Regional Cooperation for Limited Area Modeling in Central Europe

LACE
nwp central europe

Status of DA on SHMU 2017

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M. Dian, J. Vivoda, M. Bellus, O. Spaniel

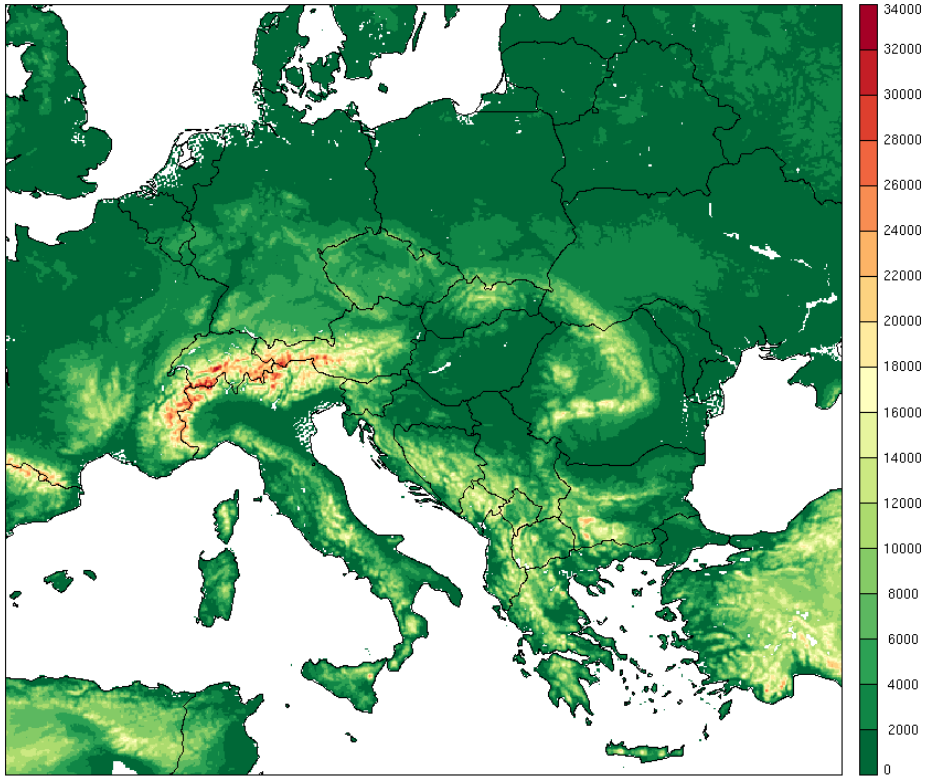
DHMZ SHMU ARSO METEO Slovenia OMSZ ZAMG ROMANIA ANM

Oper suite on SHMU

ALARO-1 CY40T1 4.5km 63level running on HPC2 (IBM – Linux)

- CANARI (OPLACE + local obsoul)
- blending

02:55 prod 00 UTC (03:43)
09:45 prod 06 UTC (10:31)
14:35 prod 12 UTC (15:21)
21:45 prod 18 UTC (22:25)



GNSS data assimilation on SHMU

Martin Imrisek, Slovak University of Technology in Bratislava + partly on SHMU

- work on ZTD DA in SHMU on AROME cy40T1 2.5km (same domain as OMSZ)
- 32 stations, Static bias corection
- more in his presentation: Global Navigation Satellite System data processing

Calculation of Bmatrix

Ensemble Bmatrix based on PEARP data (over two periods in 2016) is in preparation for an AROME domain with 2.0 km horizontal resolution, 512 x 384 points and 73 vertical levels, with the aim to test the GNSS ZTD data and radar data assimilation.

Identical domain is defined for ALARO 2 km, its Bmatrix is planned to be computed as well in later stage.

Surfex

- Offline Surfex 7.3 Cy40T1 (SHMU HPC2 Linux) ALARO
- Pre-operational implementation of 1-way coupling of SURFEX to new (4.5 km) operational model (SURFEX offline mode).
- Aims for better representation of a surface and surface boundary layer (below lowest model level) => more accurate analysis and forecast of soil and screen-level variables.
- Development of application which prepares offline SURFEX forcing consistently from different sources (INCA, AROME) has been started. Ongoing validation of offline SURFEX with 1-column configuration on interesting cases (PGD testing, forcing with observations, testing different initializations).

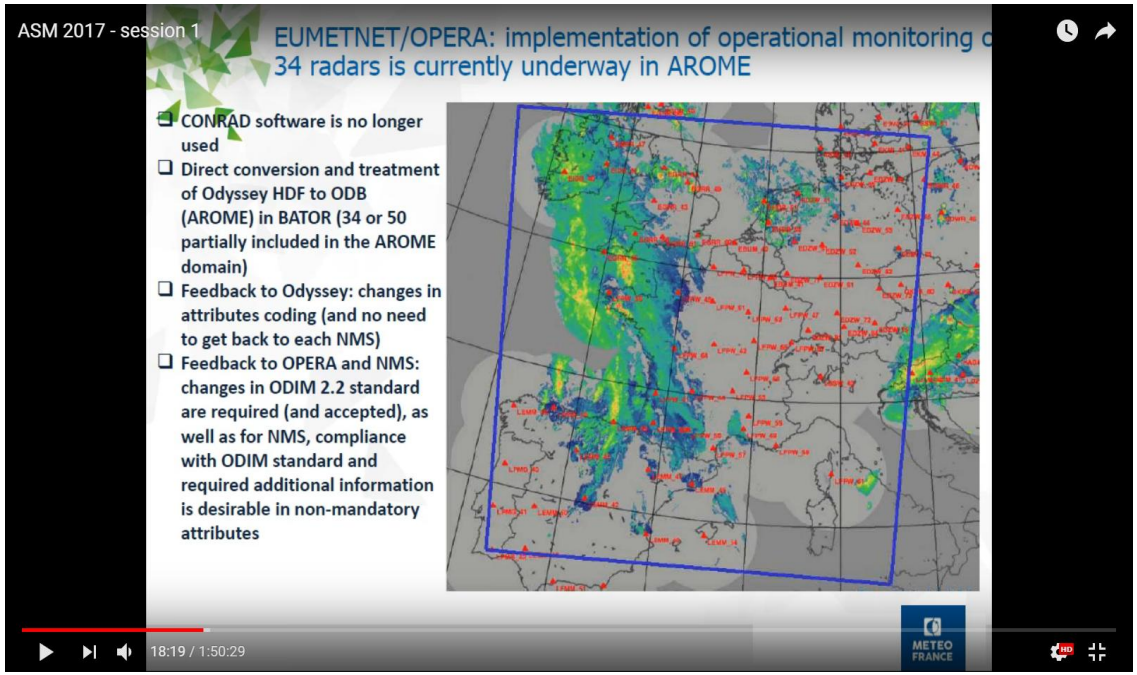
- Continue work from OMSZ (Validation of EKF)

