

# REPORT FROM PILOT REPROCESSING IN GAMIT/GLOBK

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L A N T M Ä T E R I E T



## **MODEL TESTING**

- HIGH ORDER IONOSPHERE (HOI)
- MAPPING FUNCTIONS

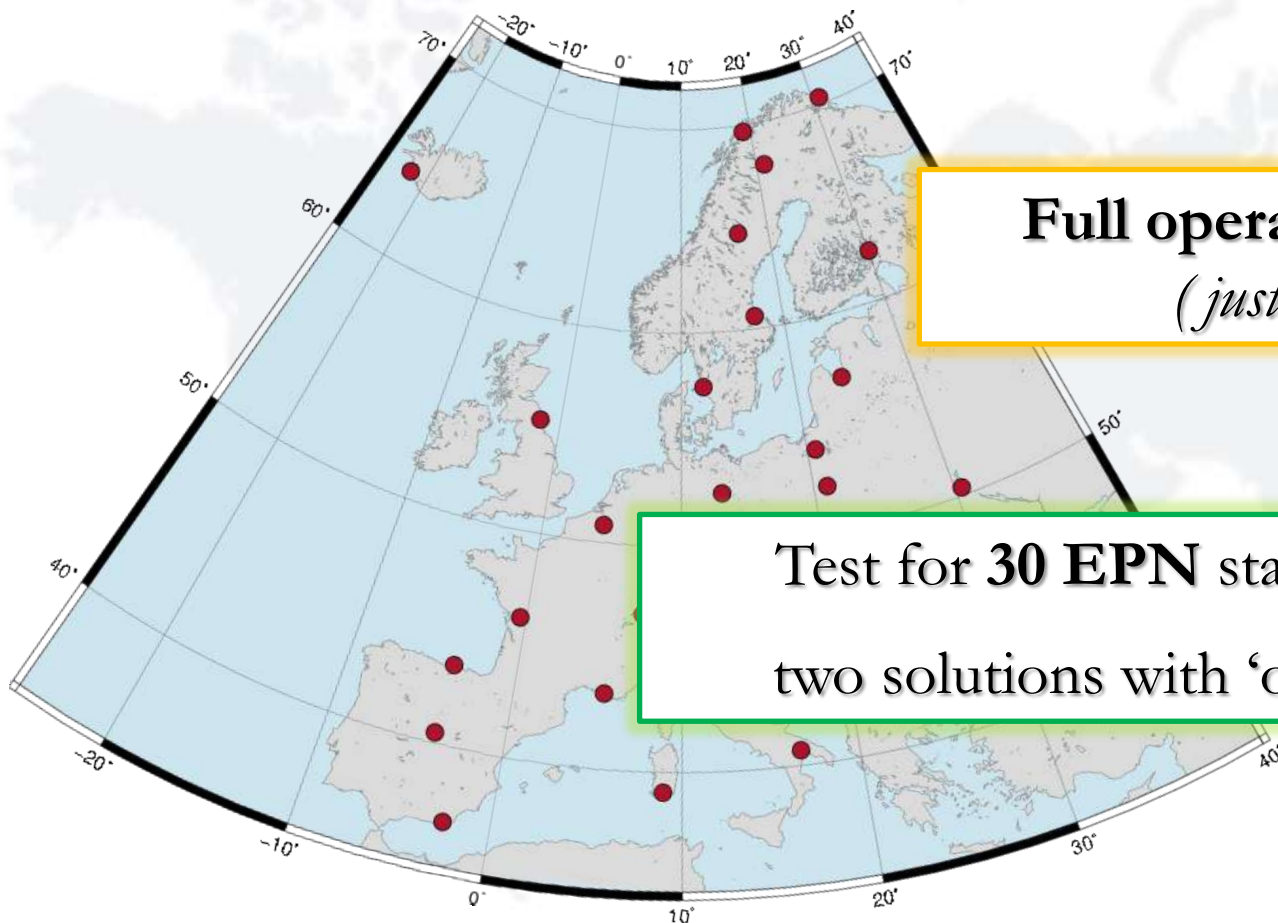
## **TEST REPROCESSING 2006**

- COMPARISON WITH CURRENT EPN
- COMPARISON WITH COMBINED REPROCESSING

## **LESSON FROM REPROCESSING**

# HIGH ORDER IONOSPHERIC CORRECTIONS

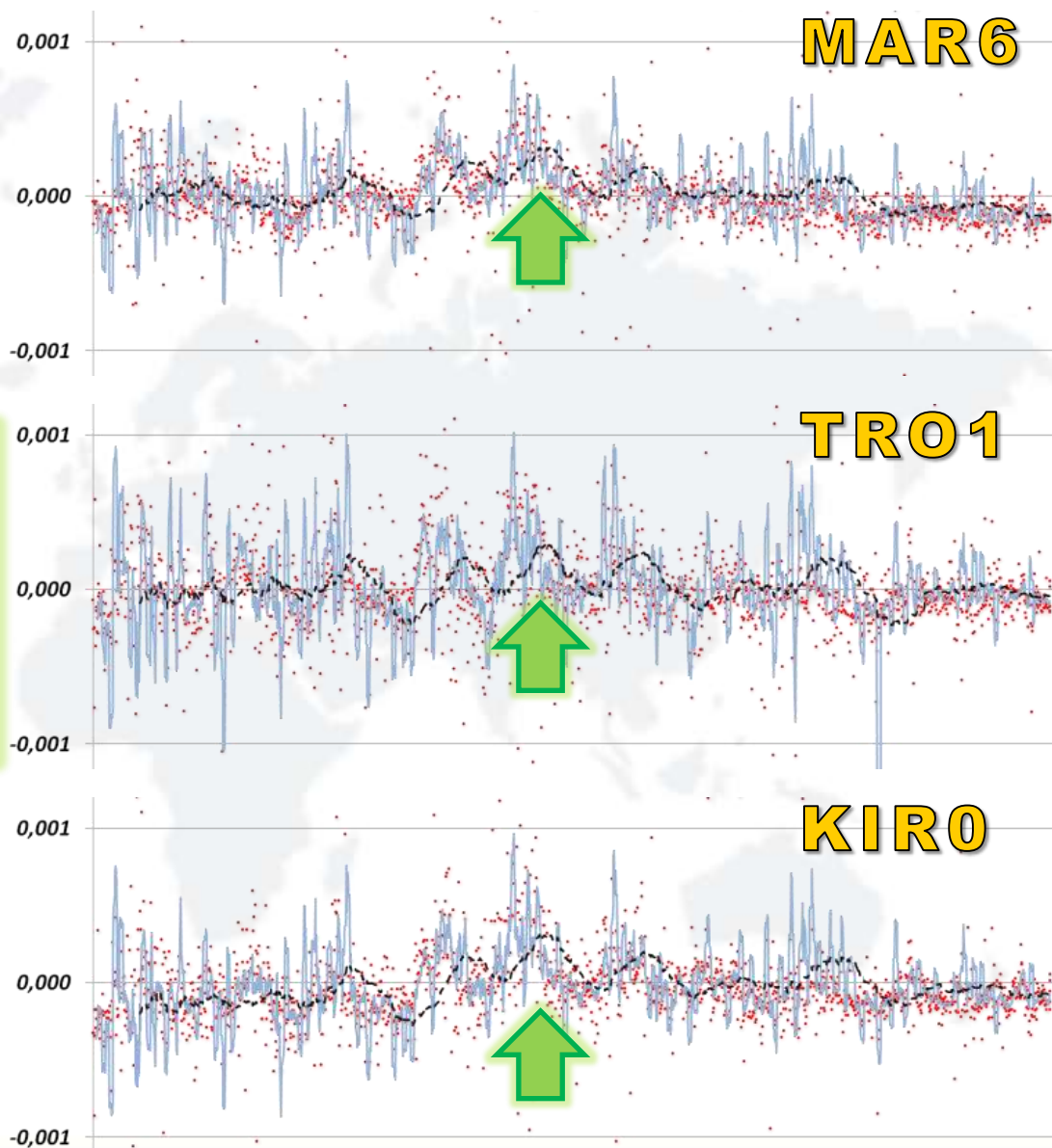
*( Available in test version since GG 10.35 )*

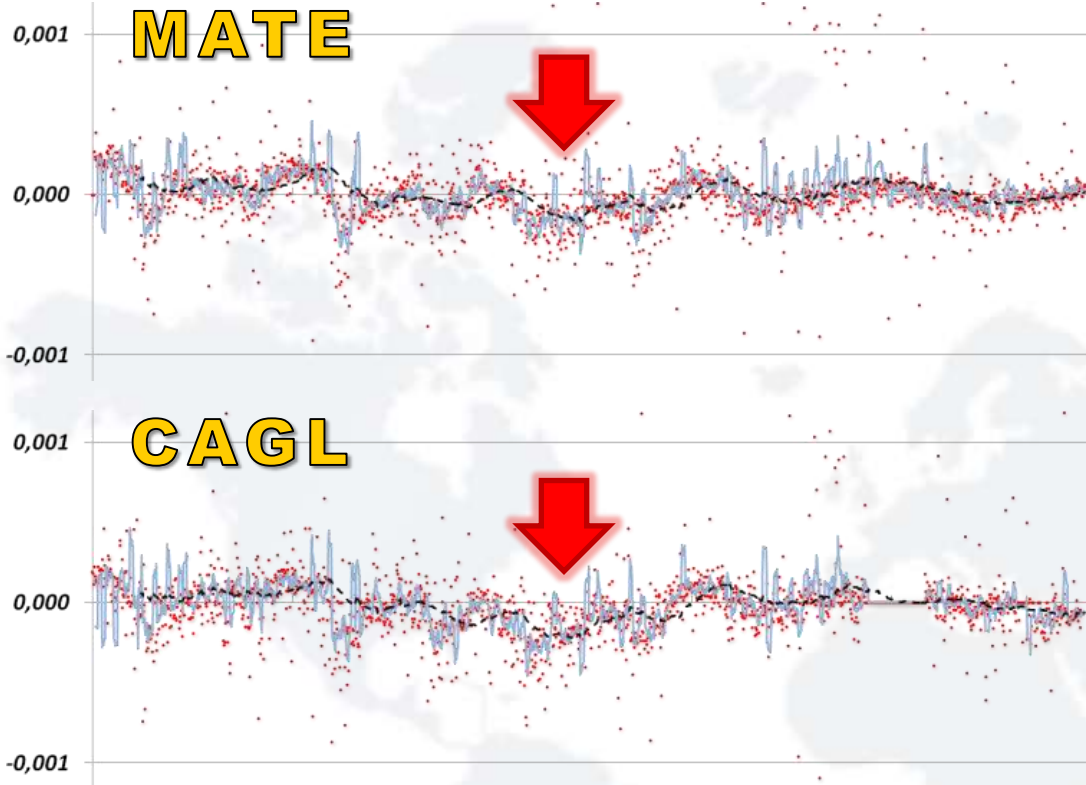


**Full operational in GG 10.4**  
*( just been released )*

Test for **30 EPN** station ( 2000-2004 )  
two solutions with 'on' and 'off' **HOI**

