Regional Cooperation for
Limited Area Modeling in Central Europe

LACE
nwp central europe

Radar DA releated activity 2014

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DHMZ SHMU OMSZ ZAMG ROMANIA ANM

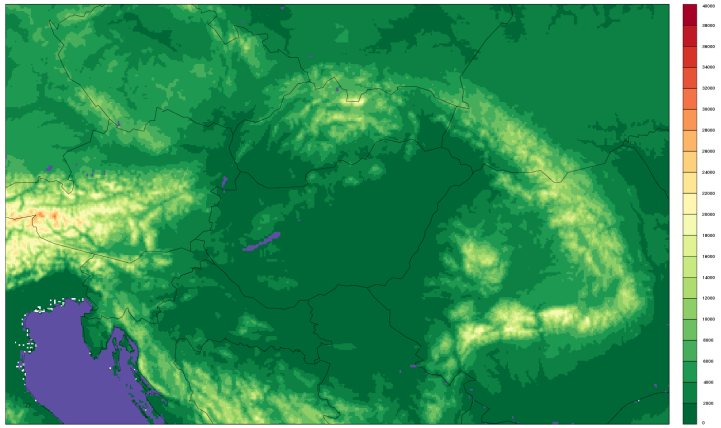
RC LACE radar assimilation period

- Two months period 2012/05 and 2012/06

Cc	Radar	Station
Austria	Ok	Ok (I)
Croatia	Ok	Ok
Czech Republic	Ok (I)	Ok (I)
Hungary	Ok	Ok
Slovakia	Ok (I)	Ok (I)
Slovenia	Ok	Ok
Romania	Ok	Miss

http://radar.nowcasting.eu/rclaceradar.html

Actual status



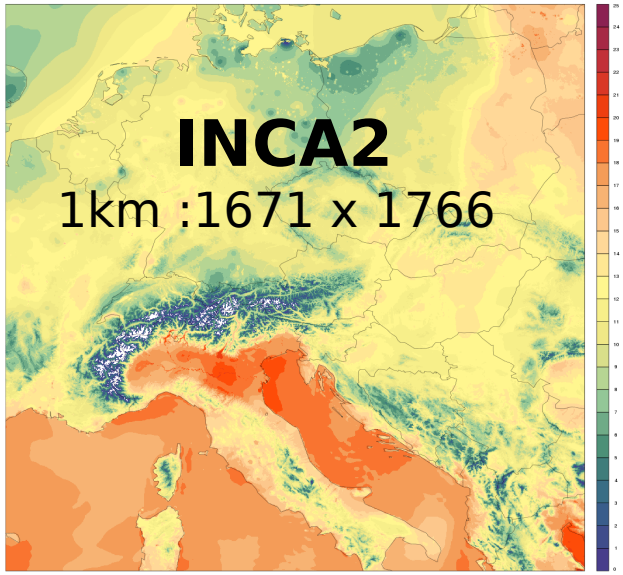
- **SHMU**
- INCA2 on hpc (AIX)
- NWCSAF (ALARO-0 9km)
- Planed NWCSAF (**AROME 2.5km**)
- SHMU – CONRAD on hpc (AIX)
- Postpone SHMU - ?? ALARO-0 3.3km | 4.5km or **AROME 2.5km**?? (some technical tests ,but postpone 11-12/2014)
- **OMSZ**
- INCA2 precipitation model was install on blade12 (linux)
- NWCSAF (OMSZ local staff provide data based on ECMWF)
- CONRAD on blade12 (linux)
- 36T1 is already running on wfma (linux) plan was switch to 38T1 (in progress, OMSZ staff already have it;-))

How Radar assimilation works

NWC-SAF
SK - SHMU
HU – OMSZ
import/nwcs
af

3D VOL RADAR
AT, CZ, HR,
HU,RO,SI,SK
import/radar

AWS
AT, CZ, HR, HU
SI,SK
import/station



3D VOL RADAR
AT, CZ, ,HR,
HU,RO,SI,SK
export/radar

INCA2 – how to set up

- **# INPUT data for the analysis #**
- INCA_RR_INPUT_NUM = 4
- INCA_RR_INPUT_NAME_1 = STA_PREC
- INCA_RR_INPUT_NAME_2 = OPERA_RADAR
- INCA_RR_INPUT_NAME_3 = SAFNWC
- INCA_RR_INPUT_NAME_4 = SRTM

