



# SLR – International Organization of Product Generation

Daniela Thaller

With contributions by:

ILRS-A Combination Center ASI (Cinzia Luceri)

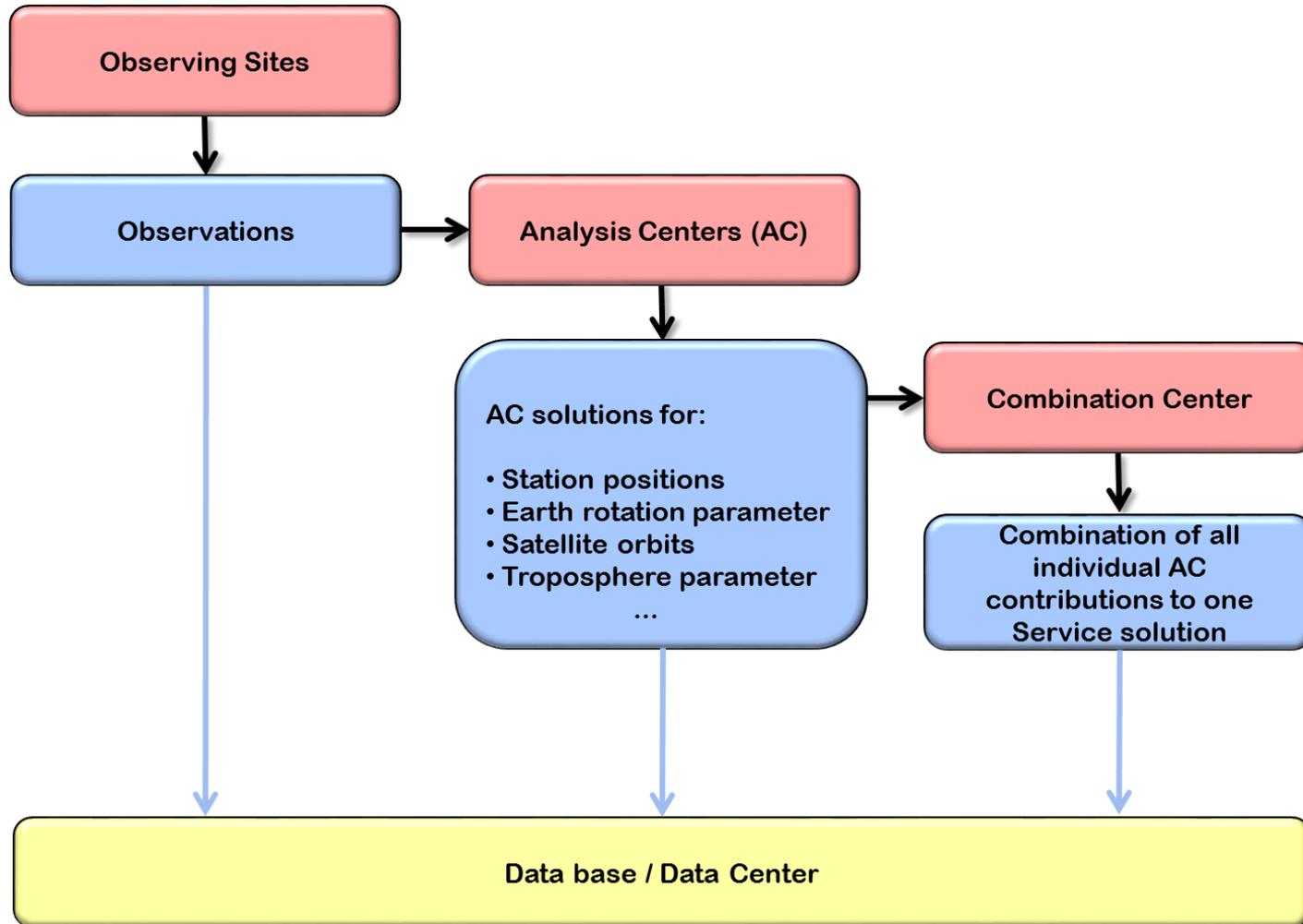
---

# The ILRS – International Laser Ranging Service



- Under the umbrella of IAG
- Integrated into the IERS as one of the Technique Centers
- Organizing product generation, data/product holding, exchange between individual groups, support new developments, exchange of knowledge

