

COL-WG project

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Outline of Presentation

Comparison Campaign on Combination at Observation Level

- Goal and description of the project
- Analyses Centers participating

Strategy of SINEX files processing at GRGS

SINEX to GINS conversion

test for AIUB SINEX files

GRGS EOP Determination:

- Pole, UT at 6h, Nutation at 12h and daily
- Individual techniques

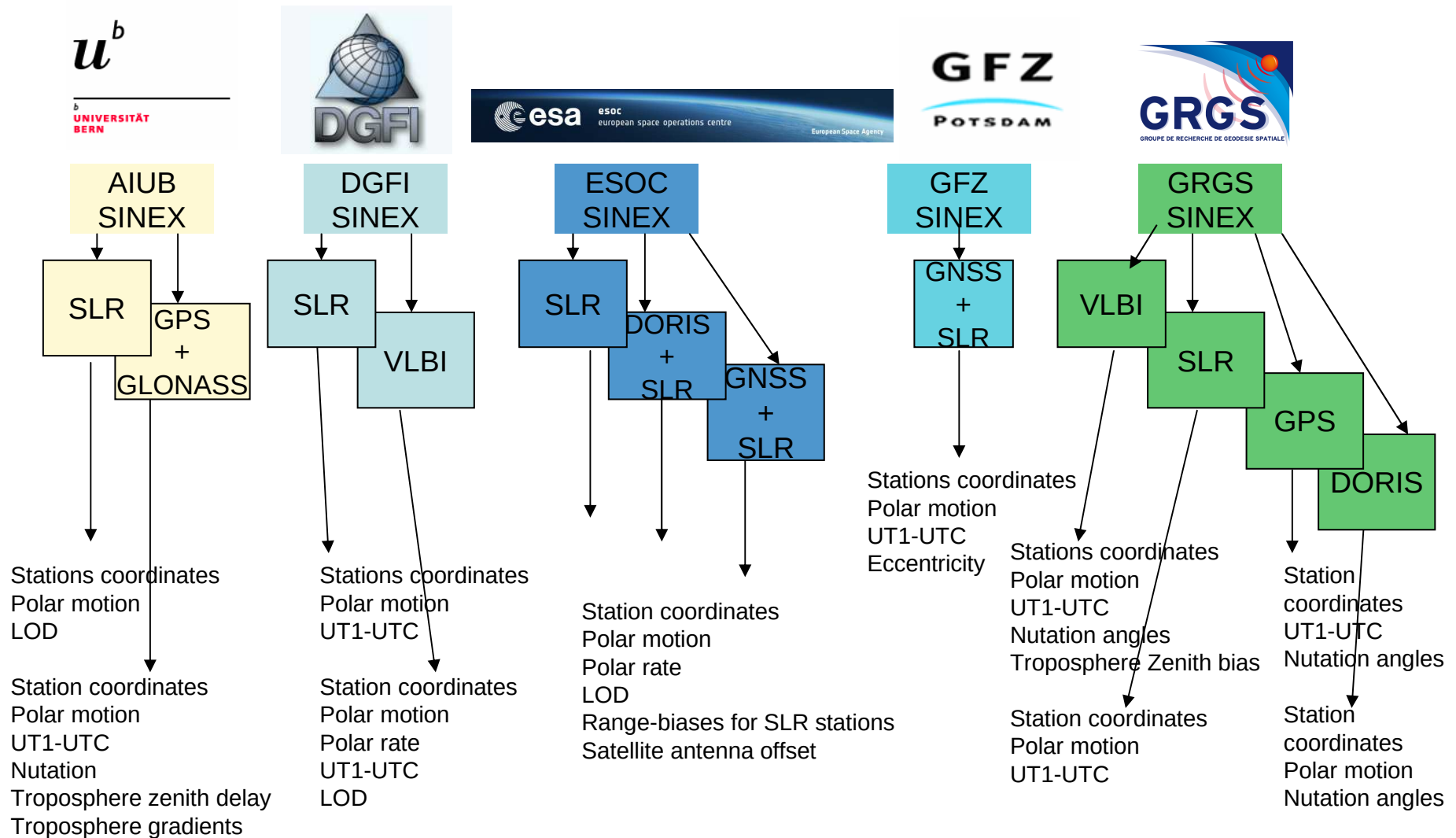
Proposal to compare solutions of individual techniques and combined techniques

