

Status of the EUMETNET C-SRNWP project

Balázs Szintai

with inputs from Máté Mile, Benedict Strajnar, Jelena Bojarova, Martin Ridal,
Christoph Schraff, Bruce Macpherson and many others ...

Outline

- News from EUMETNET
- OPERA and NWP
- SRNWP support for EUCOS (Obs-SET)
- BUFR migration
- Extension of the ECMWF BC project to EPS
- SRNWP data pool
- Global Lake Data Base
- Physiographic data bases

C-SRNWP highlights

News from the EUMETNET Forecasting Programme

- **Nowcasting Phase II**
 - Approved by EUMETNET Council in December 2014
 - Project name: ASIST (Application oriented analySIS and very short range forecast environment)
 - Duration: 1 July 2015 – 31 December 2017
 - Coordinating Member: ZAMG (Austria)
- **SRNWP EPS Phase II**
 - Approved by EUMETNET Council in May 2015
 - Duration: 1 July 2015 – 31 December 2017
 - Coordinating Member: AEMET (Spain) supported by USAM (Italy) with the involvement of ARPA-SIMC (Italy)

C-SRNWP highlights

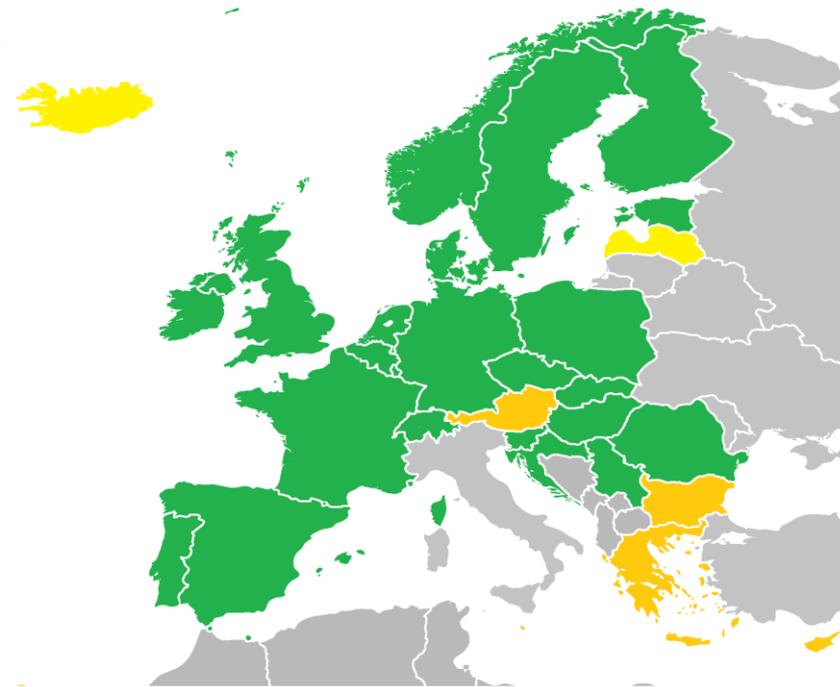
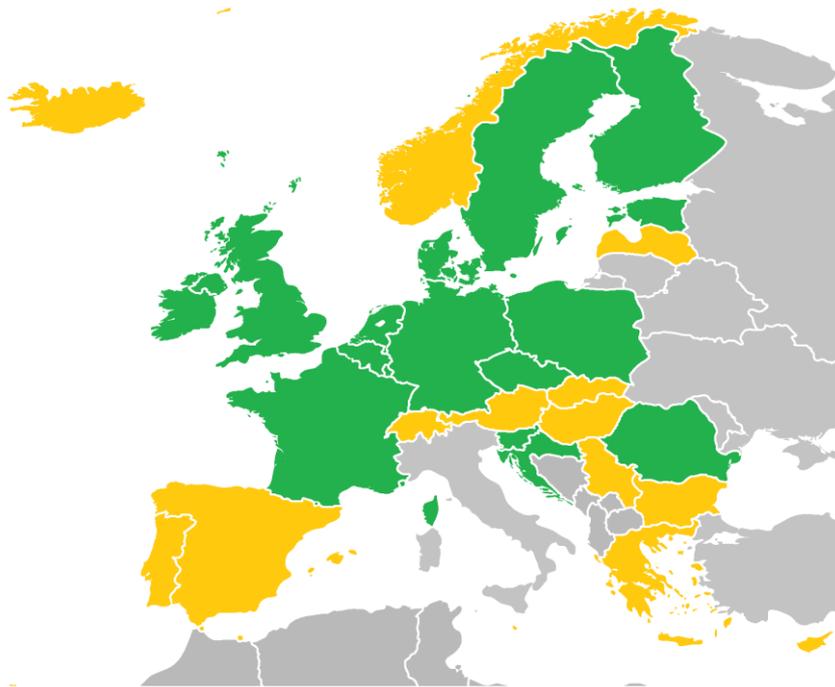
OPERA and NWP