# The ILRS – International Laser Ranging Service



# ILRS Analysis and Combination Centers



**Primary CC**

**Backup CC**

# ILRS Analysis and Combination Procedure

(from Luceri et al., 2014)

- The official ILRS analysis centers (ACs) produce daily and weekly solutions that are combined by the two combination centers (CCs)
- Solutions contain SSC and daily EOP, using Lageos and Etalon data, according to the **ILRS/AWG guidelines**
- Same processing strategy adopted for the ITRF2013 solutions



ASI



BKG



DGFI



ESA



GFZ



GRGS



JCET



NSGF

ILRS ACs



Database



ILRS CCs



Database

# ILRS Analysis Centers: Software Packages used

- A broad variety of analysis software packages used among the Analysis Centers helps to reduce the „Analysis Noise“

ILRS Analysis Centre	Software Package
ASI, Italy	Geodyn
BKG, Germany	Bernese GNSS Software, SLR development version
DGFI-TUM, Germany	DOGS-OC
ESA	NAPEOS
GFZ, Germany	EPOS
GRGS, France	GINN / Dynamo
JCET, USA	Geodyn
NSGF, UK	SATAN

# ILRS Analysis Centers: Organization

- The organization and exchange between the ILRS Analysis and Combination Centers is done within the **„ILRS Analysis Standing Committee“** (formerly „Analysis Working Group“)
  - Define the guidelines for product generation
  - Define next steps forward by organizing Pilot Projects
- Led by the 2 Analysis Coordinators:
  - Erricos Pavlis (JCET, US)
  - Cinzia Luceri (ASI, Italy)
- Meeting usually twice per year (EGU in April; ILRS Workshop in Oct/Nov)
- Participation is open for any interested people

# Operational Products

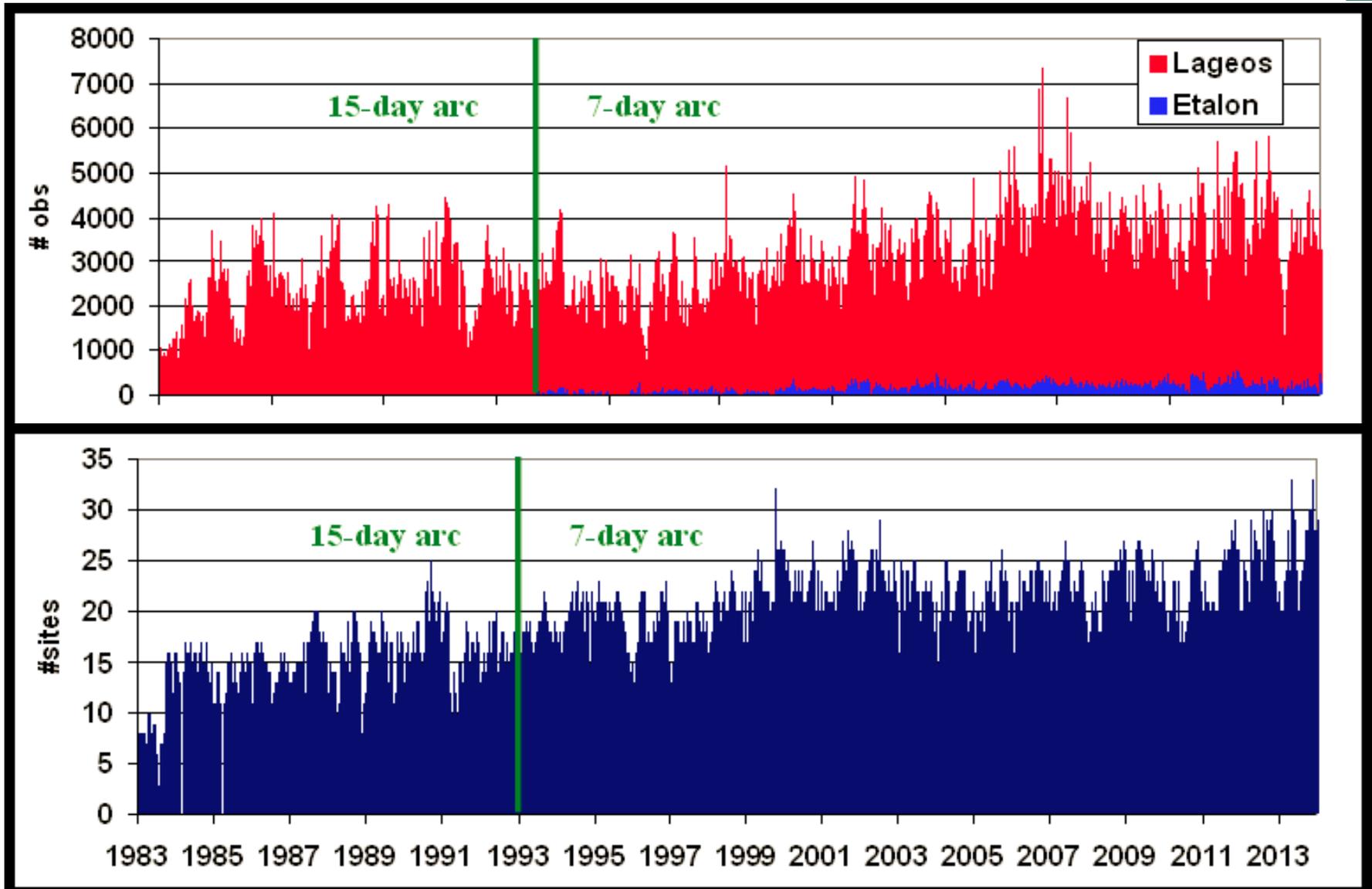
- 4 satellites only: LAGEOS-1/-2, Etalon-1/-2
- 7-day solutions = 7-day orbital arcs
- **DAILY** products (= „Rapid“ product) are due 2 days after last observation day:
  - e.g. for the DAILY orbital arc Tuesday-Monday, the product needs to be delivered on Wednesday morning (UT)
- **WEEKLY** products (orbital arc Sunday - Saturday) are due on Wednesday