Plans from April 2017

Joint 27th ALADIN Workshop & HIRLAM All Staff Meeting 2017, 3-7/04/2017, Helsinki
Plenary session 1 on DA

C. Fisher – Progress and plans of global and LAM DA at Meteo France
https://www.youtube.com/watch?v=SiFzVg2A-kI (18:40)

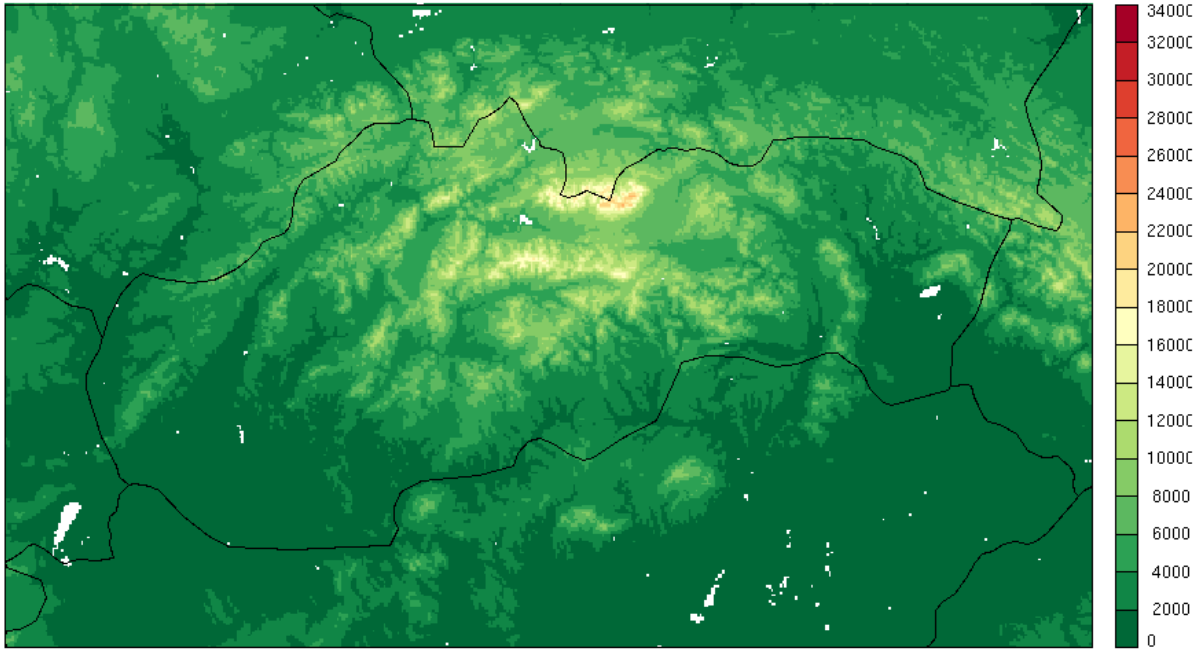
- CONRAD is no longer used
- Direct HDF5 to ODB
- I communication with
  WATTRELOT Eric - *(2017-June) "The direct conversion from HDF to ODB will be possible in the next cycle. It works well now based on cy42 (op for MF) in my pack and Frank Guilllaume's pack (!), but it has not been introduced in the common code yet."*
  And than we wait for bator_decodhdf_mod.F90 …



Way to Hi-res models on SHMU

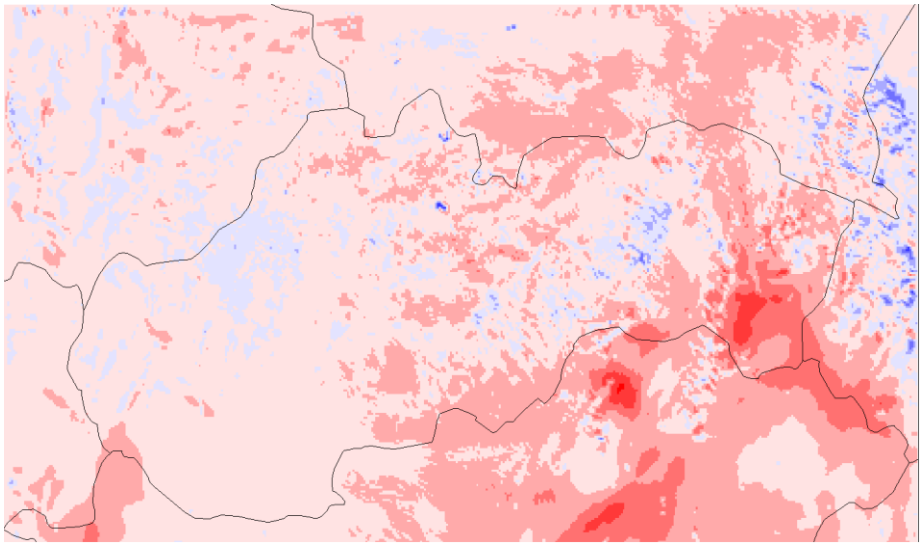
In perion 2016-12 to 2017-06 **ALARO-1 CY40T1 1km on HPC2 (IBM – Linux)**

04:10 00 UTC (+F24h 4:28) run after OPER 4.5km suite
22:28 18 UTC
23:40 06 UTC (-1day)
05:40 12 UTC (-1 day)

