

EPN Time Series Analysis SP

Status report

A. Kenyeres

FOMI Satellite Geodetic Observatory

Hungary

UPGRADES

- **Software tools (CATREF)**

combination, velocity
estimation

- **Noise analysis**

spectral index, velocity
uncertainty

- **Harmonic analysis**

seasonal (annual) periodicity

SOFTWARE UPGRADE

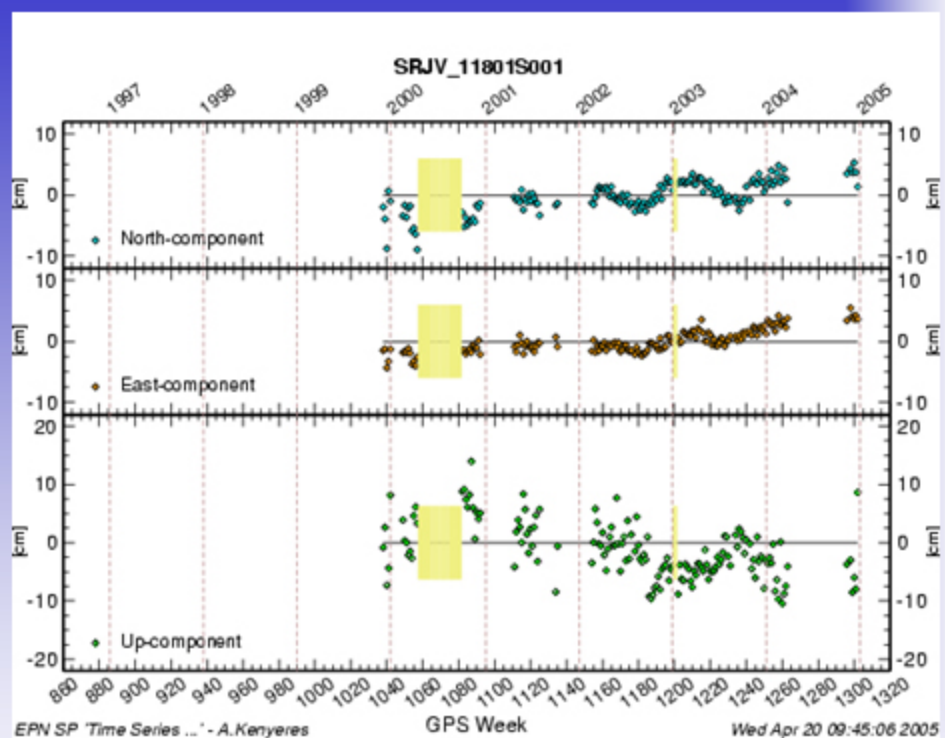
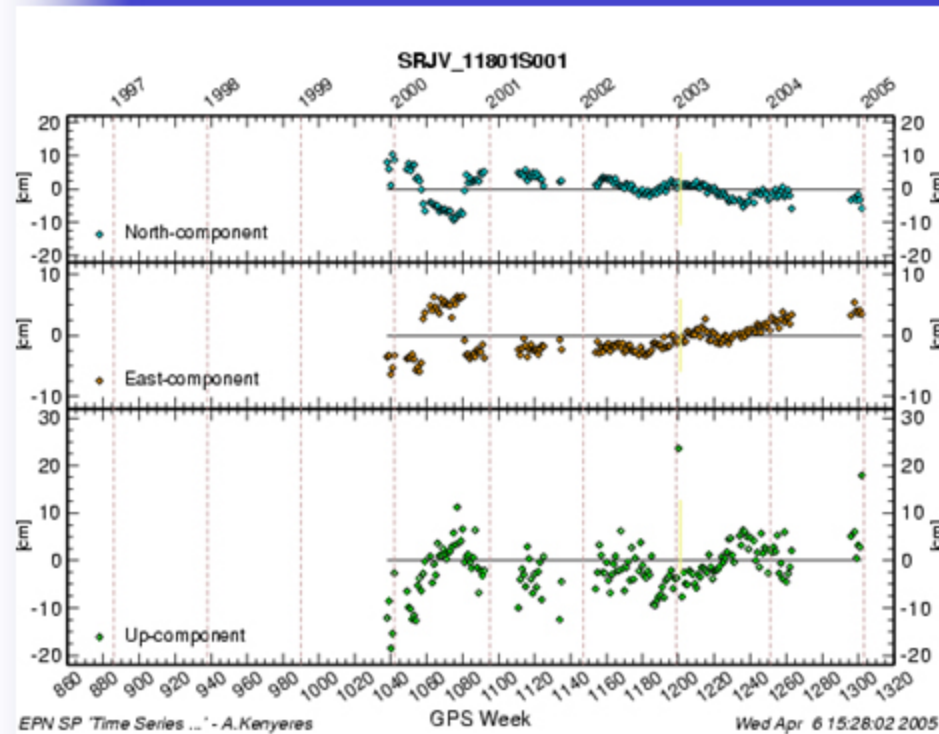
- **SW TOOL** for cumulative solution:

