

AdriaArray Seismic Network

Petr Kolínský (in near future: Geophysical Institute, Prague; formerly Uni Wien)

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&

AdriaArray Seismic Network Working Group

AlpArray & 4D-MB Scientific meeting ([online](#)), AdriaArray/Orfeus breakout session, 11. November 2021

(updated 12. November 2021)



Orfeus



permanent station inventory: sheet of 2515 stations and spots (rows) x 25 “properties” (columns)

StationInventory.xls - OpenOffice.org Calc

Soubor Úpravy Zobrazit Vložit Formát Nástroje Data Okno Nápověda

Najít Arial 10 B U

A1

name Name town previous sheet round name corner in [sec] yes=1/no=0 name table if r1=wors operat ina no=0 EID center GIB+DS9/sug difficulty

Network Name Latitude Longitude elevation show Site name country Sensor ph Sensor type corner period Possible spot Digitizer Caplin+qua Institute et prelin+DA+OA no+Be+SN+ sug

station WGS84 WGS84 [m] village / see remark on rock, cor marketing sensor low if corner<60s marketing higher active network sens=+IDA+de / da+Gok+DS9/sug any c

GR CMG-3ESP 100s (200) 100 Janus-Trident 40 Vpp (Gain 1) 1 1 1

D Le3D-1 1

H G120 120

GR Building concrete Lennartz20s+CMG-5T 20 0 SMART24 100 4 NOA Evan 1 1 NOA 1 1

GR Urban free field concrete TrilCompact120s 120 Geobit SR32 100 3 UPAT Soko 1 1 NOA 1 1

GR Underground shaft concrete CMG40T 30 1 Q330 100 3 NIEP 1 0 0 0

GR Free field bedrock G120s 120 Guralp Minim 100 2 UPAT Soko 1 1 NOA 1 1

I NANOMETRICS TRILL 40

CZ L43D 1

I GEOTECH KS-2000ED 30

GR Free field bedrock G60s 60 PS6-SC 100 1 NOA Evan 1 1 NOA 1 1

D CMG-3ESPC 60s 60

B A 1

TR 120 120

GR Urban free field concrete G120s 120 Guralp DM24 100 2 UPAT Soko 1 1 NOA 1 1

I NANOMETRICS TRILL 40

GR CMG-3ESP 100s (200) 100 Janus-Trident 40 Vpp (Gain 1) 1 1 1

GR LENNARTZ LE3D-5S 5

GR NANOMETRICS TRILL 120 PS6-SC 100 1 NOA Evan 1 1 NOA 1 1

I NANOMETRICS TRILL 40

I LENNARTZ LE3D-5S 5

I NANOMETRICS TRILL 120

F STS2 120

E G120 120

RO building concrete Episensor_2g_2_5vfs 2 1 k2 100 4 NIEP 1 0 0 0

I NANOMETRICS TRILL 40

NL CMG3ES

RO underground shaft concrete STS2 120 Q330 100 3 NIEP 1 0 0 0

GR Special bedrock Lennartz20s 20 0 DR24 100 2 NOA Evan 1 1 NOA 1 1

TR 120s, 120

RO special bedrock CMG3ESP 59 Q330 100 3 NIEP 1 1 NIEP 1 1

I LENNARTZ LE3D-5S 5

F STS2 120

I NANOMETRICS TRILL 40

GR building concrete Episensor_2g_2_5vfs 2 1 k2 100 4 NIEP 1 0 0 0

I KINEMETRICS EPISE 1

I NANOMETRICS TRILL 120

I NANOMETRICS TRILL 40

GR G120s 120

I LENNARTZ LE3D-5S 5

I KINEMETRICS EPISE 1

F STS2 120

I NANOMETRICS TRILL 40

GR bedrock STS2 120 DR24 100 1 NOA Evan 1 1 NOA 1 1

GR G60s 60

I LENNARTZ LE3D-5S 5

PageStyle_Stations Celkem=0

Stations List 1/1 110%

- Python script (317 lines) to distill the required information from the sheet
- produces files for plotting by GMT (script 1397 lines)

```

d: > 16AdriaArray > stations > xmmaps > extract.py
85     citacBB30 = citacBB30 + 1
86     outBB30.write ("\"%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]))) # s
87     csvBB30.write ("\"%s\n" % (str(inventory.iloc[n,2]) + ' ' + str(inventory.iloc[n,3]) + ' ' +
88     csvBB300.write("\"%s\n" % (str(inventory.iloc[n,2]) + ' ' + str(inventory.iloc[n,3]) + ',30
89     csvBB3040.write("\"%s\n" % (str(inventory.iloc[n,2]) + ' ' + str(inventory.iloc[n,3]) + ',40
90     labBB30.write ("\"%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]) + '\t'
91     # BB 40 out
92     if inventory.iloc[n,5] == 0 and inventory.iloc[n,11] >= 30 and inventory.iloc[n,11] < 40: # to
93         citacBB40 = citacBB30 + 1
94         outBB40.write("%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]))) # st
95         labBB40.write("%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]) + '\t'
96     # BB 40 in
97     if inventory.iloc[n,5] == 1 and inventory.iloc[n,11] >= 40 and inventory.iloc[n,11] < 50: # to
98         citacBB40 = citacBB40 + 1
99         outBB40.write ("\"%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]))) # s
100        csvBB40.write ("\"%s\n" % (str(inventory.iloc[n,2]) + ' ' + str(inventory.iloc[n,3]) + ' '
101        csvBB4030.write("\"%s\n" % (str(inventory.iloc[n,2]) + ' ' + str(inventory.iloc[n,3]) + ',30
102        csvBB4040.write("\"%s\n" % (str(inventory.iloc[n,2]) + ' ' + str(inventory.iloc[n,3]) + ',40
103        labBB40.write ("\"%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]) + '\t'
104     # BB 40 out
105     if inventory.iloc[n,5] == 0 and inventory.iloc[n,11] >= 40 and inventory.iloc[n,11] < 50: # to
106         citacBB40 = citacBB40 + 1
107         outBB40.write("%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]))) # st
108         labBB40.write("%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]) + '\t'
109     # BB 60 in
110     if inventory.iloc[n,5] == 1 and inventory.iloc[n,11] >= 50: # to
111         citacBB60 = citacBB60 + 1
112         outBB60.write ("\"%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]))) # s
113         csvBB60.write ("\"%s\n" % (str(inventory.iloc[n,2]) + ' ' + str(inventory.iloc[n,3]) + ' '
114         csvBB6030.write("\"%s\n" % (str(inventory.iloc[n,2]) + ' ' + str(inventory.iloc[n,3]) + ',30
115         csvBB6040.write("\"%s\n" % (str(inventory.iloc[n,2]) + ' ' + str(inventory.iloc[n,3]) + ',40
116         labBB60.write ("\"%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]) + '\t'
117     # BB 60 out
118     if inventory.iloc[n,5] == 0 and inventory.iloc[n,11] >= 50: # to
119         citacBB60 = citacBB60 + 1
120         outBB60.write("%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]))) # st
121         labBB60.write("%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]) + '\t'
122     # UNKN in
123     if inventory.iloc[n,5] == 1 and math.isnan(inventory.iloc[n,11]) and math.isnan(inventory.iloc
124         citacUNKN = citacUNKN + 1
125         outUNKN.write("%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]))) # sta
126         labUNKN.write("%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]) + '\t' +
127         csvUNKN.write("\"%s\n" % (str(inventory.iloc[n,2]) + ' ' + str(inventory.iloc[n,3]) + ' ' +
128     # UNKN out
129     if inventory.iloc[n,5] == 0 and math.isnan(inventory.iloc[n,11]) and math.isnan(inventory.iloc
130         citacUNKN0 = citacUNKN0 + 1
131         outUNKN0.write("%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]))) # st
132         labUNKN0.write("%s\n" % (str(inventory.iloc[n,3]) + ' ' + str(inventory.iloc[n,2]) + '\t' +
133     # SPOT - always in
134     if math.isnan(inventory.iloc[n,11]) and inventory.iloc[n,12] == 1: # pokud je corner pr
135         citacSPOT = citacSPOT + 1

