Summary of WG6 activities

Massimo Milelli
&
all the group members

Outline

➢ Documentation

➢ NWP Test Suite

➢ ICON-LAM Test Suite

➢ COSMO-LEPS

➢ AoB

Documentation

- Up-to-date operational web pages

- Updated the Core documentation page:

  - PART V (INT2LM user's guide)

  - PART VI (Model Output and Data Formats for I/O)

  - PART VII (COSMO 5.06 user's guide)

- Activity Proposal form changed (DWD request), and web page modified:

    http://www.cosmo-model.org/content/support/activityProposal

- link to ICON added in the home page

- "official" software page updated with DACE and VAST

- "other" software page updated with bufr2netcdf

- DOI in progress, TRs 16-39 labelled

- NL n°19 to be issued and labelled with DOI

- TRs n° 36 (PP VERSUS2), 37 (PP INSPECT), 38 (PP CORSO-A), 39 (PP SPRED) released during the COSMO year 2018-2019

- TRs n° 40 (PT Terra Nova) and 41 (PT AEVUS) to be released later in autumn

- expected TRs during next COSMO year: PP KENDA, PP POMPA, PP CDIC, PP CELO

- common plot activity report 2018-2019 is expected, but the plots are updated and the page is interactive:

    http://cosmo-model.org/content/tasks/verification.priv/common/plots

- NWP TS report is expected (v5.05 vs v5.06)

NWP Test Suite

COSMO_v5.05	Hindcast		Forecast		Improvement
HRES → 7p0 (EC_total_tasks=72, EC_nodes=1)	~ 17 BU	~1.5min	~ 40 BU	~6min	-58% BU
7p0_SP (EC_total_tasks=720, EC_nodes=20)	~ 712 BU	~ 4 min	~ 1650 BU	~9 min	-57% BU
7p0_DP (EC_total_tasks=720, EC_nodes=20)	~ 890 BU	~ 5 min	~ 2500 BU	~ 13 min	-64% BU
7p0_DP→ 2p8_DP (EC_total_tasks=72, EC_nodes=2)	~ 115 BU	~ 6 min	~ 278 BU	~ 14 min	-59% BU
2p8_DP (EC_total_tasks=972, EC_nodes=27)	~ 13.535 BU	~ 53 min	~ 27.250 BU	~ 105 min	-50% BU

7p0: forecast range 72h -> 24h
2p8: forecast range 48h -> 24h

Simulation of comparison test COSMO v5.05 vs v5.06 in hindcast mode is complete

@ 7km in SP and DP

@ 2.8km in DP only (nested in @7km DP)

Cost and time consumed for a 24h run on ECMWF HPC

	COSMO-5.05		*COSMO-5.06*	
HRES → 7p0 (EC_total_tasks=72, EC_nodes=1)	~ 17 BU	~1.5min		
7p0_SP (EC_total_tasks=720, EC_nodes=20)	~ 712 BU	~ 4 min	~ 761 BU	~ 4 min
7p0_DP (EC_total_tasks=720, EC_nodes=20)			800BU	~ 5 min
7p0_DP → 2p8_DP (EC_total_tasks=72, EC_nodes=2)	~ 115 BU	~ 6 min	~ 121BU	~ 6 min
2p8_DP (EC_total_tasks=972, EC_nodes=27)	~ 13.535 BU	~ 53 min	~ 12.708 BU	~ 50 min

DP consumes ~5% more than SP

DP consumes ~25% more than SP

	COSMO-5.05		COSMO-5.06	
HRES → 7p0 (EC_total_tasks=72, EC_nodes=1)	~ 17 BU	~1.5min	~ 17 BU	~1.5min
7p0_SP (EC_total_tasks=720, EC_nodes=20)	~ 712 BU	~ 4 min	~ 761 BU	~ 4 min
7p0_DP (EC_total_tasks=720, EC_nodes=20)	~ 8...			5 min
7p0_DP → 2p8_DP (EC_total_tasks=72, EC_nodes=2)	~ 115 BU	~ 6 min	~ 121BU	~ 6 min
2p8_DP (EC_total_tasks=972, EC_nodes=27)	~ 13.535 BU	~ 53 min	~ 12.708 BU	~ 50 min

