Highlight of activities – Hungarian Meteorological Service

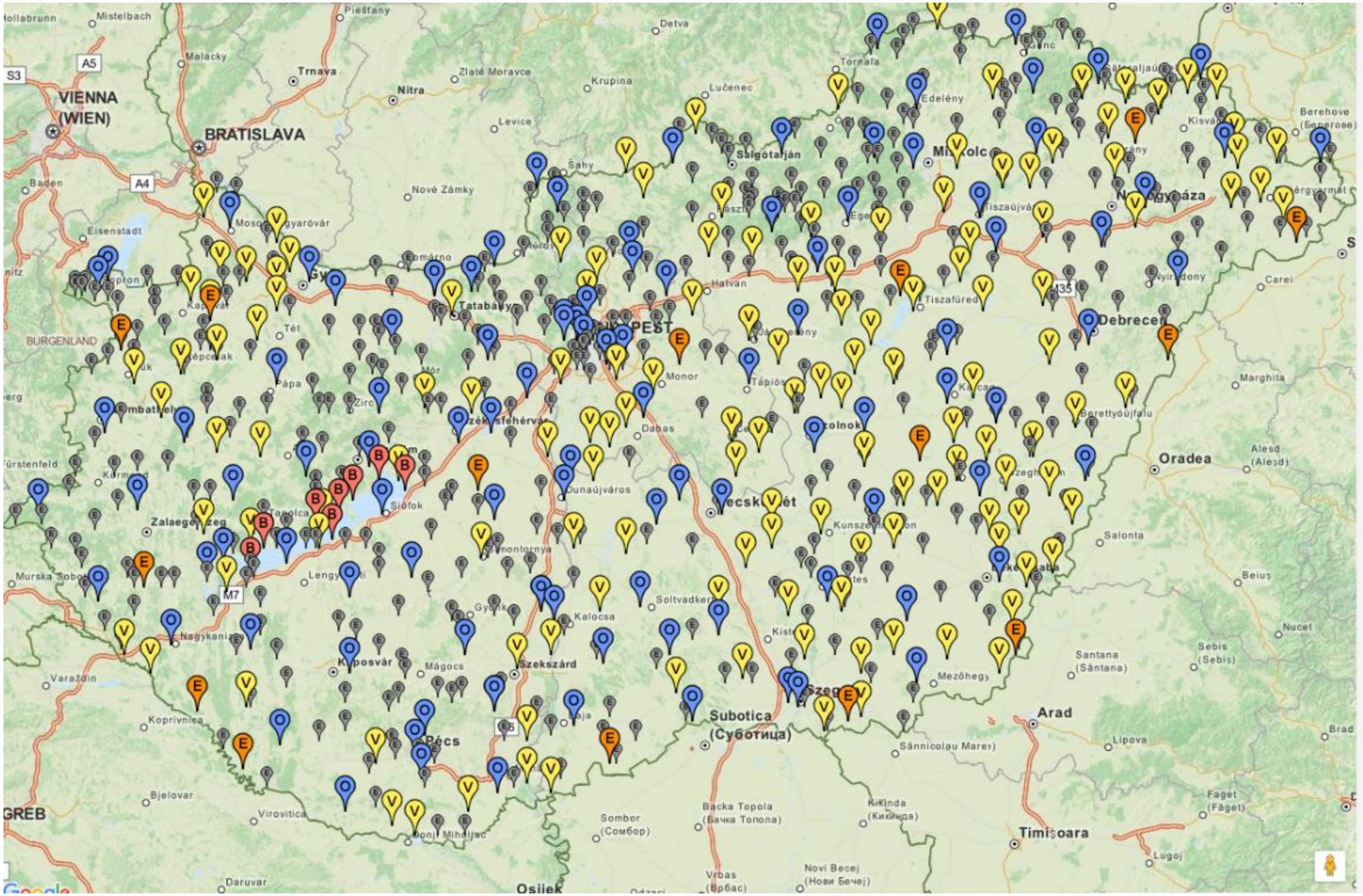
18th ICSEED Meeting (4th November 2018, Tel Aviv)