Perspectives and discussions

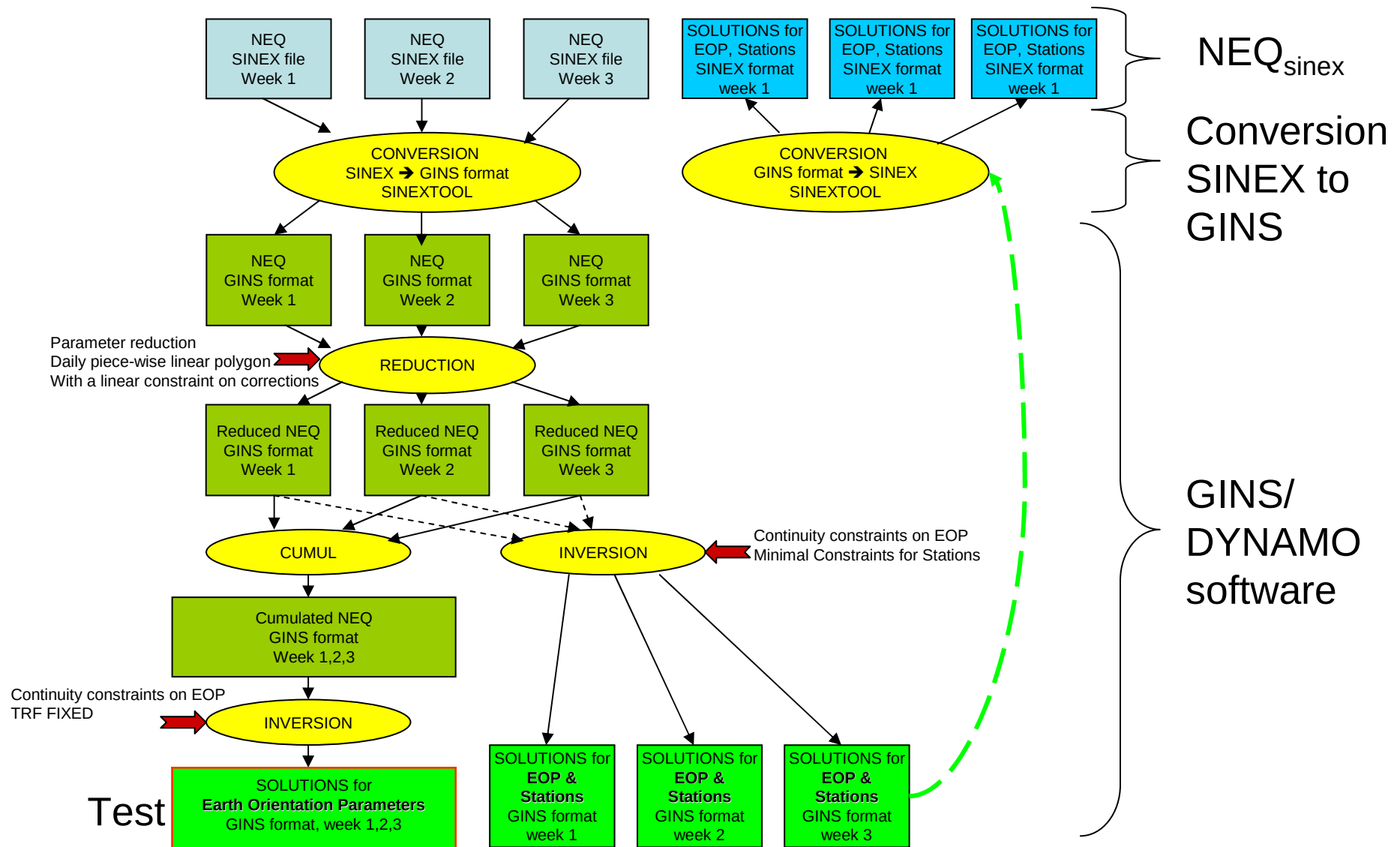
Comparison Campaign on Combination at Observation Level

- Goal: compare combined solutions issued from heterogeneous softwares and explain the possible differences
- The benchmark is established from August 10 to August 30, 2008 and includes the CONT08 VLBI period from August 12 to August 26
- The file exchange format is SINEX format delivered normal equations (NEQs) per week
- The parameters contained in NEQs are
 - Pole coordinates per day (possibility rate)
 - UT1 per day (possibility LOD)
 - Nutation per day (possibility rate)
 - Station coordinates per week
 - Troposphere zenith delay per hour (in order to reduce the size of SINEX files, these parameters of non collocated GPS stations can be reduced)

Analysis Centers participating



Strategy of SINEX files processing at GRGS



SINEX to GINS conversion

DYNAMO software processing at GRGS
using SINEX files from AIUB, DGFI, ESOC, GFZ

SINEX to GINS format conversion need

- to keep the signaled elements (parameter names)
- to convert units used for EOP in GINS format
- to convert ASCII files into binary files

