ITRF datum and ILRS network geometry

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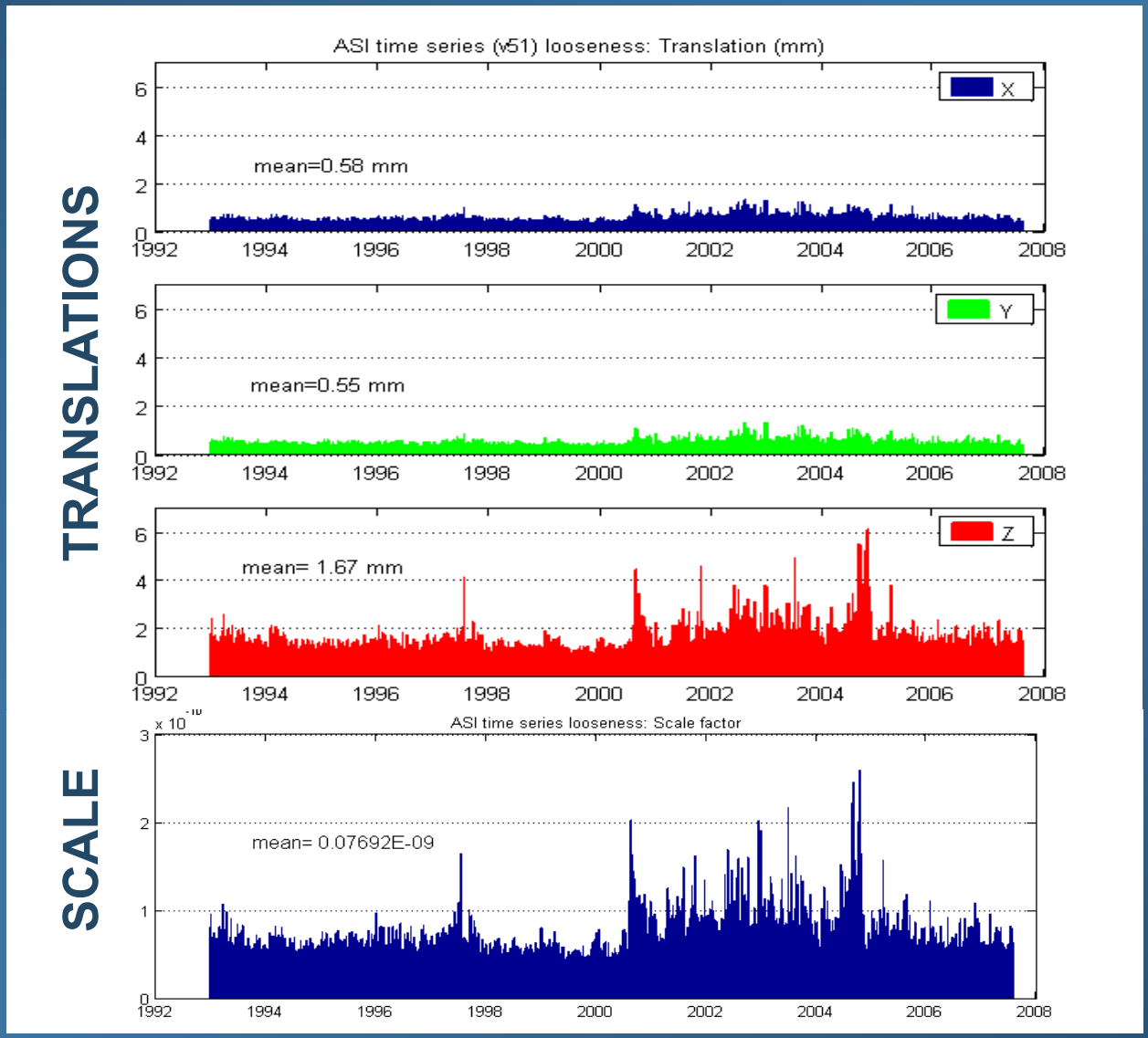
The SLR sensitivity to the TRF datum