Dr. Kornélia RADICS
president

Overview

- Under the Ministry of Agriculture
- Number of staff 188 (**-8%**)
- State budget support in 2018: 17.5% (**-2,5%**)
- Total budget 10 843 322 EUR (**+20%**)
- New law for civil service:
  - Increase of salaries (**+30%**)
  - New structure intoduced
- Membership fees: have been transferred by the ministry
- No law on meteorology
- Consultation: adoption of Open Data Policy

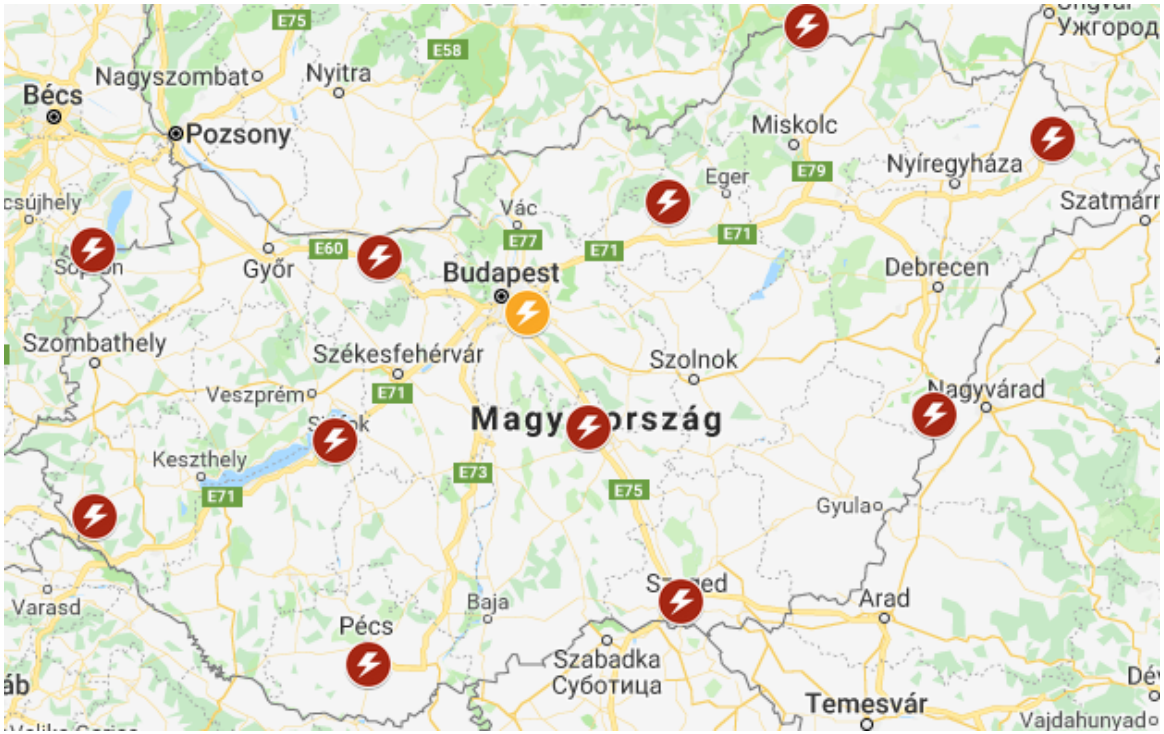
Surface observations



- The full network consists of 297 stations (**+3 stations**)
- Traditional precipitation measurements: ~460 stations

OMSZ

Surface observations



- New lightning detection network has been installed: 11 sensors
- Capacity building in the Calibration Laboratory: colleague graduated as a metrology specialist

Remote sensing observations

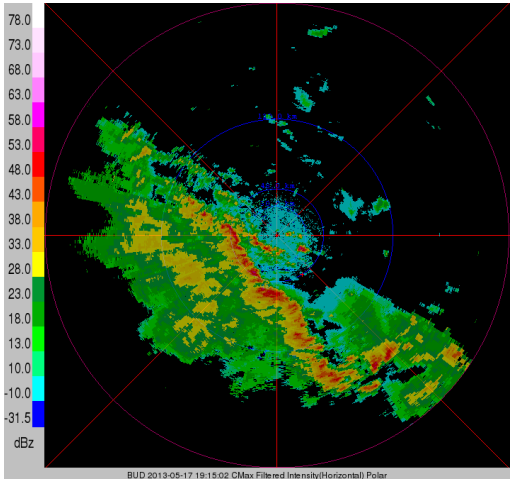
RADAR

- Attenuation correction is operatively used since May 2019
- Radar disturbance: 146 users of RLAN equipments were forced to change frequency in 2018
- Tender of 5th radar started

