IAG WG "REGIONAL DENSE VELOCITY FIELD"
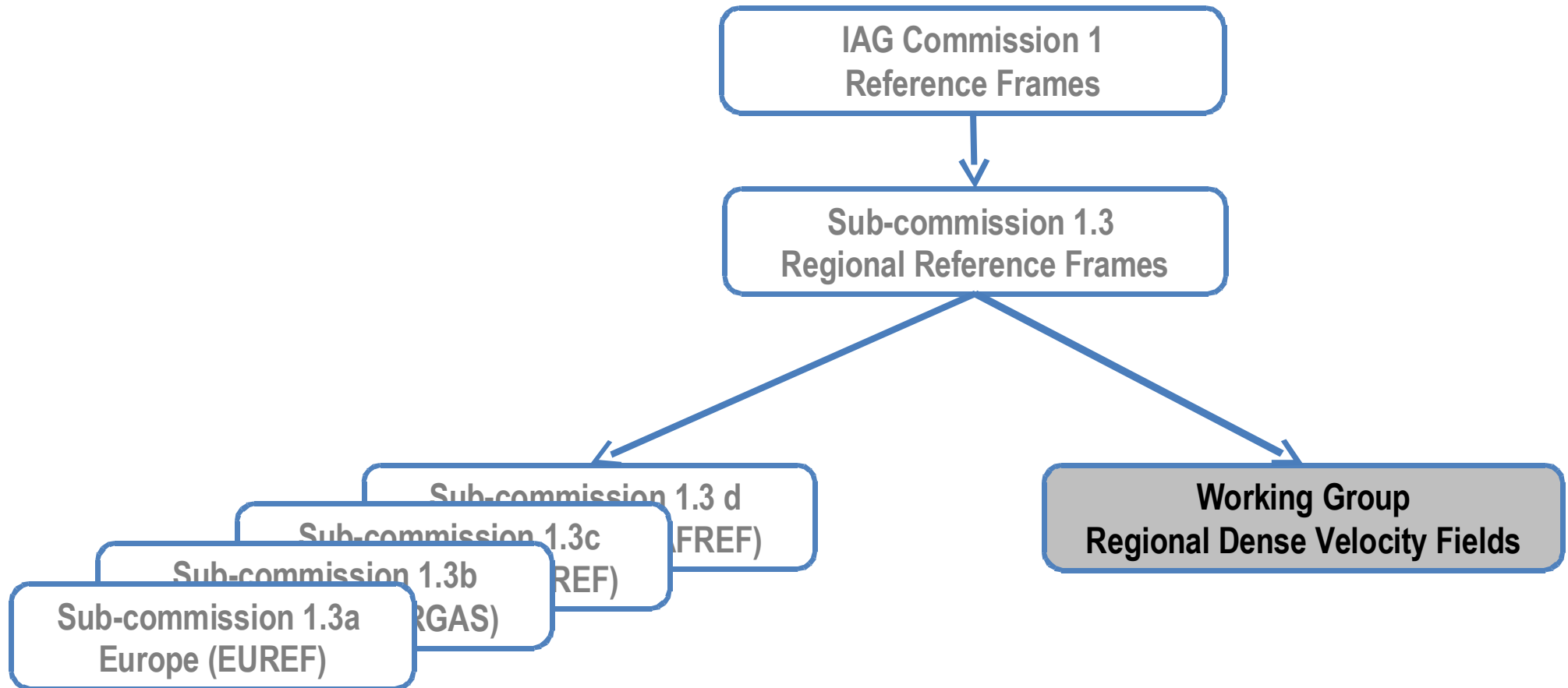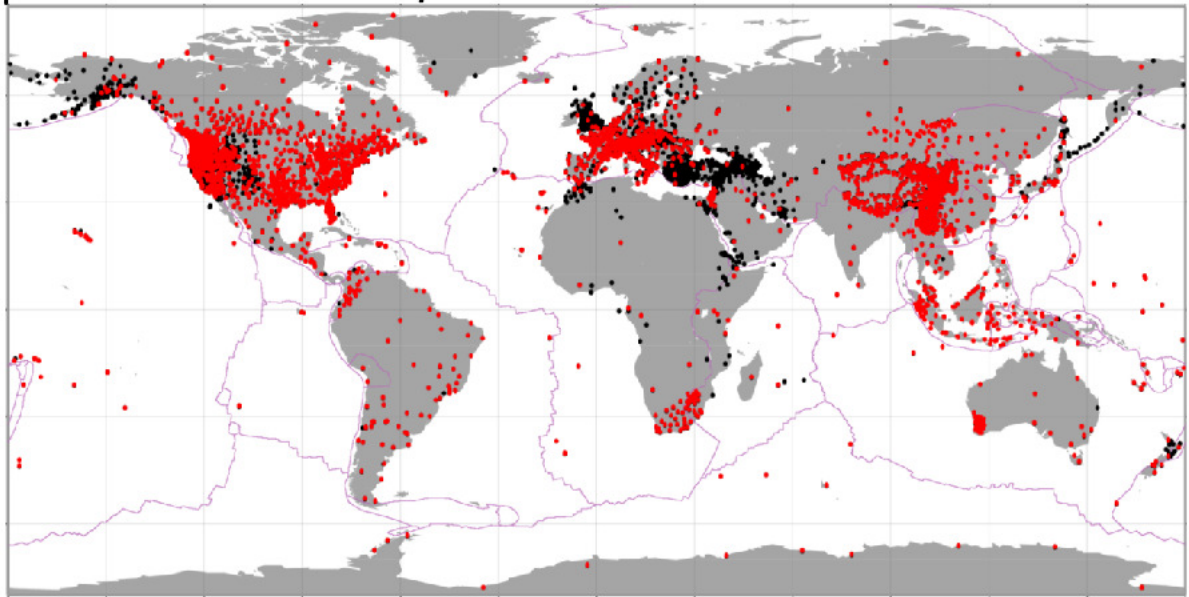
2007-2011

