

ROYAUME DU MAROC
MINISTERE DE L'ENERGIE, DES MINES, DE L'EAU ET DE L'ENVIRONNEMENT
Direction de la Météorologie Nationale

NUMERICAL WEATHER PREDICTION IN MOROCCO 2013

Direction de la Météorologie Nationale, Casablanca, Morocco

Hassan HADDOUCH / Essaouini Karam

The Computing Platform



9 Physical Blade Center H :

- 114 shared memory nodes : 4 cores each, 16GB memory
- 2 shared memory nodes : 8 cores each, 32GB memory
- ~475 core in total

- 6 p520 network-I/O nodes, 8 cores, 16GB memory
- 2 Switch InfiniBand for I/O and MPI

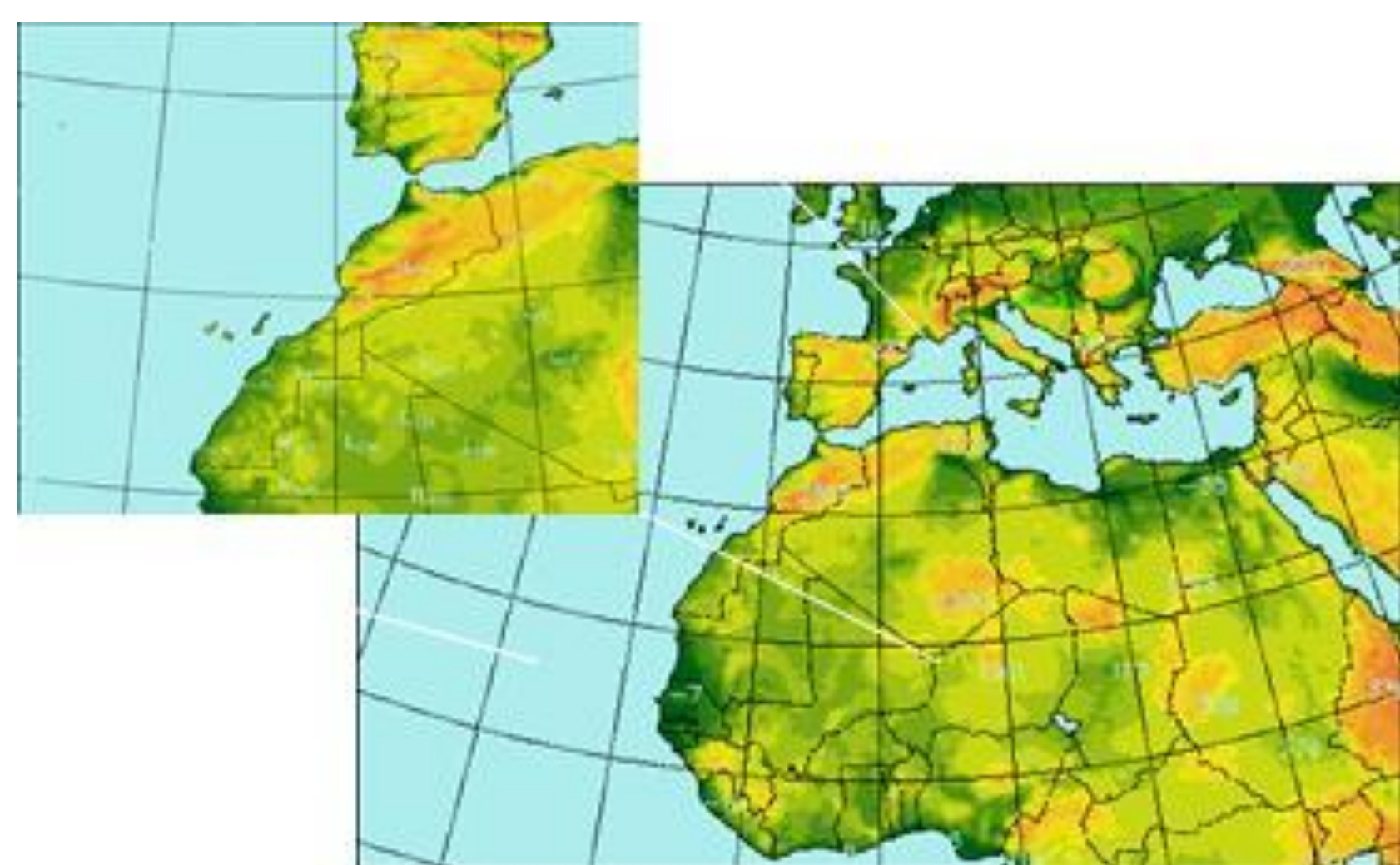
- CPU : RISC/UNIX IBM Power6+ @4.2 GHz
- 52 TB disk space
- ~ 1.95 TB memory,
- ~ 8.3 Tflops theoretical peak performance for application

Operational NWP Moroccan suites:

Three suites two based on ALADIN are run twice a day: ALADIN/NORAF and ALADIN/MAROC.