V5.06 consumes ~ 6-10% less than v5.05

Cost and time consumed for a 24h run on ECMWF HPC

- the results are basically neutral

- still an issue with the precipitation field

- to be checked the SP/DP behaviour (v5.05 vs v5.06)

ICON-LAM Test Suite

	ICON-LAM-CTS7	ICON-LAM-CTS2
H.RESOLUTION	R3B7 (6.576km)	R4B8 (2.466km)
CENTER	13.65625W, 48.58875N	13.4125W, 48.6625N
ROTATION	0	0
HALF WIDTH	20.65625	19.8375
HALF HEIGHT	14.71875	14.3375
lwrite_parent	ON	ON
CENTRE, SUBCENTRE	250, 0	250, 0
NUMBER GRID USED	1001	1002

Leaflet | Tiles © Esri — Esri, DeLorme, NAVTEQ, TomTom, Intermap, iPC, USGS, FAO, NPS, NRCAN, GeoBase, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community
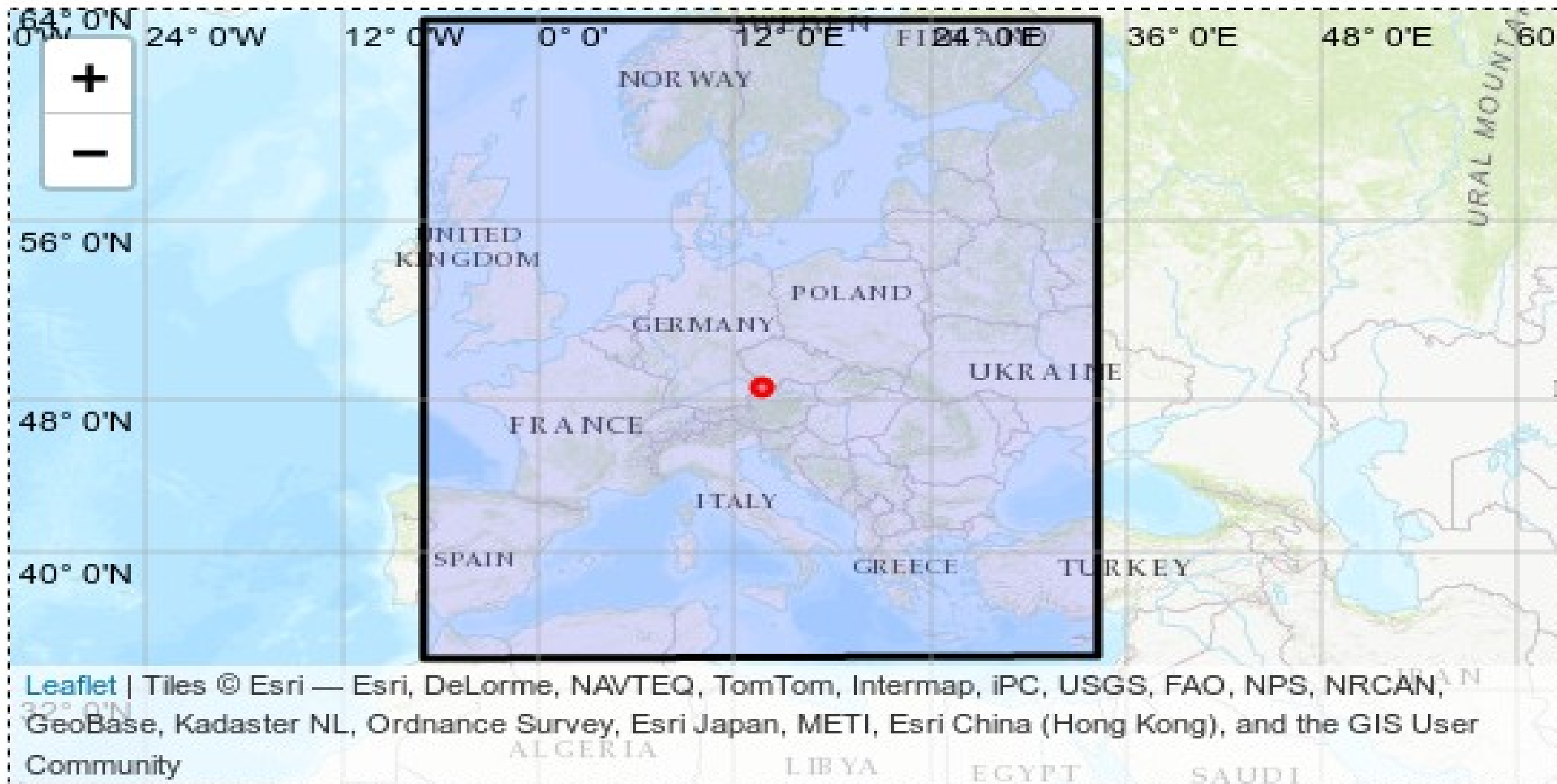
COSMO-LEPS

