

The Combination of Alternative Processing Strategies Solutions



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Alternative Processing Strategies

- Call to LACs to process additionally the observations of 3 weeks with changed options (by C. Bruyninx, J. Dousa, H. Habrich)
- It has been asked to generate a series of 3 test solutions.
- How do the solutions of each LAC change (not topic of this presentation) ?
- How does the combined solution change ?

(1) Test Solution Series

- **Option:** „Dry Niell“ mapping function
- **Objective:** More realistic mapping of the tropospheric delay.

(2) Test Solution Series

- **Option:** Elevation-dependent weighting of the observations.
- **Objective:** Low-elevation observations show an increased observation scatter and could change the scale of the station coordinates (de-weighting required).

(3) Test Solution Series

- **Option:** 10° observation elevation cut-off angle instead of 15°
- **Objective:** Better decorrelation of height and tropospheric delay parameters

Test Solution Matrix

(0) *Standard Solution*

(1)

(2) *Dry Niell Mapping*

(3) *+ Elev. Weighting*

(3) *+ 10° Cut-off Angle*

Week 1096

BKG	BKG	BKG	BKG
GOP	GOP	GOP	GOP
IGN	IGN	IGN	IGN
OLG	OLG	OLG	OLG
ROB	ROB	ROB	ROB

Week 1097

BKG	BKG	BKG	BKG
GOP	GOP	GOP	GOP
OLG	OLG	OLG	OLG
ROB	ROB	ROB	

Week 1098

BKG	BKG	BKG	BKG
GOP	GOP	GOP	GOP
ROB	ROB	ROB	ROB

status April 27, 2001



Statistical Information of Combined Solution

Week 1096:

Sol. 0:	RMS OF UNIT WEIGHT:	0.0032	# OBS:	55214	# UNKNOWNNS:	23491
Sol. 1:	RMS OF UNIT WEIGHT:	0.0031	# OBS:	89728	# UNKNOWNNS:	37529
Sol. 2:	RMS OF UNIT WEIGHT:	0.0019	# OBS:	78858	# UNKNOWNNS:	39230
Sol. 3:	RMS OF UNIT WEIGHT:	0.0022	# OBS:	87302	# UNKNOWNNS:	56422

Week 1097:

Sol.0:	RMS OF UNIT WEIGHT:	0.0029	# OBS:	46514	# UNKNOWNNS:	18200
Sol 1:	RMS OF UNIT WEIGHT:	0.0028	# OBS:	69192	# UNKNOWNNS:	26438
Sol 2:	RMS OF UNIT WEIGHT:	0.0016	# OBS:	72261	# UNKNOWNNS:	32363
Sol 3:	RMS OF UNIT WEIGHT:	0.0019	# OBS:	43188	# UNKNOWNNS:	23973

Week 1098:

Sol 0:	RMS OF UNIT WEIGHT:	0.0030	# OBS:	35072	# UNKNOWNNS:	15099
Sol 1:	RMS OF UNIT WEIGHT:	0.0031	# OBS:	43323	# UNKNOWNNS:	18588
Sol 2:	RMS OF UNIT WEIGHT:	0.0018	# OBS:	81638	# UNKNOWNNS:	40793
Sol 3:	RMS OF UNIT WEIGHT:	0.0021	# OBS:	67087	# UNKNOWNNS:	42646

File: EURwwwww.SNX



How do the LAC's solutions fit to each other ?

		N	E	U
Week 1096:	Sol. 0:	0.4	0.8	2.1
	Sol. 1:	0.4	0.9	2.6
	Sol. 2:	0.5	0.5	3.3
	Sol. 3:	0.5	0.5	3.0
Week 1097:	Sol. 0:	0.4	0.7	2.2
	Sol. 1:	0.5	0.8	2.5
	Sol. 2:	0.6	0.5	3.1
	Sol. 3:	0.5	0.5	2.6
Week 1098:	Sol. 0:	0.4	1.0	1.3
	Sol. 1:	0.3	0.9	1.5
	Sol. 2:	0.3	0.6	2.5
	Sol. 3:	0.3	0.6	1.9