BERNESE 4.2 → CATREF

**constrained → minimum
constrained**

- **offset and outlier database (web access)**
prepared to contribute ITRF2004
- **velocity estimation**

Combination: importance of outlier removal



UPGRADES II.

NOISE ANALYSIS

$$P(f) = P_0 f^\alpha = P_0 (f_0^{-\alpha} + f^\alpha)$$

white + colored noise

$\alpha=-1$: flicker noise

$\alpha= -2$: random walk (monument instability)

Effect in velocity uncertainty estimation

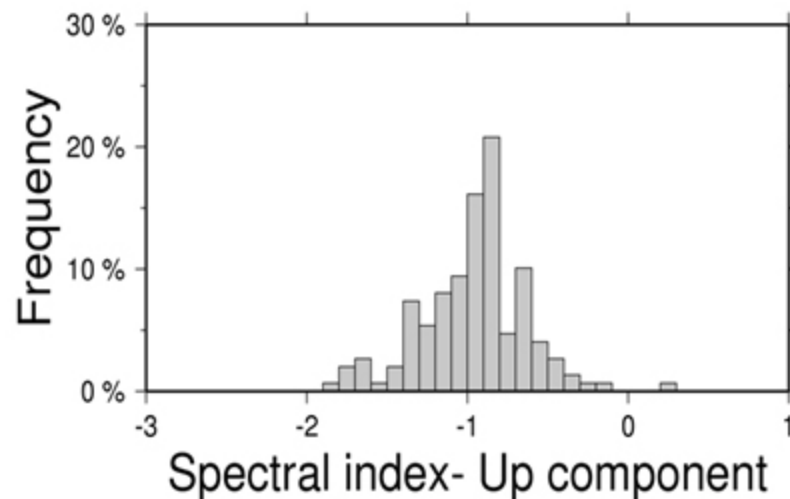
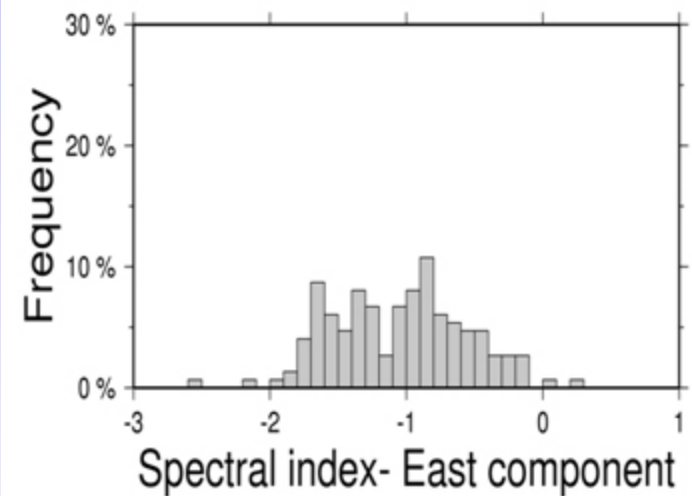
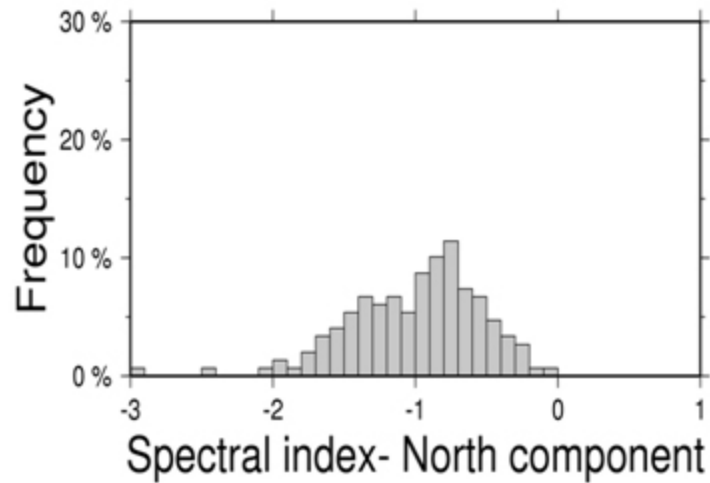
Spectral index estimation for the EPN stations:

CATS software [SD Williams]

MLE

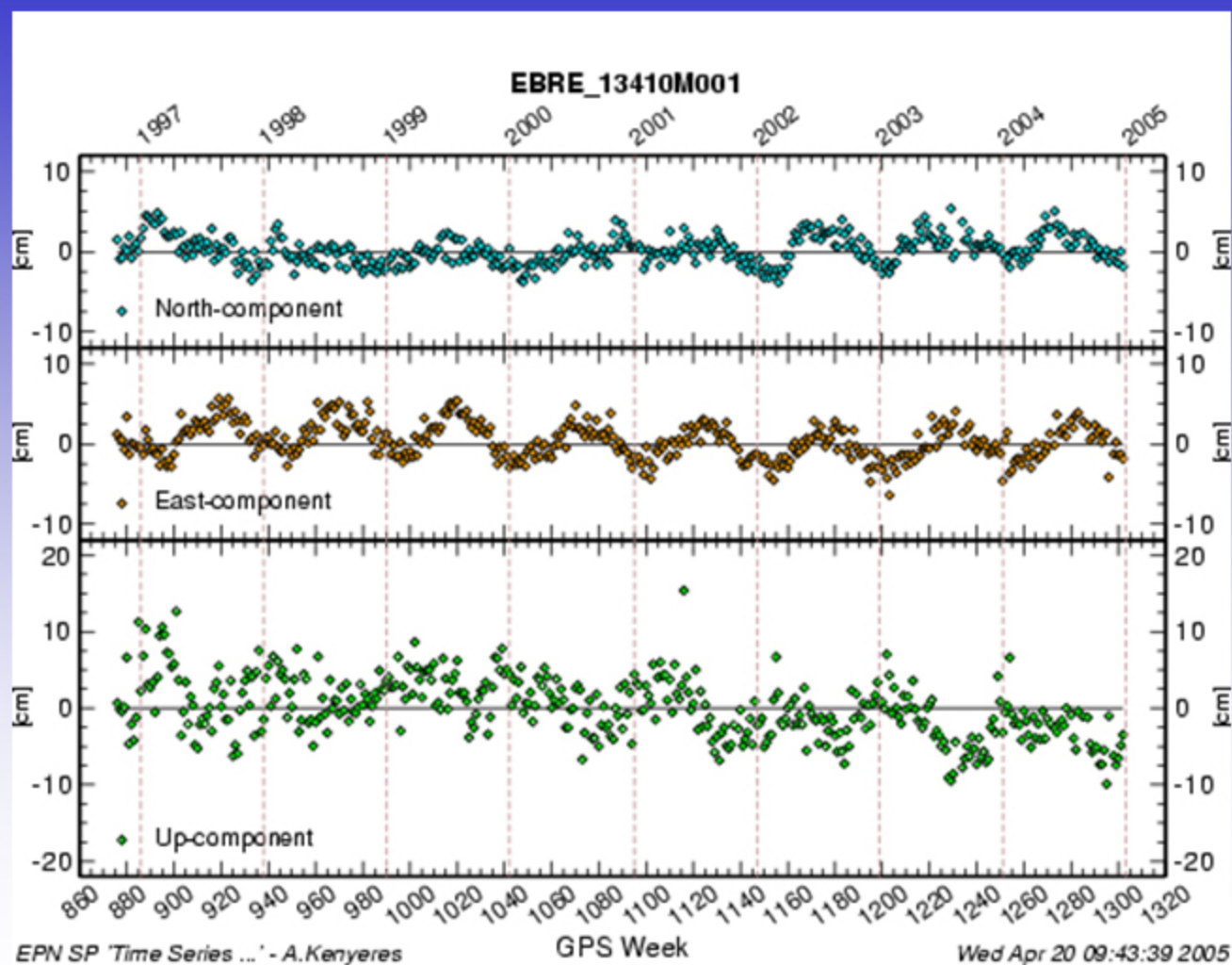
**Presence of colored noise/flicker noise/ was
proved**