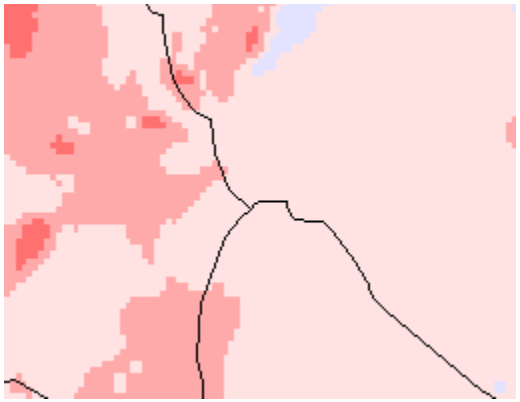


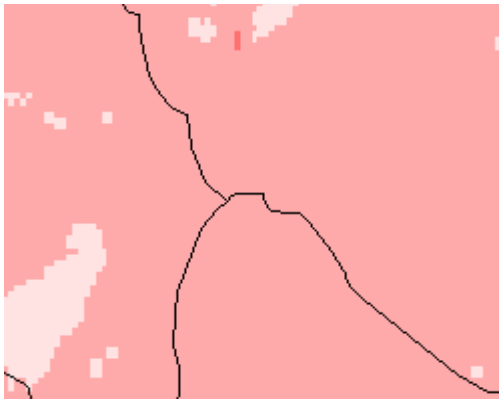
ALARO-1 with Domain and resolution as INCA-SK

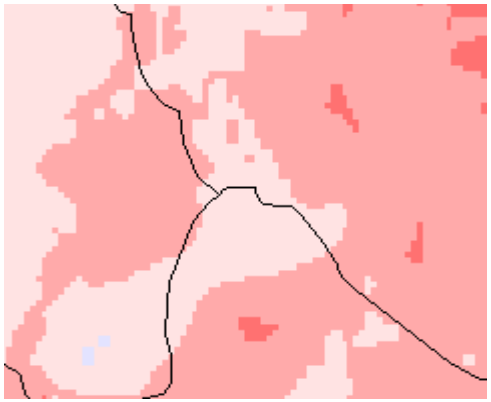
Way to hi-res models on SHMU



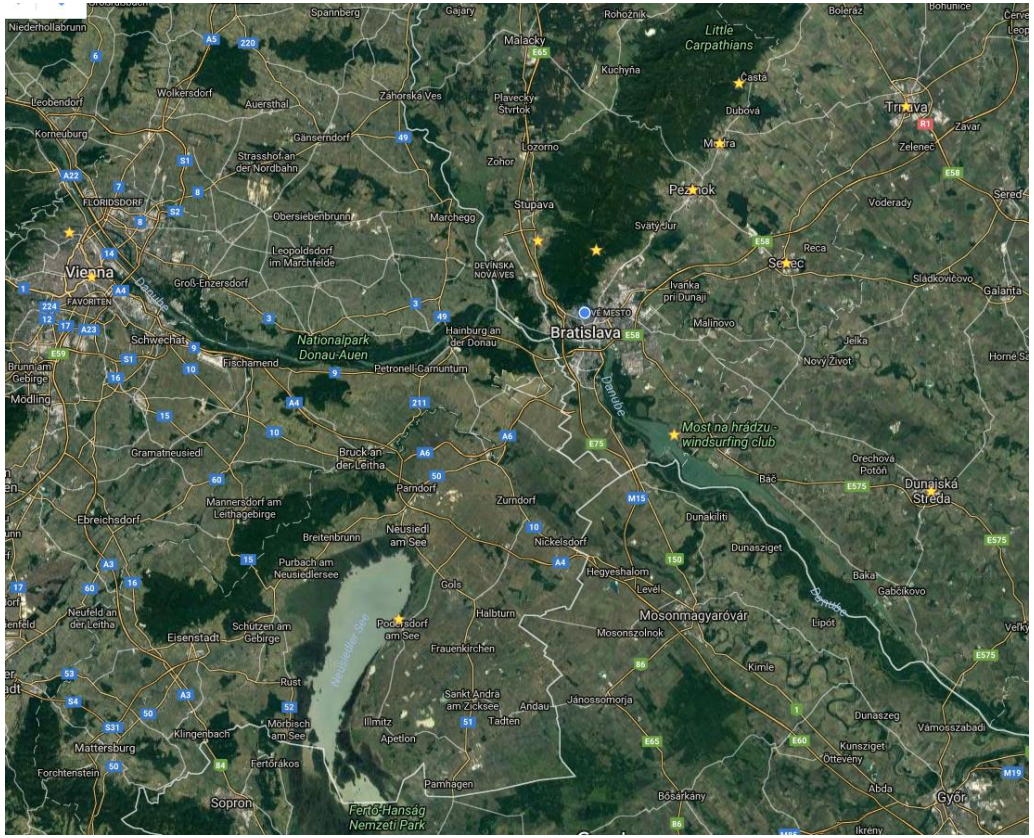
- Some case and technical tests with CANARI / MESCAN (T2m + RH) CY40T1 on 1km resolution
- bad coverage with conventional data for this resolutions