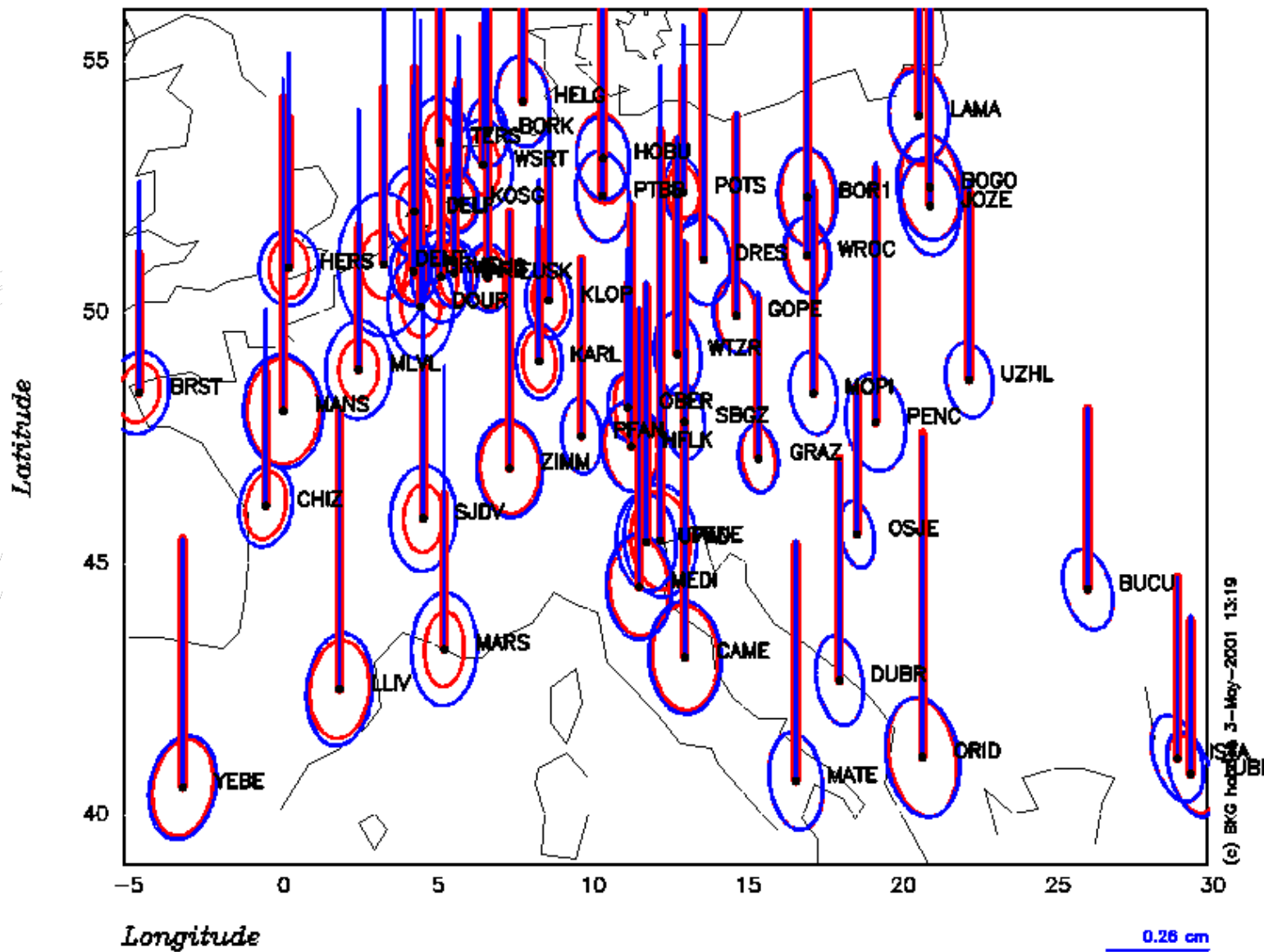
Unweighted RMS values of **each LAC solution** with respect to the combined solution, Mean values given here, File EURwwwws.SUM

How is the Weekly Repeatability of the Combined Solution ?

	N	E	U
Sol. 0:	1.1	1.1	3.3
Sol. 1:	1.1	1.3	3.6
Sol. 2:	1.0	0.9	3.5
Sol. 3:	1.0	0.8	3.3

Unweighted RMS values of **each weekly solution** with respect to the combined solution, mean values given here, File EUWwwwws.SUM (3 week solution)

WEEK 1097 EUREF COMBINATION, OPTIONS 0=BLUE, 2=RED



Conclusions

- New processing options promise improved results
- Not all LACs could use the proposed options, e.g., no elevation dependent weighting in Microcosm software available
- Improvement in east direction has to be studied (ambiguity resolution success?)
- Some stations show smaller formal errors if using the new options; other stations remain unchanged (to be confirmed by further analysis)
- Niell mapping function and ele.-dept. weighting should be used for routine processing