- Data are already there for testing → access to volume data (wind and reflectivity) is enabled through HIRLAM (SMHI) (same as on ODC) without operational service level → NWP centers can test the assimilation of the data
- Anticipated difficulties:
 - Doppler wind: maximum measurable speed varies between measurements. High speeds are shown as much smaller speeds. Correction (dealiasing methods) are being tested in SMHI.
 - Reflectivity: from most radars, lack of distinction between „*undetected*” (valid „dry” measurement) and „*nodata*” (unknown status: cluttered, „wet” or „dry” measurement) pixels → we are throwing away valuable „dry” information

Plans for 2015/2016: collect experiences on the assimilation of volume data from ODC and local QC applications → feedback to OPERA (should be a loop)

C-SRNWP highlights

OPERA data availability



Doppler winds

Reflectivity

C-SRNWP highlights

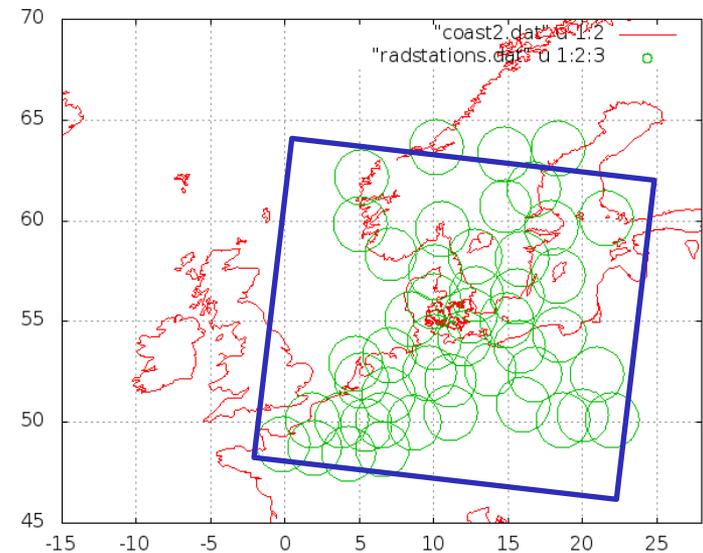
OPERA and NWP

- ALADIN
 - Meteo-France: experiments with OPERA volume data (QC problems → raw data needed)
- COSMO
 - DWD: operational assimilation of OPERA rain rate, testing of volume data
- LACE
 - OPERA developments are closely followed but no use of OPERA volume data yet
 - Internal radar data exchange for experiments
- HIRLAM
 - BALTRAD: Quality controlled data (BALTRAD QC Toolbox) from 10 countries (60-70 stations) → real-time assimilation test by DMI

Radar data assimilation – OPERA

(Martin Ridal, Mats Dahlbom)

- Domain: DKCOEXP
 - Covers many countries
 - 648x648 grid points, 65 levels, 2.5 km grid space
- Radar data
 - Radar data from 9 countries: Belgium, Germany, Denmark, Estonia, Finland, France, The Netherlands, Norway and Sweden
 - The same data as is sent to OPERA
 - Reflectivity only
 - Quality controlled using the BALTRAD toolbox
- Period: 20140824-31
 - During this period a strong precipitation event hit Copenhagen and Malmö (southern Sweden)
- Three experiments in the examples
 - Baseline – contains no radar data
 - Old thinning – made with the blind pixel hopping method (two times)
 - Superobservations – super observations are created and the elevation check performed

