

Multi Year SLR Solution

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Motivation

- SLR TRF realization
- Contributions to various IERS projects
- Reference for station coordinates (*operational weekly computations*)
- J2 series
- Geocenter and scale

Satellite Tracking Data Used

- All SLR tracking data
- LAGEOS-1: Jan. 1981 – May 2004
- LAGEOS-2: Oct. 1992 – May 2004
- 2 min. normal points computed at DGFI from FR-data, till 1988
- 2 min. normal points from CDDIS
- 2 min. onsite normal points, provided by EDC, since Dec. 1993

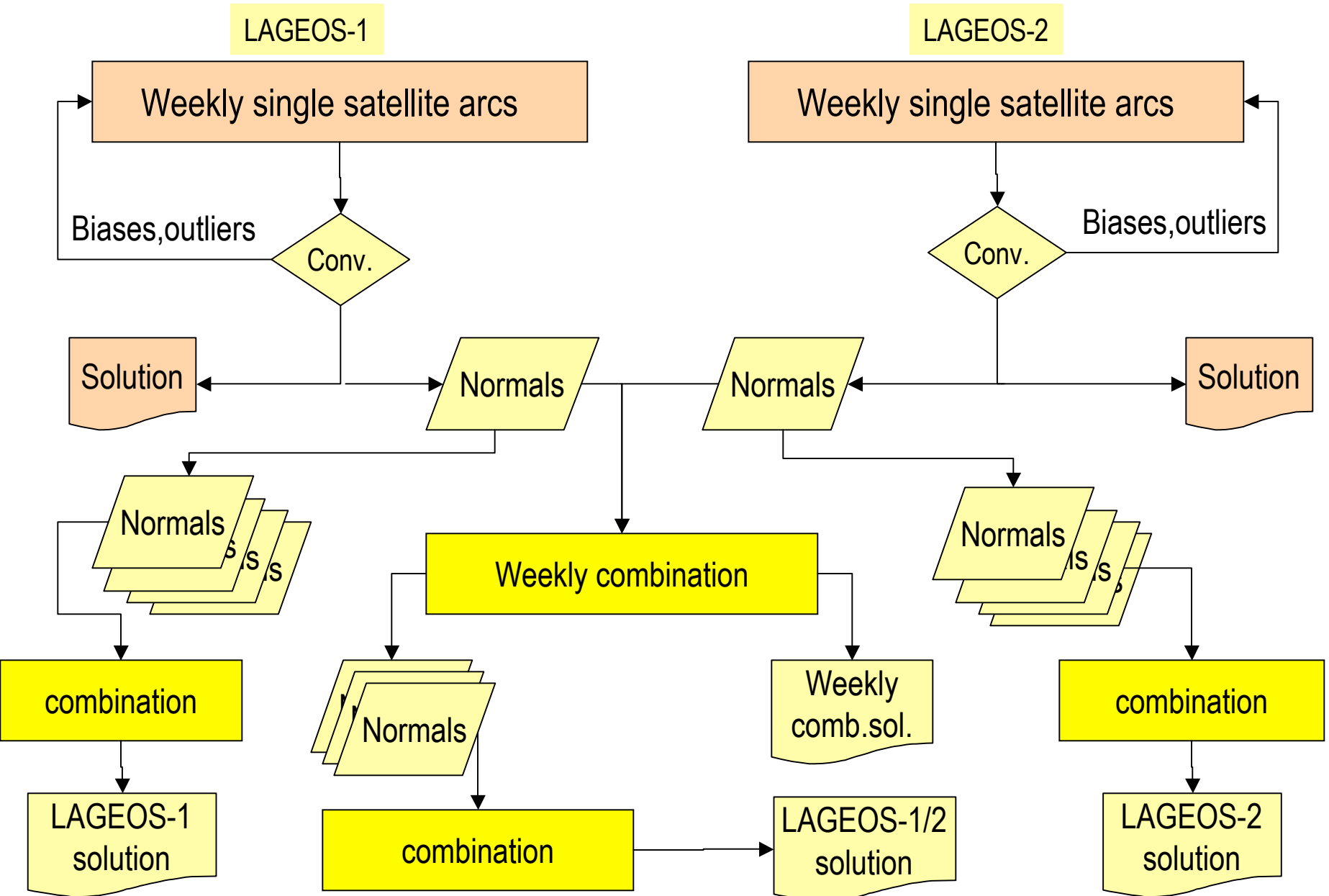
Models used for Weekly Arcs

- Models: IERS 2000 Conventions
- Gravity Field: EGM96(to 20x20)
- Biases: significant biases adjusted
- Weighting: loose constraints (1m)
- EOP IERS C04
- Apriori station coord./vel.: DGFI-solution
- Datum: no net rotation on core stations