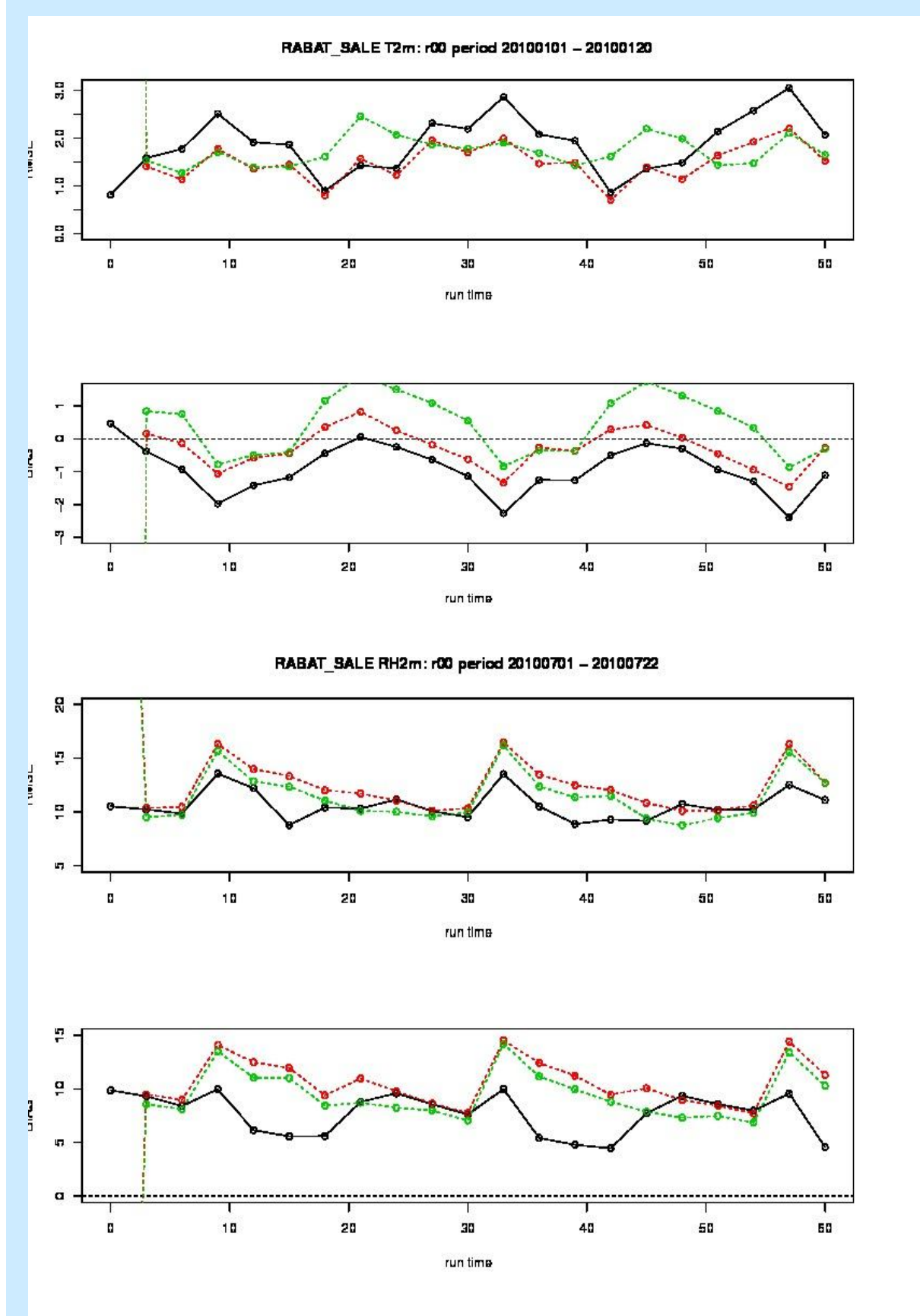
Their domains are respectively showed in figure1. They are run on an IBM parallel Machine, and used in operational way.

The third based on AROME.