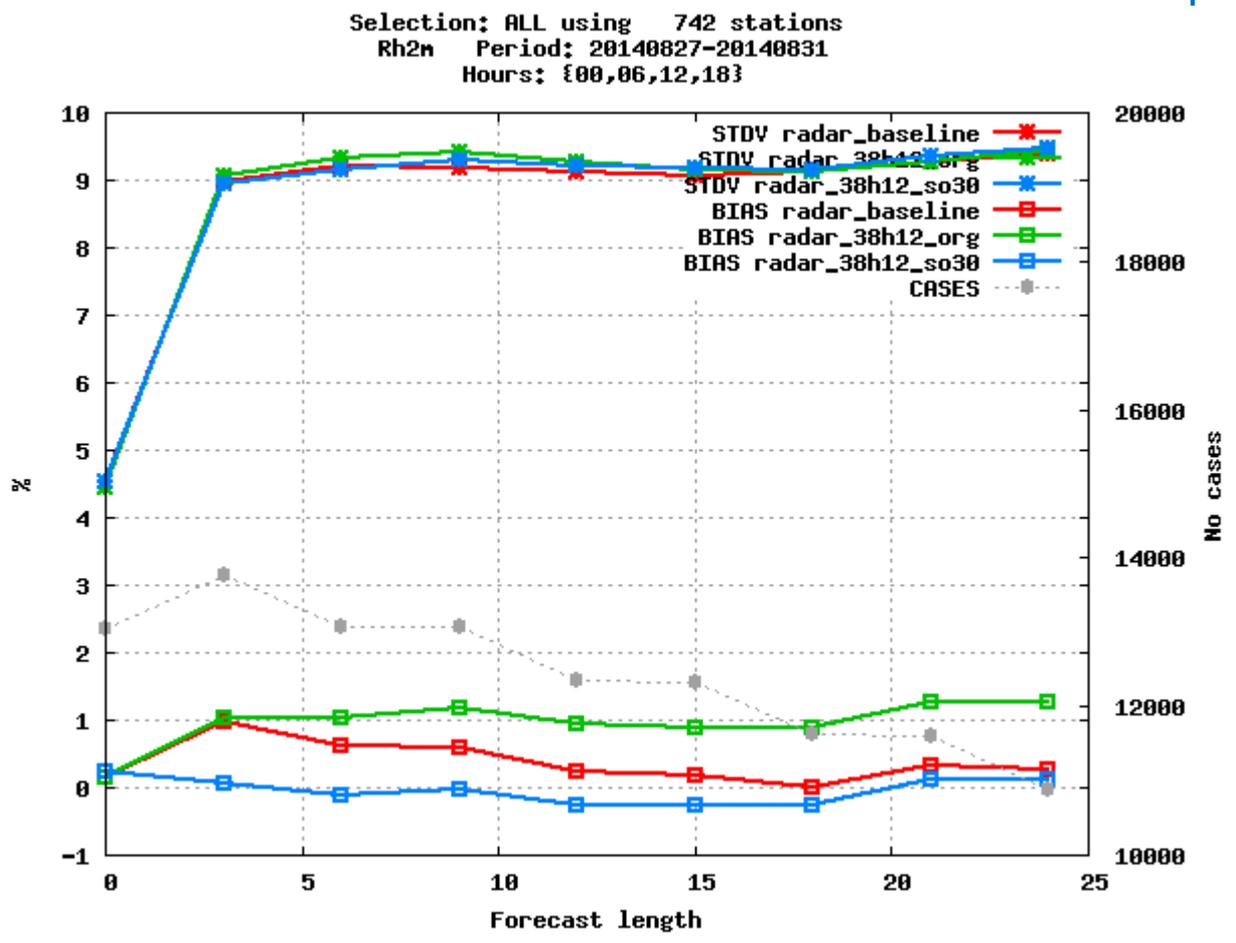


Radar data assimilation – OPERA

(Martin Ridal, Mats Dahlbom)

