

ITRF2005 and consequence for ETRF2005

- ITRF2005 datum definition
- Transformation btw ITRF2005 and ITRF2000
 - Visit: itrf.ensg.ign.fr/ITRF_solutions/2005/
- Consequence for ETRS89 (ETRF2005)



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ITRF2005 Datum definition

- **Origin:** ZERO translations/rates btw ITRF2005 and ILRS time series
- **Scale:** ZERO scale/rate btw ITRF2005 and IVS time series
- **Orientation:** ZERO rotations/rates btw ITRF2005 and ITRF2000

ITRF2005 to ITRF2000

	TX	TY	TZ	Scale
	mm	mm	mm	ppb
	mm/y	mm/y	mm/y	ppb/y
Offset At 2000.0	0.1	-0.8	-5.8	0.40
Drift	-0.2	0.1	-1.8	0.08

ITRF2005 and the NNR condition

Rotation rate diffs wrt ITRF2005 Using Ref set of 70 stations

- ITRF2000 (NNR-NUVEL-1A)
- APKIM 2005 (Drewes, 2006)
- GRSM-2 model by (Kreemer et al. 2006)

$\dot{R}1$ mas/y	$\dot{R}2$ mas/y	$\dot{R}3$ mas/y	
-0.035	0.002	-0.024	APKIM2000
-0.026	0.010	-0.015	APKIM 2005
-0.050	0.049	-0.058	GRSM 2001
-0.037	0.041	-0.063	GRSM-2
-0.02	0.04	-0.04	Diff ~ 2mm/yr

