

# EPN DENSIFICATION & ECC

## AMBRUS KENYERES CHAIR OF EPN DENSIFICATION WORKING GROUP & EUPOS COMBINATION CENTRE

A BARON - C BRUYNINX - A CAPORALI - F DE DONCKER - **B DROSCAK** - A DURET -  
P FRANKE - I GEORGIEV - D HANSEN - L HUISMAN - L JIVALL - O KHODA -  
- **K MOROZOVA** - **J NAGL** - X PAPANIKOLAOU - **E PARSEULINAS** - **P PIHLAK** -  
G STANGL - M VALDES - **M RYCZYWOLSKI**  
AI KURT - S LAHTINEN - OB TANGEN - M WEBER

EPNCB (J LEGRAND, D MESMAKER)

B MAGYAR

AND MANY MORE . . .



# A REMINDER:

THE TASK IS THE COMBINATION OF NATIONAL WEEKLY SINEX SOLUTIONS TO REALIZE HOMOGENEOUS, DENSE EUROPEAN LEVEL **POSITION AND VELOCITY** PRODUCT

## MAIN FEATURES

- DISTRIBUTED PROCESSING, BUT CENTRALIZED ANALYSIS  
→ SAME ANALYST, **COHERENT** HANDLING OF SINEX INPUT
- **TIME SERIES LEVEL COMBINATION (SEE ITRF)**
- **MULTI-LEVEL QUALITY CHECK AND HOMOGENIZATION**
- **RIGOROUS COMBINATION WITHOUT ANY COMPROMISE, SIMPLIFICATION!**
- **COMBINED SOLUTION FREED FROM OCCASIONAL REFERENCE FRAME DEFINITION WEAKNESSES,**