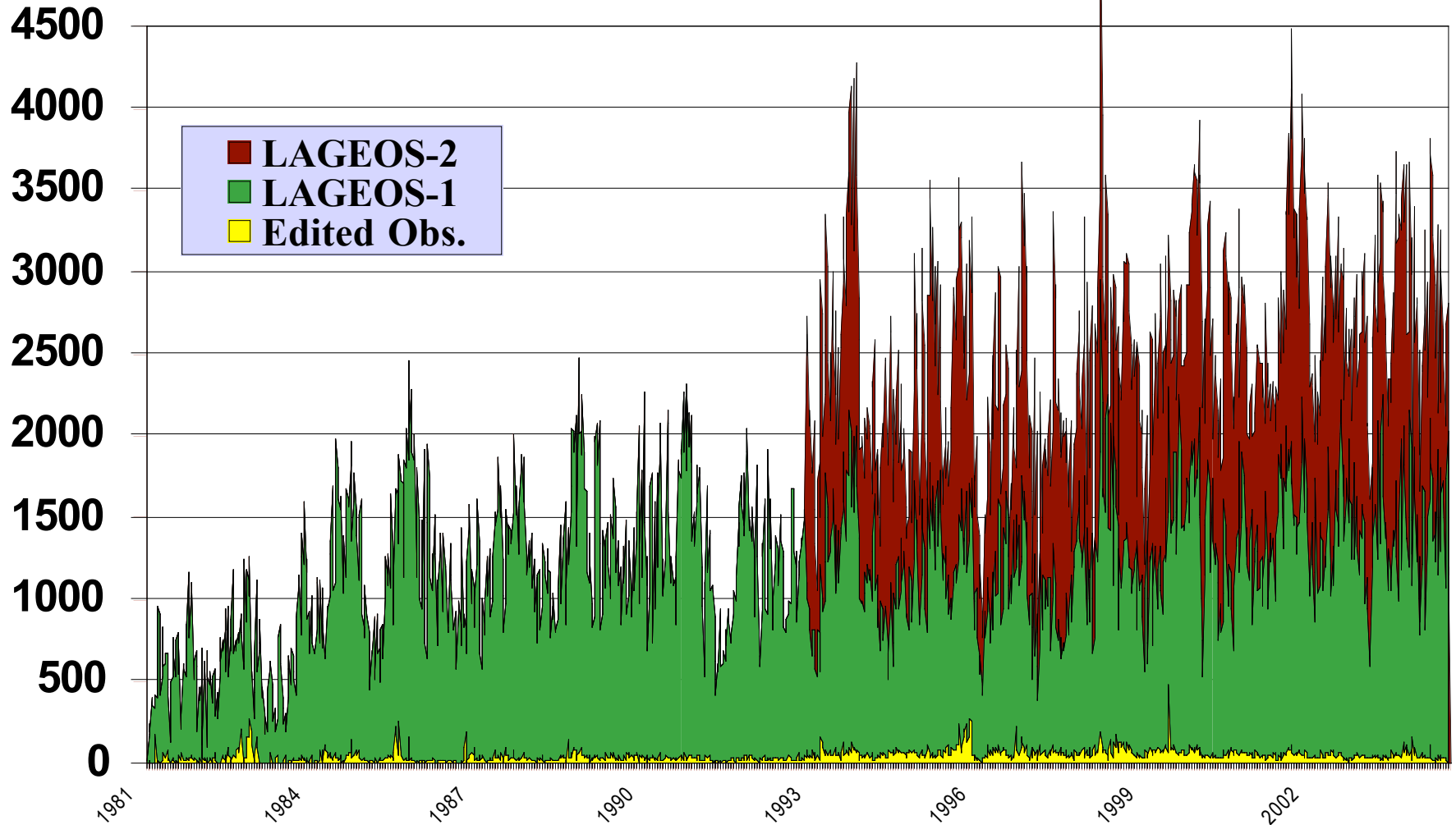
Solved Parameters

- 6 Orbital Elements
 - Once per rev. Along-track: 1/arc
 - Once per rev. Cross-track: 1/arc
 - Emp. Alongtrack-Parameter: 3/arc
 - Solar Radiation Correction: 3/arc
-
- Daily EOP's (X,Y,UT1)
 - Station Coordinates (epoch center of arc)

