Regional Cooperation for
Limited Area Modeling in Central Europe

LACE
nwp central europe

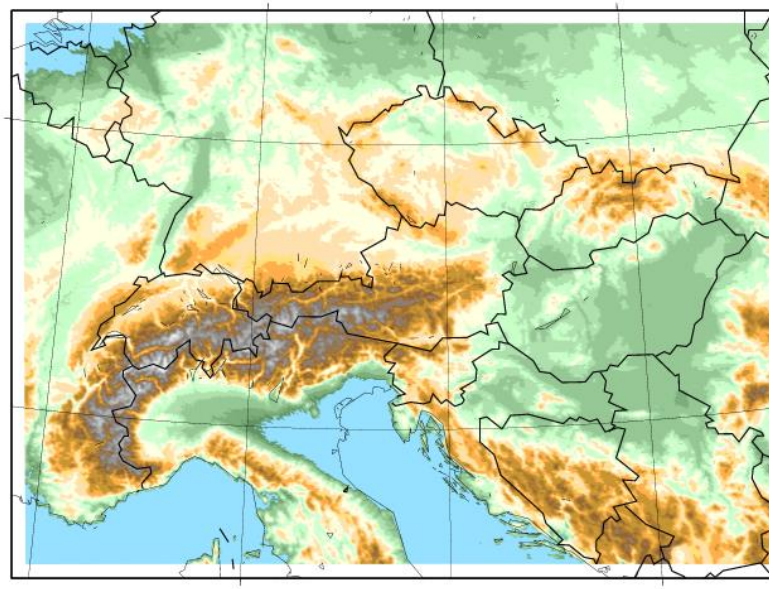
Status data assimilation in Austria

Florian Meier

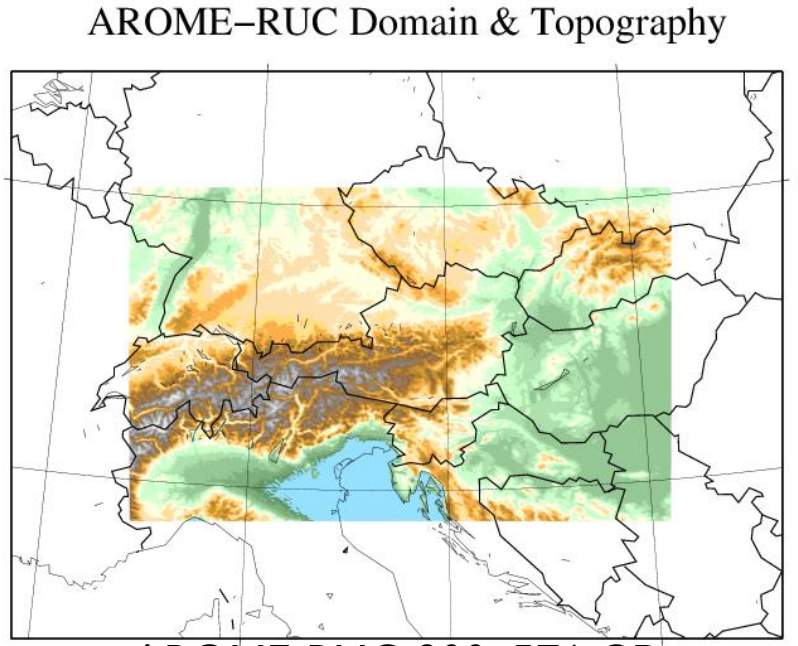
DHMZ SHMU OMSZ ZAMG ROMANIA ANM

Operational systems (cy40t1)

- AROME-Aut 2.5km/L90 3h cycle
- CLAEF (AROME-EPS) 2.5km/L90 6h cycle + Jk (ECMWF HPC)
- AROME-RUC 1.2km/L90 1h cycle + IAU
- (ALADIN LAEF 11km is not further developed within Austria)



AROME-/C-LAEF 600x432 GP



AROME-RUC 900x576 GP

Observations used in AROME/C-LAEF:

Obstype	Parameter
Synop+Tawes+Ship	U10m,V10m, RH2m,T2m, Z
AMDAR	U, V, T
MODE-S test (KNMI/OPLACE) DK	U, V, T
GEOWIND	AMV (WVCL1/2,WVMW1, IR3,VIS3)
TEMP	U, V, T, Z, Q
PILOT	U,V
MSG-SEVIRI	WV radiances
NOAA18/19/MetOp-A,-B	AMSU-A, AMSU-B, MHS, HIRS
MetOp-A	IASI
MetOp-A	U10m, V10m ASCAT ocean winds 25km