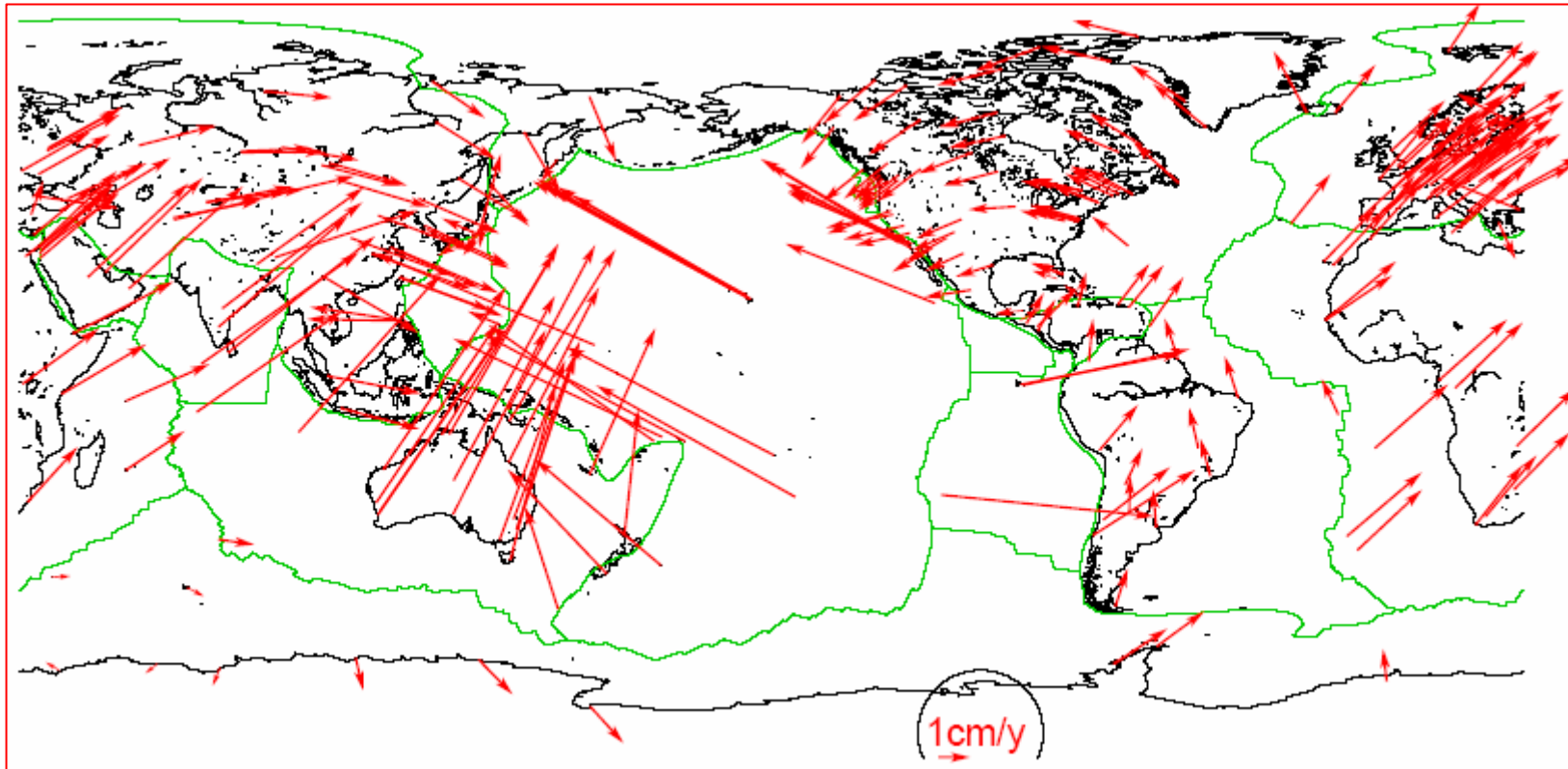
ITRF2005

Accuracy of the datum definition

	at epoch 2000.0 (mm)	Rate mm/yr
Origin	5	2
Scale	6.3	0.6
NNR		2

ITRF2005 Velocity Field

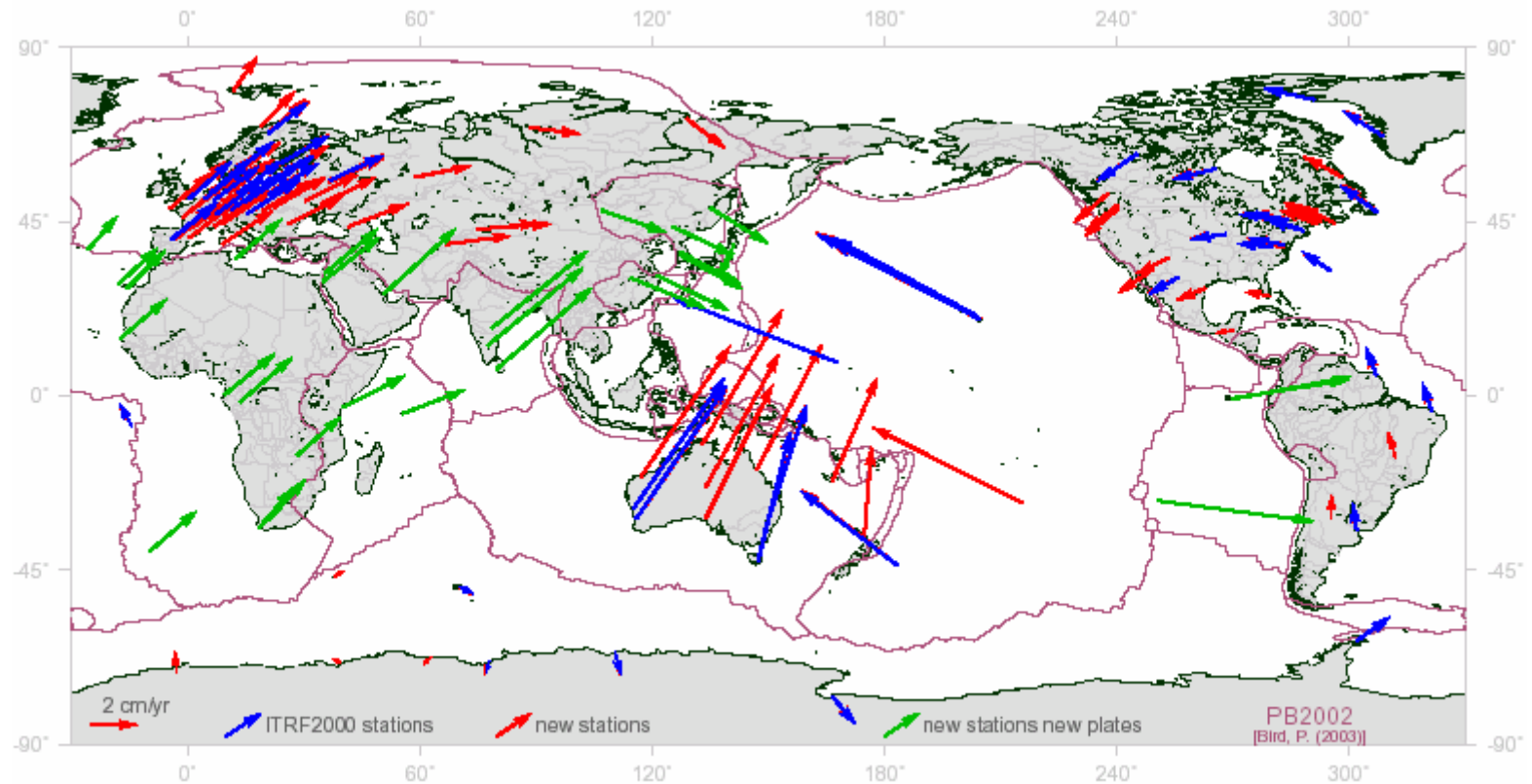
$$\sigma \leq 3\text{mm/yr}$$