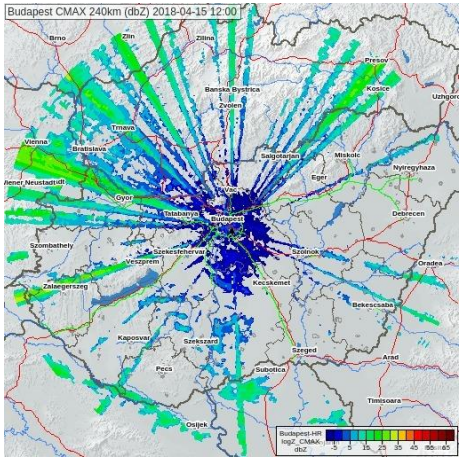
RADIOSONDE

- Tender of automatic launchers of radiosondes started

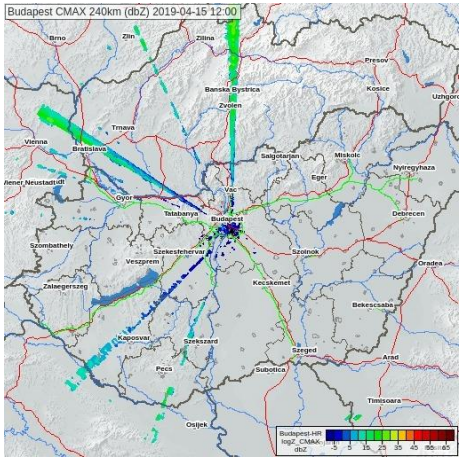
After implementing attenuation correction



April 2018



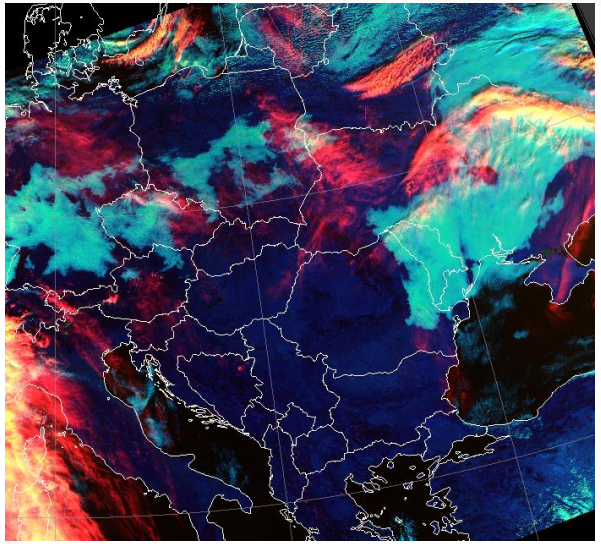
April 2019



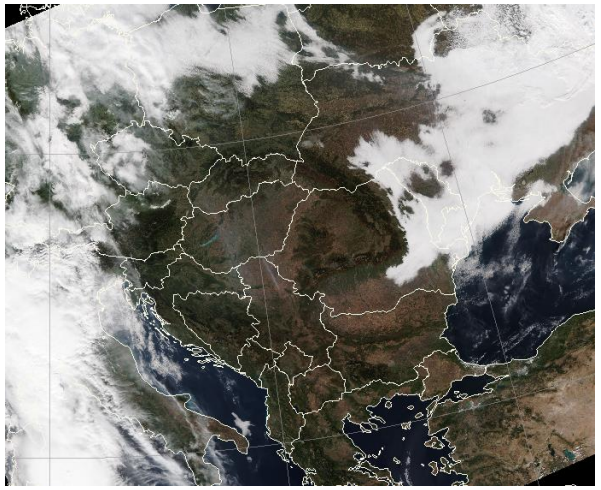
Satellite meteorology

Preparation for Meteosat Third Generation

- RGB composite images from Suomi NPP and NOAA 20 satellites, quick guides for EUMeTrain
- Study on nowcasting use of IASI humidity and temperature profiles
- Test of new data access technology: EUMETCast terrestrial through internet
- During the spring delegate body meetings: decision about MTG-I1 operation mode → Full Earth Scan (10 min frequency) or Rapid Scan (2.5 min frequency) → ***Rapid Scan would be more beneficial for SEE countries***