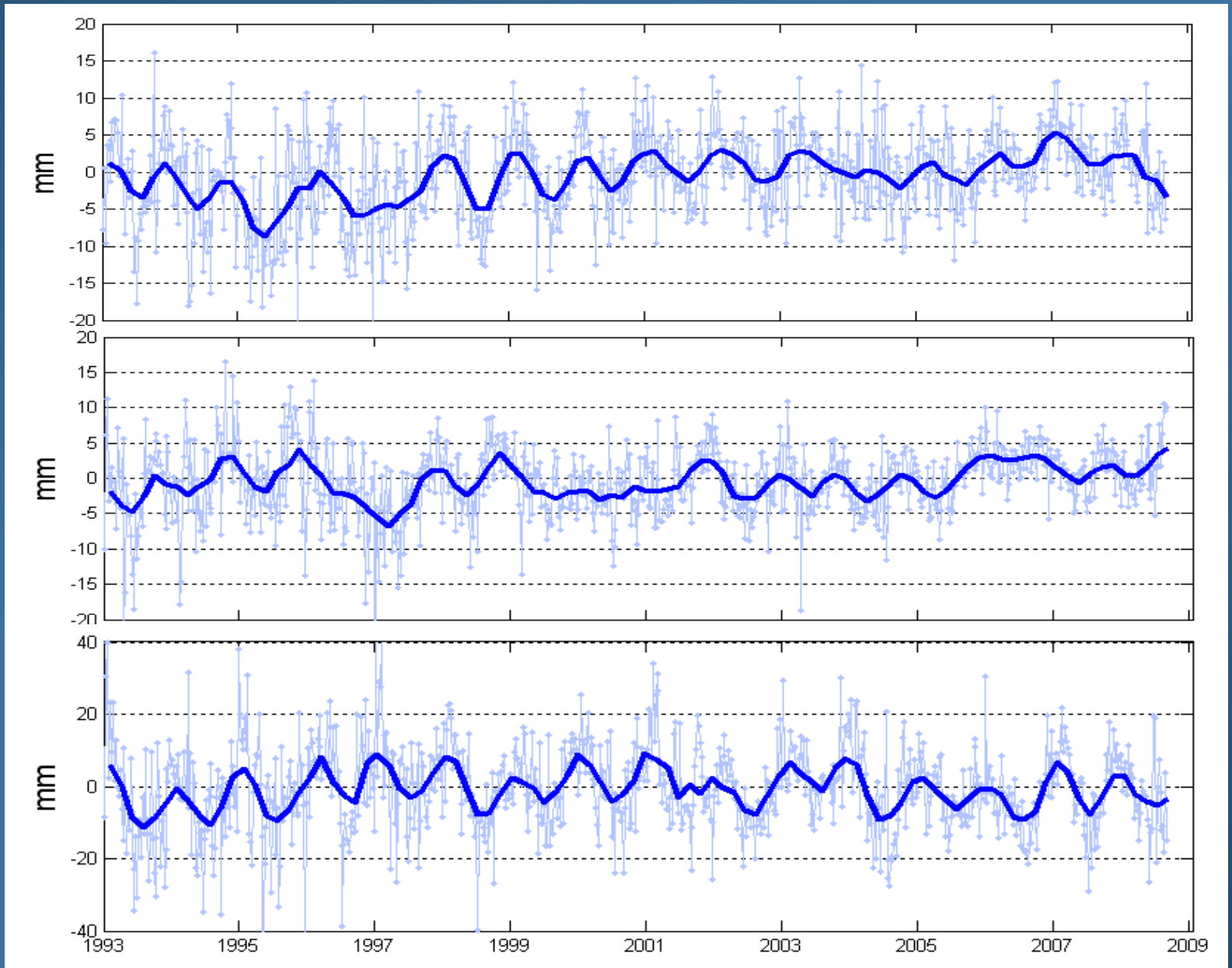


Translations to SLRF2005
(ASI v12 time series)