# Different Product Lines of ILRS

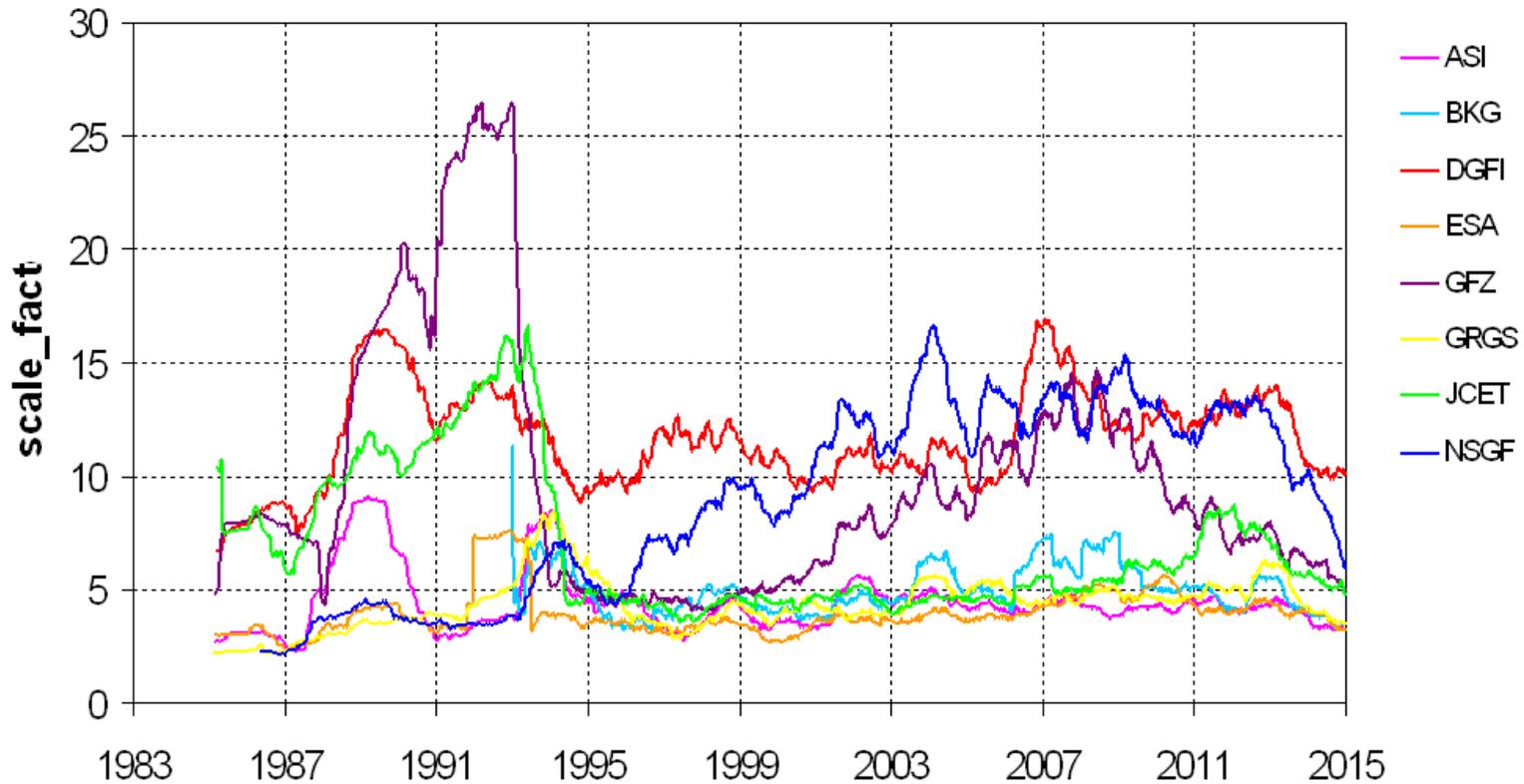
- Operational products
  - DAILY: Station coordinates, ERP
  - WEEKLY: Station coordinates, ERP
  - Orbits with fixed TRF and ERP
- Special study products („Pilot Projects“):
  - Impact of new ITRF
  - Estimating Range Biases for all stations to investigate potential systematic errors
  - Inclusion of the LARES satellite
- Re-analysis for ITRF generation

# ILRS Analysis Statistics per Orbital Arc

(from Luceri et al., 2014)

