

Deformation Integrity Monitoring for GNSS-Positioning Services including a Scalable Hazard Monitoring by the Karlsruhe Approach (MONIKA)

- Software Handling -

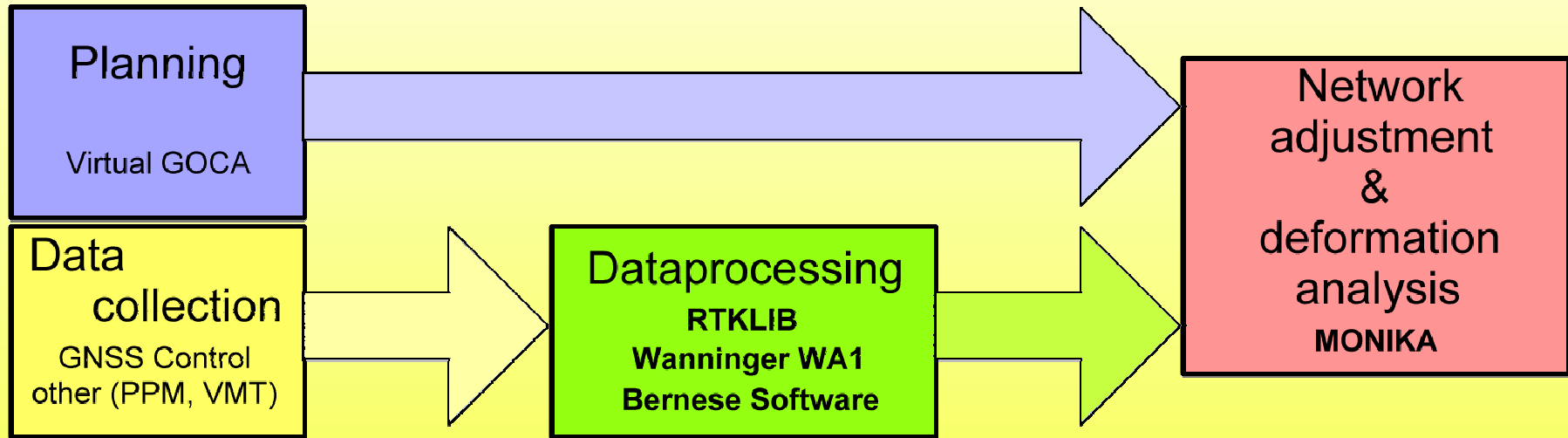
Speaker:

Dipl.Ing. Peter Spohn

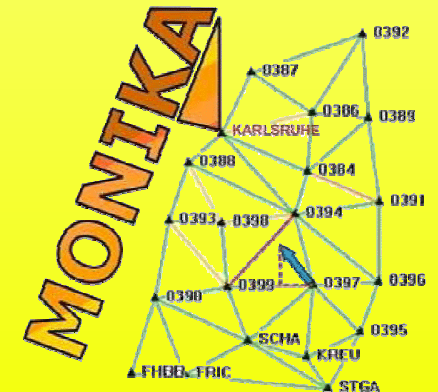
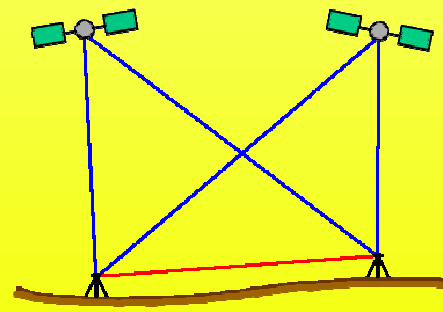
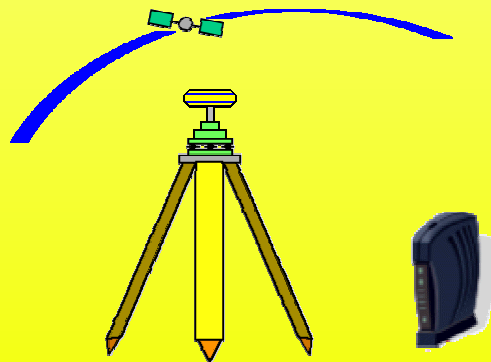
Content

1. Preparations
2. New project
3. Baseline processing
4. Epoch definition
5. 3D-Adjustment
6. Plate rotation
7. Deformation analysis
8. Automatications

MONIKA-Monitoring-Chain

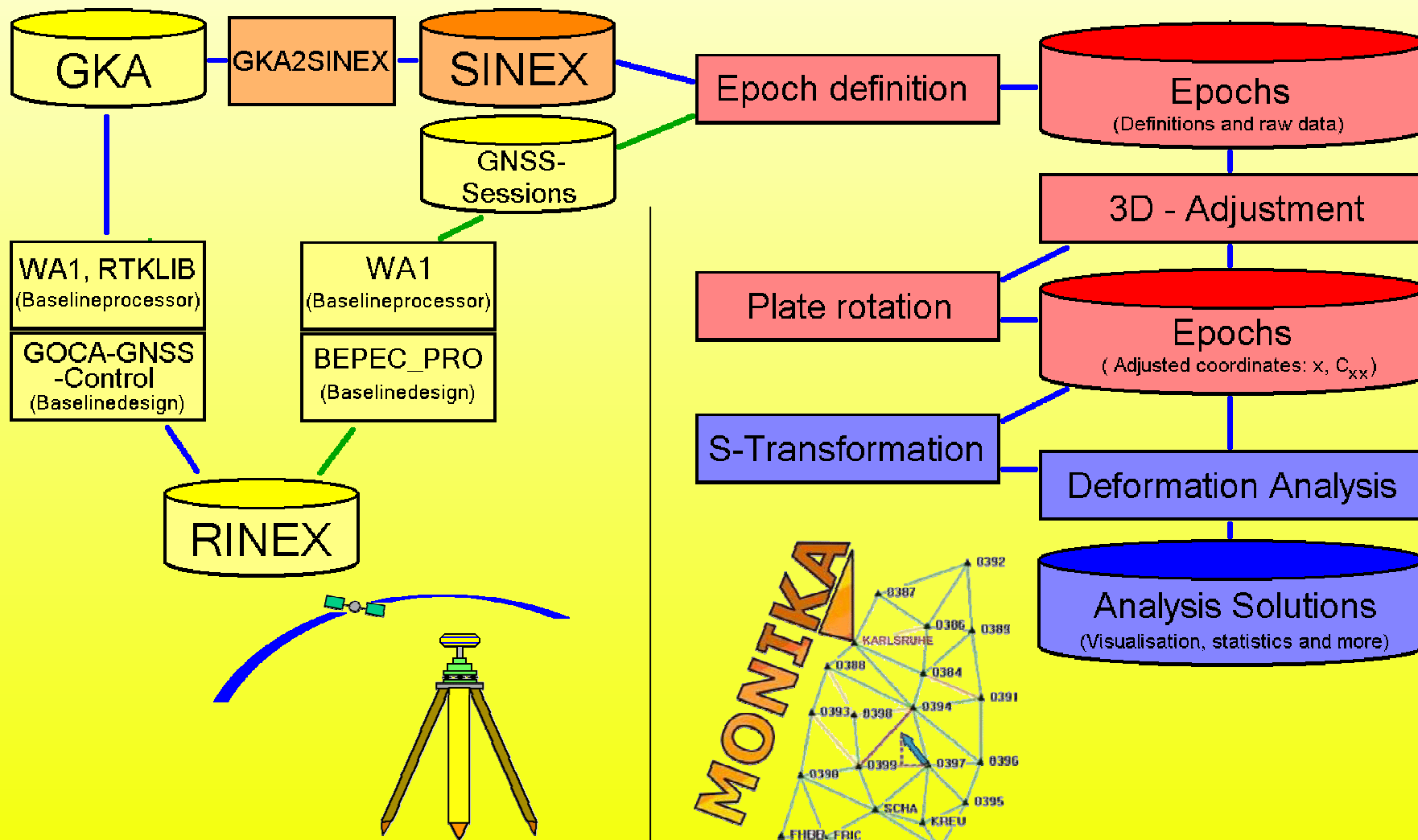


Communication

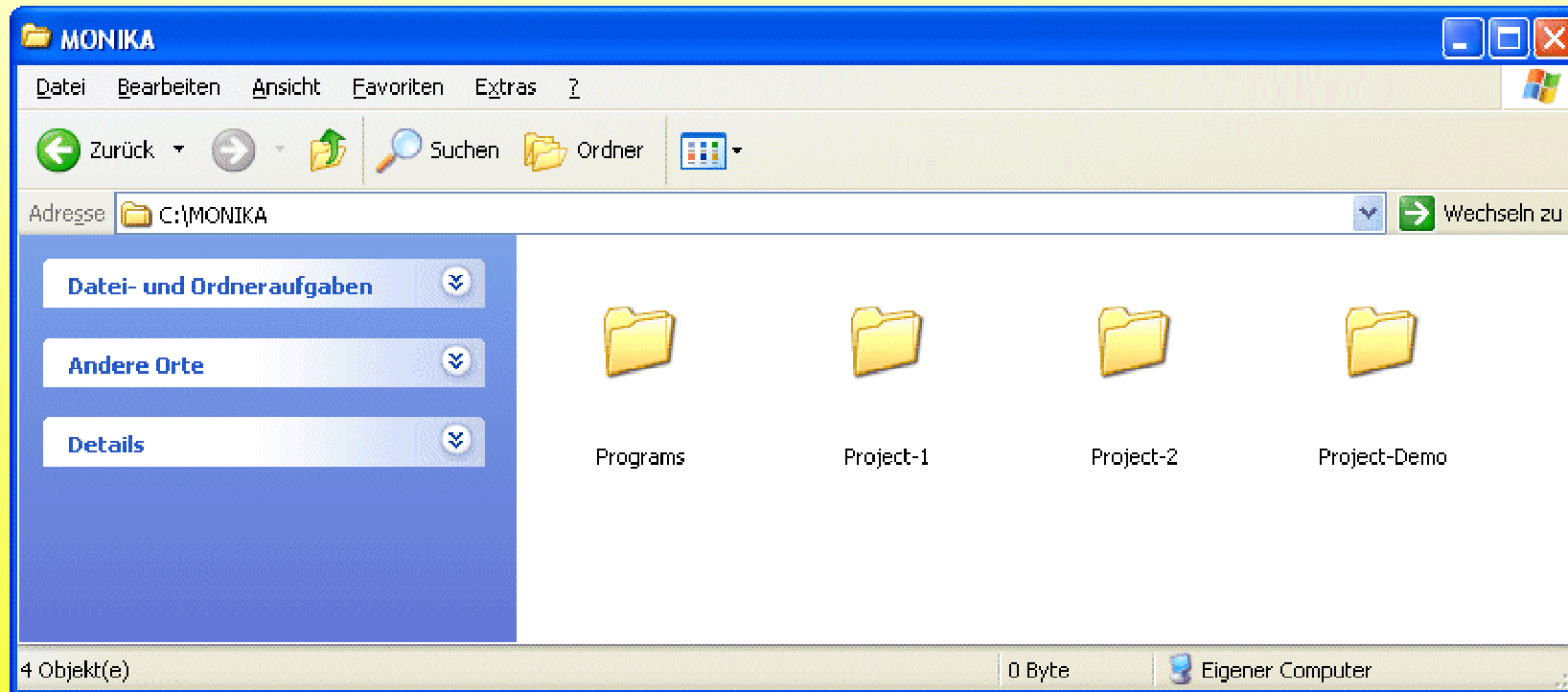


Overview

Overview



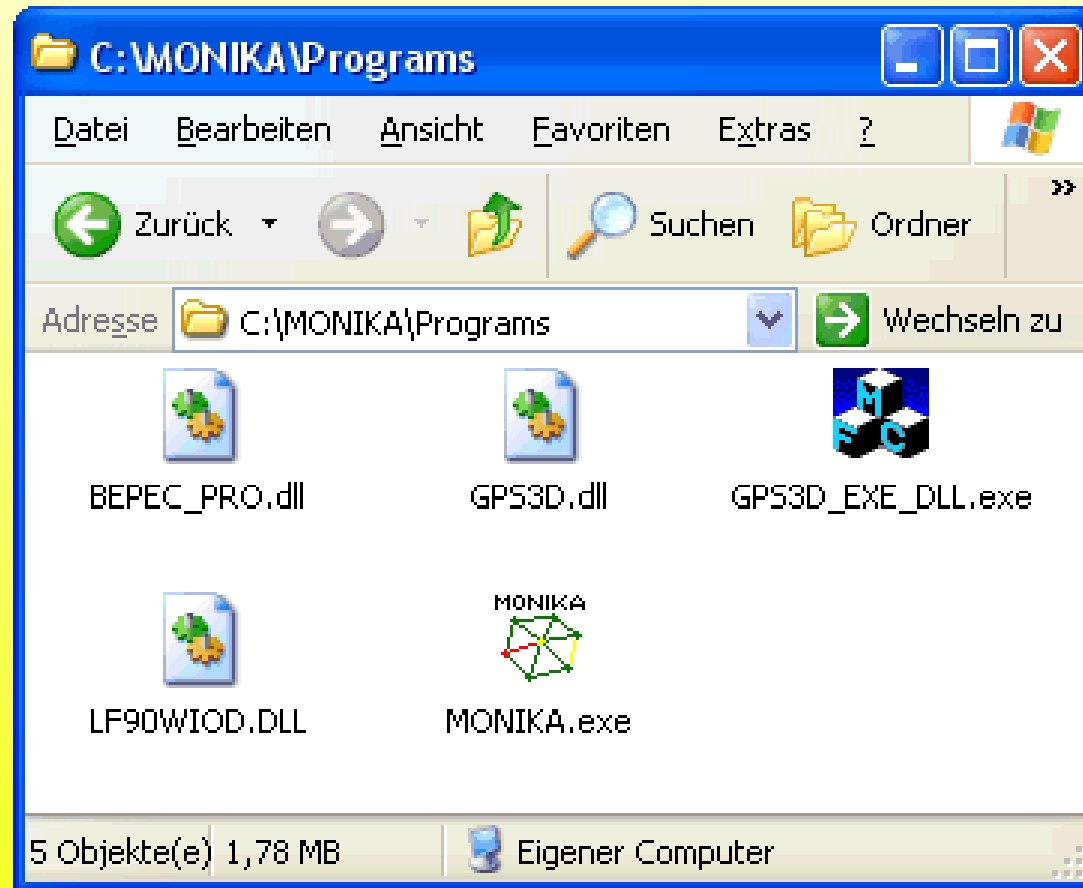
1. Preparations



- Project and folder-based file handling

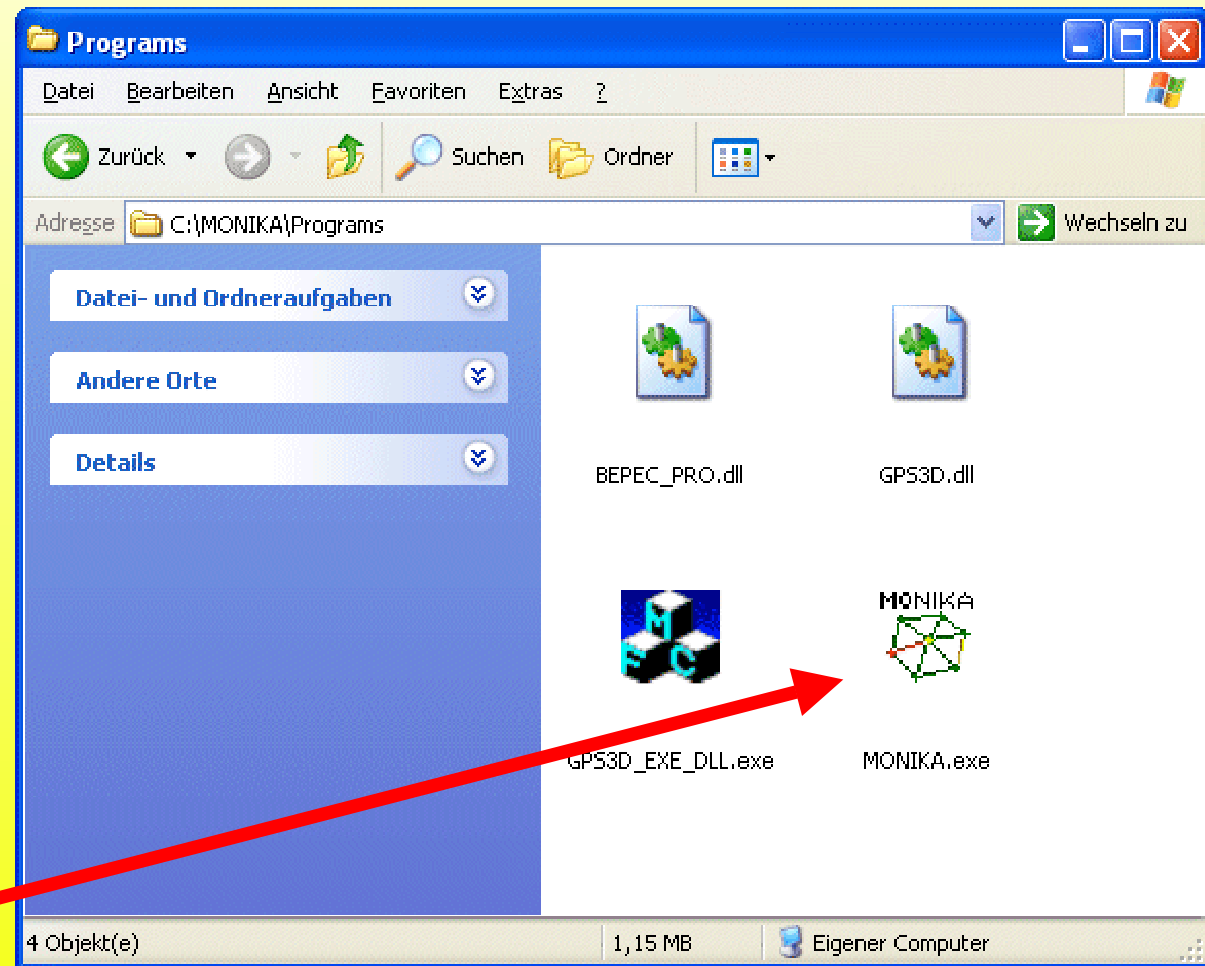
MONIKA-Files

- MONIKA.exe
- BEPEC_PRO.dll
- GPS3D.dll
- GPS_EXE_DLL.exe
- LF90WIOD.dll
- GKA2SINEX.exe



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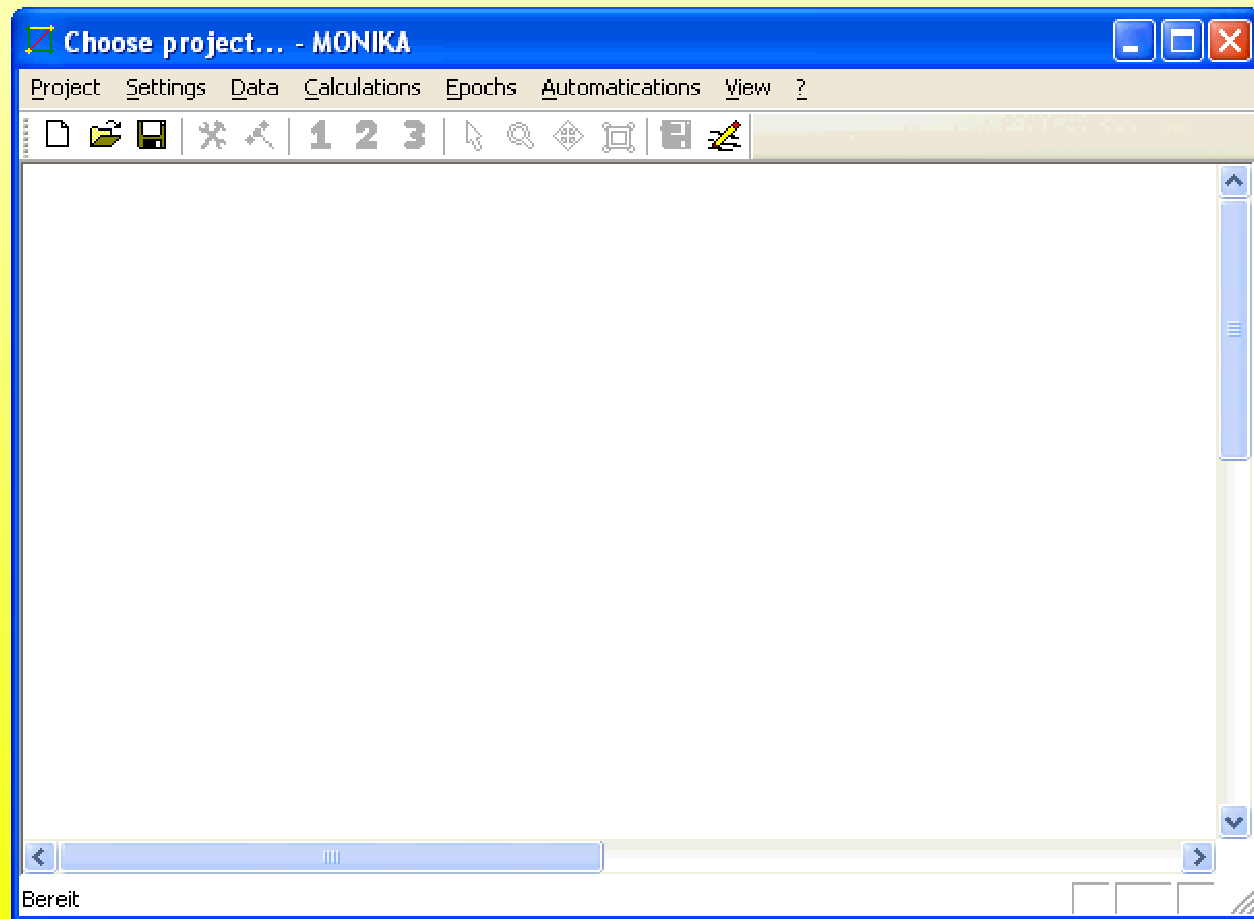


start MONIKA

2. New project

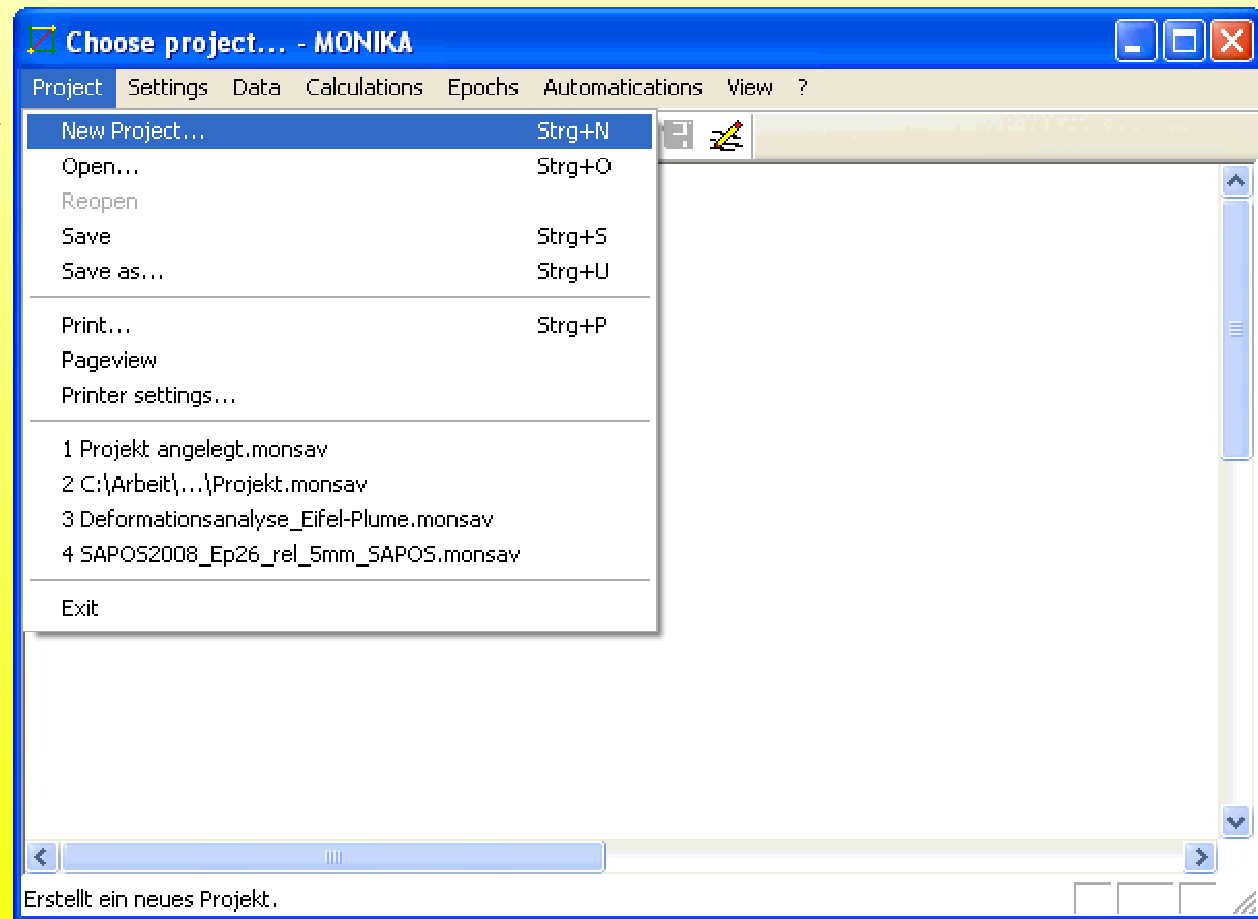
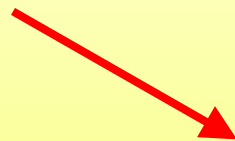
2.1 Program window