```

when the „final“ version of inventory and scripts are ready, they will be **freely available** for anyone for plotting the station maps

```

1. aktuality.html 2. usuketecne20.html 3. fotkyzakoi20.html 4. menu.html 5. zapisy.html 6. index.html 7. fero.css 8. orbis.sh 9. global.sh 10. availableMap.sh 11. figMap.sh 12. figDensity.sh 13. figAdriaGP.sh
dose2unix pNOSP.txt
psxy pNOSP.txt           -R -JL -St$sizeps -G$nbsp -W$thps/$blk -K -O > $psfile01 # vyhodit pro Renatu
psxy pNOSP.txt           -R -JL -St$sizeps -G$nbsp -W$thps/$blk -K -O > $psfile10 # vyhodit pro Renatu
dose2unix pWHIT.txt
psxy pWHIT.txt           -R -JL -St$sizeps -G$nbsp -W$thps/$blk -K -O > $psfile01
psxy pWHIT.txt           -R -JL -St$sizeps -G$nbsp -W$thps/$blk -K -O > $psfile10
dose2unix pWHIT0.txt
psxy pWHIT0.txt          -R -JL -St$sizeps -G$nbsp -W$thps/$blk -K -O > $psfile01
psxy pWHIT0.txt          -R -JL -St$sizeps -G$nbsp -W$thps/$blk -K -O > $psfile10
awk -v awk_diam30=$diam30 '(print $1, $2, "0.0 \" awk_diam30" " awk_diam30)' pWHIT.txt > circlesWHIT30.dat
awk -v awk_diam40=$diam40 '(print $1, $2, "0.0 \" awk_diam40" " awk_diam40)' pWHIT.txt > circlesWHIT40.dat
dose2unix pSPOT.txt
psxy pSPOT.txt           -R -JL -St$sizeps -G$spot -W$thps/$blk -K -O > $psfile01
psxy pSPOT.txt           -R -JL -St$sizeps -G$spot -W$thps/$blk -K -O > $psfile10
awk -v awk_diam30=$diam30 '(print $1, $2, "0.0 \" awk_diam30" " awk_diam30)' pSPOT.txt > circlesSPOT30.dat
awk -v awk_diam40=$diam40 '(print $1, $2, "0.0 \" awk_diam40" " awk_diam40)' pSPOT.txt > circlesSPOT40.dat
dose2unix pUNKN.txt
psxy pUNKN.txt           -R -JL -St$sizeps -G$unkn -W$thps/$blk -K -O > $psfile01
psxy pUNKN.txt           -R -JL -St$sizeps -G$unkn -W$thps/$blk -K -O > $psfile10
psxy pUNKNO.txt          -R -JL -St$sizeps -G$unkn -W$thps/$blk -K -O > $psfile01
psxy pUNKNO.txt          -R -JL -St$sizeps -G$unkn -W$thps/$blk -K -O > $psfile10
psxy pUNKN0.txt          -R -JL -St$sizeps -G$unkn -W$thps/$blk -K -O > $psfile01
psxy pUNKN0.txt          -R -JL -St$sizeps -G$unkn -W$thps/$blk -K -O > $psfile10
psxy pUNKNN.txt          -R -JL -St$sizeps -G$unkn -W$thps/$blk -K -O > $psfile01
psxy pUNKNN.txt          -R -JL -St$sizeps -G$unkn -W$thps/$blk -K -O > $psfile10
psxy pUNKNN0.txt         -R -JL -St$sizeps -G$unkn -W$thps/$blk -K -O > $psfile01
psxy pUNKNN0.txt         -R -JL -St$sizeps -G$unkn -W$thps/$blk -K -O > $psfile10
awk -v awk_diam30=$diam30 '(print $1, $2, "0.0 \" awk_diam30" " awk_diam30)' pUNKN.txt > circlesUNKN30.dat
awk -v awk_diam40=$diam40 '(print $1, $2, "0.0 \" awk_diam40" " awk_diam40)' pUNKN.txt > circlesUNKN40.dat
dose2unix pUPGR.txt
psxy pUPGR.txt           -R -JL -St$sizeps -G$upgr -W$thps/$blk -K -O > $psfile01
psxy pUPGR.txt           -R -JL -St$sizeps -G$upgr -W$thps/$blk -K -O > $psfile10
awk -v awk_diam30=$diam30 '(print $1, $2, "0.0 \" awk_diam30" " awk_diam30)' pUPGR.txt > circlesUPGR30.dat
awk -v awk_diam40=$diam40 '(print $1, $2, "0.0 \" awk_diam40" " awk_diam40)' pUPGR.txt > circlesUPGR40.dat
dose2unix PACASEstay.txt
psxy stations-PACASEstay.txt -R -JL -St$sizeps -G$pcse -W$thps/$blk -K -O > $psfile01 # tady muze umazato to "stay" a namal
psxy stations-PACASEstay.txt -R -JL -St$sizeps -G$pcse -W$thps/$blk -K -O > $psfile02 # tady muze umazato to "stay" a namal
awk -v awk_ts=$ts '(print $3, $2, awk ts " 0 TC", $1)' PACASEstay.txt > stations-PACASEstayLABEL.txt
awk -v awk_diam30=$diam30 '(print $1, $2, "0.0 \" awk_diam30" " awk_diam30)' stations-PACASEstay.txt > circlesPCSE30.dat
awk -v awk_diam40=$diam40 '(print $1, $2, "0.0 \" awk_diam40" " awk_diam40)' stations-PACASEstay.txt > circlesPCSE40.dat
dos2unix pBB30.txt
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile01
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile02
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile03
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile04
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile05
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile06
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile07
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile08
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile09
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile10
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile11
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile12
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile13
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile14
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile15
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile16
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile17
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile18
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile19
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile20
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile21
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile22
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile23
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile24
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile25
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile26
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile27
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile28
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile29
psxy pBB30.txt            -R -JL -St$sizeps -G$bb30 -W$thps/$blk -K -O > $psfile30
awk -v awk_diam30=$diam30 '(print $1, $2, "0.0 \" awk_diam30" " awk_diam30)" pBB30.txt > circlesBB3030.dat

```

permanent stations - properties of interest:

| | |
|----------------------|---|
| sensor corner period | < 30s |
| | => 30 s and < 40 s (effectively = 30 s) |
| | => 40 s and < 60 s (effectively = 40 s) |
| | => 60 s |

binary properties:

| | |
|-------------------|--|
| EIDA | yes / no |
| online | yes / no |
| StationBook | yes / no |
| FDSN | yes / no |
| inside the region | yes / no (to flexibly change the AdriaArray outline) |
| for upgrade | yes / no (if corner < 60 s) |

idea: whenever you change or add a line (station properties) in the inventory,

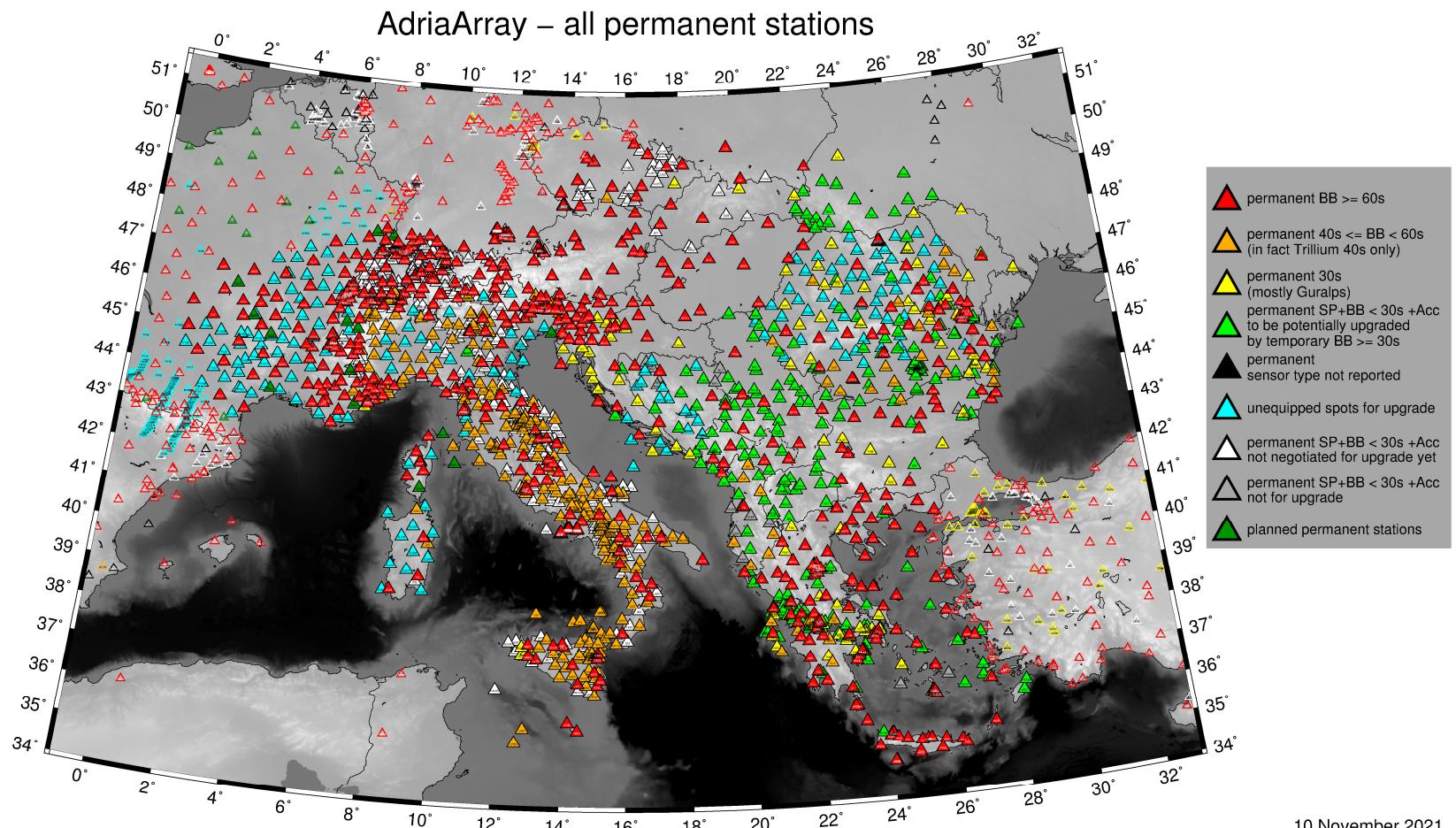
- you run the Python script
- and you get an updated map by the GMT script