INCA2 setting for precipitation station

- **# prec. station parameters #**
- PREC_STATION_DATA_DIR = [inca2_rr_exp path]/import/station
- PREC_STATION_DATA_REPEAT_FREQ_MIN = 5
- PREC_STATION_DEF_QI = 1.0
- PREC_STATION_DEF_STDDEV_MMH = 2.0
- PREC_STATION_QI_TEST_NUM = 1
- PREC_STATION_QI_TEST_NAME_1 = SAFNWC_PC_QI
- PREC_STATION_QI_TEST_NAME_2 = RADAR_QI
- PREC_STATION_SAFNWC_PC_QI_CORR_COEF = 2.0

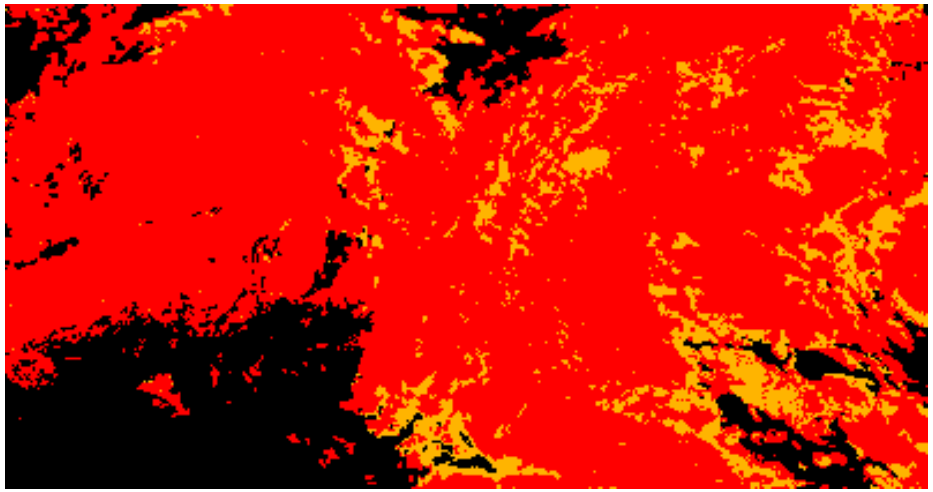
INCA2 setting for radar site

- **# radar parameters #**
- OPERA_RADAR_DATA_DIR = **[**inca2_rr_exp path**]/import/radar**
- OPERA_RADAR_SITE_NUM - number of radars sites
-
- OPERA_RADAR_SITE_CODE_1 = T_PAGZ41_C_LZIB (radar file name)
- OPERA_RADAR_SITE_REPEAT_FREQ_MIN_1 = 5 (measurement frequency of radar site)
- OPERA_RADAR_SITE_DEF_QI_1 = 1.0 (default QI set to 1)
- OPERA_RADAR_SITE_DEF_STDDEV_DBZ_1 = 4.0
- OPERA_RADAR_SITE_CLIM_QI_FILE_1 = = **[inca2_rr_exp path] /import/radar_clim/T_PAGZ41_C_LZIB_CLIM_QI.hdf**
- OPERA_RADAR_SAVE_CORRECTED_1 = 1
- OPERA_RADAR_SAVE_CORRECTED_DIR_1 = **[inca2_rr_exp path]/export/rad_vol**

INCA2 setting for NWCSAF

- SAFNWC_DATA_DIR = [inca2_rr_exp path] /import/safnwc
- SAFNWC_SATELLITE = MSG2
- SAFNWC_REPEAT_FREQ_MIN = 15
- SAFNWC_REGION_NAME = slovakia___p
- SAFNWC_PRODUCT_NUM = 3
- SAFNWC_PRODUCT_NAME_1 = CT
- SAFNWC_PRODUCT_NAME_2 = CTTH_HEIGHT
- SAFNWC_PRODUCT_NAME_3 = PC