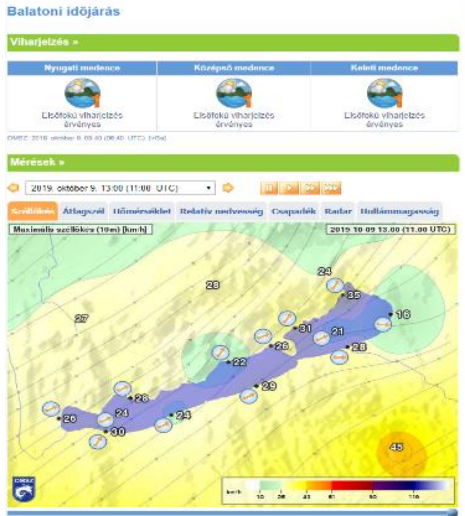
NOAA 20 composit for cloud types
23 October 2019, 11:26 UTC



NOAA 20 true color composit image
24 October 2019, 11:07 UTC

General and severe weather forecasting

- New unit from March: responsible for Public Warning, Wind Warning for Lakes, Hail forecasting for agriculture
- Implementation of verification method for Hail forecasting
- Extending hail forecasting season (15 April – 30 September)
- Change in the thunderstorm warning (yellow level for single thunderstorm/lightning)
- A new post has been created for increasing social media involvement (facebook profile, youtube channel)



Aviation

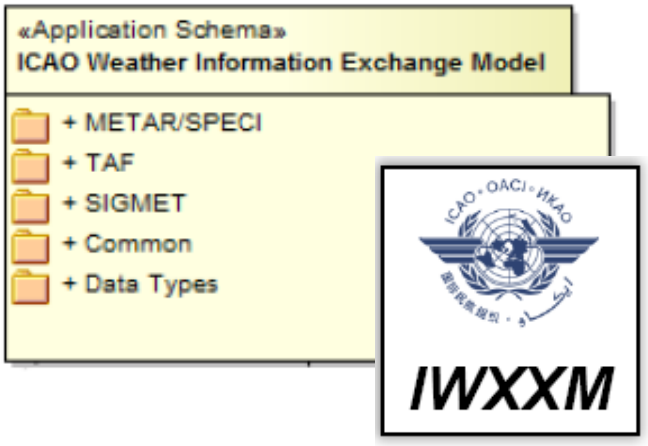
Intensive development activities:

