measurements of temperature started in the early 1970s (possibly stimulated by the work of Allan Crawford of the South African Weather Bureau). He stirred up considerable interest with a paper on sea surface temperature observations and the charts he was producing, that he presented at the conference of Oceanography in South Africa in Durban in 1970.

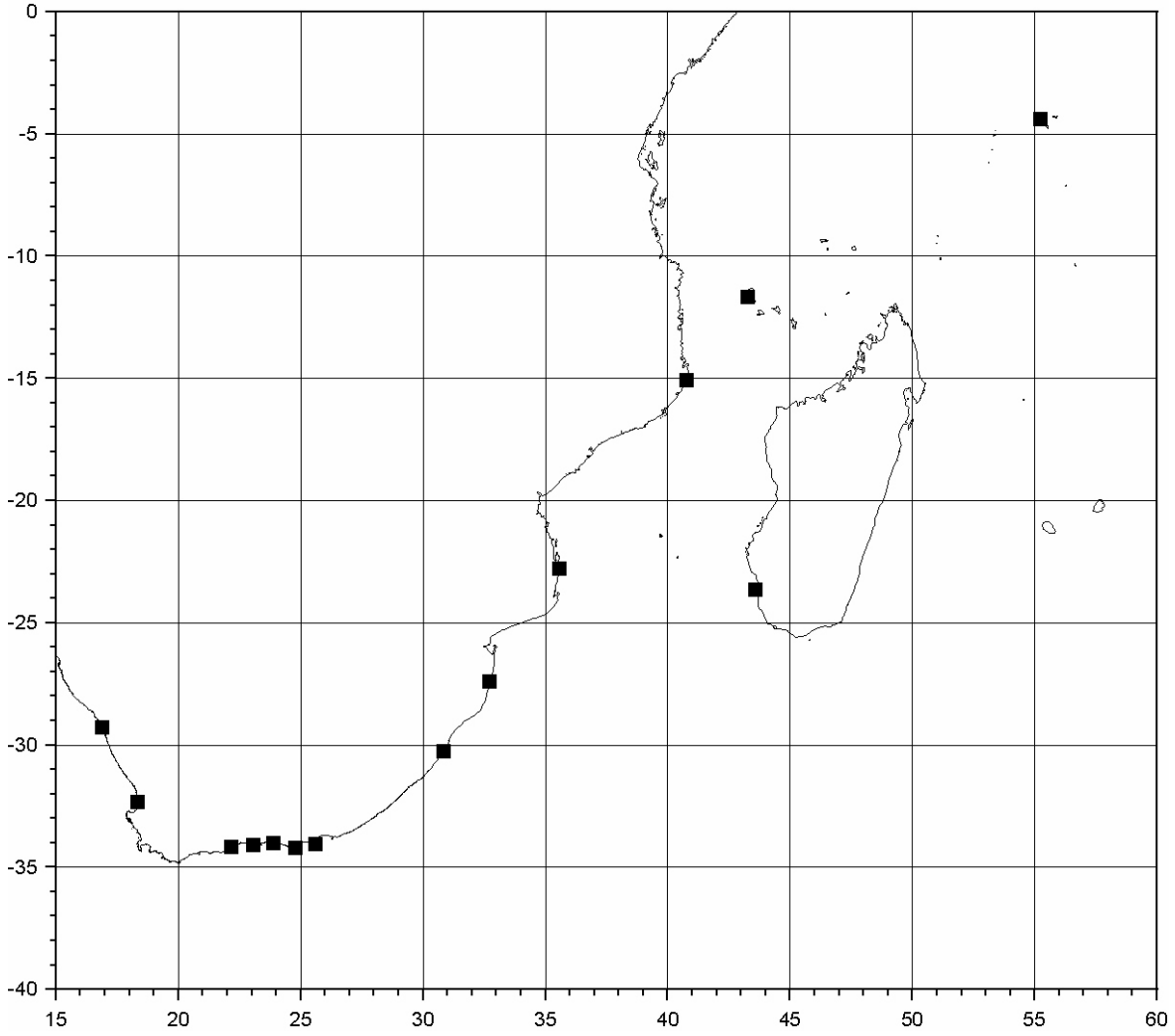
The collation of this data was later taken over by Ian Hunter of the South African Weather Service, and diligently continued by Linda Aps of the SAWS office at Cape Town International Airport. The 33 stations are located from Walvis Bay in the west to Zinkwasi in the east and the data has been compiled and supplied to many users over the years.

MCM sea temperatures

A more recent programme of sea temperature measurement was started several years ago by Mike Roberts of Marine and Coastal Management. This data is collected at hourly intervals by Underwater Temperature Recorders (UTRs) along the South African coast. This huge data set extends up the East coast of Africa, and comprises 20 stations.

This data has been submitted to SADCO and considerable time and effort was devoted by Louise Watt to prepare the data for loading.

The attached chart indicates the positions where recorders have been deployed. The data has been loaded but has not yet been released for access.



Positions of the coastal sea temperature recorders.

Progress with OBIS

For the past few months AfrOBIS has been concentrating on scouting for data. This, and loading of the data, will be the main focus for the rest of 2006.

Portal and software

One of the first tasks to establish AfrOBIS, the sub-Saharan node of OBIS (Ocean Biogeographic Information System) was to create the data base and the software infrastructure.