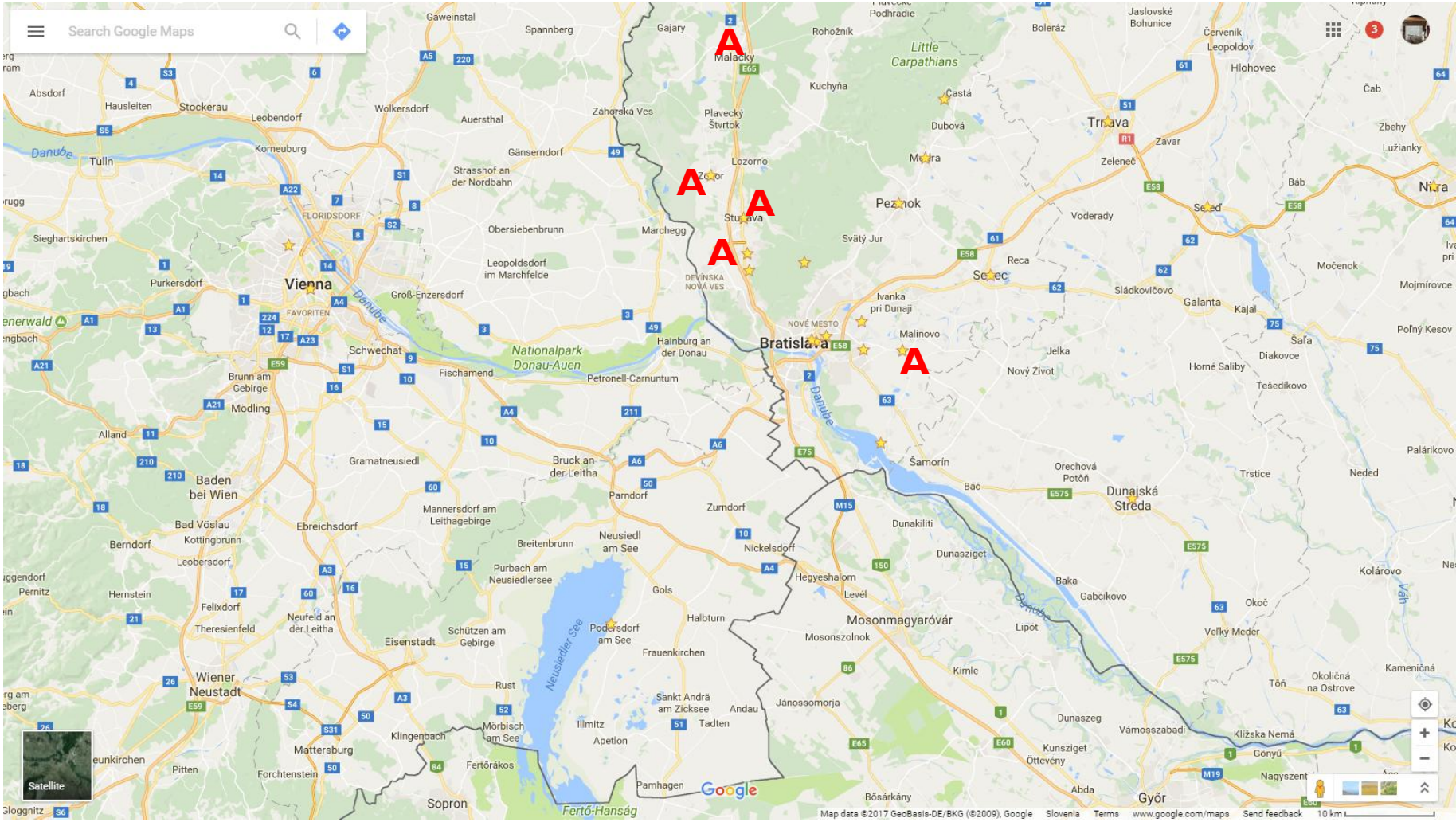


Why is this area so interesting?



- **Bratislava (0.5 mil)**
- **Wien (**1.868 million **)**
- **Brno (**377,028)
- **Győr (**129,568)
- Sered (16k)
- Pezinok (23k)
- Trnava (66k)
- Nitra (77k)