Example of selected sites for plate angular velocities estimation

Using PB 2002 Plate boundaries (Bird, 2003)

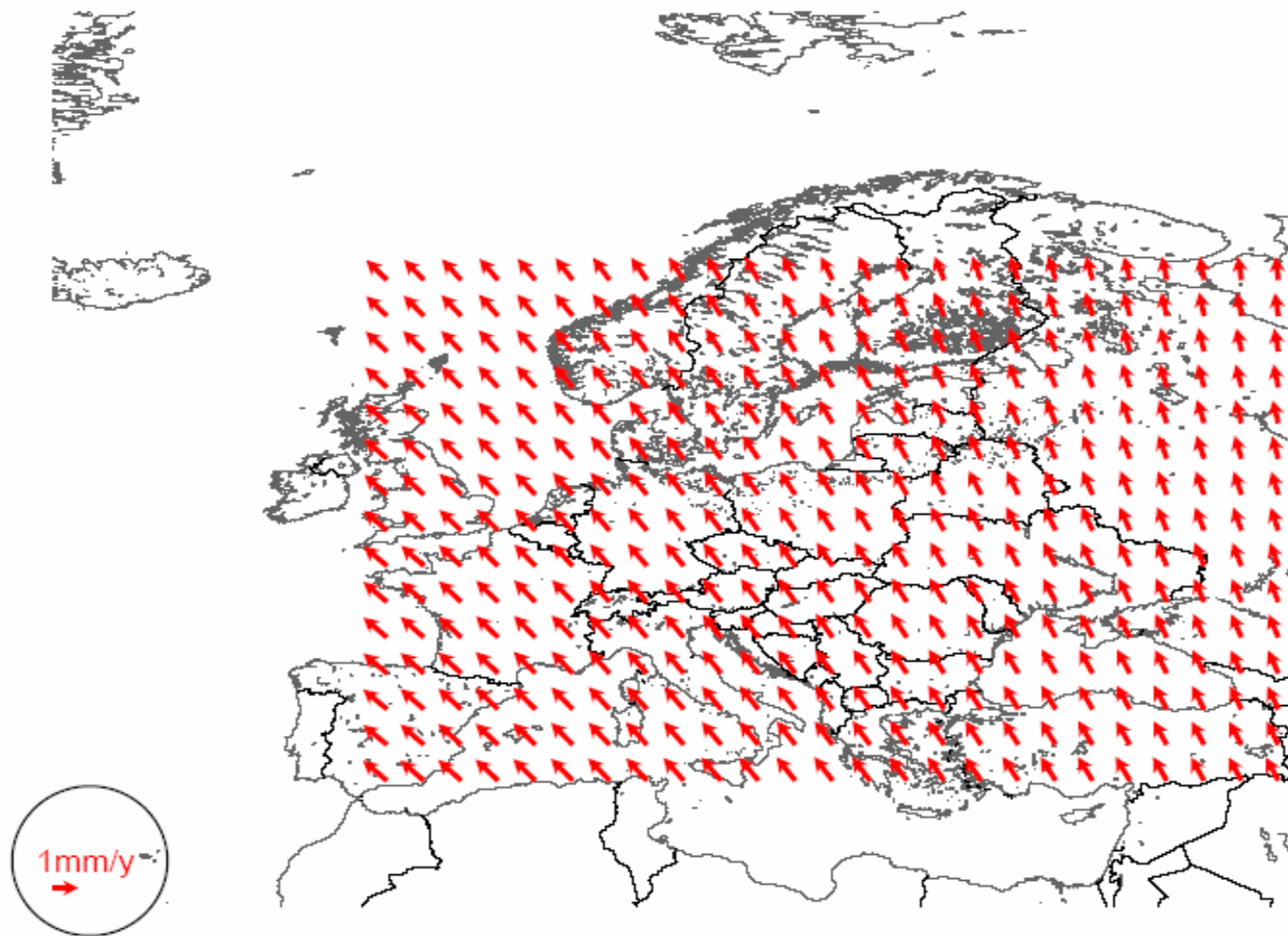
Pacific
Africa
Amur
Antarctica
Arabia
Australia
Caribbean
Eurasia
India
North America
Nazca
Okhotsk
South America
Somalia
Yangtze