CANARI settings: REF_A=190km, LVARSIGO=F, LMESCAN=T, LCORRF=T
REF_S_T2=5.0,REF_S_H2=0.3,RCLIMCA=0.045,RCT2SY=3.9, RCH2SY=2.5
OROLIM=3800.,ORODIF=1650. REDNMC=1.2

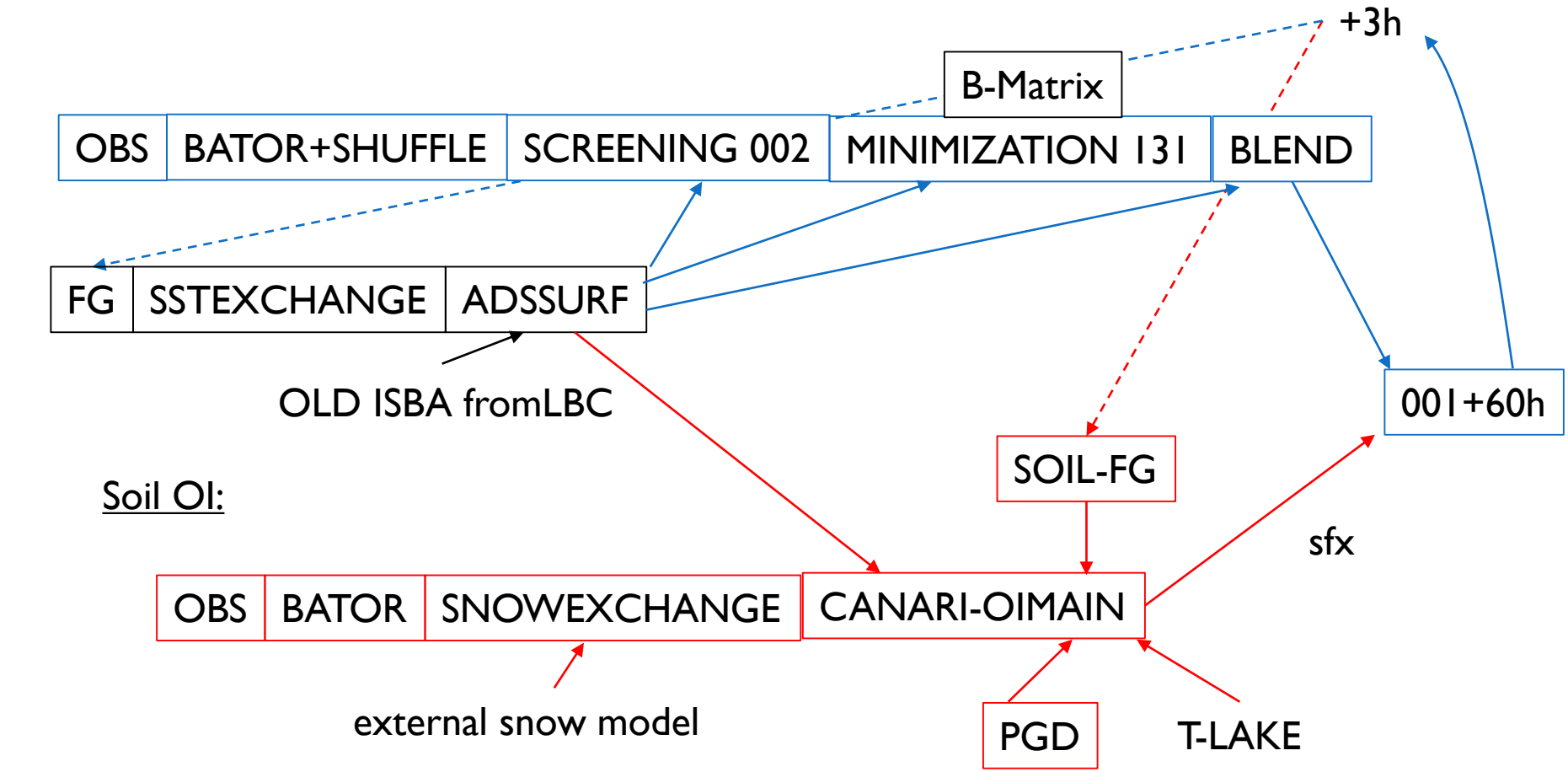
T_LAKE from Lake Constance from measurement interpolated inside OIMAIN