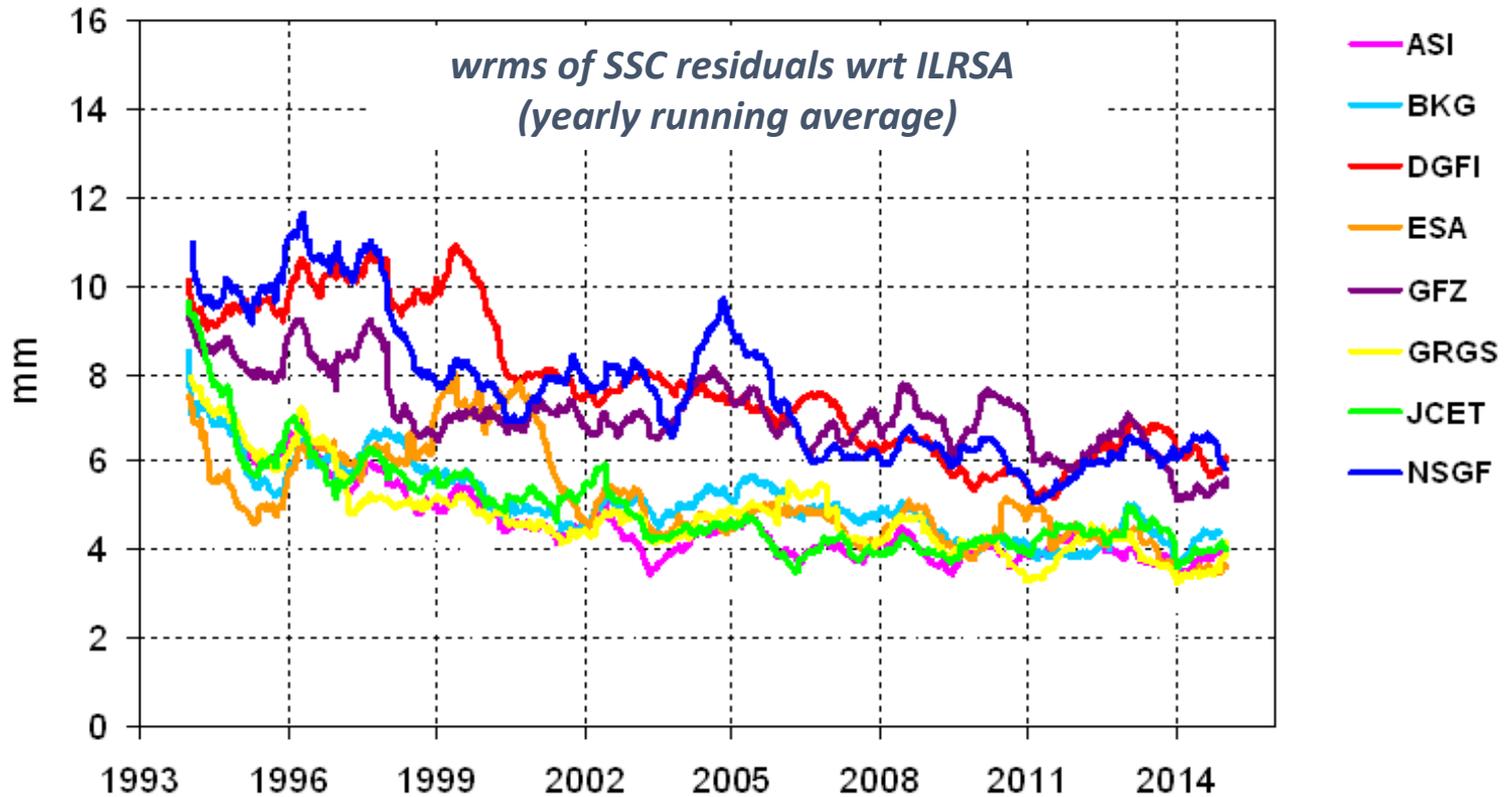


# AC Scale Factors

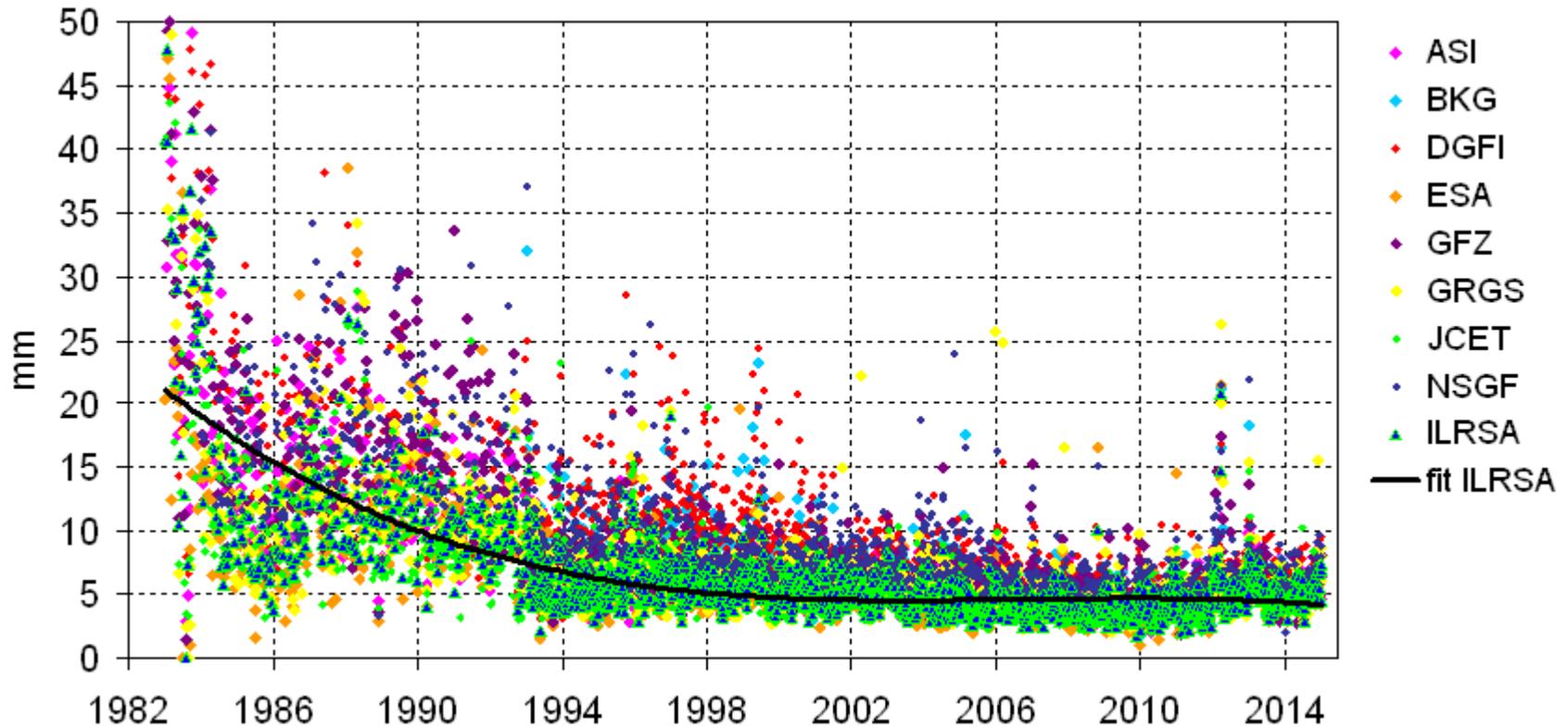


1993-2014	ASI	BKG	DGFI	ESA	GFZ	GRGS	JCET	NSGF
mean	4.3	4.9	11.6	3.9	7.6	4.7	5.4	10.6
st. dev	2.7	4.1	5.5	1.7	5.4	2.9	3.5	6.0