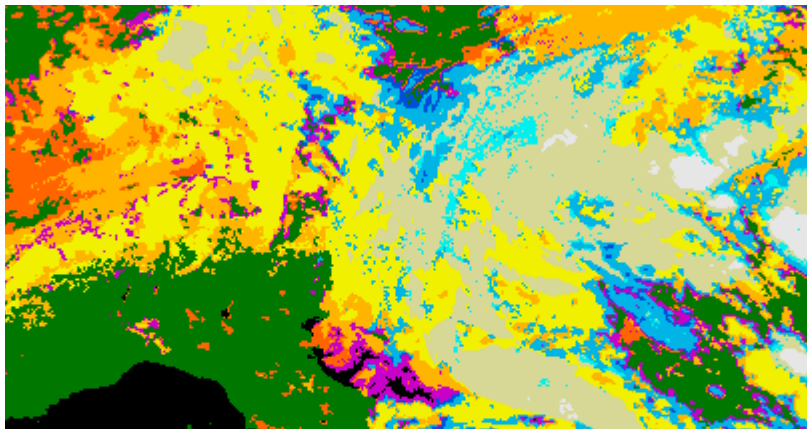
INCA2 - NWCSAF inputs - Cloud Mask

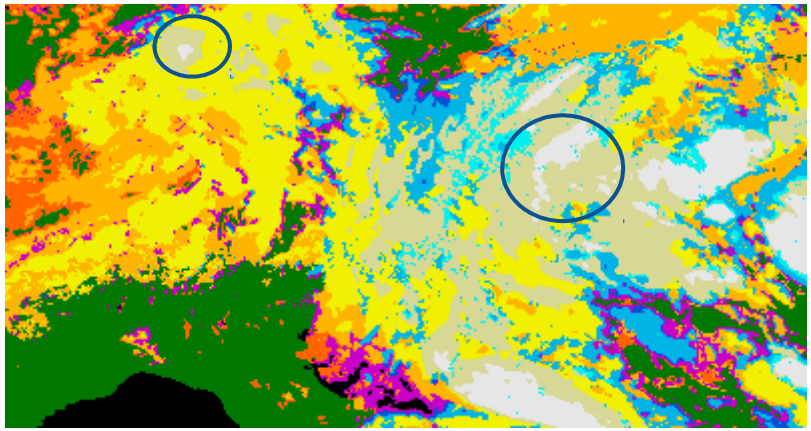


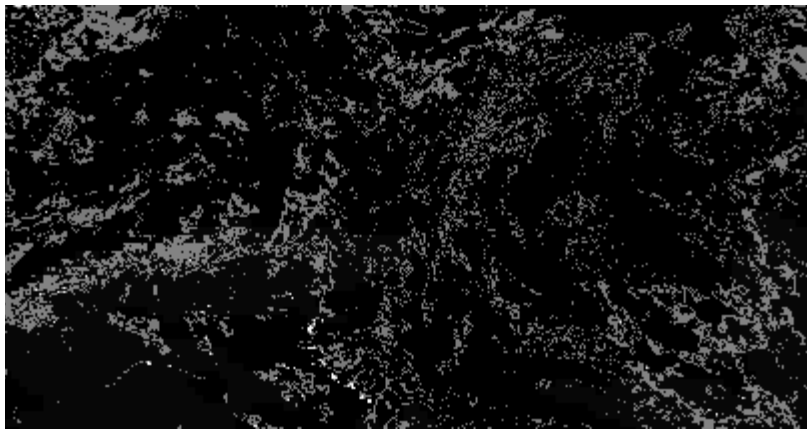
We try to test Nowcasting SAF data from more sources (both institutes receive the same satellite data from is still same but backgroung model is different)

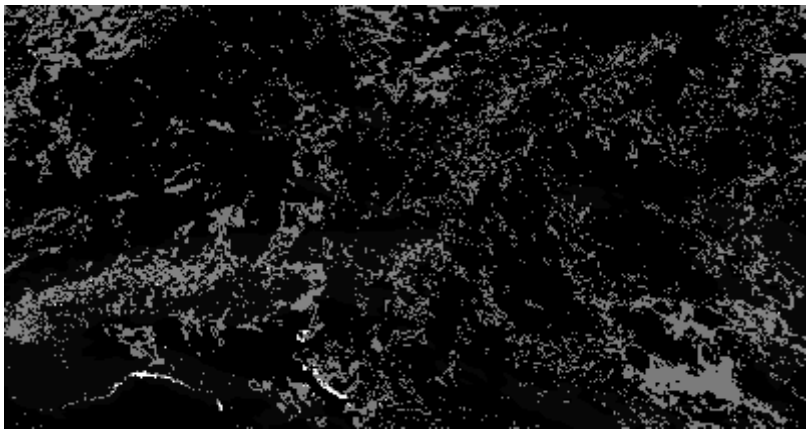
- SHMU (ALARO 9km)
- OMSZ (ECMWF 16km)
- In last phase I try to test and run NWCSAF on SHMU (AROME 2.5km)