Eurasia Rotation Rates

YY	$\dot{R}1$ mas/y	$\dot{R}2$ mas/y	$\dot{R}3$ mas/y
89	0.11	0.57	-0.71
90	0.11	0.57	-0.71
91	0.21	0.52	-0.68
92	0.21	0.52	-0.68
93	0.32	0.78	-0.67
94	0.20	0.50	-0.65
96	0.20	0.50	-0.65
97	0.20	0.50	-0.65
00	0.081	0.490	-0.792
	± 0.021	± 0.008	± 0.026
05	0.066	0.517	-0.767
	± 0.008	± 0.005	± 0.009

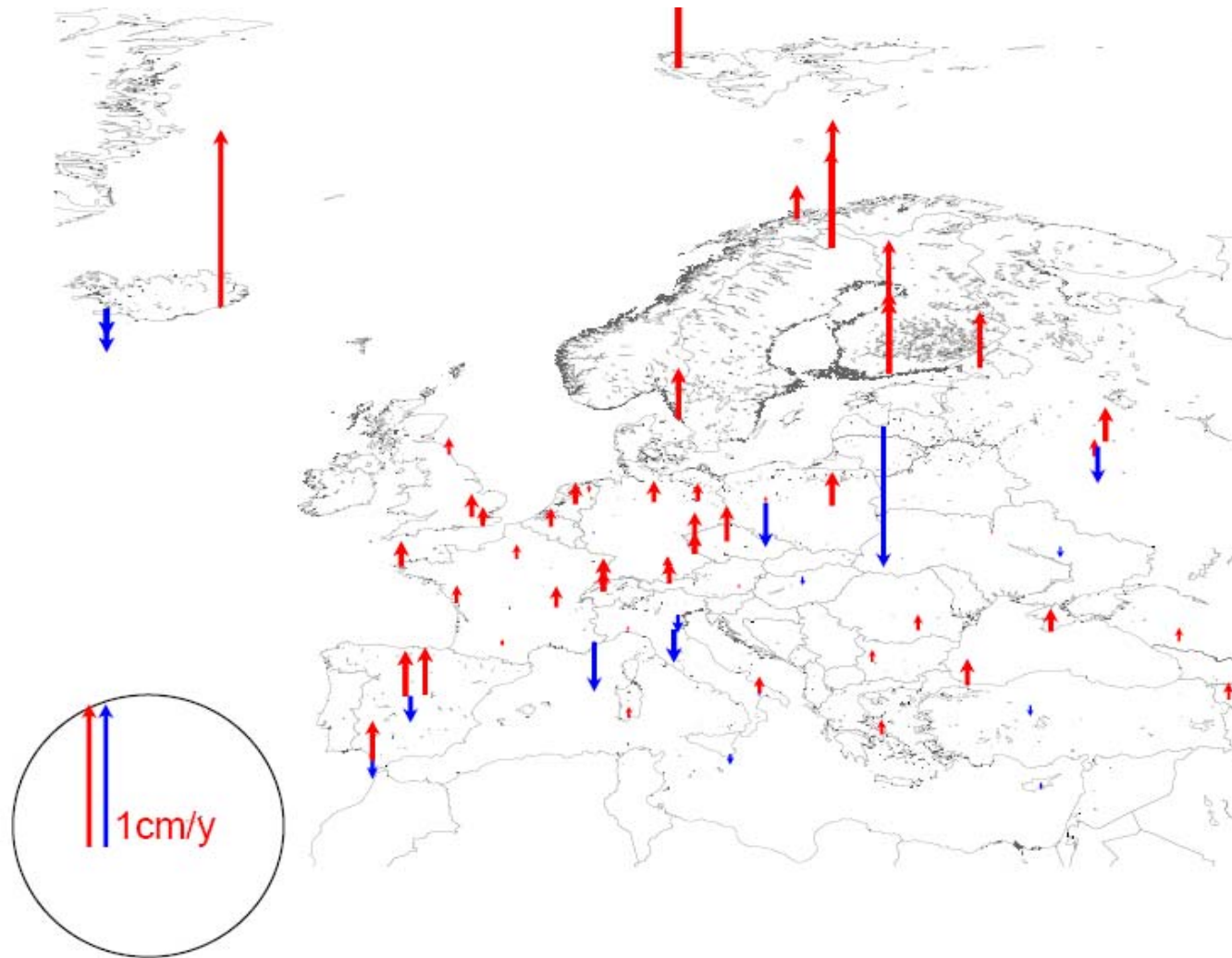
Difference btw ITRF2000 & ITRF2005 Eurasia rotation rates