- menu bar →
- shortcut bar →
- status bar

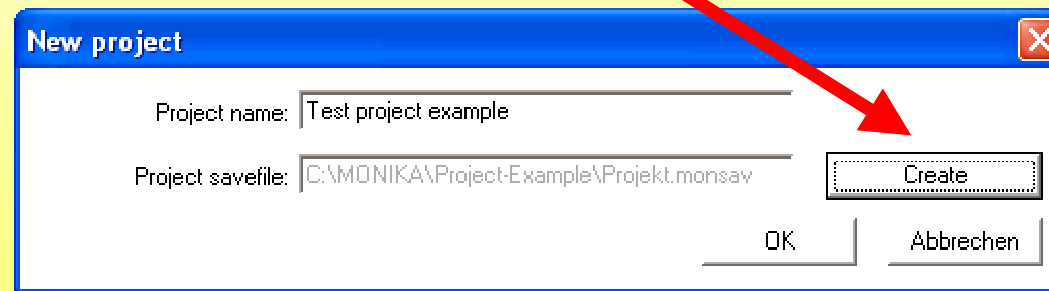


2.1 Program window

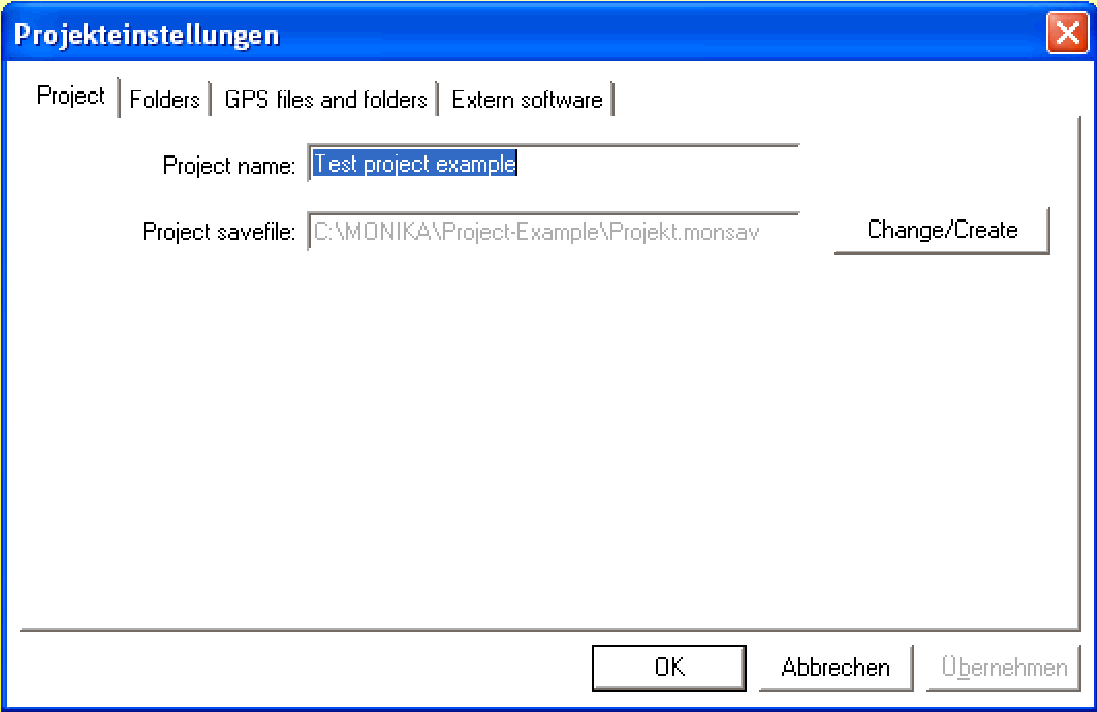
creating a new project



creating a new save file



Project settings - Project page



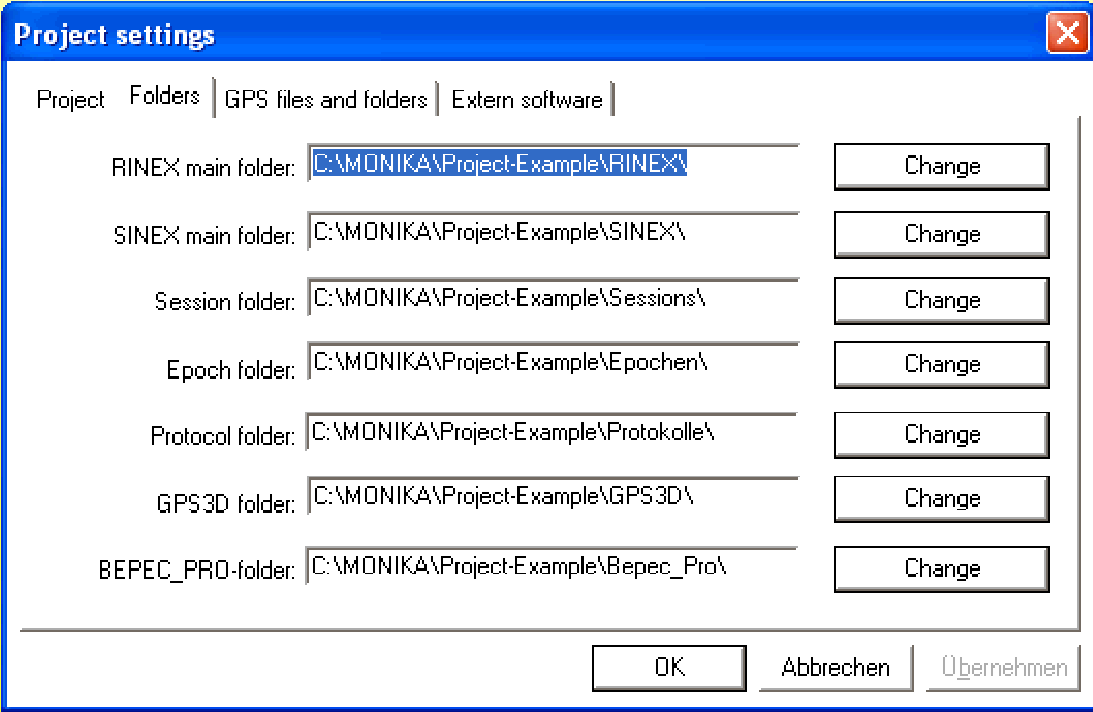
Projekteinstellungen

Project | Folders | GPS files and folders | Extern software

Project name:

Project savefile:

Project settings - Folders page



Project settings

Project | **Folders** | GPS files and folders | Extern software

RINEX main folder: C:\MONIKA\Project-Example\RINEX\

SINEX main folder: C:\MONIKA\Project-Example\SINEX\

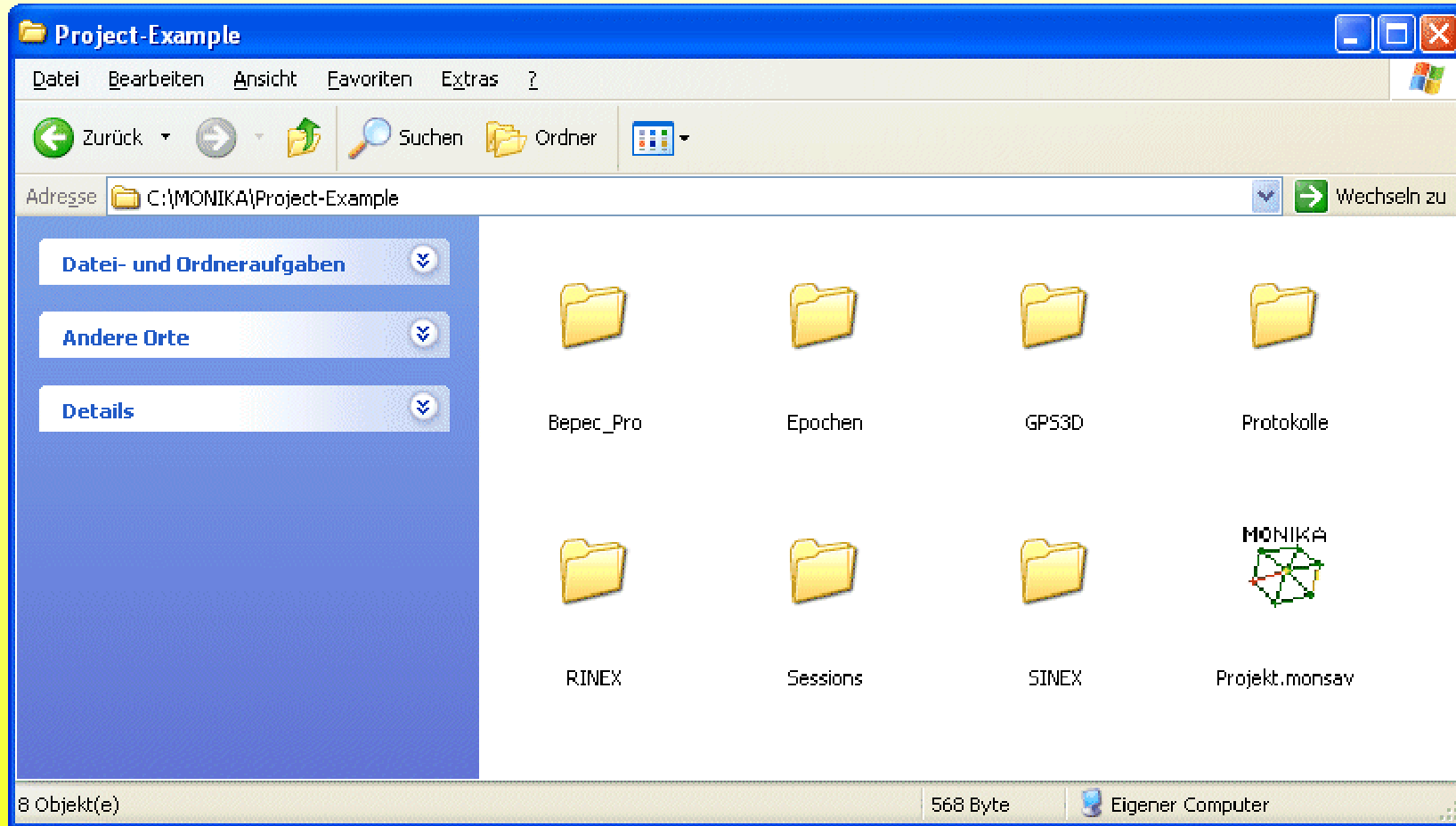
Session folder: C:\MONIKA\Project-Example\Sessions\

Epoch folder: C:\MONIKA\Project-Example\Epochen\

Protocol folder: C:\MONIKA\Project-Example\Protokolle\

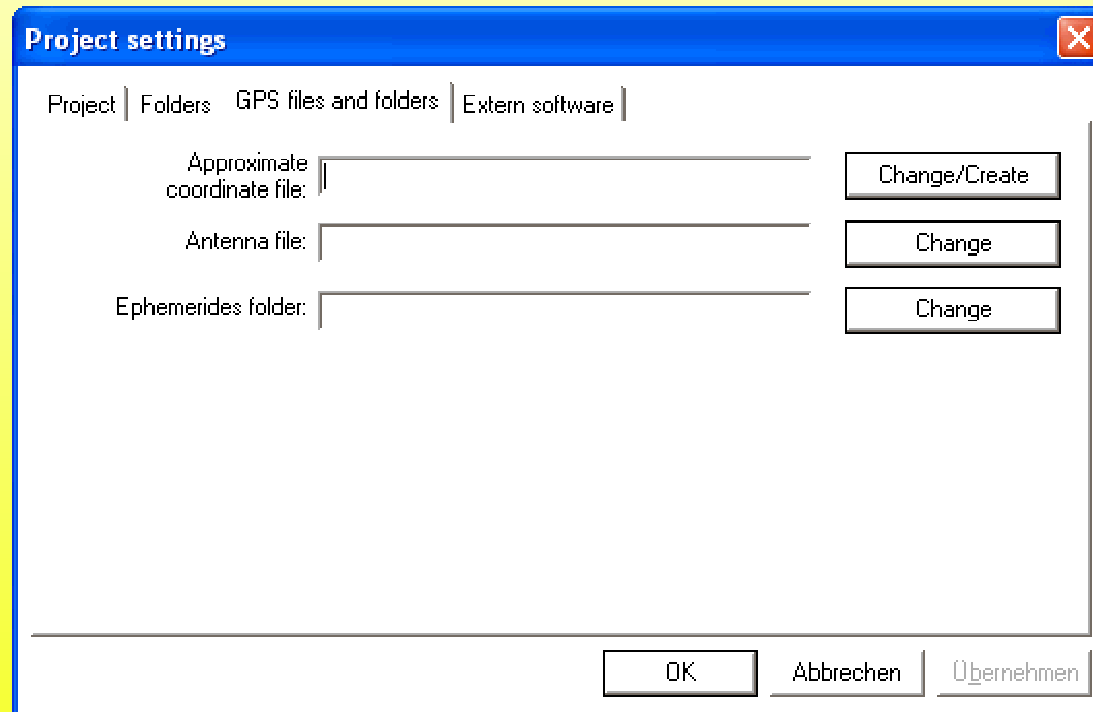
GPS3D folder: C:\MONIKA\Project-Example\GPS3D\

BEPEC_PRO-folder: C:\MONIKA\Project-Example\Bepec_Pro\



folder-based file handling

Project settings - GPS page



Project settings

Project | Folders | **GPS files and folders** | Extern software

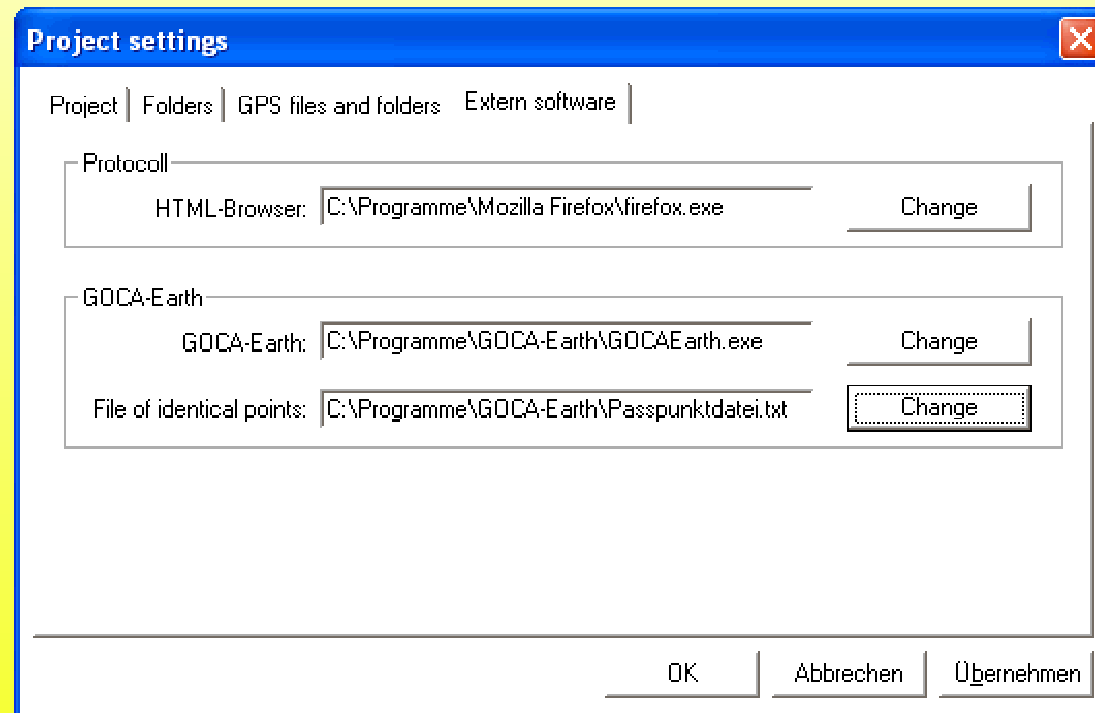
Approximate coordinate file:

Antenna file:

Ephemerides folder:

files which are needed for the baseline processing

Project settings - extern software page



eg. internet browser for protocol viewing

3. Baseline processing



There are two ways of baseline processing:

- Manual baseline processing with
BEPEC_PRO (see chapter 3.1)
- Automatic baseline processing with
GOCA-GNSS-Control (see chapter 3.2)

3.1 BEPEC PRO

Files needed:

- Aproximate coordinates (for net design)
- Antenna calibration file
- RINEX files
- Ephemerides data (optional)

Station	East (m)	North (m)	Up (m)
0384	4157307.0000	6711171.0000	4774690.0000
0386	4126956.0000	669775.0000	4800826.0000
0387	4112214.0000	627442.0000	4818951.0000
0388	4164699.0000	593657.0000	4778281.0000
0389	4123747.0000	706187.0000	4798643.0000
0390	4236029.0000	583607.0000	4717073.0000
0391	4165864.0000	719747.0000	4760759.0000
0392	4081117.0000	695459.0000	4836010.0000
0393	4185910.0000	666037.0000	4732085.0000
0394	4130257.0000	666265.0000	4755490.0000
0395	4232700.0000	717747.0000	4701825.0000
0396	4205648.0000	725930.0000	4724763.0000
0397	4214033.0000	684329.0000	4723570.0000
0398	4192085.0000	620213.0000	4751866.0000
0399	4224193.0000	628656.0000	4722440.0000
FHBB	4276062.0000	573481.0000	4682319.0000
FRIC	4271934.0000	608891.0000	4682092.0000
KARL	4146524.0000	613137.0000	4791516.0000
KREU	4250723.0000	685424.0000	4690487.0000
SCHA	4248835.0000	646812.0000	4697774.0000
STGA	4264776.0000	701896.0000	4675676.0000

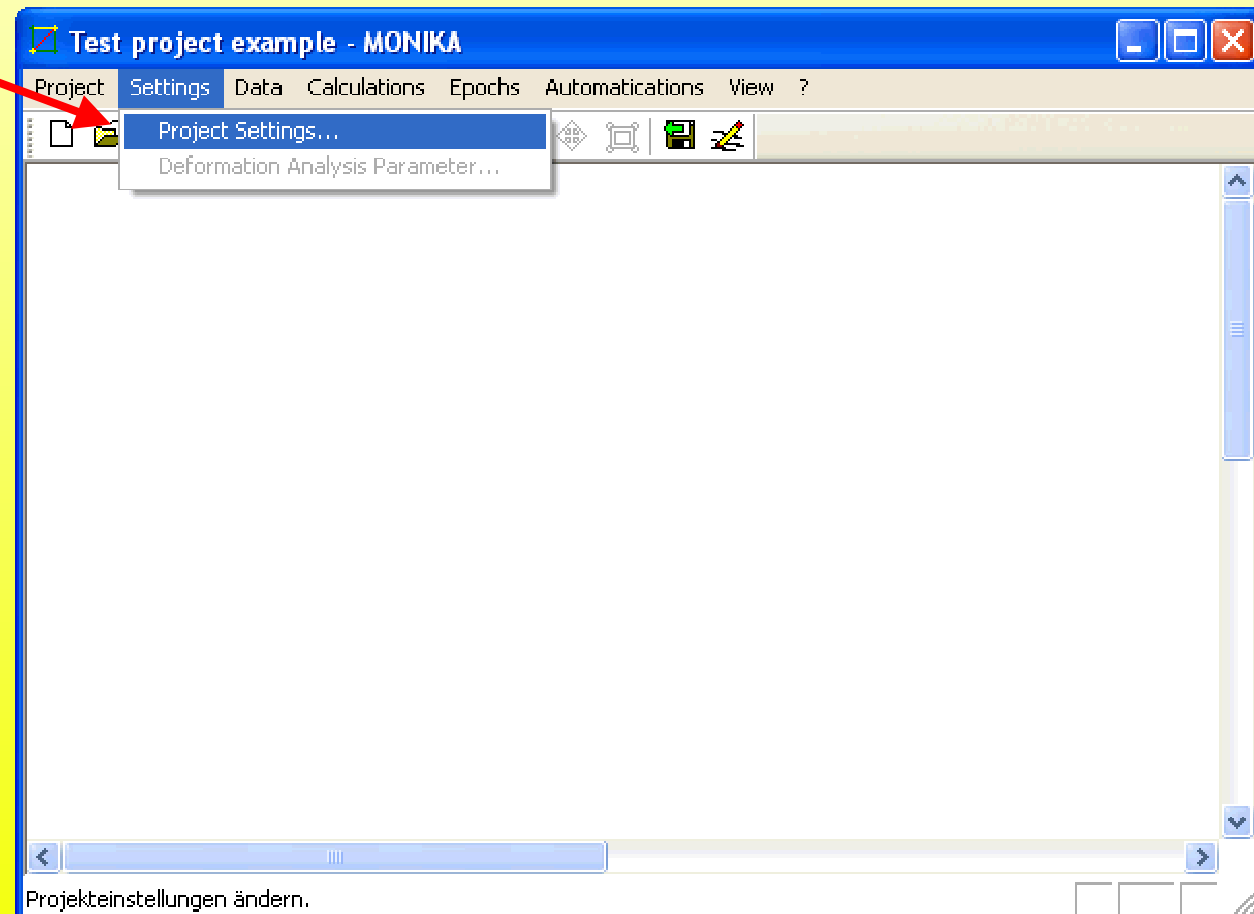
ANTENNA DATA FILE

START OF ANTENNA DATA

Antenna	PCU TYPE	REFANT	COMMENT
1	G		
2	G		
3	G		
4	G		
5	G		
6	G		
7	G		
8	G		
9	G		
10	G		
11	G		
12	G		
13	G		
14	G		
15	G		
16	G		
17	G		
18	G		
19	G		
20	G		
21	G		
22	G		
23	G		
24	G		
25	G		
26	G		
27	G		
28	G		
29	G		
30	G		
31	G		
32	G		
33	G		
34	G		
35	G		
36	G		
37	G		
38	G		
39	G		
40	G		
41	G		
42	G		
43	G		
44	G		
45	G		
46	G		
47	G		
48	G		
49	G		
50	G		
51	G		
52	G		
53	G		
54	G		
55	G		
56	G		
57	G		
58	G		
59	G		
60	G		
61	G		
62	G		
63	G		
64	G		
65	G		
66	G		
67	G		
68	G		
69	G		
70	G		
71	G		
72	G		
73	G		
74	G		
75	G		
76	G		
77	G		
78	G		
79	G		
80	G		
81	G		
82	G		
83	G		
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85	G		
86	G		
87	G		
88	G		
89	G		
90	G		
91	G		
92	G		
93	G		
94	G		
95	G		
96	G		
97	G		
98	G		
99	G		
100	G		