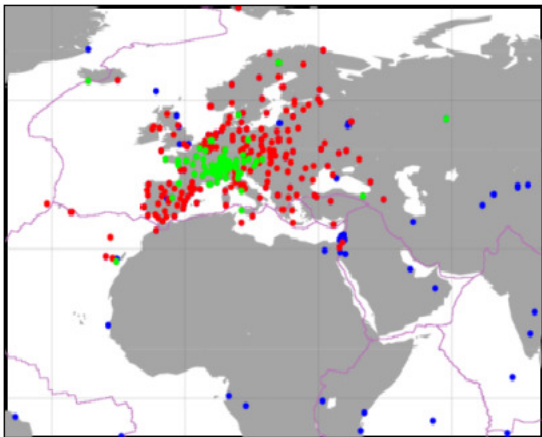**Replies to WG CfP:** *Proposed*   *Received*

Impossible to manage:
- Inconsistent station naming and DOMES numbering
- Inconsistent discontinuity epochs and solution numbers
- numerical instabilities caused by velocity constraints at sites with coordinate offsets.

Need to go step by step:

Level 1: Global core (IGS/ITRF)
Level 2: Regional + Global CORS (pos+vel)
Level 3: all other solutions (episodic, vel.only, third party)

Level 2 → Level 1: positions & velocities, coordination of discontinuities necessary
Level 3 → Level 2: possibility to attach sites with just their velocities, choice of regional coordinator