Adria Array – all permanent stations - update November 2021

inside AdriaArray region:

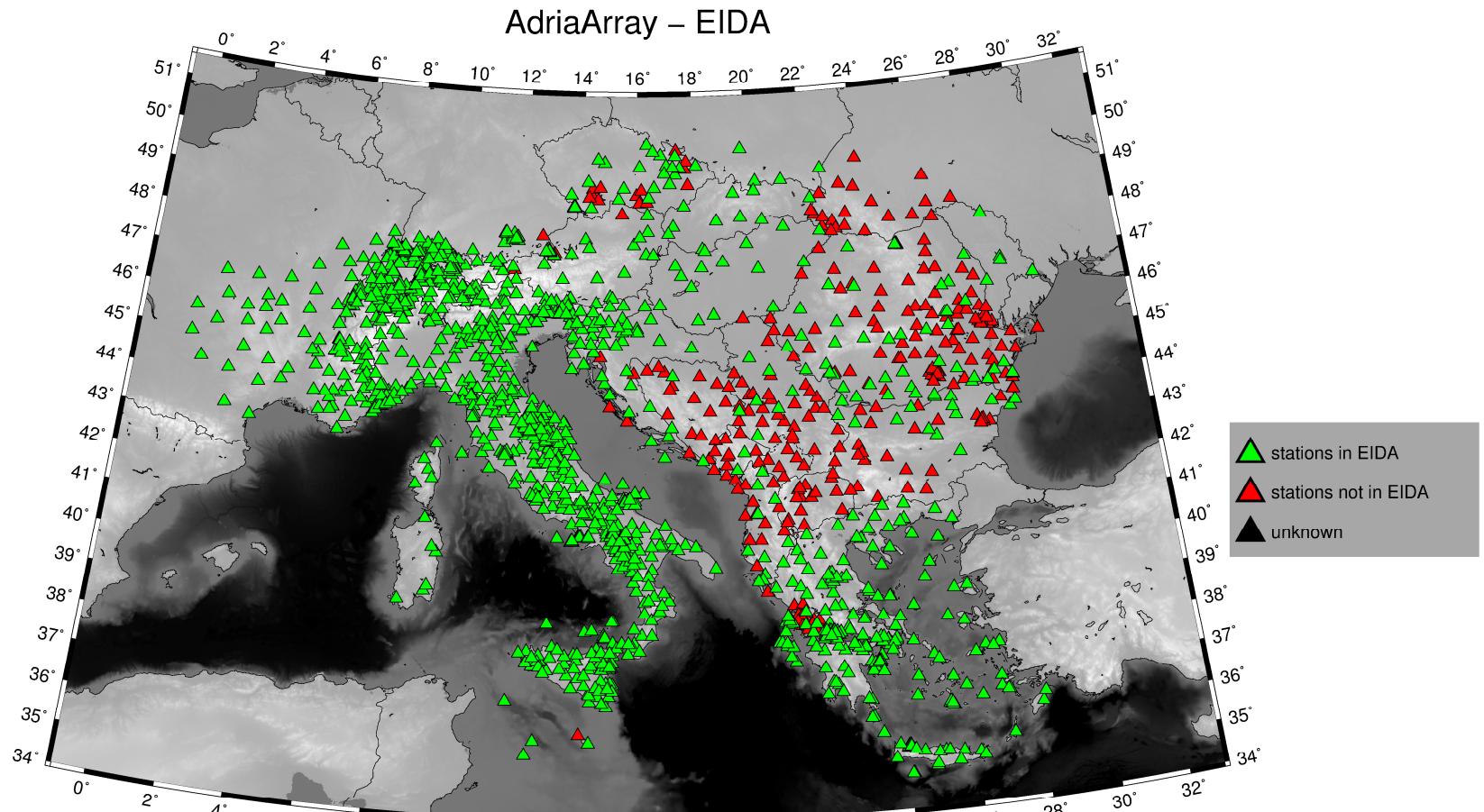
| | |
|------------------------|-------------|
| BB (>= 30s) | 951 |
| SP+SM for upgrade | 265 |
| SP+SM others | 448 |
| unknown | 2 |
| planned permanent | 15 |
| total permanent | 1681 |

(there are 2300+ stations on the map
including those outside the AdriaArray region)



from that **1681** permanent stations, **1373** are already in EIDA (82%)
=> 293 are not in EIDA (BB+SP+SM)
out of these 293,
86 BB permanent stations need to be connected to EIDA

HOMEWORK: if there is a new non-EIDA permanent station built since we communicated the last time (2019/2020/2021), please, share the information with me, as I cannot find that station otherwise and connect it to EIDA!



AdriaArray

Seismic Network

Working Group

(November, 2021)

50 participating institutions from **27** countries

(alphabetical order by countries)

seismic network preparatory steps:

- 1 permanent stations in the region
- 2 availability of the mobile stations
- 3 distribution of mobile stations

- 4 iterate 1 – 3 to update

2019 – 2020 – 2021 ...

IGEWE-PUT, Tirana, Albania
Uni Vienna, Austria
ZAMG, Austria
SC FHMZ, Sarajevo, Bosnia and Herzegovina
GS Republic of Srpska, Bosnia and Herzegovina
BAS, Bulgaria
CSS, Zagreb, Croatia
Uni Zagreb, Croatia
Charles Uni, Prague, Czech Republic
IG, CAS, Prague, Czech Republic
IPE, Masaryk Uni, Brno, Czech Rep.
IRSM, CAS, Prague, Czech Republic
Uni Aarhus, Denmark
Uni Helsinki, Finland
Uni Oulu, Finland
Uni Grenoble, France
Observatoire Midi Pyrénées, France
Uni Bochum, Germany
GEOMAR Kiel, Germany
GFZ Potsdam, Germany
Uni Kiel, Germany
Uni Karlsruhe, Germany
Uni Münster, Germany
Uni München, Germany
Uni Frankfurt, Germany
NOA, Greece/ORFEUS
Uni Thessaloniki, Greece
HCMR, Athens, Greece
Uni Patras, Greece
HAS, Budapest, Hungary
EPSS, Hungary
INGV, Italy
OGS, Trieste, Italy
GS Kosovo, Pristina, Kosovo
Uni Sts. Cyril and Methodius, Skopje, N. Macedonia
Uni Malta
IGS-CES, Chisinau, Moldova
MSS, Podgorica, Montenegro
Uni Twente, The Netherlands
Norwegian Broadband Pool, Norway
IG PAS, Warsaw, Poland
Uni Silesia, Katowice, Poland
Uni Warszawa, Poland
NIEP, Romania
ESI SAV, Bratislava, Slovakia
SSS, Ljubljana, Slovenia
ICTJA-CSIC, Barcelona, Spain
ETH, Zürich, Switzerland
IoG, NAS, Ukraine
ORFEUS

mobile stations available

| | |
|-----------------------------|--|
| Uni Vienna, Austria | 30 |
| Uni Zagreb, Croatia | 6+ |
| IG, Czech Republic | 50 |
| IRSM, Czech Republic | 4 + local experiment |
| Uni Aarhus, Denmark | 19 + local experiment |
| Uni Helsinki, Finland | 20+ |
| Uni Oulu, Finland | 10 |
| Resif-Sismob, France | 35 |
| Germany DSEBRA+ | 114 + local on-shore/off-shore experiments |
| Hungary | 15 |
| OGS, Italy | 6 |
| INGV, Italy | local experiment |
| INGV, Italy, Bologna | 1 |
| Uni Twente, the Netherlands | 10 |
| Norwegian Broadband Pool | 10+ |
| IG+Warszawa+Silesia, Poland | 30 |
| Barcelona, Spain | 10 |
| ETH, Switzerland | 20 |
| total available | 390+ mobile stations |