Solution estimation by normal equation inversion needs

- to adapt a director files with the SINEX signaled elements
- to extract solutions from DYNAMO solution files

Conversion of solutions from GINS to SINEX format

- SINEX files set in the ftp web site for community use

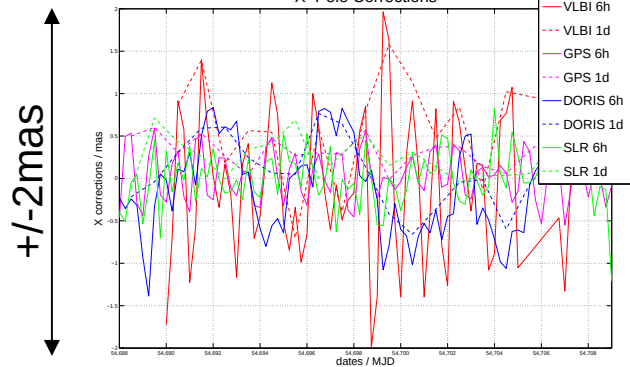
Test of AIUB SINEX to GINS conversion and EOP + Stations + troposphere solutions

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1	[STAX 1884 08:226:43200]	0.31838956728306E+07	0.93666350023119E-01	0.31838957664969E+07	-0.40179991748399E-01	FREE
2	[STAY 1884 08:226:43200]	0.14214971872082E+07	-0.18278306261320E+00	0.14214970044251E+07	-0.88301112042864E-01	FREE
3	[STAZ 1884 08:226:43200]	0.53228037799357E+07	0.20396684674575E+00	0.53228039839025E+07	-0.64848206819439E-01	FREE
67	[XPO ---- 08:223: 0000]	0.29193000520833E+03	0.22160940334780E+01	0.29414609924181E+03	-0.43368981757160E+00	FREE
68	[XPO ---- 08:224: 0000]	0.29238000428241E+03	-0.16783765928401E+01	0.29070162768957E+03	-0.31358640293284E+00	FREE
69	[XPO ---- 08:225: 0000]	0.29275000266204E+03	0.11216596580722E+01	0.29387166232011E+03	-0.61418394808557E+00	FREE
70	[XPO ---- 08:226: 0000]	0.29298000057870E+03	0.38916256703618E+01	0.29687162624906E+03	-0.39236497090029E+00	FREE
71	[XPO ---- 08:227: 0000]	0.29302999895833E+03	0.10179143834467E+01	0.29404791334178E+03	-0.27143492346809E+00	FREE
72	[XPO ---- 08:228: 0000]	0.29294000752315E+03	0.21185887690364E+00	0.29315186640005E+03	-0.30071559188996E+00	FREE
73	[XPO ---- 08:229: 0000]	0.29359000752315E+03	0.30156785766063E+01	0.29660568609976E+03	-0.38573427083400E+00	FREE
74	[XPOR ---- 08:223: 3200]	0.44999999999993E+00	-0.51585353013551E+01	-0.47085353013552E+01	-0.61550730203554E+00	FREE
75	[XPOR ---- 08:224: 3200]	0.37000000000004E+00	0.13578802365766E+01	0.17278802365766E+01	-0.50699075685722E+00	FREE
76	[XPOR ---- 08:225: 3200]	0.22999999999999E+00	-0.26852103541702E+01	-0.24552103541703E+01	-0.85204797967977E+00	FREE
77	[XPOR ---- 08:226: 3200]	0.49999999999959E-01	-0.42687689884129E+01	-0.42187689884129E+01	-0.59421196742999E+00	FREE
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86	[YPO ---- 08:228: 0000]	0.37345996759258E+03	-0.12595459638050E+01	0.37220042162878E+03	-0.37441724245985E+00	FREE
87	[YPO ---- 08:229: 0000]	0.37065997037036E+03	-0.25828932082891E+01	0.36807707716207E+03	-0.34539048180312E+00	FREE
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94	[YPOR ---- 08:229: 3200]	-0.25600000000000E+01	0.52957556569268E+01	0.27357556569268E+01	-0.64567767337748E+00	FREE
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105	[LOD --- 08:226: 3200]	-0.12600722695750E+00	0.23461199700635E+00	0.10860477004885E+00	-0.50212641106006E-01	FREE
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109	[RBIAS 08 08:226: 2003]	0.00000000000000E+00	0.61098996196313E+01	0.61098996196313E+01	-0.33650835323423E+00	FREE

GRGS EOP determination for individual techniques

- Pole at 6h interval and daily, UT
- UT at 6h interval and daily
- Nutation at 12h and daily