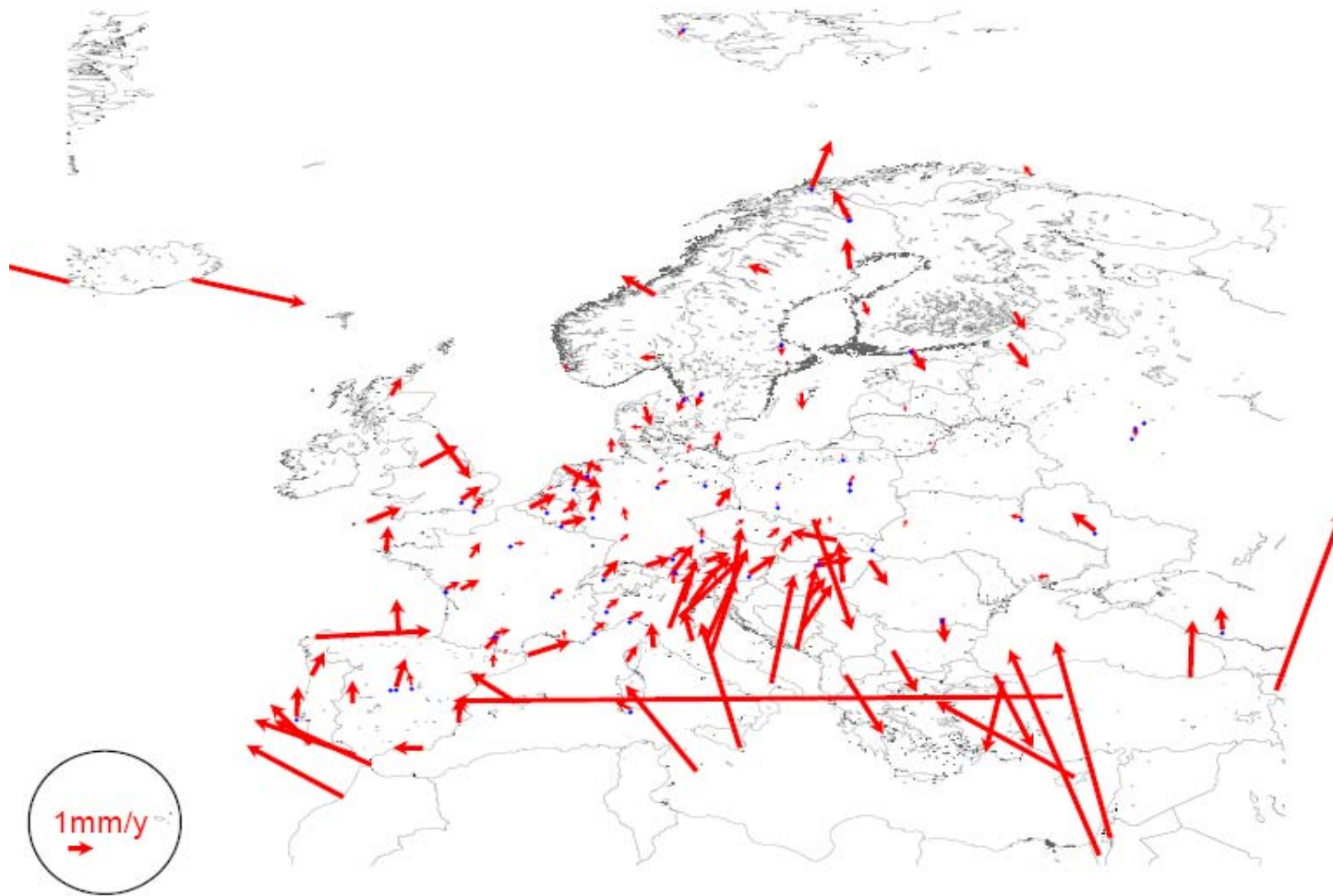
ETRF2005 Horizontal Velocities



ITRF2005/ETRF2005 Vertical Velocities



EPN (ETRF2005) Horizontal Velocities



EPN (ETRF2005) Vertical Velocities