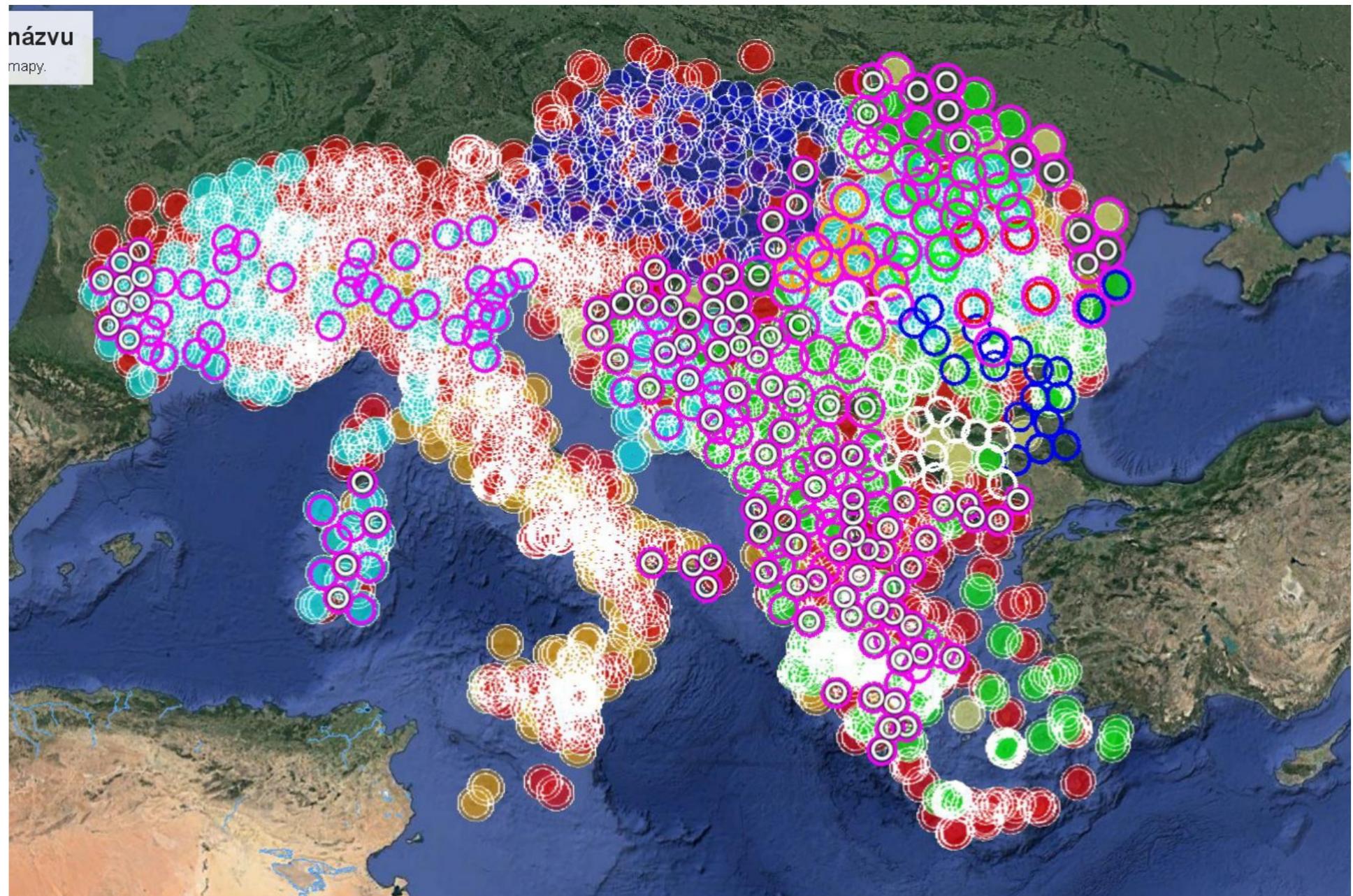
| | MOBILES | REGION | PACASE already in place | | | | 121 | | | |
|------------------|-----------------|--------------|-------------------------|--------------|-------------|----------|--------------|---------------------|-----------|-------|
| EAST | Poland | Ukr.-Carp. | Ukr.-Coast | Moldavia | Romania | Bulgaria | | sum columns | available | spare |
| | IG CzechRep | | | | 9 | 10 | | 19 | 20 | 1 |
| | IRSM Czech Rep | | | | 4 | | | 4 | 4 | 0 |
| | Denmark | | | | 4 | 15 | | 19 | 19 | 0 |
| | Helsinki | | | 3 | 16 | | | 19 | 20 | 1 |
| | Oulu | | | | 9 | | | 9 | 10 | 1 |
| | ??? | | 2 | | | | | 2 | 0 | -2 |
| | Poland | 14 | 16 | | | | | 30 | 30 | 0 |
| | | | | | | | 102 | 103 | 1 | |
| sum of rows | 14 | 16 | 2 | 3 | 42 | 25 | 102 sums | available | spare | |
| needed | 14 | 16 | 2 | 3 | 42 | 25 | 102 needed | | | |
| 30s NOT replaced | | | | | | | | | | |
| PANNONIAN | CzechRep | Austria | Slovakia | Hungary | Serbia | Germany | | sum columns | available | spare |
| | UniWien | | 17 | 9 | | | | 26 | 30 | 4 |
| | IG CzechRep | 8 | | 22 | | | | 30 | 30 | 0 |
| | Hungary PACASE | | | 11 | | | | 11 | 11 | 0 |
| | Hungary new | | | 4 | | | | 4 | 4 | 0 |
| | Kiel | | 15 | 15 | | 10 | | 40 | 40 | 0 |
| | | | | | | | 111 | 115 | 4 | |
| | sum of rows | 8 | 32 | 31 | 30 | 0 | 10 | 111 sums | available | spare |
| | needed | 8 | 32 | 31 | 30 | 0 | 10 | 111 needed | | |
| CENTRE | Croatia | BiH | N. Italy | Slovenia | | | | sum columns | available | spare |
| | NorwPool+Zag | 16 | | | | | | 16 | 16 | 0 |
| | ETH | | 18 | | | | | 18 | 20 | 2 |
| | OGS | | | 6 | | | | 6 | 6 | 0 |
| | INGV Bologna | | | 1 | | | | 1 | 1 | 0 |
| | the Netherlands | | | 9 | | | | 9 | 10 | 1 |
| | | | | | | | 50 | 53 | 3 | |
| | sum of rows | 16 | 18 | 16 | 0 | | 50 sums | available | spare | |
| | needed | 16 | 18 | 16 | 0 | | 50 needed | | | |
| SOUTHEAST | Albania | N. Macedonia | Montenegro | Kosovo | Greece | | | sum columns | available | spare |
| | Bochum | | 13 | | 41 | | | 54 | 54 | 0 |
| | Munich | 10 | | 7 | 3 | | | 20 | 20 | 0 |
| | | | | | | | 74 | 74 | 0 | |
| | sum of rows | 10 | 13 | 7 | 3 | 41 | 74 sums | available | spare | |
| | needed | 10 | 13 | 7 | 3 | 41 | 74 needed | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| WEST | Apulia | Sicily | Sardinia | Massif Cent. | Switzerland | | | sum columns | available | spare |
| | Spain | 4 | | 9 | | | | 13 | 10 | -3 |
| | France | | | 35 | | | | 35 | 35 | 0 |
| | | | | | | | 48 | 45 | -3 | |
| | sum of rows | 4 | 0 | 9 | 35 | 0 | 48 sums | available | spare | |
| | needed | 4 | 0 | 9 | 35 | 0 | 48 needed | | | |
| | | | | | | | | | | |
| | | | | | | | total needed | 385 total available | 390 | |
| | | | | | | | | total spare | 5 | |

numbers:

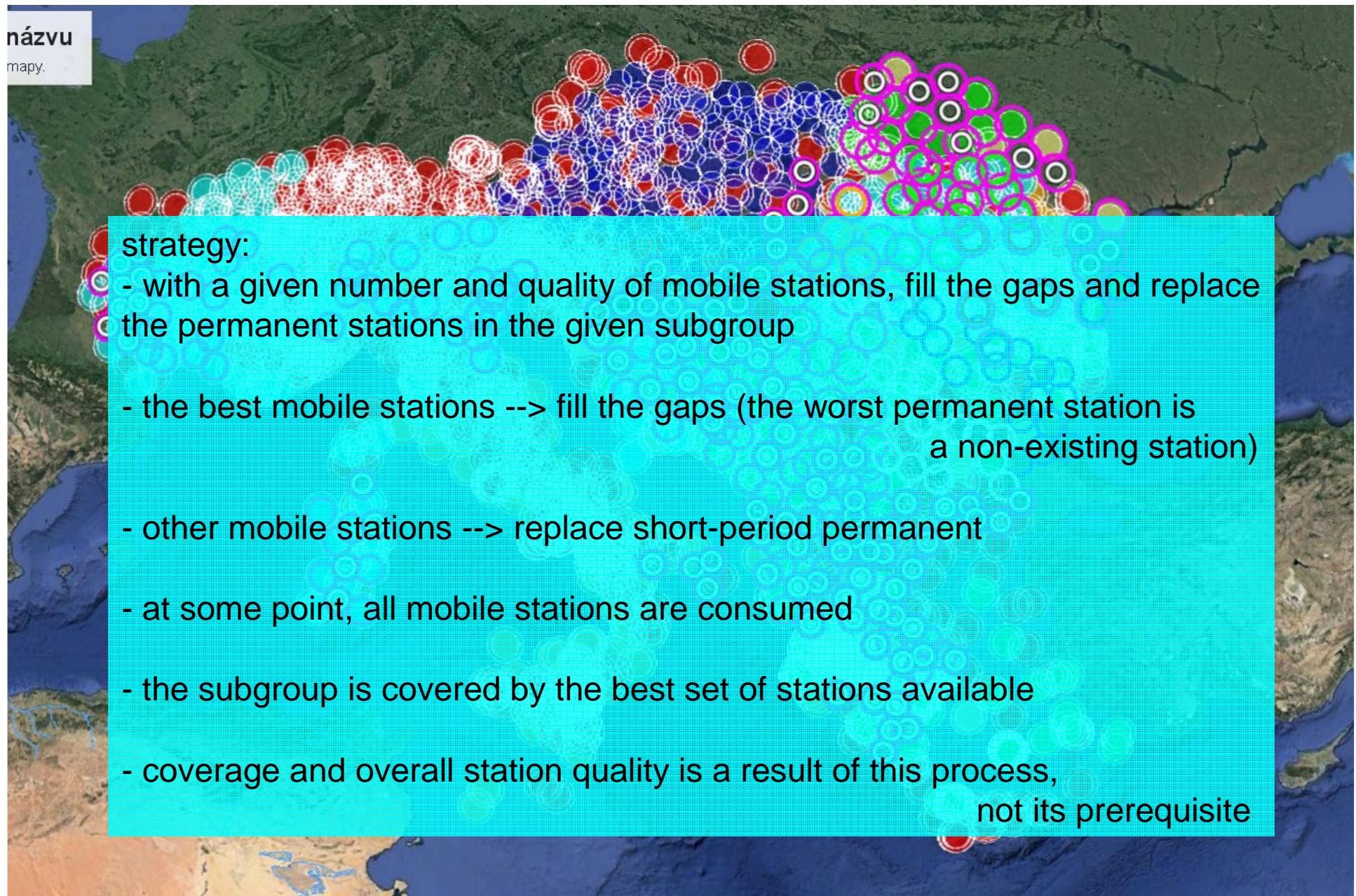
we need **385** temporary stations

however, **121** out of these 385 ARE ALREADY deployed as the PACASE project
meaning, “only” **264** stations to go!