**D1933 IS READY!**

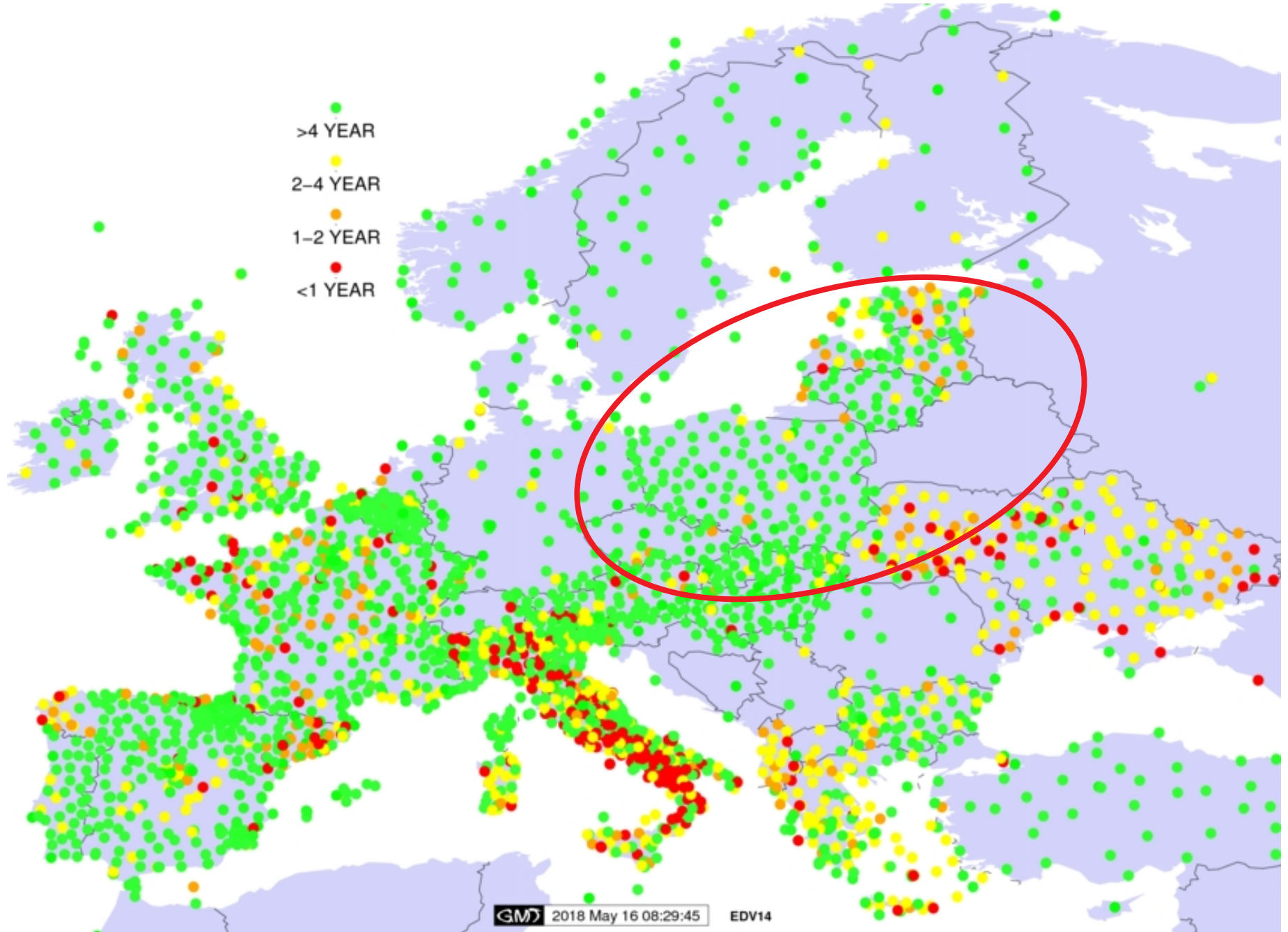


# ABOUT D1933 ...

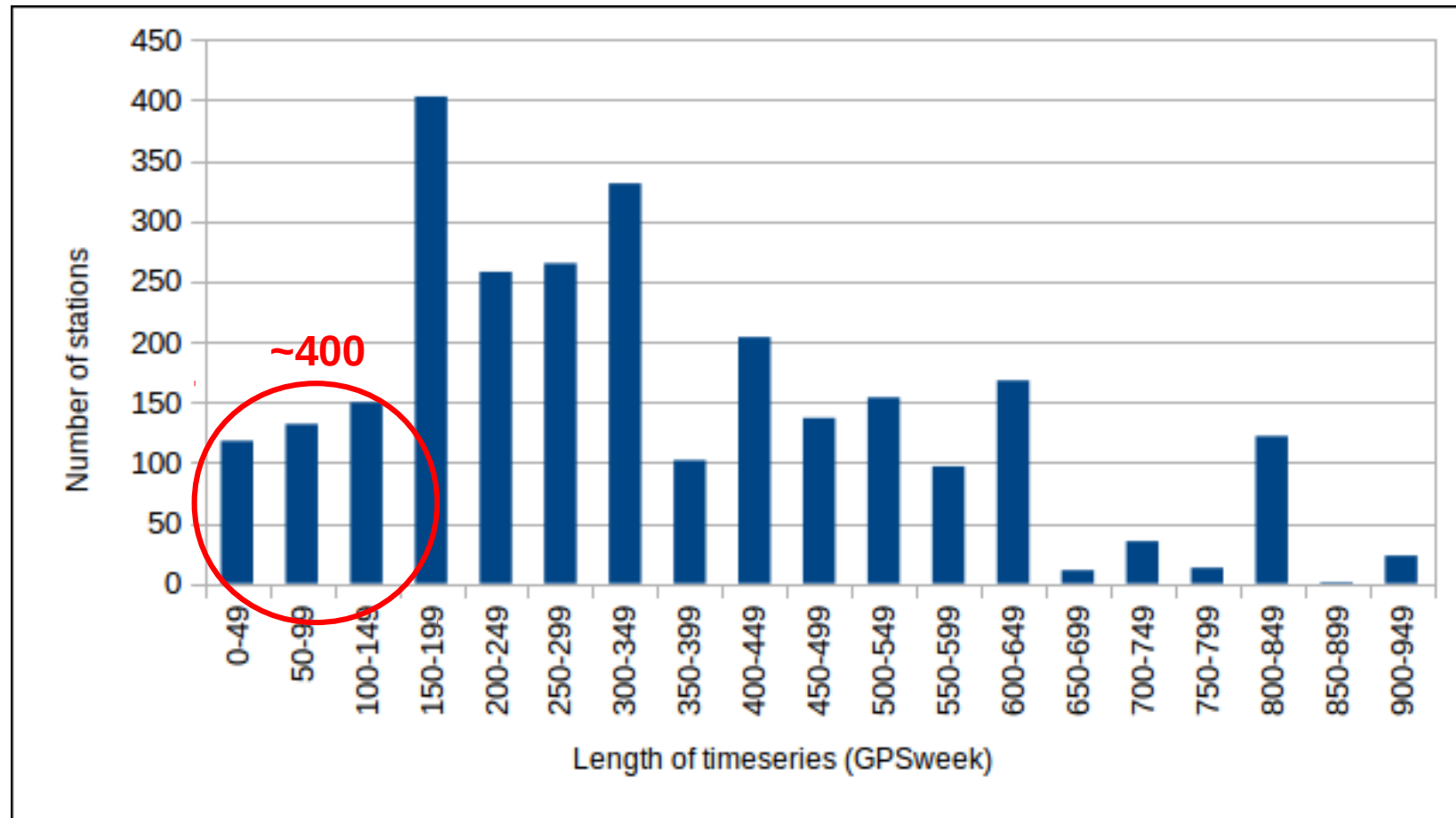
- CONTINENTAL COVERAGE - **MISSING 4 BALKAN COUNTRIES (NO PROCESSING YET) & SWITZERLAND**
- CLEANED METADATA - CRITICAL PART (**E\_GVAP CONTACT**)
- TOTAL 3192 STATIONS (3053 IN EUROPE)
  - 1322 SITE LOGS
  - **80% DOMES NUMBER** ATTRIBUTED
- 12726 WEEKLY SINEX FILES (up to week 1933!)
- 28 GB OF SINEX DATA - ALL IN **IGb08 & KEEPING EUREF STANDARDS**
- DATA AVAILABILITY MOSTLY SINCE 2007 (**AFTER WEEK 1400**)
- RUNTIME: 32 HOURS IN A MULTI-CORE COMPILER ENVIRONMENT
- **10.7 GB cumulative SINEX** - [ 29214 ] COV matrix