Spectral index estimation

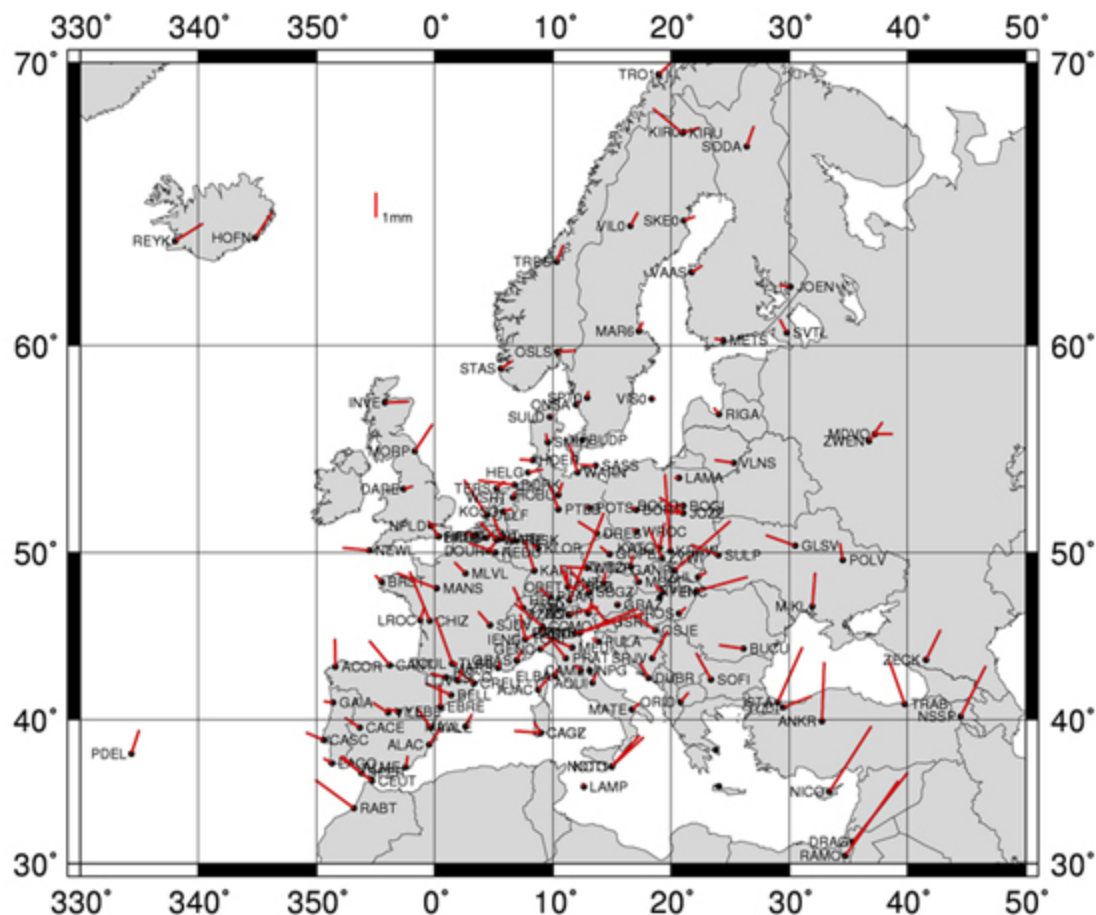


UPGRADES III.