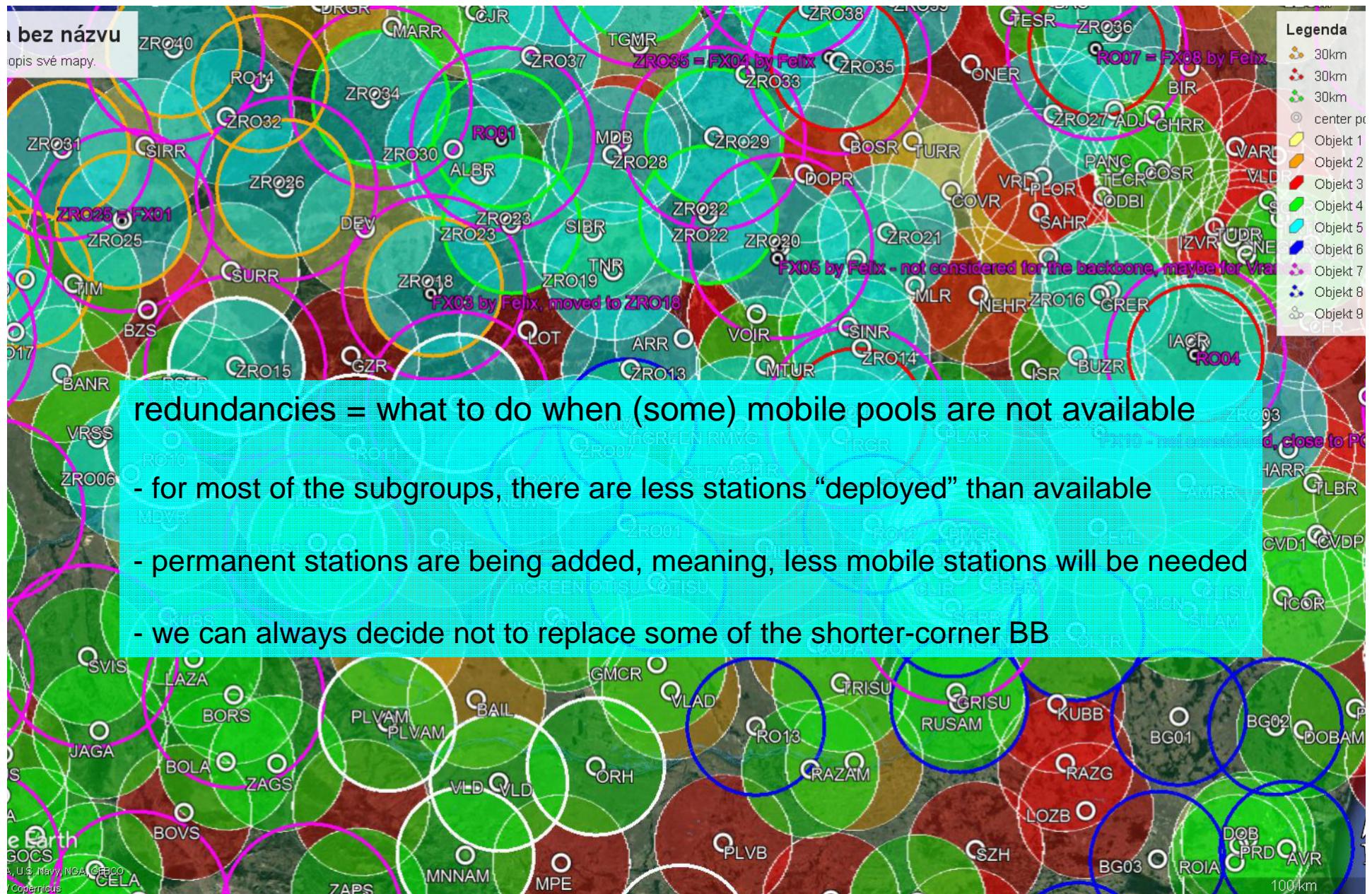
deployment of mobile stations – handmade in GoogleEarth



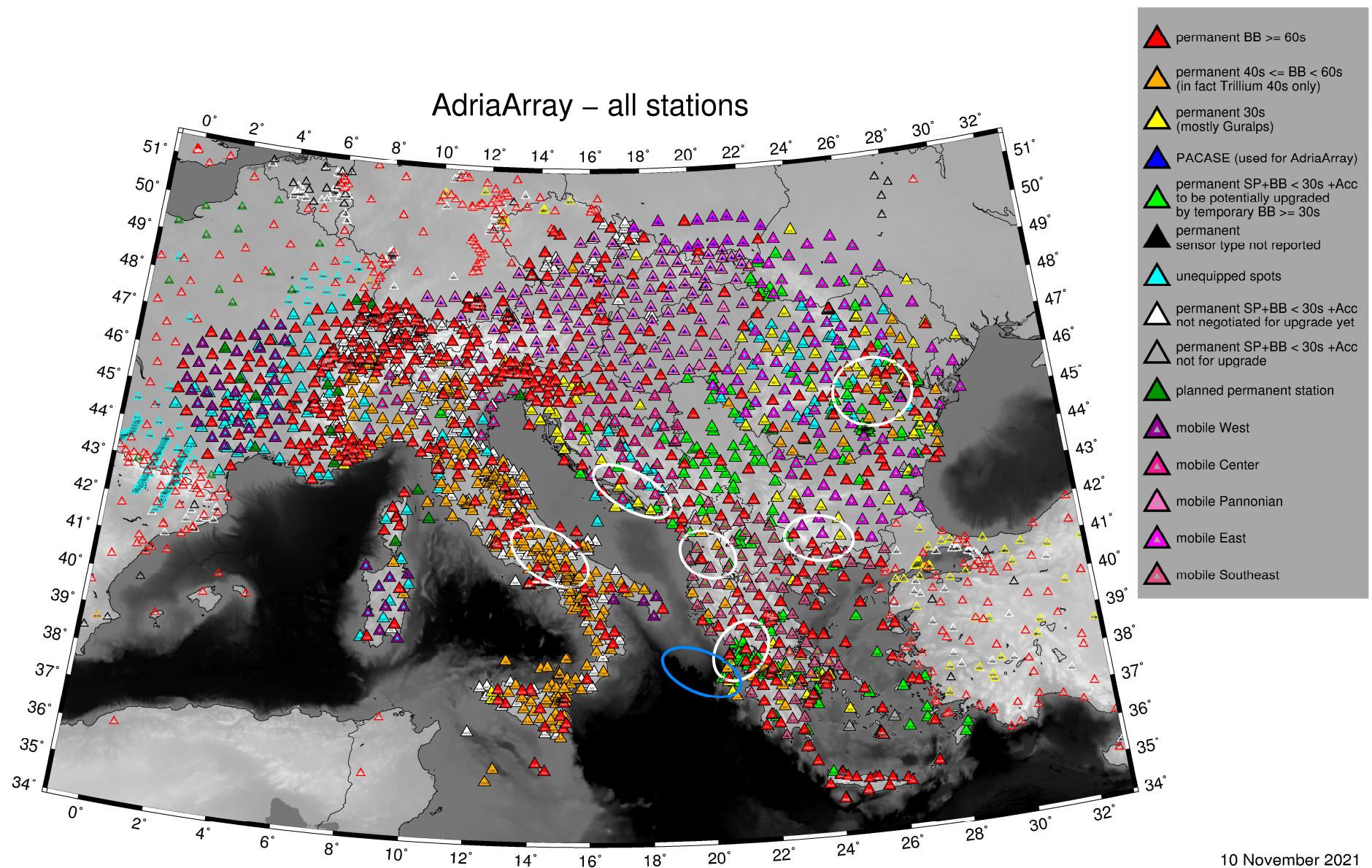
deployment of mobile stations – handmade in GoogleEarth



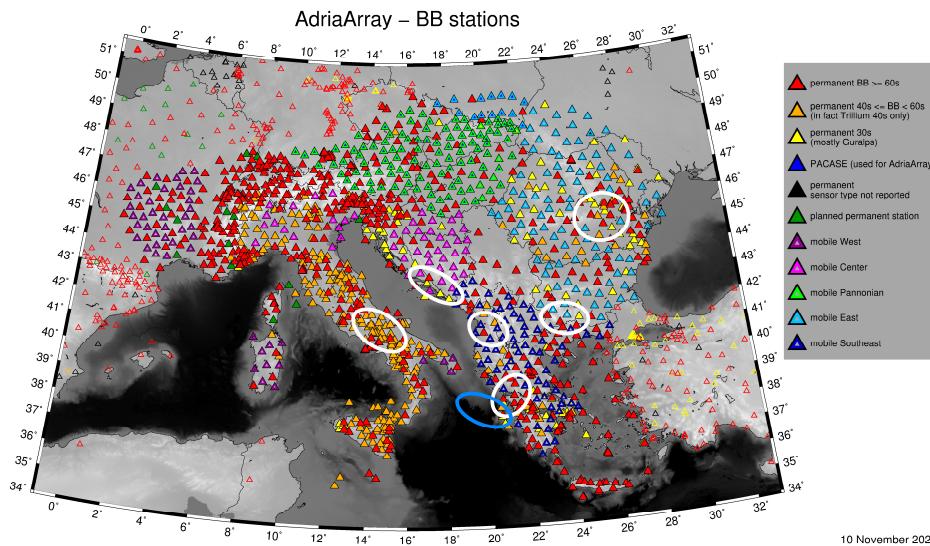
deployment of mobile stations – handmade in GoogleEarth