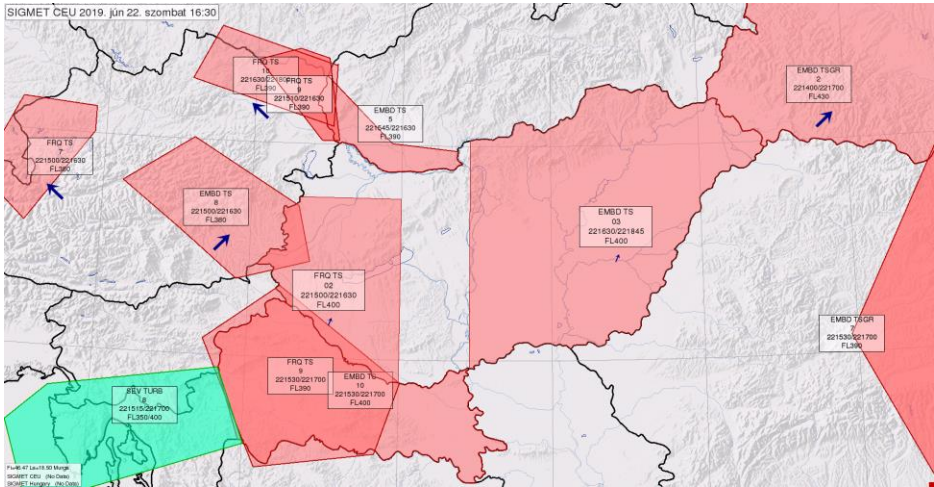
- Introducing AUTO METAR

eGAFOR - Cross border activity

Harmonization
SIGMET Coordination
Austria, Croatia, Romania, Serbia, Slovenia

- IWXXM implementation ongoing



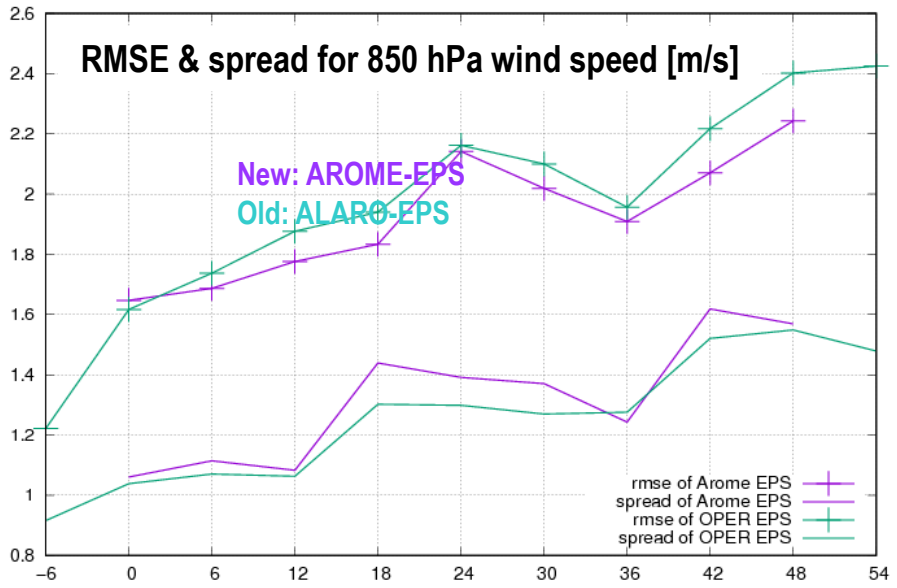


NWP modelling developements

1. Upgrade of HPC system → porting and testing ALARO cycle 40
   → **Quasi-operational convection-permitting limited area EPS based on AROME model**

2. Test experiments, preparatory steps for
   - Hourly data assimilation in AROME
   - Perturbations from ensemble data assimilation
   - Assimilation of new observations (Mode-S, AWS)
   - Increase the number of vertical levels in AROME (60 → 90)
   - Daily updated LAI in AROME

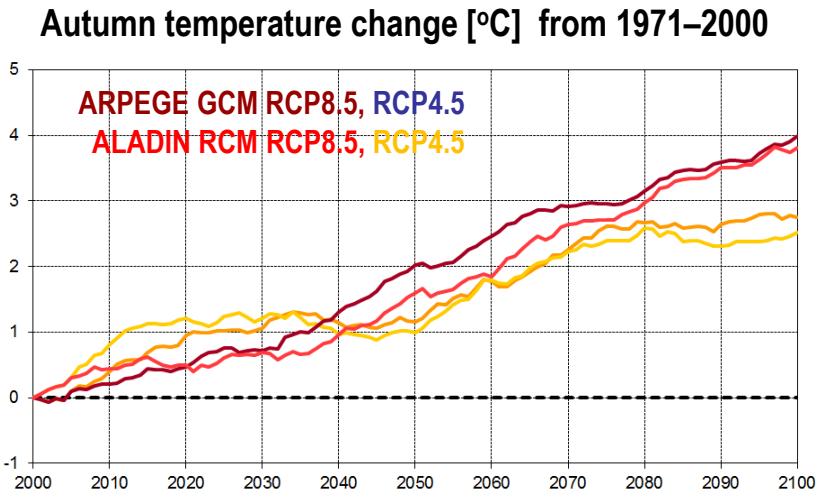
3. New probabilistic forecast product based on ecPoint-Rainfall post-processing of ECMWF