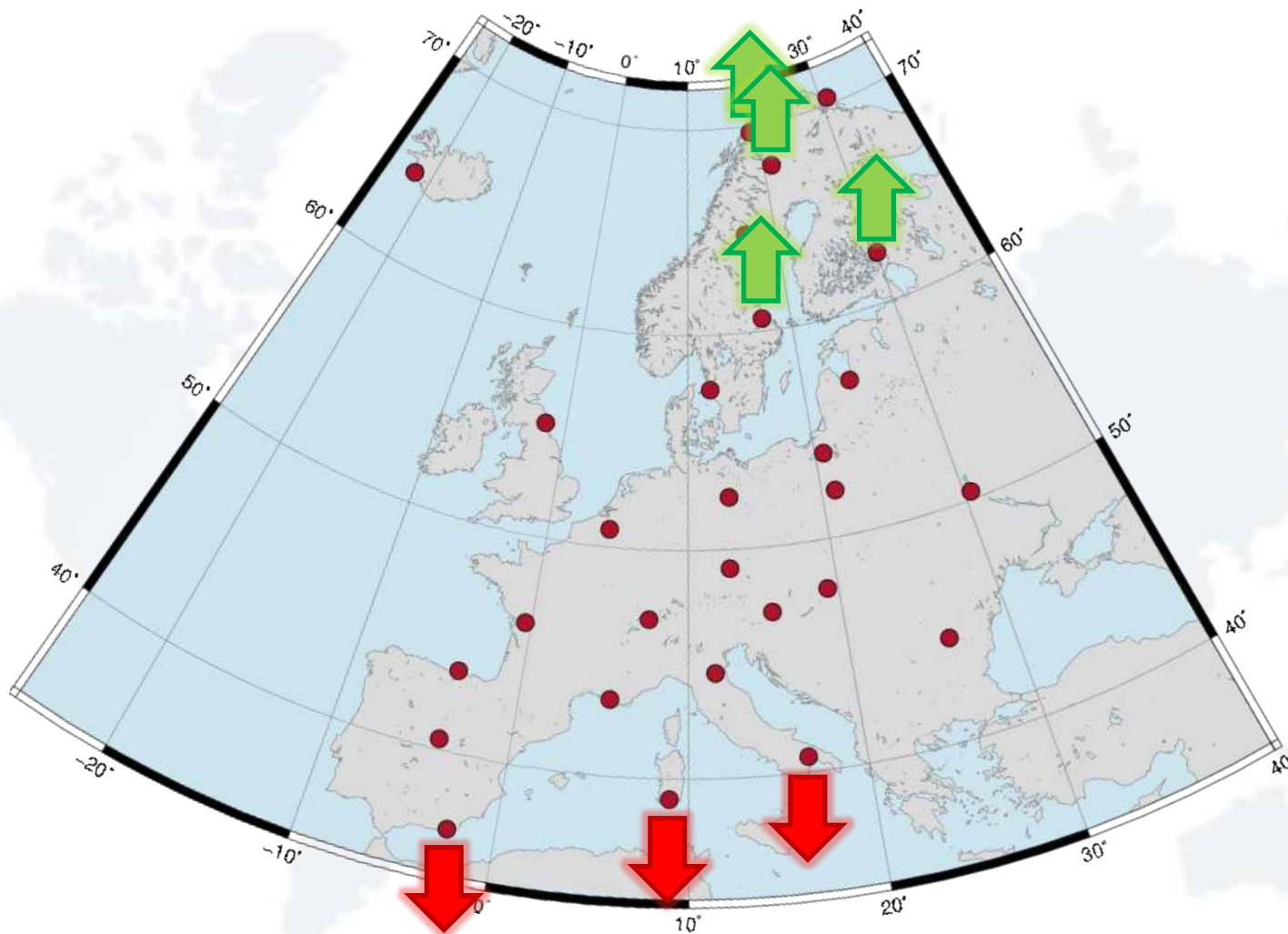
SMALL (0.2~0.3 mm)  
**POSITIVE** DIFFERENCES  
IN NORTH COMPONENT  
FOR **NORTHERN** STATIONS  
DURING 2002-2003





SMALL (0.2~0.3 mm)  
**NEGATIVE** DIFFERENCES  
 IN NORTH COMPONENT  
 FOR **SOUTHERN** STATIONS  
 DURING 2002-2003





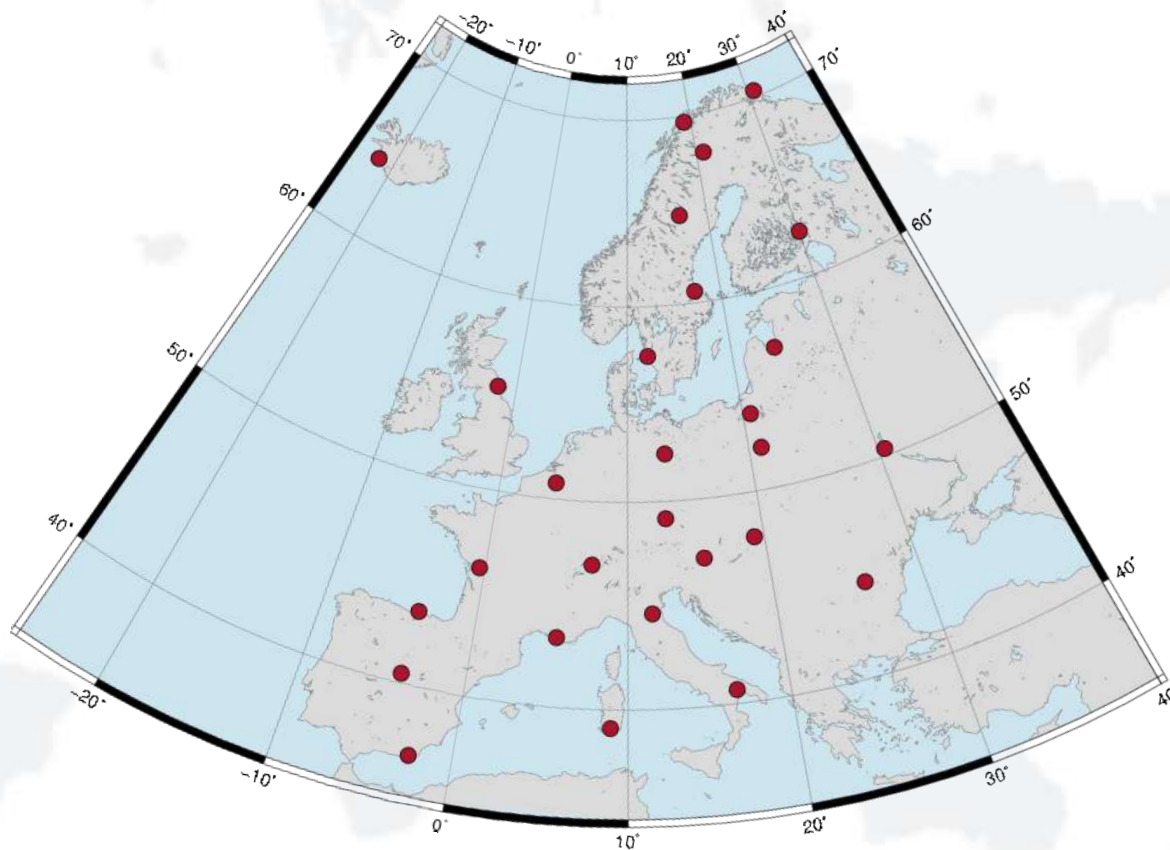
**HOI AFFECTS THE SCALE PARAMETER ?**

# MAPPING FUNCTIONS & TROPOSPHERE

NMF

GMF

VMF



TEST WAS DONE FOR WELL DISTRIBUTED  
**30 STATION** FOR YEAR 2006

## MAPPING FUNCTIONS & TROPOSPHERE

RESULTS OF **WRMS** COMPARISON:

NORTH

**similar  
results**

EAST

**similar  
results**

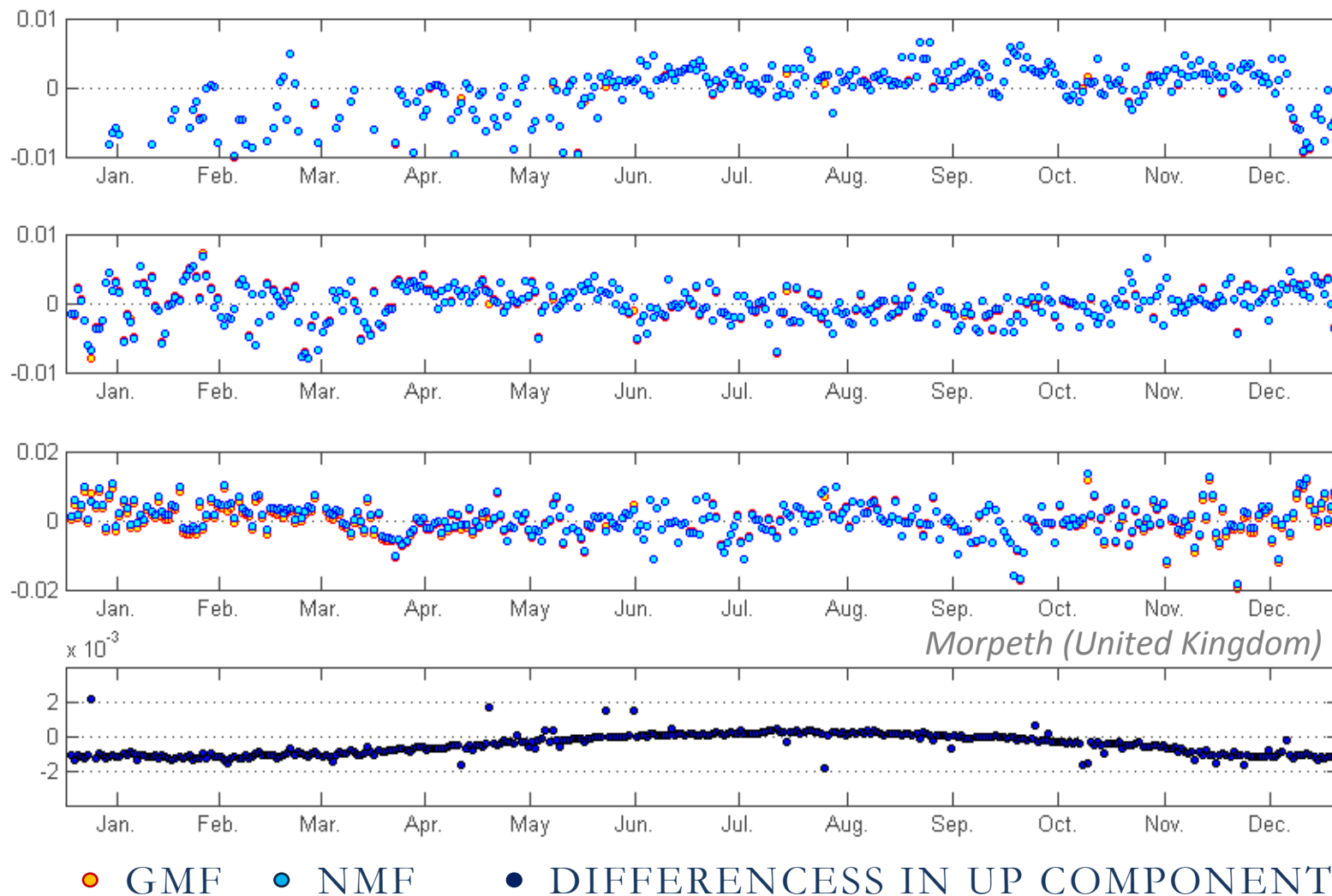
HEIGHT

**VMF1  
(18/30)**

- ABOUT **3% LESS WRMS** IN **UP COMPONENT** FOR **VFM1**
- USING **VMF1** IS MORE **TIME-CONSUMING**  
(~**0.7 min/8%** PER DAY FOR 30 STATIONS)



## COORDINATE DIFFERENCES (GMF-NMF)



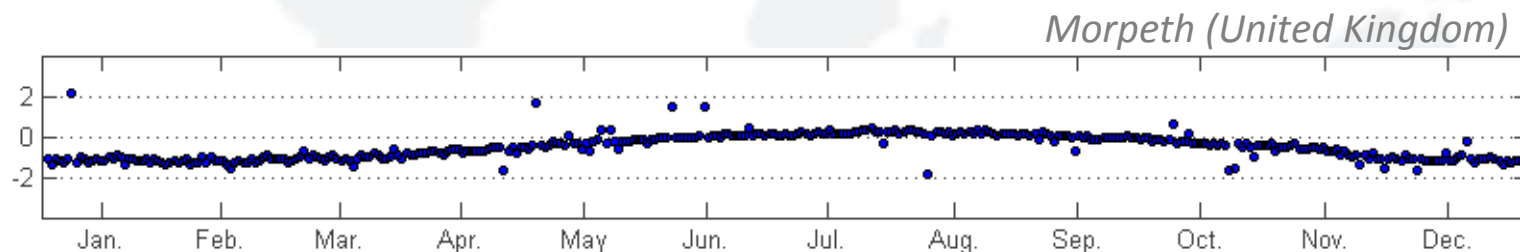
## ANNUAL SIGNAL IN HEIGHT?