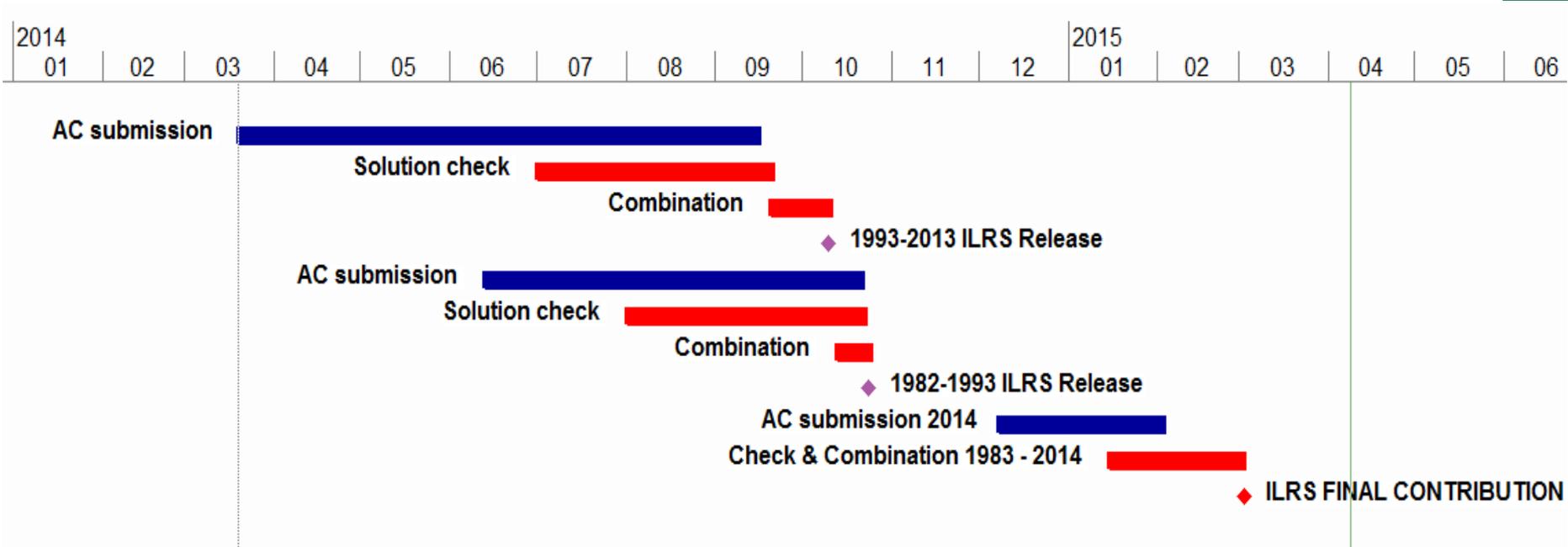
# Consistency between AC contributions



# Agreement w.r.t. SLRF2008: 3D WRMS of Residuals after Helmert Transformation



# ITRF2014 generation: ILRS Time Line

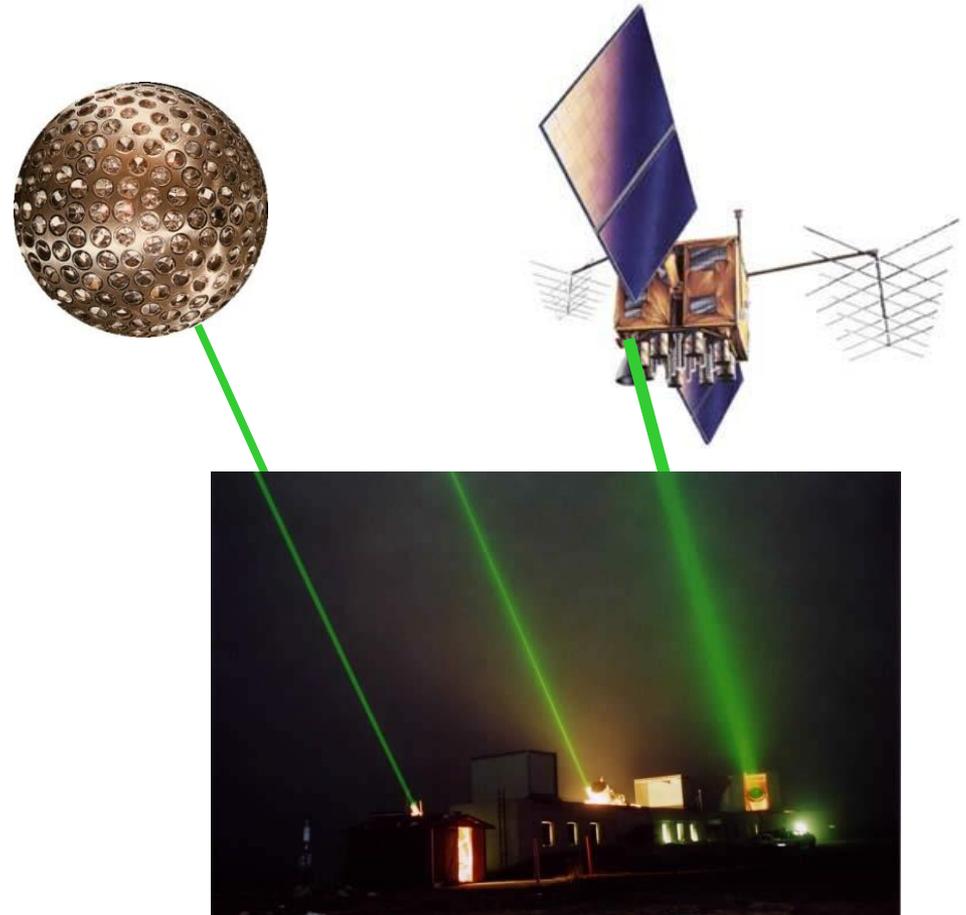


# Thank you for your kind attention!

## Contact:

Federal Agency for Cartography and Geodesy  
Section G1  
Richard-Strauss-Allee 11  
60598 Frankfurt, Germany

contact person:  
Daniela Thaller  
daniela.thaller@bkg.bund.de  
www.bkg.bund.de  
Tel. +49 (0) 69 6333-273



# Current ITRF approach