Additional observations in AROME-RUC:

Obstype	Parameter
SYNOP national (AT+ OPLACE without SK)	U10m,V10m, RH2m,T2m, Z
MODE-S ARSO/CHMI (MRAR) KNMI/AT/DK	U, V, T +AMDAR-Q
RADAR	DOW+REF +saturation of profiles
GNSS (AT national) VARBC	ZTD
GNSS-RO ROMSAF	bending angle
Windprofiler + SODAR	U,V
MetOp-C all radiances active	AMSUA, MHS, IASI
ATMS SUOMI+NOAA20	Radiances ch1-3,5-14,16-22
INCA	RR5min via LHN
TAWES+10/20/30min	T2m/RH2m/U10m/V10m via FDDA Nudging
T-Lake (Fertoe/Balaton) pseudo obs	TS_WATER

CANARI settings: REF_A=100km, LVARSIGO=F, LMESCAN=T, LCORRF=T
REF_S_T2=3.12,REF_S_H2=0.28, RCLIMCA=0.045, RCT2SY=3.9,
RCH2SY=2.5 OROLIM=3800.,ORODIF=1650. REDNMC=1.5

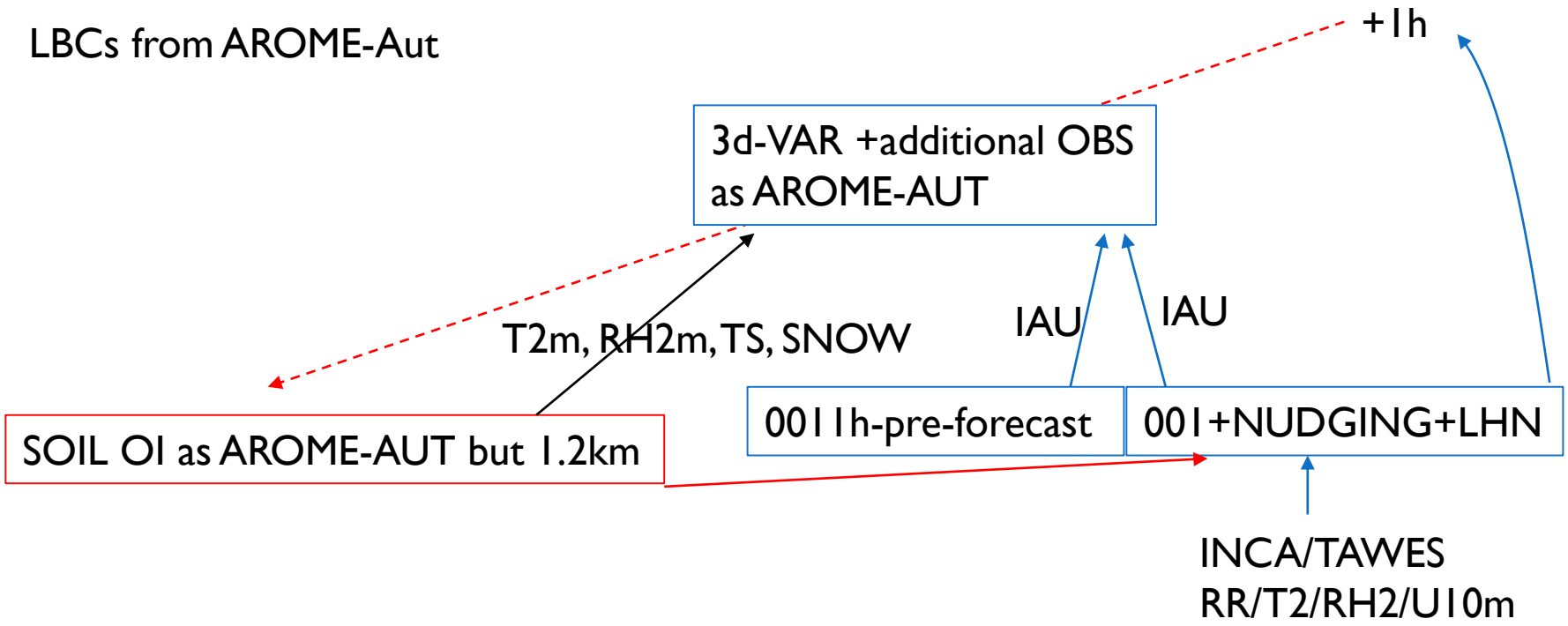
AROME-Aut structure (3 hourly cycle)



no sapareted assimilation cycle, window +-90min

AROME-RUC structure (hourly cycle)