- Dunajska Streda (23k)
- Malacky (17k)
- Most pri Bratislave (3k)

Why is this area so interesting?



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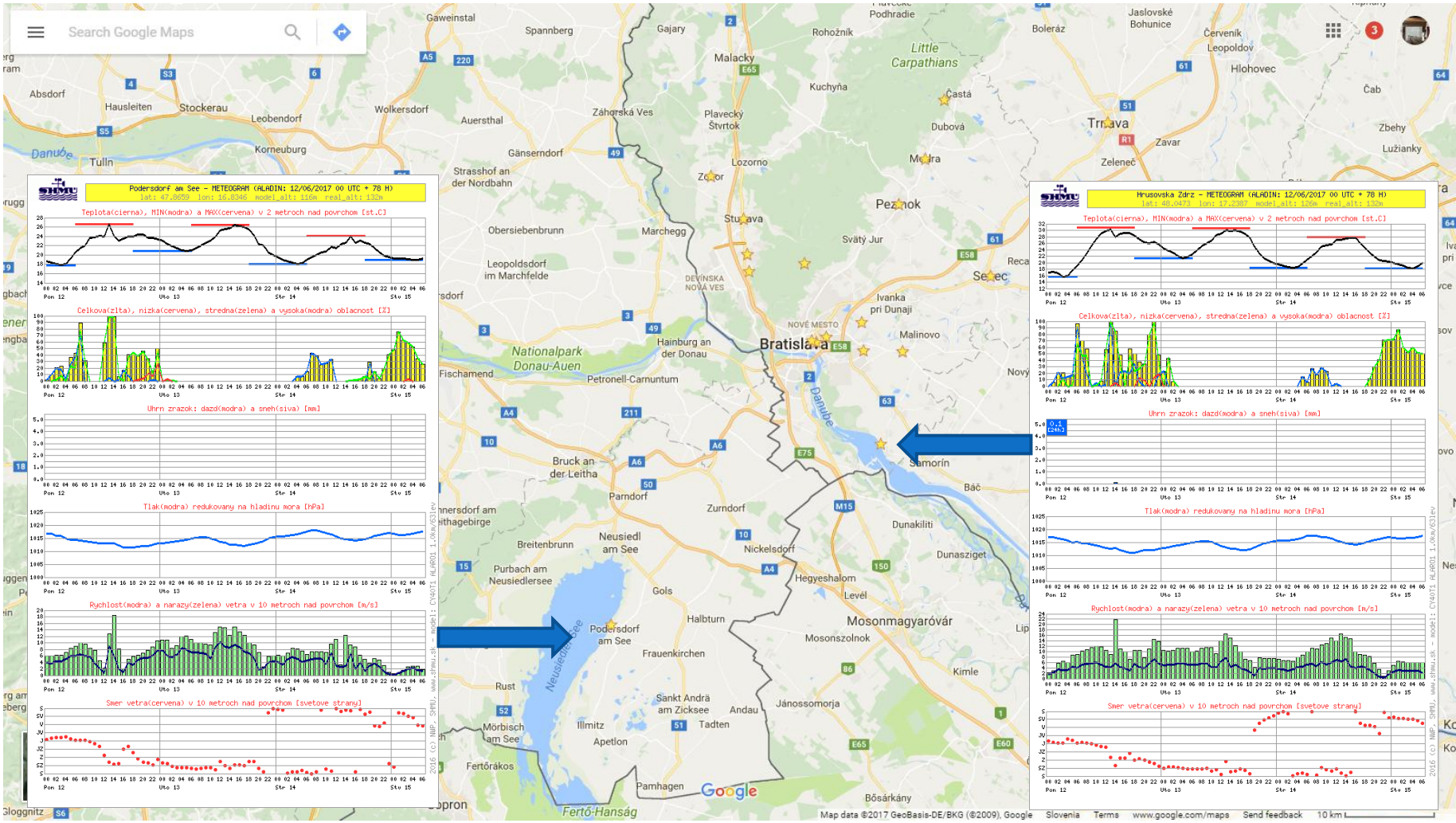
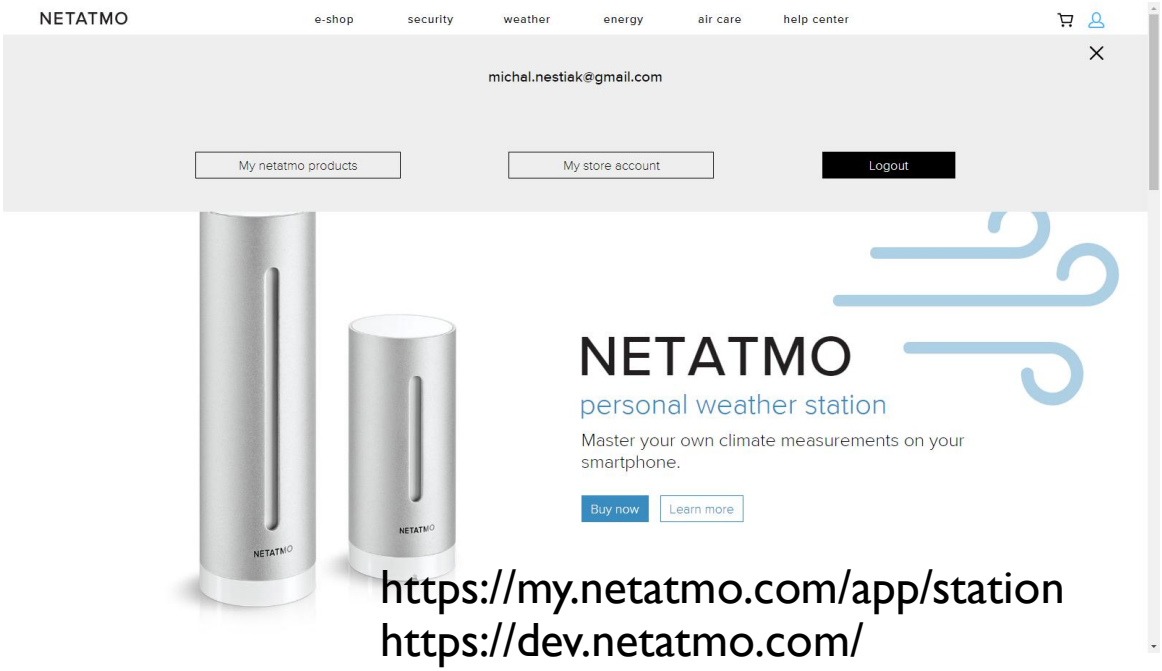