Why is import usage local model in NWCSAF





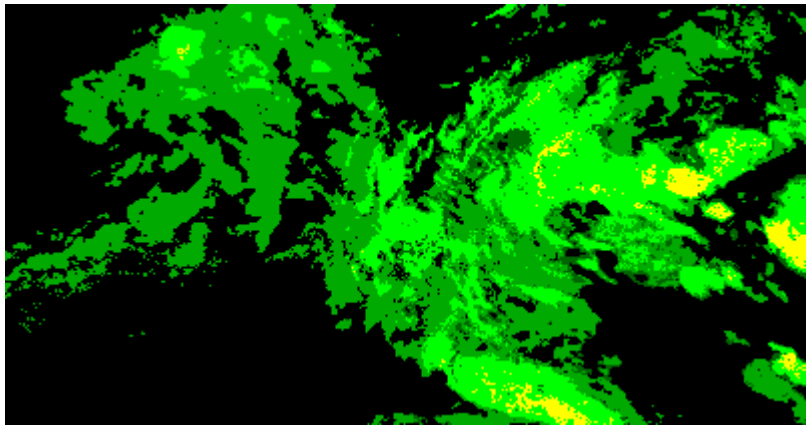




Cloud Type - In left is OMSZ (ECMWF) and in right SHMU (ALARO)

Search for differences

INCA2 - NWCSAF inputs - CRR

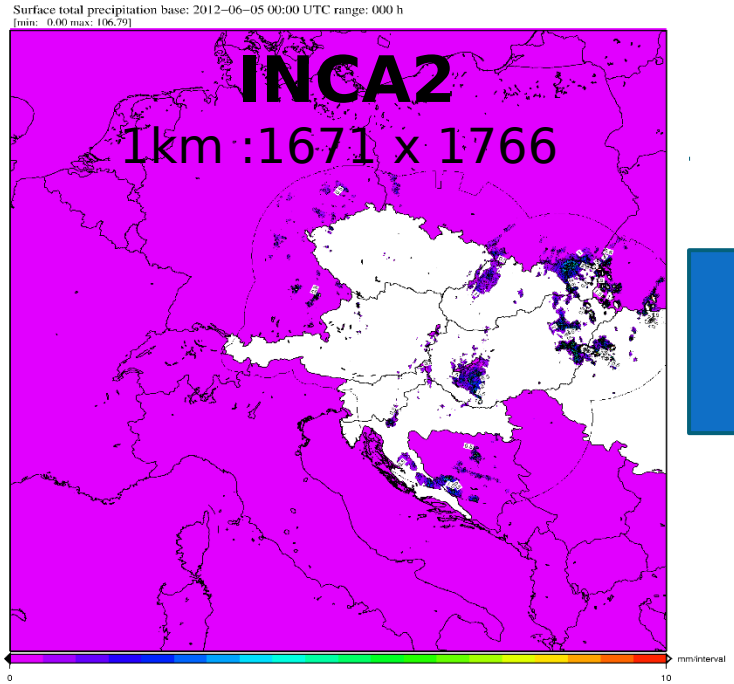


- Nowcasting SAF is now calculated each 15 minutes originally, but we testing for INCA2 5min (MSG - RAPID SCAN)
- Use of local numerical model give you features of RUC (3h) for each product where model input data is used
- Future MTG allow us 2.5 min data
- **But main reason for usage is we use these data for our QC**

INCA2 setting for for QC

- OPERA_RADAR_QI_TEST_NUM = 6
- OPERA_RADAR_QI_TEST_NAME_1 = LAPLACE
- OPERA_RADAR_QI_TEST_NAME_2 = RLAN
- OPERA_RADAR_QI_TEST_NAME_3 = ATTEN
- OPERA_RADAR_QI_TEST_NAME_4 = SAFNWC_CT_CTTH
- OPERA_RADAR_QI_TEST_NAME_5 = BEAM_BLOCK
- OPERA_RADAR_QI_TEST_NAME_6 = CLIM