Atmosphere 3D-Var:



no sapareted assimilation cycle, window -90min-+30min; cutoff 25min

COVID 19 impact on aircraft OBS

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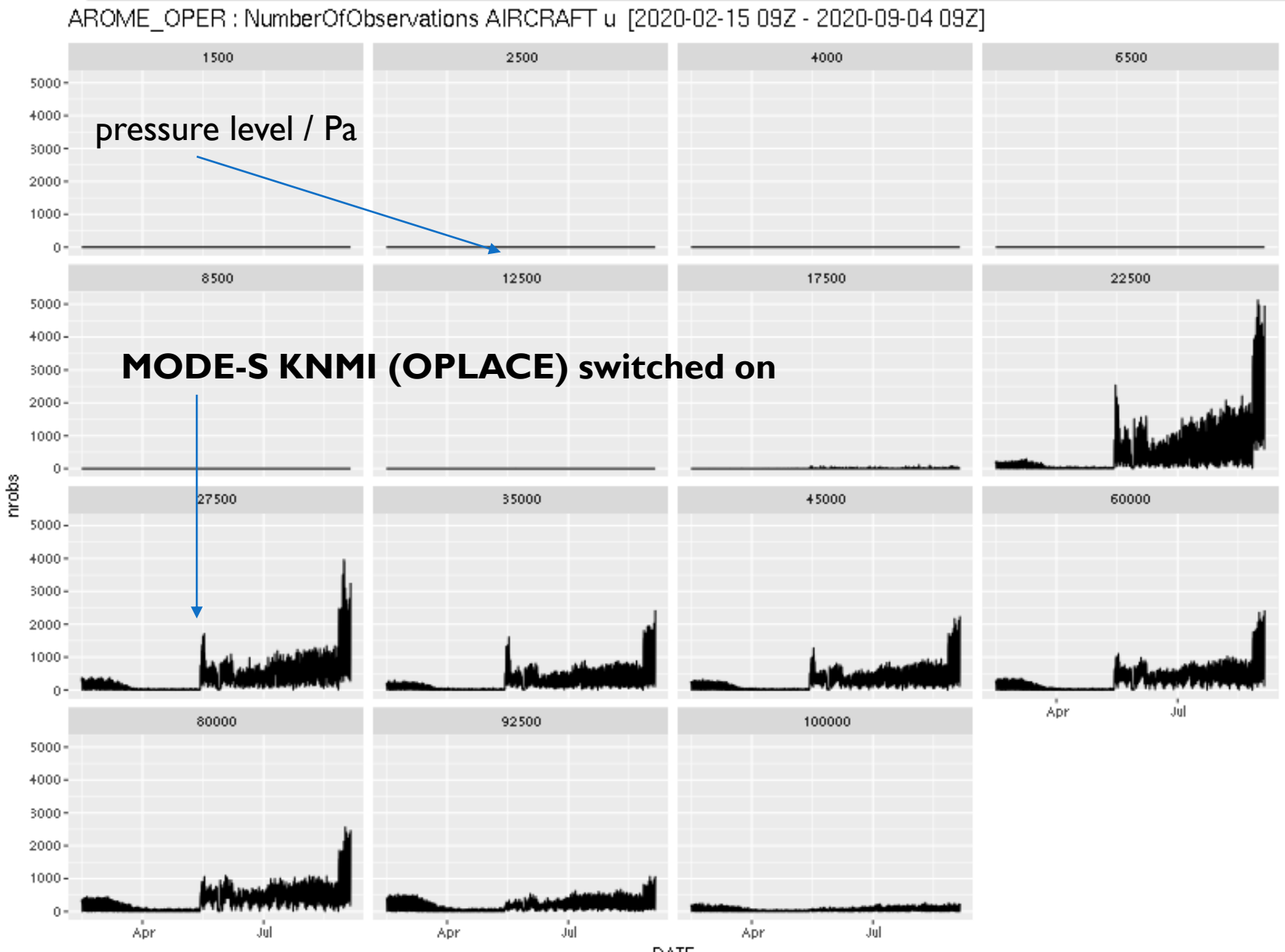
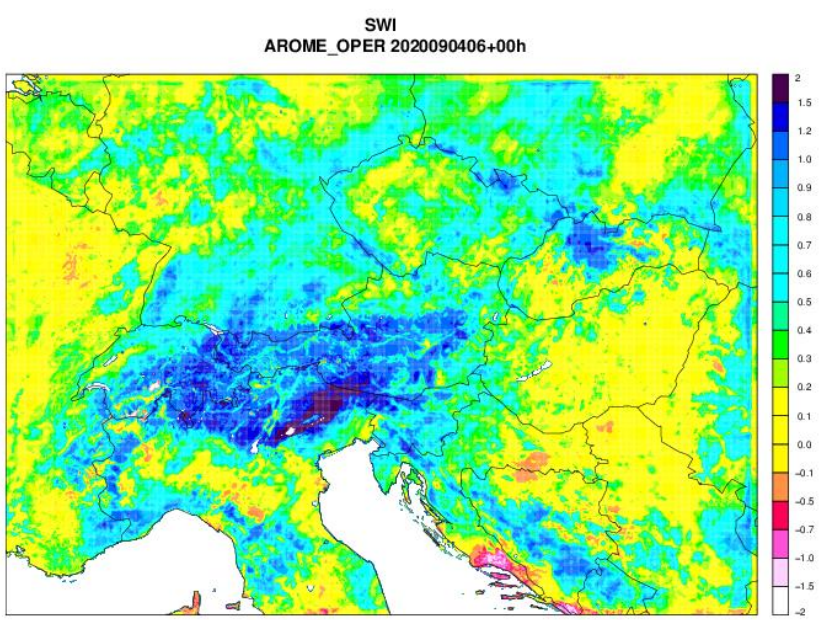


