Climate Services & SAWS

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Observations
Databank
Climate Information
SAWS Longrange
Outline

• Observations
  • SAWS surface observation infrastructure

• SAWS Upper air Observation infrastructure

• Climate Data

• Climate Information

• SAWS Longrange-Forecasts
SAWS Observations infrastructure

Surface Observations

- 156 AWS – UNMANNED
- 35 ELEC_MANUAL (AWS MANNED)
- 25 WEATHER OFFICES
- 165 AUTOMATIC RAINFALL STATIONS
- 23 CLIMATE STATIONS
- 23 SEA SURFACE TEMPERATURE STATIONS
- 1257 RAINFALL

Upper air Observations

- 9 Upper air stations (Including the ISLANDS – Marion and Gough)
- mv SA Agulhas
SAWS Observations programmes

- Automatic Rainfall Station (ARS) DEPLOYMENT PLAN
- Automatic Weather Station (AWS) DEPLOYMENT PLAN

The programme is to automate all Climate stations (Converting of Climate stations)
Rainfall stations that are priority for 2012-2013 deployment plan

SAWS ARS DEPLOYMENT 2012/2013

Legend
- SA Boundary
- Grids
- Pol_and_Mun

Document Template Reference: TQM-PRE-001.3
SAWS rainfall stations targeted 2011-2013

Document Reference: CLS-Cl-001-2012-04-11
Document Template Reference: TQM-PRE-001.3
Climate Database

Regional Offices (21): MetCap

Upper Air
WO
AWS
Semi-AWS
First
Second
Third
Rainfall

QC1

Other Data (Lightning, Radar, Marine etc.)

Other Databases

Climate Database
Historical Tables
Real-Time Tables
MetCap Error Corrections

QC2

Qualimet

Client Database
QC’d historical tables

Document Reference: CLS-CI-001-2012-04-11
Document Template Reference: TQM-PRE-001.3
Data Quality Assurance & Quality Control

**QC1 – MetCap**
Surface Measurements
(*Weather offices*)
- Data Capture
- Data Checking to ensure “clean” data set (free from impossible values)

**QC2 – QualiMet (since 2011)**
Surface Measurements (AWS)
(*Head Office*)
- 2nd level QC
- Data checking, but tests more stringent
- Expert Intervention
- Limited interpolation

Rainfall data
(*Head Office*)
Verification of electronic data with returns

Historical data
(*Head Office*)
Ad hoc capturing of missing data, correction of coding errors, change of units etc. – ongoing and according to priority

Document Reference: CLS-CI-001-2012-04-11
Document Template Reference: TQM-PRE-001.3
Archiving, quality assurance and quality enhancement of all data currently recorded from:

- Surface observation network,
- Upper air programme,
- Marine observing network of ships and marine platforms.

Temperature
- 5-minute
- Hourly
- Daily Max
- Daily Min

Rainfall
- 5-minute
- Hourly
- Daily

Wind
- 5-minute
- Hourly
- Daily Max

Pressure
- 5-minute
- Hourly
- Daily Max
- Daily Min

Humidity
- 5-minute
- Hourly
- Daily Max
- Daily Min

Sunshine
- Hourly

Observations
- Hourly
  (Visibility, Clouds, Hail, Fog etc.)

Other Data Sets
- Lightning, Model data, Radar, Upper air, Marine
  (measurements from ships, weather buoys)

Document Reference: CLS-CI-001-2012-04-11
Document Template Reference: TQM-PRE-001.3
Climate Information & Data Dissemination

- **Data**
  - **Commercial purposes**
    - Including funded research, but a service fee is charged for the extraction and dissemination of large amounts of data; Disclosure Statement to be completed
  - **Public good purposes**
    - Near real-time data (daily Max & Min temp and rainfall);
    - For educational purposes (learners and students) upon completion of a Disclosure Statement (especially students at tertiary institutions);

- Dissemination in many formats e.g. Excel, csv, txt etc. – client specifies format;
- Value-added products, e.g. 10-day and monthly rainfall maps (available on SAWS website);
- Subscriptions for regular products/publications.
Products: Climate Normals

- Monthly and annual averages of minimum, maximum, dry-bulb and wet-bulb temperatures, rainfall, humidity and cloud cover.

- The average monthly and annual frequencies of specific weather occurrences i.e. thunder, fog, hail and snow are also included.

- Climatological Standard Normal:
  - 1961 - 1990
  - 1991-2020
  - Due to the high demand for the updated normals
  - Normal: at least three consecutive ten-year periods.
Climate Normals - Completed

Updated WB42 (1981 – 2010) as on 11 April 2013
The SAWS LDN
Radar Network

Document Reference: CLS-Cl-001-2012-04-11
Document Template Reference: TQM-PRE-001.3
• Publications

- Technical papers;
- Series on general climate of South Africa (Surface Wind, Temperature, Precipitation etc.);
- Indigenous weather knowledge;
- Tornadoes;
- Educational units;
- Daily weather bulletin (inc. synoptic maps & data);
- Monthly summaries (incl. summary of significant events, rainfall & temperature maps, data etc) – subscriptions available;

• Other services

- Statistical analyses of data (extreme values, windroses, maps etc.),
- Client specific project work,
- Specialized services to the legal and insurance industries,
- Advice to general public and to government organizations.
Fig 1.1 The number of heavy rain events reported by newspapers for the period 2006-2009.

Fig 1.2 The number of flood events reported by newspapers for the period 1981-2009.
SAWS Multi-Model Forecasting System

- SAWS-LRF group produce MM seasonal forecasts for precipitation, minimum and maximum temperatures.
  - Forecasts are produced on monthly basis.
  - Forecasts for up to 6-month lead time.
- Multi-Model forecasts are obtained by:
  - By downscaling hindcasts from CFS (NCEP), CCAM(CSIR) and ECHAM4.5 AGCM to observed datasets.
  - Forecasts of individual models are then averaged (Landman & Beraki, 2010)
SAWS LRF involvement in SARCOF

- SAWS-LRF group participate in SARCOF meetings.
  - To produce seasonal forecast for rainy seasons in SADC region.
- Procedure to produce SADC forecasts
  - Each participating SADC member state produce forecasts for their own countries.
  - Then consensus is reached by all to produce the SADC forecasts.
Previous SARCOF update

Fig 1: Rainfall forecast for January-March 2013
Thank-You