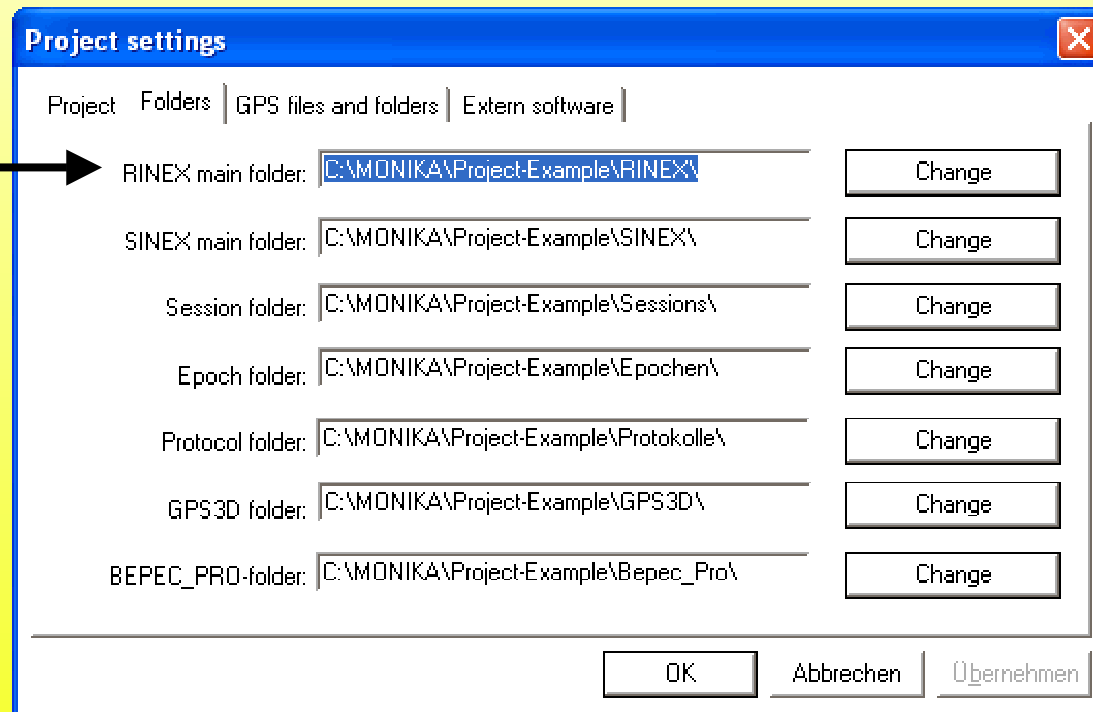
3.1 Baseline processing, BEPEC_PRO

project settings



Project settings - Folders page

main folder for
RINEX files



Project settings

Project | **Folders** | GPS files and folders | Extern software

RINEX main folder: C:\MONIKA\Project-Example\RINEX\

SINEX main folder: C:\MONIKA\Project-Example\SINEX\

Session folder: C:\MONIKA\Project-Example\Sessions\

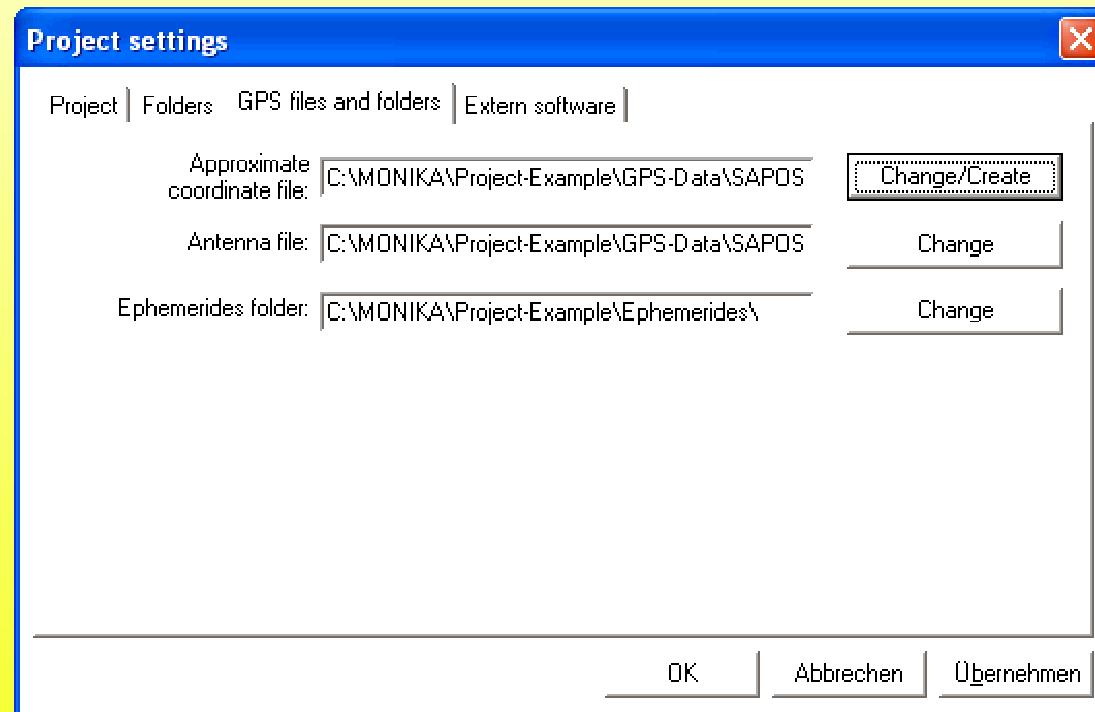
Epoch folder: C:\MONIKA\Project-Example\Epochen\

Protocol folder: C:\MONIKA\Project-Example\Protokolle\

GPS3D folder: C:\MONIKA\Project-Example\GPS3D\

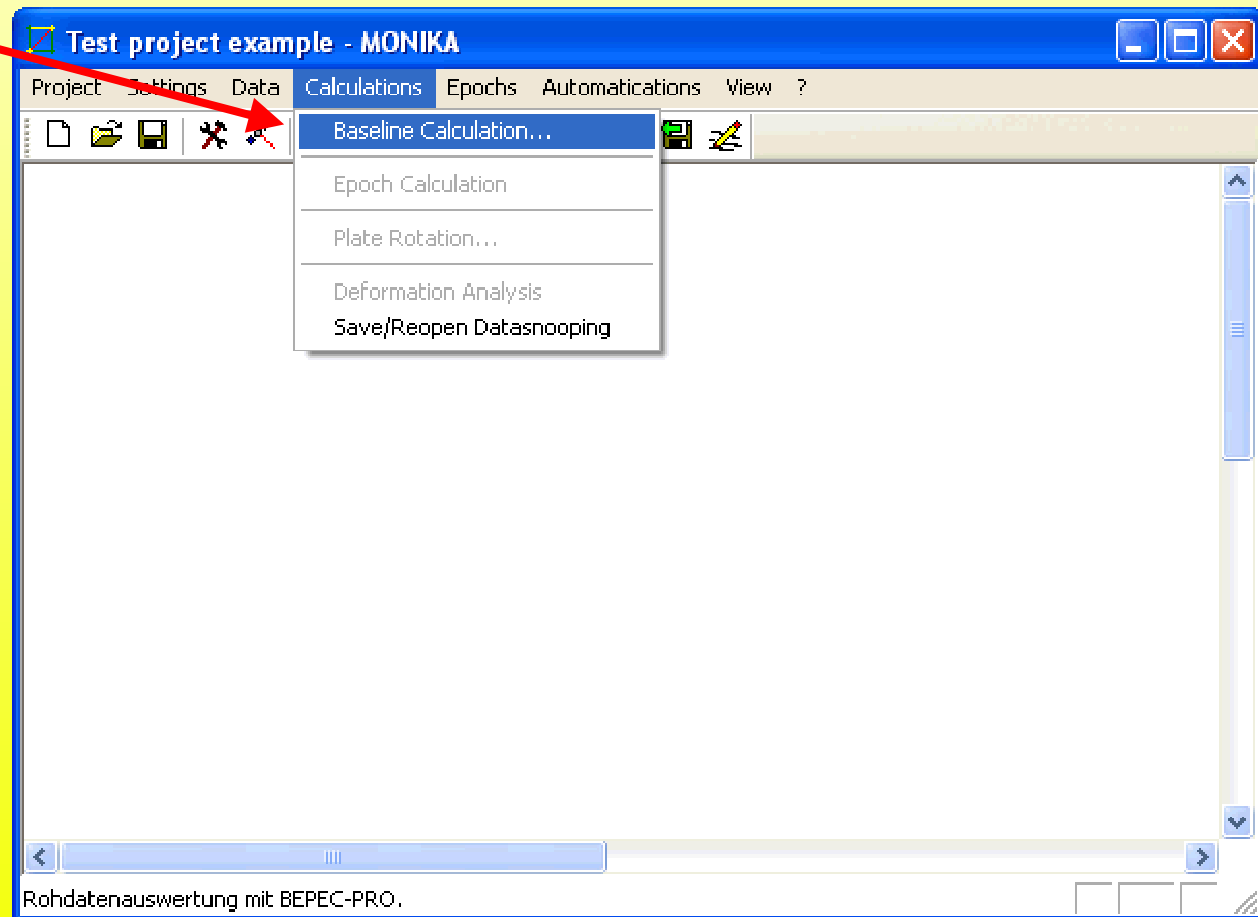
BEPEC_PRO-folder: C:\MONIKA\Project-Example\Bepec_Pro\

Project settings - GPS page



files which are needed for the baseline processing

baseline processing

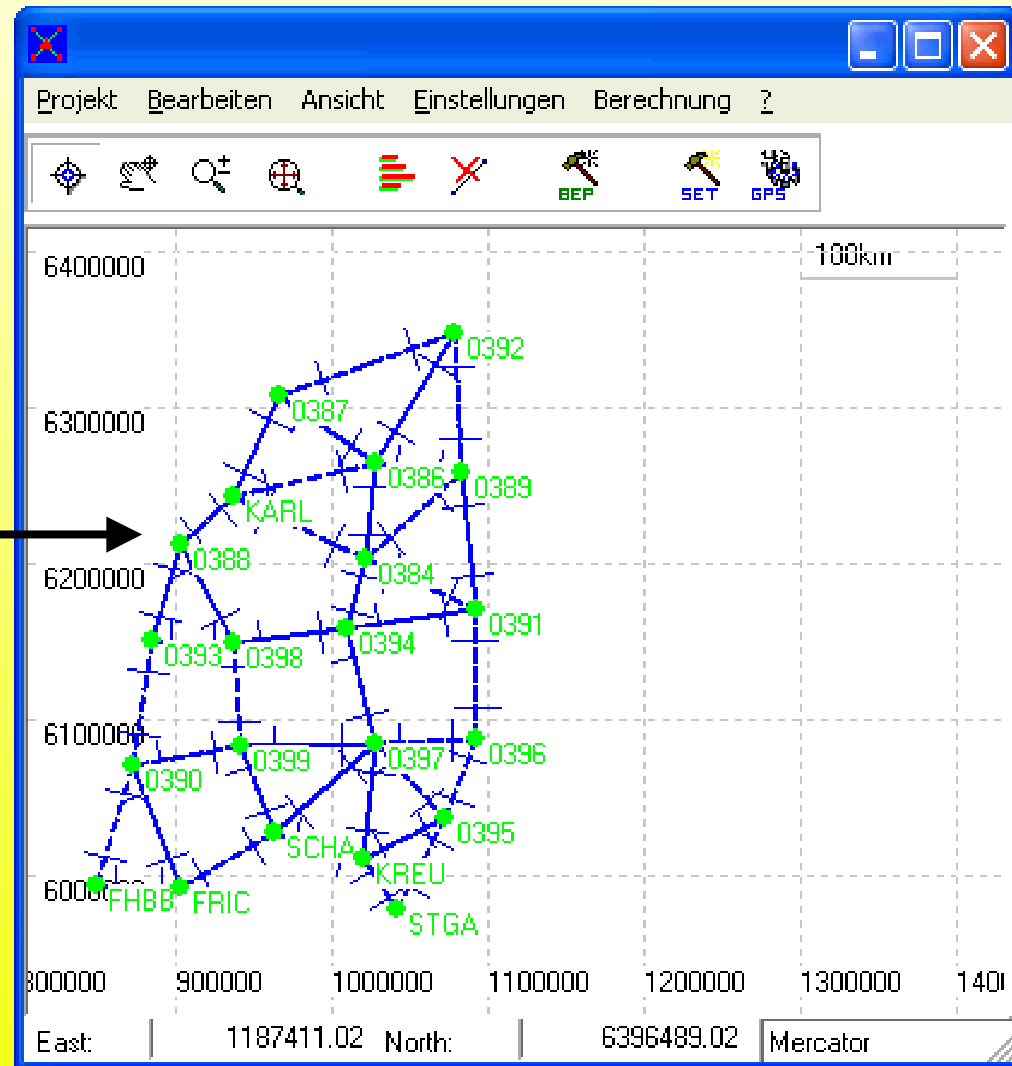


3.1 Baseline processing, BEPEC_PRO

BEPEC_PRO DLL

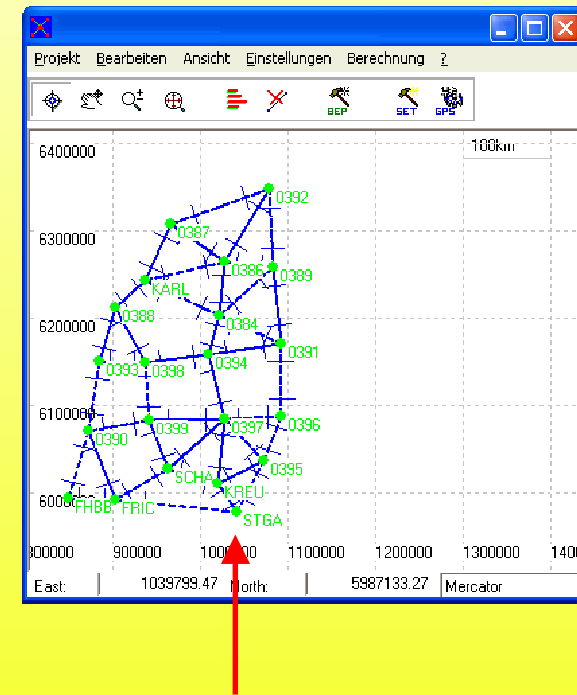
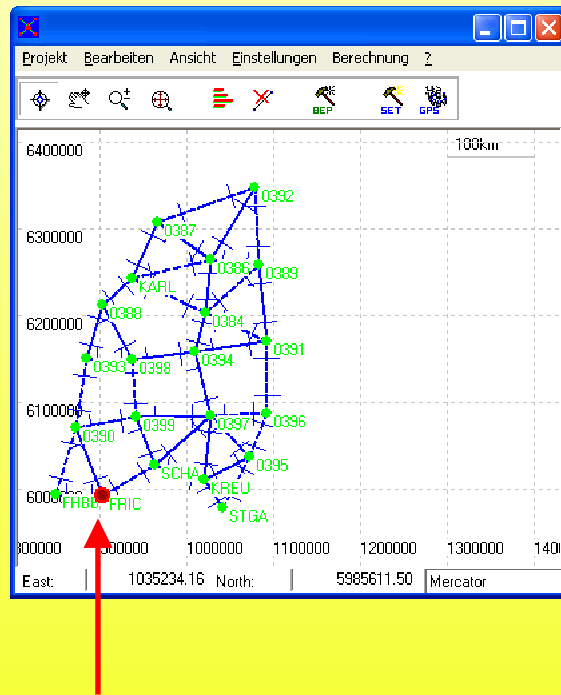
Automatic baseline
creation

(only german interface available)



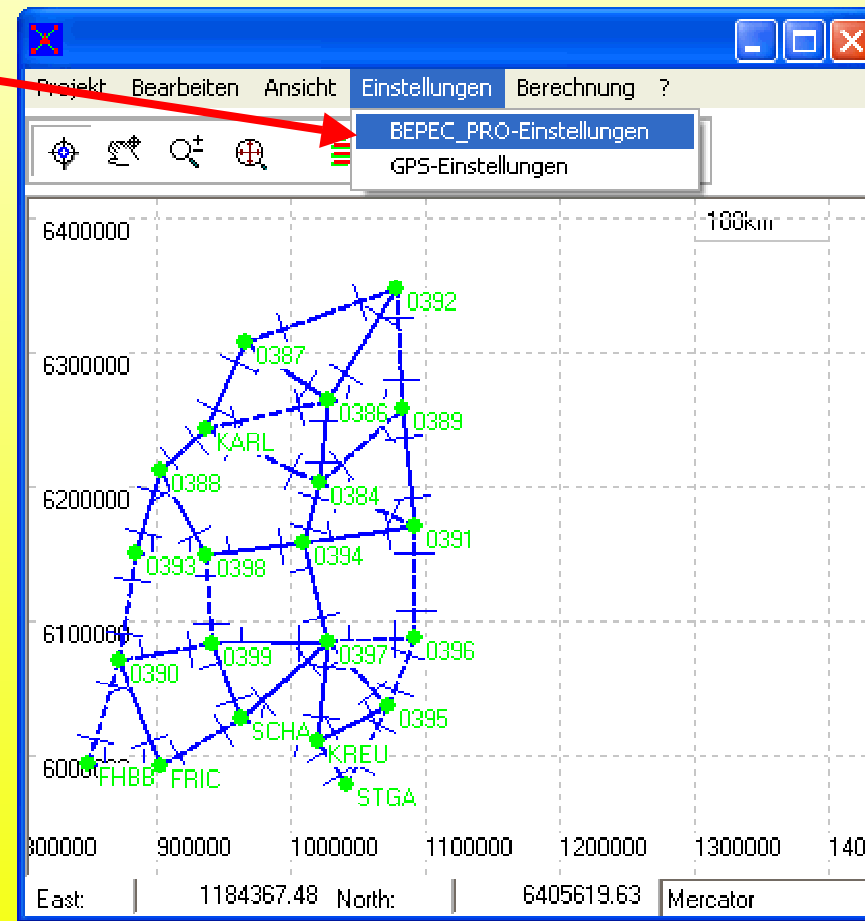
BEPEC_PRO DLL

create baseline
(left click on points)



delete baseline: Mark baseline with left click and then delete it with right click.

BEPEC_PRO settings



3.1 Baseline processing, BEPEC_PRO

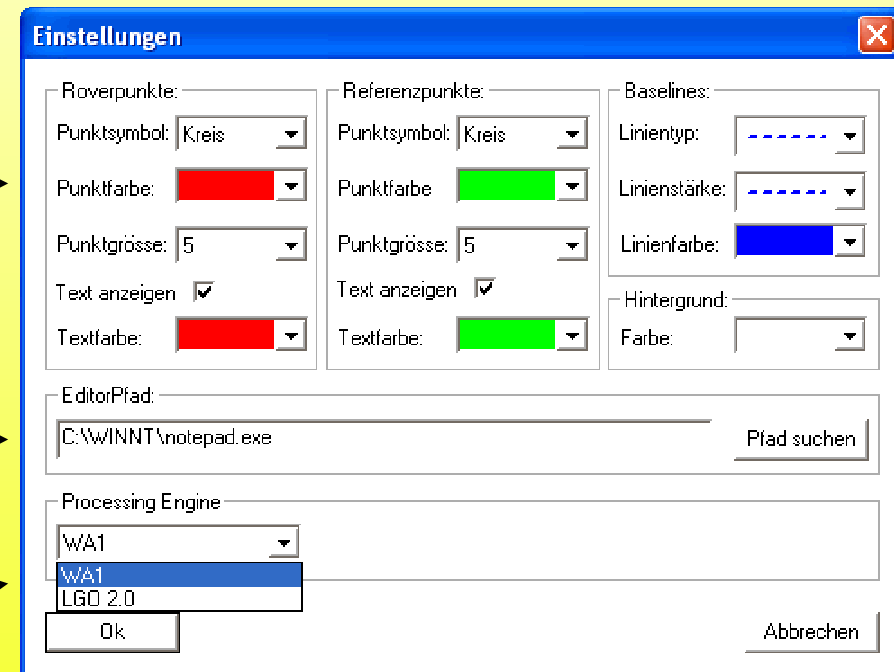
BEPEC_PRO DLL

View settings

Editor setting

Processing engine

(WA1, LGO 2.0)



Einstellungen

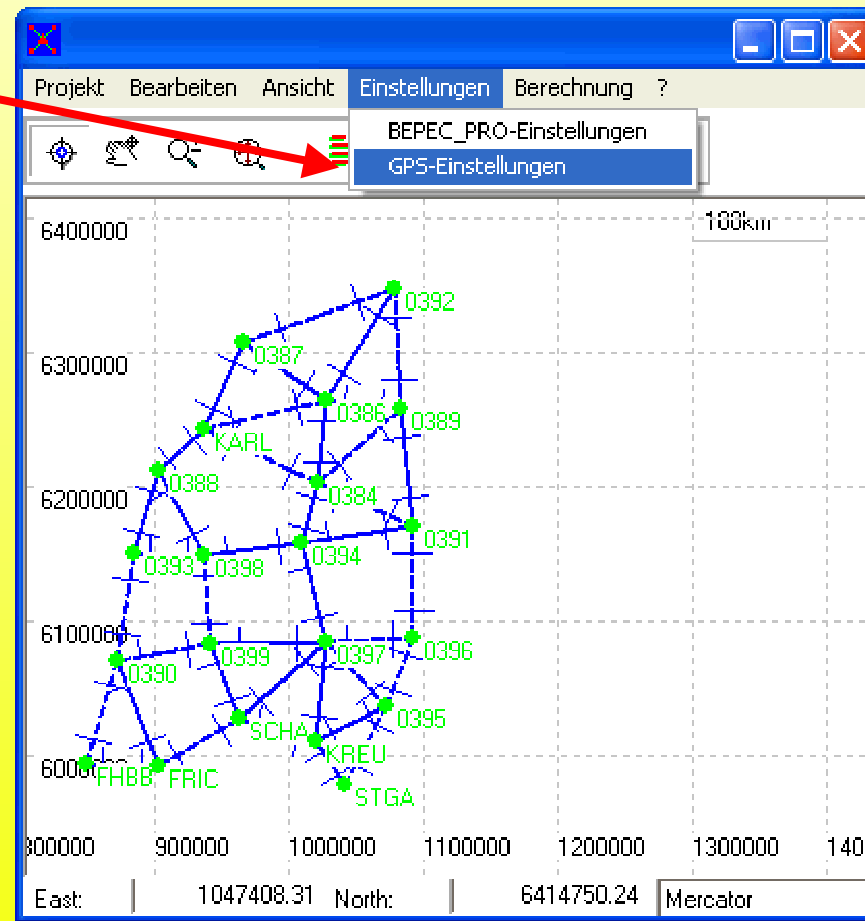
Flowerpunkte:	Referenzpunkte:	Baselines:
Punktsymbol: Kreis	Punktsymbol: Kreis	Linientyp: - - - -
Punktfarbe: [Red]	Punktfarbe: [Green]	Linienstärke: - - - -
Punktgröße: 5	Punktgröße: 5	Linienfarbe: [Blue]
Text anzeigen: <input checked="" type="checkbox"/>	Text anzeigen: <input checked="" type="checkbox"/>	Hintergrund:
Textfarbe: [Red]	Textfarbe: [Green]	Farbe: []

EditorPfad: C:\WINNT\notepad.exe Pfad suchen

Processing Engine: [WA1] (WA1, LGO 2.0)

Ok Abbrechen

GPS settings



3.1 Baseline processing, BEPEC_PRO

BEPEC_PRO DLL

used satellites



solution type (best) →
raw data intervall (all data) →

WA1-Einstellungen

Auswerteparameter:

Lösungstyp: Beste Lösung

Datenintervall: Alle Daten

Elevation: 15 [m]

Grenze für kurze Baselines: 7 [km]

Satelliten verwenden:

Alle Satelliten verwenden

<input checked="" type="checkbox"/> S1	<input checked="" type="checkbox"/> S9	<input checked="" type="checkbox"/> S17	<input checked="" type="checkbox"/> S25
<input checked="" type="checkbox"/> S2	<input checked="" type="checkbox"/> S10	<input checked="" type="checkbox"/> S18	<input checked="" type="checkbox"/> S26
<input checked="" type="checkbox"/> S3	<input checked="" type="checkbox"/> S11	<input checked="" type="checkbox"/> S19	<input checked="" type="checkbox"/> S27
<input checked="" type="checkbox"/> S4	<input checked="" type="checkbox"/> S12	<input checked="" type="checkbox"/> S20	<input checked="" type="checkbox"/> S28
<input checked="" type="checkbox"/> S5	<input checked="" type="checkbox"/> S13	<input checked="" type="checkbox"/> S21	<input checked="" type="checkbox"/> S29
<input checked="" type="checkbox"/> S6	<input checked="" type="checkbox"/> S14	<input checked="" type="checkbox"/> S22	<input checked="" type="checkbox"/> S30
<input checked="" type="checkbox"/> S7	<input checked="" type="checkbox"/> S15	<input checked="" type="checkbox"/> S23	<input checked="" type="checkbox"/> S31
<input checked="" type="checkbox"/> S8	<input checked="" type="checkbox"/> S16	<input checked="" type="checkbox"/> S24	