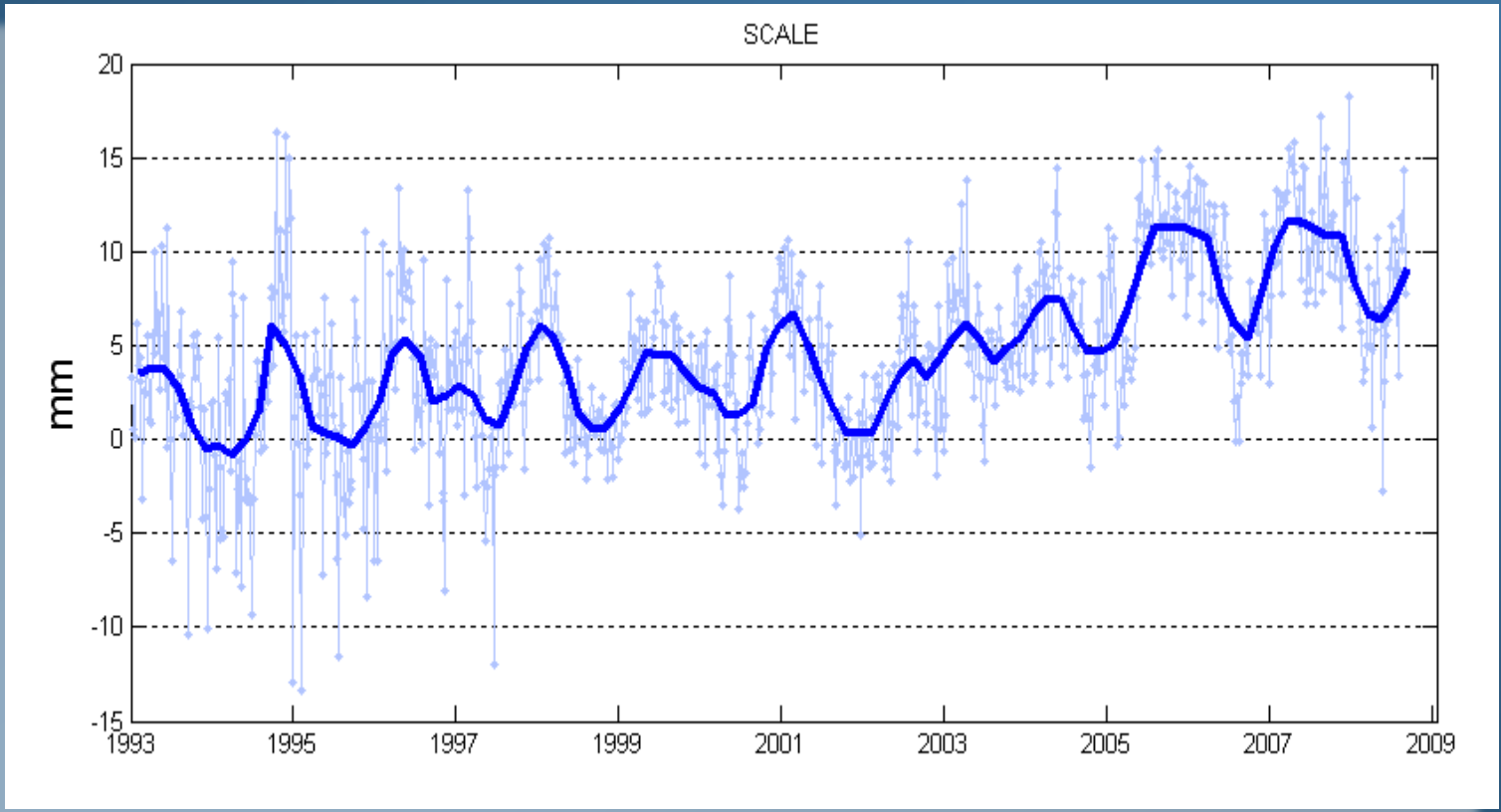
TX

TY

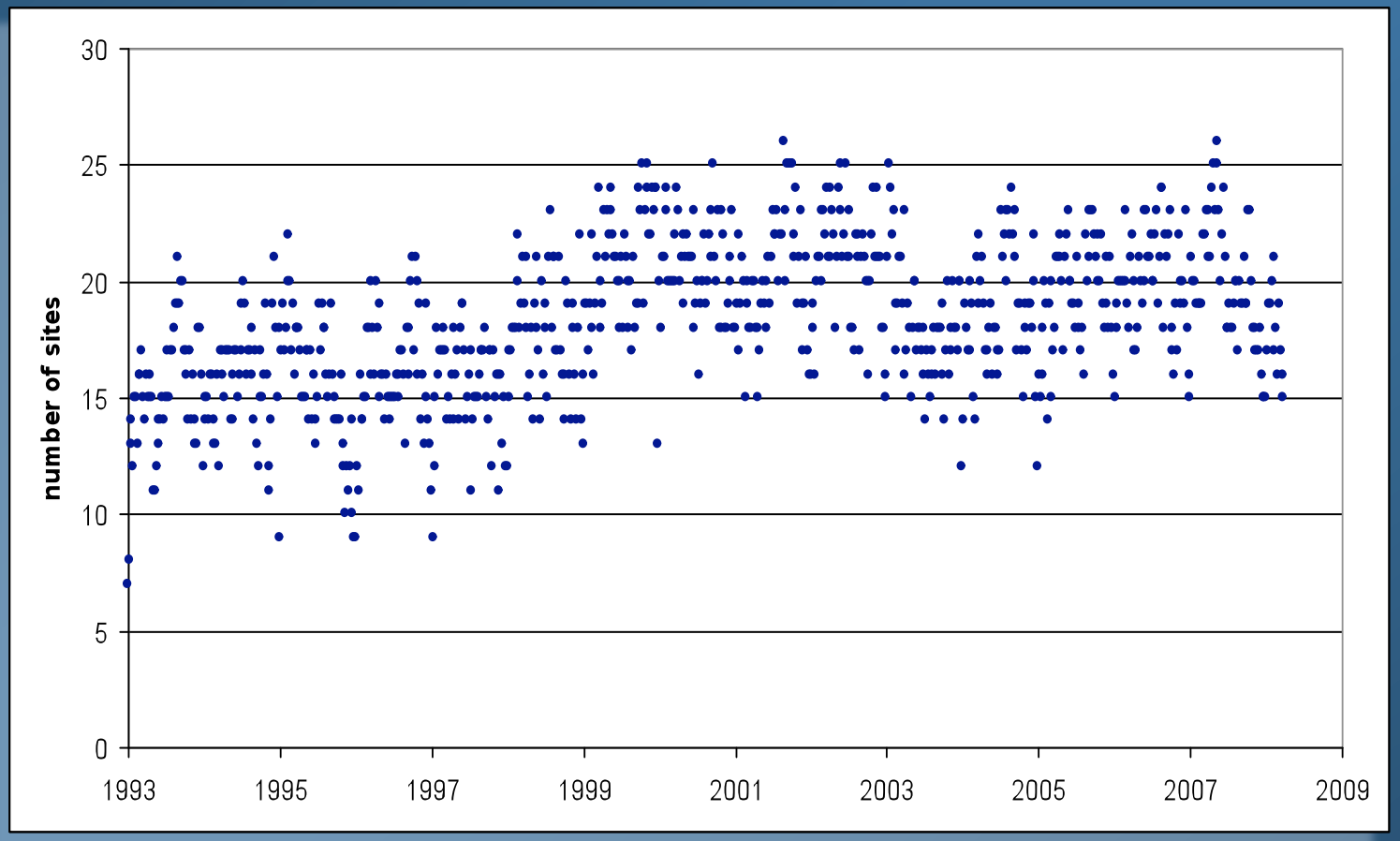
TZ



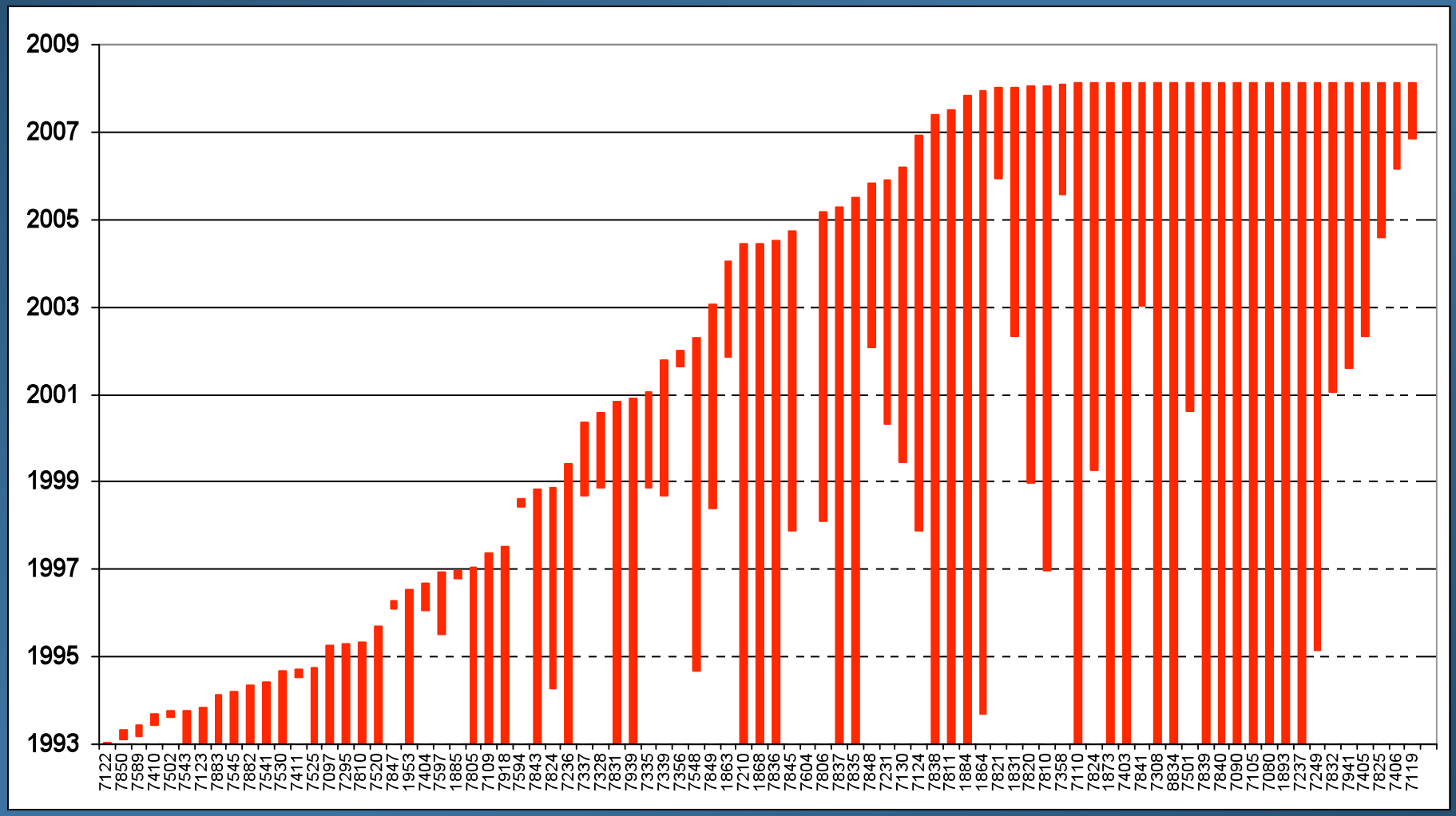
Scale to SLRF2005
(ASI v12 time series)