( 0.2 – 1.0 mm )

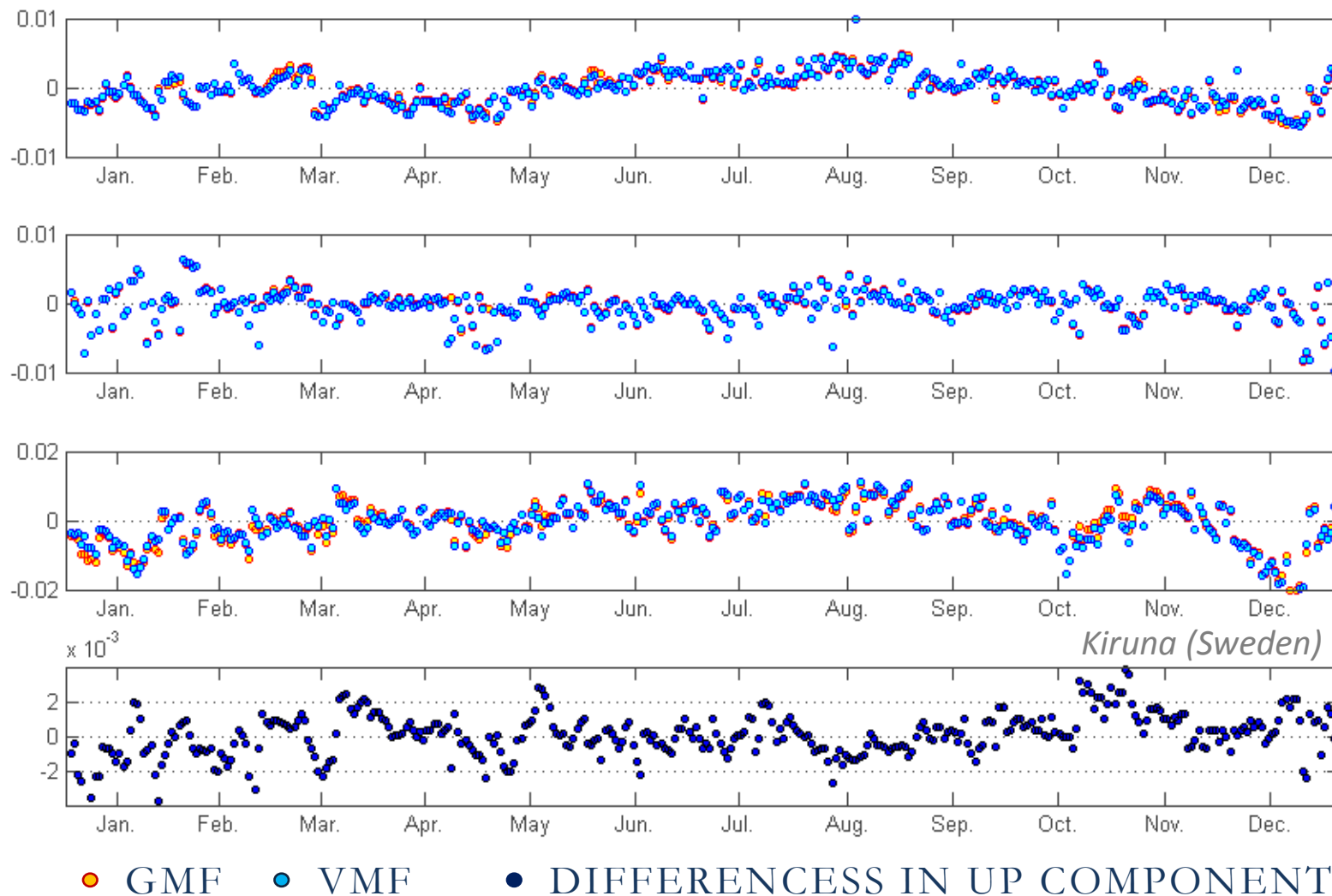
The bug in time argument for GPT.

Catched and tested by Francois Fund and Paul Tregoning.

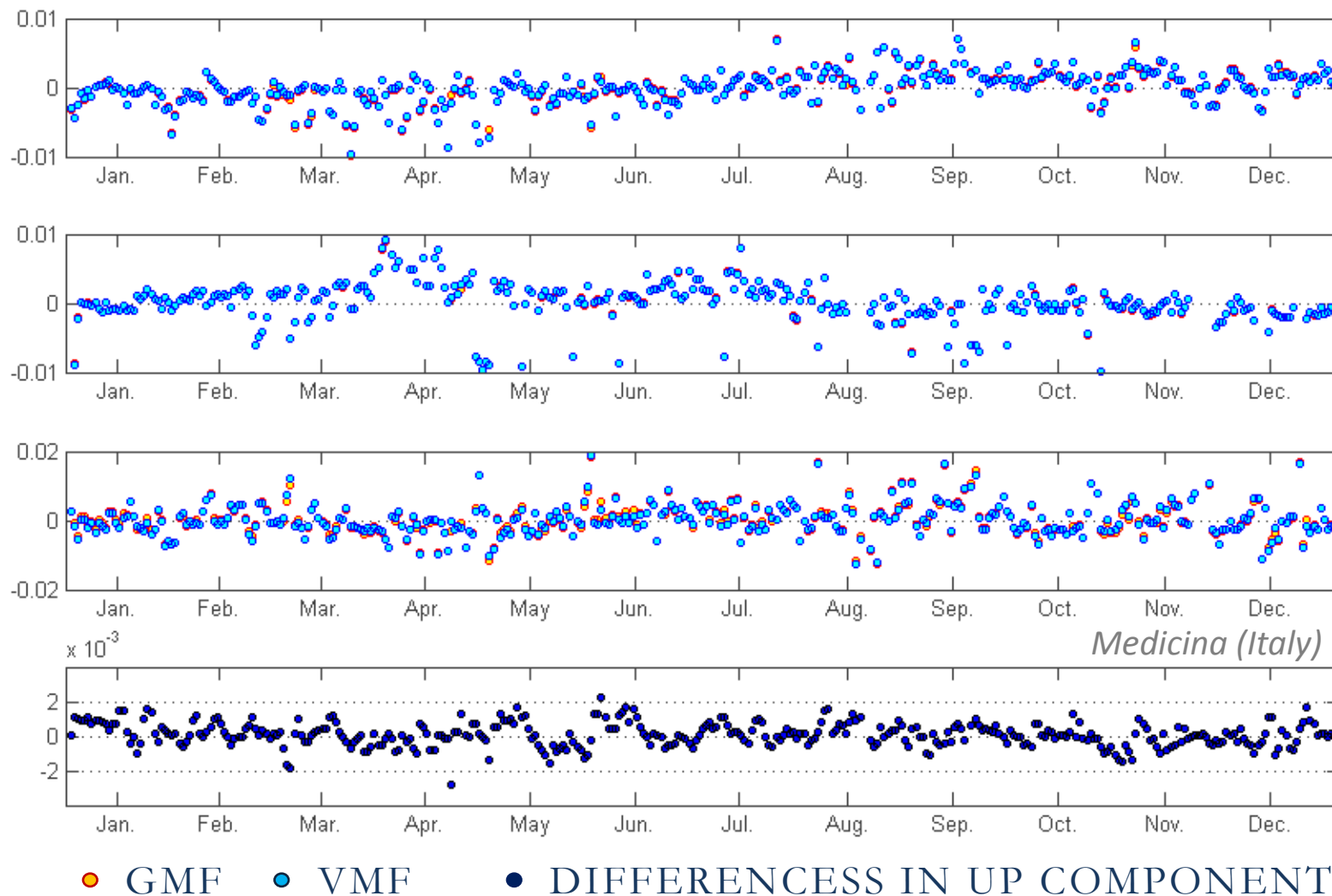
Fixed in **GAMIT/GLOBK 10.4**



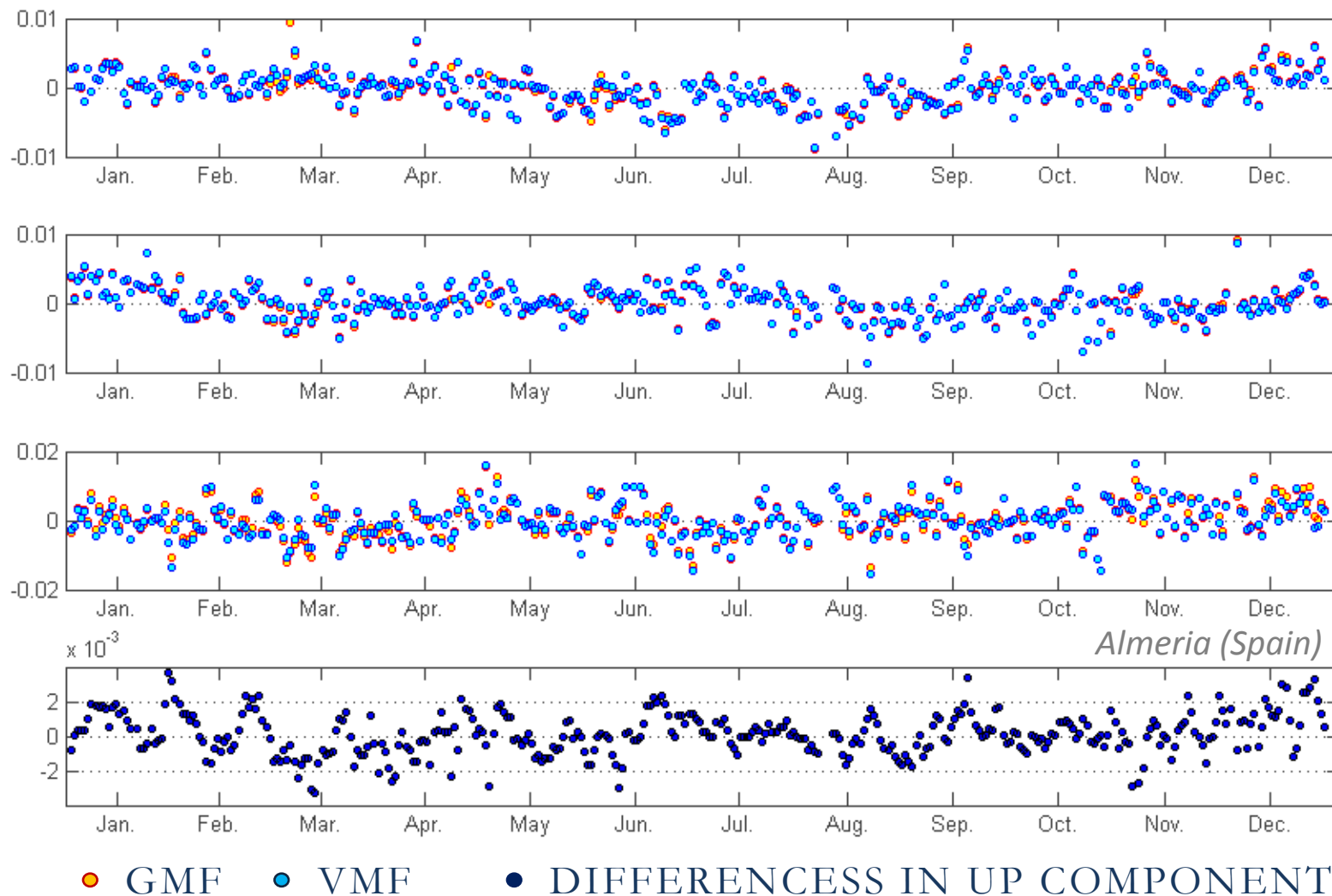
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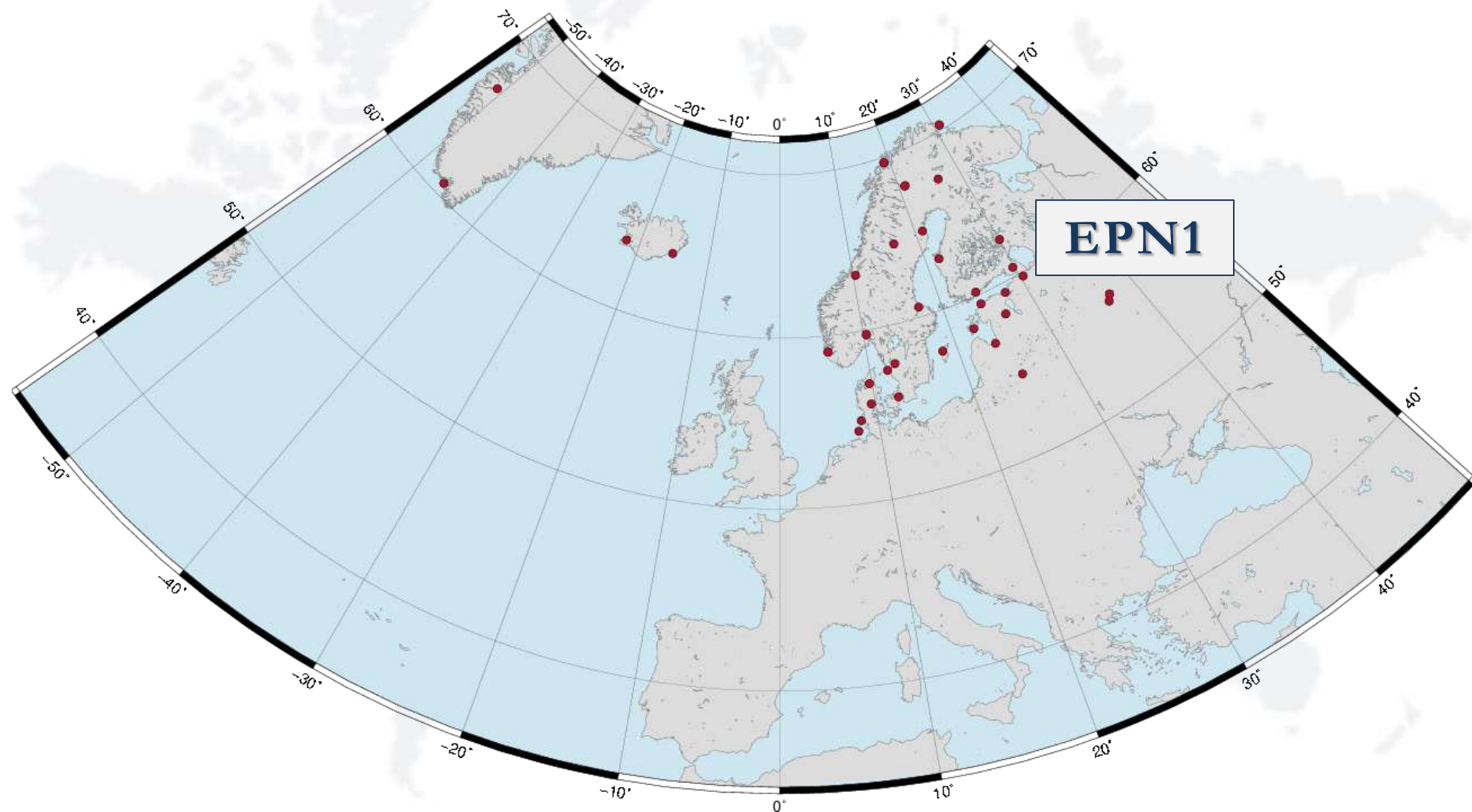