X-pole corrections



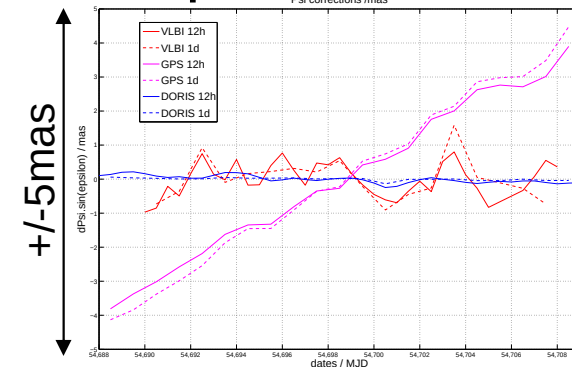
for EOP 6h interval :

EOP solutions with GRGS VLBI, GPS, DORIS SLR Normals are obtained with continuity constraints on EOP (1cm for Pole & Nutation, 21.5 μ s for UT) and Station positions fixed on a priori ITRF2005

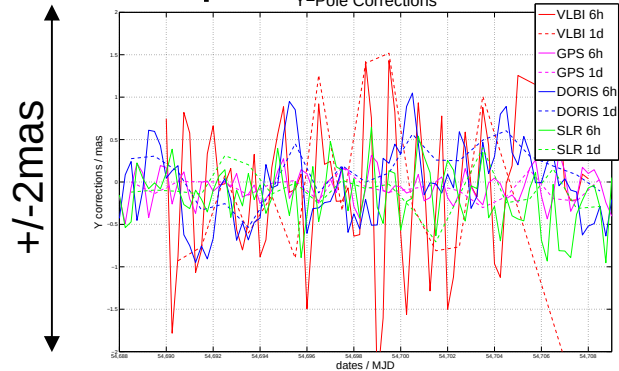
for daily EOP :

EOP solutions with GRGS VLBI, GPS, DORIS SLR NEQs are obtained with linearity constraints applied on corrections (1.3 cm for Pole & Nutation, 100 μ s for UT), stations fixed on a priori ITRF2005

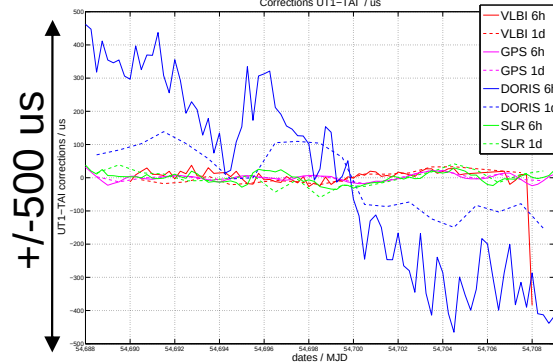
ψ corrections



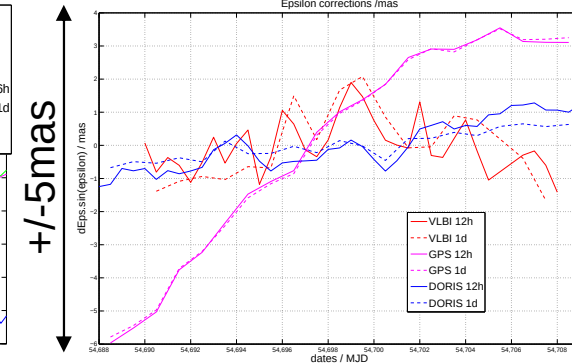
Y-pole corrections



UT1-UTC corrections



ϵ corrections



Proposal of validation

Elaborating the method to validate each NEQ from each center:

- Weekly NEQs of individual techniques from different analyses centers have to be validated => what possibility to ensure the convergence of the parameters solutions, the parameter choice to estimate and the method to invert the NEQs.
- Combination process: weekly NEQs of different techniques and from different centers can be weighted (TBD), and cumulated other the three weeks.
- Inversion with which constraints?
- Schedule to validate solutions of Earth Orientation parameters and Station positions and in future others parameters such as tropospheric bias:
 - 1st using individual technique (intra technique combination)
 - 2nd using the combination of available techniques (inter technique combination)
- Solutions in SINEX format set on the ftp web site to compare validations

Perspectives and discussions

- Comparing the models used for each software in order to ensure compatibility
- Elaborating a list of common stations measured and satellites used
- Defining type of constraints applied for inversion of NEQs (local ties)
- Describing a weighting technique used in combination process
- Determination of analyses centers participation for validation and/or combination centers (GRGS, DGFI...)
- Other groups of geodetic analyses centers interested to participate to the COL-WG project are welcome
- Elaborating a Planning task
- Date of the next meeting