Ephemeriden:

broadcast präzise

Dateiordner: C:\MONIKA\Project-Example\Ephemerides\ Pfad wählen

Antennenkorrekturen:

Korrekturen einführen C:\MONIKA\Project-Example\GPS-Data\SAPD Datei wählen

WA1:

Programmpfad: C:\MONIKA\Programs\wa1.exe Datei wählen

Ok Abbrechen

Ephemerides →

Antenna corrections →

Processing engine →
(executeable file)

BEPEC_PRO DLL

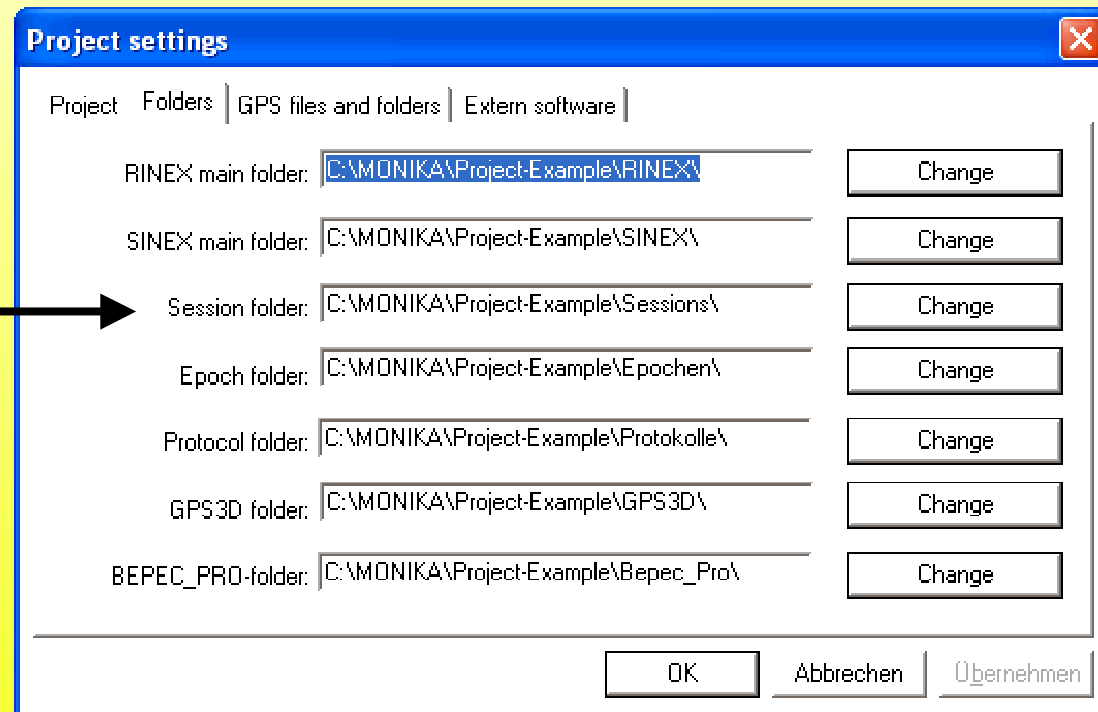
start processing

The screenshot displays the BEPEC_PRO software interface. The main window features a menu bar with 'Projekt', 'Bearbeiten', 'Ansicht', 'Einstellungen', 'Berechnung', and '?'. The 'Berechnung' menu is open, showing 'Berechnung starten/beenden' and 'Berechnung neu starten'. A red arrow points from the text 'start processing' to the 'Berechnung starten/beenden' option. The main area shows a network diagram with nodes labeled 'KARL', 'SCHAI', 'KREU', 'STGA', 'FHBB', 'FRIC', and 'STGA', connected by blue lines. The diagram is overlaid on a grid with coordinates ranging from 800000 to 1400000 on the x-axis and 6000000 to 6400000 on the y-axis. A scale bar indicates 100km. The status bar at the bottom shows 'East: 1211759.32', 'North: 6404097.86', and 'Mercator'. A 'Processing' window is open in the bottom right corner, showing a globe icon and the text 'WA1-Baselineberechnung BL 1/78 Ordner 1/6'.

3.1 Baseline processing, BEPEC_PRO

Project settings - Folders page

baseline processing
solutions are saved
here



Project settings

Project | Folders | GPS files and folders | Extern software

RINEX main folder:	C:\MONIKA\Project-Example\RINEX\	Change
SINEX main folder:	C:\MONIKA\Project-Example\SINEX\	Change
Session folder:	C:\MONIKA\Project-Example\Sessions\	Change
Epoch folder:	C:\MONIKA\Project-Example\Epochen\	Change
Protocol folder:	C:\MONIKA\Project-Example\Protokolle\	Change
GPS3D folder:	C:\MONIKA\Project-Example\GPS3D\	Change
BEPEC_PRO-folder:	C:\MONIKA\Project-Example\Bepec_Pro\	Change

OK Abbrechen Übernehmen

BLS-Interface

Date

Number of

Sessions

1. Baseline

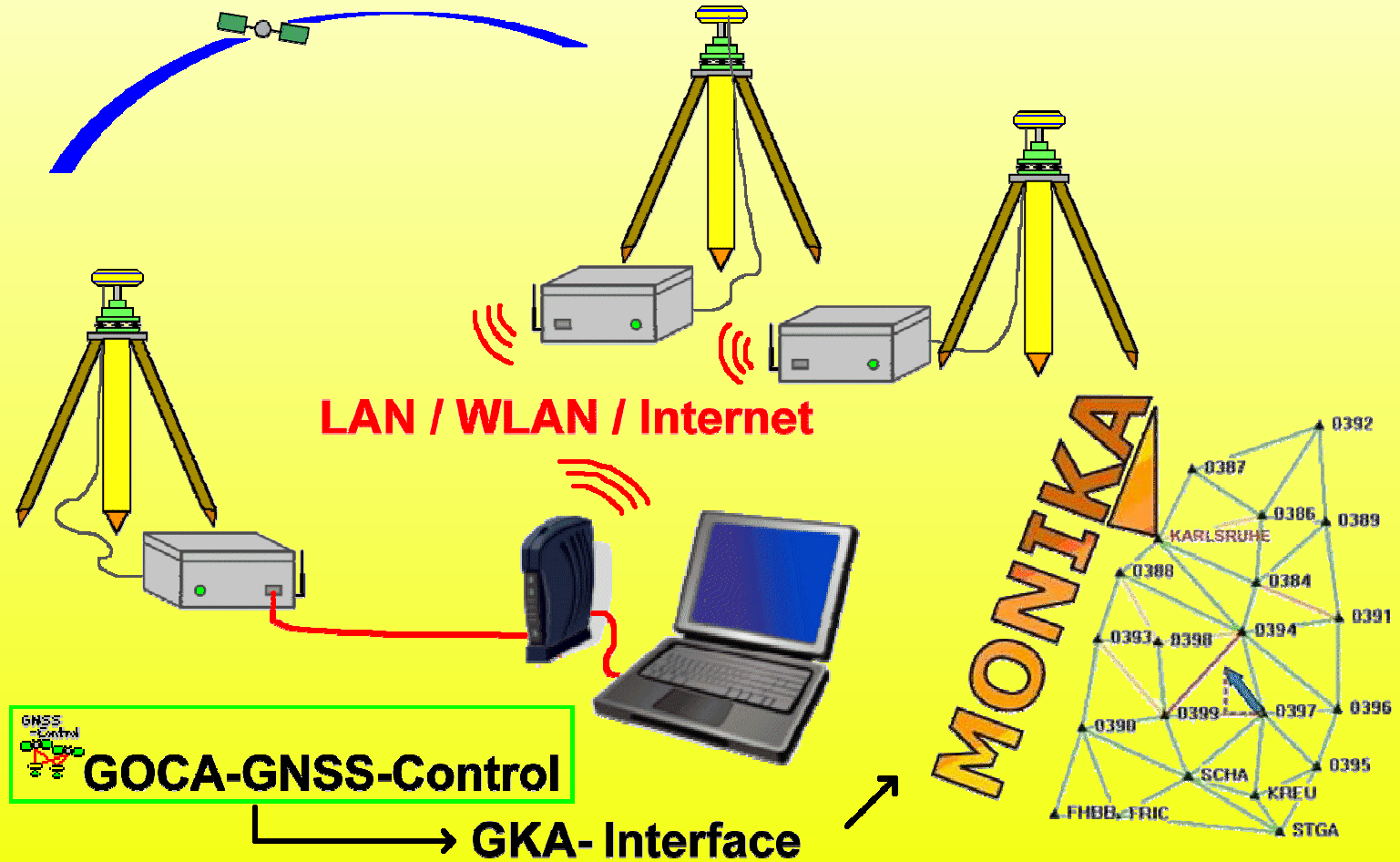
2. Baseline

```

20050110.bls - Editor
Datei Bearbeiten Format Ansicht ?
Datum =10.01.2005
Anzahl Sessions =94
SESSION
Baseline von 0399 nach 0394
Ref-Punkt =0399
Ref-XYZ =4224193.0000,628656.0000,4722440.0000
Rov-Punkt =0394
Rov-XYZ =4180256.8749,666265.4207,4755490.3029
C-Matrix =0.000090000,0.000011265,0.000078642,0.000010000,0.000017457,0.000090000
ENDE
SESSION
Baseline von 0394 nach 0399
Ref-Punkt =0394
Ref-XYZ =4180257.0000,666265.0000,4755490.0000
Rov-Punkt =0399
Rov-XYZ =4224193.1268,628655.5791,4722439.6980
C-Matrix =0.000090000,0.000011121,0.000078633,0.000010000,0.000017376,0.000090000
ENDE
SESSION
Baseline von 0390 nach SCHA
Ref-Punkt =0390
Ref-XYZ =4236029.0000,583607.0000,4717073.0000
Rov-Punkt =SCHA
Rov-XYZ =4248835.3178,646812.0708,4697773.1124
C-Matrix =0.000090000,0.000013419,0.000083700,0.000010000,0.000009918,0.000090000
ENDE

```

3.2 GOCA-GNSS-Control



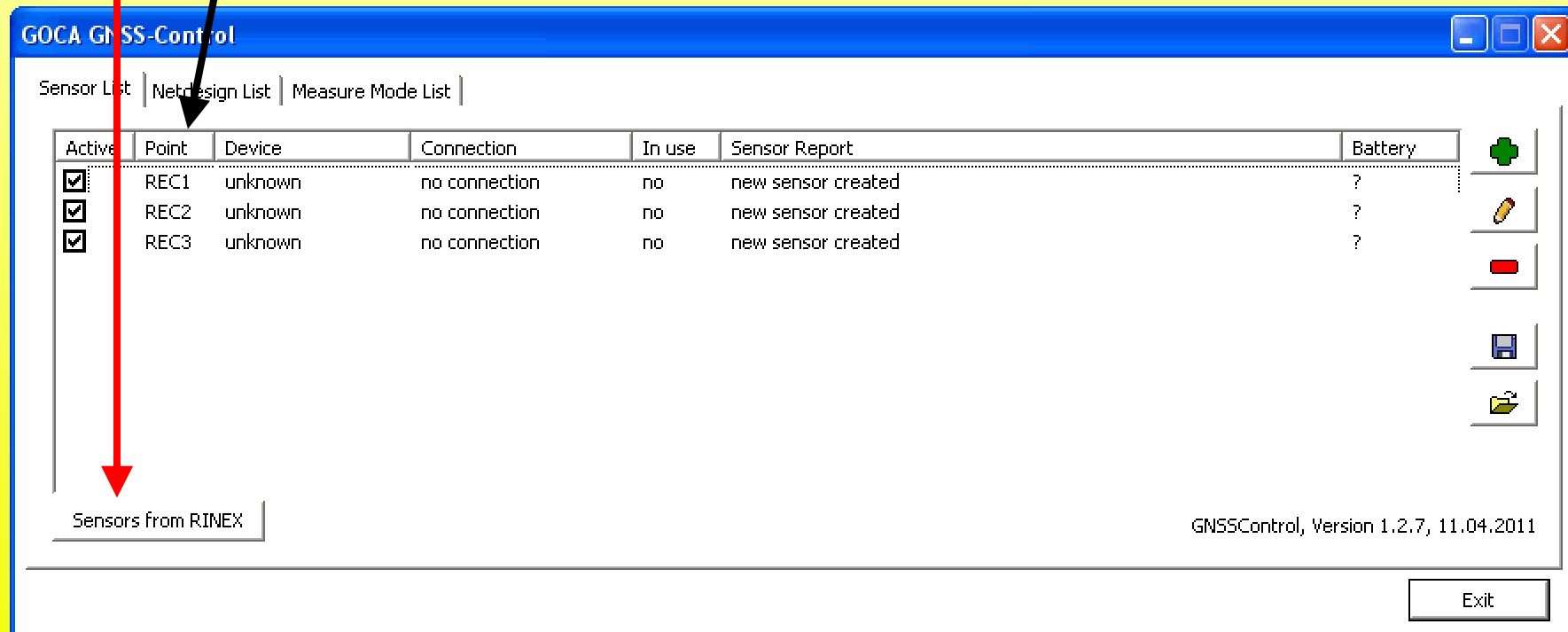
3.2 Baseline processing, GOCA-GNSS-Control

GOCA-GNSS-Control



Import GNSS-Receiver from RINEX files

List of GNSS-Receivers



Active	Point	Device	Connection	In use	Sensor Report	Battery
<input checked="" type="checkbox"/>	REC1	unknown	no connection	no	new sensor created	?
<input checked="" type="checkbox"/>	REC2	unknown	no connection	no	new sensor created	?
<input checked="" type="checkbox"/>	REC3	unknown	no connection	no	new sensor created	?

Sensors from RINEX

GNSSControl, Version 1.2.7, 11.04.2011

Exit

GOCA-GNSS-Control



List of GNSS-Networks

List of baselines

GOCA GNSS-Control

Sensor List | **Netdesign List** | Measure Mode List

Name	Baselines
Net 1	001
Net 2	006

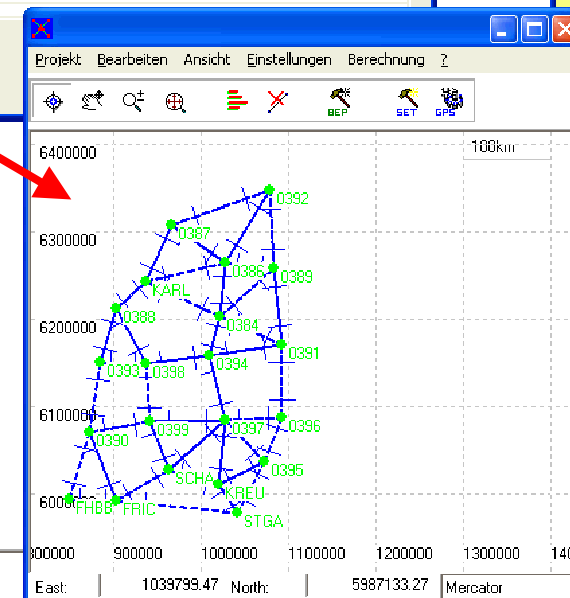
Edit GNSS Net

Name: Net 2

Active	Base	Rover	Distance
<input checked="" type="checkbox"/>	P1	P2	1.1
<input checked="" type="checkbox"/>	P2	P1	1.1
<input checked="" type="checkbox"/>	P1	P5	6366161.0

Start BepecPro

Baseline design





GOCA-GNSS-Control

Mode 2: RINEX Processing

Processing settings

GOCA GNSS-Control

Sensor List | Netdesign List | Measure Mode List

Active	Name	Mode
<input type="checkbox"/>	Mode 1 RINEX Datacollection	RINEX Collection
<input type="checkbox"/>	Mode 2 RINEX Processing	RINEX Processing
<input type="checkbox"/>	Mode 3 RTK-Processing	RTK Processing

RINEX Input folder
GKA Output folder

RINEX Processing Mode

RINEX Processing | Timespans

Rinex Processing

Name: Mode 2 RINEX Processing Minimum data duration of one baseline: 120 sec

Processor: WA1 Number of parallel threads: 1

Rinex-Input

RINEX folder: C:\Temp\rinexfiles2\ Change

Archiv folder: C:\Temp\Archive\ Change

Additional Input

use antenna file Antenna file: Change

use ephemerides Ephemerides: Change

GKA-Output

GKA folder: C:\Temp\gka\ Change

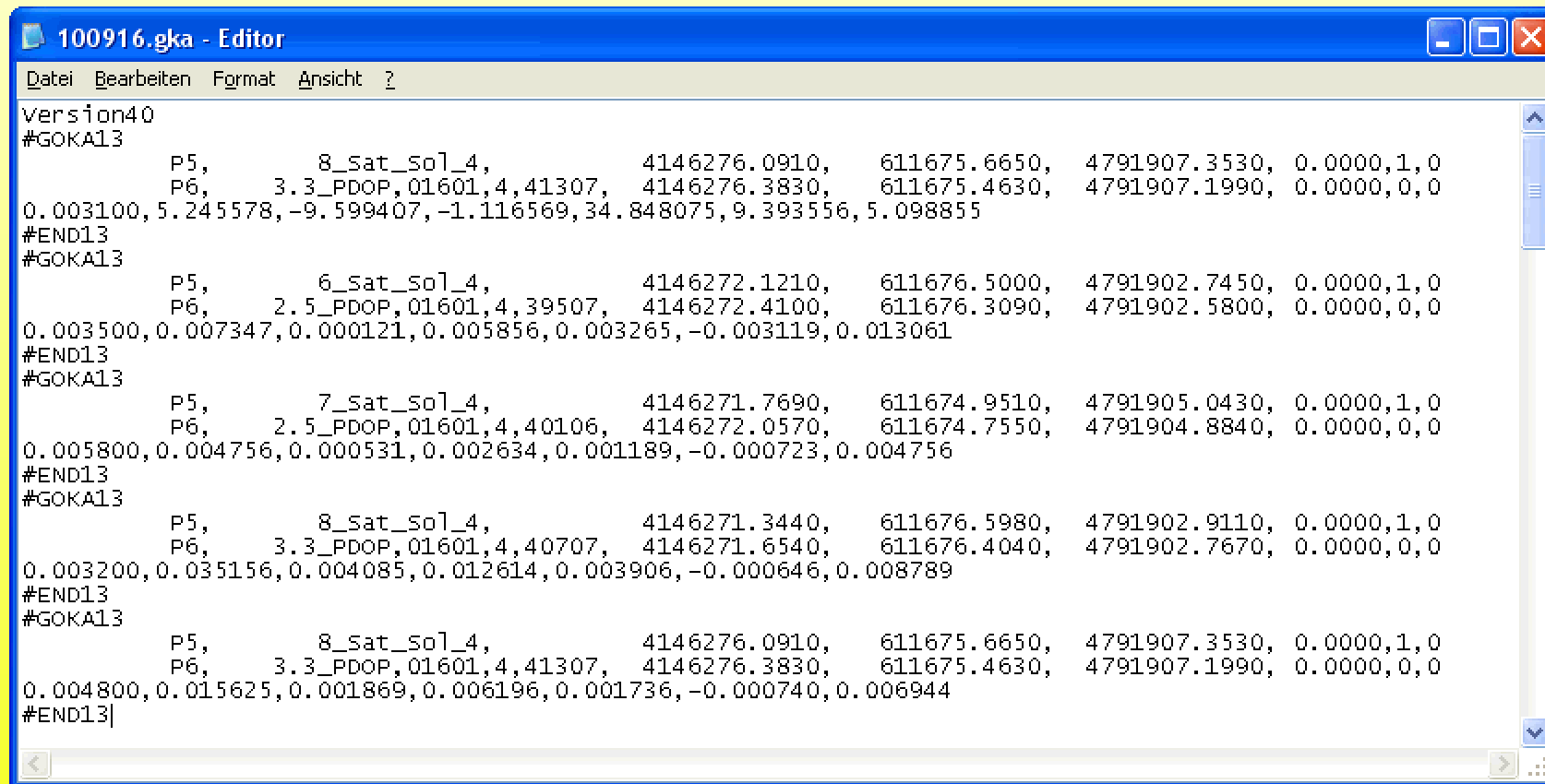
Alarm file: C:\Temp\gka\GOCA.alr Change

Net-Design-Timemanager-Interface

NDT-File: Change

OK Abbrechen Übernehmen

GKA-Interface



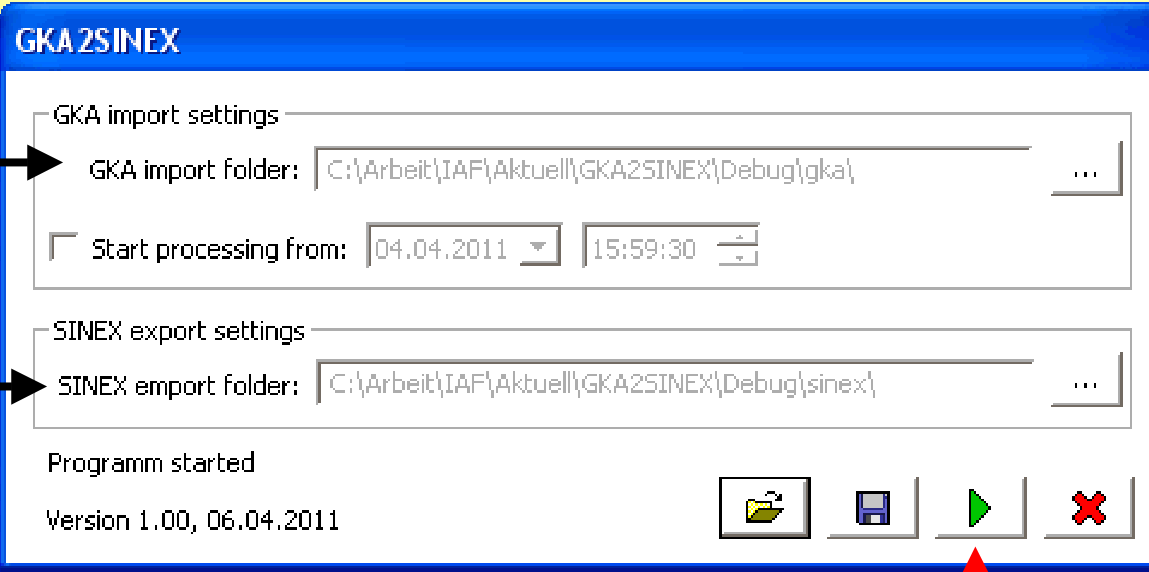
```

100916.gka - Editor
Datei Bearbeiten Format Ansicht ?
Version40
#GOKA13
P5,      8_sat_sol_4,      4146276.0910,      611675.6650,      4791907.3530,      0.0000,1,0
P6,      3.3_PDOP,01601,4,41307,      4146276.3830,      611675.4630,      4791907.1990,      0.0000,0,0
0.003100,5.245578,-9.599407,-1.116569,34.848075,9.393556,5.098855
#END13
#GOKA13
P5,      6_sat_sol_4,      4146272.1210,      611676.5000,      4791902.7450,      0.0000,1,0
P6,      2.5_PDOP,01601,4,39507,      4146272.4100,      611676.3090,      4791902.5800,      0.0000,0,0
0.003500,0.007347,0.000121,0.005856,0.003265,-0.003119,0.013061
#END13
#GOKA13
P5,      7_sat_sol_4,      4146271.7690,      611674.9510,      4791905.0430,      0.0000,1,0
P6,      2.5_PDOP,01601,4,40106,      4146272.0570,      611674.7550,      4791904.8840,      0.0000,0,0
0.005800,0.004756,0.000531,0.002634,0.001189,-0.000723,0.004756
#END13
#GOKA13
P5,      8_sat_sol_4,      4146271.3440,      611676.5980,      4791902.9110,      0.0000,1,0
P6,      3.3_PDOP,01601,4,40707,      4146271.6540,      611676.4040,      4791902.7670,      0.0000,0,0
0.003200,0.035156,0.004085,0.012614,0.003906,-0.000646,0.008789
#END13
#GOKA13
P5,      8_sat_sol_4,      4146276.0910,      611675.6650,      4791907.3530,      0.0000,1,0
P6,      3.3_PDOP,01601,4,41307,      4146276.3830,      611675.4630,      4791907.1990,      0.0000,0,0
0.004800,0.015625,0.001869,0.006196,0.001736,-0.000740,0.006944
#END13|
  