Test Of SURFEX in ALADIN

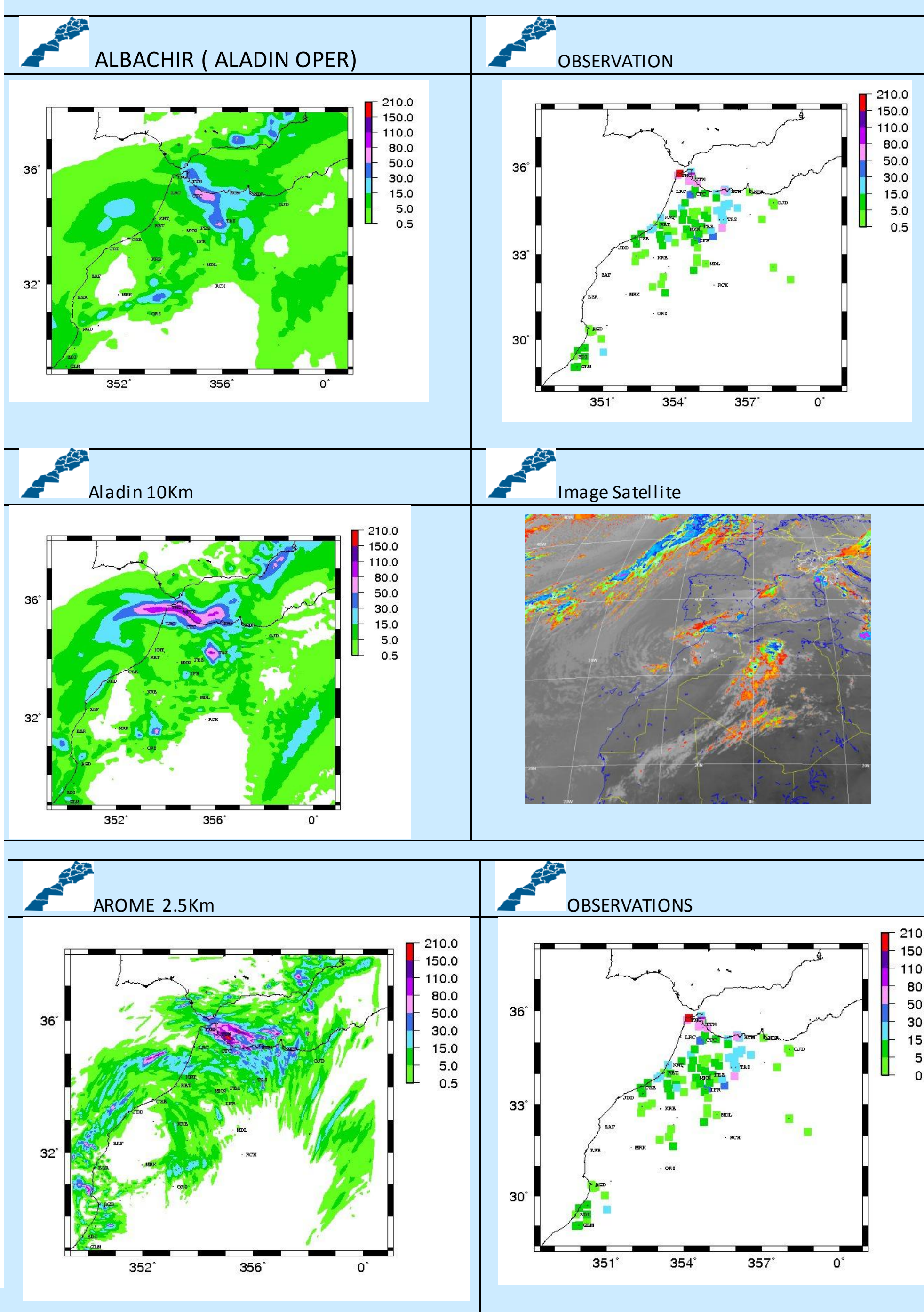
In order to evaluate the impact of Surfex, the land surface model SURFEX have been implemented in the ALADIN suite. Here after some results of this model:



- 1: Black : ALADIN 10 KM
- 2: Red : ALADIN with SURFEX
- 3: Green : ALADIN with surfex and canopy

