Application of the UM-SA12 in southern Africa

Operational Aspects of the UM SA12 LAM

The SAWS run a regional version of the UM in-house

Operational on a SX-8 high performance computer

The domain covers the whole of southern Africa as well as surrounding oceans

The UM SA12 has been operational sunce October 2006.

Operational Aspects of the UM SA12 LAM
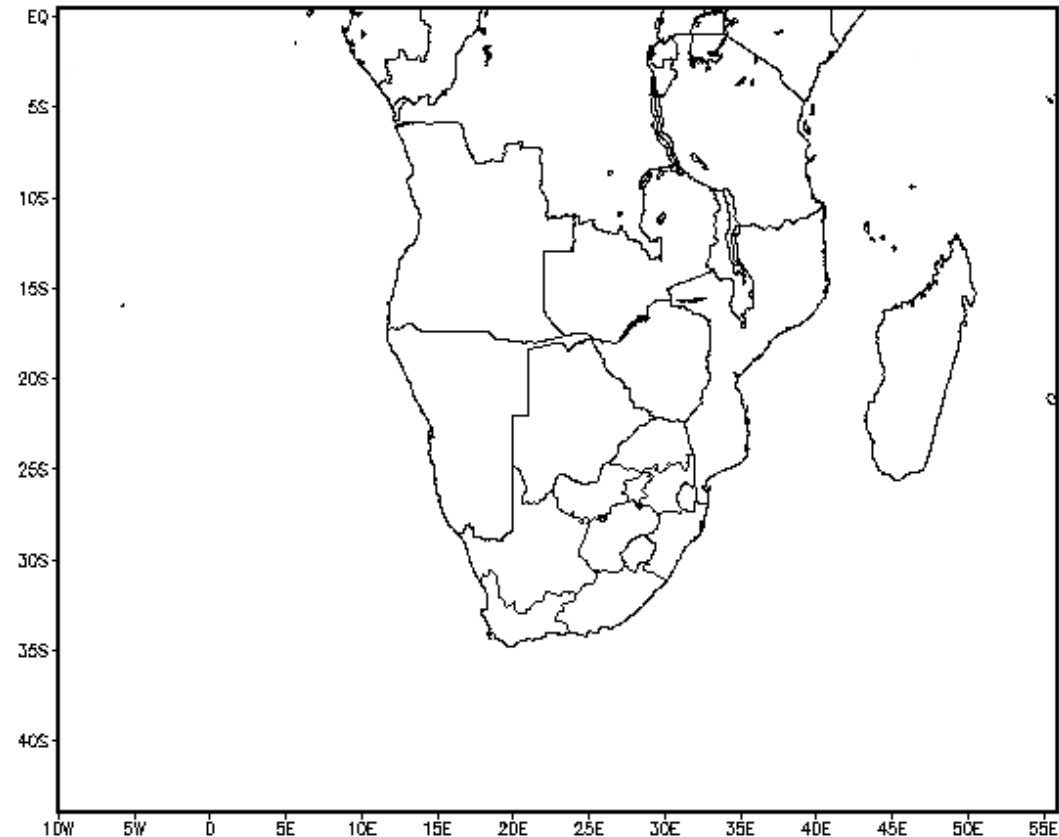
Configuration of UM

12km horizontal resolution

38 vertical levels

Domain:

20W-50E; 45S-0S (SADC)

Provides hourly numerical forecasts for up to two days ahead (48 hours).

3

Operational Aspects of the UM SA12 LAM

- NEC sx8 single node (8 CPUs)
- 648 x 480 grid points
- 38 levels
- 128GB memory, 1.2TB disk-space
- Speed: 42 minutes per 24 hr forecast for SA12: 648x480L38
- 5 Operational runs daily

4

Configurations of the UM SA LAM

Unified Model Forecasts

| Cyclone Home | NWP Products | Research Projects | In-House Training | Publications | Presentations | University Notes | Verification |