New CfP for only level 2 solutions + residual position time series

Submitted Level 2 solutions
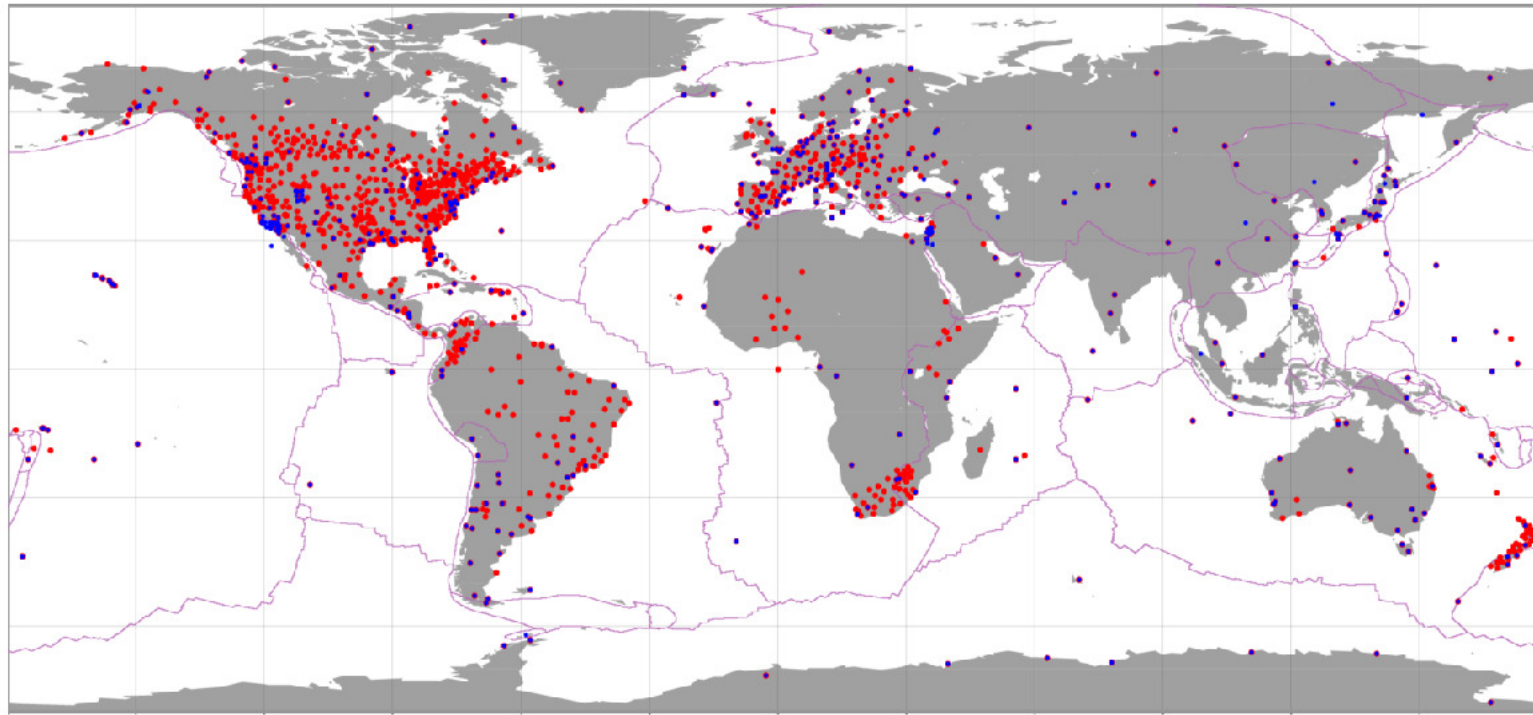
- EUREF
- SIRGAS
- NAREF
- APREF