No scientific updates to the COSMO-LEPS suite in 2018-2019

Maintenance

- Work flow migration from XCDP to ECFLOW (November 2018)

- Transition to new MARS dissemination (January 2019)

- INT2LM version updated to 2.05 (February 2019)

- <u>Transition to new version ENS ECMWF</u> (June 2019)

- Runtime issues

- User requests

Maintenance

- Upgrade of several modules (Magics, Metview, python, grib_api, libsim, fieldextra) due to ECWMF system session (18 September 2019)

- Complete migration from grib_api to eccodes (libsim, fieldextra) (within 2019)

- Work flow migration from XCDP to ECFLOW of esuite (within 2019)

- Upgrade of COSMO version from 5.03 SP to 5.06 SP (as soon as it will be available)
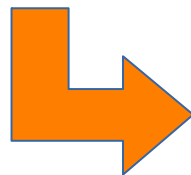
Upgrade

- Extension of COSMO-LEPS domain towards East to include Israel (increment of ~45% cost and time, challenging implementation)

- Lagged ensemble (ENS 06UTC, 12UTC for LEPS starting at 12UTC; ENS 18UTC, 00UTC for LEPS starting at 00UTC) (= SBU, simple implementation)

- SPPT (in COSMOv5.06 SP) (small increment of cost and time, simple implementation)

Other business

- Cosmin Barbu left NMA at the end of May

- New mail list activated for PP C2I (c2i@cosmo-model.org)

- Next model training course announced (30/3-3/4 2020):
https://www.dwd.de/EN/specialusers/research_education/seminar/2020/nwp_training_2020/
training_2020_en_node.html

- Next ICCARUS meeting announced (2-6/3/2020):
https://www.dwd.de/EN/specialusers/research_education/seminar/2020/iccarus2020/
iccarus_2020_en_node.html

- PP C2I meeting

- Test Suites meeting

Scientific partner

US	Lawrence Livermore National Laboratory
US	University of Washington
CA	University of Toronto
EC	Research Center on Mathematical Modeling
PY	Universidad Católica "Nuestra Señora de la Asunción"
BR	SIMEPAR – Sistema Meteorológico do Paraná
BR	Universidade do Estado do Rio de Janeiro
NG	Federal University of Technology
NG	Federal University Lafia
UG	Makerere University
IL	University of Tel Aviv
SA	King Abdulaziz University
IE	University College Dublin
GB	University of Hull
CZ	Akademie der Wissenschaften der Tschechischen Republik
UA	Marine Hydrophysical Institute
IN	Space Physics Laboratory
IN	Dibrugarh University
IN	Alaknanda Ghaati Shilpi Federation
CN	Zhejiang University
CN	Shanghai Typhoon Institute

COSMO Member   COSMO Licensee   Scientific partner

Thanks for your attention and for your work !