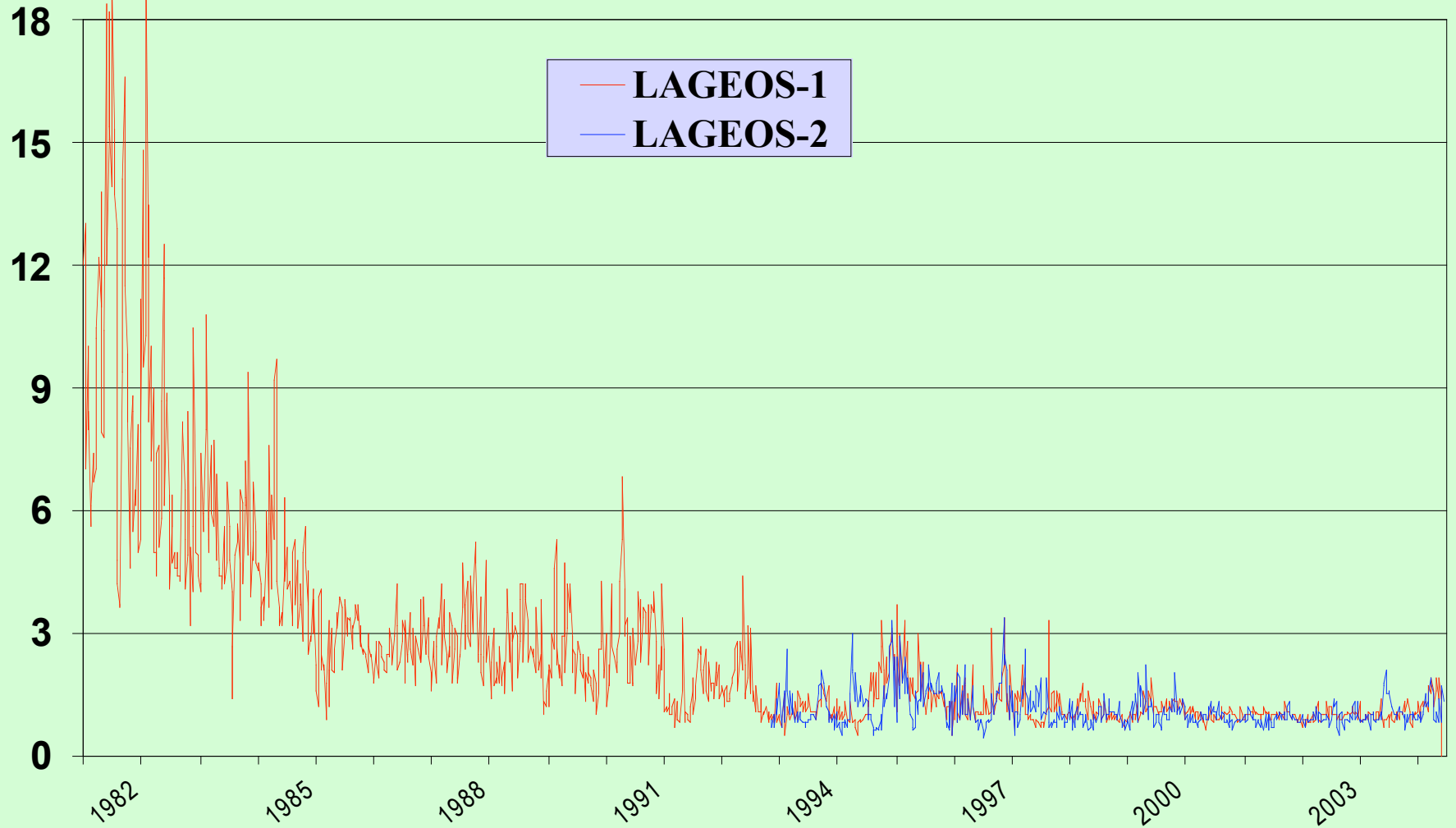
DOGS Processing Scheme



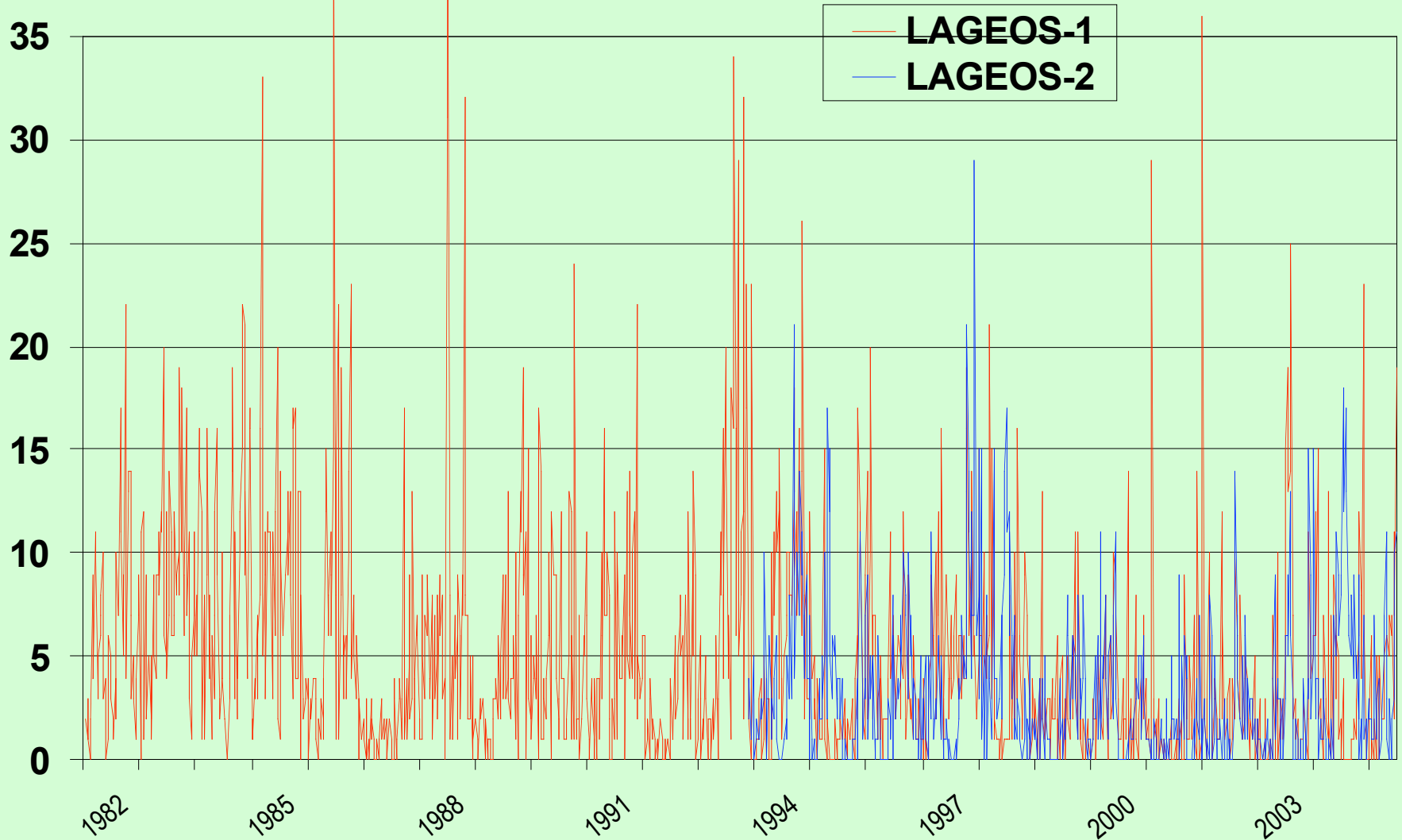
Number of Normal Points



Weekly Orbital Fit [cm]



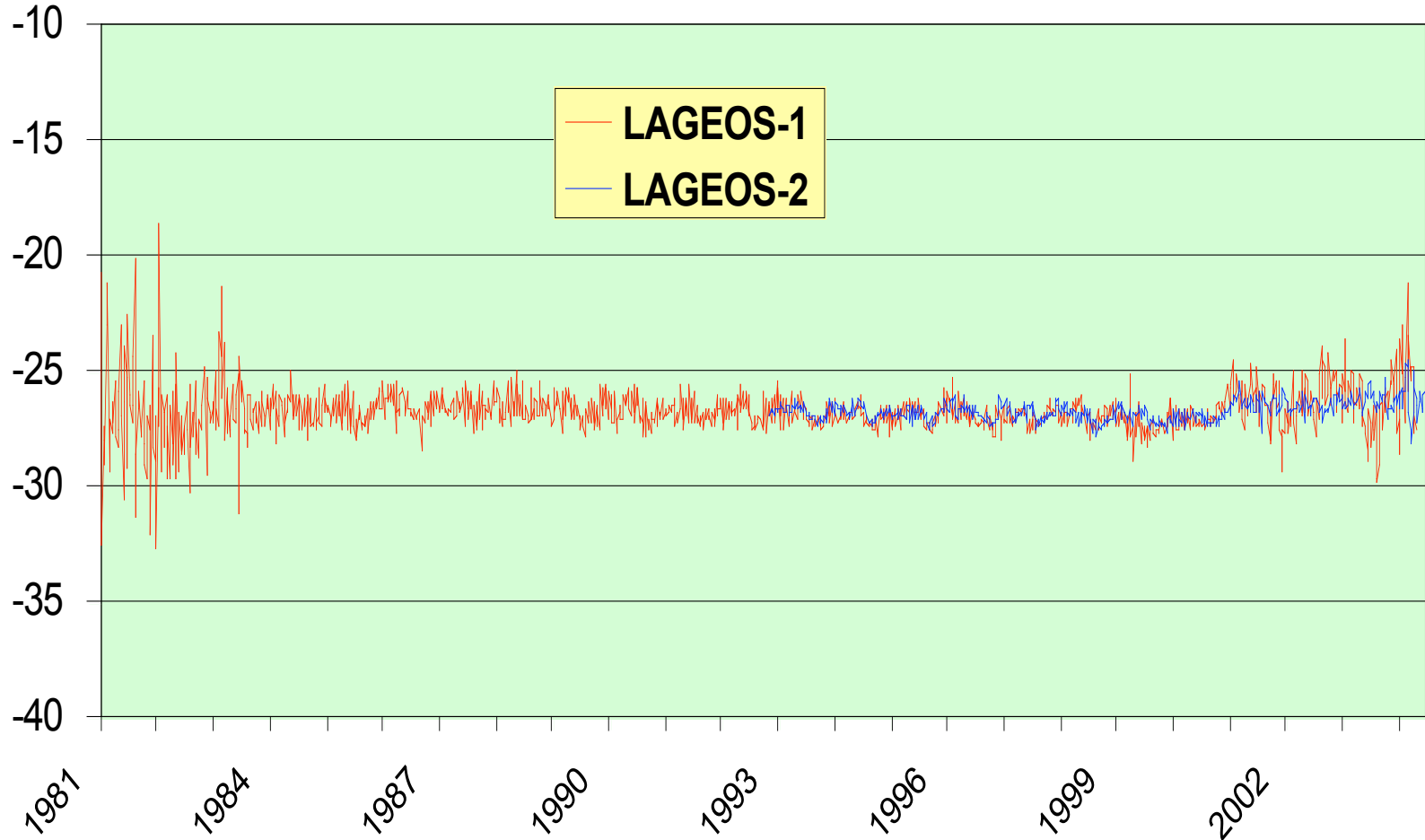
Number of Biases per Week



Weekly J2 Values

(Relative to $1.0826e-3$)