2 m relative humidity

Baseline
Old thinning (blind)
Superobservations

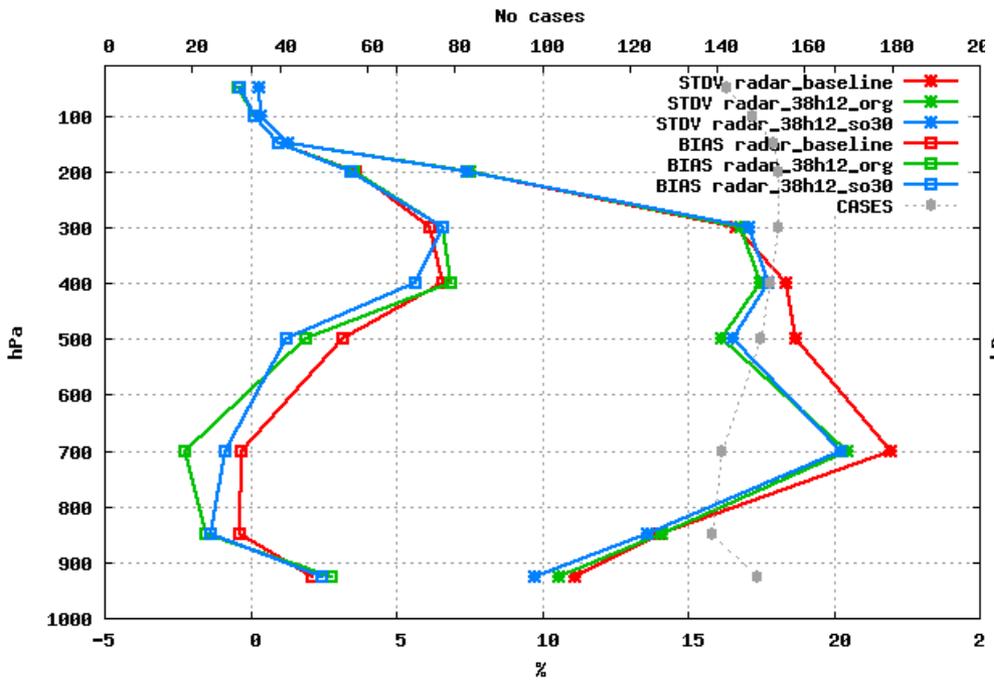


Radar data assimilation – OPERA

(Martin Ridal, Mats Dahlbom)

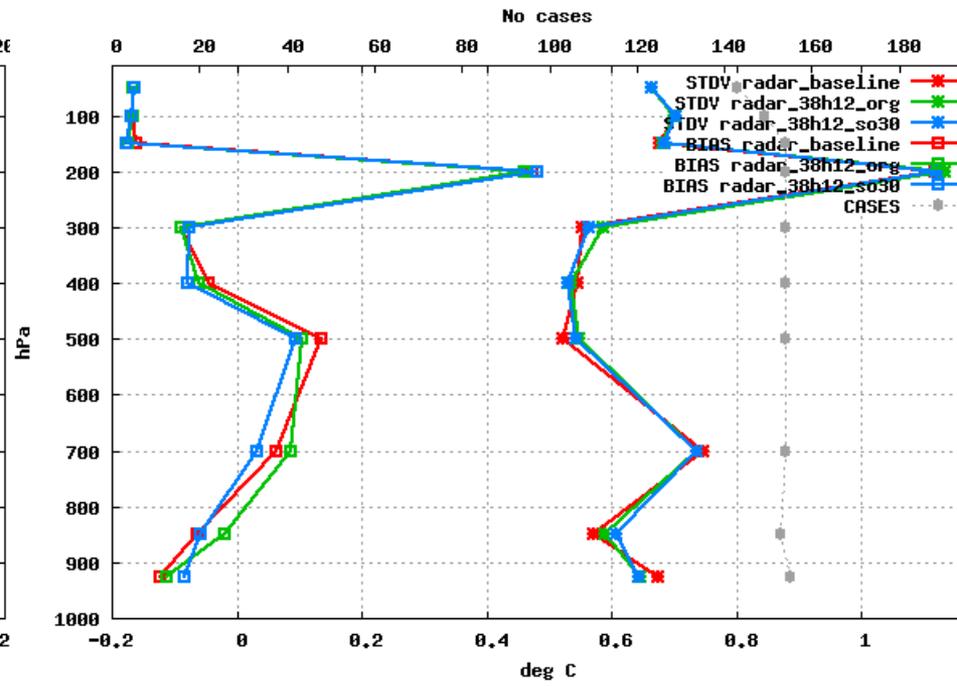
Relative humidity profiles

18 stations Selection: ALL
Relative Humidity Period: 20140827-20140831
Used {00,06,12,18} + 06



Temperature profiles

18 stations Selection: ALL
Temperature Period: 20140827-20140831
Used {00,06,12,18} + 06



