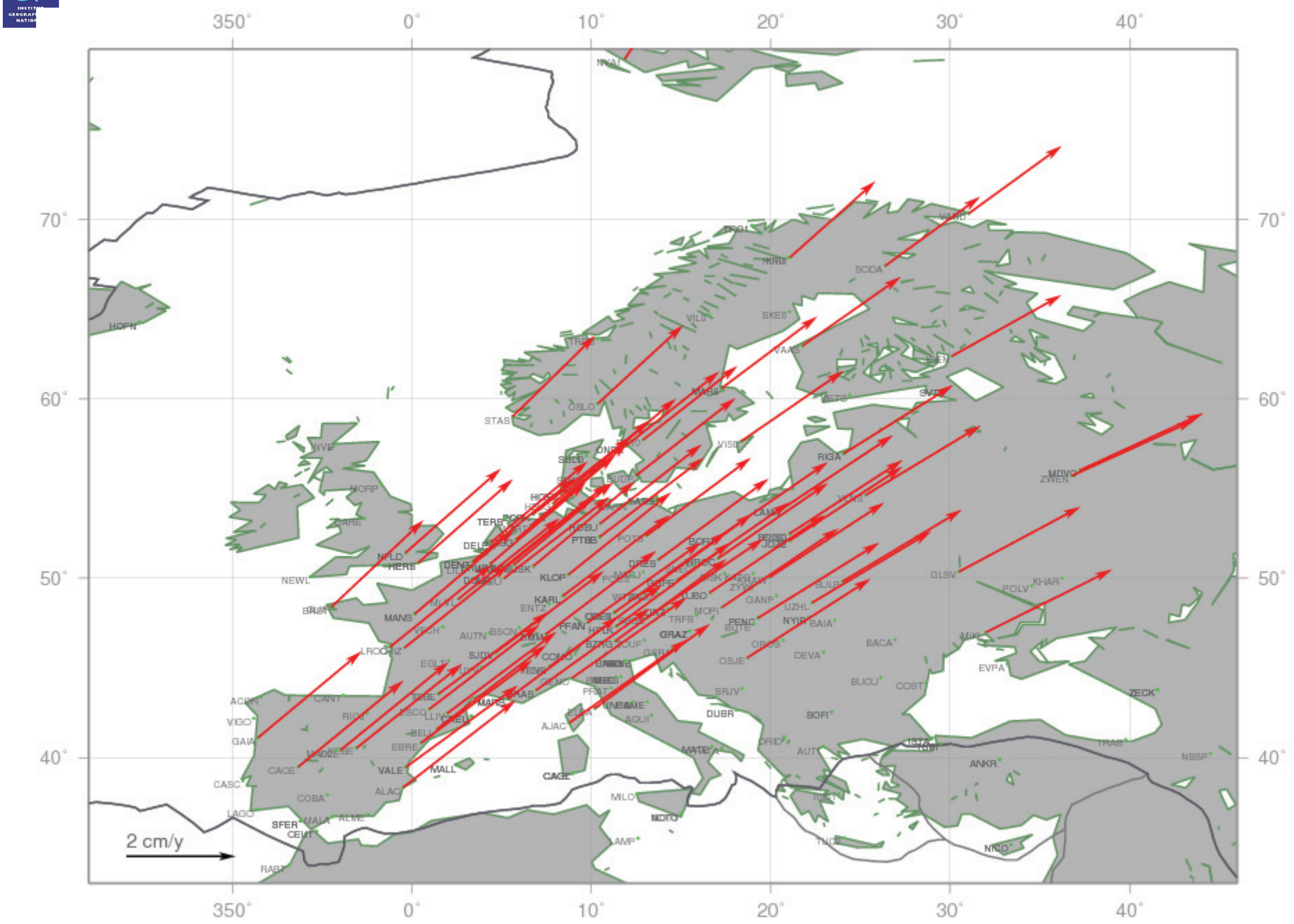
Dense European Velocity Field: an Update :

