Gravity field models under test
(for the period before 2002)

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Gravity field models under test

- **EIGEN-GL04S** : Based on 4.5 years of GRACE+LAGEOS data. 1/y and 2/y periodic variations. Drifts are not considered.

- **EIGEN-6S2** : Based on the same data as EIGEN-6C2. Full degree 2 replaced by annual PWL model between 1985 and 2012 (from LAGEOS-1&2 + GRACE GRGS RL02 time series). 1/y and 2/y periodic variations.

- **EIGEN-6S2.v5** : Same as **EIGEN-6S2**, except that all degrees between 3 and 50 have been replaced by annual PWL model between 2003 and 2012 (from GRACE+LAGEOS RL02 time series). 1/y and 2/y periodic variations.
  Extrapolation before 2003 and after 2012: Constant biases + 1/y and 2/y periodic variations.

C(2,0) coefficient
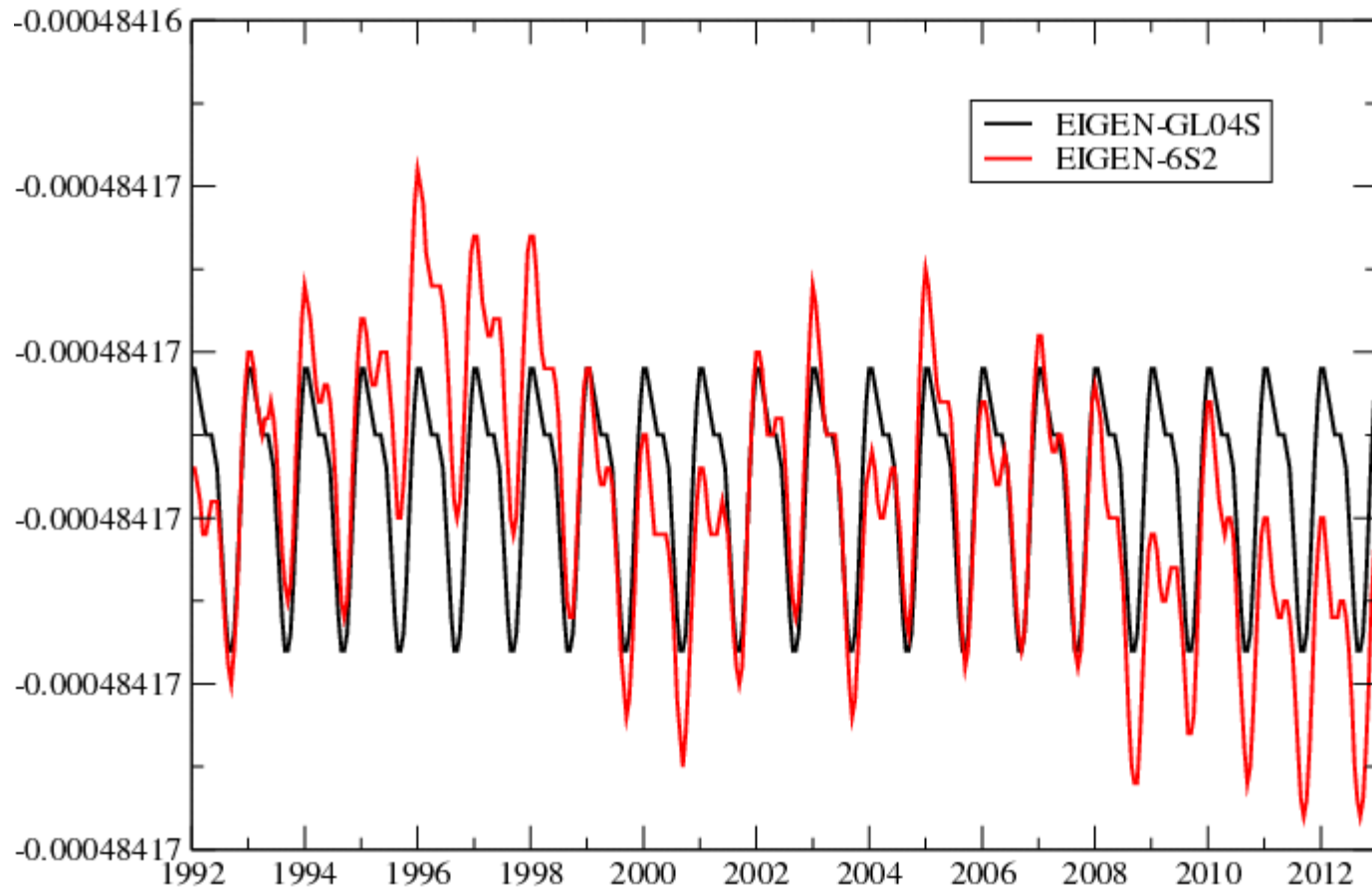
S(10,2) coefficient
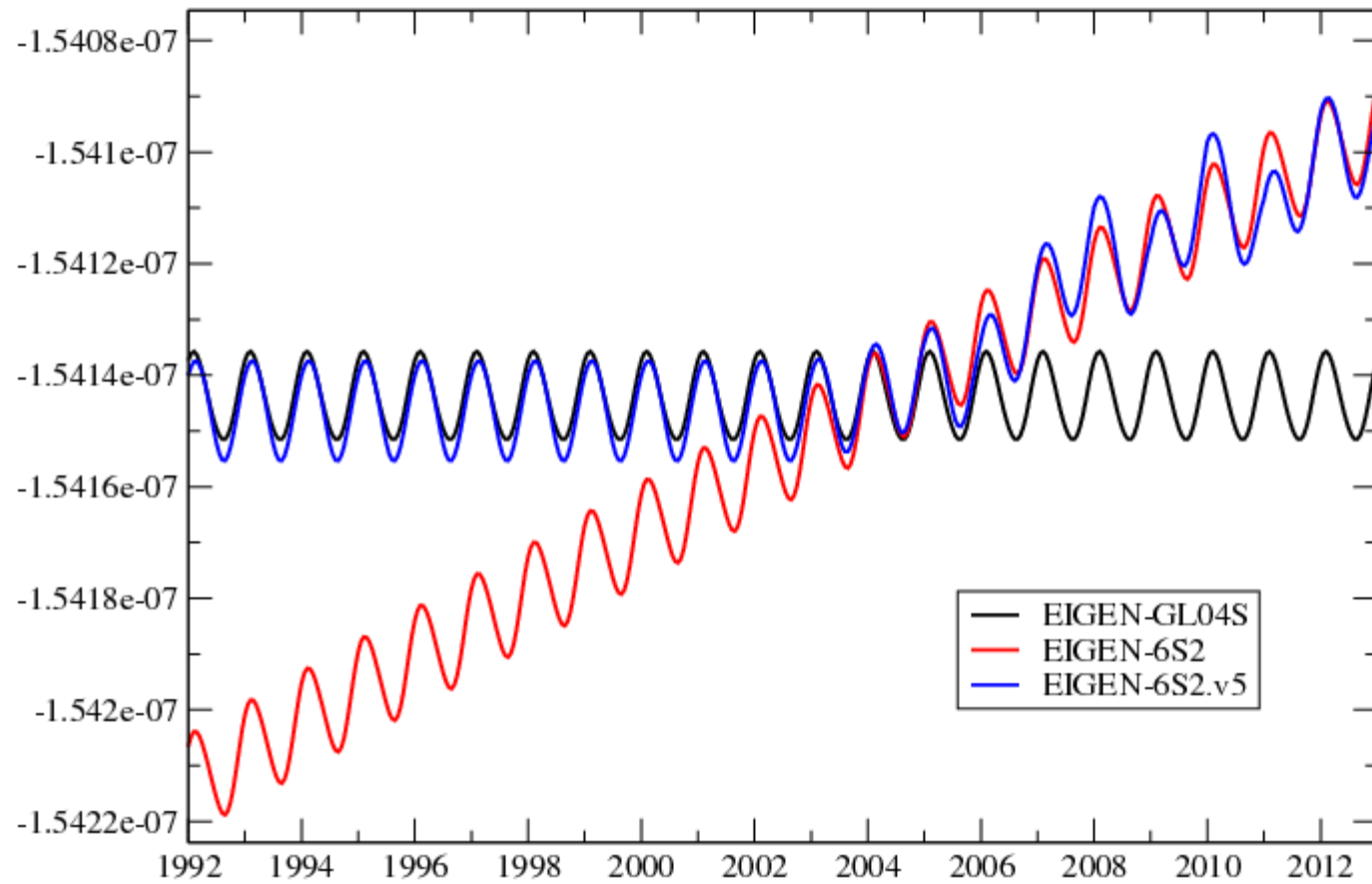
SLR and XOVER residuals