C-SRNWP highlights

Observation network design (support EUCOS, Obs-SET)

- Collect DFS (Degrees of Freedom For Signal) and FSO (Forecast Sensitivity to Observations) observation impact indicators from the SRNWP community
→ this provides useful complementary information to Observing System Experiments
- The above is important in order to have an influence on the priority of EUCOS observation programmes/projects from an SRNWP perspective

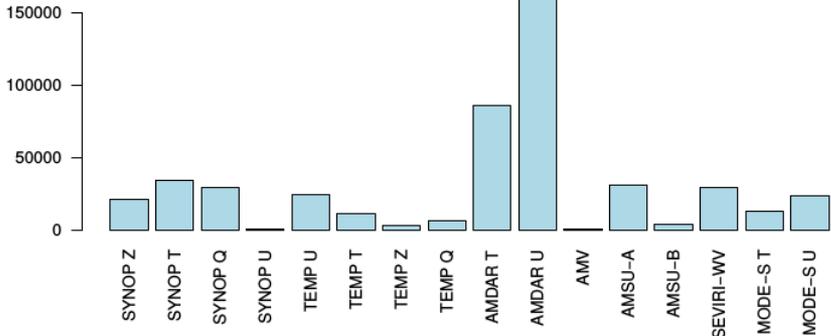
Plans for 2016

- Prepare material for Obs-SET

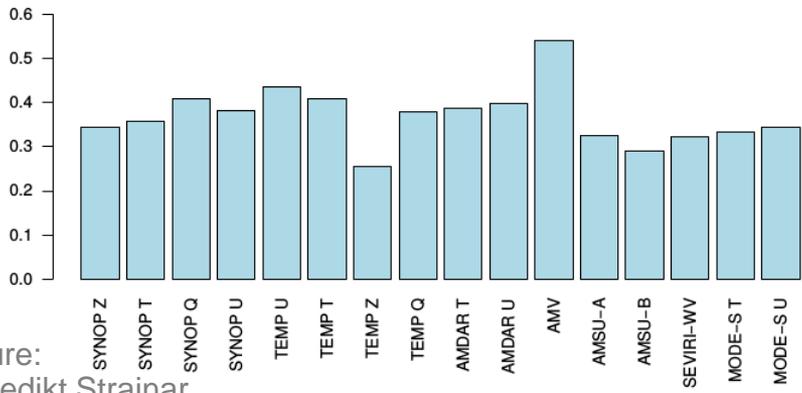
C-SRNWP highlights

Observation network design (support EUCOS, Obs-SET)

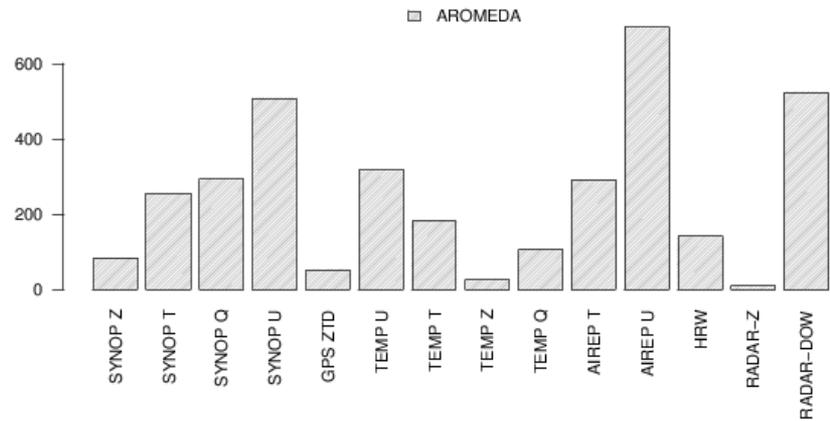
Absolute Degree of Freedom for Signal (DFS)



Relative Degree of Freedom for Signal (DFS/observations)



Absolute Degree of Freedom for Signal (DFS)



Relative Degree of Freedom for Signal (DFS/observations)