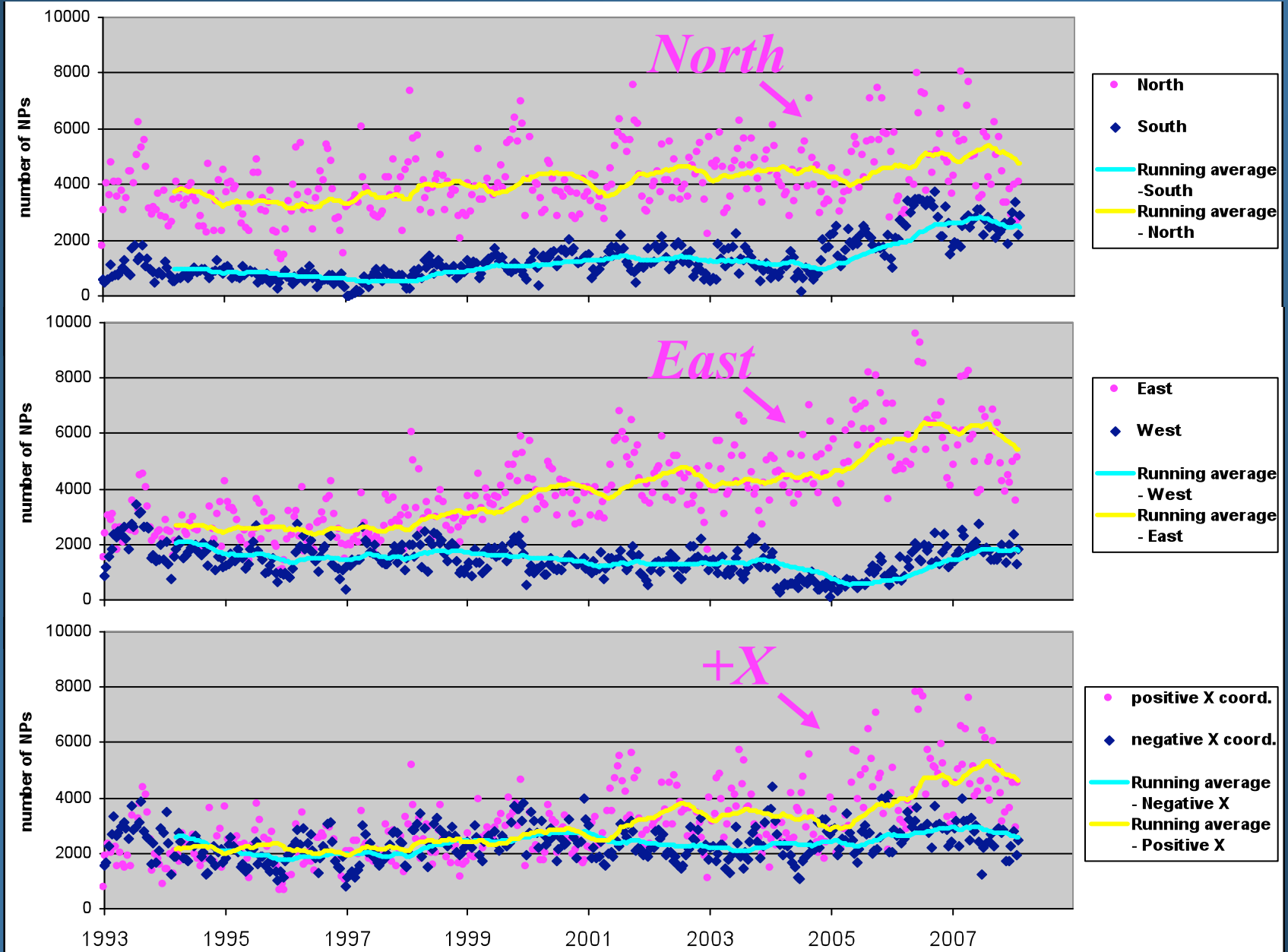
The number of sites in the SLR network



The SLR network temporal coverage



LAGEOS 1/2 data Geographical distribution



The *data barycenter*

A weekly time series of the LAGEOS 1/2 *data barycenter* has been computed, expressed as coordinates (*dX*,*dY*,*dZ*) in the ITRF reference frame.