Unified model **Research runs**

Status of model runs HERE

12km no-DA (Xaana) run

⇨ Updated: Once daily
⇨ Available – 13:00 SAST
⇨ 12km Resolution
⇨ No Data Assimilation
⇨ Last update: 11 Nov 11:39
⇨ Forecast: 11 Nov 00:00z to 13 Nov 09:00z
⇨ Temperature Forecast Error : 11 Nov
⇨ Day 1: Tn Tx
⇨ Day 2: Tn Tx

12km version 7.3 (Xaanti)

⇨ Upgrade from vn6.1 to vn7.3
⇨ Available – 05:00 SAST
⇨ 12km Resolution
⇨ No Data Assimilation
⇨ Last update: 12 Nov 9:07
⇨ Forecast: 12 Nov 00:00z to 14 Nov 00:00z
⇨ New features

12km DA (Xaang) run

⇨ Updated: Once daily
⇨ Available – 09:00 SAST
⇨ 12km Resolution
⇨ Continuous Data Assimilation
⇨ Last update: 17 Nov 08:34
⇨ Forecast: 12 Nov 00:00z to 14 Nov 00:00z
⇨ Temperature Forecast Error : 11 Nov
⇨ Day 1: Tn Tx
⇨ Day 2: Tn Tx

* 4KM MODEL : NOT VERIFIED *

Xaanj run

⇨ Updated: Once daily
⇨ Available – 20:00 SAST
⇨ 12km Resolution
⇨ Intermittend Data Assimilation
⇨ Last update: 27 Nov 20:17
⇨ Forecast: 27 Nov 12:00z to 29 Nov 12:00z

15km (Xaaha) run

⇨ Updated: Once daily
⇨ Available – 01:30 SAST
⇨ 15km Resolution (only over SA)
⇨ No Data Assimilation
⇨ Last update: 12 Nov 00:48
⇨ Forecast: 12 Nov 00:00z to 14 Nov 00:00z
⇨ Temperature Forecast Error : 11 Nov
⇨ Day 1: Tn Tx

15km version 7.3 (Xaaon)

⇨ Updated: Once daily
⇨ Available – 09:00 SAST
⇨ 15km Resolution (only over SA)
⇨ No Data Assimilation
⇨ Last update: 12 Nov 00:35
⇨ Forecast: 12 Nov 00:00z to 14 Nov 00:00z

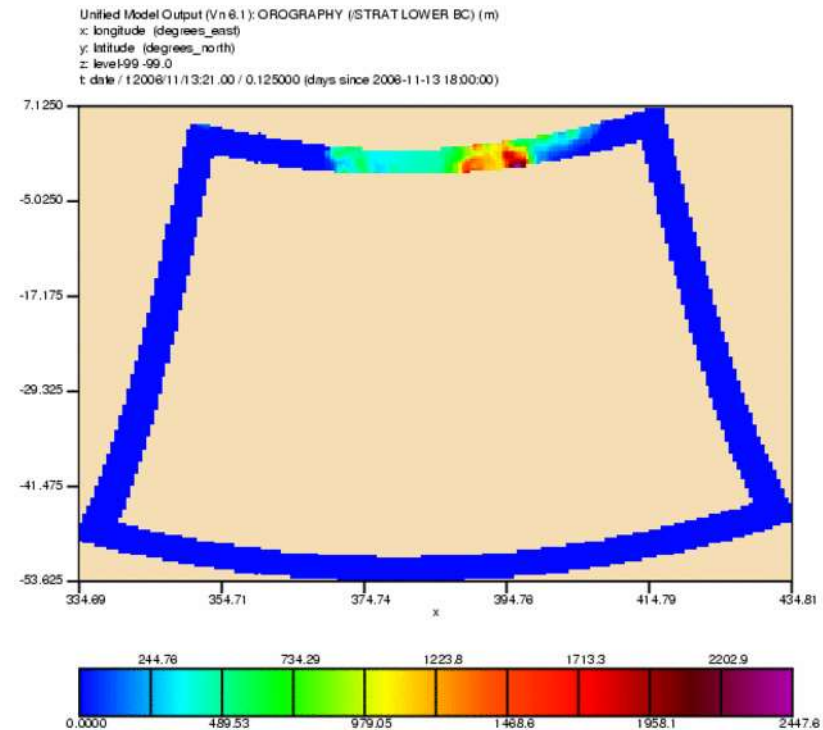### Saanb run

⇨ Updated: Once daily
⇨ Available – 01:30 SAST
⇨ 4km Resolution (only over SA)
⇨ Intermittend Data Assimilation
⇨ Last update: 17 Jan 09:27
⇨ Forecast: 16 Jan 18:00z to 18 Jan 00:00z