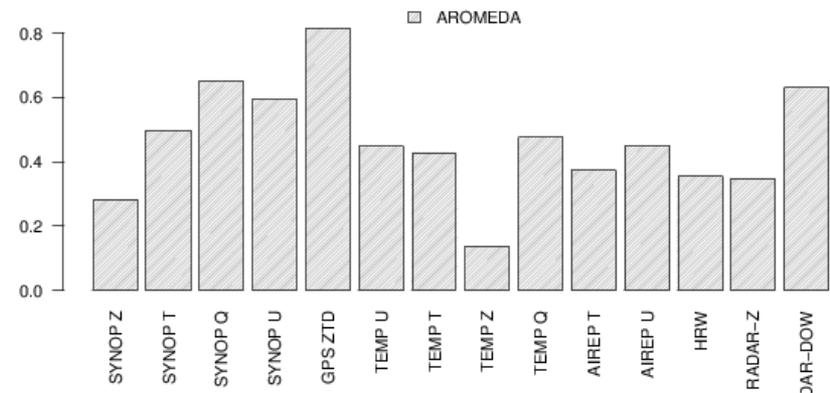


Figure: Benedikt Strajnar

Figure: Máté Mile

C-SRNWP highlights

TAC to BUFR migration

- Questionnaire sent in January 2015: replies from all consortia and ECMWF
- ECMWF maintains wiki page: <https://software.ecmwf.int/wiki/display/TCBUF/>
- General conclusions:
 - Several countries assimilate SYNOP in BUFR format
 - Only few countries assimilate radiosoundings in BUFR format → technical problems when generating BUFR message (simple conversion from TEMP to BUFR, not real BUFR message)
 - AMDAR BUFR assimilation still in progress

C-SRNWP highlights

ECMWF ENS LBCs to drive high resolution LAM EPS

- Thanks to ECMWF, high-resolution (T1279) IFS ENS runs were available to drive convective-scale EPS experiments (since January 2013) → several NMSs were testing the T1279 LBCs
- Workshop to discuss the results and prepare a proposal (ECMWF, 9-10 December 2013) to the TAC Subgroup of the BC project → 2 options proposed for IFS EPS LBC extensions (high-resolution, more runs)
 - A: 2 extra runs of IFS ENS (at 06 and 18 UTC) with present resolution (including the planned upgrade in 2015), 6 days forecast range, 50+1 members, hourly output (this last also for the operational 00 and 12 UTC runs)
 - B: 2 extra runs of IFS ENS (at 06 and 18 UTC) with present resolution (included the planned upgrade in 2015), 50+1 members up to a 3 day forecast range, then 20 + 1 members up to 6 day forecast range, hourly output (this last also for the operational 00 and 12 UTC runs)
- TAC subgroup reviewed the above proposal and recommended to go for option A
- 18 and 06 UTC runs will require additional manpower and SBU from BC project members → ~0.5% increase in the contributions, 20% of SBUs dedicated to BC project → TAC decided to put the proposal further to Council → Council approved (December 2014)
- **Real time test data** (3h output until 5.75 forecast range, no archiving) **is now available**
- Operational implementation later in 2015

C-SRNWP highlights

SRNWP data pool

- 7 new users (3 from universities) since May 2014 (Germany, Finland, Italy, Switzerland)
- New data policy proposed through STAC/PFAC (October 2013) allowing an access to universities
- EUMETNET Assembly approved the new data policy (November 2013)
- „terms and conditions of use” of the data pool have been updated at the portal
- Complete data from Debrecen (Hungary) station

Plans for 2015-2016

- Promote the data to universities (through the NMHSs)

Global Lake Data Base

- A budget is necessary to maintain and further develop this data base (important for surface modeling in NWP) → ALADIN offered to ensure the necessary funding for 2015

C-SRNWP highlights

Use of „geospatial data” at high resolution

- Higher resolutions → stronger and stronger dependence on „geospatial forcing” (*orography* like ASTER, SRTM, GTOPO30, GMTED2010, *soil texture* like HWSD, *land-use* like Ecoclimap, Corine, Globcover)
- Web meeting December 2014
 - Participants from COSMO, HIRLAM, ALADIN, LACE
 - Topics discussed:
 - Setting up common workspace/wiki pages
 - Revival of SRNWP Surface Expert Team
 - Coordinated sensitivity studies

C-SRNWP highlights

EWGLAM/SRNWP Annual Meeting

- 5-8 October 2015, Serbia
- Local organiser: RHMS (Serbia)
- Preliminary program to appear on the website soon

Thank you for your attention!

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