```

(Baseline Observations)

see also: www.goca.info

GKA2SINEX



GKA Input folder →

SINEX Output folder →

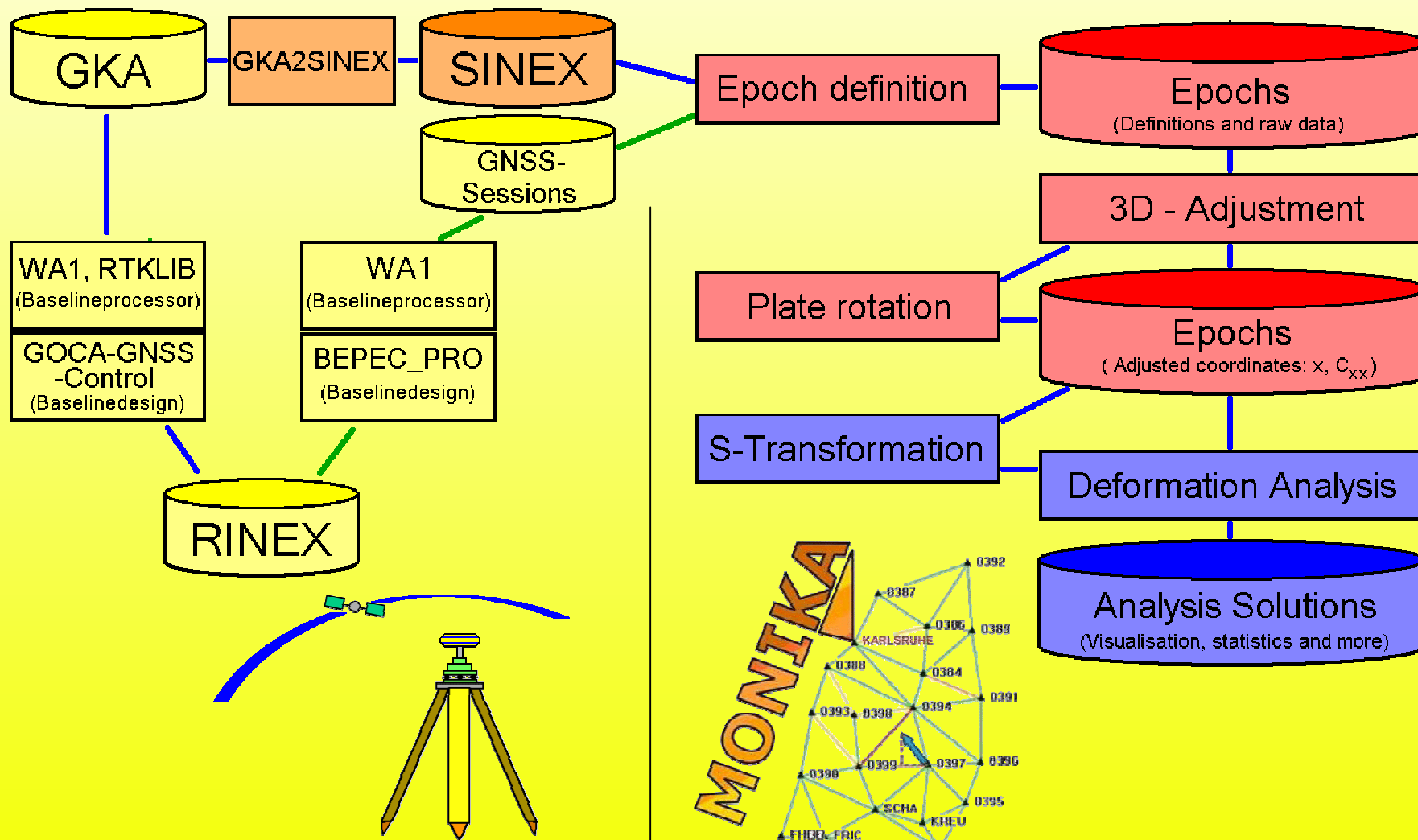
Start automatic conversation

SINEX-Interface

```

20100916110826-002.snrx - Editor
Datei Bearbeiten Format Ansicht ?
%SNX 2.00 GKA 10:259:40106 GKA 10:259:40106 10:259:40106 P 00003 0 X
+FILE/REFERENCE
*INFO_TYPE_____ INFO_____
OUTPUT Hochschule Karlsruhe, IAF, GOCA-Projekt
CONTACT reiner.jeager@hs-karlsruhe.de OR SEE www.goca.info
SOFTWARE GKA2SINEX-Module
INPUT GKA-Files
-FILE/REFERENCE
*-----
+SOLUTION/STATISTICS
*_STATISTICAL PARAMETER_____ VALUE(S)_____
NUMBER OF OBSERVATIONS 6
NUMBER OF UNKNOWNNS 3
NUMBER OF DEGREES OF FREEDOM 3
VARIANCE FACTOR 0.000033640000000
-SOLUTION/STATISTICS
*-----
+SOLUTION/ESTIMATE
*INDEX TYPE__ CODE PT SOLN _REF_EPOCH__ UNIT S _ESTIMATED VALUE__ _STD_DEV__
1 STAX P6 A 0001 10:259:40106 m 0 4.146272057000000E+006 3.9999E-004
2 STAY P6 A 0001 10:259:40106 m 0 6.116747550000000E+005 1.9999E-004
3 STAZ P6 A 0001 10:259:40106 m 0 4.791904884000000E+006 3.9999E-004
4 STAX P5 A 0001 10:259:40106 m 0 4.146271769000000E+006 0.0000E+000
5 STAY P5 A 0001 10:259:40106 m 0 6.116749510000000E+005 0.0000E+000
6 STAZ P5 A 0001 10:259:40106 m 0 4.791905043000000E+006 0.0000E+000
-SOLUTION/ESTIMATE
  
```

Overview

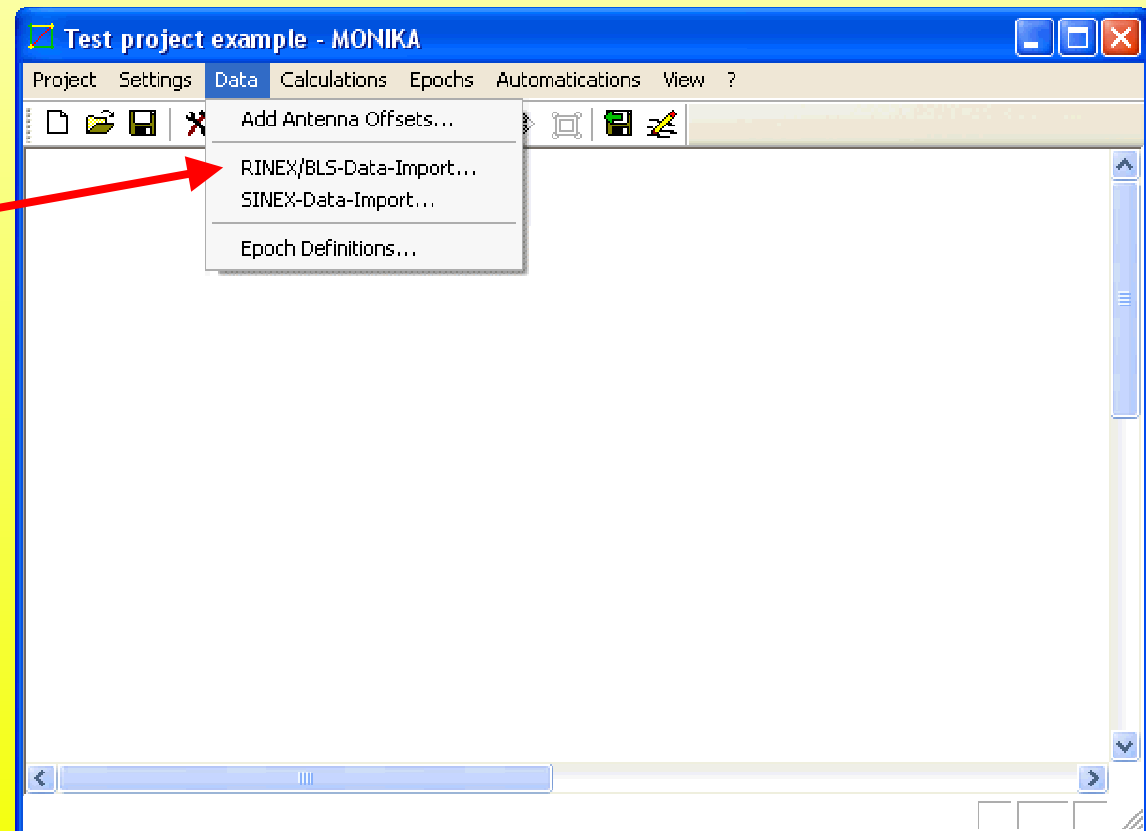


4. Epoch definition

4.1 BLS-Data-Import

Dayly sessions files

RINEX/BLS-Import



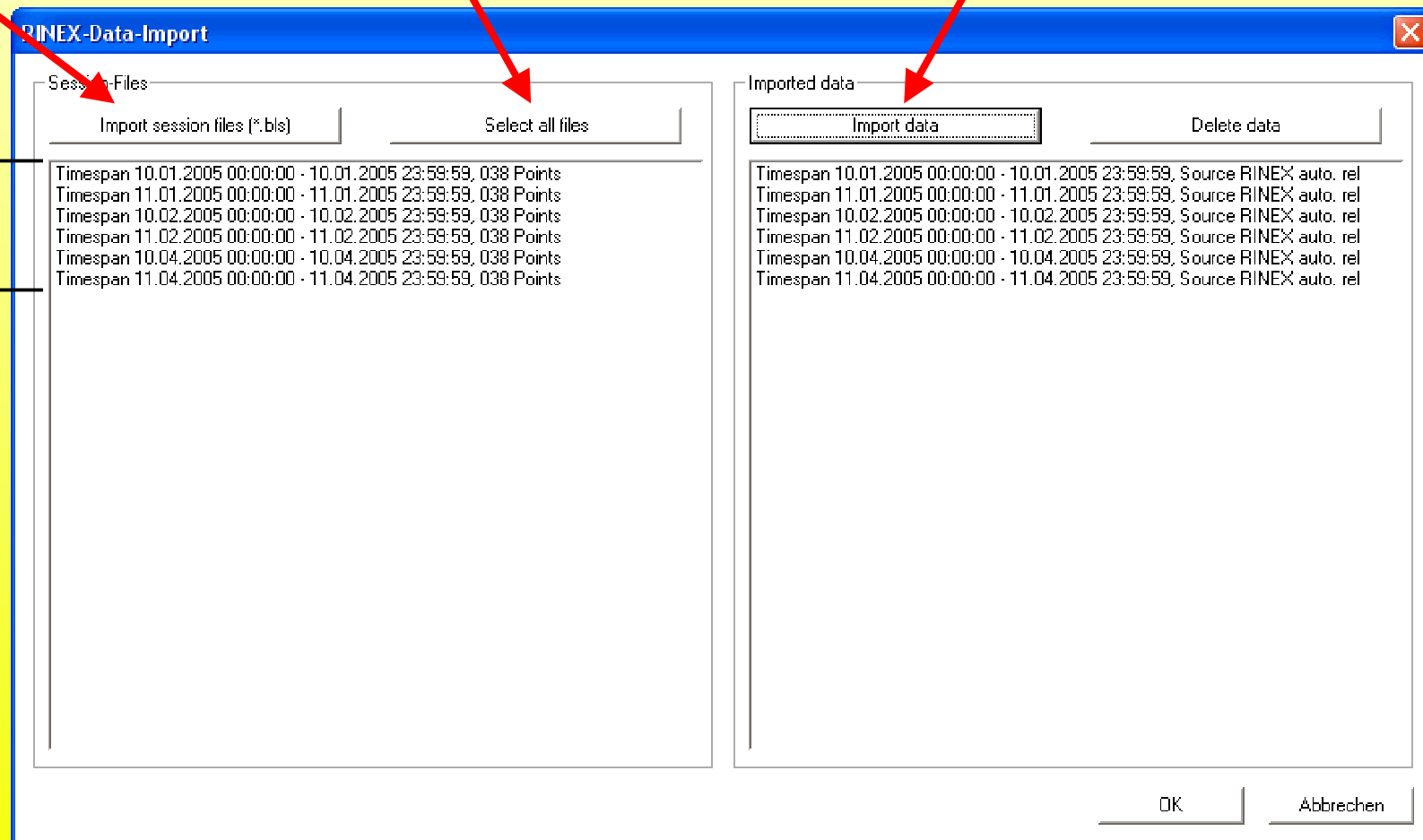
BLS-Data-Import dialog

1.open files (*.bls)

2.select files

3.import files

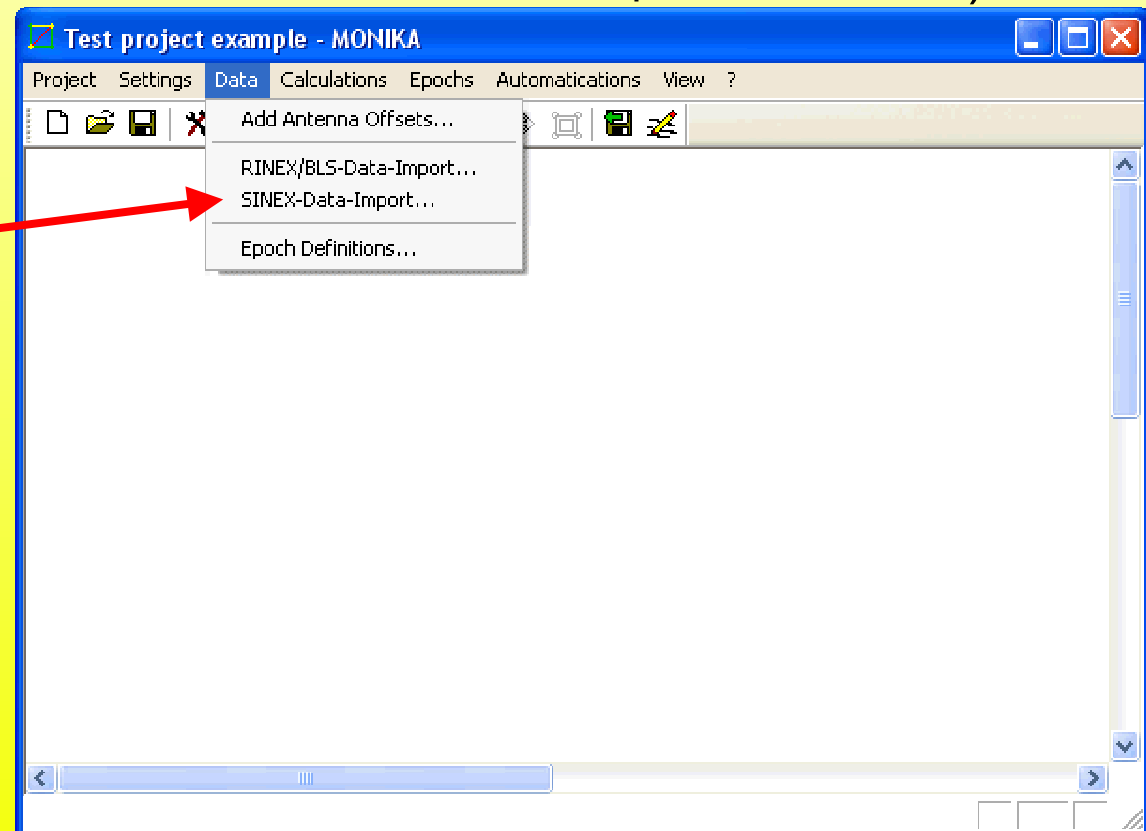
data



4.2 SINEX-Data-Import

(SINEX Format V2.1, Estimate solution or Normal Equation - Format)

SINEX-Import



SINEX-Data-Import dialog

1. open files (*.snx)

2. select files

3. import files

data

absolute
or
relative
data ?

SINEX Files

Import SINEX files (*.snx) Select all files

Timespan 02.11.2008 00:00:00 - 02.11.2008 23:59:30, 042 Points
 Timespan 03.11.2008 00:00:00 - 03.11.2008 23:59:30, 044 Points
 Timespan 04.11.2008 00:00:00 - 04.11.2008 23:59:30, 044 Points
 Timespan 05.11.2008 00:00:00 - 05.11.2008 23:59:30, 041 Points
 Timespan 06.11.2008 00:00:00 - 06.11.2008 23:59:30, 044 Points
 Timespan 07.11.2008 00:00:00 - 07.11.2008 23:59:30, 044 Points
 Timespan 08.11.2008 00:00:00 - 08.11.2008 23:59:30, 041 Points

relative observations

Imported data

Import data Delete data

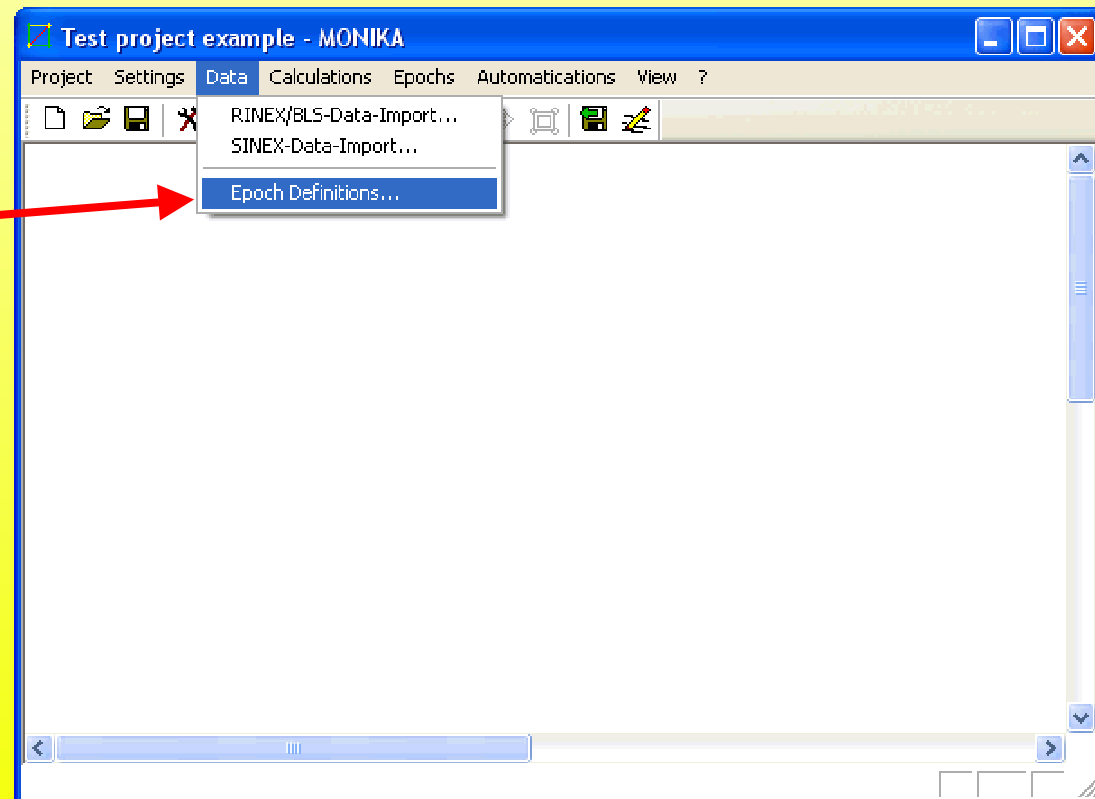
Timespan 10.01.2005 00:00:00 - 10.01.2005 23:59:59, Source RINEX auto. rel
 Timespan 11.01.2005 00:00:00 - 11.01.2005 23:59:59, Source RINEX auto. rel
 Timespan 10.02.2005 00:00:00 - 10.02.2005 23:59:59, Source RINEX auto. rel
 Timespan 11.02.2005 00:00:00 - 11.02.2005 23:59:59, Source RINEX auto. rel
 Timespan 10.04.2005 00:00:00 - 10.04.2005 23:59:59, Source RINEX auto. rel
 Timespan 11.04.2005 00:00:00 - 11.04.2005 23:59:59, Source RINEX auto. rel
 Timespan 02.11.2008 00:00:00 - 02.11.2008 23:59:30, Source SINEX auto. rel
 Timespan 03.11.2008 00:00:00 - 03.11.2008 23:59:30, Source SINEX auto. rel
 Timespan 04.11.2008 00:00:00 - 04.11.2008 23:59:30, Source SINEX auto. rel
 Timespan 05.11.2008 00:00:00 - 05.11.2008 23:59:30, Source SINEX auto. rel
 Timespan 06.11.2008 00:00:00 - 06.11.2008 23:59:30, Source SINEX auto. rel
 Timespan 07.11.2008 00:00:00 - 07.11.2008 23:59:30, Source SINEX auto. rel
 Timespan 08.11.2008 00:00:00 - 08.11.2008 23:59:30, Source SINEX auto. rel

OK Abbrechen

4.3 Epoch definition

(only available, if data already have been imported)

epoch definition



Epoch definition dialog

1.select data

2.create epoch

data

GPS -
factor ?