Podersdorf am See

Hrusovska Zdrz

NON-GTS & IOT measurments

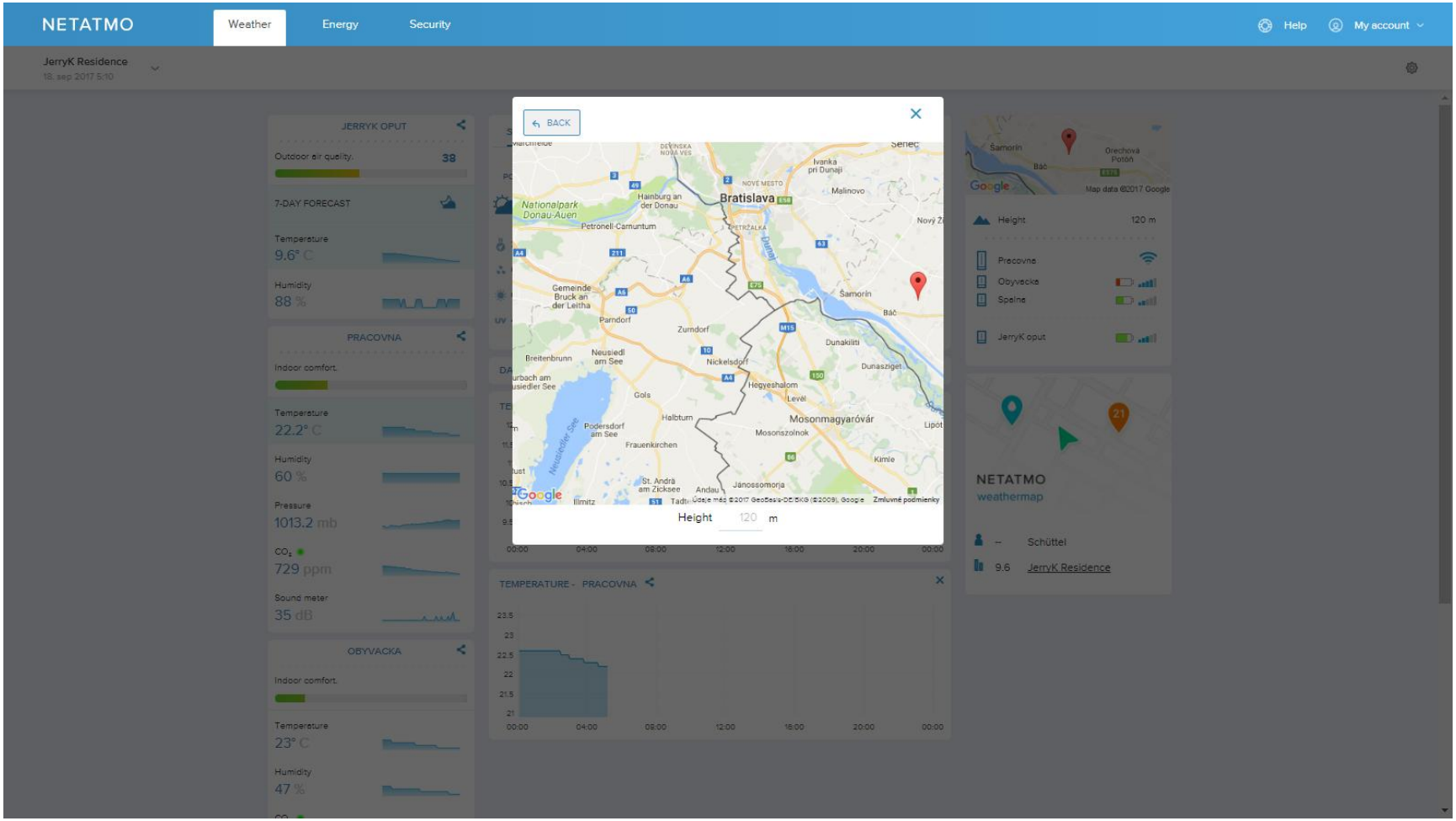
http://esp8266.net/



https://www.raspberrypi.org/

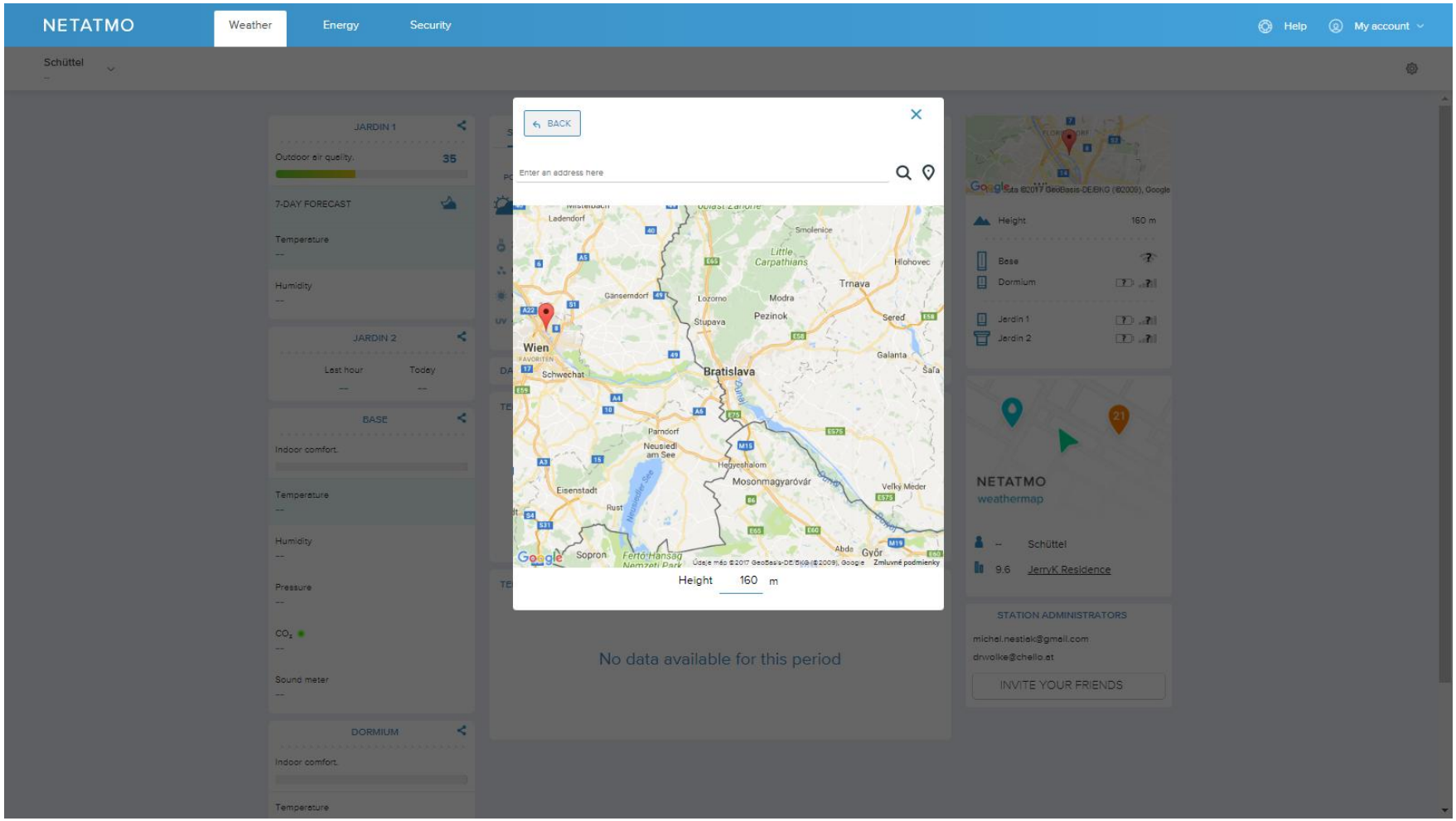
https://my.netatmo.com/app/station
https://dev.netatmo.com/