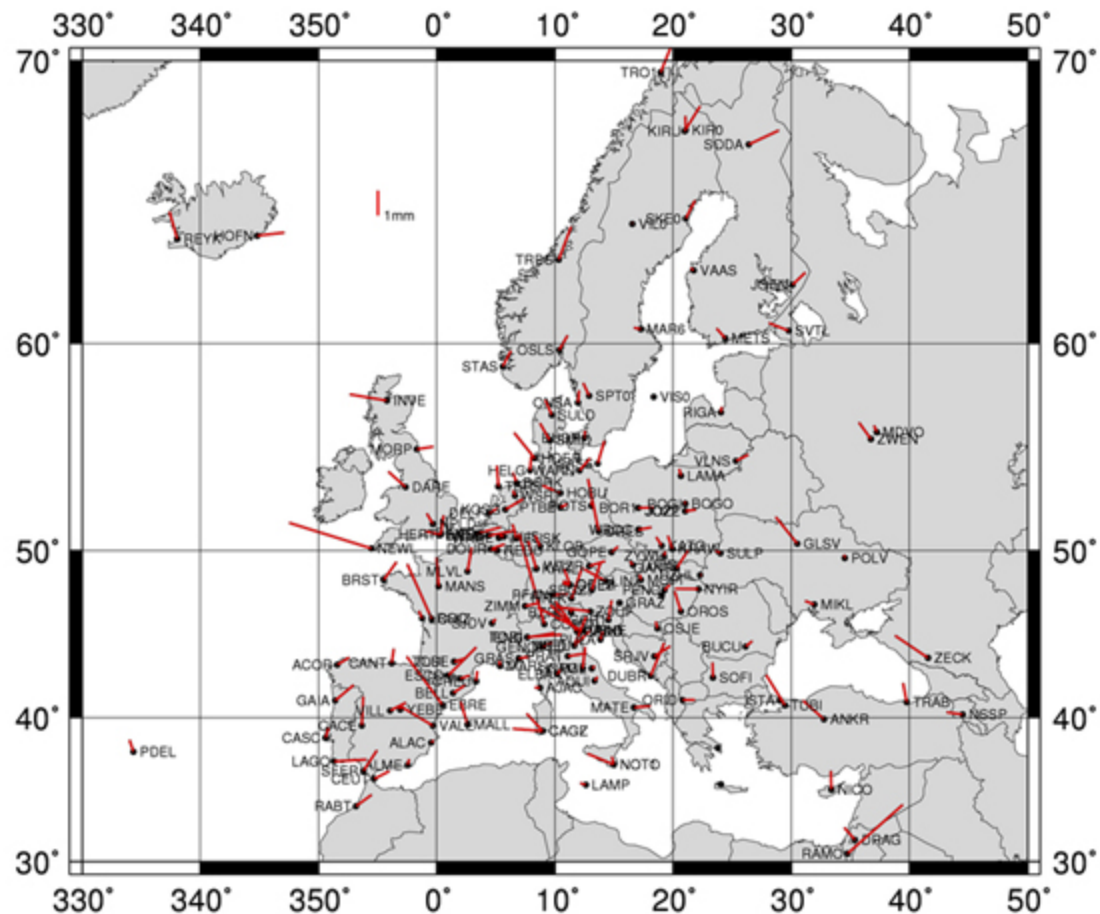
HARMONIC ANALYSIS



North component

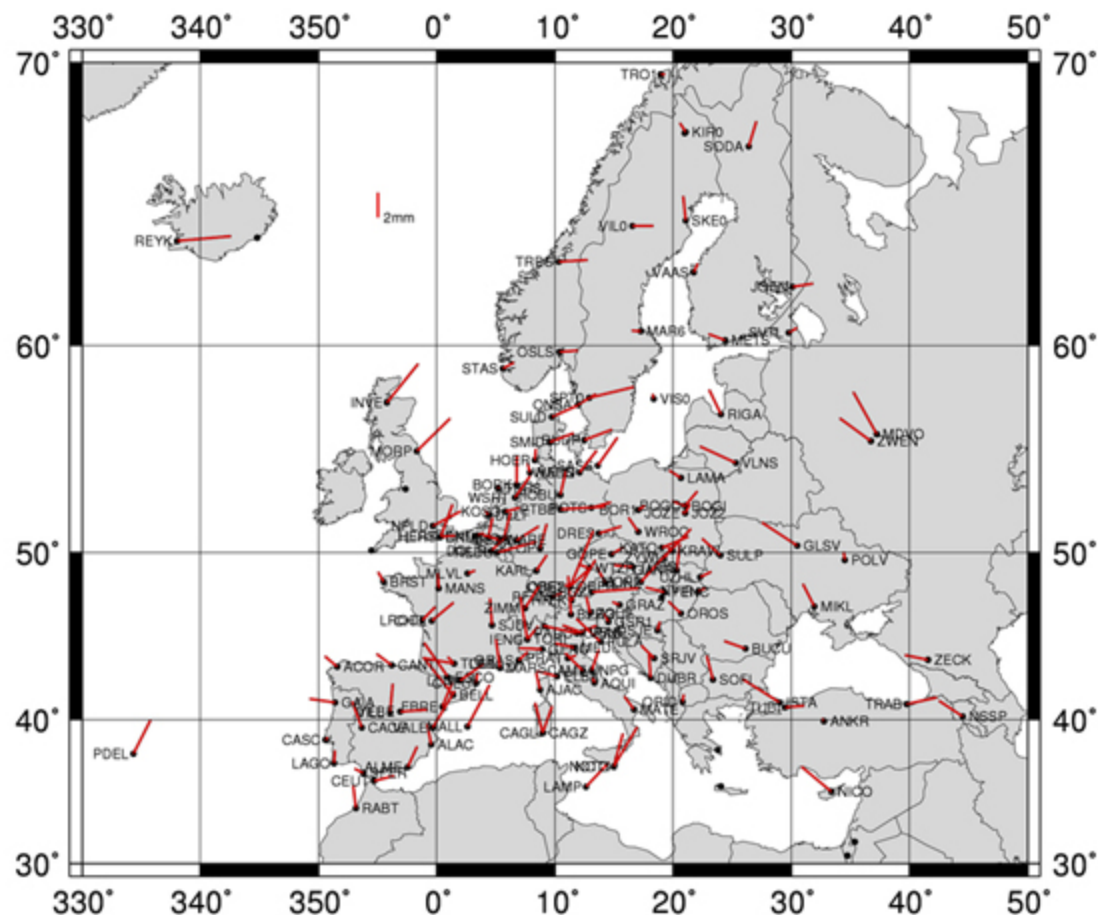