Epoch definition

Imported data

Delete data | Delete all data

Timespan 10.01.2005 00:00:00 - 10.01.2005 23:59:59, Source RINEX auto. rel
 Timespan 11.01.2005 00:00:00 - 11.01.2005 23:59:59, Source RINEX auto. rel
 Timespan 10.02.2005 00:00:00 - 10.02.2005 23:59:59, Source RINEX auto. rel
 Timespan 11.02.2005 00:00:00 - 11.02.2005 23:59:59, Source RINEX auto. rel
 Timespan 10.04.2005 00:00:00 - 10.04.2005 23:59:59, Source RINEX auto. rel
 Timespan 11.04.2005 00:00:00 - 11.04.2005 23:59:59, Source RINEX auto. rel
 Timespan 02.11.2008 00:00:00 - 02.11.2008 23:59:30, Source SINEX auto. rel
 Timespan 03.11.2008 00:00:00 - 03.11.2008 23:59:30, Source SINEX auto. rel
 Timespan 04.11.2008 00:00:00 - 04.11.2008 23:59:30, Source SINEX auto. rel
 Timespan 05.11.2008 00:00:00 - 05.11.2008 23:59:30, Source SINEX auto. rel
 Timespan 06.11.2008 00:00:00 - 06.11.2008 23:59:30, Source SINEX auto. rel
 Timespan 07.11.2008 00:00:00 - 07.11.2008 23:59:30, Source SINEX auto. rel
 Timespan 08.11.2008 00:00:00 - 08.11.2008 23:59:30, Source SINEX auto. rel

Epochs

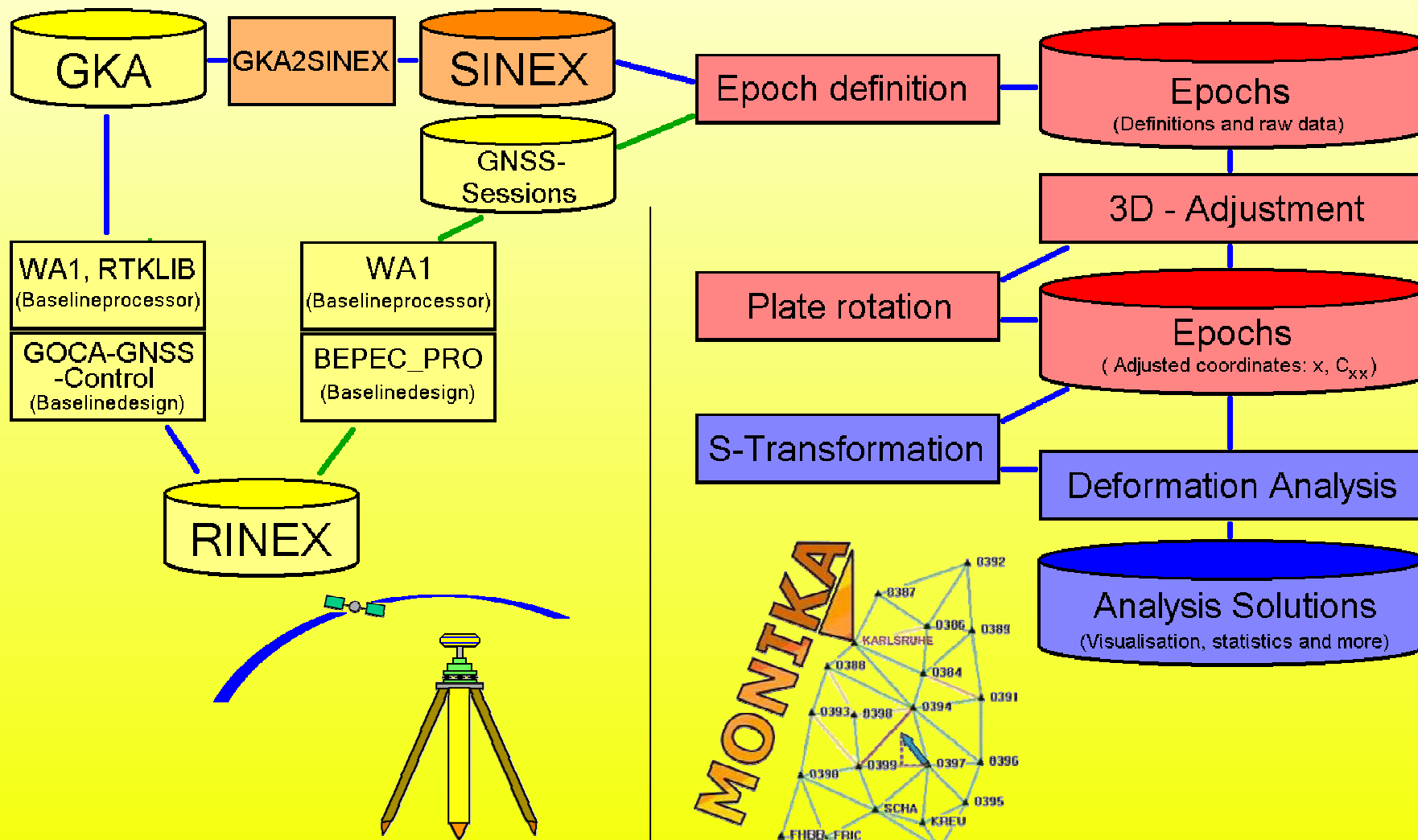
Create epoch | Delete epoch | Delete all epochs

Epoch 10.01.2005 00:00:00 - 11.01.2005 23:59:59, Type rel +
 Epoch 10.02.2005 00:00:00 - 11.02.2005 23:59:59, Type rel +
 Epoch 10.04.2005 00:00:00 - 11.04.2005 23:59:59, Type rel +

GPS-Factor (inner/outer Acc.): 0 autom. Set factor

OK | Abbrechen

Overview



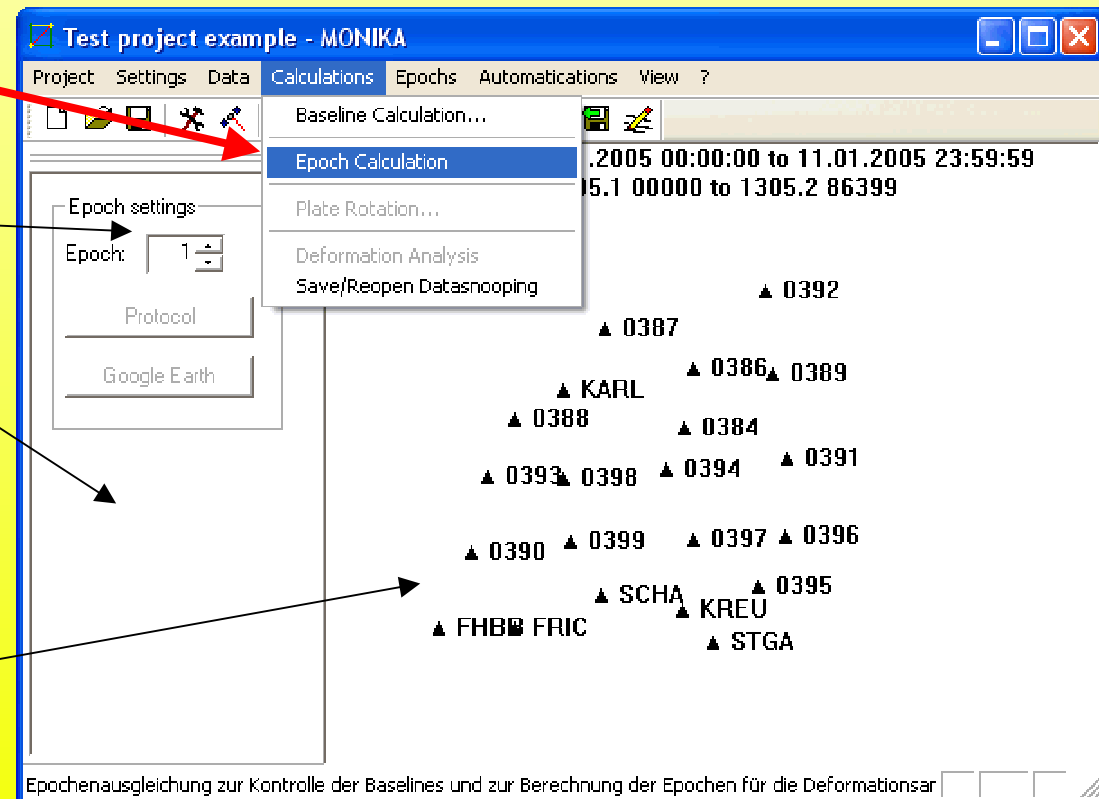
5. 3D-Adjustment

(with GPS3D.dll)

start 3D-Epoch-Adjustment

actual epoch
navigation bar

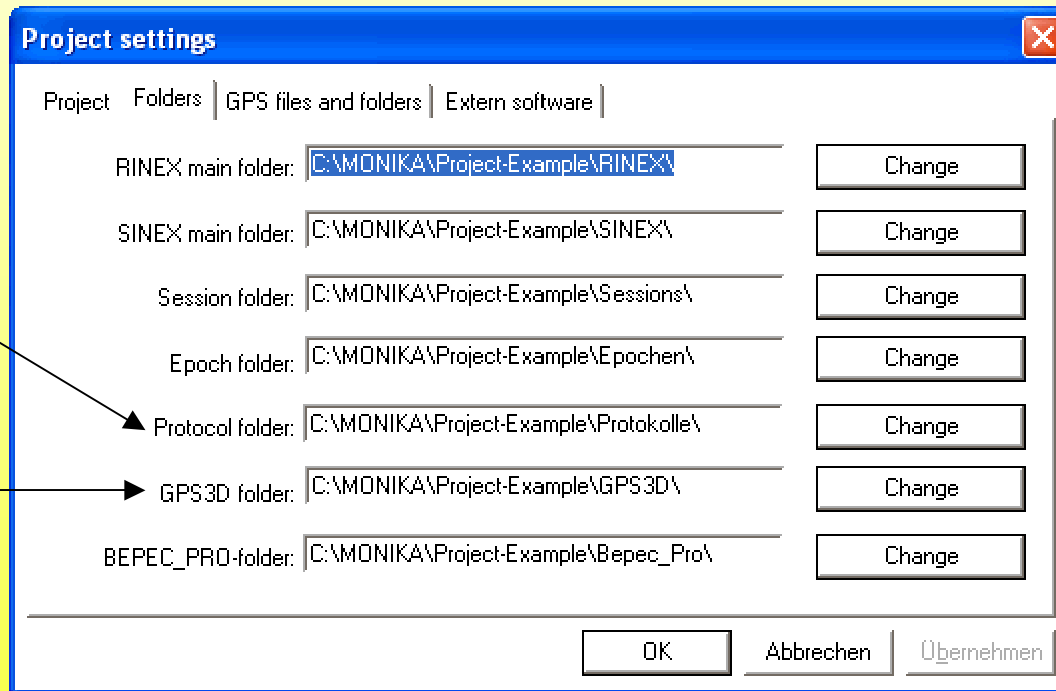
when epochs are
defined, they are
displayed in the
main window



Solutions

GPS3D-HTLM-
Protocol

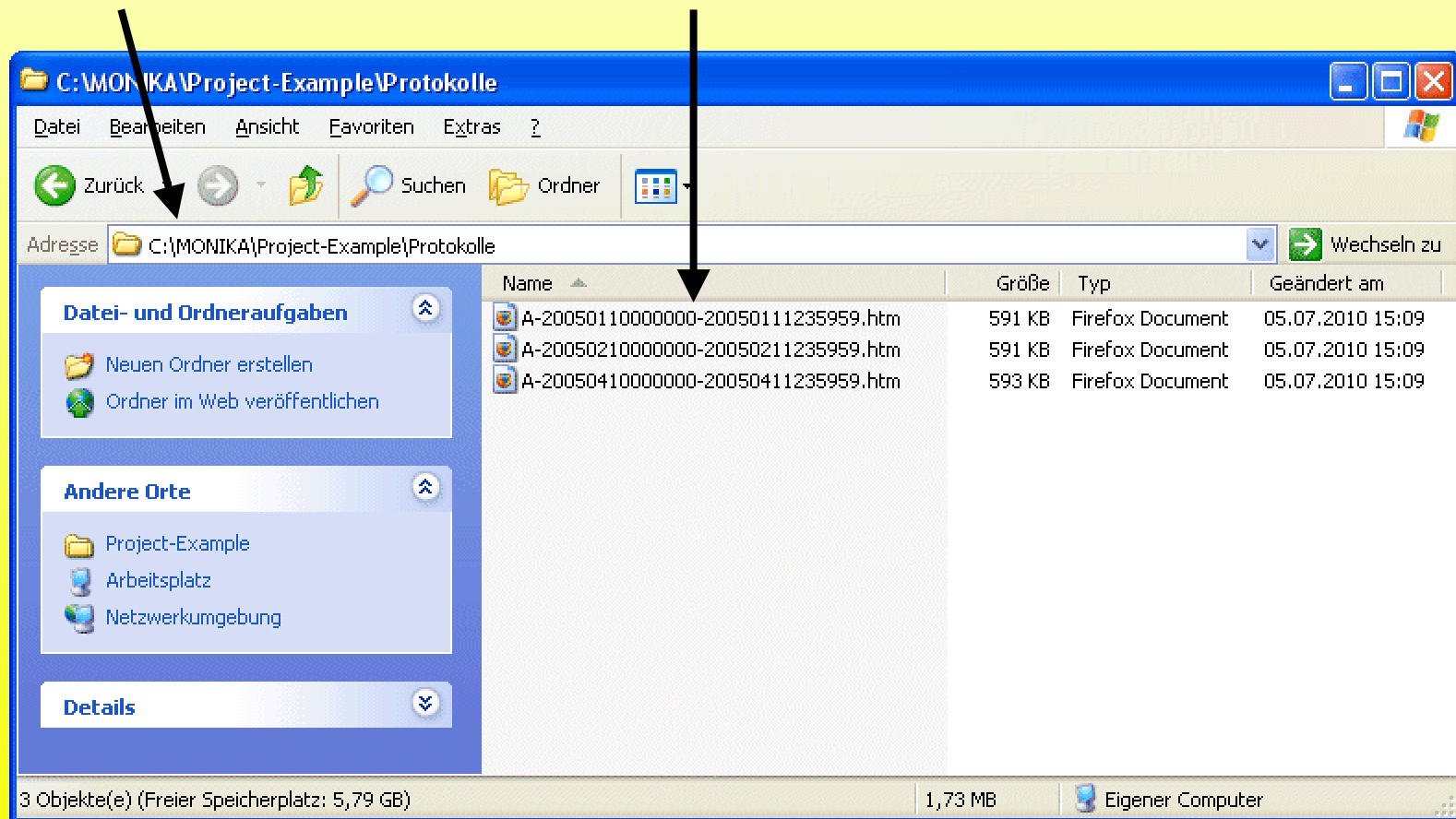
temporary files
(can be deleted)



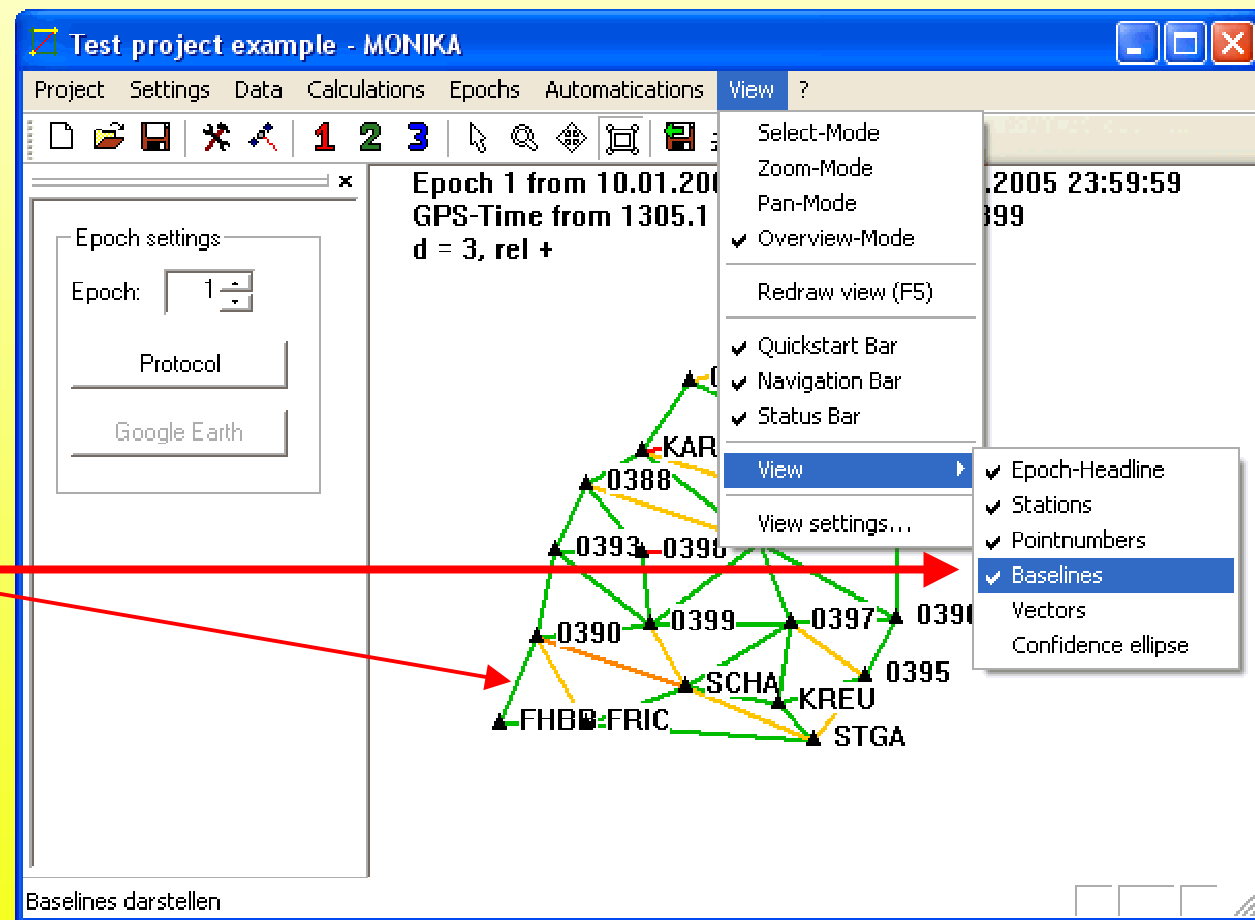
HTML-Protocols

Protocol-Folder

GPS3D-HTML-Protocols



Display settings

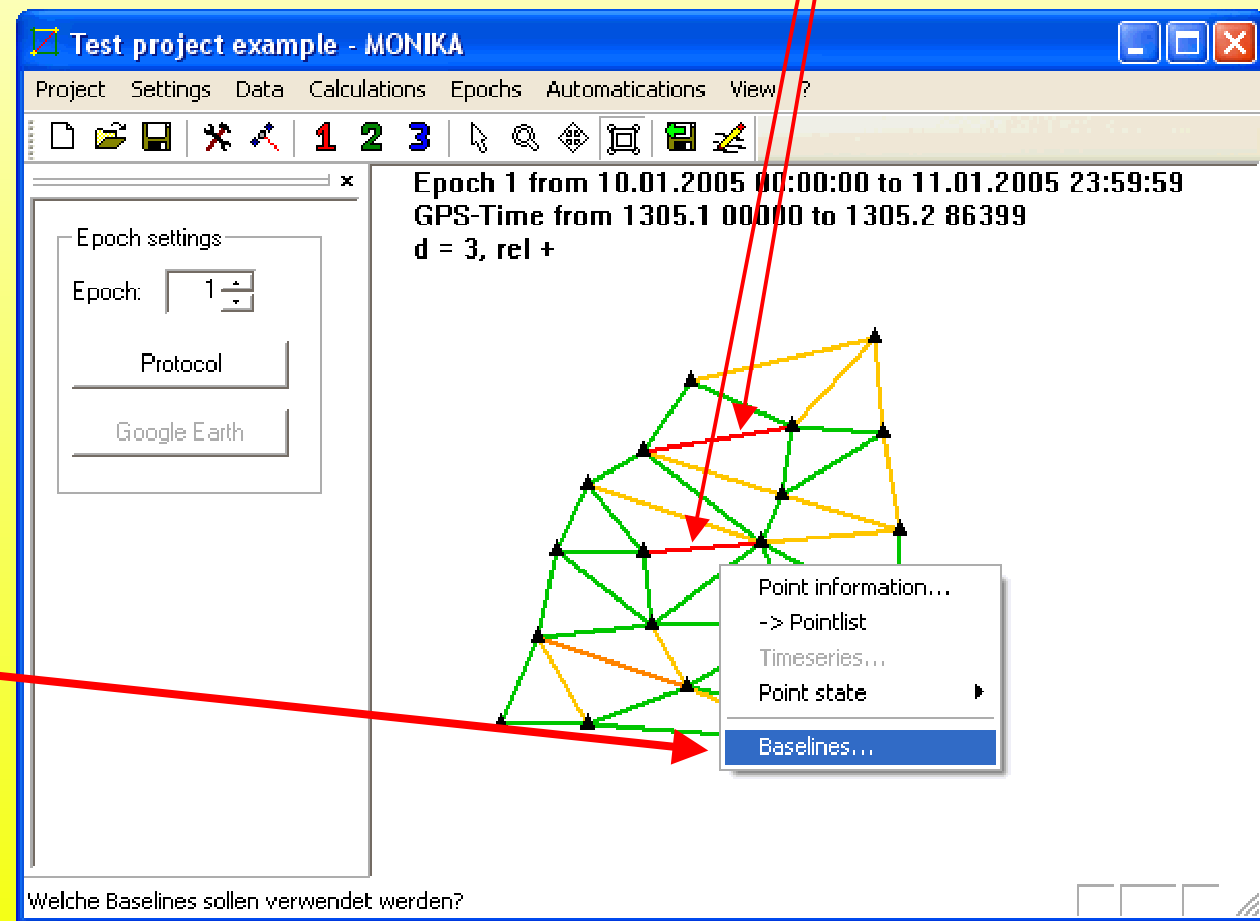


show baselines

Analyse 3D-Adjustment

critical baselines

show baselines
at point
(right click)



Analyse 3D-Adjustment

critical baseline

deactivate baseline

Baseline list

Baseline at point 0394

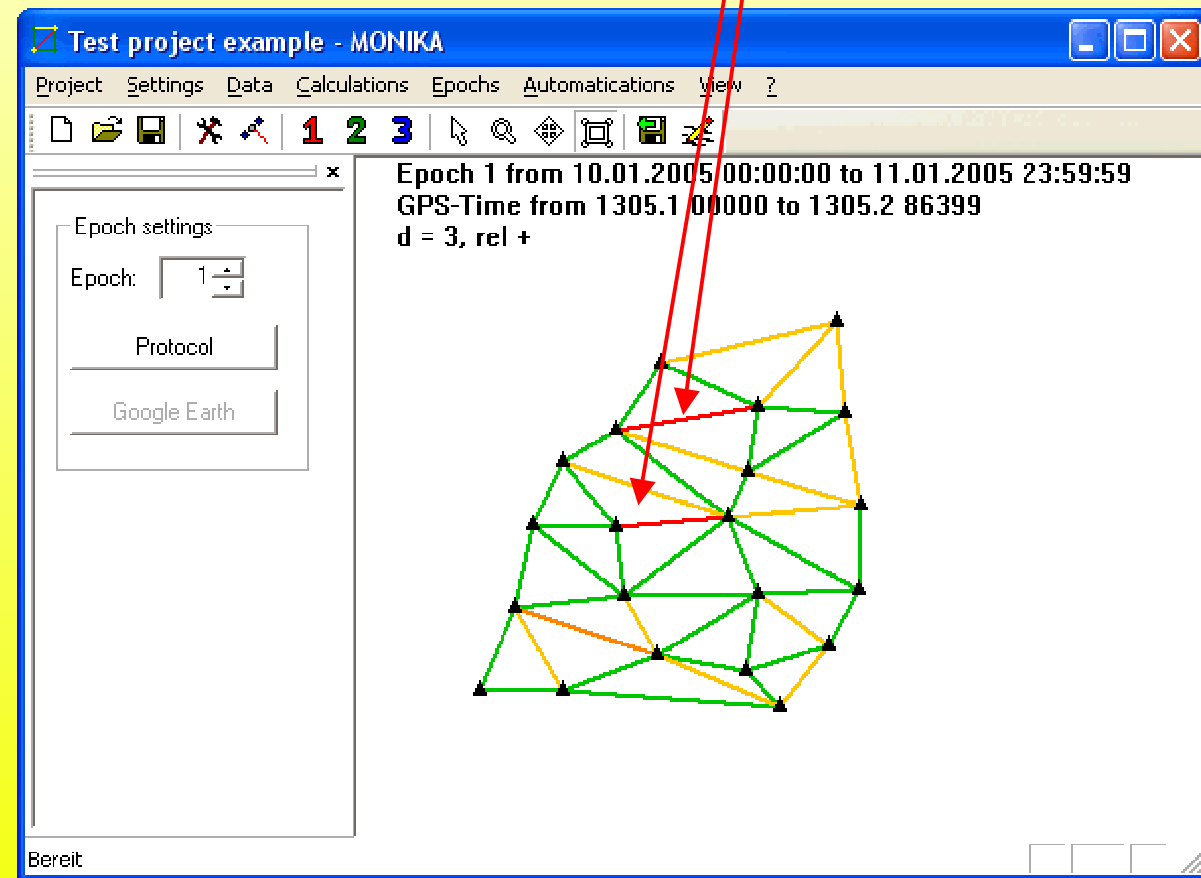
active	from	to	length	rel. Test	max. Def.
<input checked="" type="checkbox"/>	0384	0394	30321.6289 m	0.37	
<input checked="" type="checkbox"/>	0394	0384	30321.6289 m	0.37	
<input checked="" type="checkbox"/>	0384	0394	30321.6311 m	0.42	
<input checked="" type="checkbox"/>	0394	0384	30321.6312 m	0.42	
<input checked="" type="checkbox"/>	0398	0394	47684.8827 m	0.21	
<input type="checkbox"/>	0398	0394	47684.8828 m	1.09	0.0005 m
<input checked="" type="checkbox"/>	0394	0398	47684.8834 m	0.56	
<input checked="" type="checkbox"/>	0394	0398	47684.8835 m	0.53	
<input checked="" type="checkbox"/>	0394	0397	49860.3265 m	0.07	
<input checked="" type="checkbox"/>	0397	0394	49860.3267 m	0.07	
<input checked="" type="checkbox"/>	0394	0397	49860.3277 m	0.19	
<input checked="" type="checkbox"/>	0397	0394	49860.3279 m	0.28	
<input checked="" type="checkbox"/>	0391	0394	55634.5668 m	0.53	
<input checked="" type="checkbox"/>	0394	0391	55634.5678 m	0.19	
<input checked="" type="checkbox"/>	0391	0394	55634.5684 m	0.05	
<input checked="" type="checkbox"/>	0394	0391	55634.5694 m	0.19	
<input checked="" type="checkbox"/>	0399	0394	66612.1152 m	0.16	
<input checked="" type="checkbox"/>	0394	0399	66612.1159 m	0.05	
<input checked="" type="checkbox"/>	0399	0394	66612.1170 m	0.05	
<input checked="" type="checkbox"/>	0394	0399	66612.1178 m	0.14	
<input checked="" type="checkbox"/>	0396	0394	71754.7668 m	0.09	
<input checked="" type="checkbox"/>	0394	0396	71754.7676 m	0.00	
<input checked="" type="checkbox"/>	0396	0394	71754.7689 m	0.14	