5

Configurations of the UM SA LAM

- UM SA12: main model run
- Initialised daily at 00UTC
- Initial conditions & lateral boundary conditions from Global UM
- 18 UTC 6hr forecast
- 48 hr forecast
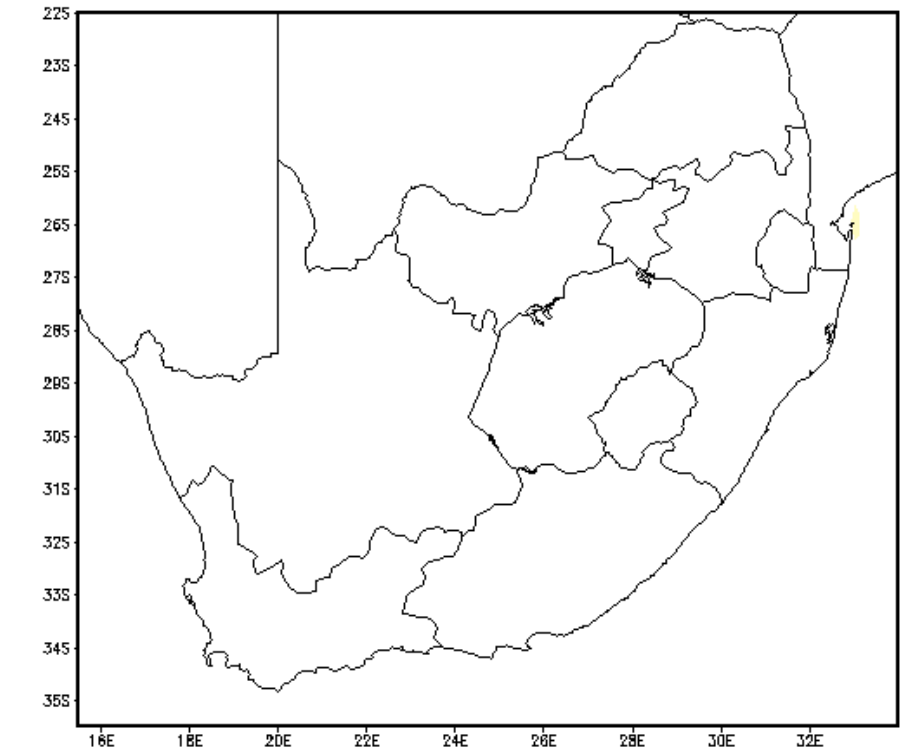- Updates daily ~ 5:00 SAST (03 UTC)