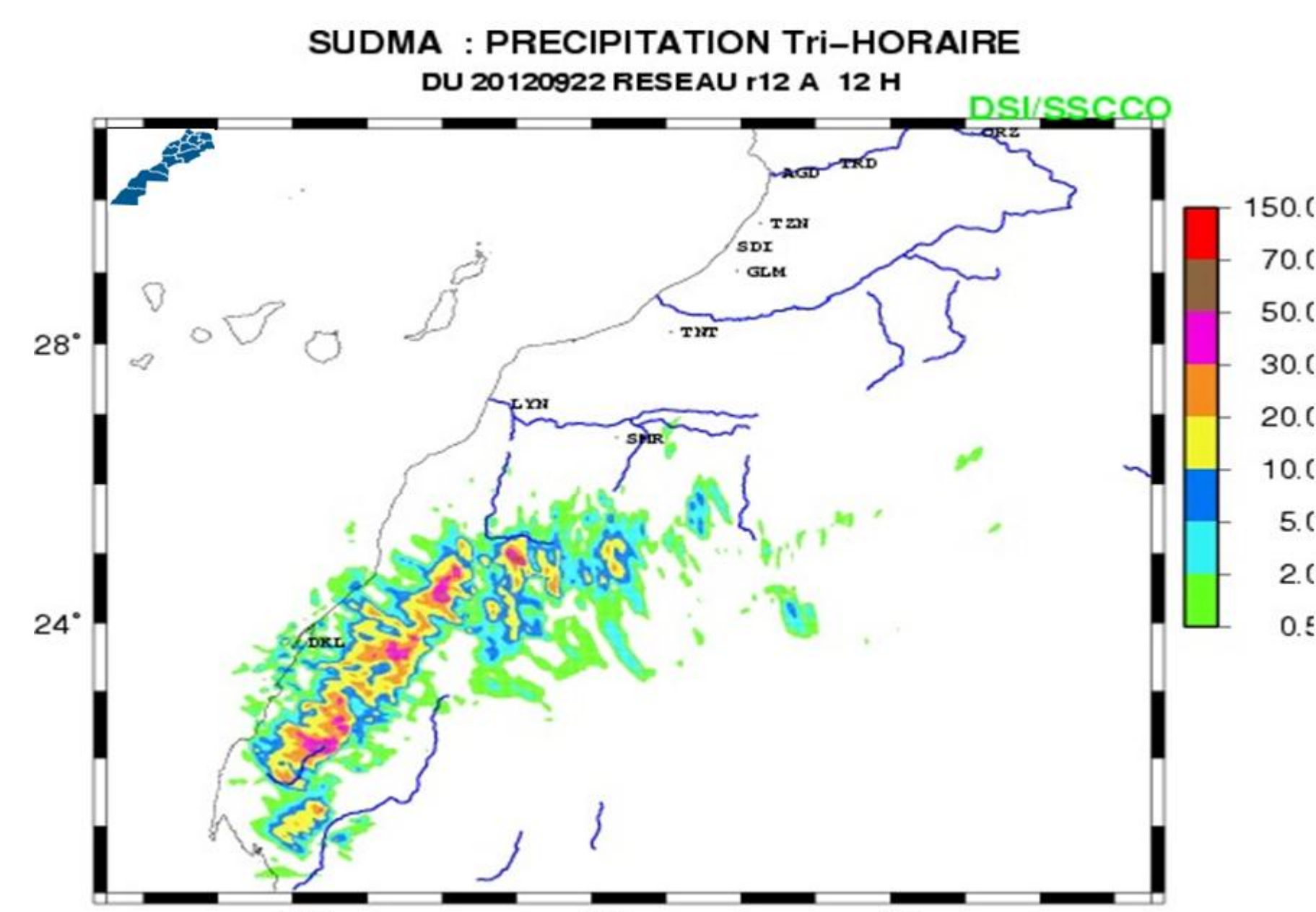
AROME-NORDM (North of morocco)

Cycle: cy 36t1
 Characteristics :
 NON-Hydrostatic
 Semi-implicit semi-lagrangian two-time-level scheme; DT=60s
 2 runs / day 00, 12 : 24 hrs forecast range
 Boundary conditions from ALADIN-MAROC (1 hrs coupling frequency)
 domain : yyyxyy points, Dx=2.5Km (Lambert Projection – linear grid)
 60 vertical levels