- **ERS-1**

	SLR [cm]	SXO [cm]	Number of arcs used	Geopotential model	Comment
CCI04	2.145824	4.735484	376 / 362	EIGEN-GL04S	gives smallest RMS fits
CCI13	2.219406	4.843073	375 / 361	EIGEN-6S2	

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ERS-2

	SLR [cm]	SXO [cm]	Number of arcs used	Geopotential model	Comment
CCI04	1.684111	4.097691	793 / 779	EIGEN-GL04S	gives smallest RMS fits
CCI13	1.733231	4.130400	793 / 779	EIGEN-6S2	

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ENVISAT

	SLR [cm]	SXO [cm]	Number of arcs used	Geopotential model	Comment
CCI07	1.327476	0.043178	662 / 648	EIGEN-GL04S	
CCI13	1.278550	0.043151	662 / 648	EIGEN-6S2	gives smallest RMS fits

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TOPEX/Poseidon

	SLR [cm]	SXO [cm]	Number of arcs used	Geopotential model	Comment
CCI01	2.031886	0.047977	494 / 459	EIGEN-GL04S	gives smallest RMS fits
CCI04	2.053563	0.048004	494 / 459	EIGEN-6S2	

Conclusions

Over the years before 2002:

- For the older satellites, **EIGEN-GL04S** (without drifts) is still performing better than **EIGEN-6S2**.

- The only satellite for which **EIGEN-6S2** is superior to **EIGEN-GL04S** is ENVISAT.

- We hope the results with **EIGEN-6S2.v5** will be more gratifying…