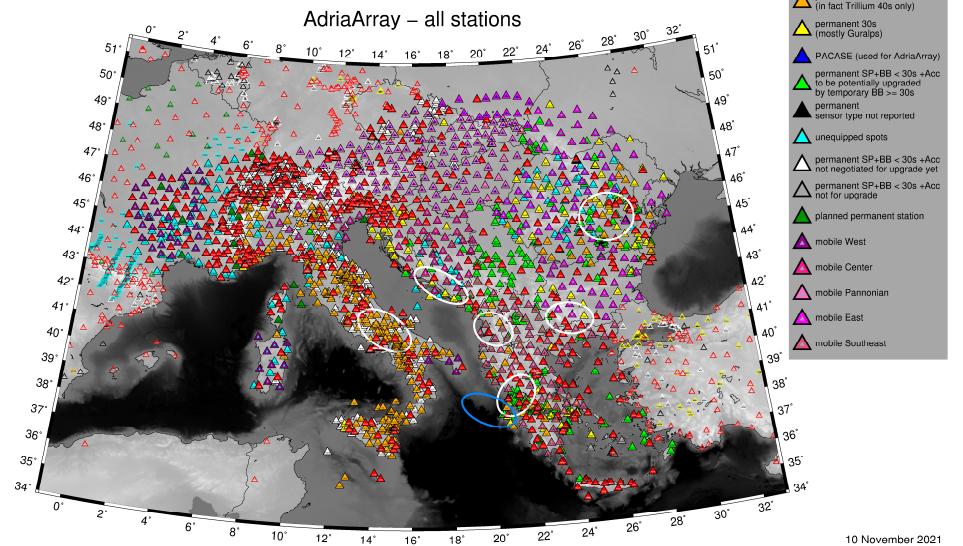
Adria Array – all permanent stations + mobile stations