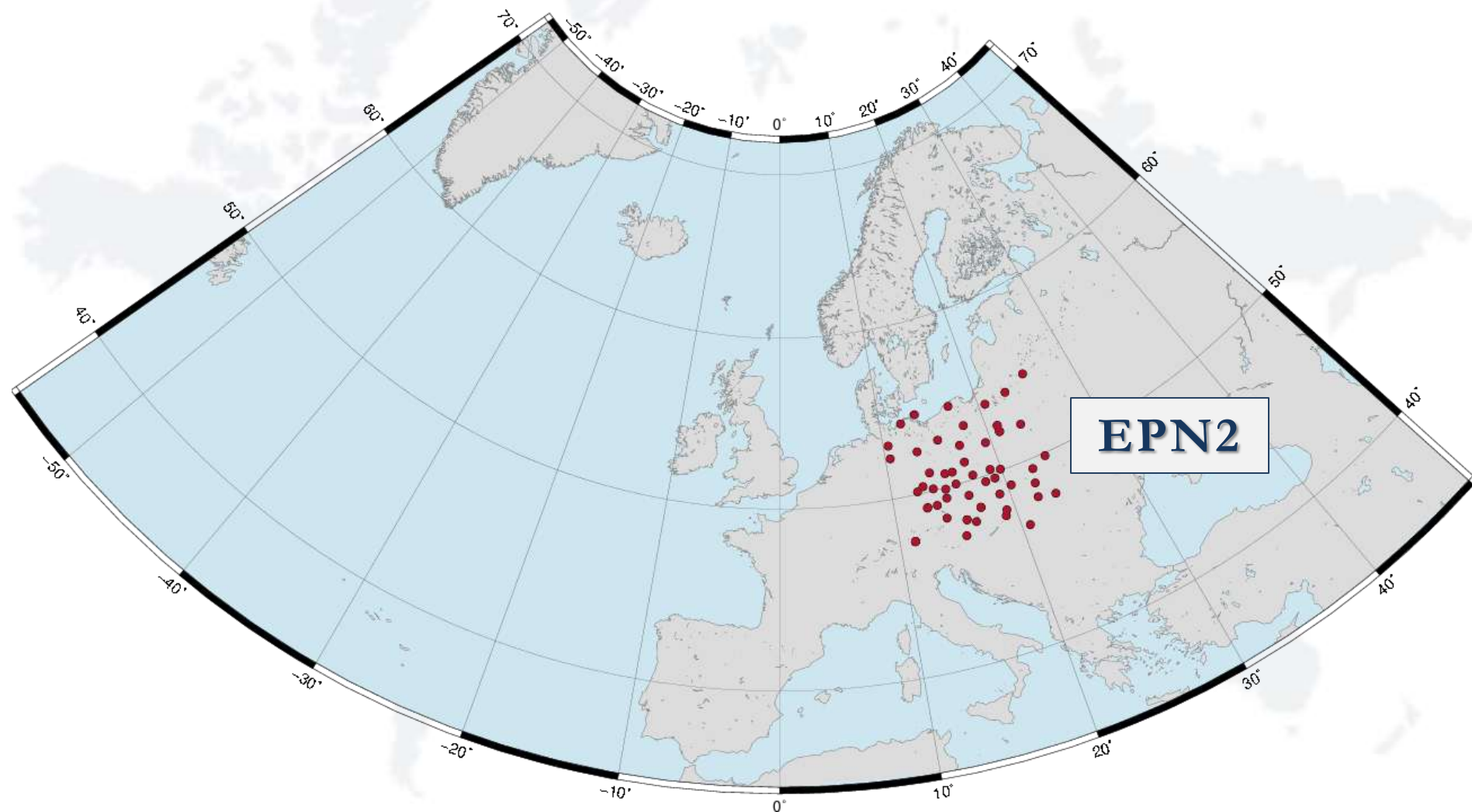
A faint, light blue world map is visible in the background of the slide, centered behind the main title text.

# EPN PILOT REPROCESSING GAMIT/GLOBK 10.35

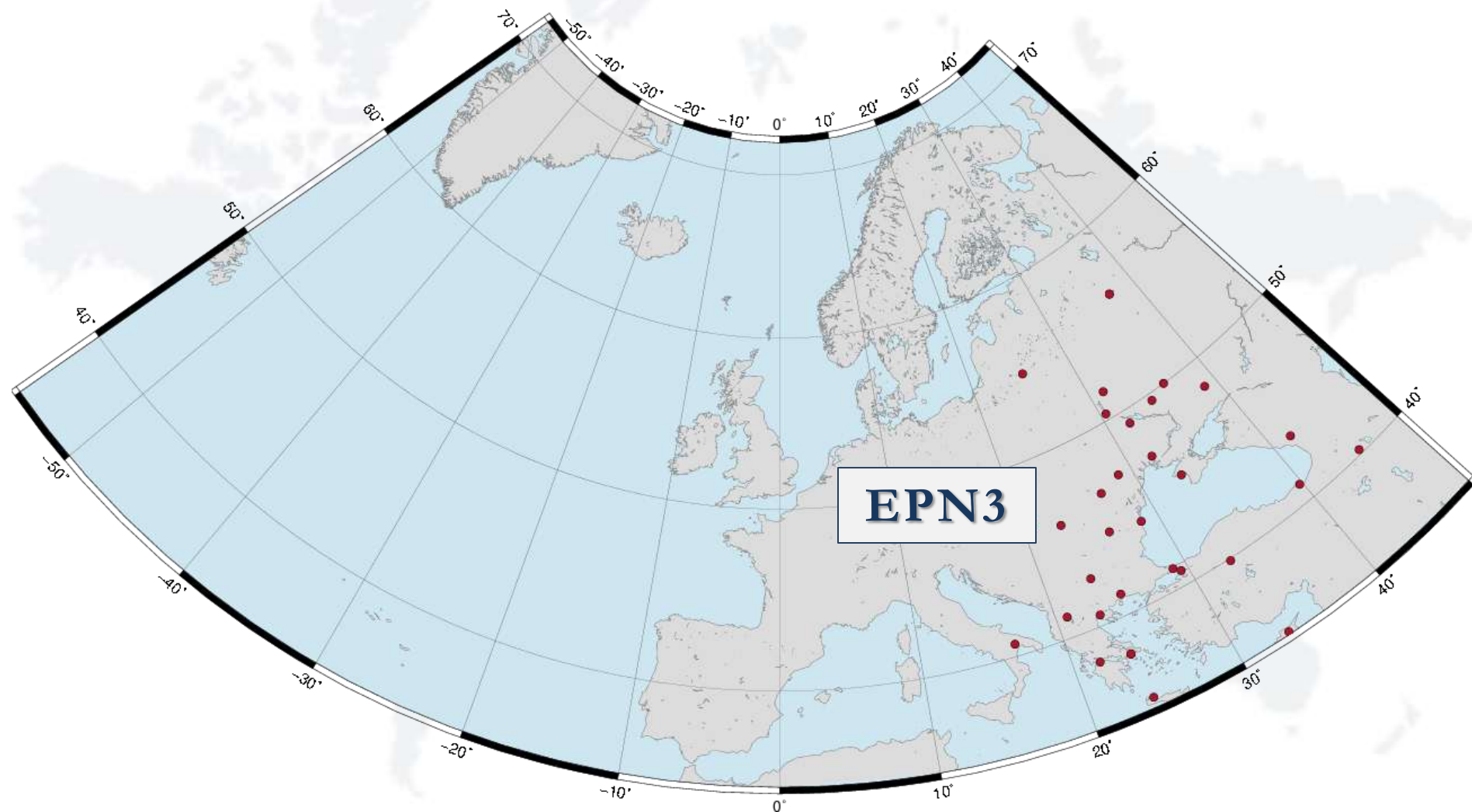
## 7 SUBNETWORKS + 1 CONTROL



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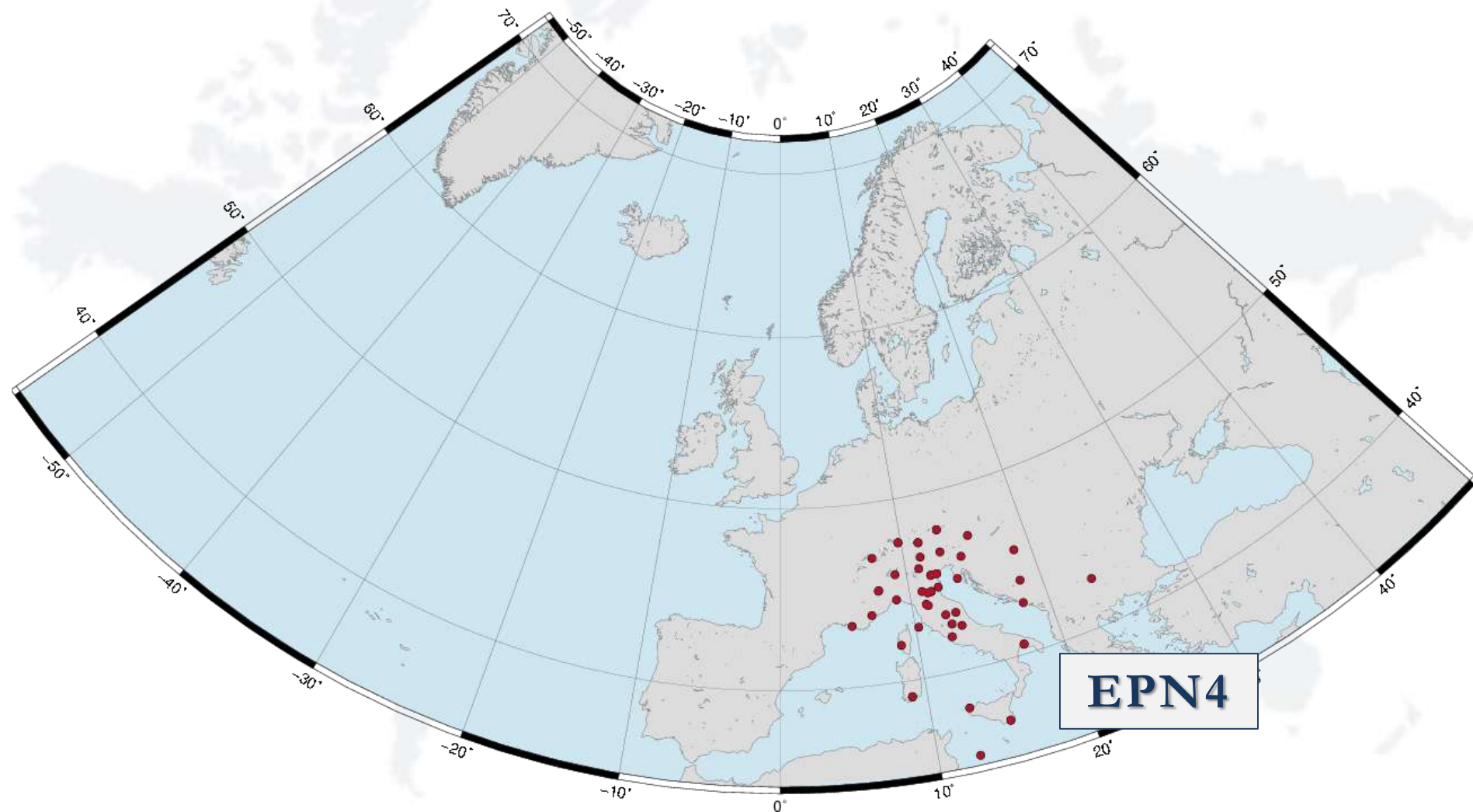