How Radar assimilation works



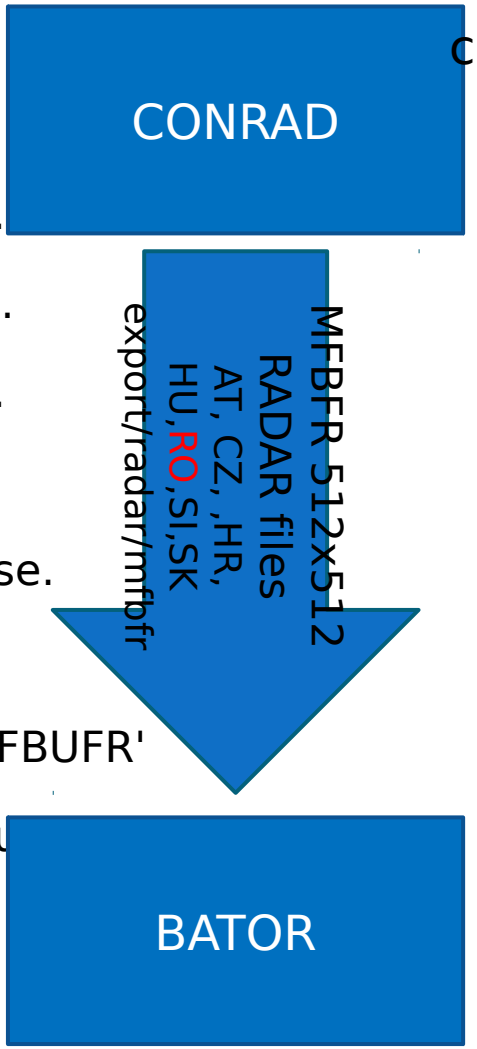
HDF5 3D -RADAR VOL
AT, CZ, ,HR, HU,RO,SI,SK
export/radar

CONRAD

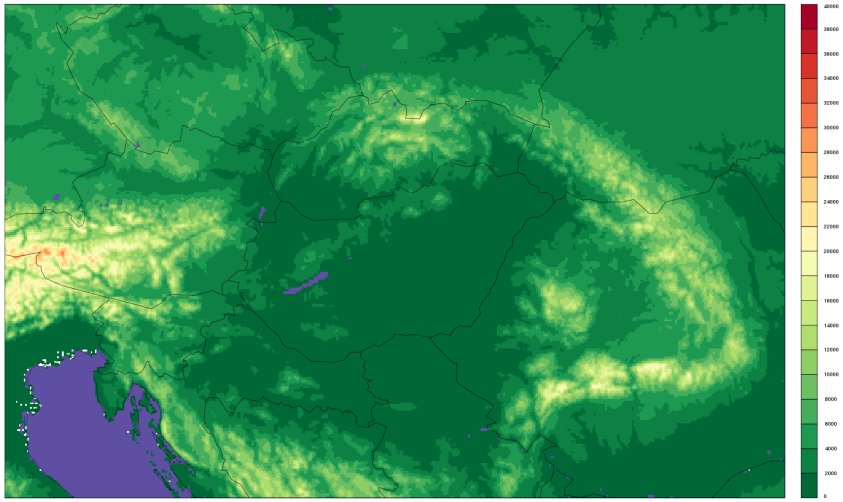
inca2_rr.exe yyyymmdd_HHMMSS [path2config/inca2.conf]

CONRAD

- &userinput
- noelevs=12
- polarcoord=.true.
- radialwind=.false.
- reflectivity=.true.
- wrkdir='[path]'
- legacy_wind=.false.
- country='SK'
- outputformat='MFBUFR'
- bufrfilename='[ou
- /



conrad_main inputnam.dat



DA plans for 2014

RC-LACE dataset

- Finally evaluate added value of DA (OMSZ – 2.5km) for whole RC-LACE dataset (now is not only radars ,but also AWS)
- Use 38T1 AROME 2.5km for experiments
- **Finally finish work and report from last Budapest stay**

- 3DVar on SHMU - ?? ALARO-0 3.3km | 4.5km or AROME 2.5km?? (some technical tests ,but postpone 11-12/2014) or use HARMONIE
- Compare usage of ALARO (4.5km) vs ECMWF (16km) vs AROME (2.5km) usage in NWCSAF
- Try to use Bator which direct working with HDF5 files

- We know that on our radar departments (SHMU, OMSZ, ZAMG,???) testing BALTRAD for QC and is possibile to compare a results

Actually used radars for RCLACE radar DA tests

T_PAGZ41_C_LZIB

T_PAGZ51_C_LZIB

T_PAGZ50_C_OKPR

T_PAGZ42_C_SOWR

T_PAGZ44_C_SOWR

T_PAGZ48_C_SOWR

BUD-PPIVol

POG-PPIVol

NAP-PPIVol

T_PAGZ60_C_OKPR

ZIR-PPIVol

RAU-PPIVol

FEL-PPIVol

PAT-PPIVol

T_PAZZ42_C_LDZM

T_PAZZ43_C_LDZM