10 November 2021

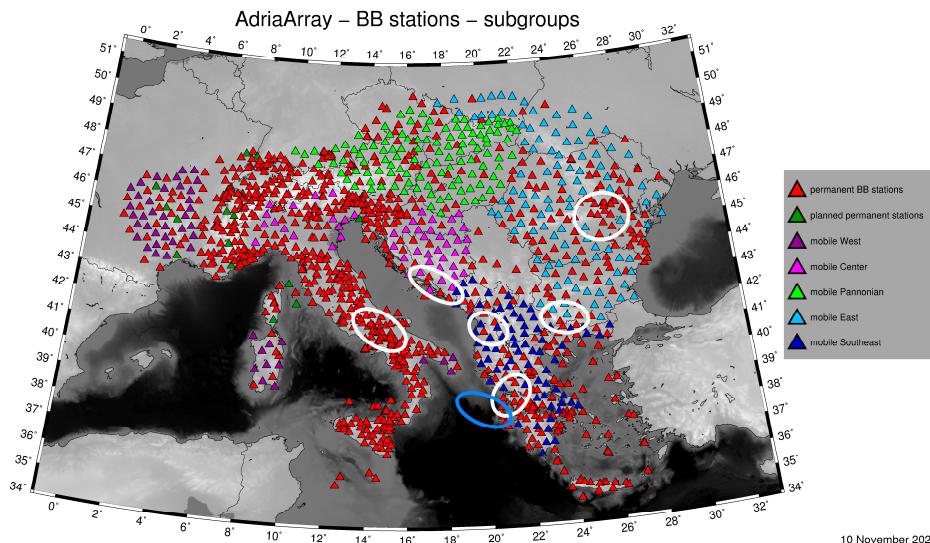


10 November 2021

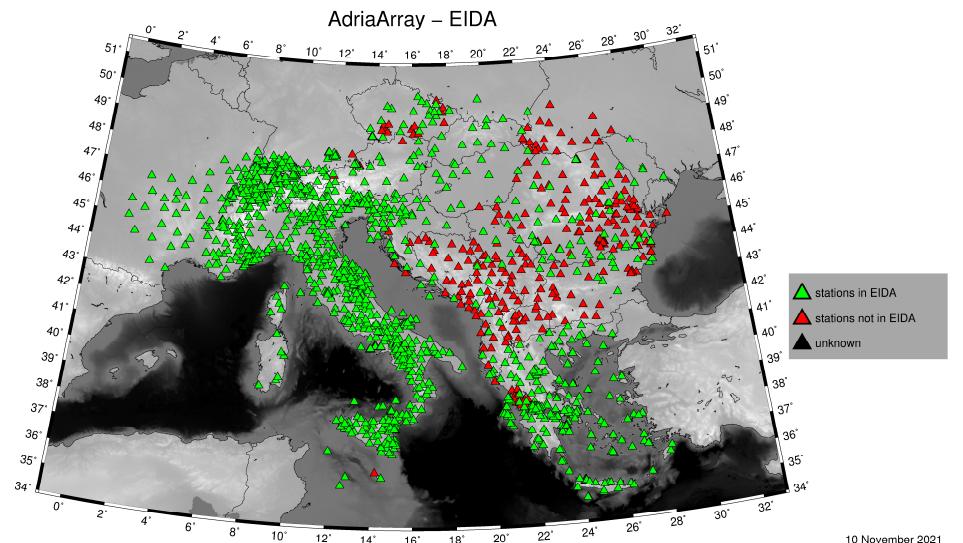


10 November 2021

various versions of the map – different levels of information plotted



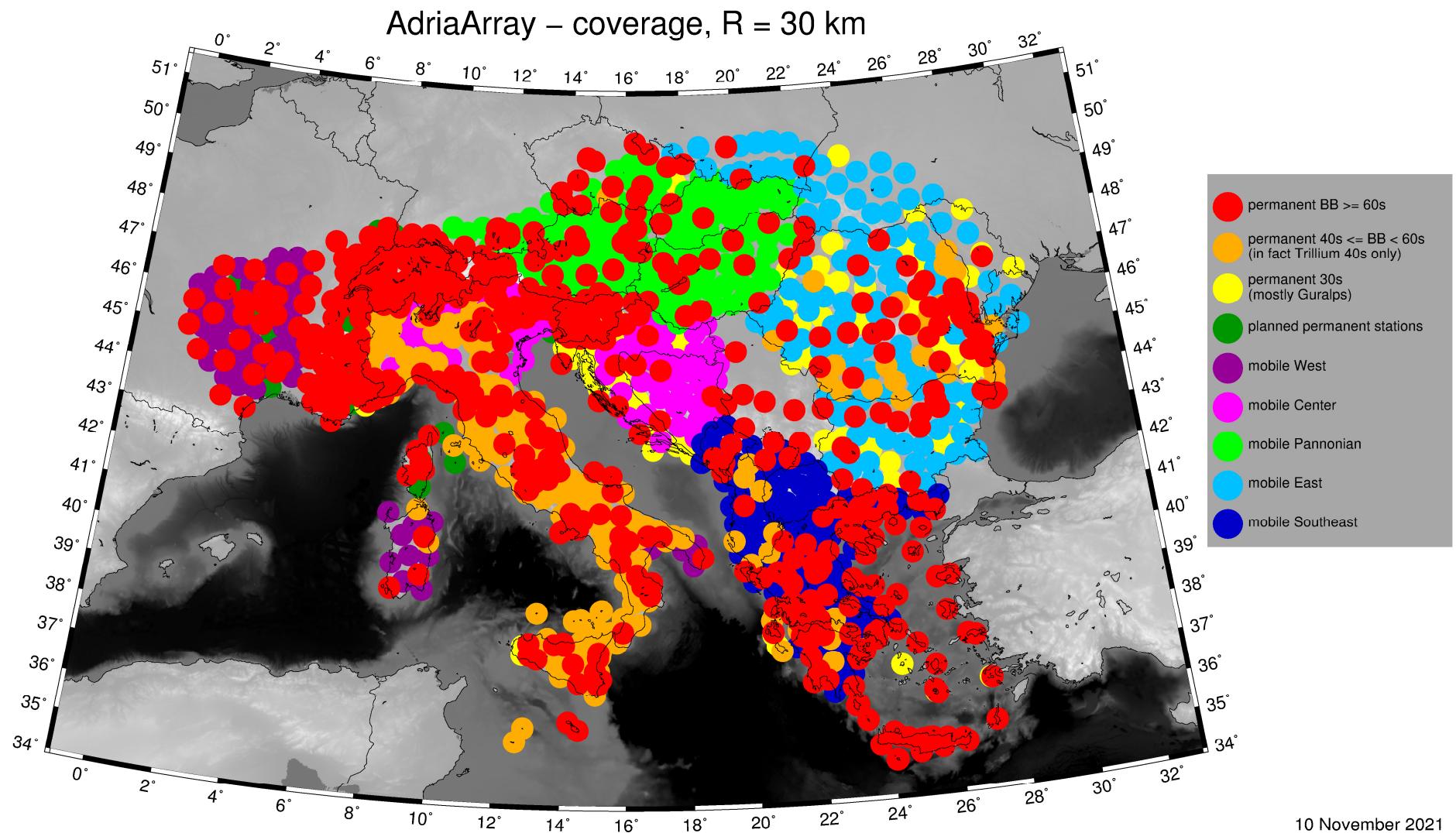
10 November 2021



10 November 2021

coverage

30 km

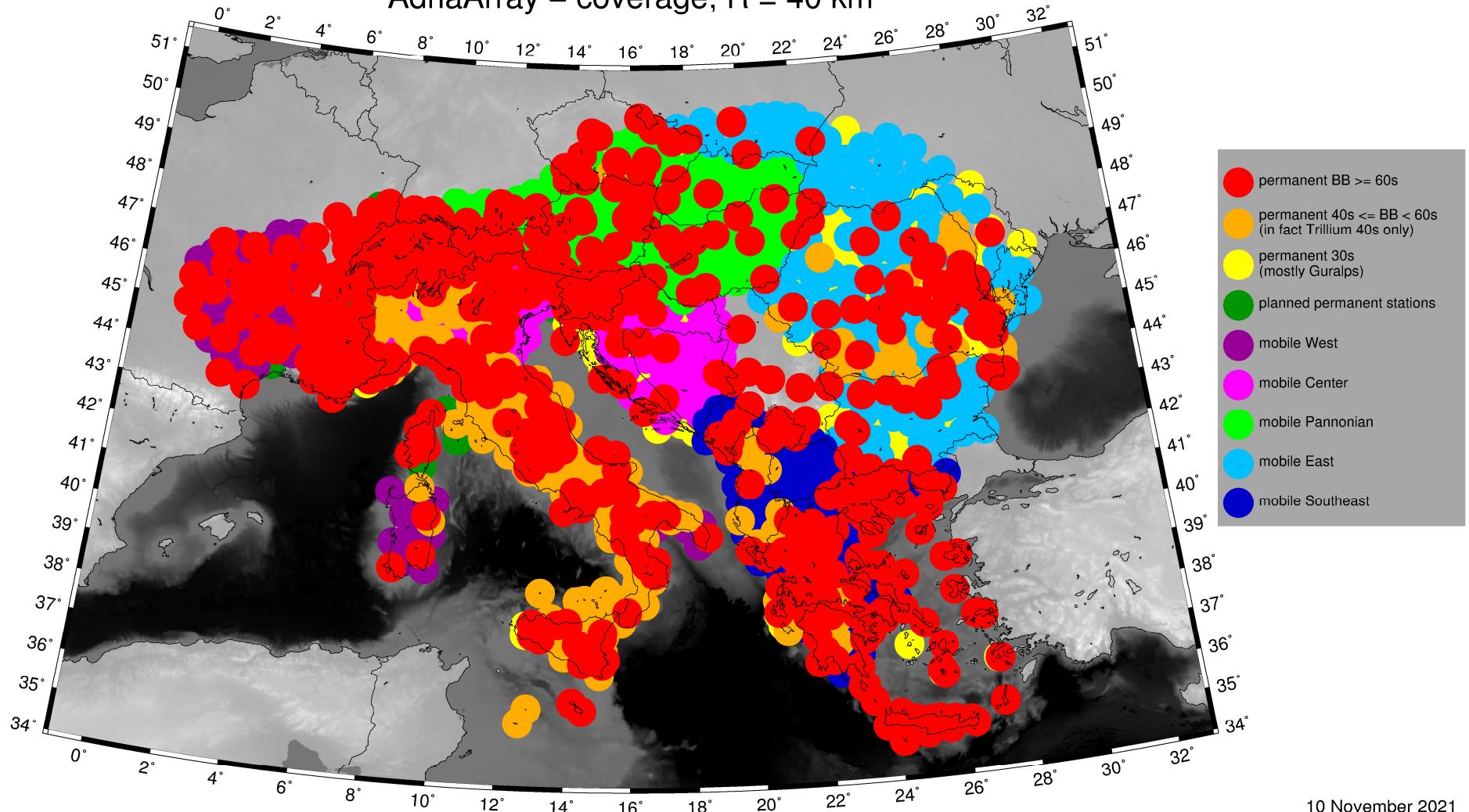


10 November 2021

coverage

40 km

AdriaArray – coverage, $R = 40$ km



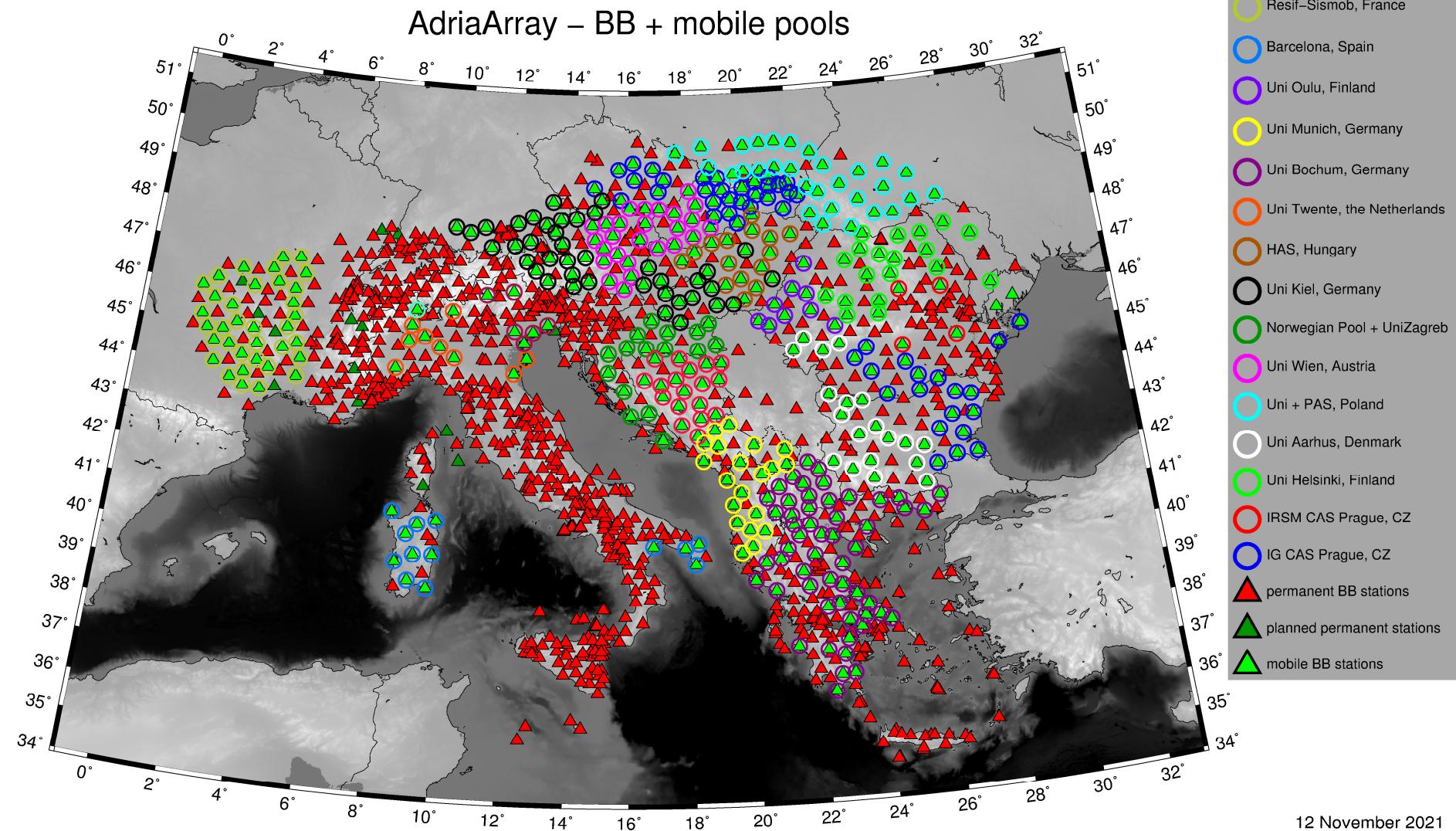
10 November 2021

mobile pools assigned to the stations

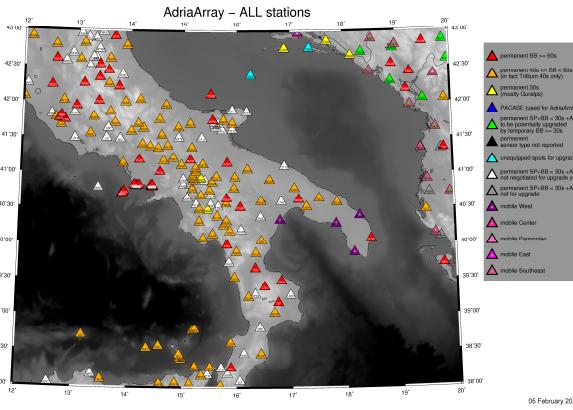
385 BB mobile stations

951 BB permanent stations

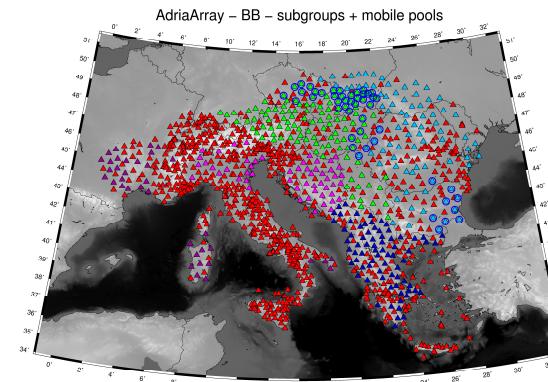
--> 1336 BB stations in total



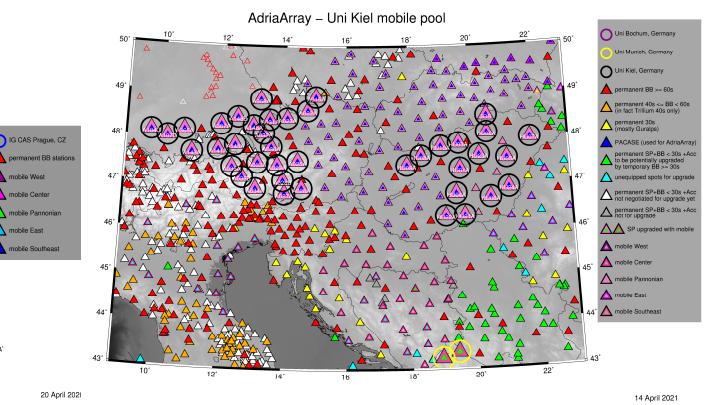
examples of maps to support project proposals



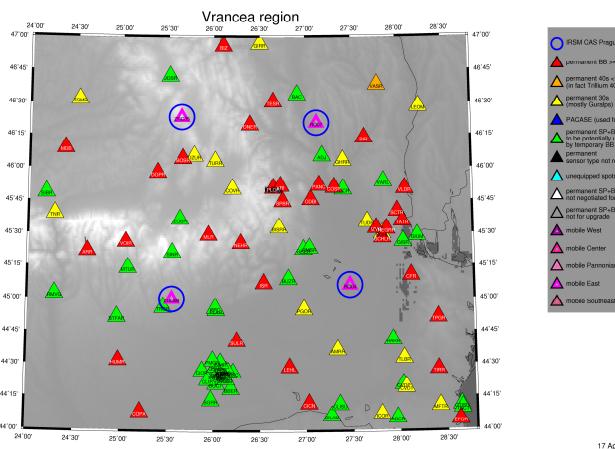
INGV



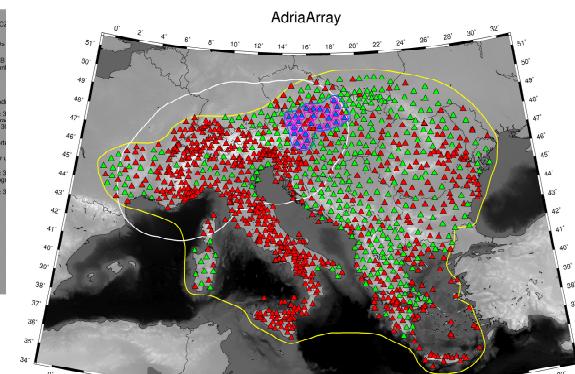
IG CAS CZ



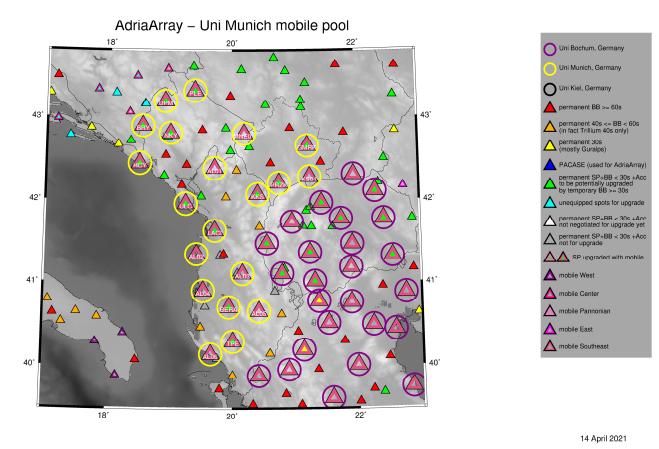
Uni Kiel



IRSM CAS CZ



Uni Wien



Uni Munich

current task: **table of contacts**
ready for the subregion “East”, under construction for the other parts



Temporary networks – subregion „East“

| mobile pool | country | contact person | host institution | host country | contact person | stations | network code | EIDA node | begin of deployment | end of deployment |
|------------------------------------|---------|-------------------------------|--------------------------|--------------|-------------------------------|----------|--------------|-------------|--------------------------|-------------------|
| IG CAS | CZ | Jarka Plomerová | NIEP | RO | Felix Borleanu | 9 | | NIEP | March/April 2022 | April 2024 |
| | | Jarka Plomerová | NIGGG BAS | BG | Lili Dimitrova | 10 | | NIEP | March/April 2022 | April 2024 |
| IRSM CAS | CZ | Renata Lukešová | NIEP | RO | Felix Borleanu | 4 | | NIEP | summer 2022 | |
| UniHelsinki | FIN | Timo Tiira | NIEP | RO | Cristian Neagoe | 16 | | NIEP | July 2022 | +2 yrs |
| | | Timo Tiira | NIEP / IGS | MD | Cristian Neagoe | 3 | | NIEP | July 2022 | +2 yrs |
| UniOulu | FIN | Hanna Silvennoinen | NIEP | RO | Cristian Neagoe | 9 | | NIEP | late spring 2022 | |
| UniAarhus | DK | Thorsten Nagel | NIEP | RO | Cristian Neagoe | 4 | | NIEP | planned July/August 2022 | +2 yrs |
| | | Thorsten Nagel | NIGGG BAS | BG | Lili Dimitrova | 15 | | NIEP | planned July/August 2022 | +2 yrs |
| IG PAS, UniWarsz, UniSilesia | PL | Wojciech Czuba Piotr Środa | IoG NAS | UA | Bohdan Kuplyovsky | 16 | | Warsz/NI EP | June/July 2022 | |
| | | Wojciech Czuba Piotr Środa | PAS,UniWarsz,Uni Silesia | PL | Wojciech Czuba Piotr Środa | 14 | | Warsz/NI EP | deployed | |
| ??? | | | IoG NAS | UA | | 2 | | NIEP | | |
| | | | | | total stations | 102 | | | | |

status:

- overview of permanent stations in the region is ready (and continuously updated)
- the mobile stations are existing and available