# SINEX AVAILABILITY (up to week 1933)

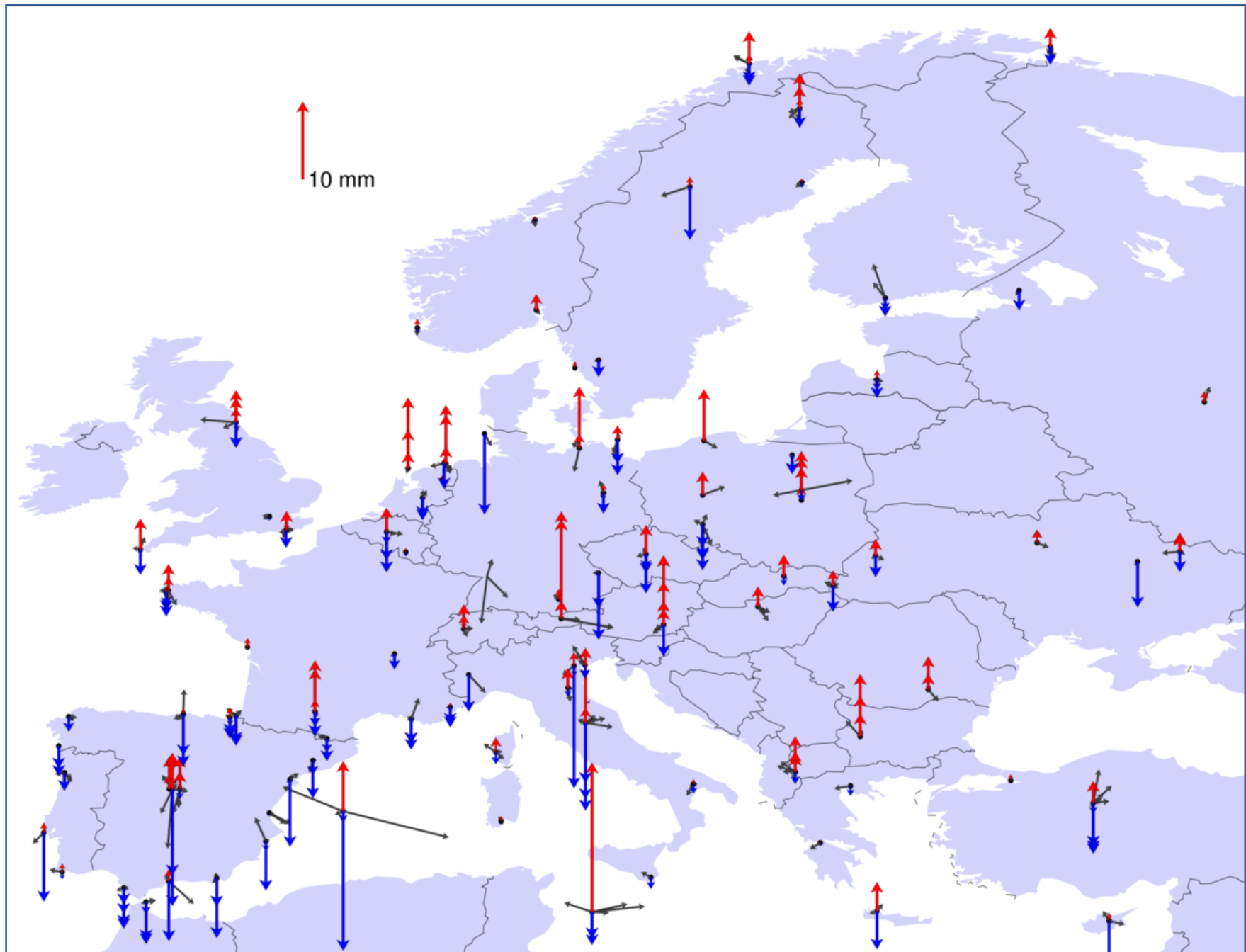


# SINEX AVAILABILITY (up to week 1933)

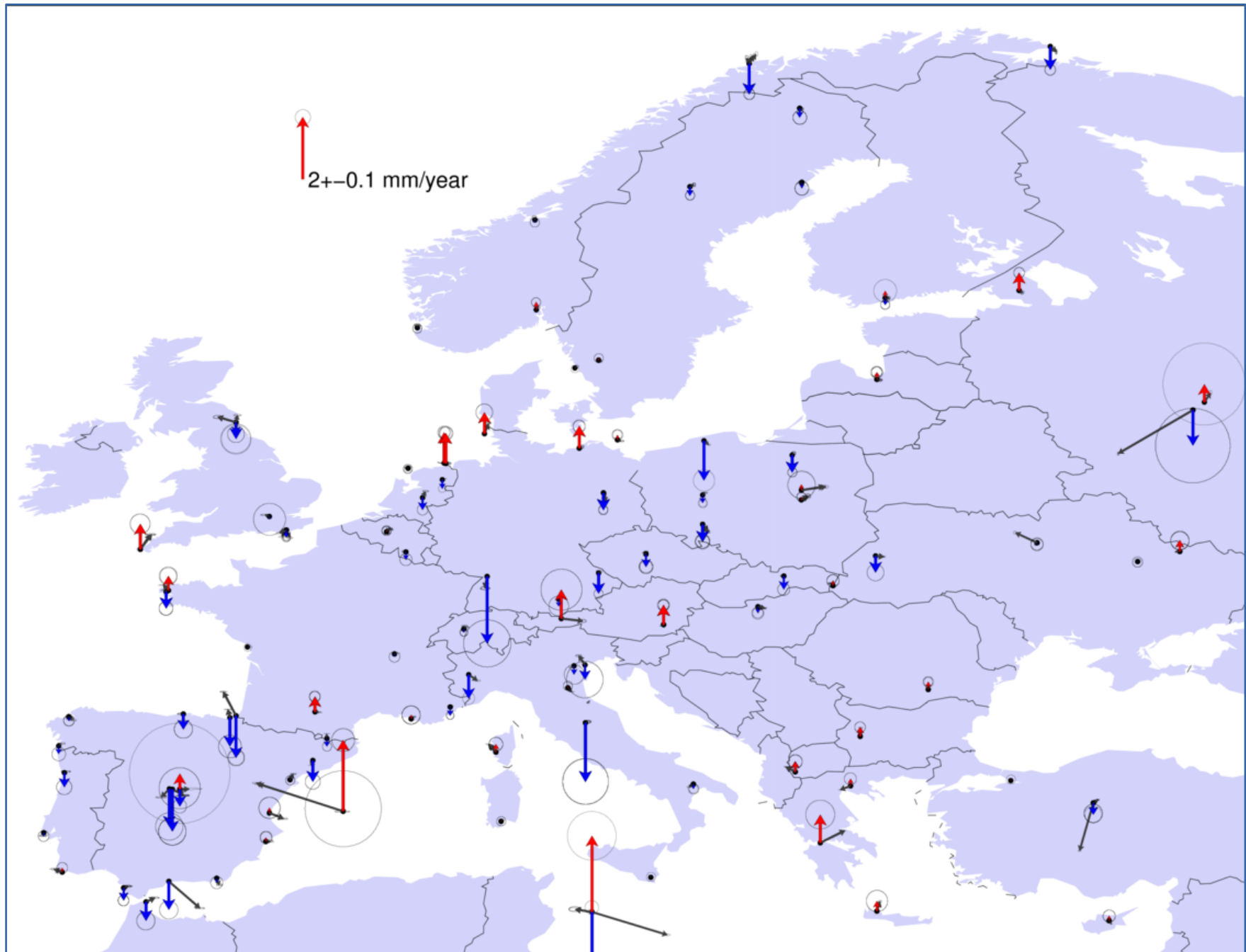