## 7 SUBNETWORKS + 1 CONTROL



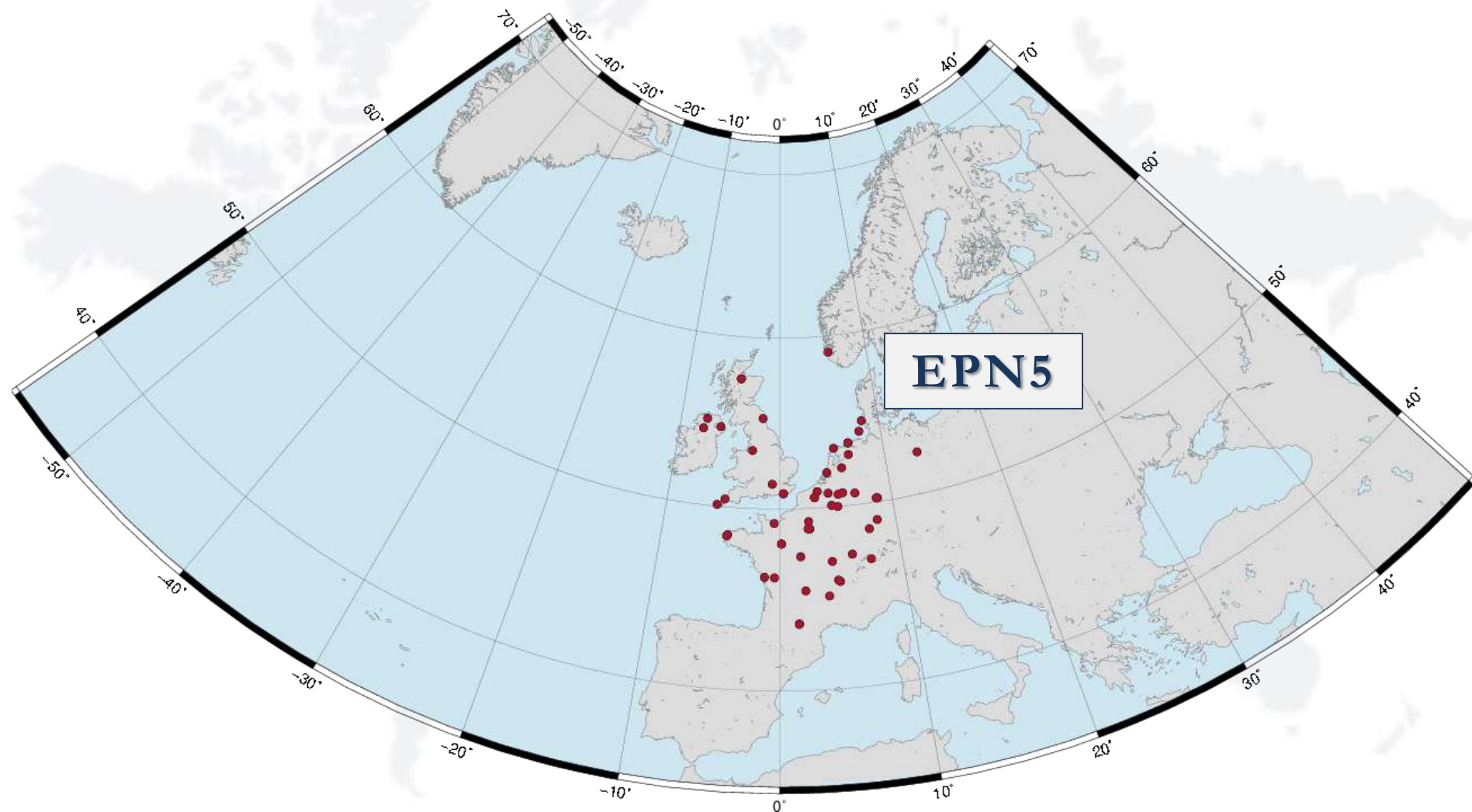


## 7 SUBNETWORKS + 1 CONTROL

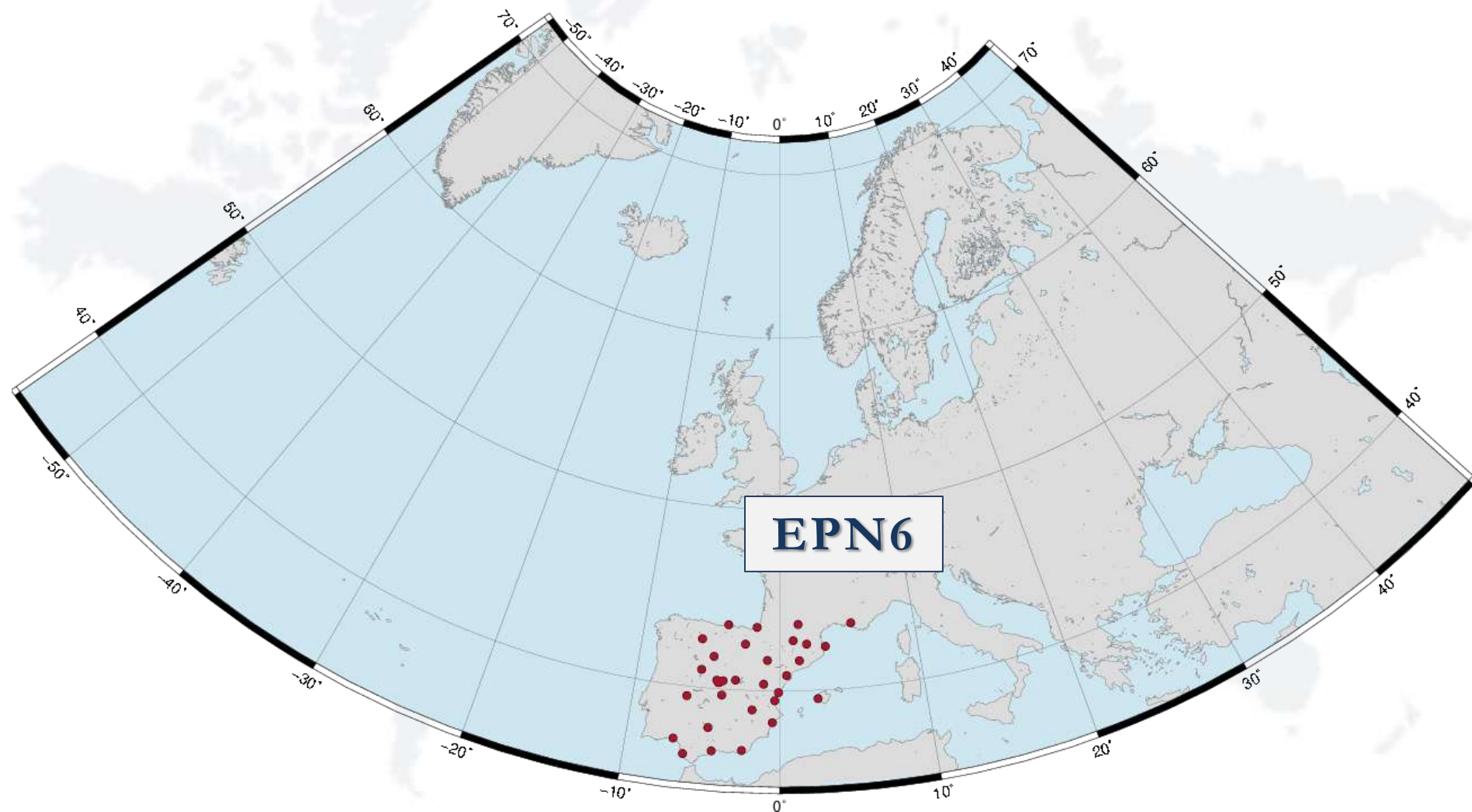




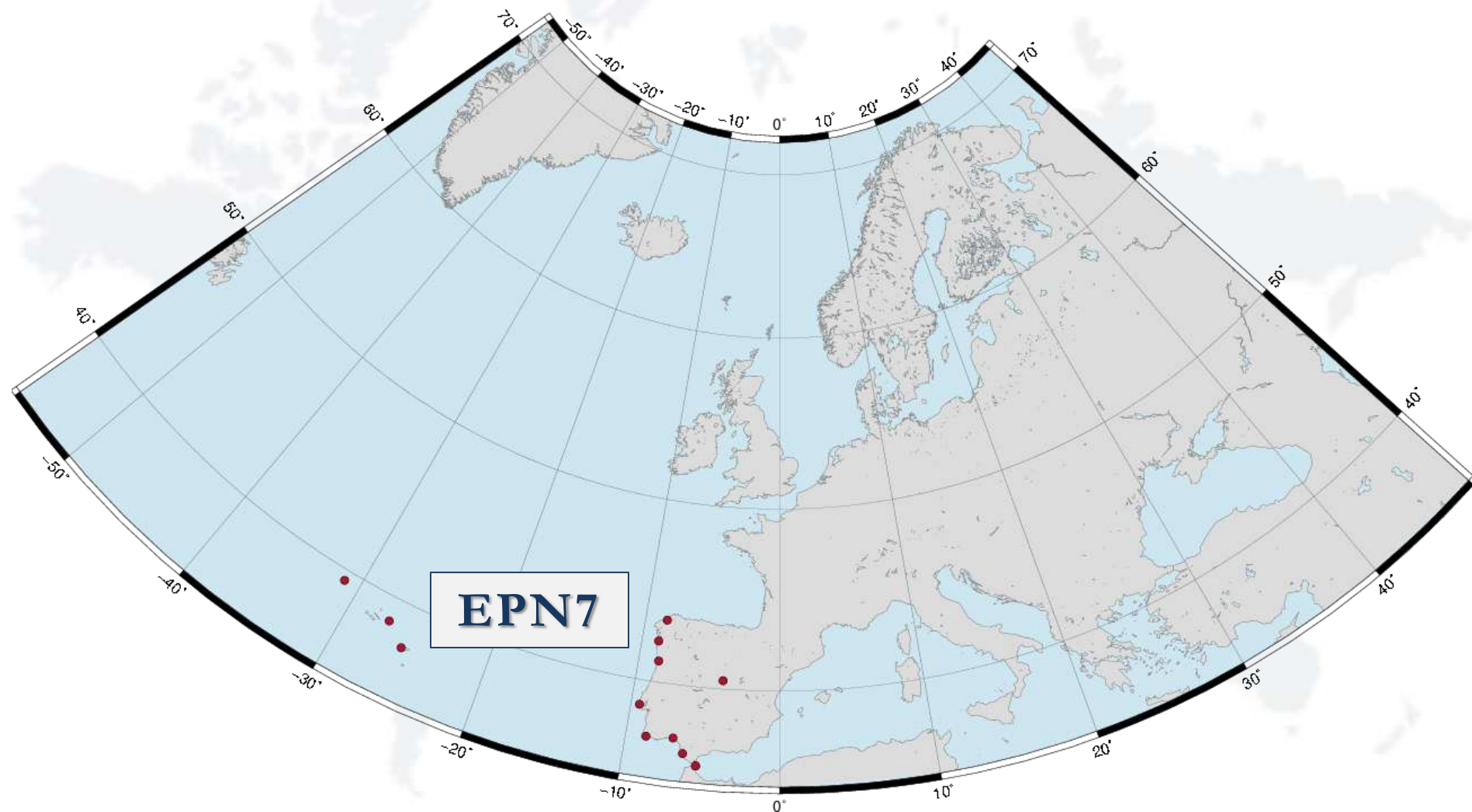
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## 7 SUBNETWORKS + 1 CONTROL



## MODELS AND STRATEGY ( GAMIT 10.35 )

- **BASELINE MODE**
- ORBITS: **IGS FINAL REPRO**
- ANTENNA MODEL: **EPN\_05.ATX**
- TROPOSPHERE: **GPT** WITH DRY/WET **GMF**
- TIDE MODEL: **IERS03**
- OCEAN LOADING: **FES2004** (*LIST*)
- ATM. LOADING: **NONE**
- ELEVATION CUTOFF: **3°**



## MODELS AND STRATEGY ( GLOBK )

- **GENERALIZED CONSTRAINTS**
- **CONSTRAINED ORBIT**
- **ESTIMATE TRANSLATION AND ROTATION**
- **4 ITERATION**
- **STATIONS USED TO REALIZE THE REFERENCE FRAME**  
**BOR1, BRUS, CAGL, GRAS, HOFN, MATE, METS, NOT1, NYA1, NYAL,**  
**ONSA, POLV, POTS, RABT, REYK, TRAB, TRO1, WSRT, WTZR, ZIMM**



## QUICK FACTS & NUMBERS

- **202 STATIONS**
- ONE DAY PROCESSED FROM **2 TO 18 min** (*42 stations*)
- „UNRECOGNISED” NUMERICAL ERROR (**~1%**) EXTORTED INDIVIDUAL DAYS PROCESSING
- GAMIT NEED **~95%** OF ALL REPROCESSING TIME ( REST **5%** IS ASSIGNED TO GLOBK )
- PILOT PROCESSING TOOK ABOUT **9-10 DAYS** ( PREPARATION **OVER 3 MONTHS** )
- WE ARE ALMOUST (**80%**) READY TO START REPROCESSING