- the local network operators are willing to accept and support
 - the installation of the mobile stations
- the local networks and the mobile pool operators are willing to exchange data
 - within the AdriaArray Initiative
- some groups have got already some funding
- suggestion of mobile station distribution is ready (with some redundancy)

memorandum of collaboration (MoC):

- almost ready, will be discussed later today

plans:

- other groups are in the process of applying for funding this year (2021)
- the anticipated time for the installation of the mobile stations is 2 years within 2022-2024
- the plans have to be adjusted according to the pandemic
- I will share the maps and the slides with you

homeworks:

- if there is a **new non-EIDA permanent station** built, please, share the information
- please, let me know your **plans** about building a **new permanent stations** in the near future; longitude + latitude + BB/SP/SM is enough (some of you did, thanks!!!)
- comments (reporting errors and so on) **to the maps** are welcome

ORFEUS + EPOS

support from Orfeus/EPOS is crucial for the AdriaArray

AdriaArray idea and Orfeus/EPOS are aiming
in the same direction, focusing on different aspects

infrastructure + science + networking

- archival of data at regional EIDA nodes
- support to AdA workshops via EPOS SP

| Datacenter ID | Description and Focus Region |
|---------------|---|
| ODC - KNMI | European-Mediterranean, Netherlands |
| GFZ | European, Global, temporary deployments |
| RESIF | France + Global temporary deployments |
| INGV | Italy, European-Mediterranean (MedNet) |
| ETHZ | Switzerland |
| BGR | Germany |
| LMU | Germany (BayernNetz) |
| NIEP | Romania |
| KOERI | Turkey |
| NOA | Greece |
| UIB - NORSAR | Norway |
| ICGC | Spain |

from the Orfeus web page:

ORFEUS Observatories & Research Facilities for European Seismology

ORFEUS is the non-profit foundation to coordinate and promote digital, broadband seismology in the European-Mediterranean area.

EIDA is the European Integrated Data Archive infrastructure within ORFEUS to provide access to seismic waveform data in European archives.

- guidelines for quality control and data management being developed

acknowledgements

Maps plotted using GMT by Wessel, P., Smith, W. H. F., Scharroo, R., Luis, J. F. and Wobbe, F., 2013: Generic Mapping Tools: Improved version released, EOS Trans. AGU, 94, 409-410.

AlpArray stations by the AlpArray Working Group www.alparray.ethz.ch.

Permanent stations by national seismological services and ORFEUS-EIDA.

Big thanks to all the network operators for supplying the permanent station information.

PACASE station information thanks to György, Jarka and Antje.

Thanks to Orfeus + Epos for supporting AdriaArray.

petr.kolinsky@univie.ac.at



Orfeus

EPOS
EUROPEAN PLATE OBSERVING SYSTEM