OK Abbrechen

Analyse 3D-Adjustment

1. search for critical baselines in all epochs
2. deactivate the most critical baselines
3. calculate the 3D-Adjustment again

critical baselines

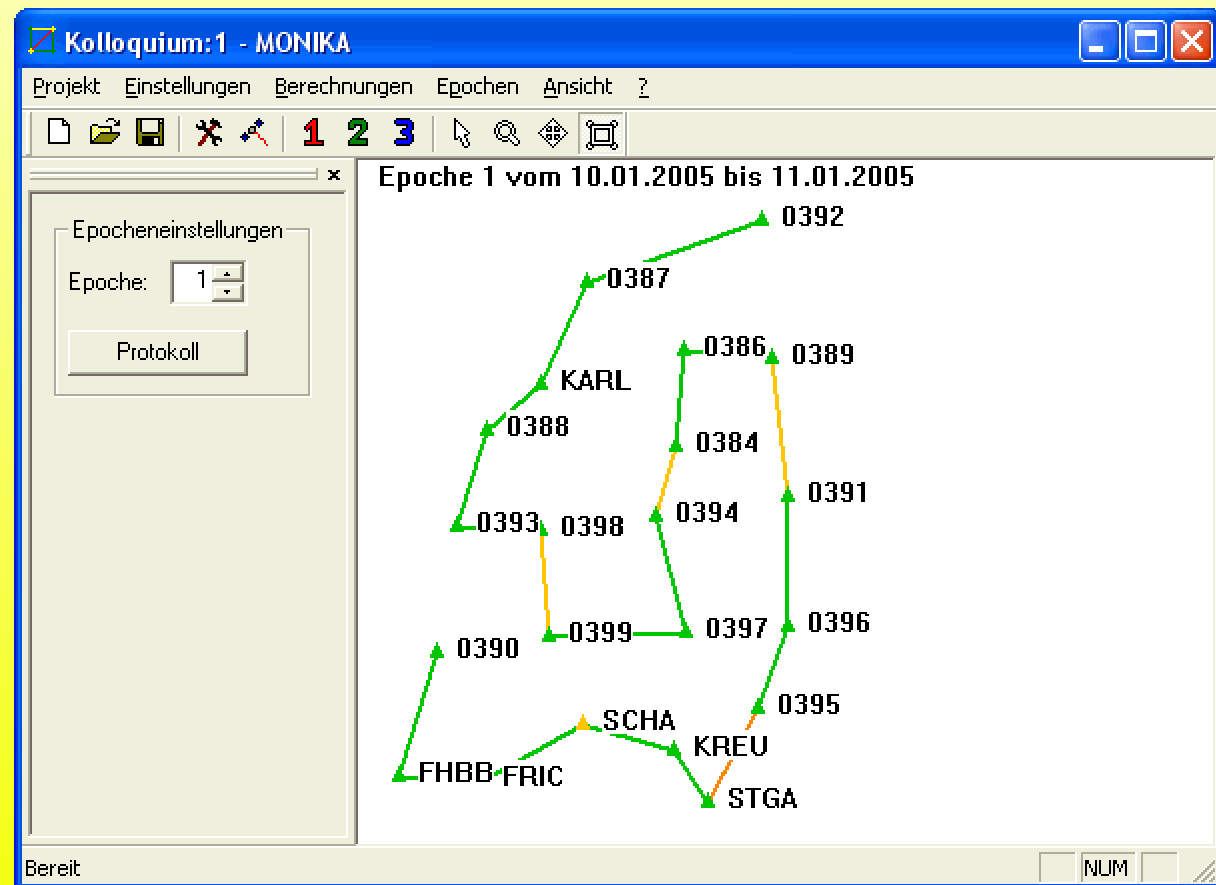


Baseline correlation

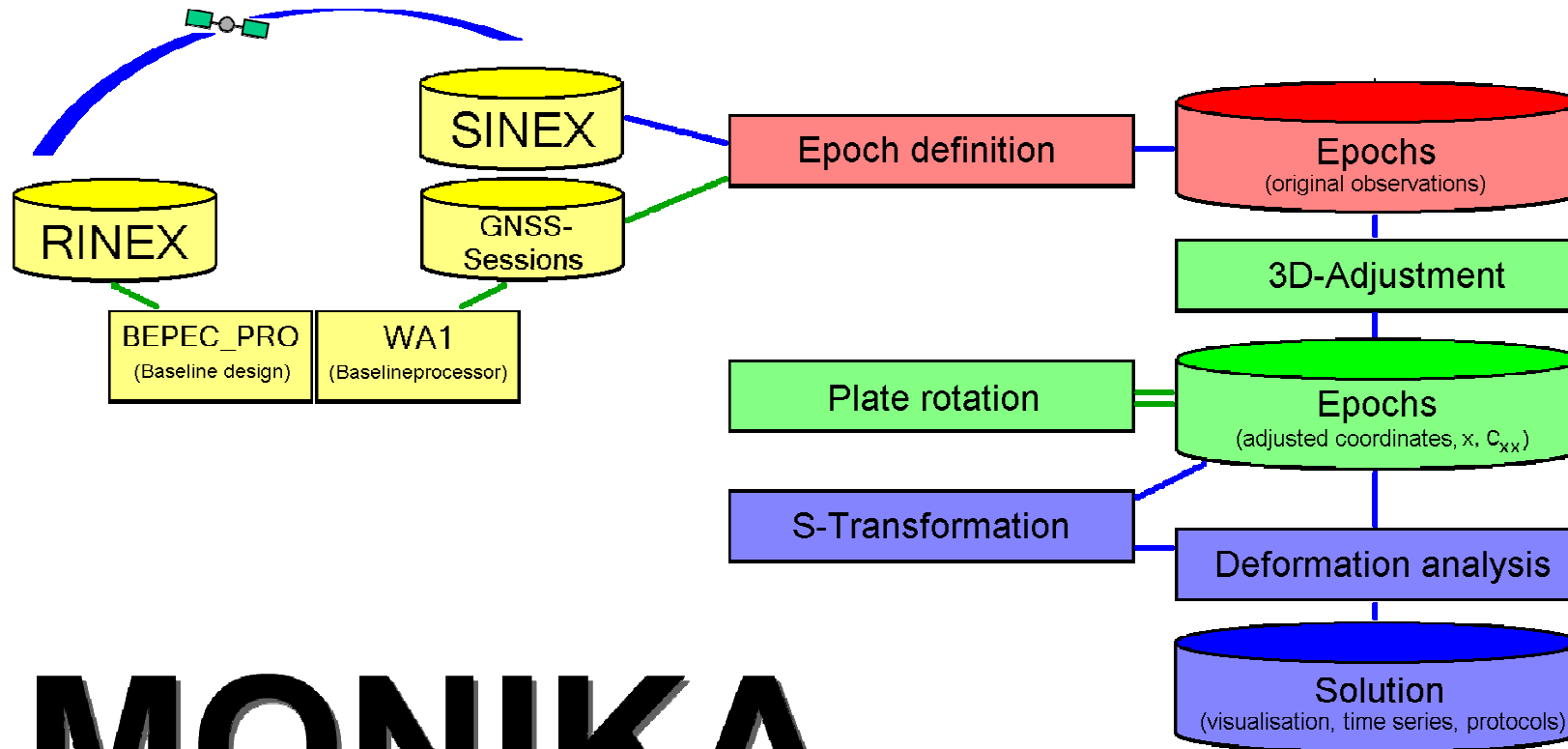
because of the the identical RINEX data, the baselines are correlated with each other.

solution:

➔ line of baselines



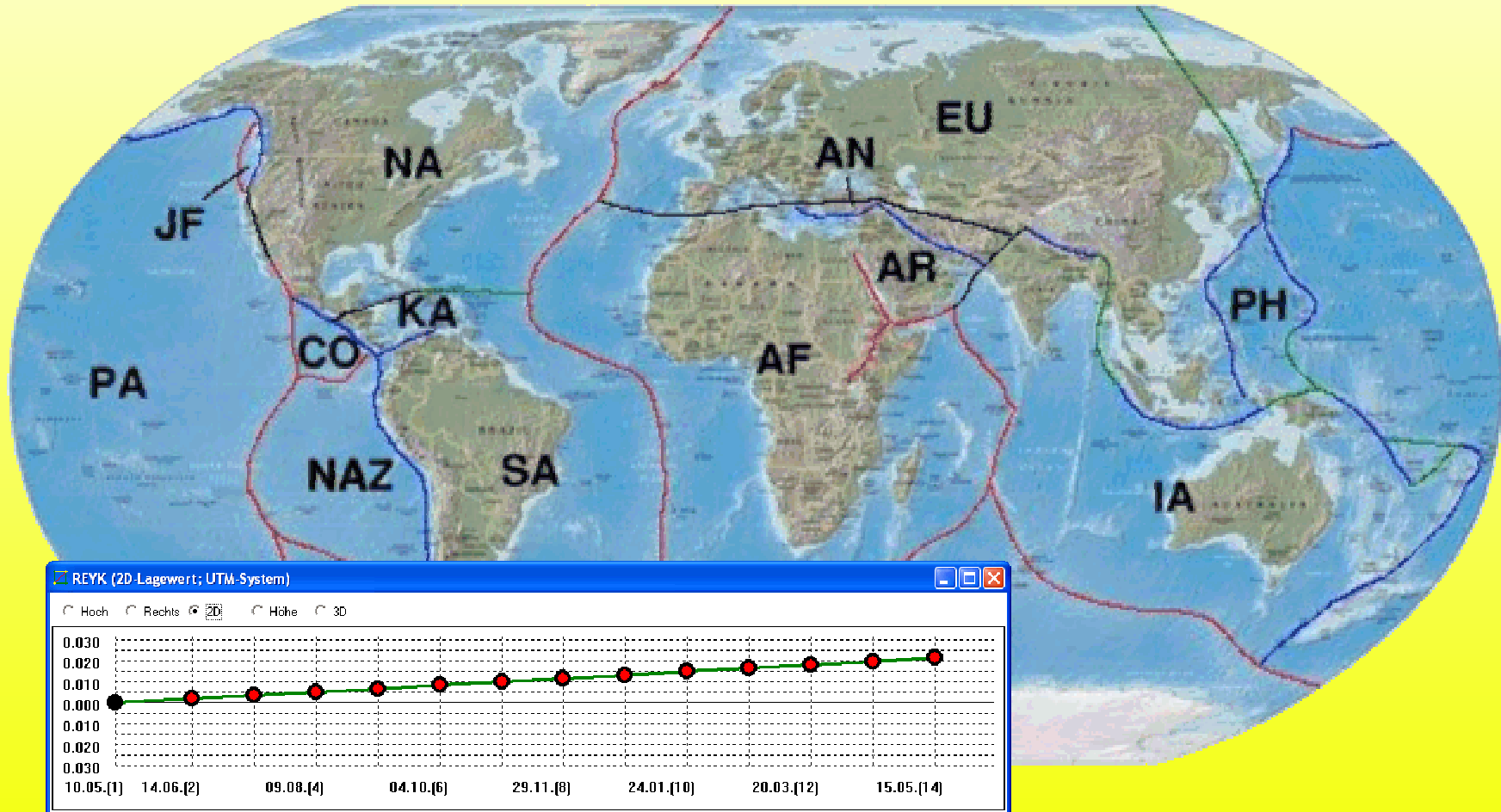
Overview



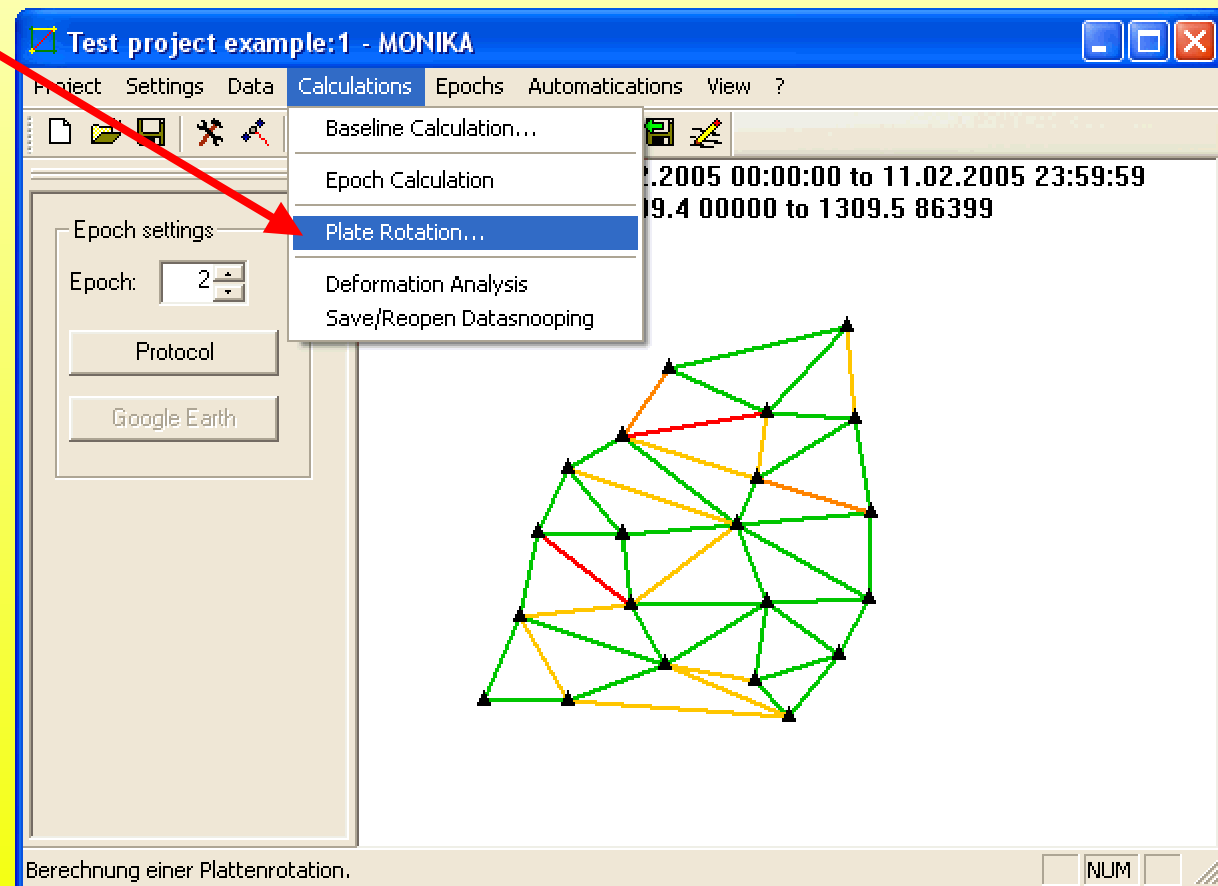
MONIKA

6. Plate rotation

necessary when large GNSS-networks or a long timespan is calculated



initialise plate rotation calculation



6. Plate rotation

epochs

reference time

plate model

plate borders

calculate

transformation

Plate rotation

Epoch settings

List of epochs :

all epochs

Active	Epoch	Ep.Start	Ep.End	Points.	State
<input checked="" type="checkbox"/>	01	2005.01.10 ...	2005.01.11 ...	21	rel +
<input checked="" type="checkbox"/>	02	2005.02.10 ...	2005.02.11 ...	21	rel +
<input checked="" type="checkbox"/>	03	2005.04.10 ...	2005.04.11 ...	21	rel +

Reference time : 25.02.2005 00:00:00 midtime

Plate settings

Plate model : Import

Plate borders : Import

automatical point to plate selection
 manual point to plate selection

Transform points Abbrechen OK

border file



```

NNR-NUVEL-1A_Borders.txt - Editor
Datei Bearbeiten Format Ansicht ?
: AFRC African
359.30 -54.80
359.70 -54.50
.80 -54.90
3.00 -53.60
4.00 -54.20
5.00 -54.80
7.60 -53.60
8.30 -54.00
11.50 -52.20
12.70 -52.80
13.90 -51.80
15.10 -52.20
15.90 -51.70
18.50 -52.70
20.00 -52.80
22.50 -53.00
25.50 -53.80
26.20 -52.50
27.80 -52.80
29.50 -50.20
30.50 -49.80
32.50 -47.00
34.80 -47.20

```

plate model file



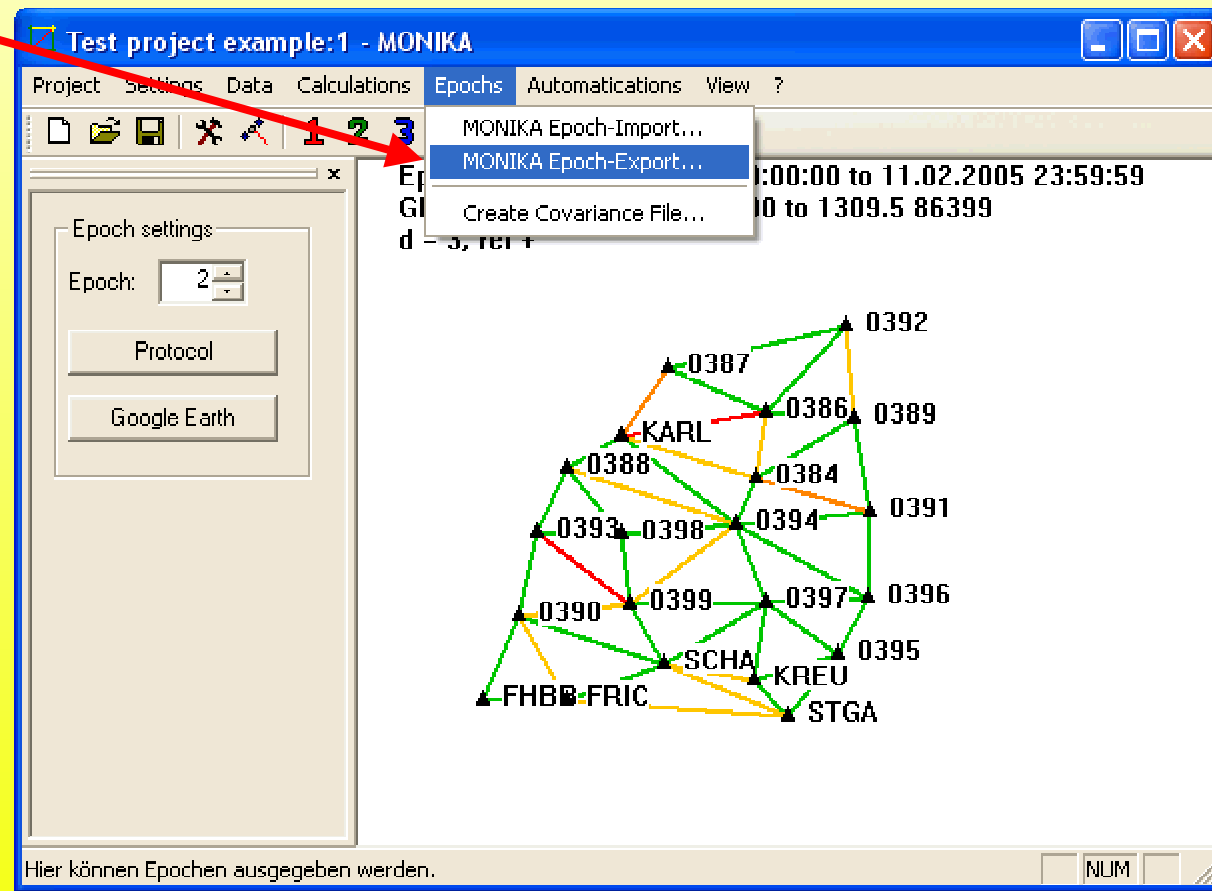
```

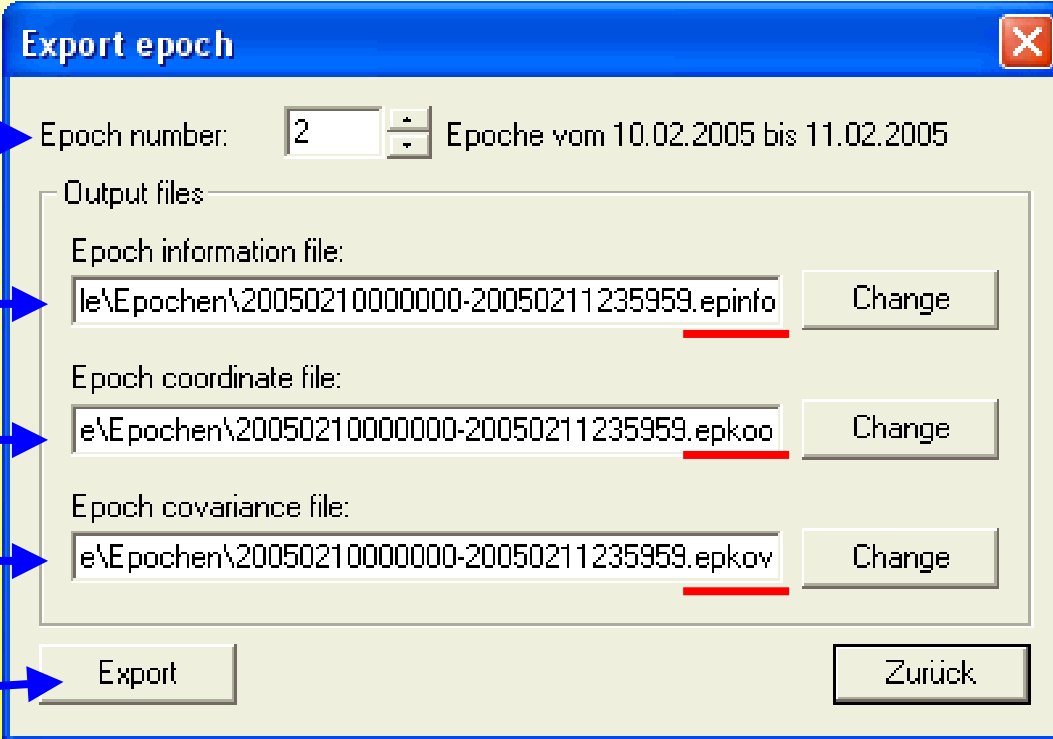
NNR-NUVEL-1A.txt - Editor
Datei Bearbeiten Format Ansicht ?
;Plate PHI          LAM      OMEGA      omega(x)  omega(y)  omega(z)  Plate
:                [deg]    [deg] [deg/Ma] - [rad/Ma] [rad/Ma] [rad/Ma] - Name
:-----
NNR-NUVEL-1A
AFRC  50.569  -73.978  0.2909    0.000891 -0.003099  0.003922  Africa
ANTA  62.986  244.264  0.2383   -0.000821 -0.001701  0.003706  Antarctica
ARAB  45.233   -4.464  0.5455    0.006685 -0.000521  0.006760  Arabia
AUST  33.852   33.175  0.6461    0.007839  0.005124  0.006282  Australia
CARB  25.014  266.989  0.2143   -0.000178 -0.003385  0.001581  Caribbea
COCO  24.487  244.242  1.5103   -0.010425 -0.021605  0.010925  Cocos
EURA  50.631  247.725  0.2337   -0.000981 -0.002395  0.003153  Eurasia
INDI  45.505    0.345  0.5453    0.006670  0.000040  0.006790  India
NOAM  -2.438   -85.895  0.2069    0.000258 -0.003599 -0.000153  N.America
NAZC  47.804  259.870  0.7432   -0.001532 -0.008577  0.009609  Nazca
PCFC  -63.045  107.325  0.6408   -0.001510  0.004840 -0.009970  Pacific
SOAM  -25.325  235.570  0.1164   -0.001038 -0.001515 -0.000870  S.America
JUFU  -30.054   58.870  0.6658    0.005200  0.008610 -0.005820  Juan de Fuca
PHIL  -38.011  -35.360  0.8997    0.010090 -0.007160 -0.009670  Philippine
;RIVR  20.428  253.128  1.9781   -0.009390 -0.030960  0.012050  Rivera
SCOT  -25.273  261.234  0.1705   -0.000410 -0.002660 -0.001270  scotia

```

6.1 Epoch-Export

export epochs





The screenshot shows a dialog box titled "Export epoch" with a close button (X) in the top right corner. The dialog contains the following elements:

- Epoch number:** A text box containing the number "2" and a spinner control. To its right, the text "Epoche vom 10.02.2005 bis 11.02.2005" is displayed.
- Output files section:** A group box containing three rows, each with a label, a text box, and a "Change" button.
 - Epoch information file:** The text box contains the path "le\Epochen\20050210000000-20050211235959.epinfo".
 - Epoch coordinate file:** The text box contains the path "e\Epochen\20050210000000-20050211235959.epkoo".
 - Epoch covariance file:** The text box contains the path "e\Epochen\20050210000000-20050211235959.epkov".
- Buttons:** At the bottom of the dialog, there are two buttons: "Export" on the left and "Zurück" on the right.