$$dX = \sum_i X_i n_i / N_{tot}$$

$$dY = \sum_i Y_i n_i / N_{tot}$$

$$dZ = \sum_i Z_i n_i / N_{tot}$$

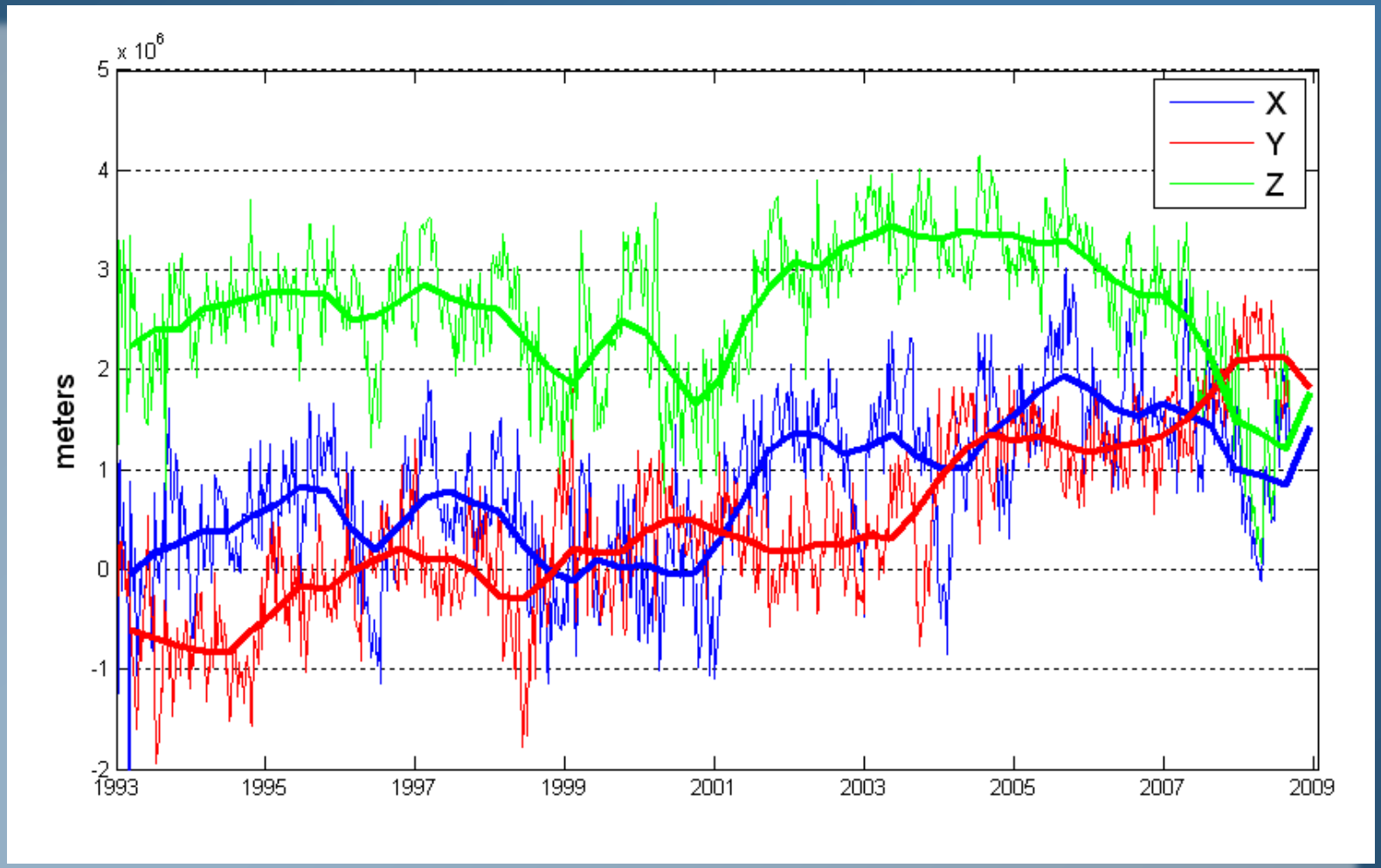
where:

X_i, , Y_i, Z_i : X, Y, Z coordinate of the i-th site of the week

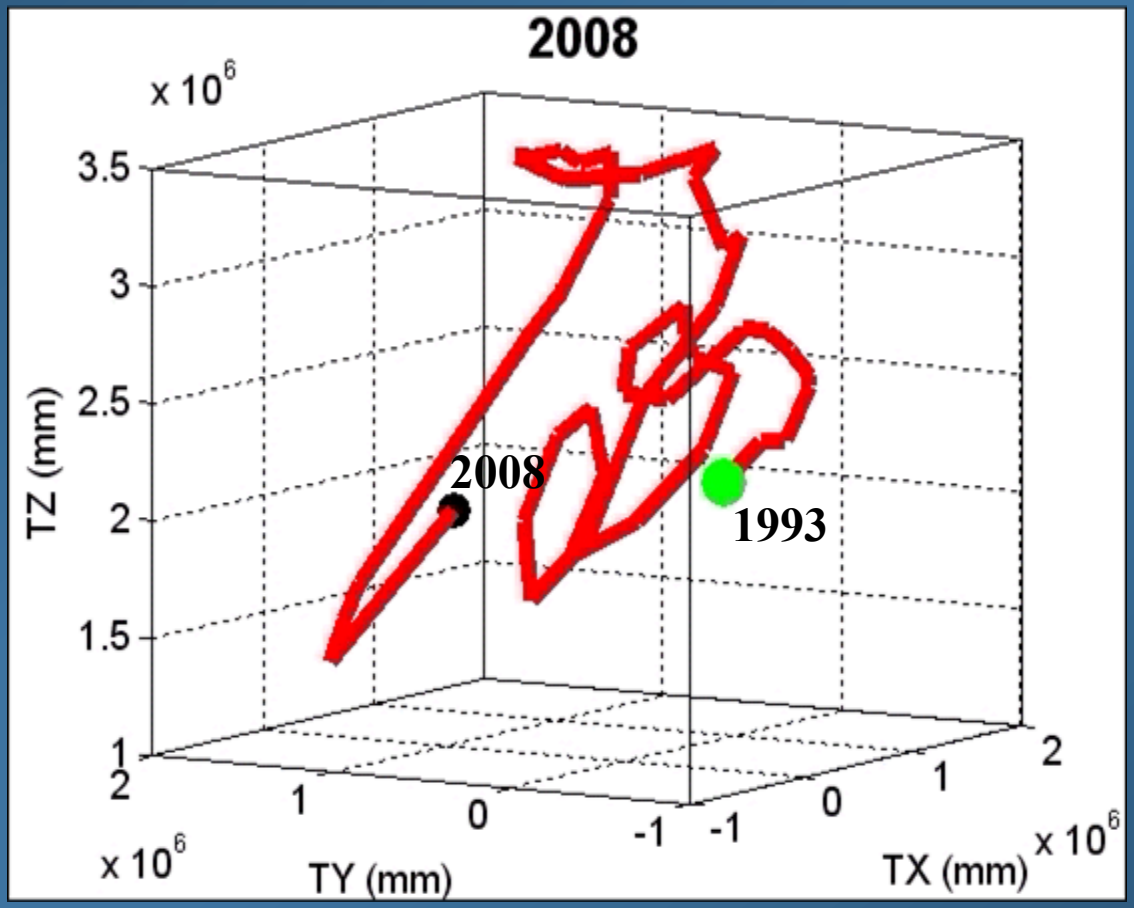
n_i : number of observations of the i-th site of the week