[1e-9]

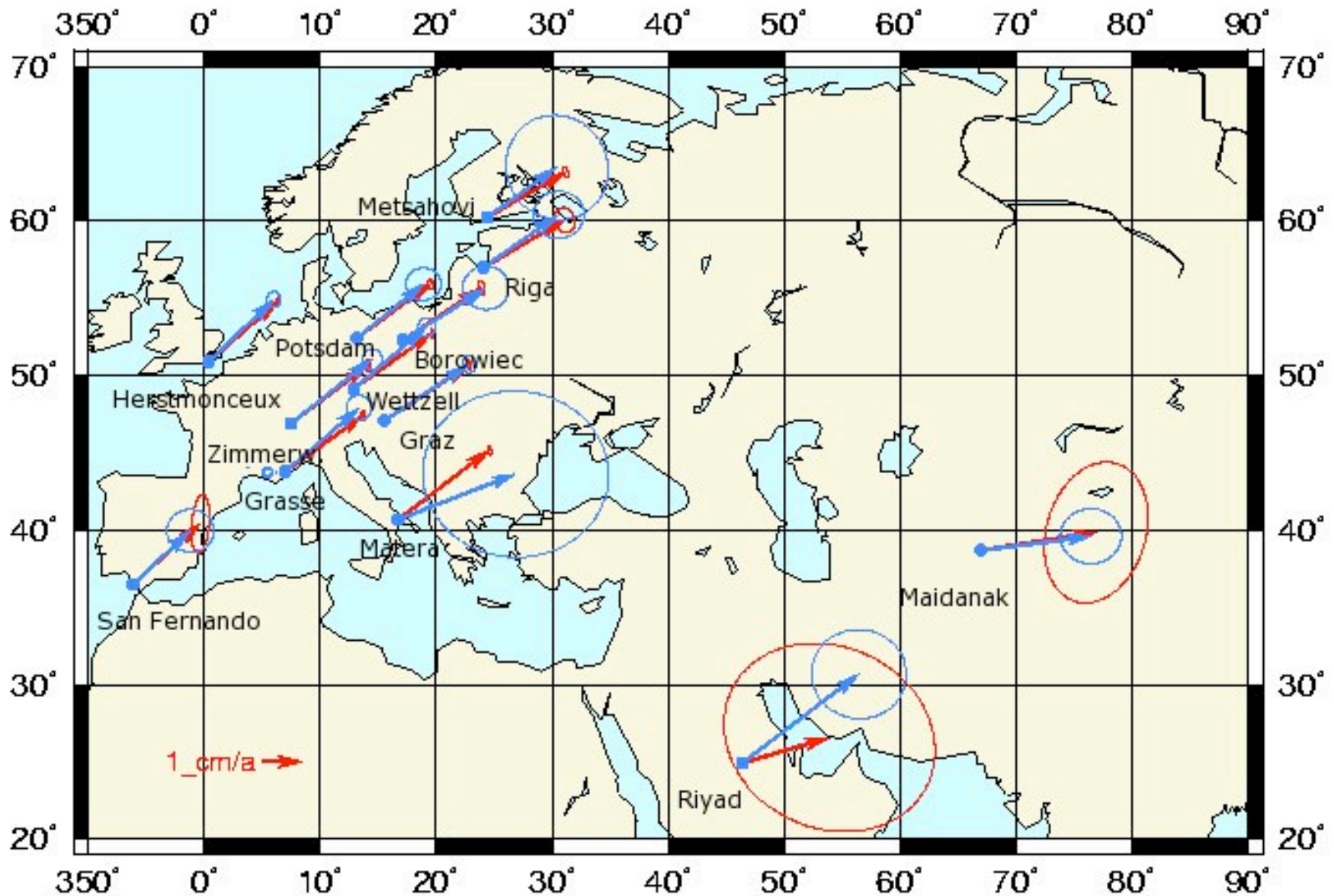


Recent Solution

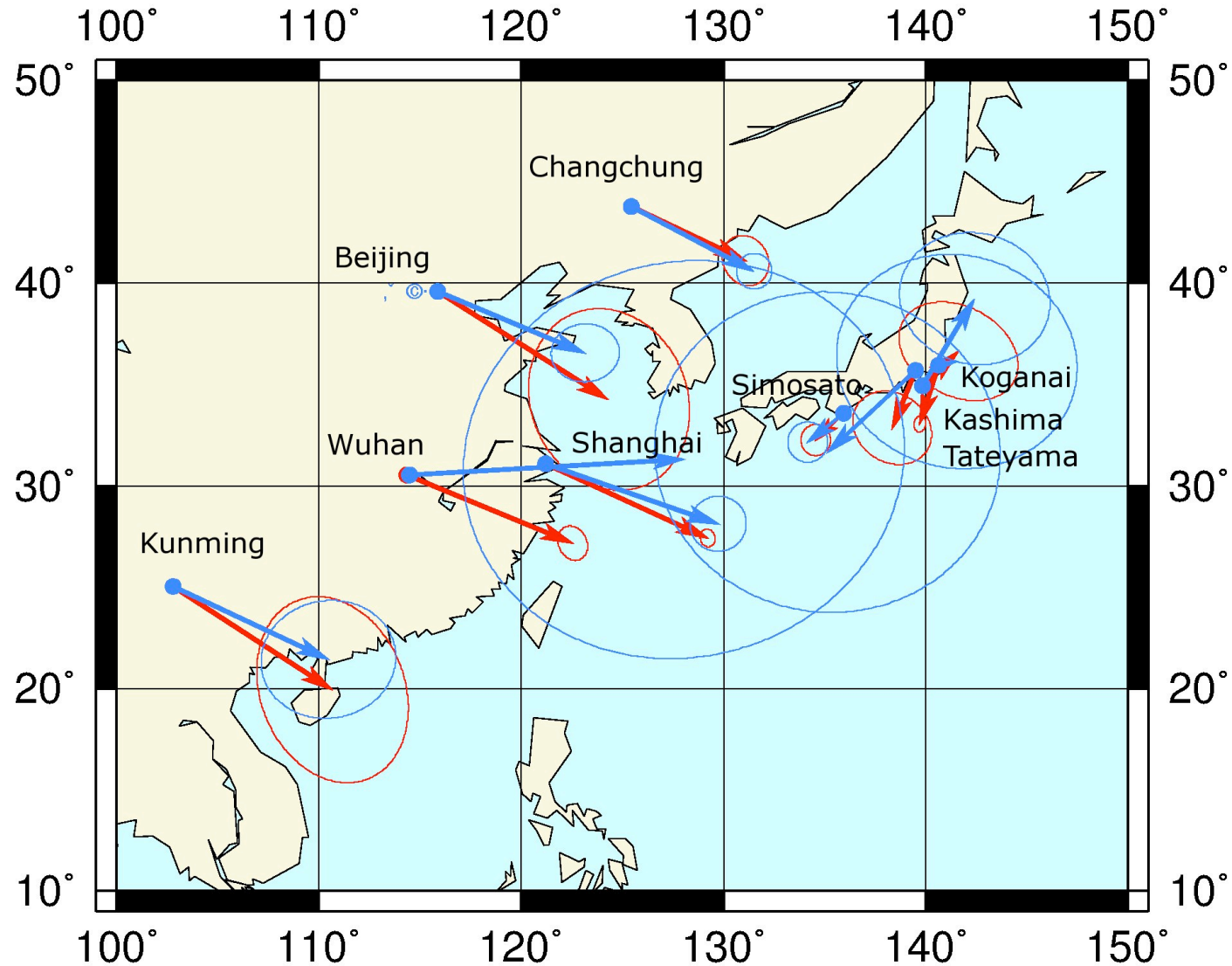
- Time span Jan. 1999 – May 2004
- LAGEOS-1 and 2 combined
- Datum: no net rotation conditions