Climate studies

Regional climate modelling

- Sensitivity studies with ALADIN-Climate 5.2 (finished) and REMO2015 (ongoing) for domain choice
- **ALADIN-Climate RCP4.5 projection runs at 50 km** (finished) and 10 km (ongoing) resolution
- Climate model data provision for users

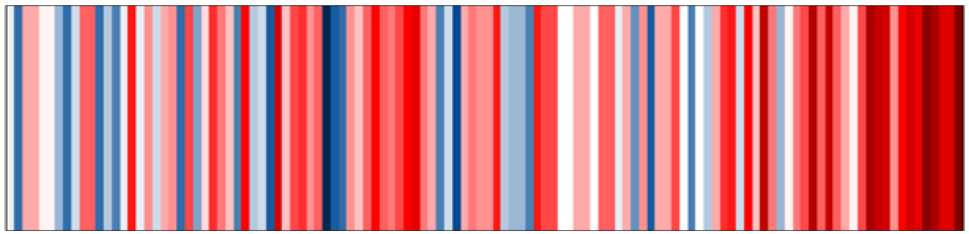


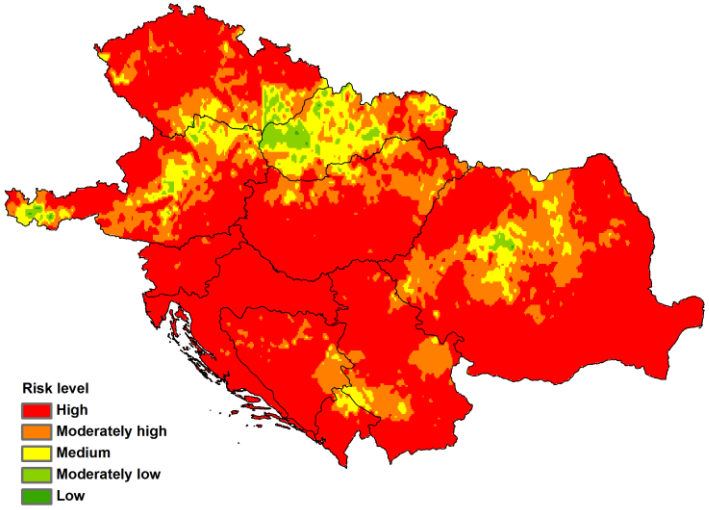
Statistical climatology

- Update of long term homogenized and gridded data series 1901-2018
- **Testing of the MISH interpolation method** using nowcasting model results as background information
- **New agrometeorological website**
- Studies (eg. PM10, Szeged airport, Paks nuclear power plant lightining statistics)