The AfrOBIS portal was completed in September 2005 and can be accessed at

afrobis.csir.co.za:8000

Data interrogation is done on a global basis. This means that a search submitted to the AfrOBIS portal will provide a comprehensive insight into the world-wide distribution of a particular species. The global database now contains more than 9 million observations.

Data scouting

Over the past months, AfrOBIS has moved into the next phase, namely to start the extensive process of scouting for data on the African continent. Up to now, only data from South African sources have actually been submitted to the database, but promises of data from other countries have also been received. Because of limited e-mail connections, as well as language, hardware and other constraints, the process of getting the data from those countries is taking considerably longer than for South African data sets (this will be followed up soon).

The following data sets have been located (and in some cases, loaded):

Status of Data submission to AFROBIS

Source	Type	Records	Digitised?	Records submitted	Records loaded
SAIAB*, Grahamstown	Fish	103 000	Yes	103 000	57 000
Natal Museum, Pietermaritzburg	Molluscs	63 000	28 400	63 000	28 400
Iziko Museum, Cape Town	Fish	18 000	Yes	18 000	No
	Molluscs	Est 30 000	Partially	Nil	
	Mammals	1 300	Yes	1 300	No
	Invertebrates	Est 4 000	Partial	Nil	
	Cephalopods	Est 5 000	Partial	Nil	
	Sharks	Est 14 000	Partial	Nil	
	Crustaceans	Est 25 000	Partial	Nil	
	Invertebrates	Est 4 000	Partial	Nil	
	Cnidaria	Est 4 000	Partial	Nil	
UCT	Seaweeds	Unknown	No		
Marine and Coastal Management	Plankton (copepods)	20 000	Yes	20 000	No
	Mammals (seals)	2 000	Yes	2 000	No
	Pelagic fish	unknown	Yes	Unknown	No
	Marine birds	Unknown	Yes	Nil	No
	Line fish	Unknown	Yes	Nil	No
	Demersal fish	Unknown	Yes	Nil	
East London Museum	Molluscs	Est 16 000	No	Nil	
S Schonland Herbarium, Grahamstown	Seaweeds	Est 32 000	No	Nil	
Bolus Herbarium, UCT	Seaweeds	Est 30 000	No	nil	
ORI*, Durban	various	Unknown	Partial	Nil	

* SAIAB: South African Institute for Aquatic Biodiversity; ORI: Oceanographic Research Institute

Submission of hydrographic data

1. XBT data

IMT provided SADCO with XBT data.

2. CTD data from UCT

Isabelle Ansorge submitted 99 XBT stations to SADCO collected during a cruise of the *GoodHope* experiment.

3. WOD data

SADCO's work list contains data on the World Ocean Database (WOD), kindly provided by the World Data Centre (Oceanography) in Washington DC.

SADCO is particularly interested in the "historic" data on WOD that forms part of the data rescued by the GODAR (Global Ocean Data Archiving and Rescue) programme. Six years ago SADCO loaded approximately 50 000 such stations occupied in our target area the single largest addition to our holdings of hydrographic stations. Although the added data was spread over the target area, a conspicuous dense subset was located off the coast of Namibia and especially Angola.

It is expected that the recent edition of WOD will similarly contain a large amount of interesting new (but historic) data in our target area, and SADCO is looking forward to the loading of the data.

4. Chemical data

SADCO has always had chemical data (trace metals) in its database, although the amount of data is overshadowed by the amount of hydrographic data.

One of the main collectors of this data is the CSIR's section in Durban. From a historic perspective, the CSIR's fledgling oceanographic group was transferred to Durban in the early 1960s specifically to conduct research and provide advice on aspects of marine effluent disposal off the KwaZuluNatal coast.

Although data has been collected for more than 3 decades, not all data is digitised. Data collected at various locations along the coast (mainly between Richards Bay in the north to Umkomaas in the south) has recently been submitted to SADCO and the loading process is underway.

We will report on the loading and accessibility as well as the full extent of the data in a further Newsletter.

First submission of turbidity data to SADCO

SADCO loaded turbidity data for the first time. This data was collected off Namibia and submitted to SADCO by NatMIRC, Swakopmund.

SADCO has diversified considerably over the past few years. After concentrating on so-called "core data sets" for the first decade of its "rebirth" since 1990, considerations have recently been given to adding other data sets.

An item that we have not considered is *turbidity,* simply because there are only small amounts of this data type collected in southern Africa (as far as we know).

However, a recent submission from Namibia contained a set of turbidity measurements and these will be loaded as soon as some modifications have been made to our database.

What is turbidity?

Turbidity is a quantification of the degree of opaqueness of the water.

Coastal waters in bays and estuaries are normally more turbid than offshore areas.

Increased turbidity is usually associated with upwelling of nutrient-rich water and greater productivity, while areas of confluence and sinking are less turbid. This distribution is supported by global maps of turbidity, where turbidity coincides with upwelling.

Turbidity results in extinction of light, but this is not uniform for all wavelengths and increases towards the infrared wavelengths.

One of the older methods to determine an integrated estimate of turbidity is to express it in terms of the so-called depth of visibility. This was obtained by lowering a disk from a vessel, and the depth (the so-called Secchi depth) recorded where the disk disappears from sight.

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