N_{tot} : total number of observations in the week

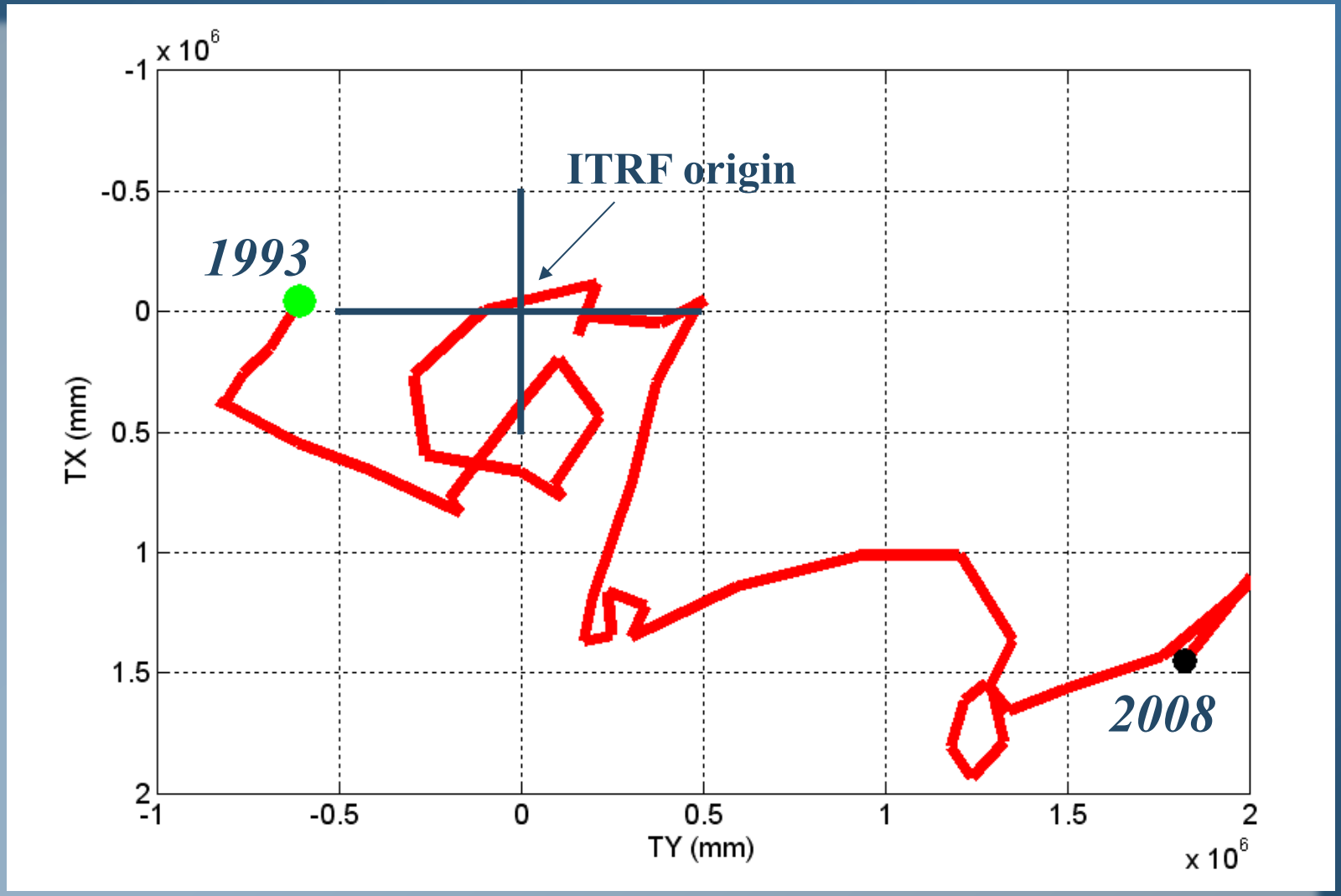
The data barycenter



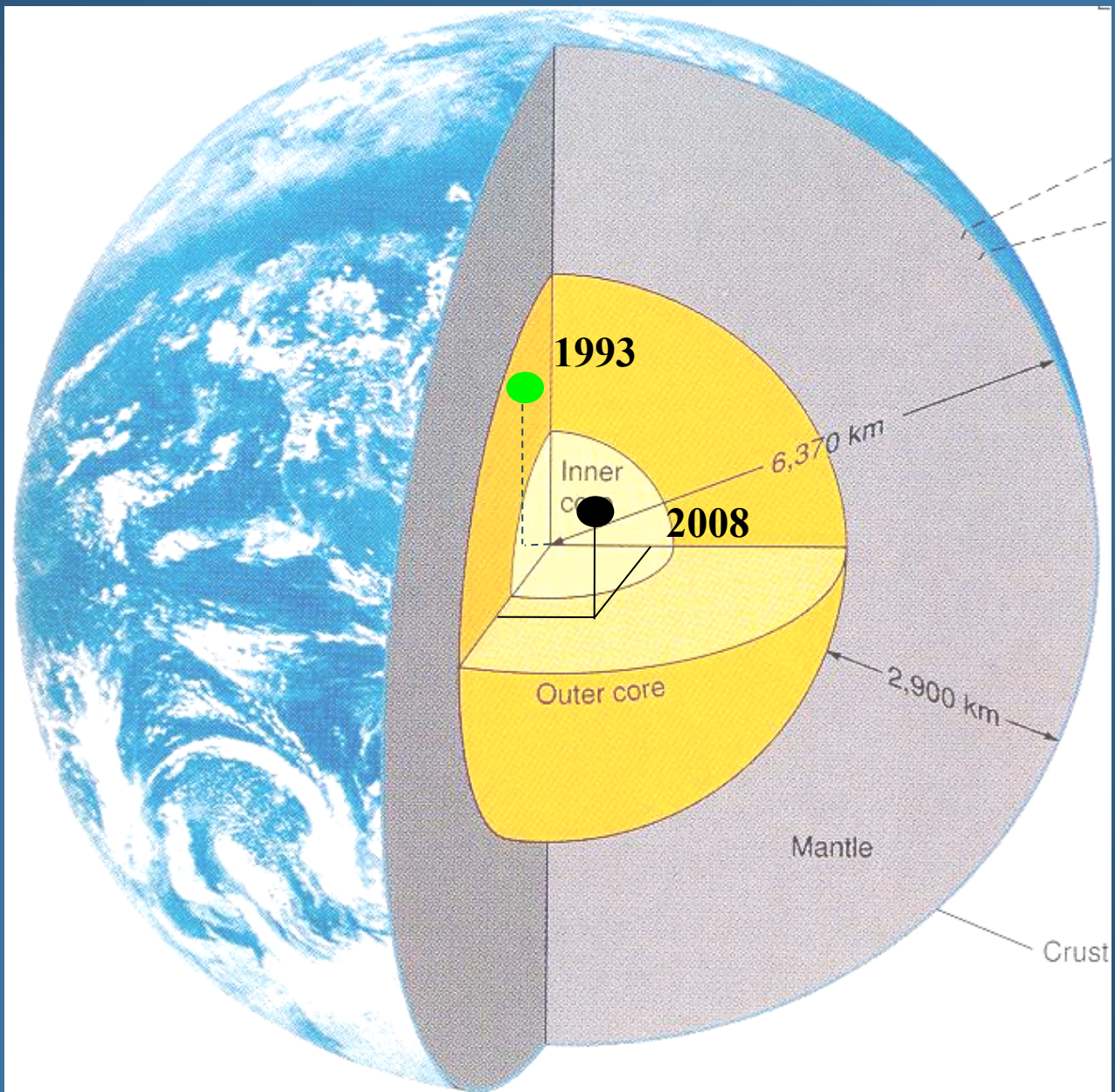
3D data barycenter evolution



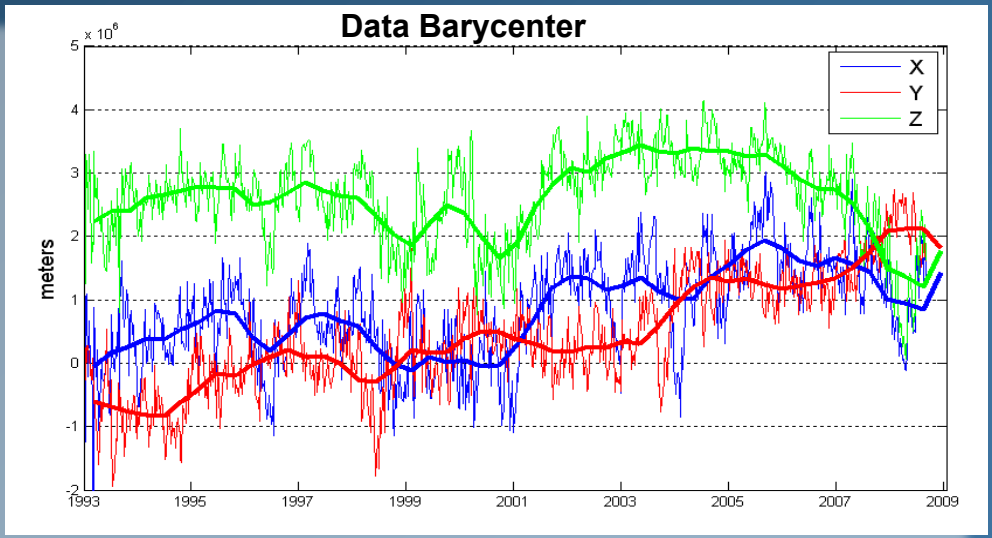
Data barycenter on the XY plane

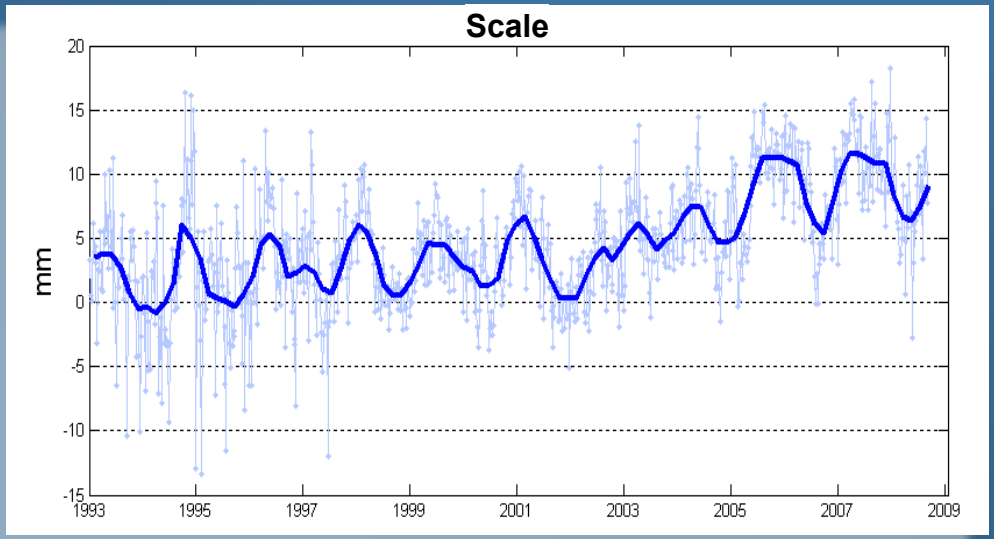


The data barycenter position



Correlations