# ITRF2014 vs D1933 - positions (epoch 2010.0)

SVTL\_2, ZWEN, KARL, MARS\_5, REYK\_1, TOUL\_2, LAMP4-5



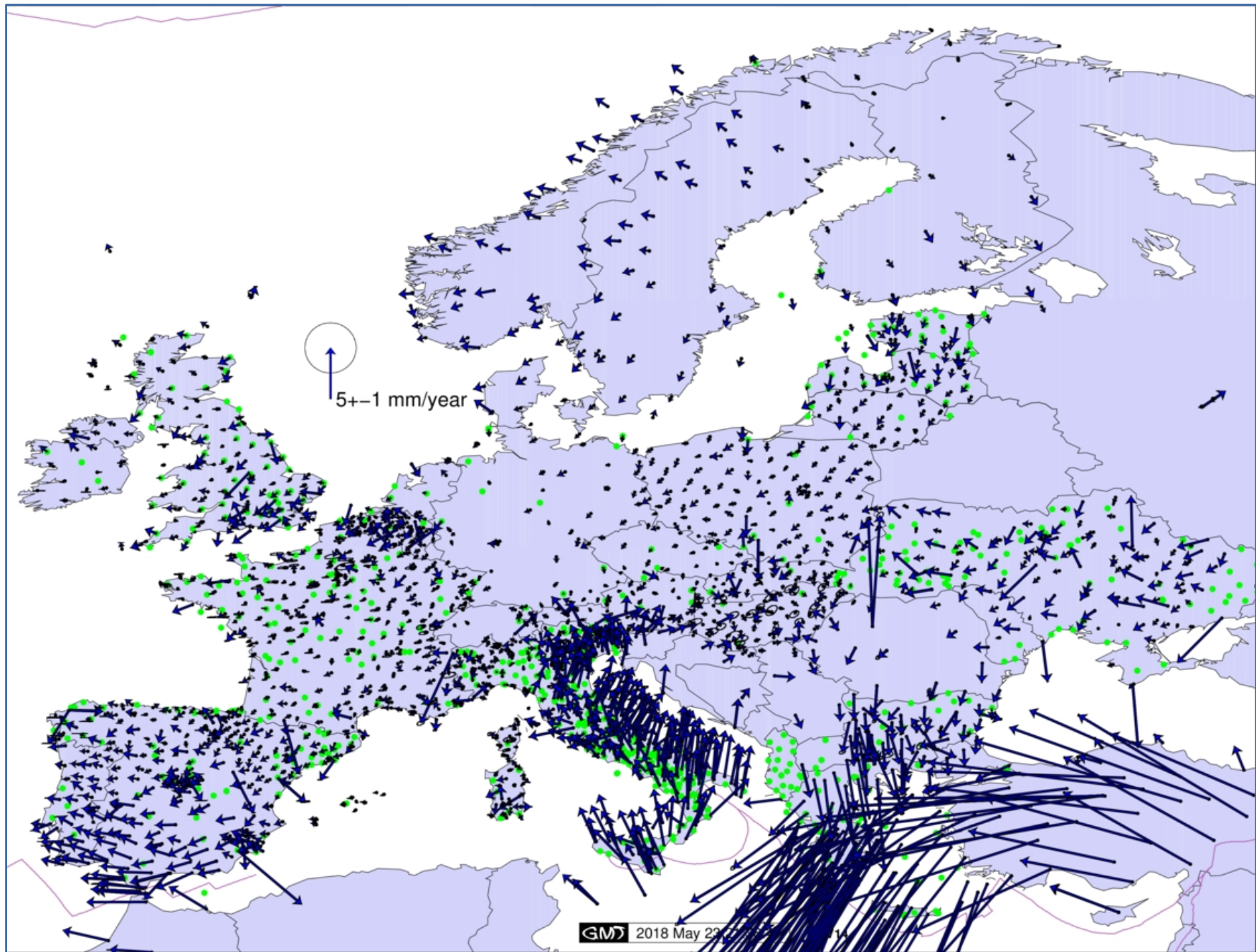
# ITRF2014 vs D1933 - velocities





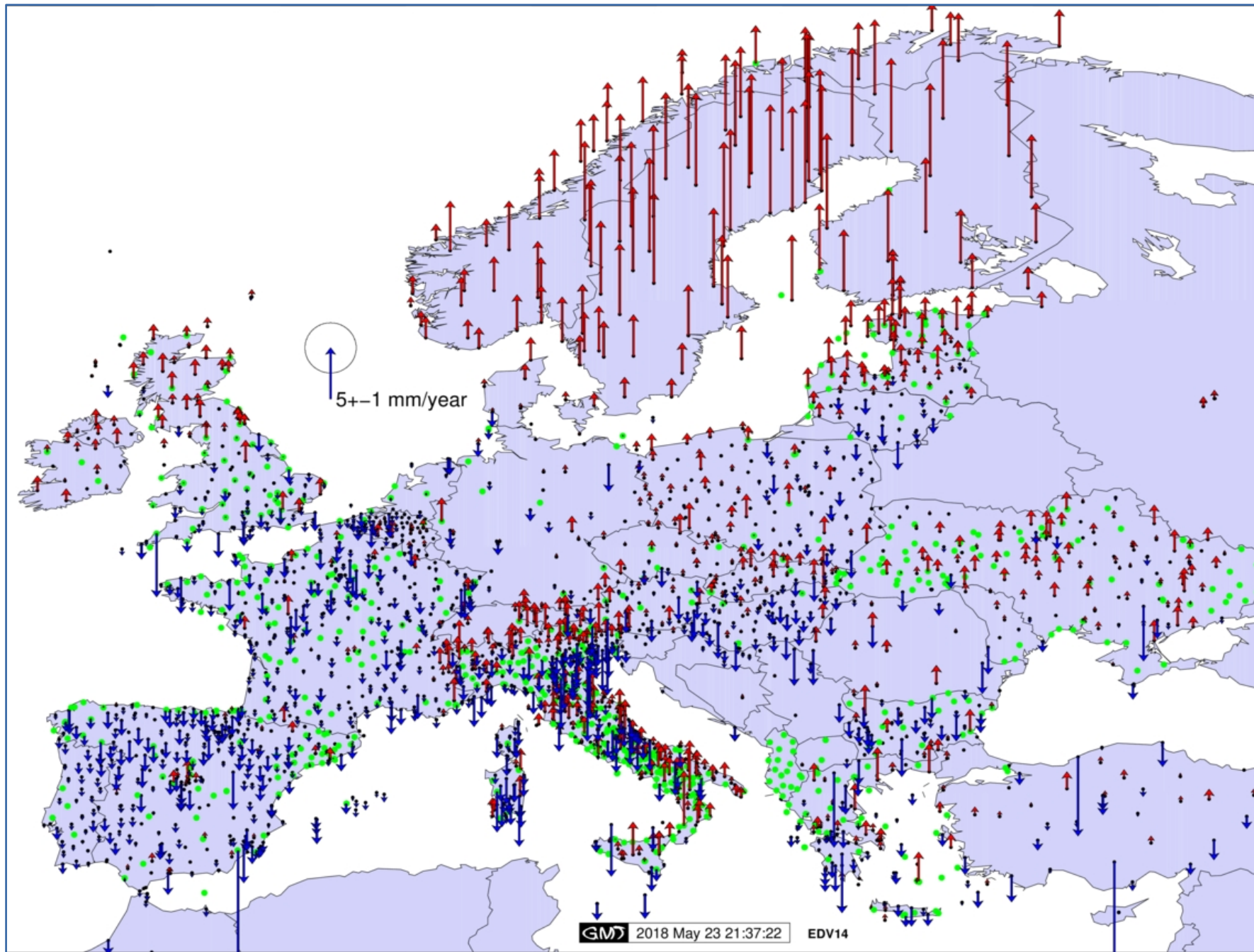
# ETRF2000 VELOCITIES

L > 3 years