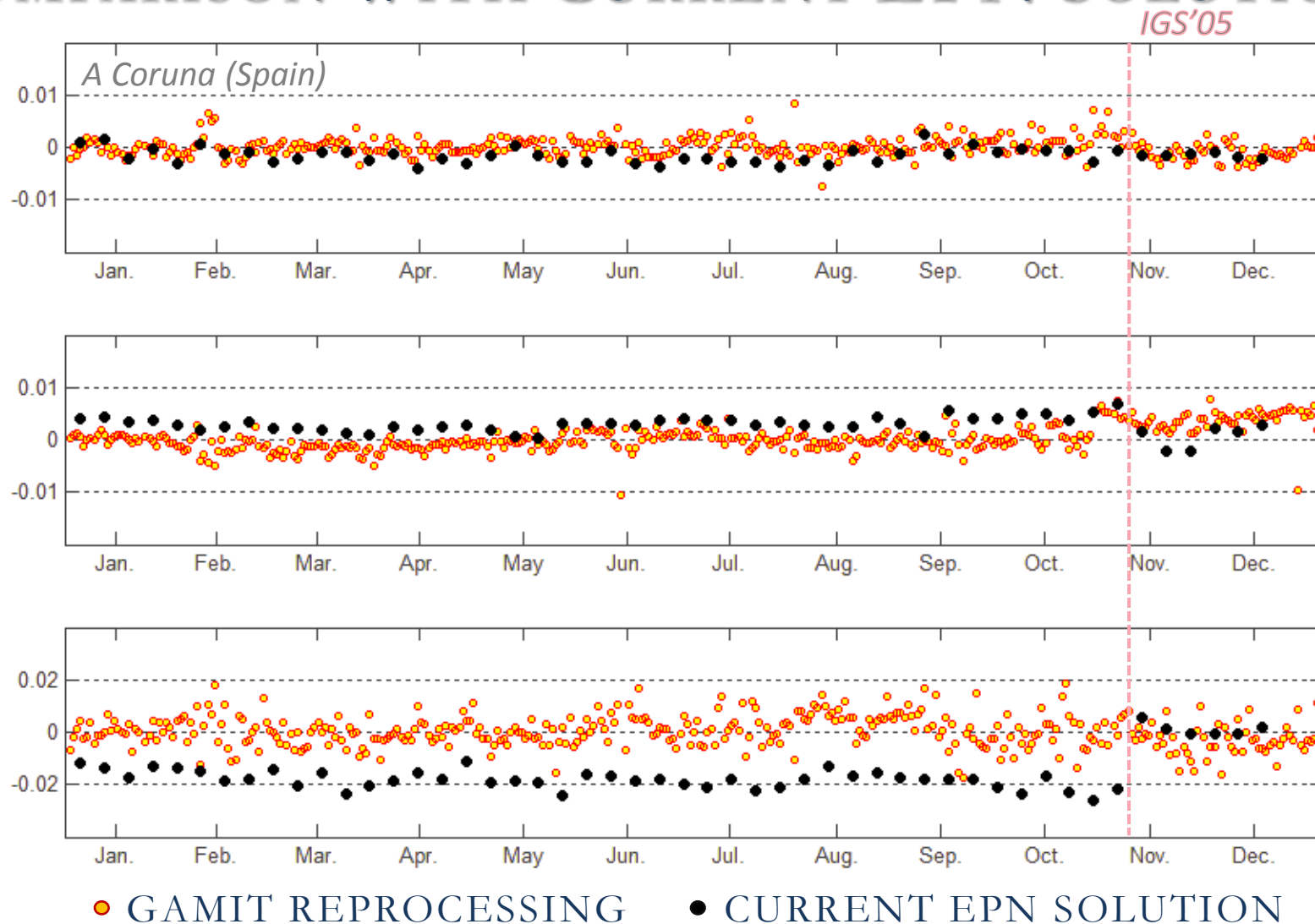
## PROBLEMS DURING/AFTER PROCESSING

- BAD ENTRY IN **STATION.INFO**
- PROBLEMS WITH AUTOMATIC UPDATE THE **APRIORI FILE**
- UNRECOGNISED NUMERICAL ERROR

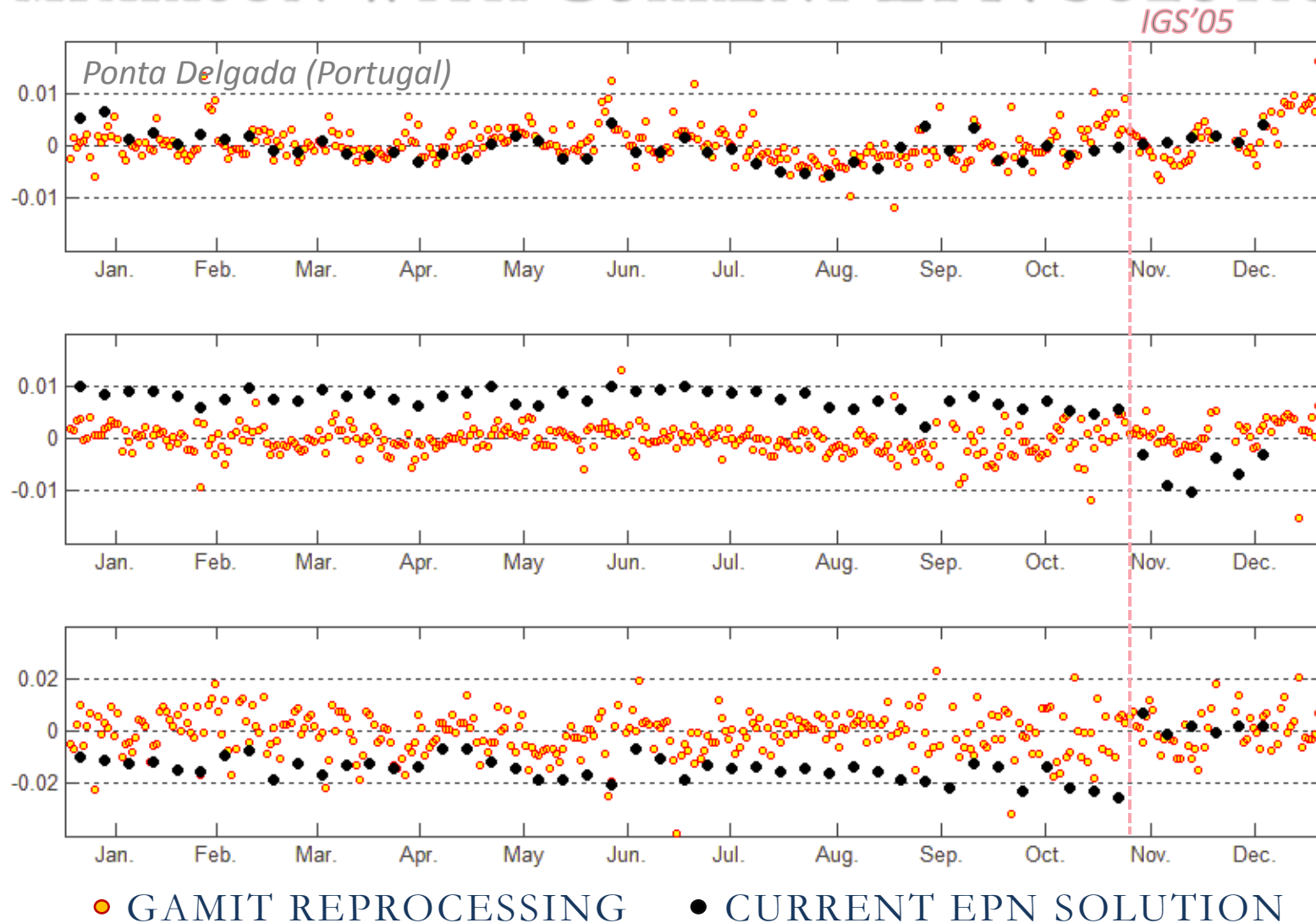
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# COMPARISON WITH CURRENT EPN SOLUTIONS

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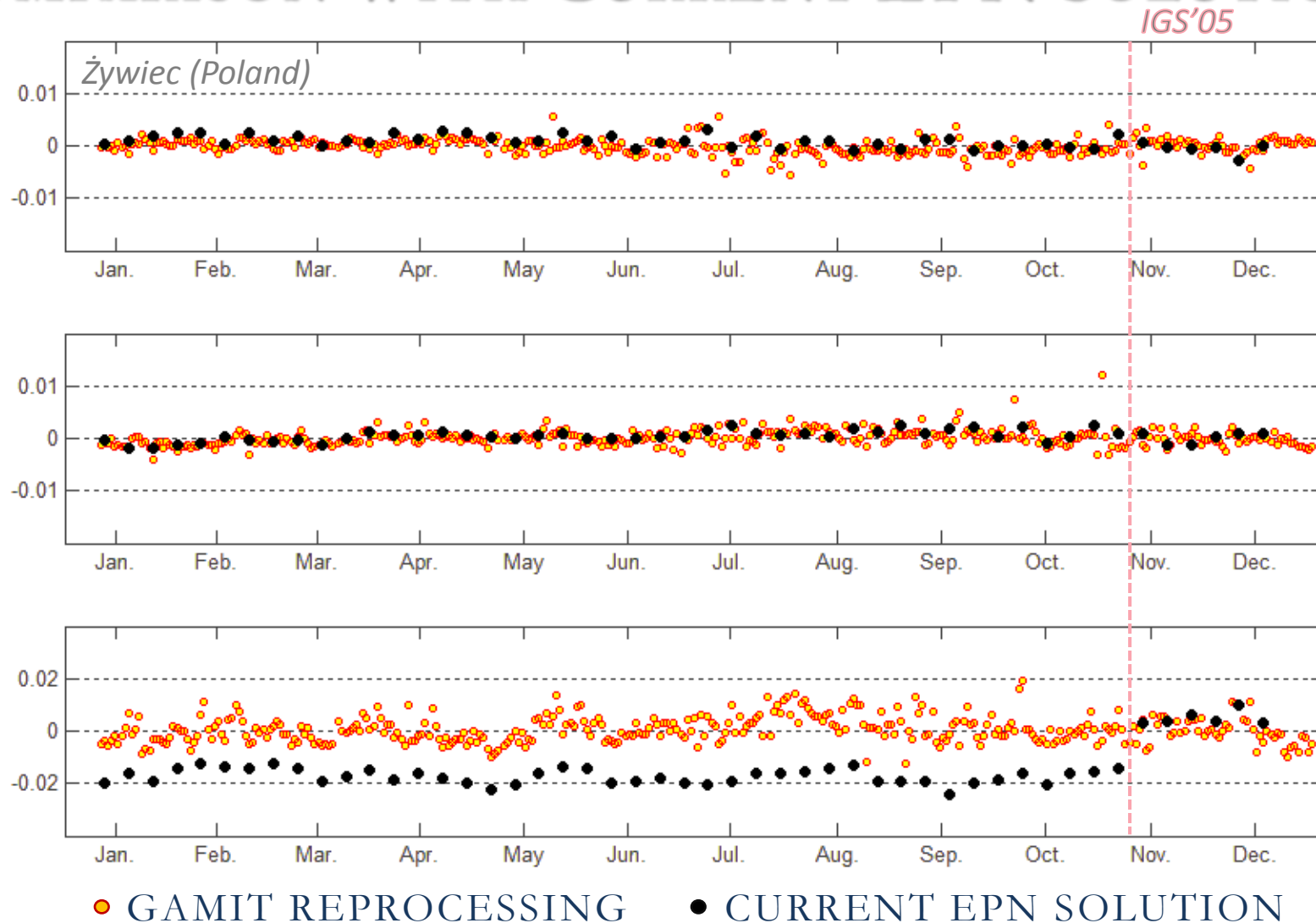