- Comparison with ITRF2000
- Comparison with GPS and DORIS on weekly basis

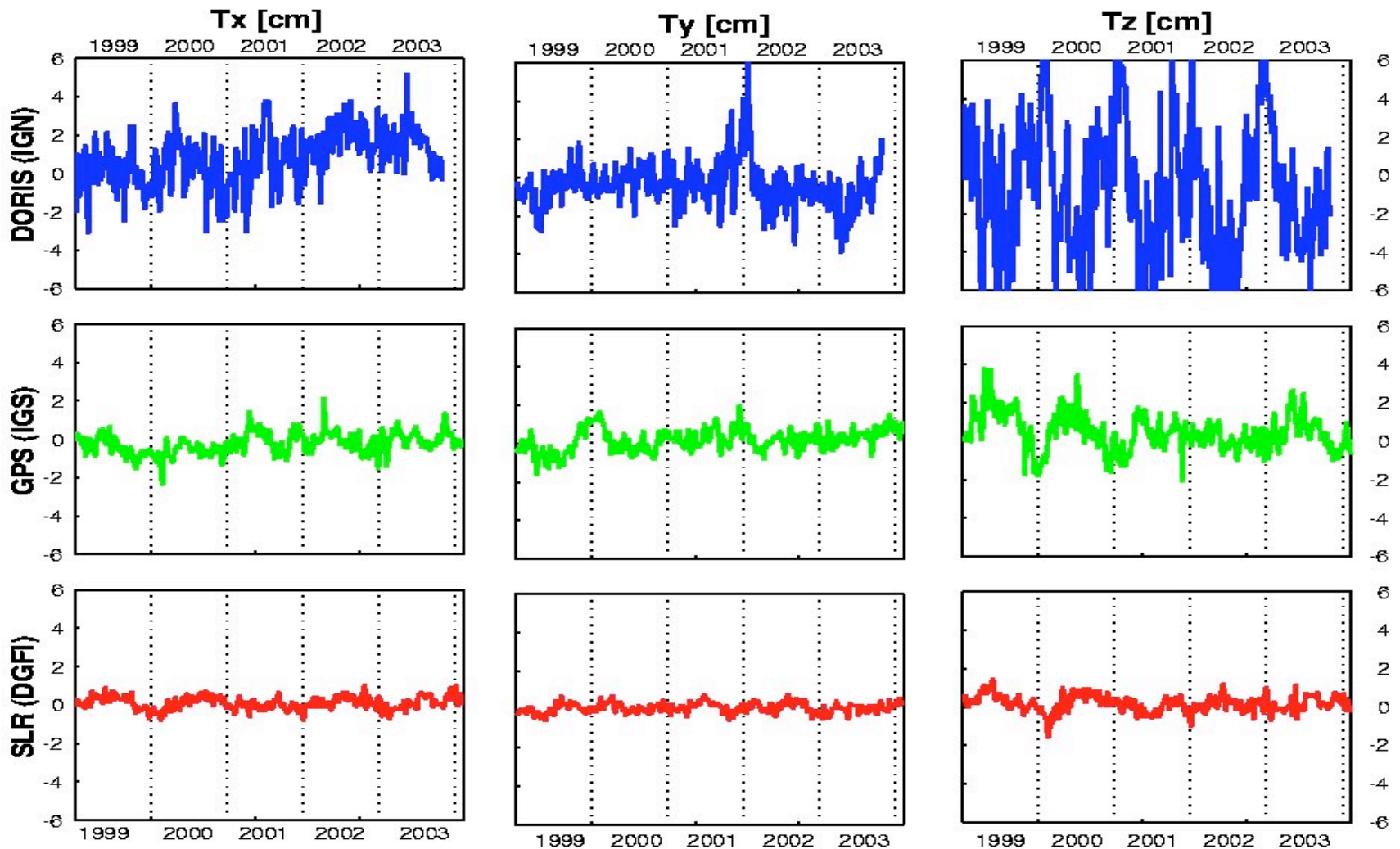
Comparison DGFI - ITRF2000 (Europe)