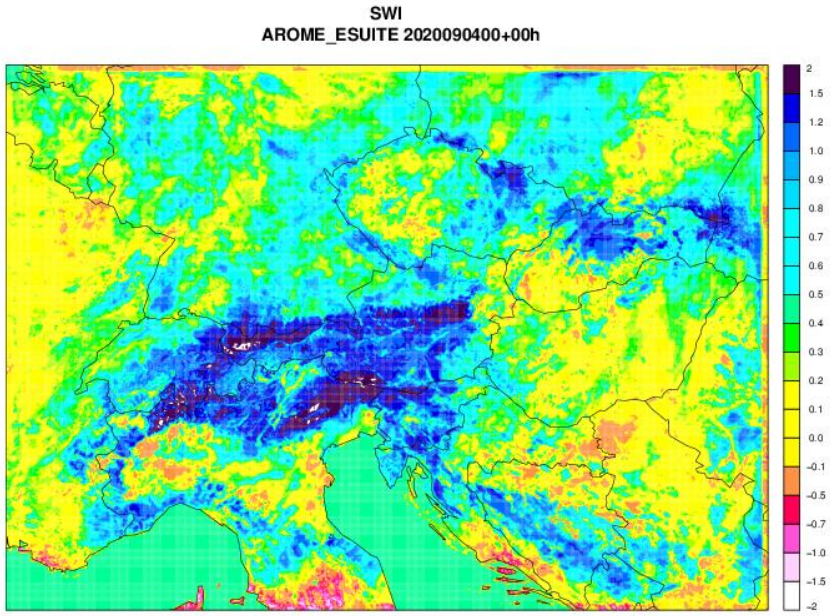
Status of cy43t2 at ZAMG

- All local modifications coded into cy43t2
- all binaries and scripts/namelists generated (setting close to cy40t1); all steps technically working
- RADAR pre-processing adapted to cy43t2 BATOR
- Start of AROME-Aut parallel run in late spring 2020 with same observations as cy40t1 except satellite (only passive)
- no OIMAIN namelist read in cy43t2?