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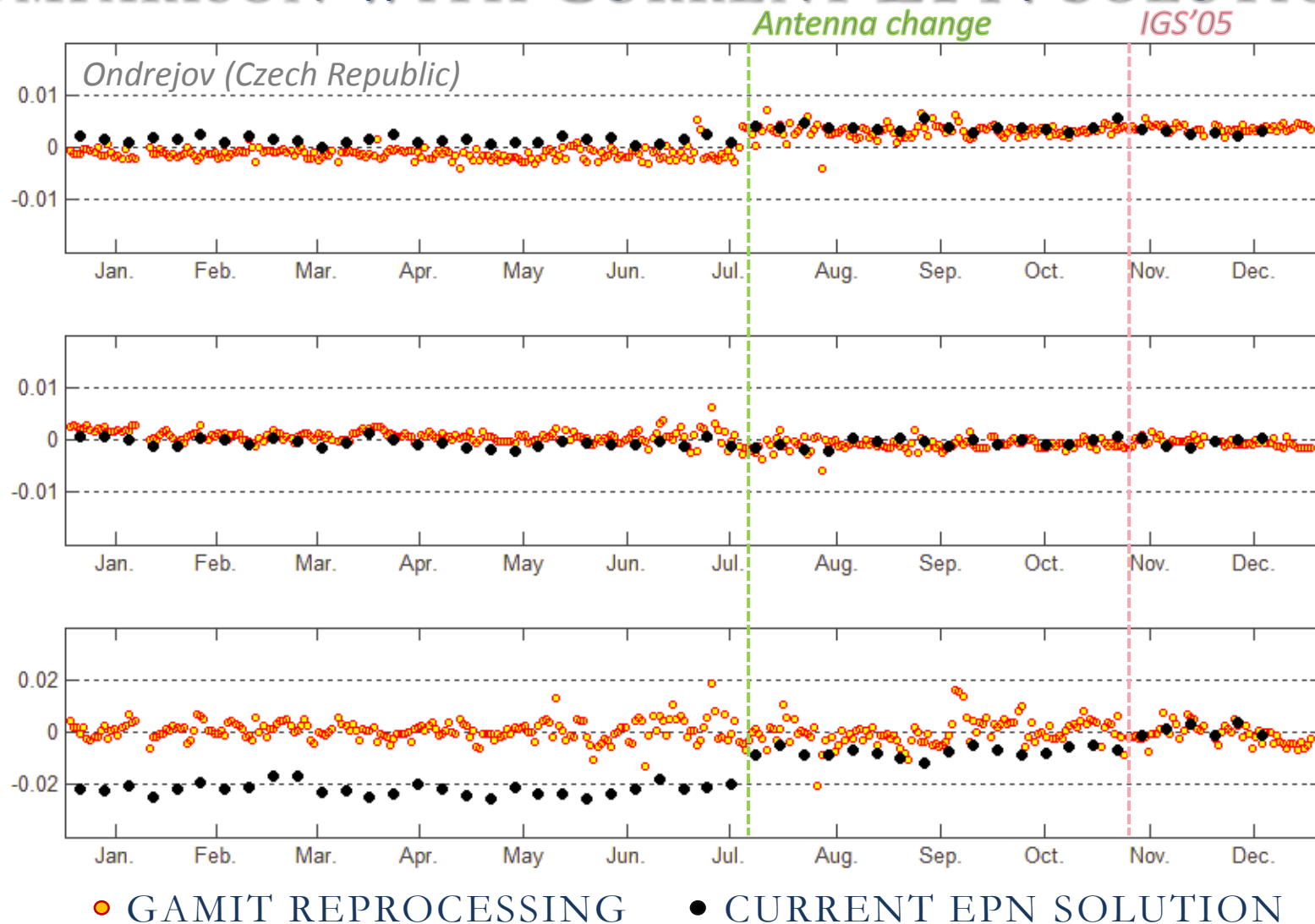




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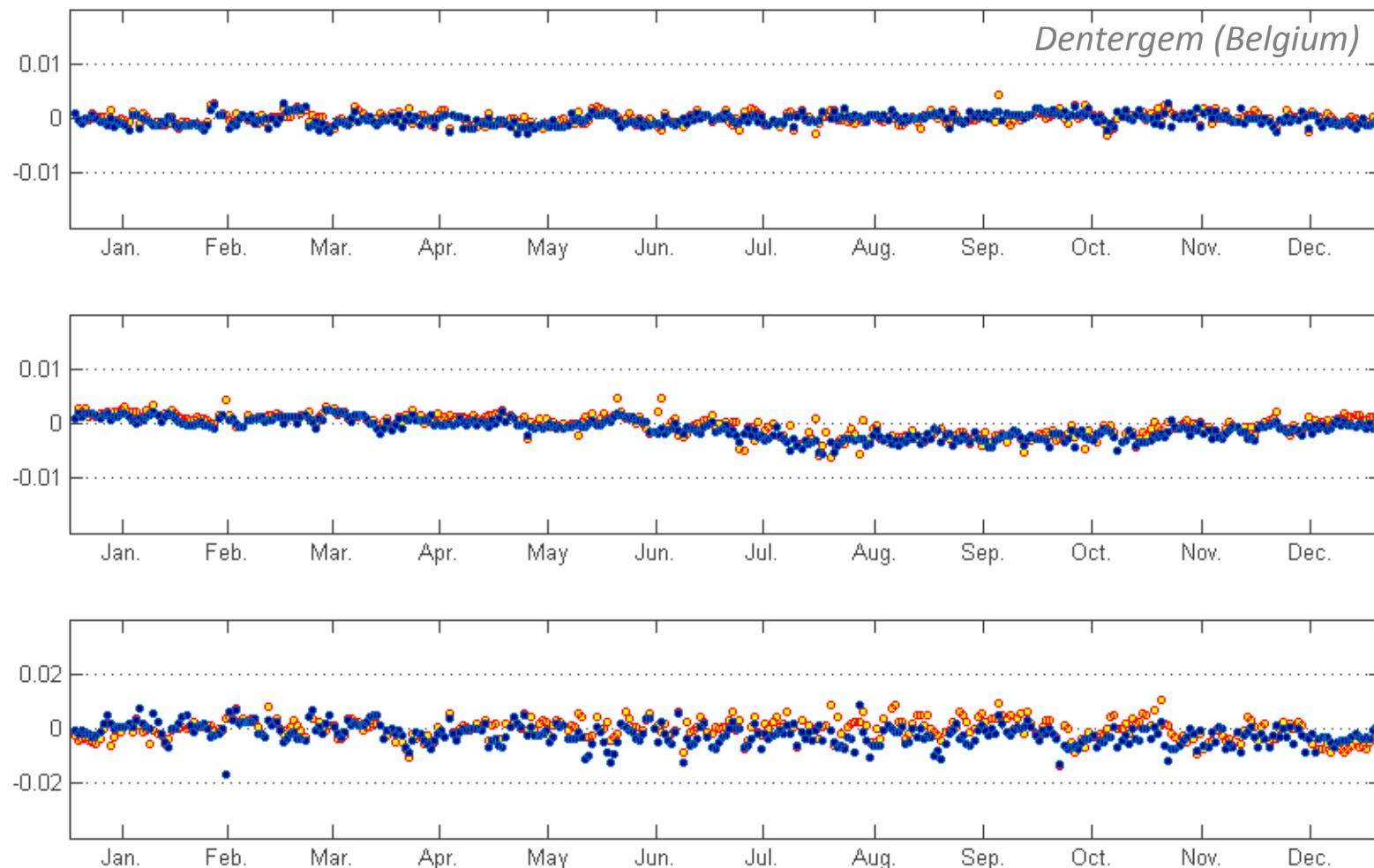
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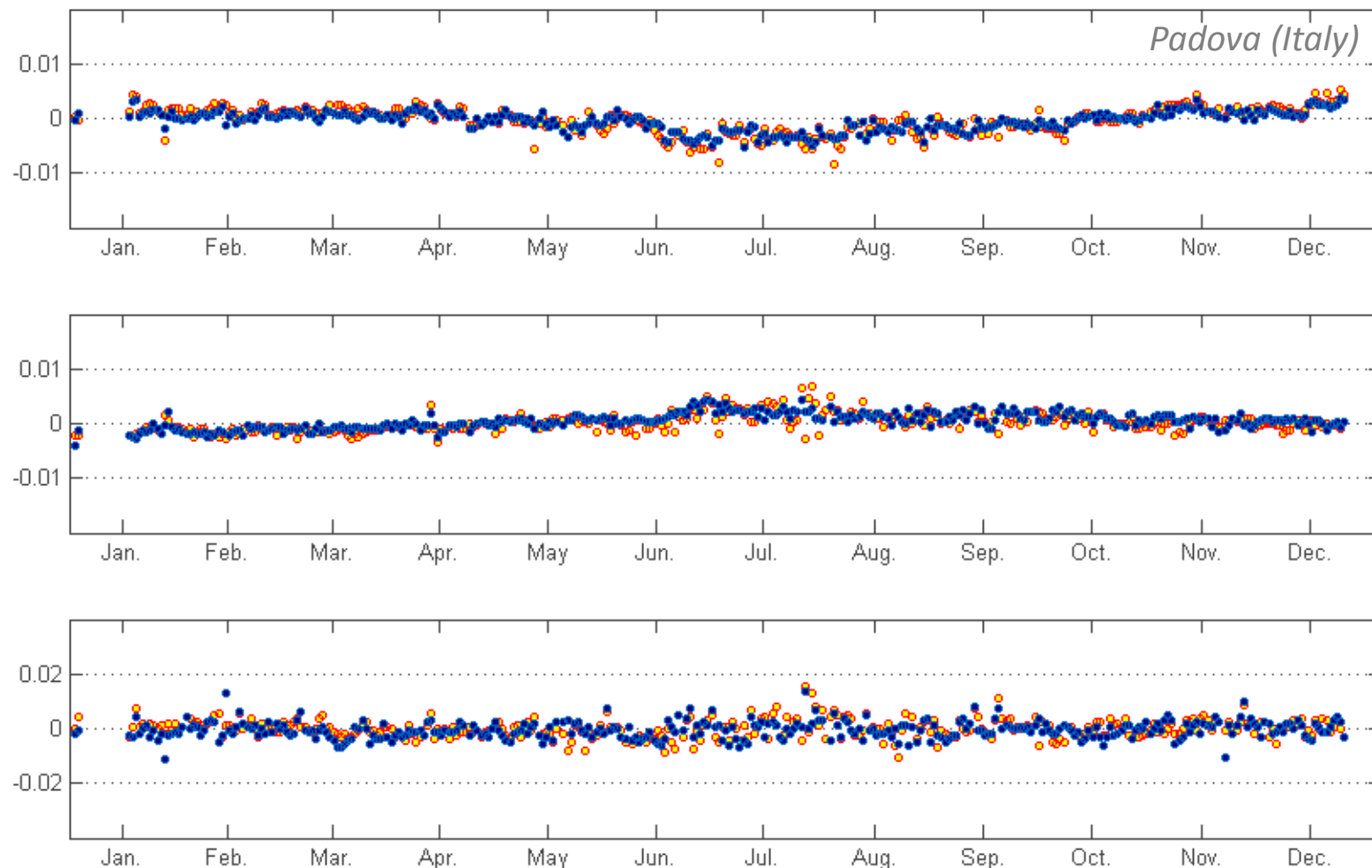
# COMPARISON WITH PILOT EPN REPROCESSING

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● GAMIT REPROCESSING    ● PILOT REPROCESSING