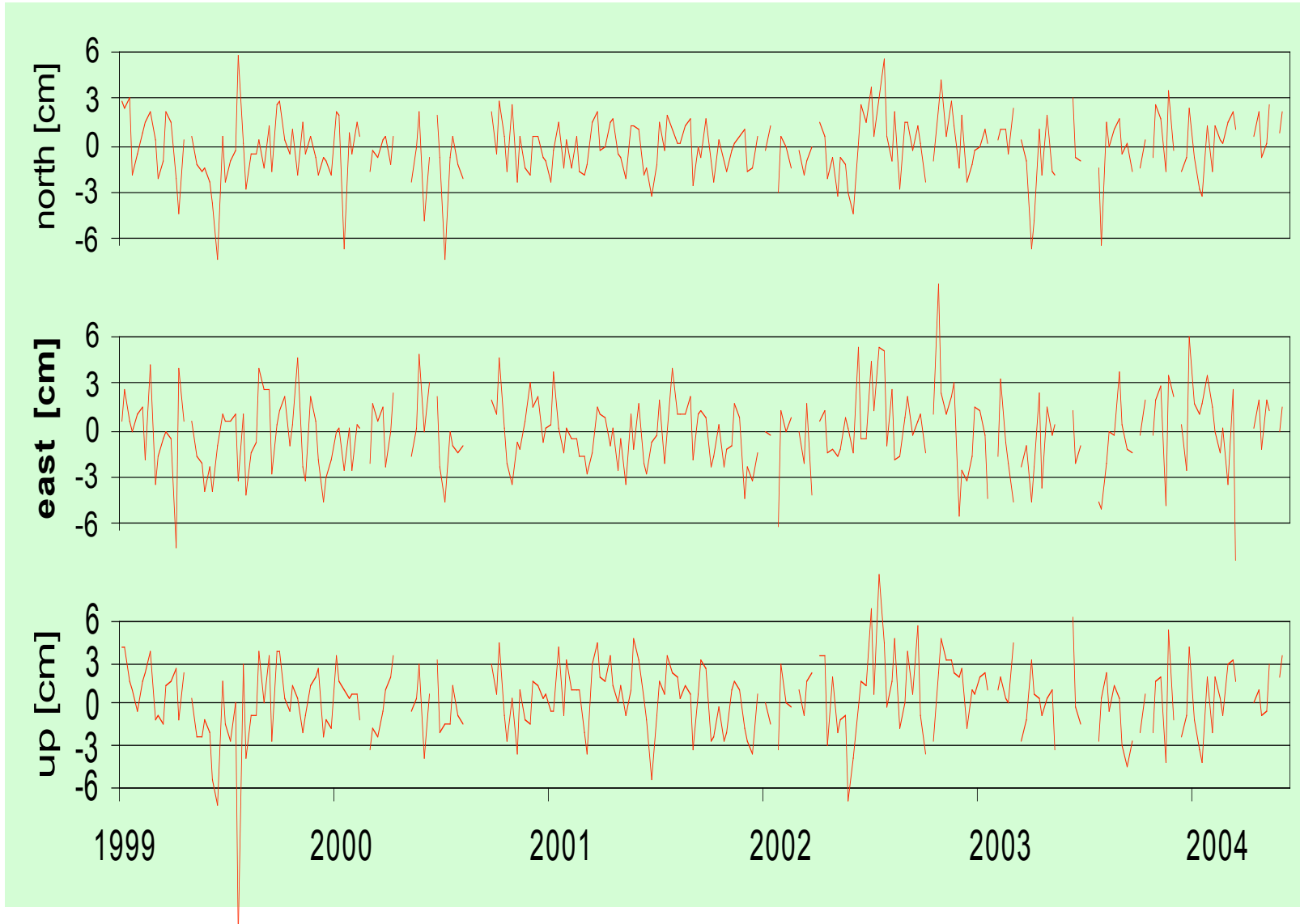
Comp. DGFI – ITRF2000 (East Asia)



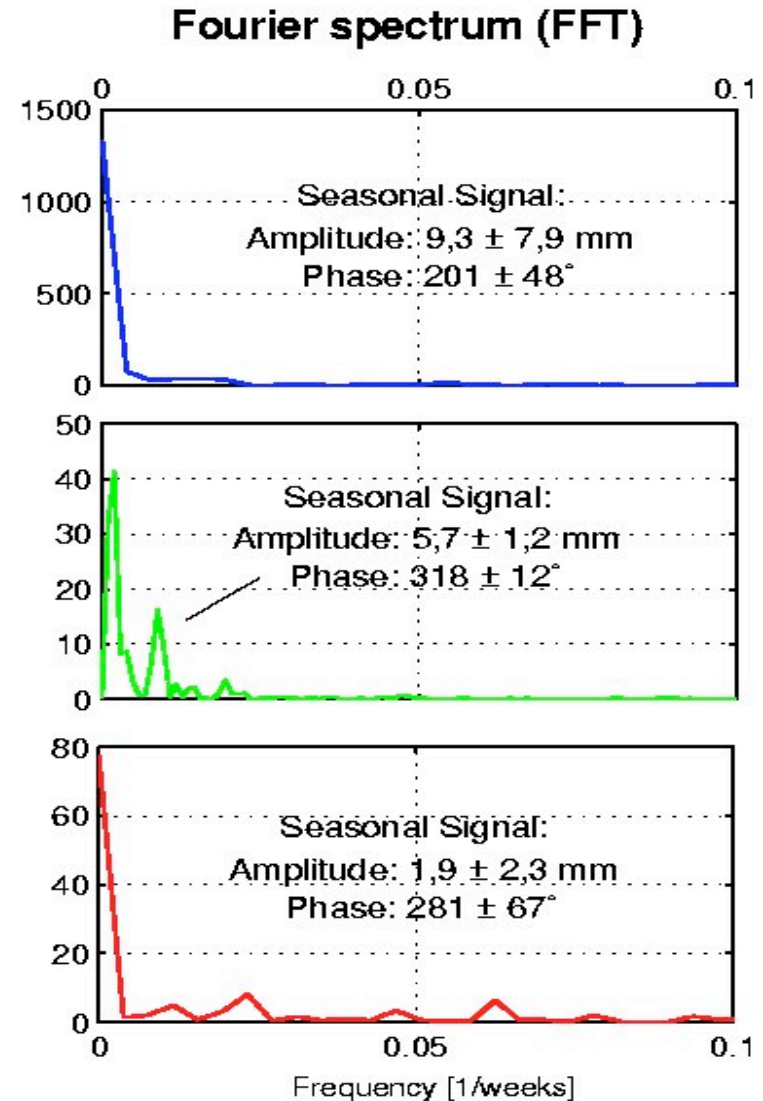
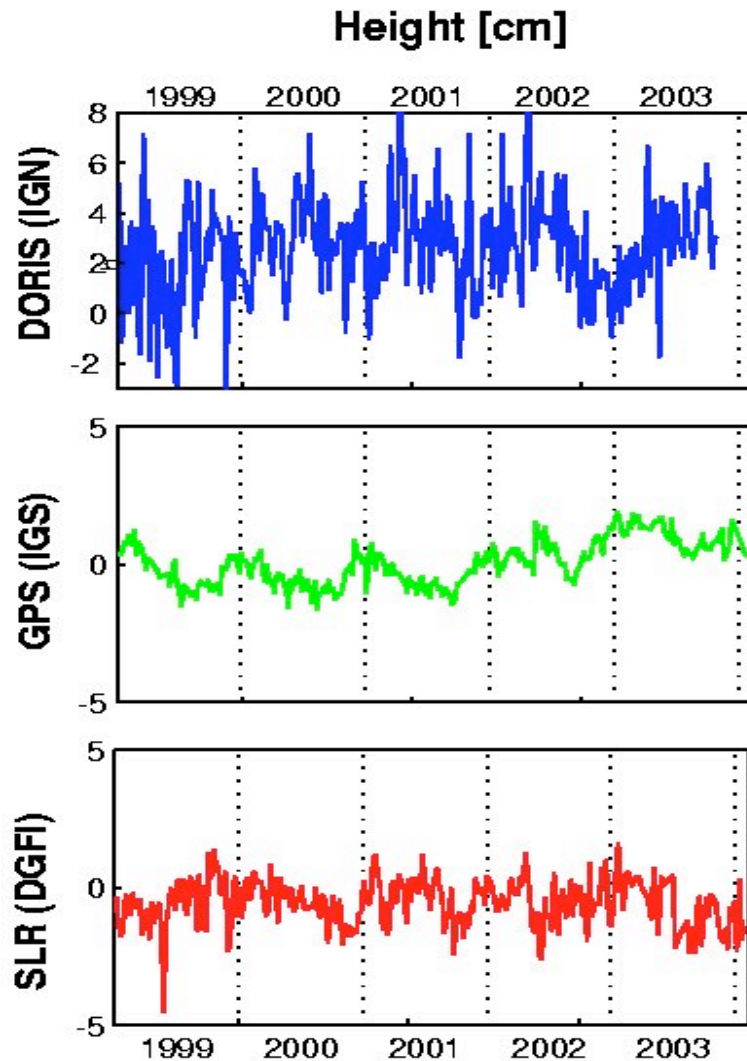
Time Series of Weekly Translation Parameters