East component

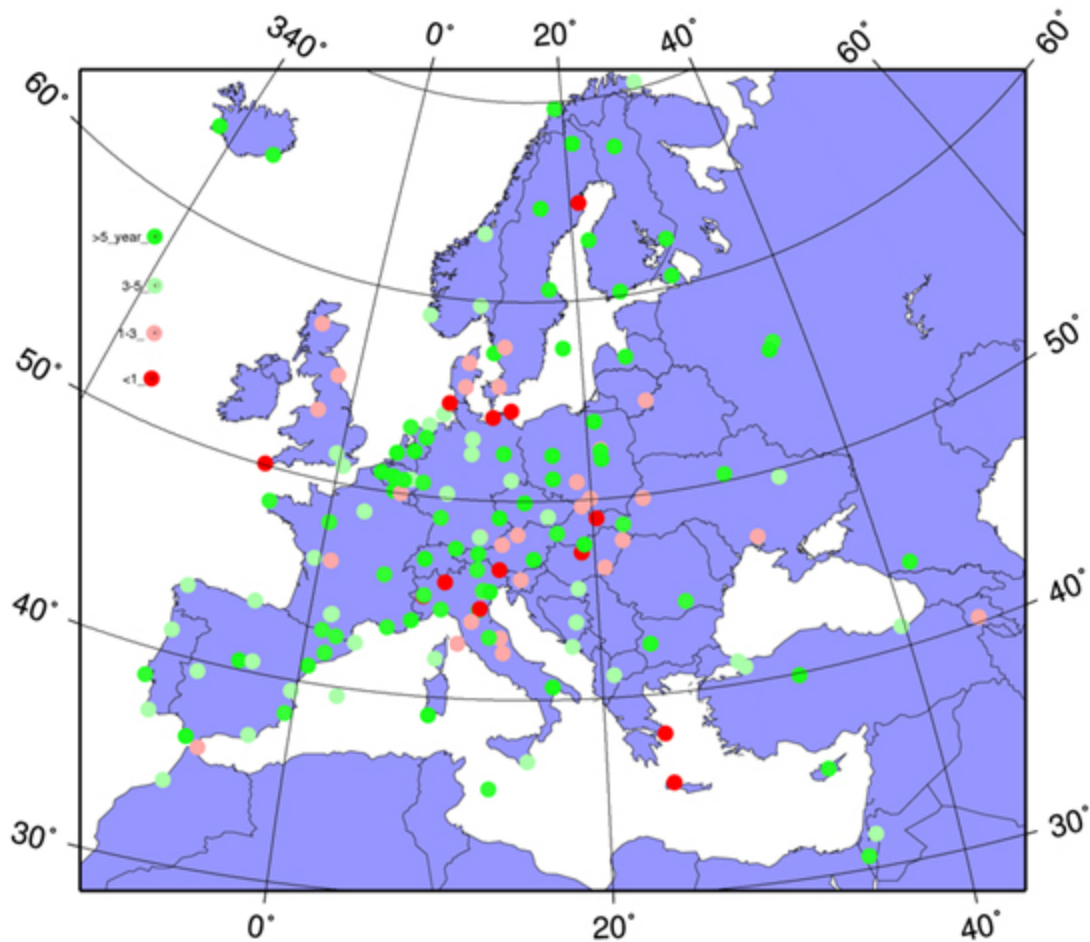


HARMONIC ANALYSIS

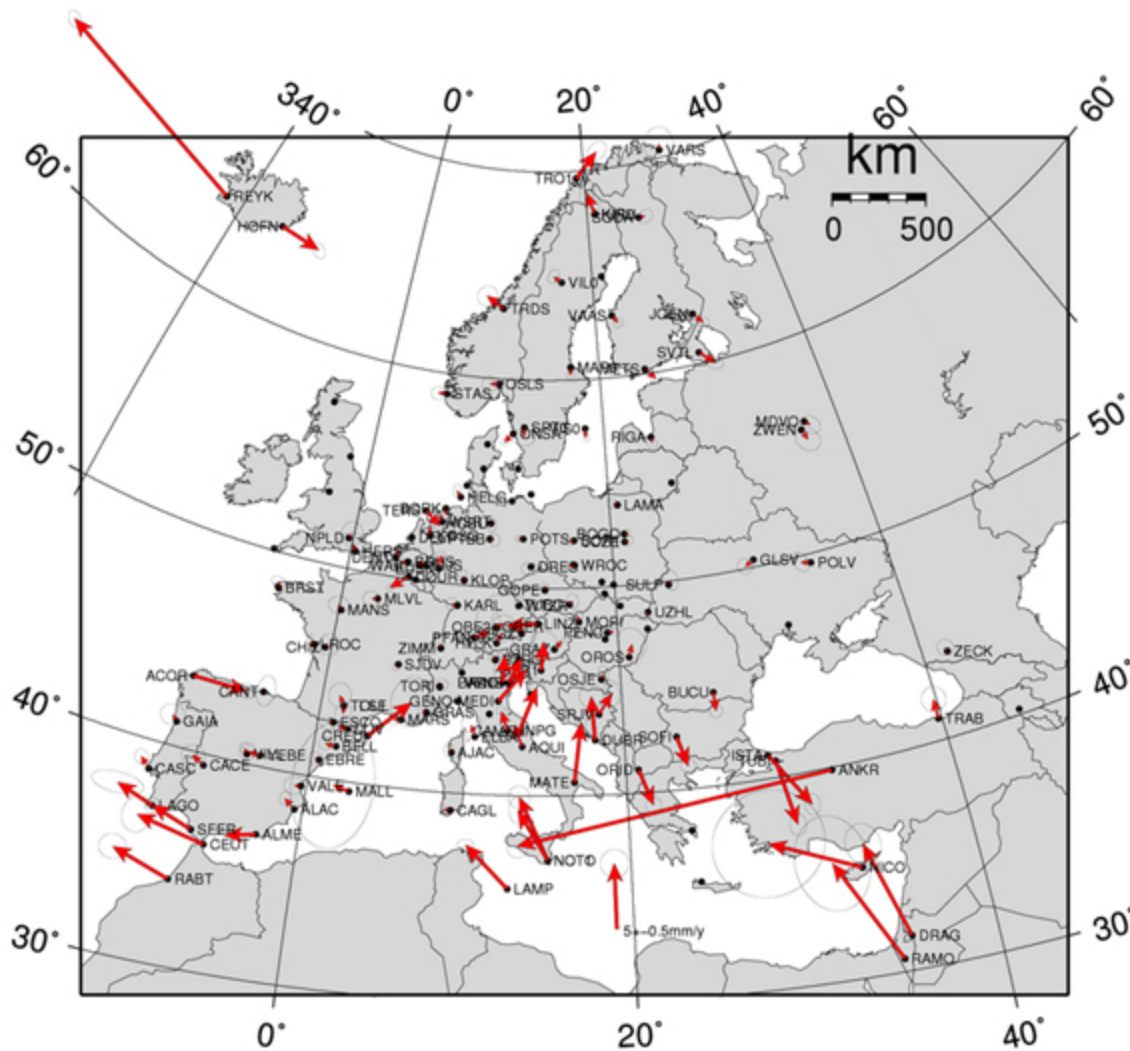
Vertical component



Ability of EPN for velocity estimation



NE-velocity estimation



UP-velocity estimation