Status of cy43t2 at ZAMG

- Scores not satisfying at all
- big positive 2m temperature bias at night in Alpine valleys under stable conditions
  -> reason: orography GMTED vs smoothed GTOPO; independent of cycle
- Sometimes huge differences in precipitation during the first hours
- Significant difference in soil moisture (cy43t2 more wet)
- Probably mixture of DA and other issues (orography, SURFEX, physics)
- Further investigation needed





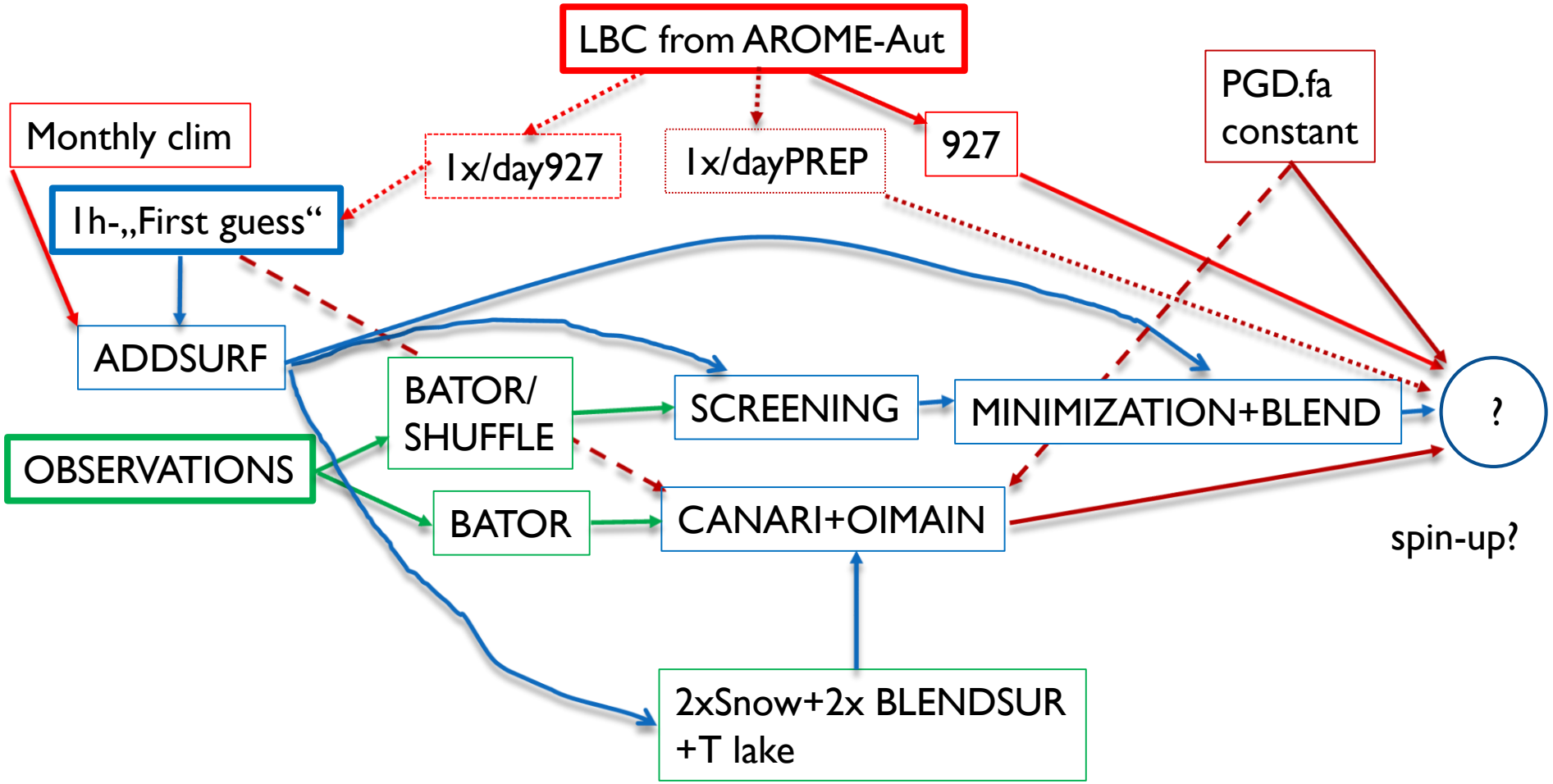
SWI

Plans for 2021

- Assimilation of GNSS-ZTD on board of Austrian trains
- Exploitation of microwave links from Austrian mobile phone network ->LHN
- Cycle update
- Little work on radar ->modification of hydrometeors
- bring CLAEF/AROME-AUT closer together

2020: tests with private weather stations

AROME-RUC structure part A



window -90/+30min additional observations