Climate studies

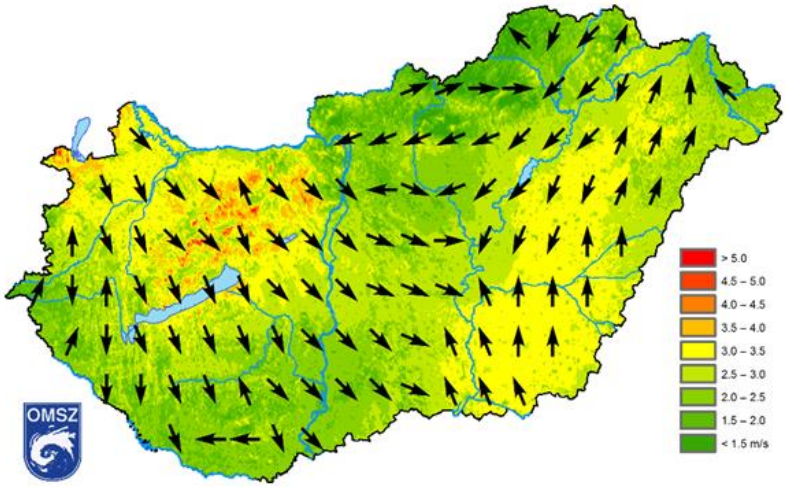
Warming stripes
for Hungary
1901-2018





Risk map for maize
in the Danube region

Mean wind speed and
gridded prevailing wind
direction in winter



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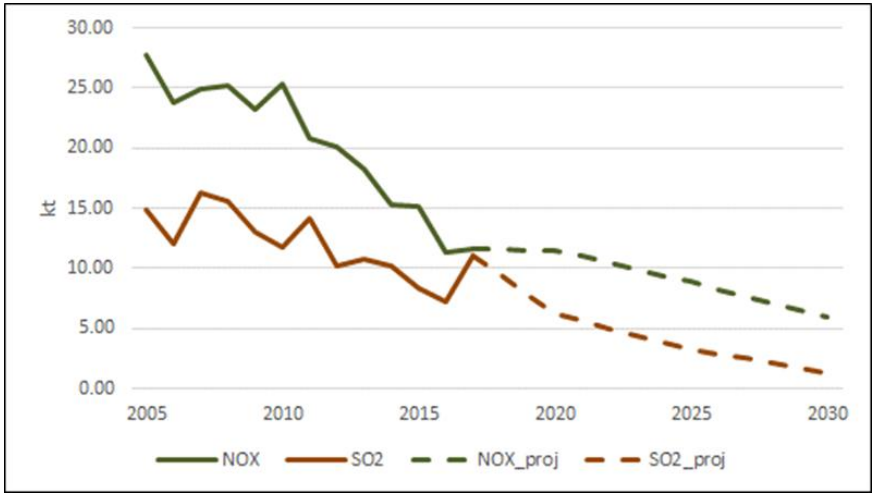
Computer infrastructure development

- New supercomputer has been procured
- It is under installation at OMSZ Severe Weather Observatory in Siófok (near Lake Balaton)
- Our storage capacity has significantly been increased

Air quality measurements and services

National Emissions Inventories:

- Projections of emissions in line with international reporting requirements
- Contribution to the preparation of the first national air pollution control programme (as required by EU legislation)
- LIFE project: improve air quality in 8 regions - Development of an improved emission database



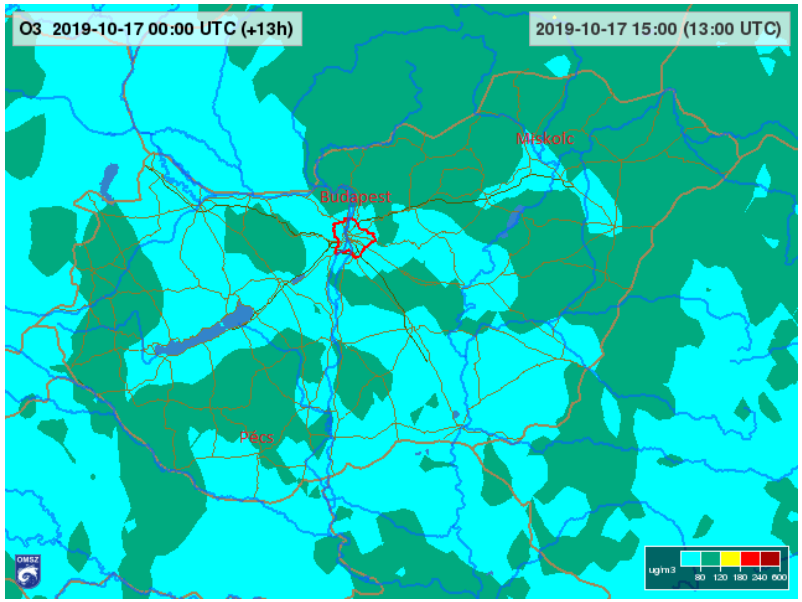
Air Quality Reference Centre:

- Calibration and Testing laboratories transition to the 2017 version of ISO/IEC 17025
- Field operation and ongoing quality control of the background stations (Nyírjes, K-puszta, Hortobágy, Farkasfa)
- Revision of the Hungarian Air Quality Monitoring Network
- Pilot project related to tracers of solid waste burning

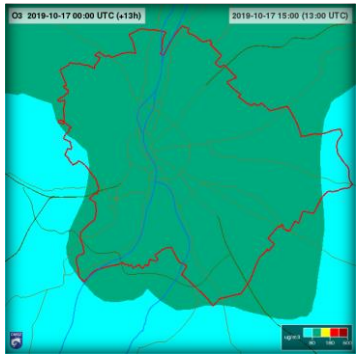
Air quality measurements and services

Air quality forecast with CHIMERE chemical transport modell: (example: O_3 forecast)