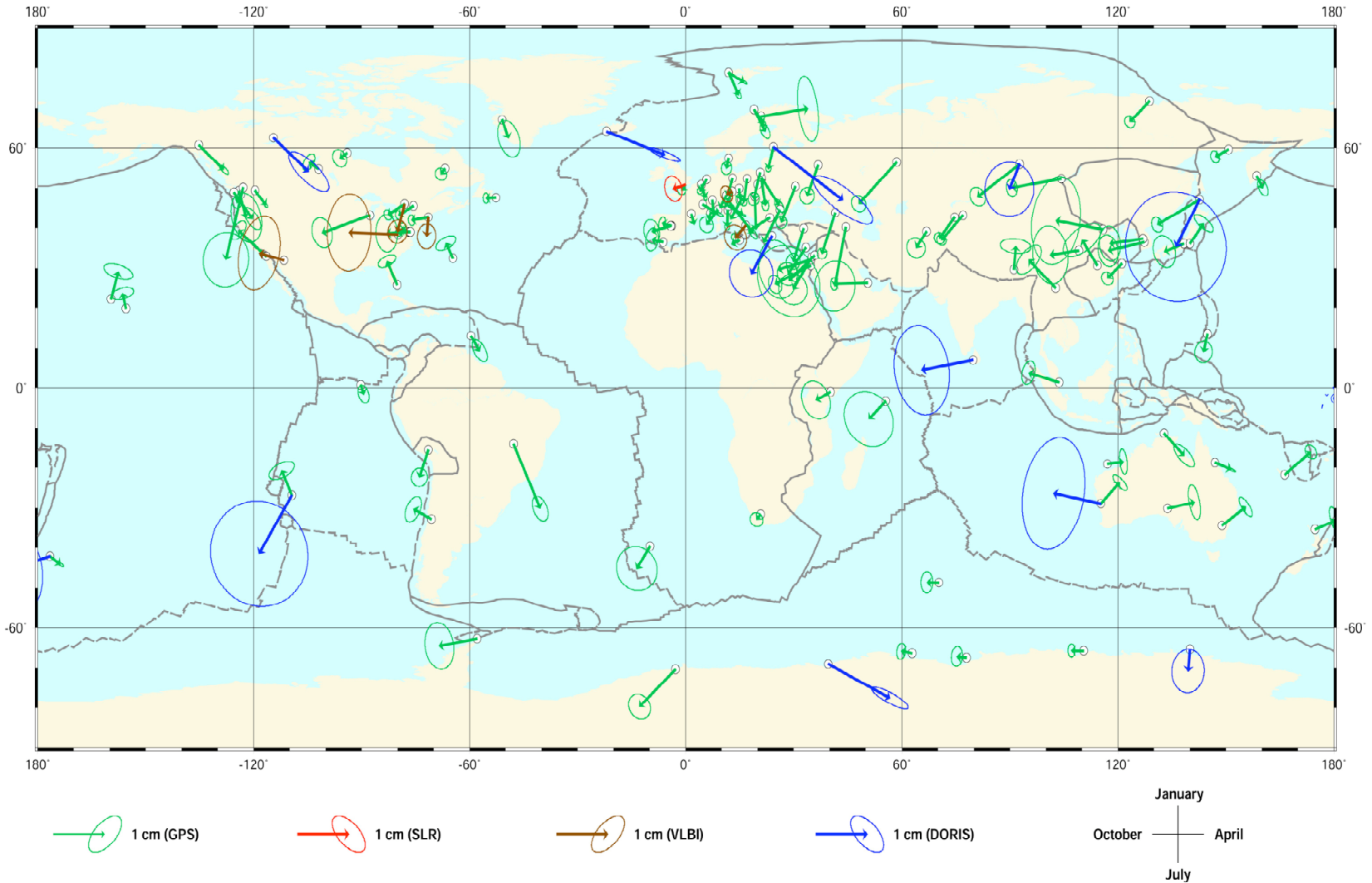
Position Time Series (Yarragadee)