NETATMO – already “owned” 2-stations



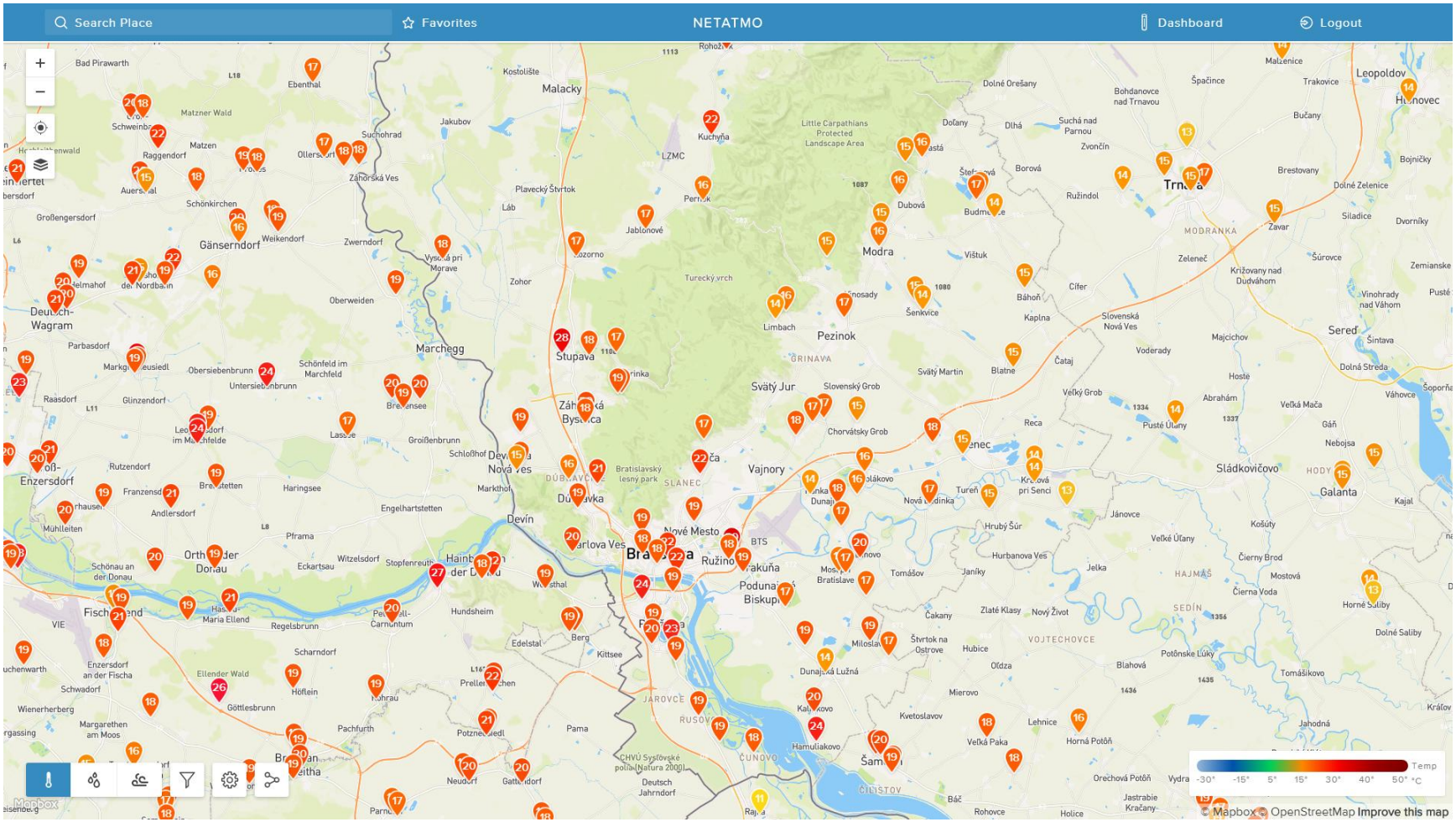
https://dev.netatmo.com/

NETATMO – already “owned” 2-stations



https://dev.netatmo.com/

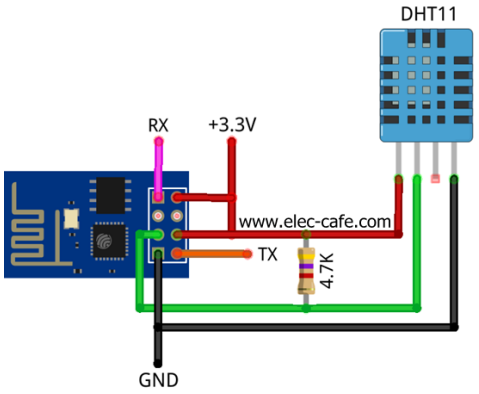
NETATMO public stations

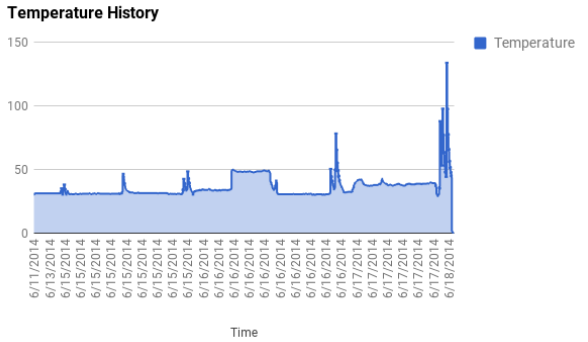


https://weathermap.netatmo.com/

IOT - WIFI ESP8266 - T and RH into Google Spreadsheet

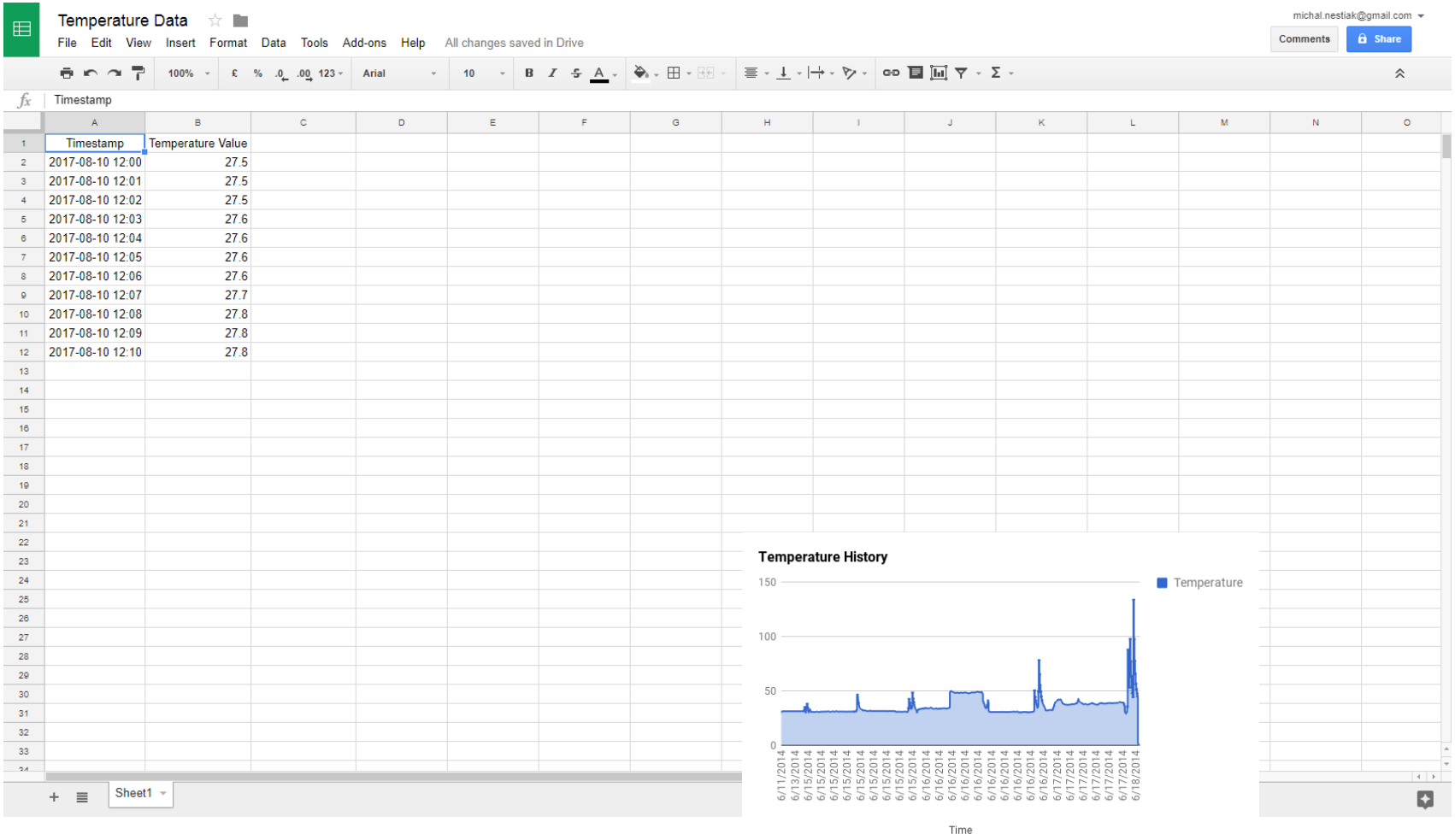
- http://www.elec-cafe.com/esp8266-temperature-humidity-webserver-with-a-dht11-sensor/