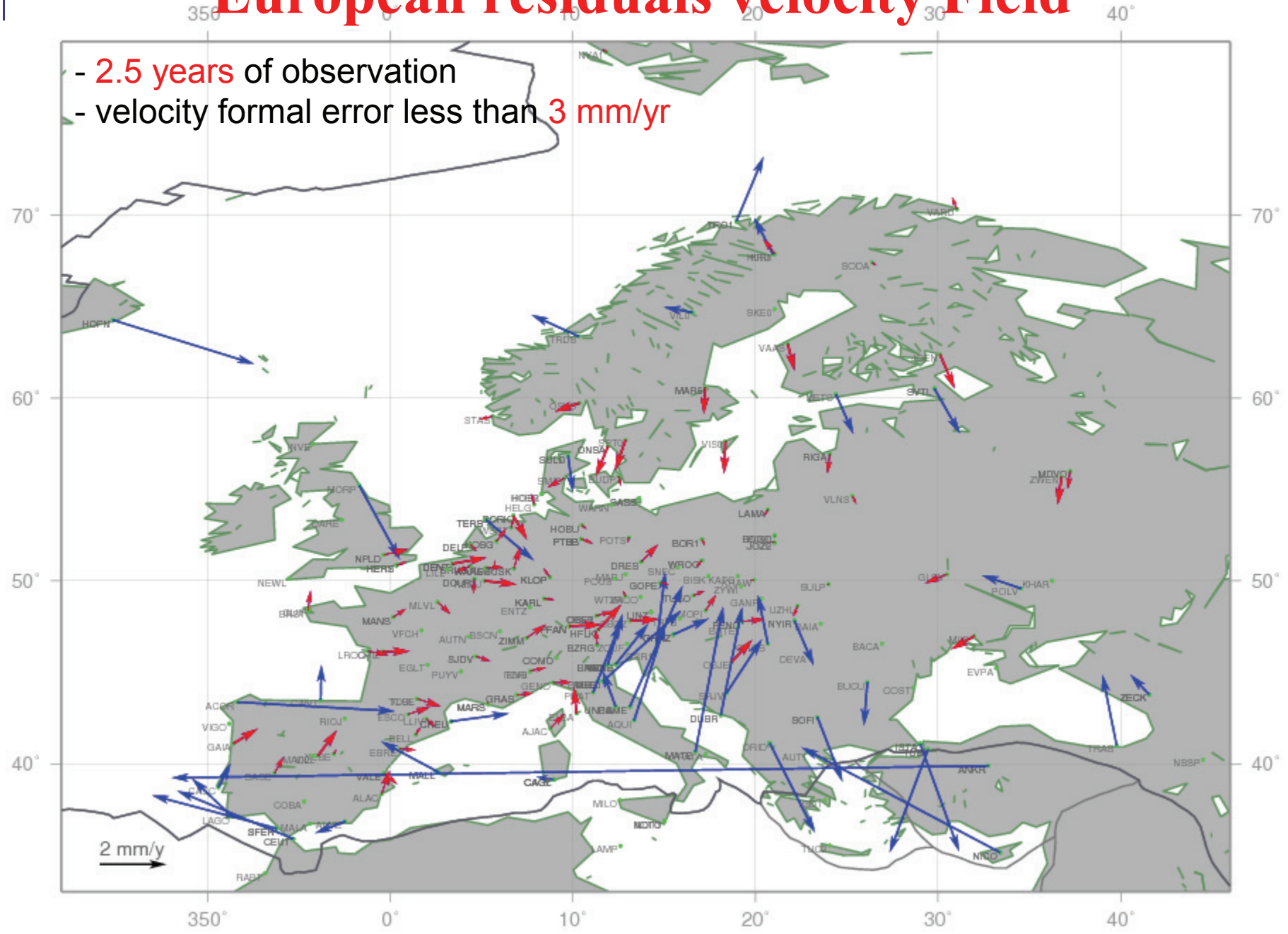
Interpolation of the EPN Velocity field using Least Squares Collocation Method

Zuheir Altamimi

Juliette Legrand


350°
0°
10°
20°
30°
40°
70°
60°
50°
40°
2 cm/y

European residuals velocity Field



Least-squares collocation method

The best (unbiased minimum variance) linear estimate of the signal vector $W(Q)$ in terms of the "measurement" vector $V(P)$ is given by [Moritz, 1989] :

$$\hat{W}_Q = A_Q C_{\omega_Q \omega_P}{}^t A_P [A_P C_{\omega_P \omega_P}{}^t A_P + C_{\eta_P \eta_P}]^{-1} V_P$$

The covariance matrix of the interpolated velocity field is :

$$C_{\epsilon\epsilon} = A_Q C_{\omega_Q \omega_Q} A_Q^T - A_Q C_{\omega_Q \omega_P} A_P^T [A_P C_{\omega_P \omega_P} A_P^T + C_{\eta_P \eta_P}]^{-1} A_P C_{\omega_P \omega_Q} A_Q^T$$

Interpolated EPN velocity field