6

Configurations of the UM SA LAM

- UM SA12 DA: continuous data assimilation
- Same domain and resolution as UM SA12
- 48 hr forecast initialised daily at 00UTC
- Ops and background error files from Global UM
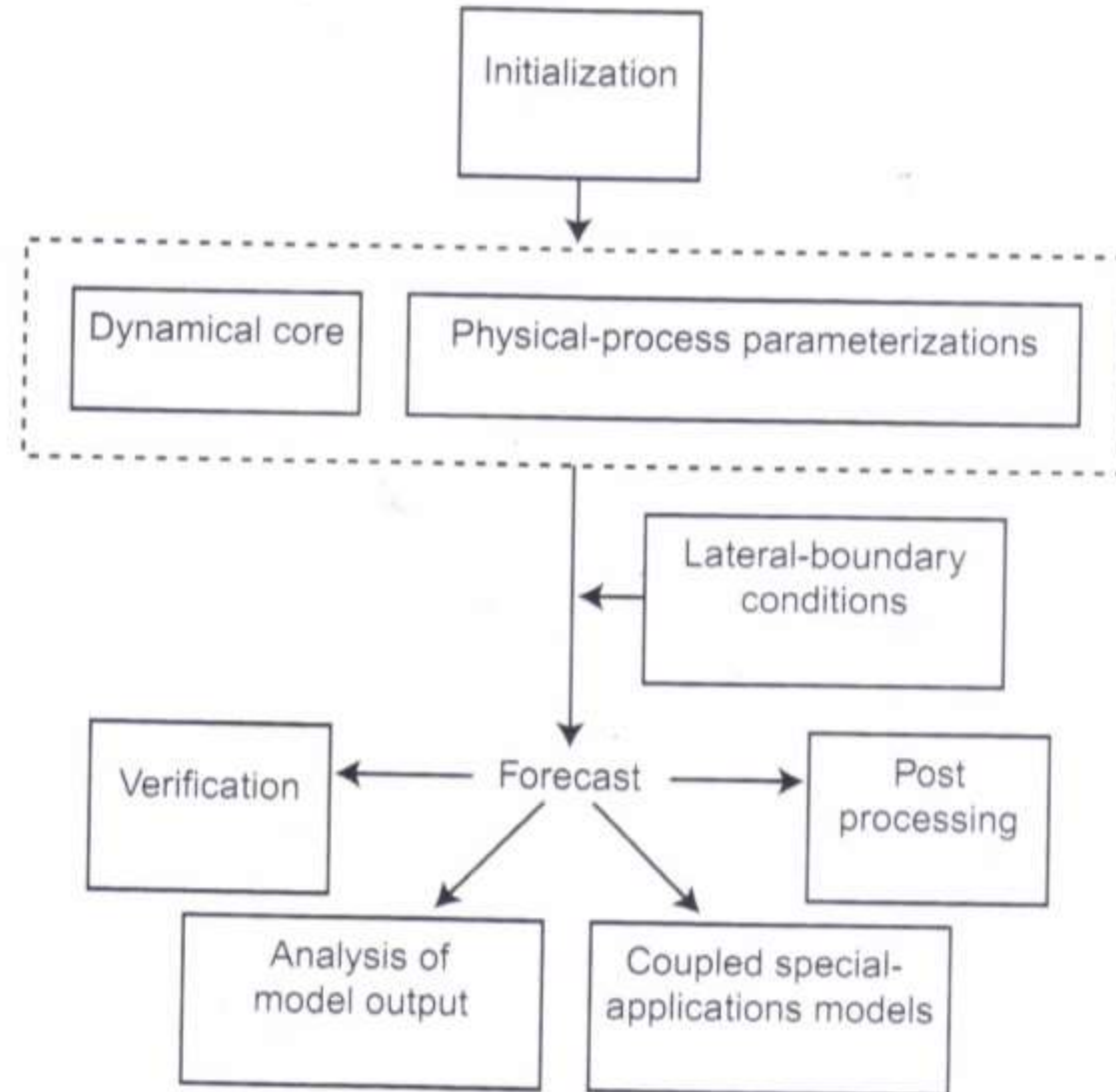- Updates daily ~ 9:00 SAST (07 UTC)

7

Configurations of the UM SA LAM

- UM SA15: 3 model runs
- Horizontal resolution of 15 km
- Only covers the South African domain
- 48 hr forecast initialised daily at 00UTC

    1. Old version of UM code (v 6.9)

    2. Old version but with different cumulus scheme

    3. Upgrade version of UM code (v 7.3)

- Updates daily ~ 1:00, 1:30 & 8:30 SAST respectively

Components of the UM SA LAM

9

Applications of the UM SA LAM

- Regional responsibilities (RSMC / SWFDP)
- Training (www.eumetrain.org)
- Flash Flood Guidance
- Client specific forecasts (i.e. ESKOM)
- Regional multi-model ensemble probability forecasts

10