- ULR

Reprocessed solutions: igs05.atx + ITRF2008 discontinuities
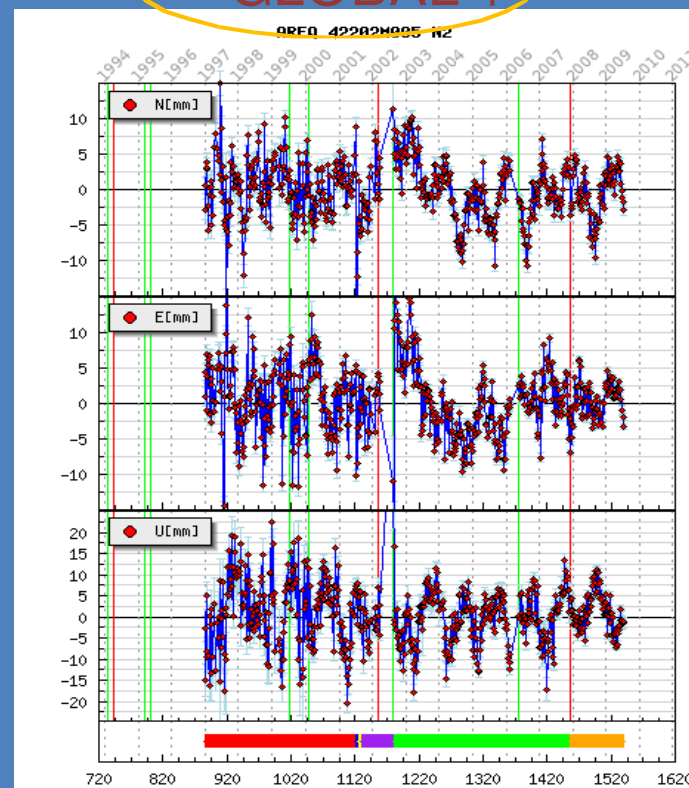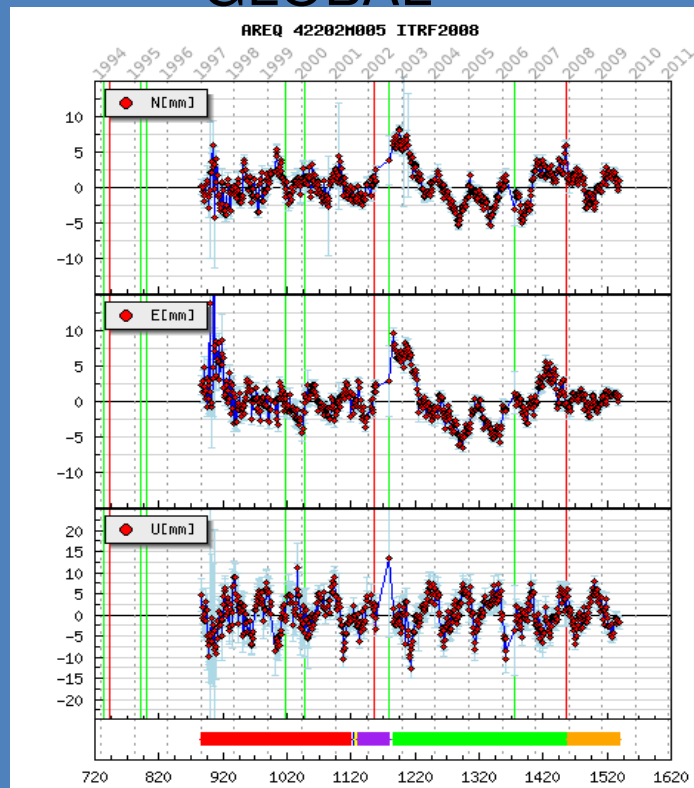
+ residual position time series !!!

Comparison of Residual Position Time Series

Aliasing effects are removed
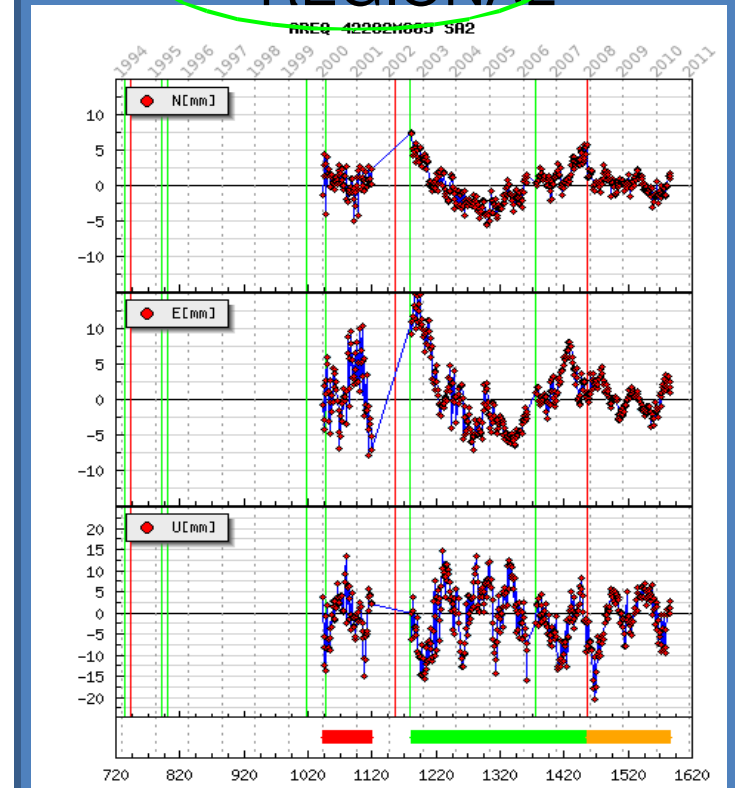
Noise level higher than in global (atypical)

GLOBAL

« GLOBAL + »

REGIONAL

RMS		GLOBAL	« GLOBAL + »	REGIONAL	
	N	2.4	4.1	2.2	mm
	E	2.9	4.8	4.2	mm
	U	3.9	7.0	6.3	mm

Conclusion

Working Group joined representatives from regional reference frame sub-commissions and analysists of global networks:

- Comparison of approaches & residual position times series
- Disagreements mostly understood thanks to inspection of residual position time series
- Will lead to more consistency between regional/global solutions
- (sub)mm/yr-velocities….
- Once agreement on level 2 solutions, then Level 3

Future: Inclusion of third party (level 3) solutions (mostly sub-regional):

- Regional coordinators: interact with third parties about discontinuities (education)

IAG WG "UNIFIED DENSE VELOCITY FIELD"

2011-2015

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┌─────────────────────────┐
│   IAG Commission 1      │
│   Reference Frames      │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│   Sub-commission 1.3    │
│ Regional Reference Frames│
└─────────────────────────┘
        ╱           ╲
       ▼             ▼
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Sub-commission 1.3 d
(FREF)

Sub-commission 1.3c
(REF)

Sub-commission 1.3b
(RGAS)

Sub-commission 1.3a
Europe (EUREF)

Working Group
"Unified Dense Velocity Field"
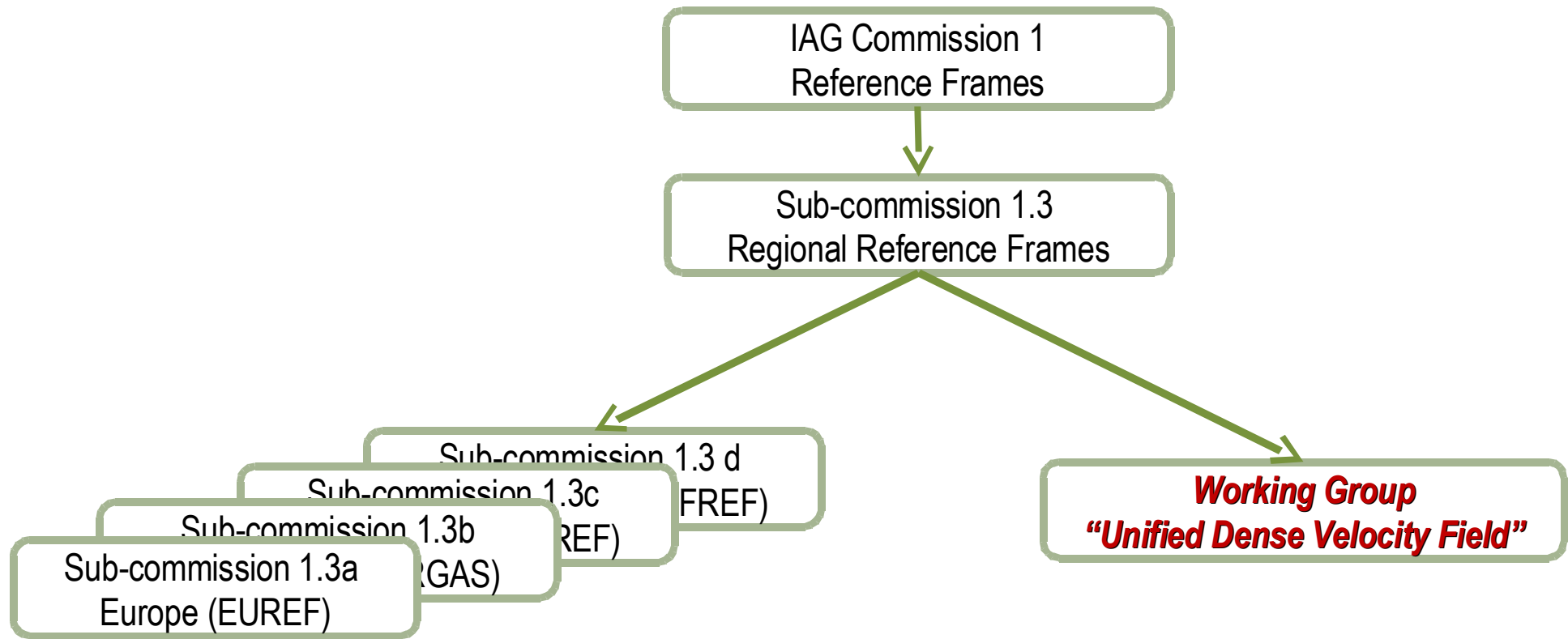
to study and promote consistent specifications for the generation of GNSS-based velocity field solutions and their combination in order to derive a unified dense velocity field in a common