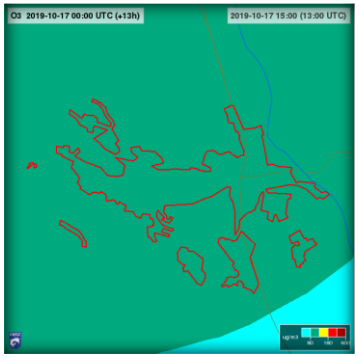
Hungary



Budapest

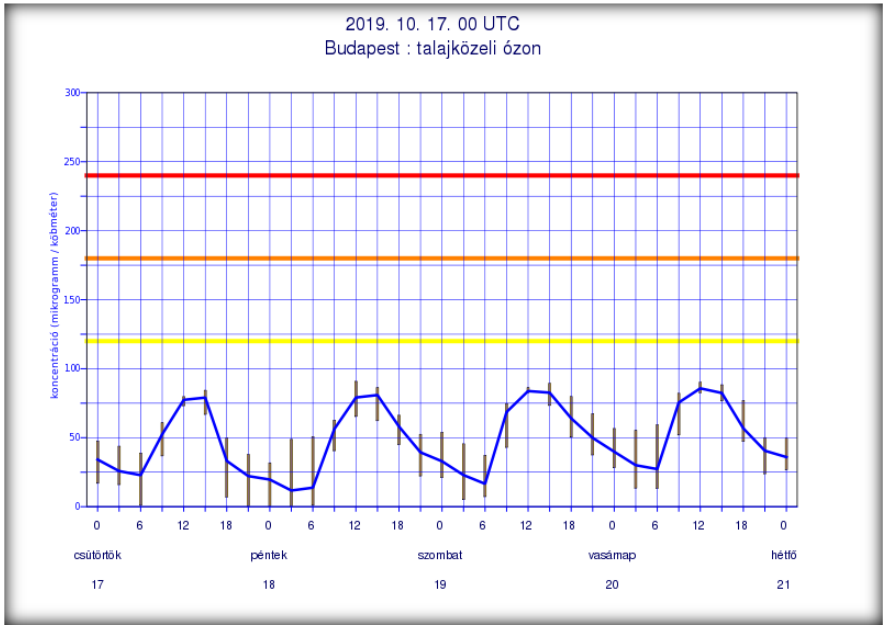


Miskolc



Pollutant	Index level (based on pollutant concentrations in µg/m3)				
	Good	Fair	Moderate	Poor	Very poor
Particles less than 2.5 µm ($PM_{2.5}$)	0-10	10-20	20-25	25-50	50-800
Particles less than 10 µm (PM_{10})	0-20	20-35	35-50	50-100	100-1200
Nitrogen dioxide (NO_2)	0-40	40-100	100-200	200-400	400-1000
Ozone (O_3)	0-80	80-120	120-180	180-240	240-600
Sulphur dioxide (SO_2)	0-100	100-200	200-350	350-500	500-1250

Air quality Epsgrams for different cities (using Copernicus Atmosphere Monitoring Service results)



Outreach to wider public

- Amateur observer system, meeting for volunteer observers
- Participation at the Earth Day
- Night of Museums: OMSZ opened its doors for the public, main focus on precipitation
- OMSZ pavilion at rock festivals

Projects

OMSZ participated in 14 international an 10 national projects in 2019

International relations

International meetings in Budapest, 2019:

- ALADIN/HIRLAM/LACE Data assimilation training, 11-15 February 2019
- Waste Burning Project kick off meeting, 4-6 March 2019
- Hungary Life WastProject Workshop, 19 March 2019
- DriDanube a National Drought Seminar, 15 April 2019
- eGAFOR F2F Meeting, 13-24 May 2019
- LIFE HungAiry emission workshop, 4 June 2019
- CAMS 4th General Assembly, 20-24 September 2019
- C3S User Learning Services training event, 8 October 2019
- 6th Meeting of the Carpathian Convention Working Group on Climate Change, 9 October 2019

Thank you for your attention!