# UP VELOCITIES

**L > 3 years**

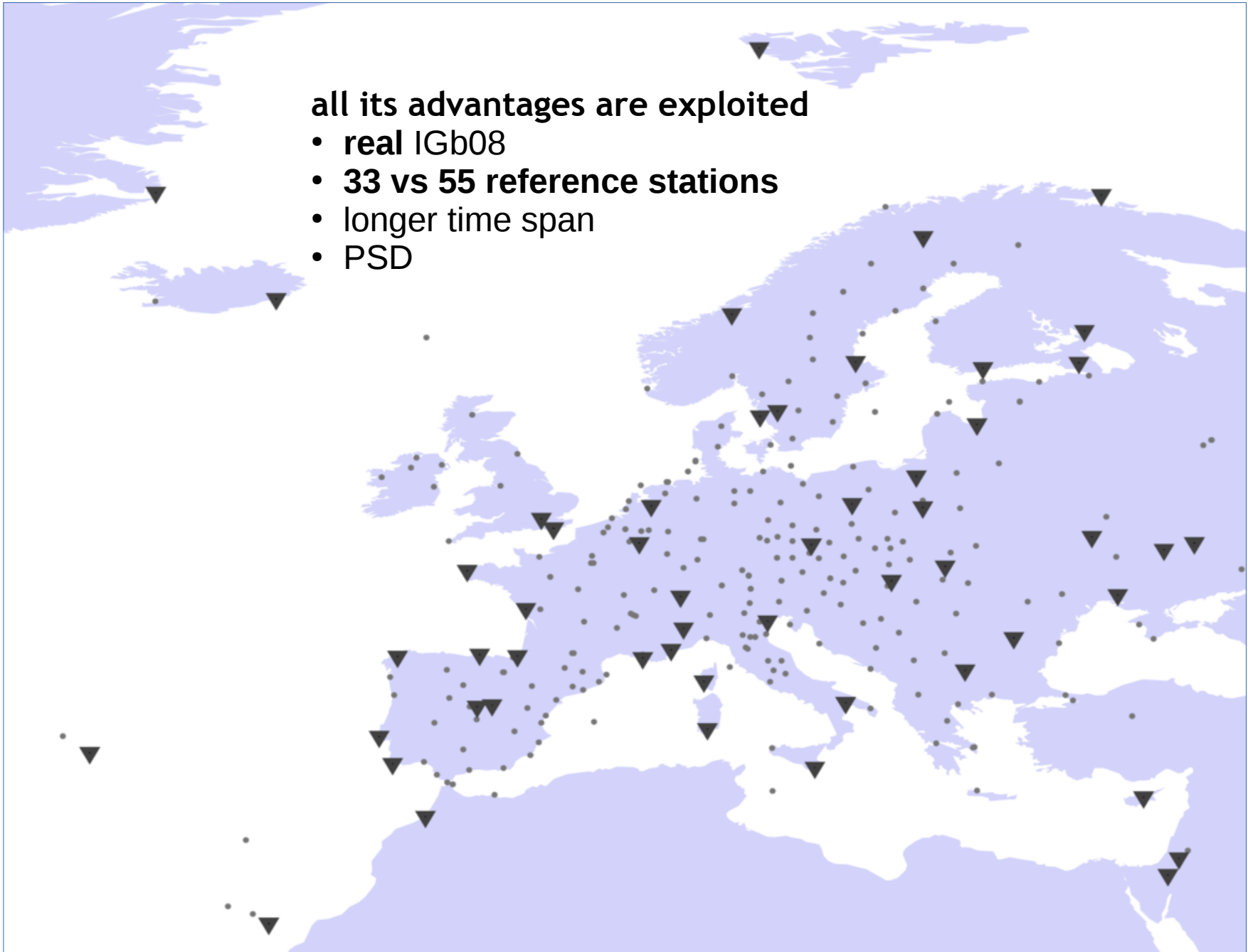


# REFERENCE FRAME: ITRF2014

MC realization tested and passed