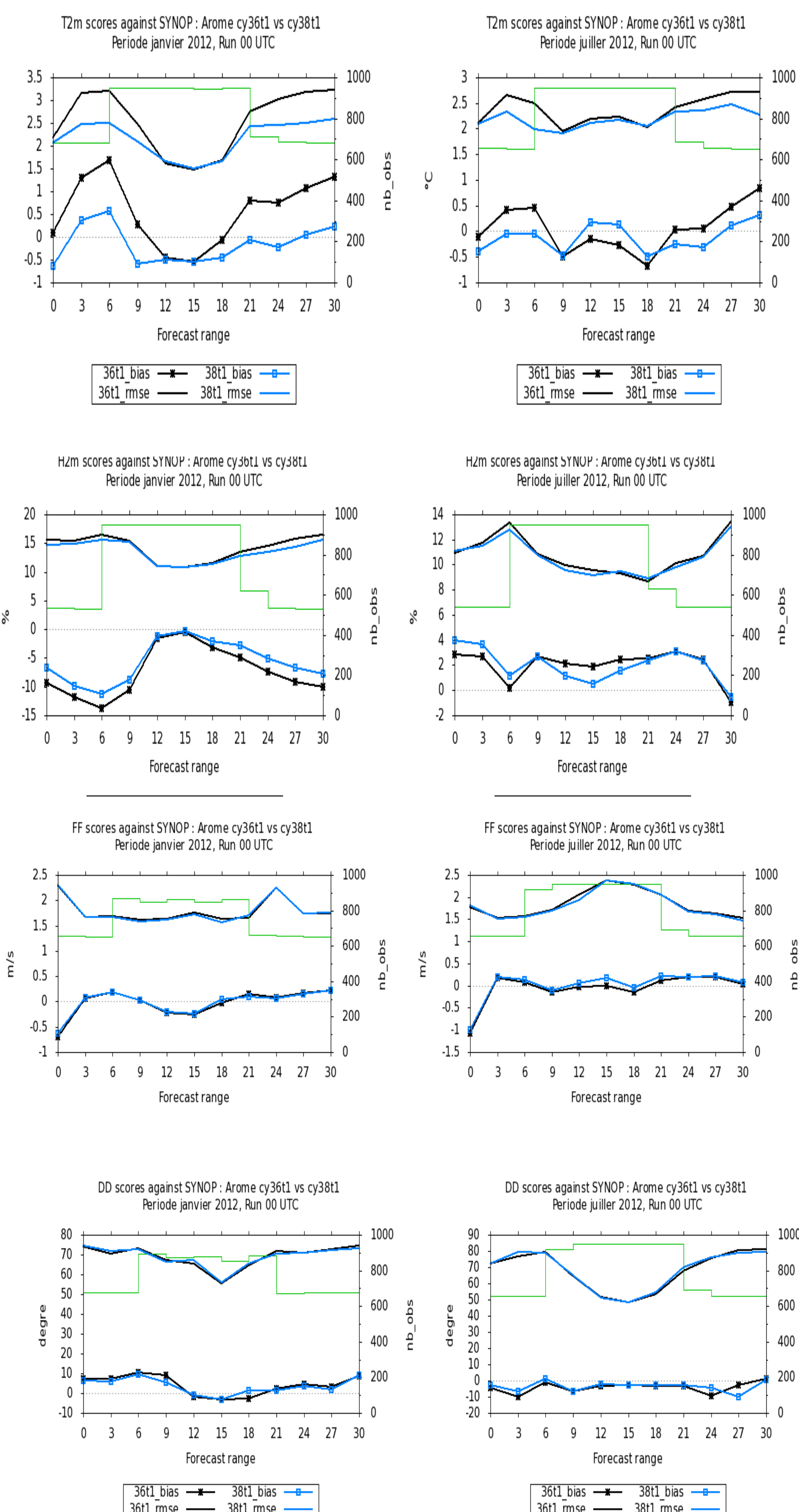


AROME-SOUTHDM (test suite) : South of morocco

Cycle: cy 36t1
 Characteristics :
 NON-Hydrostatic
 Semi-implicit semi-lagrangian two-time-level scheme; DT=60s
 2 runs / day 00, 12 : 24 hrs forecast range
 Boundary conditions from ALADIN-MAROC (1 hrs coupling frequency)
 domain : yyyxyy points, Dx=2.5Km (Lambert Projection – linear grid)
 60 vertical levels



AROME North of Morocco Scores



	Horizontal Resolution	Vertical levels	Data assimilation	Range of forecast	Operation cycle	boundary conditions
ALADIN/NORAF	18km	60	Dynamical adaptation	72	CY36t1	ARPEGE Asynchronous
ALADIN/MAROC	10 km	60	Dynamical adaptation	72	CY36t1	ARPEGE Synchronous
AROME	2.5 km	60	Dynamical adaptation	30	CY36t1	ALADIN/MAROC