- ARDUINO problems with https use https://www.pushingbox.com/api.php for GET REQUESTs
- **Create CustomURL**
- only 1000 daily requests and day have 1440 minutes

IOT - WIFI ESP8266 - T into Google Spreadsheet



Timestamp	Temperature Value
2017-08-10 12:00	27.5
2017-08-10 12:01	27.5
2017-08-10 12:02	27.5
2017-08-10 12:03	27.6
2017-08-10 12:04	27.6
2017-08-10 12:05	27.6
2017-08-10 12:06	27.6
2017-08-10 12:07	27.7
2017-08-10 12:08	27.8
2017-08-10 12:09	27.8
2017-08-10 12:10	27.8

IOT - WIFI ESP8266 to upload Temperature and humidity from DHT11 to Google Cloud Platform

- All info https://cloud.google.com/
- jarkomdityaz.appspot.com
- appengine.google.com (access Spreadsheet API by Google Script)

gcloud app deploy

Google Cloud Platform – Hello world

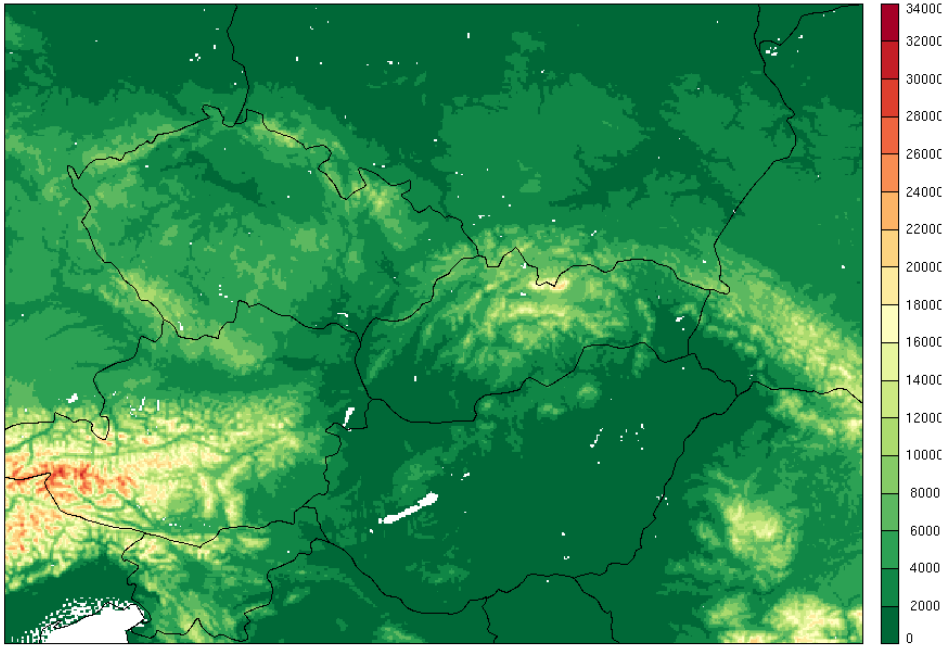
- TUTORIALDIR=~/src/nowcasting-908/php_gae/
- git clone https://github.com/GoogleCloudPlatform/appengine-php-guestbook.git $TUTORIALDIR
- cd $TUTORIALDIR
- git checkout phase0-helloworld
- cat helloworld.php
- cat app.yaml
- dev_appserver.py --php_executable_path=/usr/bin/php-cgi $PWD
- gcloud app deploy app.yaml --project nowcasting-908
- http://nowcasting-908.appspot.com/

Winners : Hi-Res models on SHMU for 2017

From 2017-07 to nowdays
only 00 and 12 UTC runs (not enough CPU for more than 2 runs)

ALARO-1 CY40T1 2km 73level on HPC1 (IBM – AIX) – old HPC1
04:10 00 UTC
20:00 12 UTC

AROME CY40T1 2km on HPC2 (IBM – Linux)
04:10 00 UTC
20:00 12 UTC



Or survivals????

Plans in DA in SHMU

- Continue on radar assim in SHMU with official Meteo France bator_decodhdf_mod.F90 (MiNe [80%])
- Continue work on computation B-Matrix (Mariska)
- Continue on SURFEX in SHMU and OMSZ (Viktor)
- I hope continue DA of GNSS (Imro)
- Non-GTS measurments
  - IOT (MiNe [20%])
  - Rassberry Pi (Roman, Martin Dian, MiNe [20%])

- Thanks for support JoVi, Mbell, Oldrich, **Roman Zehnal**