all its advantages are exploited

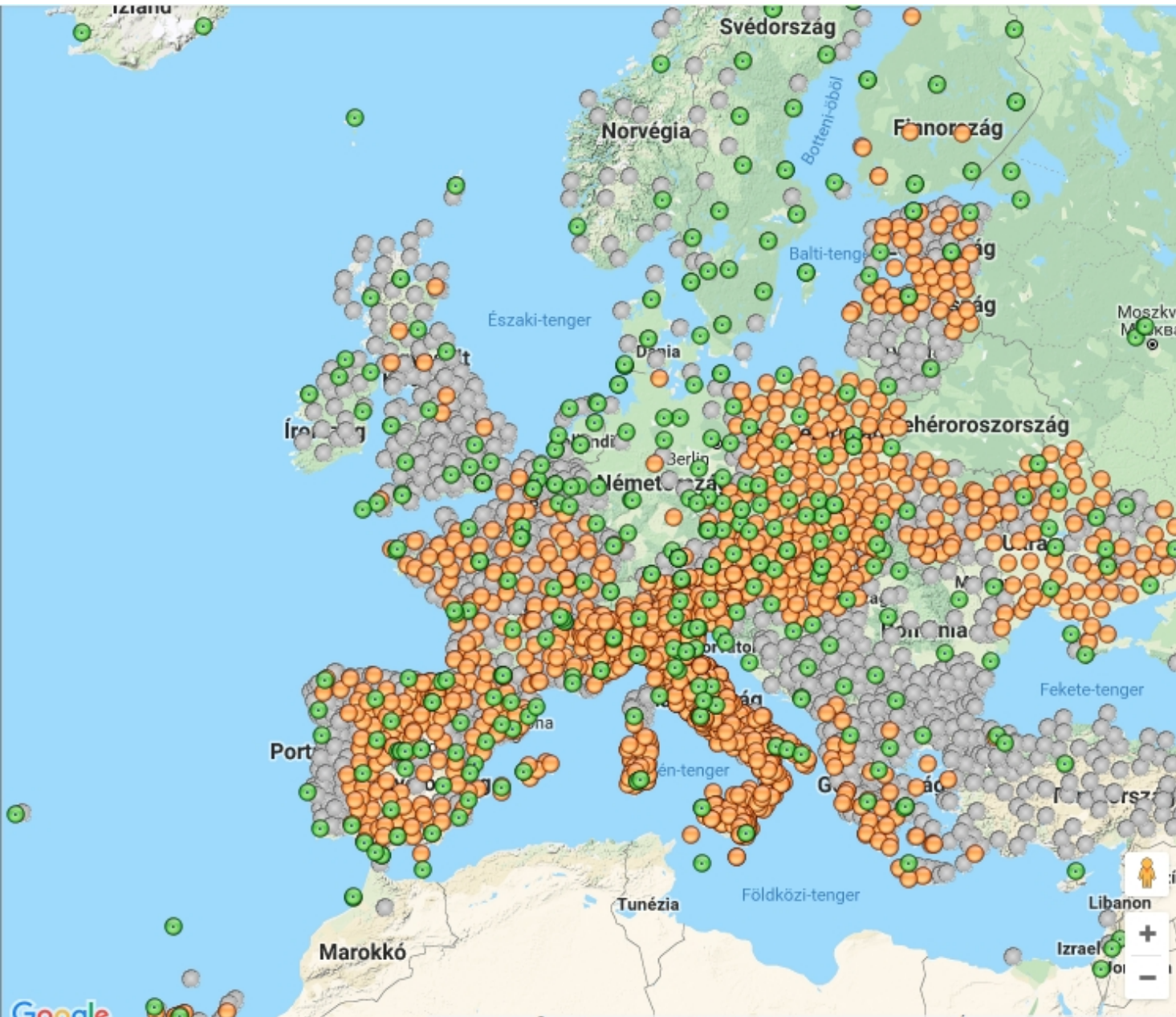
- real IGB08
- **33 vs 55 reference stations**
- longer time span
- PSD