Station Height Variations



Annual signals in station heights



Future Plans

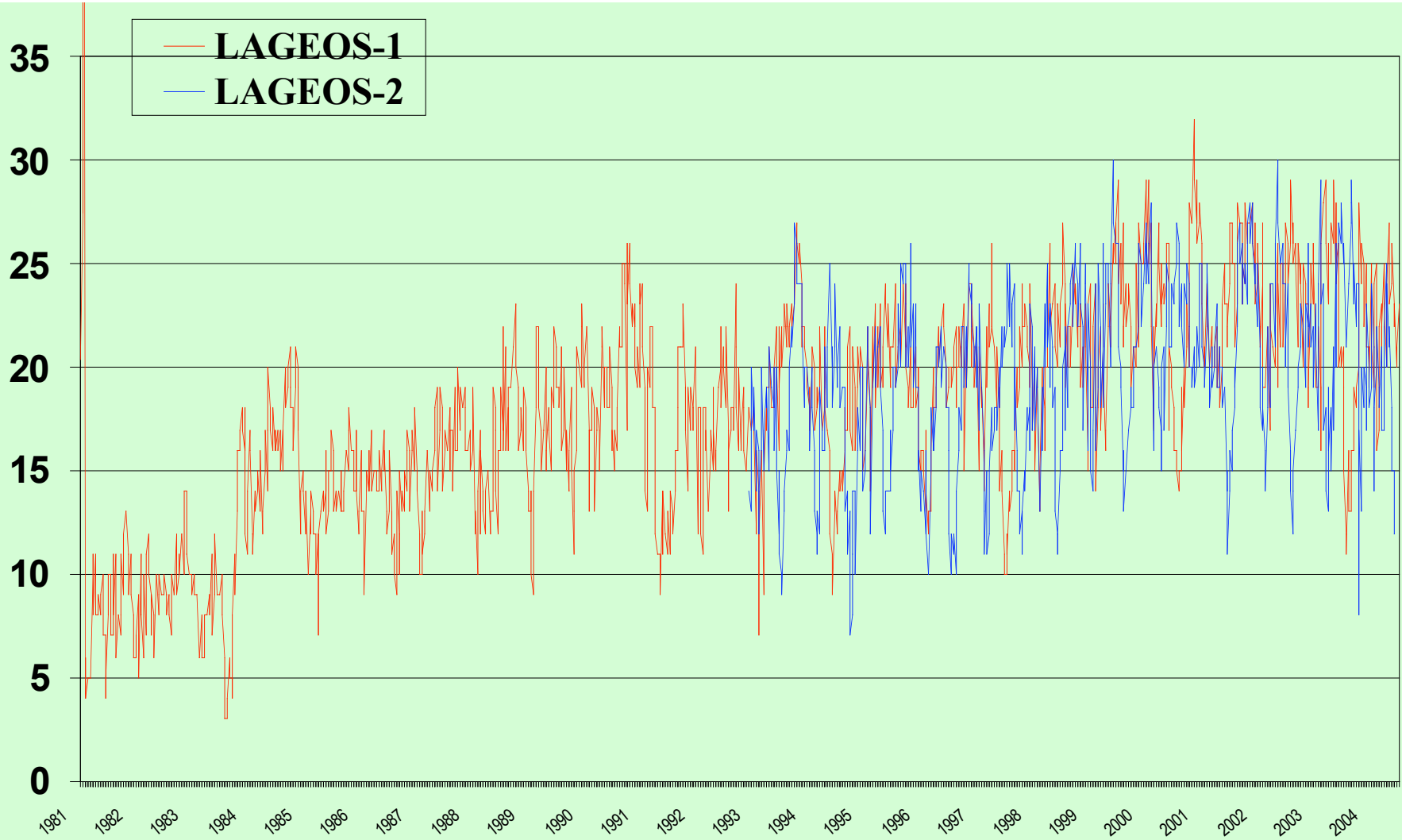
- 12-Years comb. solution (10/92-06/04)
- Combined solution 1981-2004
- Seasonal signals in positions, low degree harmonics
- Continuous update of solutions
- Provide results at

<http://ilrsac.dgfi.badw.de/>

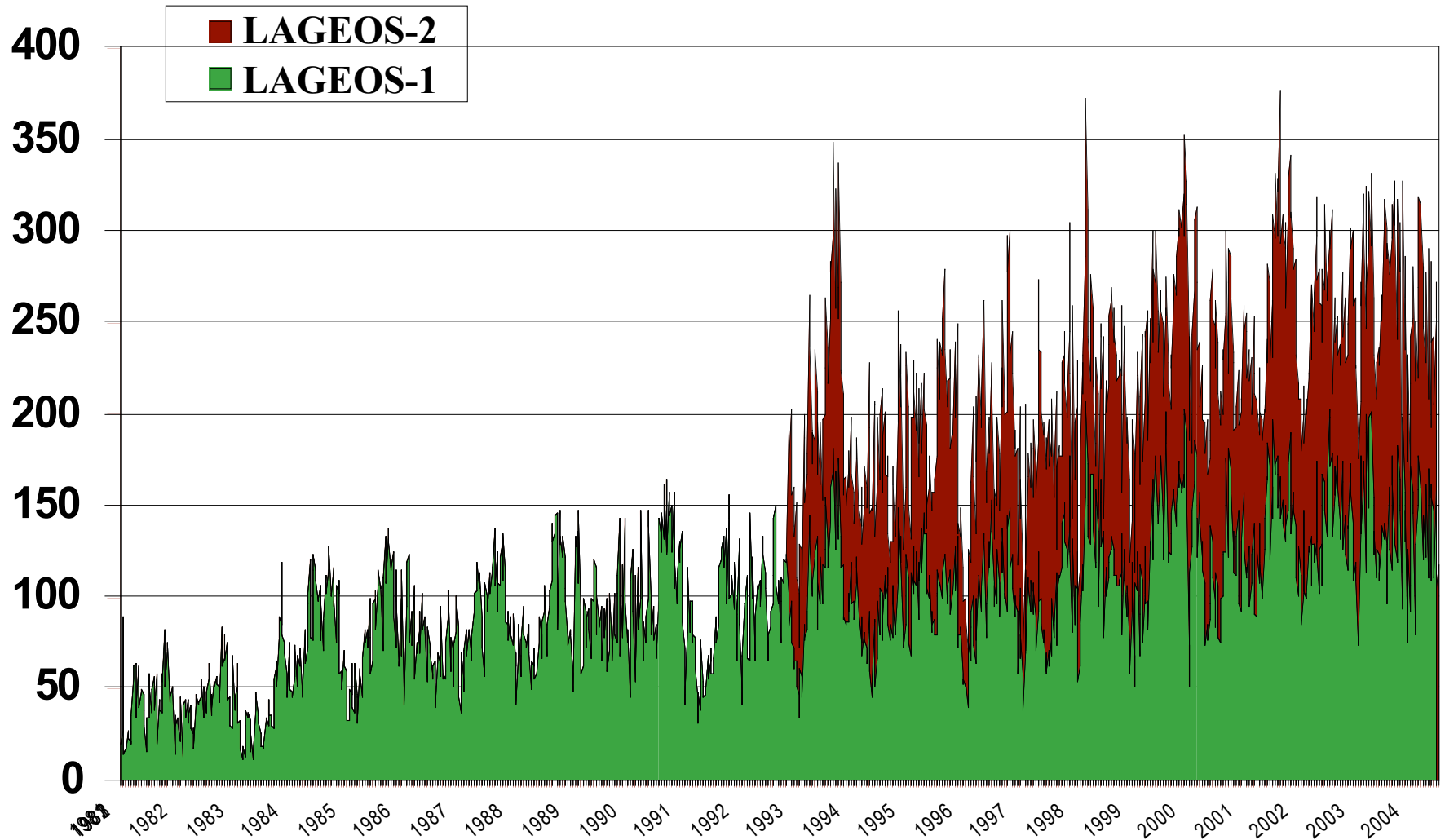
Position Time Series (Herstmonceux)



Number of Station per Week



Number of Passes



Comparison DGFI – ITRF2000 (South Africa)