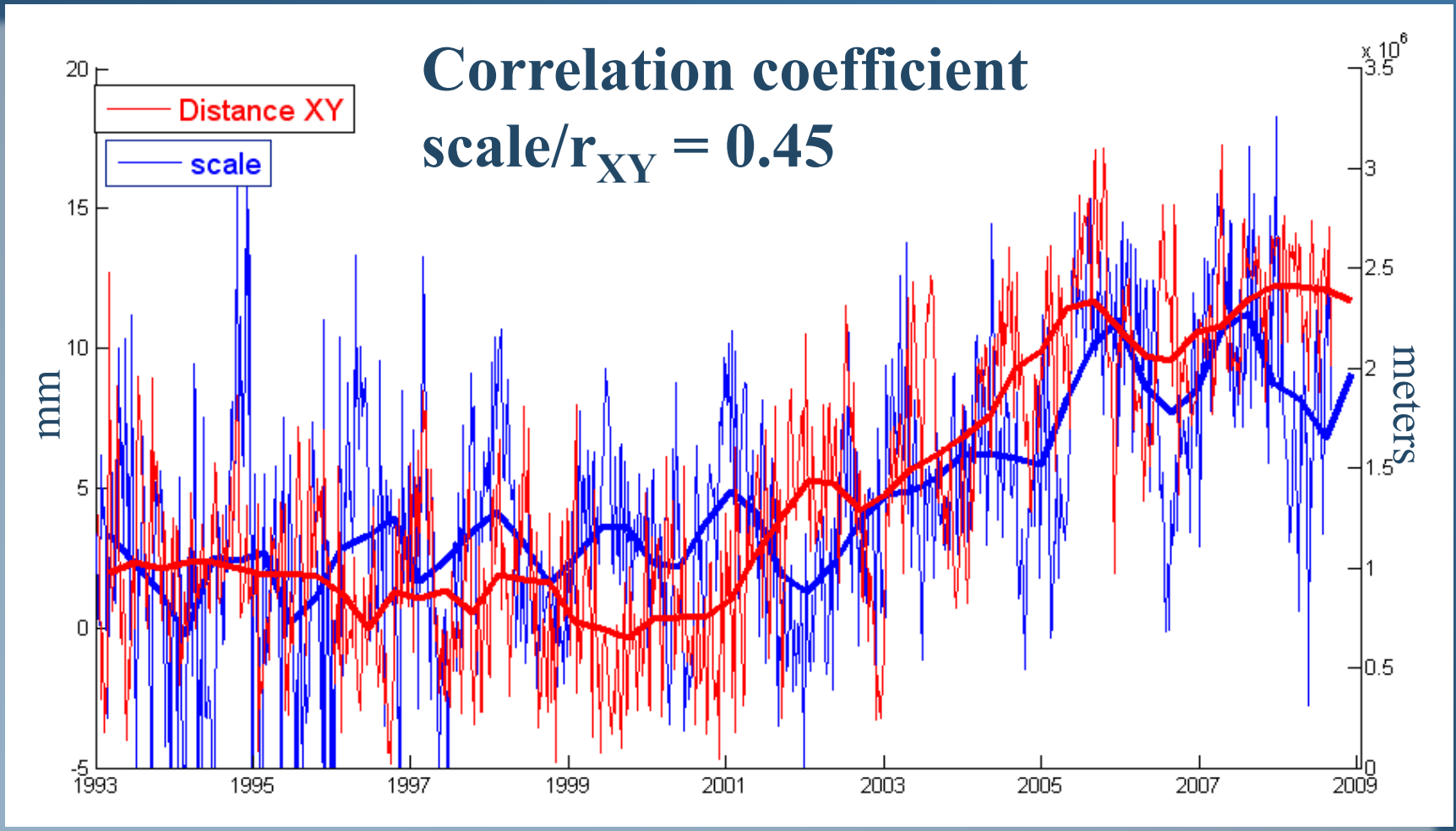
Correlation coefficients

scale/X = 0.32

scale/Y = 0.45

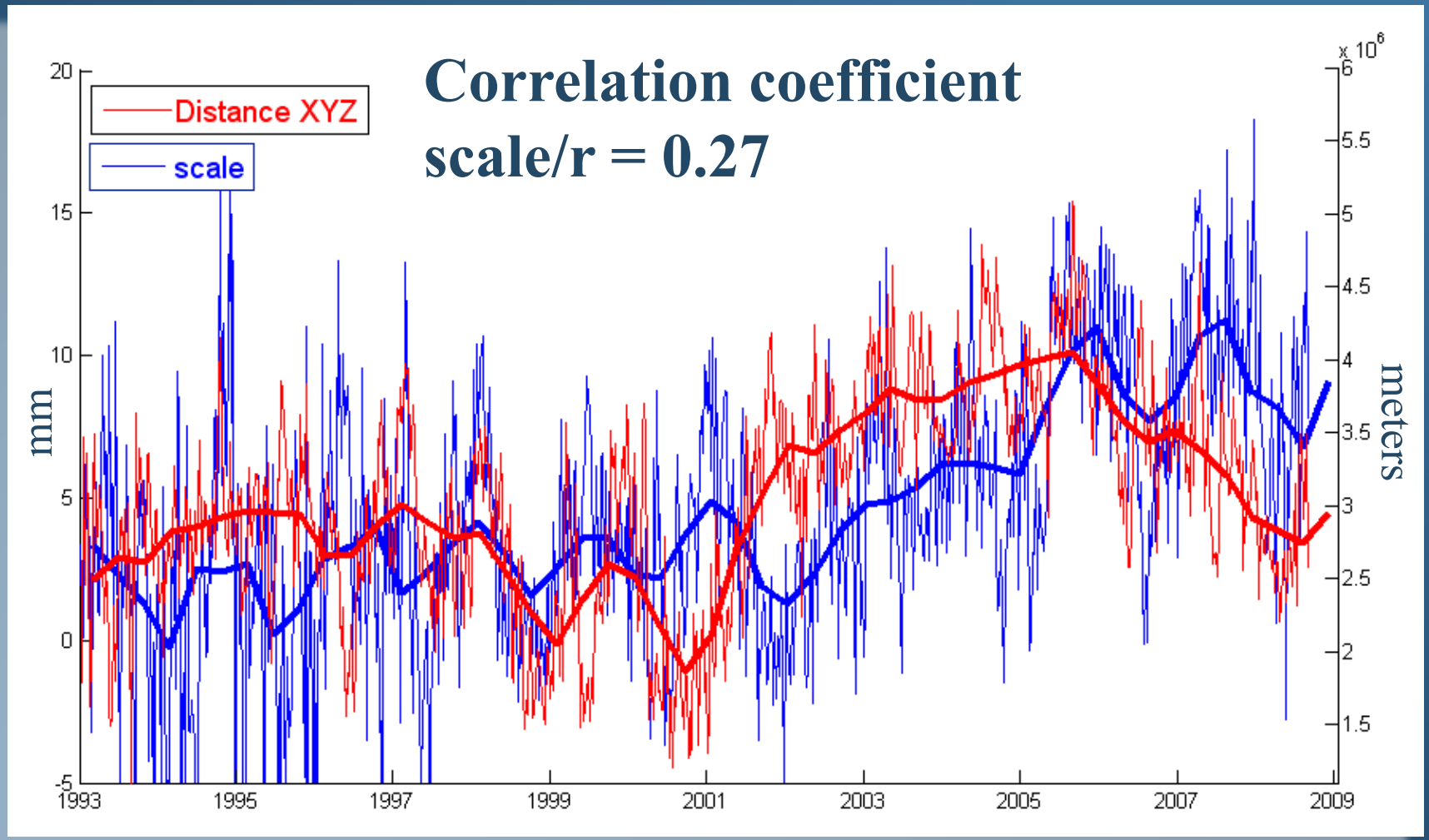
scale/Z = 0.06

XY eccentricity vs scale



r_{XY} = distance of the data barycenter from the ITRF origin, in the XY plane (equator)

3D eccentricity vs scale



r = distance of the data barycenter from the ITRF origin

Concluding remarks

- Unbalanced data distribution since 2002
- Possible effect of the longitudinal data distribution on the scale to SLRF2005
- No evidence of the North/South data distribution influence on the scale to SLRF2005
- Further investigations with network simulation to:
  - ✓assess the correlation scale/data barycenter
  - ✓check the reliability of scale estimation