# EPN DENSIFICATION WEBSITE

[www.epncb.oma.be/\\_densification](http://www.epncb.oma.be/_densification)



- **\*\*\*.AC** and **\*\*\*.OC** forms are prepared and available
- partners are working on site logs

**ABSOLUTELY CRITICAL TO HAVE SITE LOGS!**

site log submission like at EPN (M3G)

- **results are available (time series, plots)**

**M3G**

# WHERE TO GO ?

## CONTINUATION

- **D2020** (IGb08 - IGS14 “BOUNDARY VALUE PROBLEM”)
- DEEPER META DATA CHECK (MISSING SITE LOGS)

## POSITION PRODUCT

ALL PARTNERS ARE ADVISED TO CHECK THEIR NATIONAL ETRS89 REALIZATION

## VELOCITY PRODUCT

- RAW VELOCITY FILTERING, ELIMINATION OF BLUNDERS, GRIDDING
- EXPLOITATION WITHIN EUREF
  - DEFORMATION WORKING GROUP FOR STRAIN RATE
  - EXTENSION OF ETRS89 OVER STABLE EUROPE?
- EXPLOITATION BY OTHER COMMUNITIES
  - EPOS: EXPLOIT AND CONTRIBUTE
  - EU-GMS: MOSAICING AND VALIDATION



# GO FOR D2020

- CONTINUED SUBMISSION OF THE DAILY / WEEKLY SOLUTIONS
- REGIONAL SUBDIVISIONS WITH DEDICATED RESPONSIBILITIES
  - a) IBERIA - J ZURUTUZA
  - b) ECC - ANY VOLUNTEERS?
- ECC PRESENT STATUS
  - EST, LAT, HUN - ROUTINE ANALYSIS AND SUBMISSION
  - GKU - TEMPORARY ISSUES - REPROCESSING IN PROGRESS
  - POL - MORE GROUPS, REPROCESSING IN PROGRESS
  - LIT - DELIVERY IN BATCHES (?)
  - ANY OTHER NETWORKS TO BE CONSIDERED?

**THANKS FOR THE SUPPORT OF ALL ACs!**

# EPOS RELATIONS

**EPOS ERIC APPROVED - A LEGAL BODY**

**EPOS THEMATIC CORE SERVICES**

**EPOS INTEGRATED CORE SERVICES**

- DATA SUPPLIER LETTER
- PRODUCT SUPPLIER LETTER - A CONSENT TO ALLOW THE DISTRIBUTION OF THE COMBINED PRODUCT **NOT THE ORIGINAL SINEX FILES!**
- RINEX AVAILABILITY?  
DEFINE EMBARGO TIME OR FULL RESTRICTION?
- METADATA PROVISION

# EUREF RELATIONS

- POSKEN?
- AMSTERDAM SYMPOSIUM
  - InSAR TUTORIAL
  - CORNER REFLECTORS
  - TRANSPONDERS - ACTIVE RADAR SIGNAL BACKSCATTERING
  - EUROPEAN GROUND MOTION SERVICE - EU\_GMS
- GALILEO
  - PROCESSING STATUS
  - PCV CALIBRATIONS?
- ELECTIONS IN 2019
  - NEW CHAIR AND MEMBERS
- HEIGHT
  - HEIGHT MODERNISATION  
(NEW EVRF, EUVN\_DA, GEOID, EU\_GMS, NATIONAL InSAR)