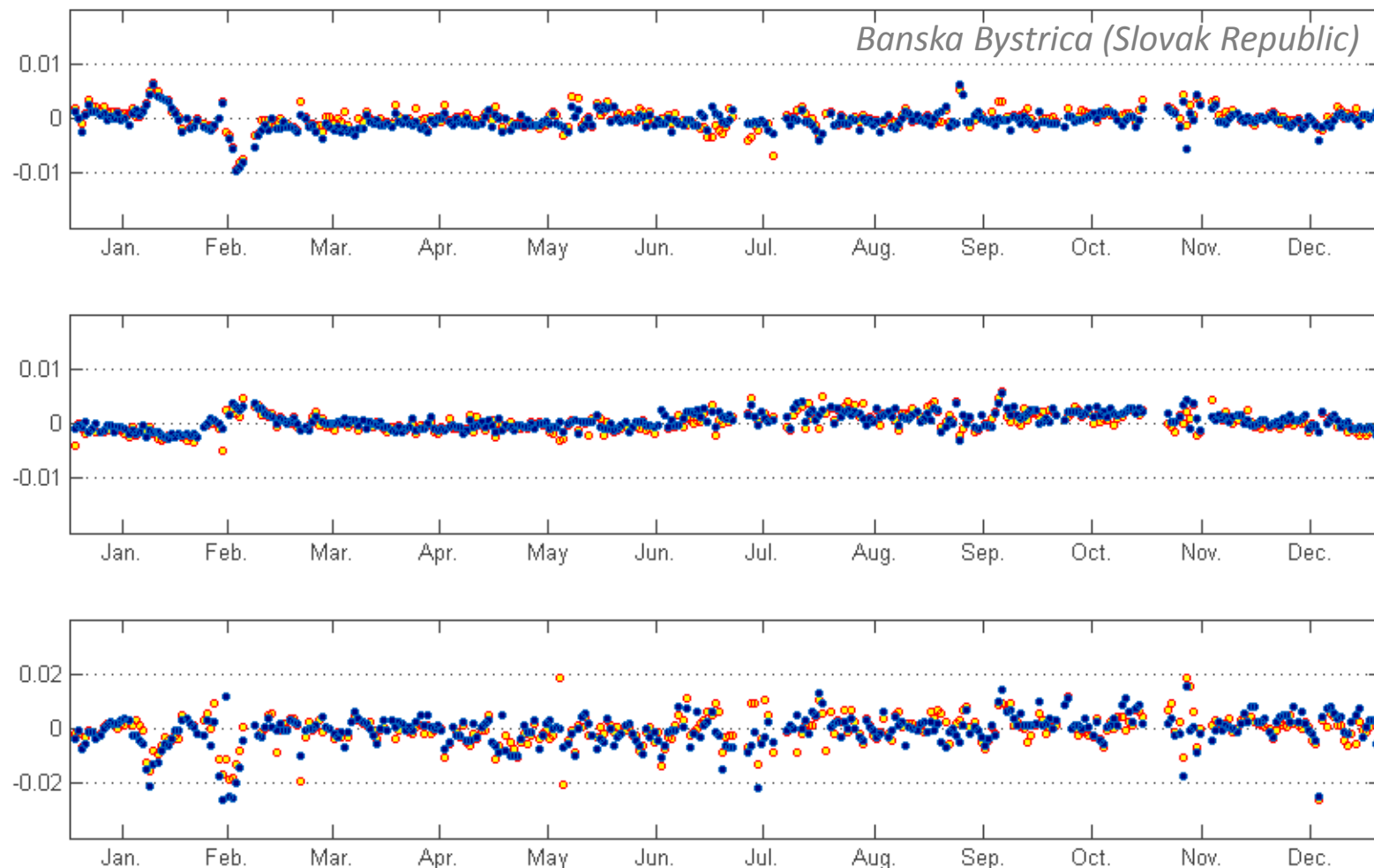
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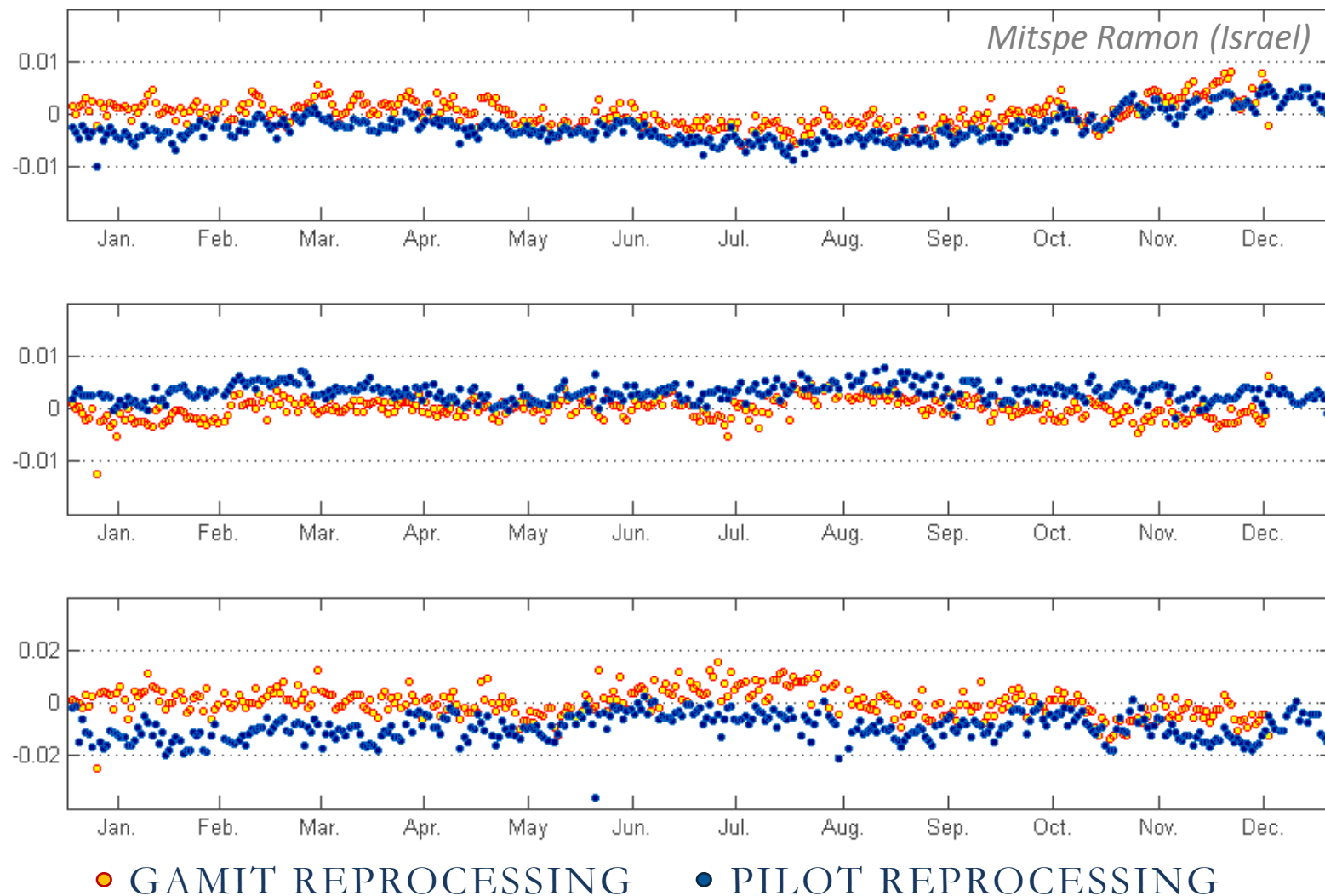


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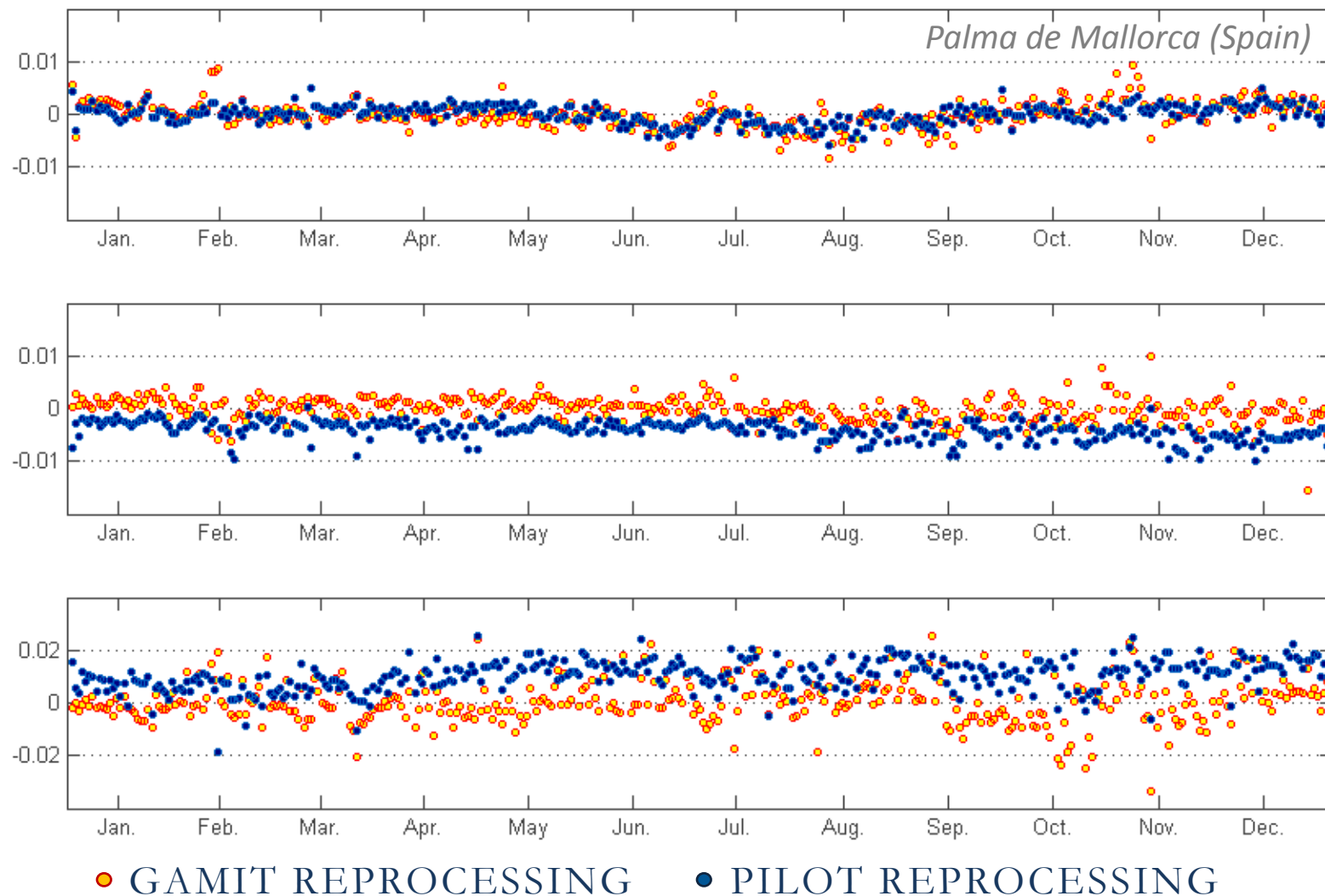


● GAMIT REPROCESSING    ● PILOT REPROCESSING

# COMPARISON WITH PILOT REPROCESSING



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## SUMMARY & LESSONS:

- NEED MORE CAREFUL PREPARATION OF **NECESSARY FILES** TO FASTER AND DETAILED PROCESSING
- USING **VMF** GIVES **BETTER RESULTS**
- HIGHT ORDER IONOPHERIC CORRECTION **CAN BE SKIPPED** FOR LOCAL SOLUTIONS ( ? )
- WE ARE STILL LEARNING, BUT RESULTS SHOWED THAT WE ARE HEADING IN A GOOD DIRECTION

## PLANS FOR FUTURE:

- ANALYSE THE **RESULTS**
- CHECK LATEST VERSION OF **GAMIT/GLOBK 10.4**
- DO SOME TESTS WITH **ATML**
- DO MORE TESTS WITH **GLOBAL** AND **LOCAL** SOLUTIONS
- CHOOSE FINAL **STRATEGY** FOR **FINAL REPROCESSING**



A faint, light blue world map is centered in the background of the slide, showing the outlines of the continents.

THANKS FOR YOUR ATTENTION !

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# TWO TYPES OF ‘EXPERIMENT’ & REFERENCE FRAME REALIZATION

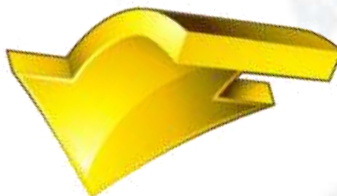
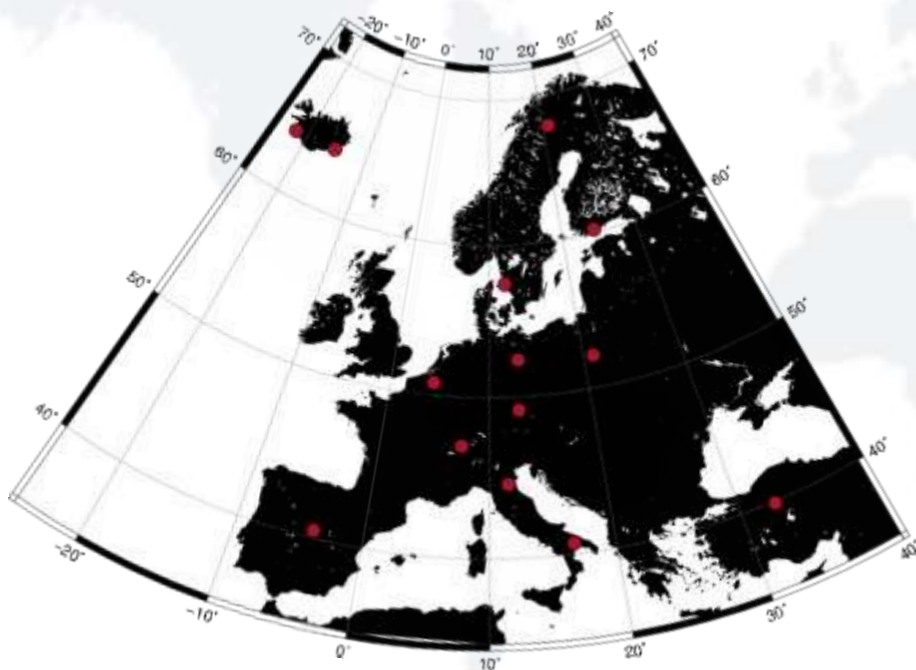
**GAMIT** processing in **BASELINE** mode

or

**GAMIT** processing in **RELAX** mode and combine  
results with global solution in **GLOBK**

COMBINED WITH SOPAC SOLUTIONS

## LOCAL SOLUTION



## GLOBAL SOLUTION