Five blue arrows point from text labels on the left to the corresponding elements in the dialog box:

- "epoch number" points to the "Epoch number" text box.
- "information file" points to the "Epoch information file" text box.
- "coordinate file" points to the "Epoch coordinate file" text box.
- "covariance file" points to the "Epoch covariance file" text box.
- "export epoch" points to the "Export" button.

Epoch-Format

epoch date

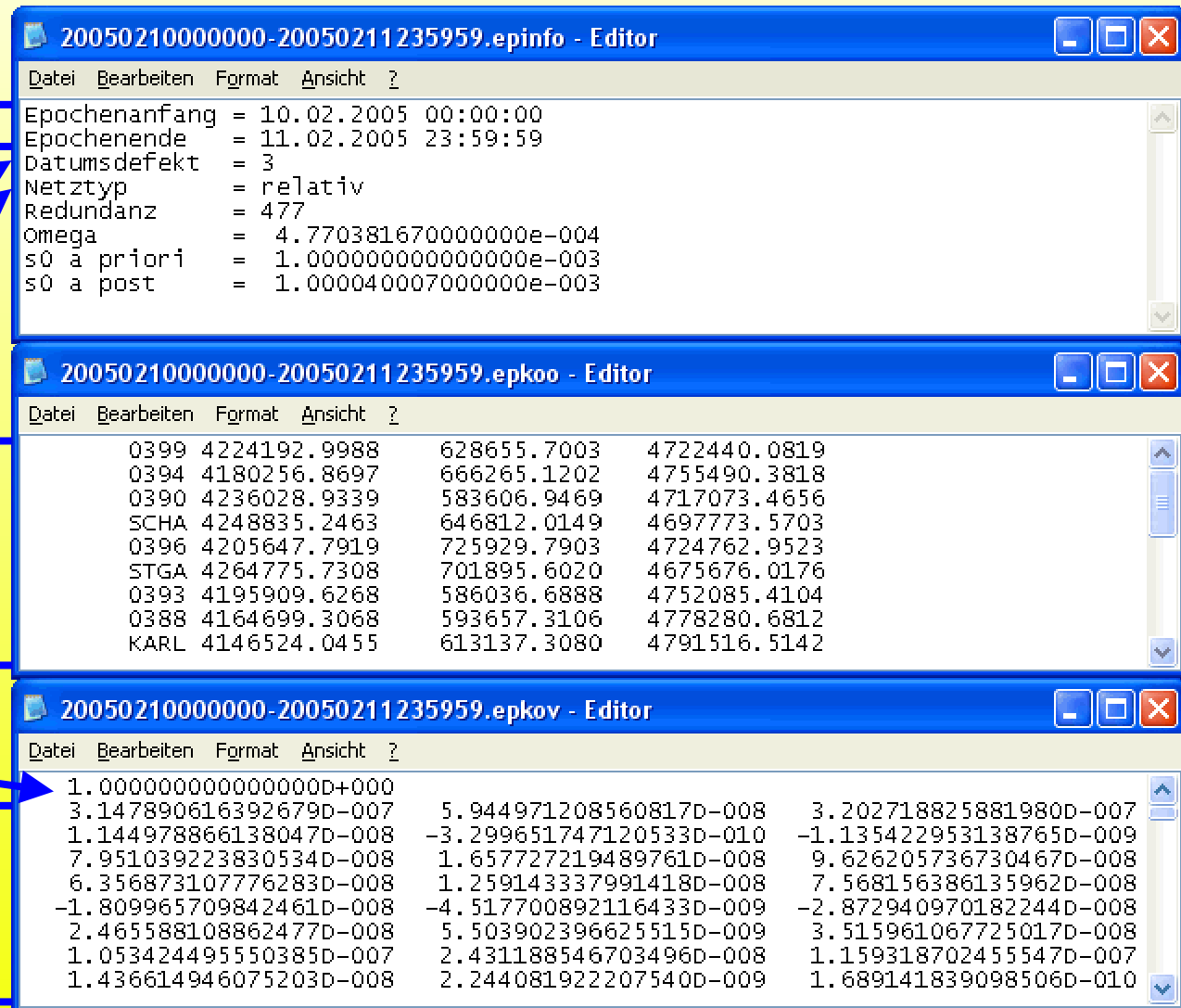
epoch defect

epoch type

coordinates

variance factor

covariances



20050210000000-20050211235959.epinfo - Editor

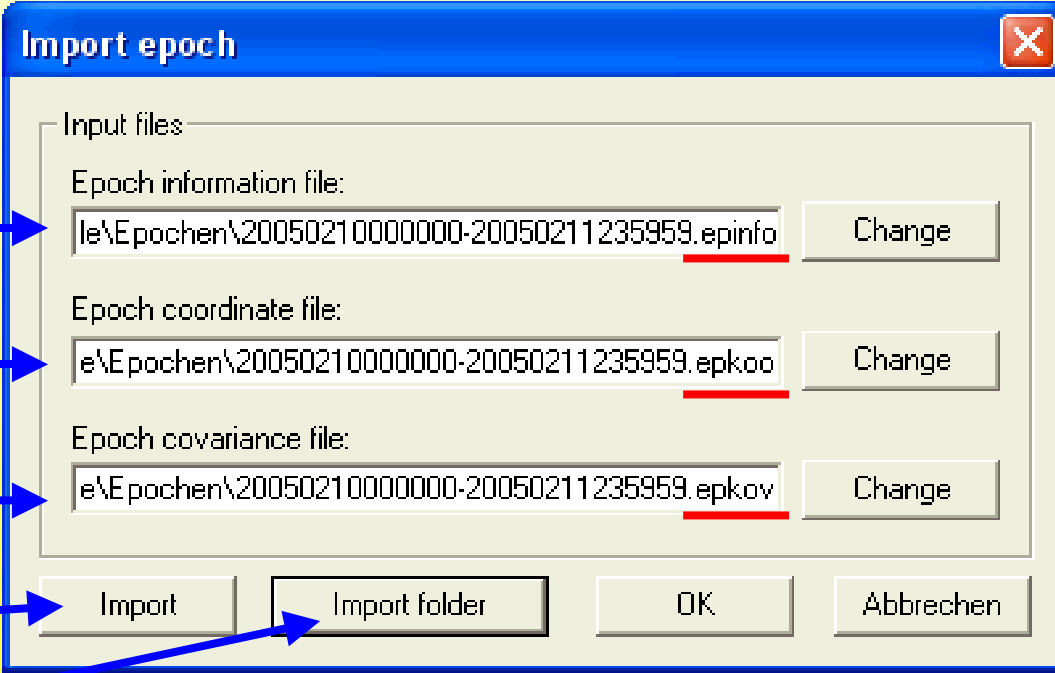
Datei	Bearbeiten	Format	Ansicht	?
Epochenbeginn = 10.02.2005 00:00:00				
Epochenende = 11.02.2005 23:59:59				
Datumsdefekt = 3				
Netztyp = relativ				
Redundanz = 477				
Omega = 4.7703816700000000e-004				
s0 a priori = 1.0000000000000000e-003				
s0 a post = 1.0000400070000000e-003				

20050210000000-20050211235959.epkoo - Editor

Datei	Bearbeiten	Format	Ansicht	?
0399	4224192.9988	628655.7003	4722440.0819	
0394	4180256.8697	666265.1202	4755490.3818	
0390	4236028.9339	583606.9469	4717073.4656	
SCHA	4248835.2463	646812.0149	4697773.5703	
0396	4205647.7919	725929.7903	4724762.9523	
STGA	4264775.7308	701895.6020	4675676.0176	
0393	4195909.6268	586036.6888	4752085.4104	
0388	4164699.3068	593657.3106	4778280.6812	
KARL	4146524.0455	613137.3080	4791516.5142	

20050210000000-20050211235959.epkov - Editor

Datei	Bearbeiten	Format	Ansicht	?
1.0000000000000000D+000				
3.147890616392679D-007				
1.144978866138047D-008				
7.951039223830534D-008				
6.356873107776283D-008				
-1.809965709842461D-008				
2.465588108862477D-008				
1.053424495550385D-007				
1.436614946075203D-008				
5.944971208560817D-008				
-3.299651747120533D-010				
1.657727219489761D-008				
1.259143337991418D-008				
-4.517700892116433D-009				
5.503902396625515D-009				
2.431188546703496D-008				
2.244081922207540D-009				
3.202718825881980D-007				
-1.135422953138765D-009				
9.626205736730467D-008				
7.568156386135962D-008				
-2.872940970182244D-008				
3.515961067725017D-008				
1.159318702455547D-007				
1.689141839098506D-010				



The screenshot shows a dialog box titled "Import epoch" with a close button (X) in the top right corner. The dialog contains three input fields for file selection, each with a "Change" button to its right:

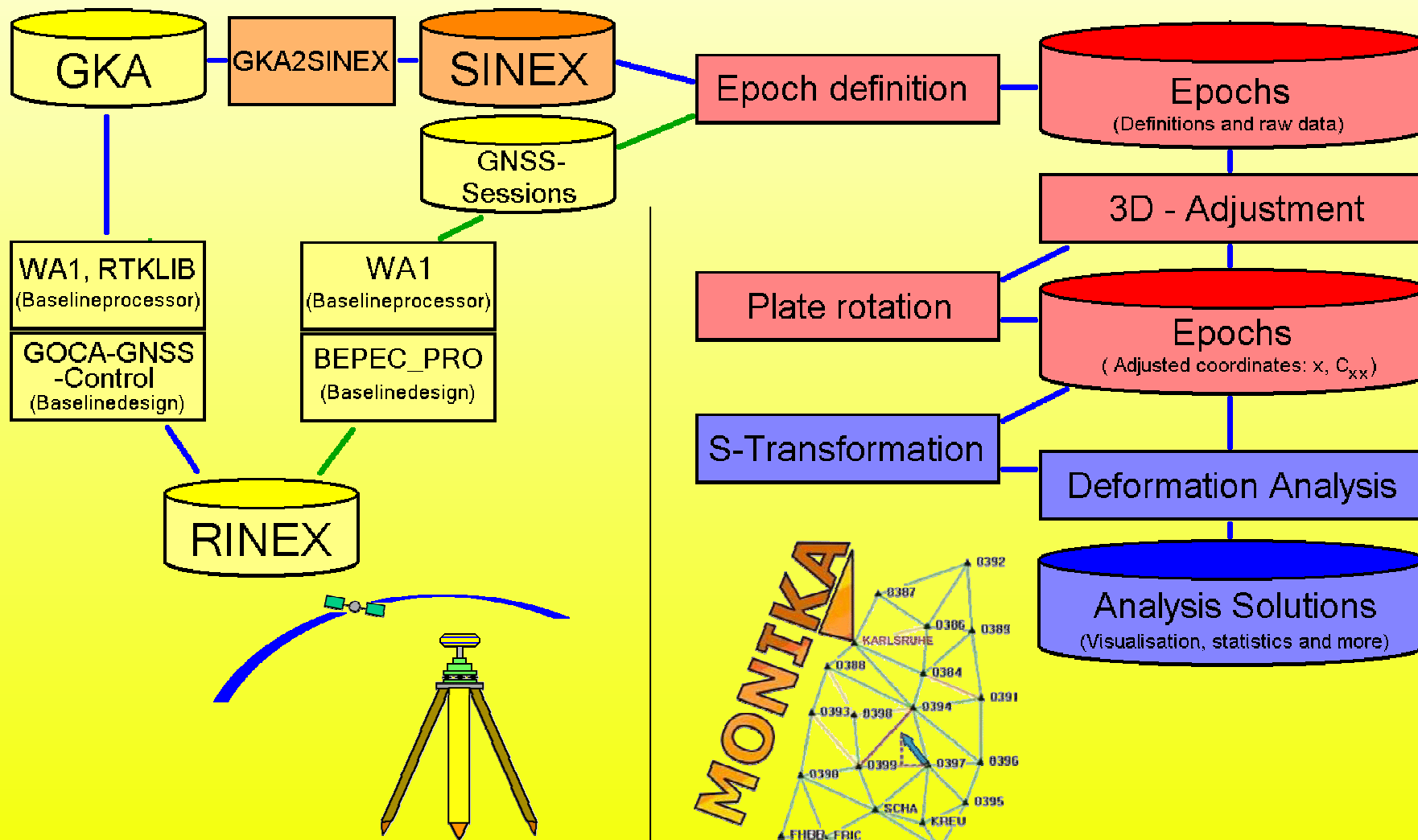
- Epoch information file: `e\Epochen\20050210000000-20050211235959.epinfo`
- Epoch coordinate file: `e\Epochen\20050210000000-20050211235959.epkoo`
- Epoch covariance file: `e\Epochen\20050210000000-20050211235959.epkov`

At the bottom of the dialog, there are four buttons: "Import", "Import folder", "OK", and "Abbrechen".

Annotations with blue arrows point from text labels on the left to the corresponding elements in the dialog:

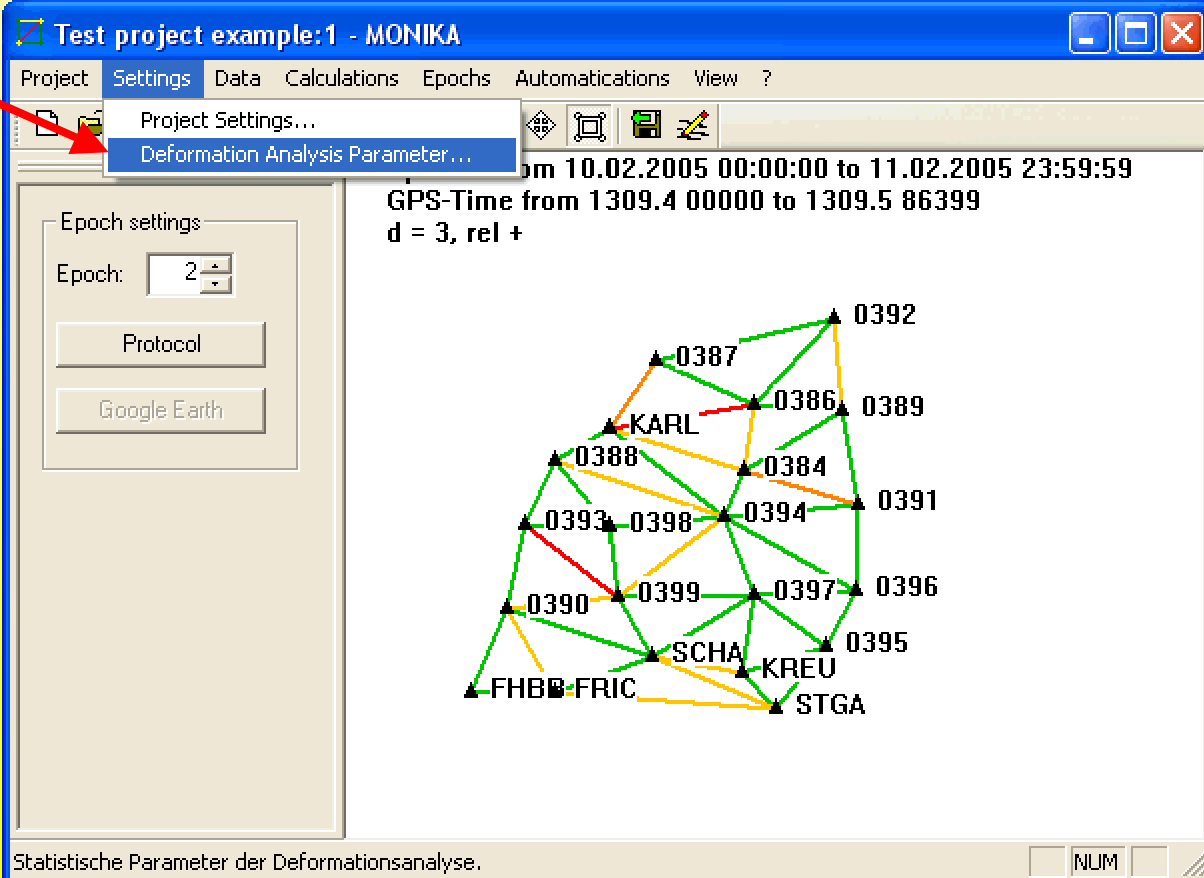
- "information file" points to the first input field.
- "coordinate file" points to the second input field.
- "covariance file" points to the third input field.
- "import epoch" points to the "Import" button.
- "import complete folder" points to the "Import folder" button.

Overview



7. Deformation analysis

deformation analysis parameter settings



Test project example:1 - MONIKA

Project Settings Data Calculations Epochs Automations View ?

Project Settings...
Deformation Analysis Parameter...

Epoch settings
Epoch: 2
Protocol
Google Earth

GPS-Time from 10.02.2005 00:00:00 to 11.02.2005 23:59:59
d = 3, rel +

0392
0387
KARL 0386 0389
0388 0384
0393 0398 0394 0391
0390 0399 0397 0396
SCH 0395
KREU
FHBB FRIC STGA

Statistische Parameter der Deformationsanalyse. NUM

7.1 Parameters

probability of error
during the datasnooping

probability of error
during the final
deformation analysis

Deformation analysis parameter

Datasnooping

Probability of error: 0.01

Min. deformation: 0.003

Standard

Deformation analysis:

Probability of error: 0.01

Power of sensitive: 0.95

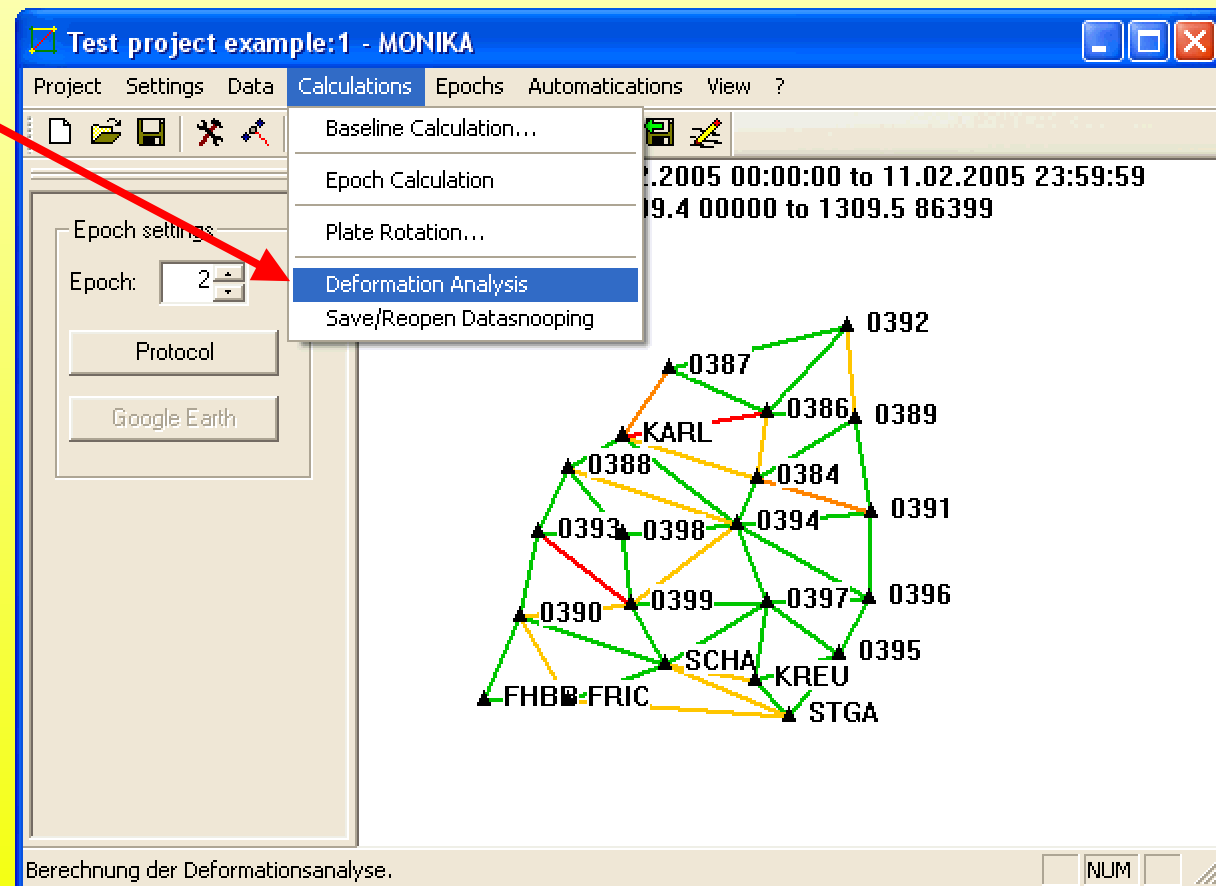
OK Abbrechen

minimal deformation for an
deformed reference point

power of the
sensitivity analysis

7.2 Deformation analysis

starting the deformation analysis



7.2 Deformation analysis

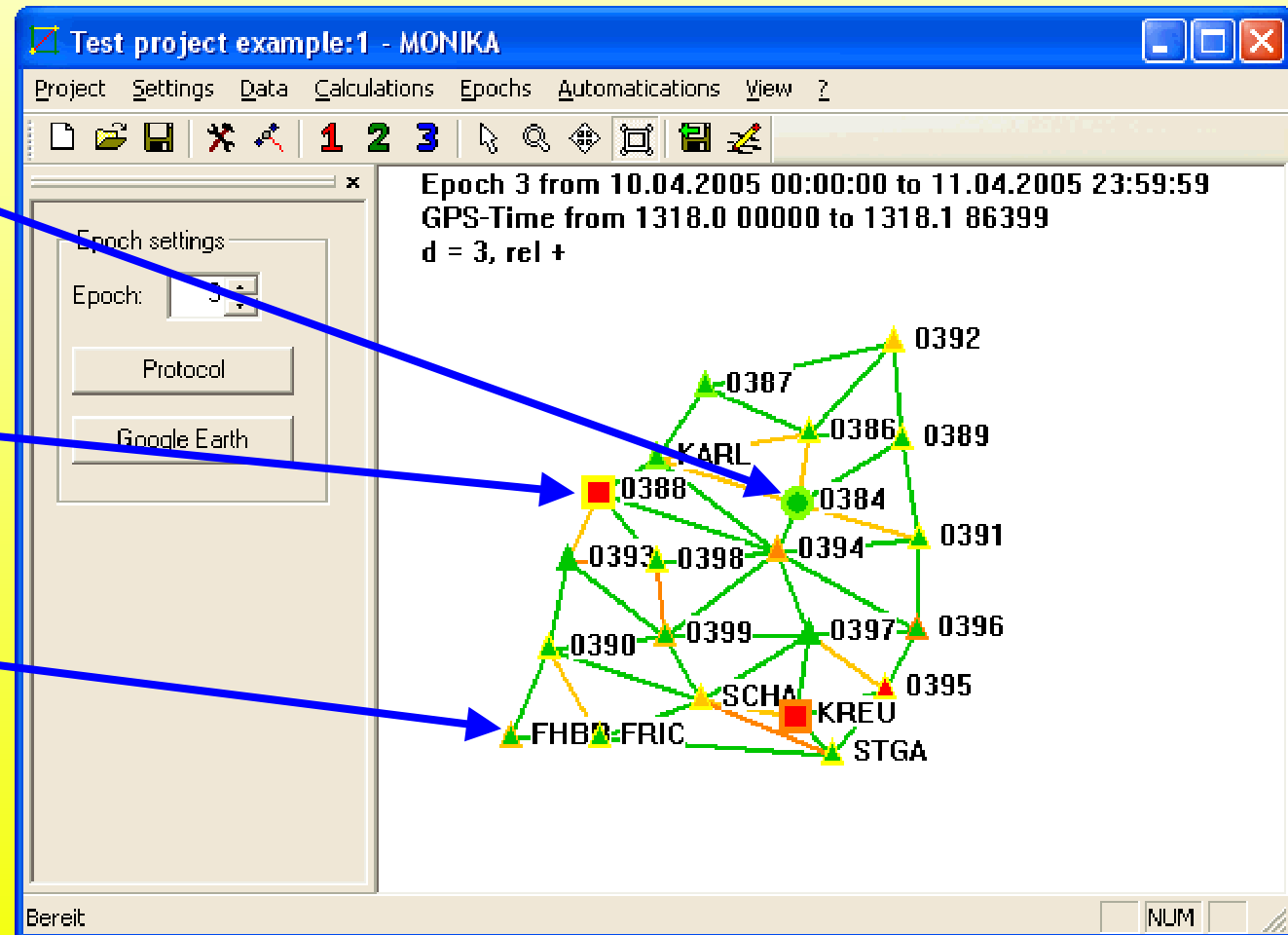
7.3 View solutions

symbols:

object point
 (circle)

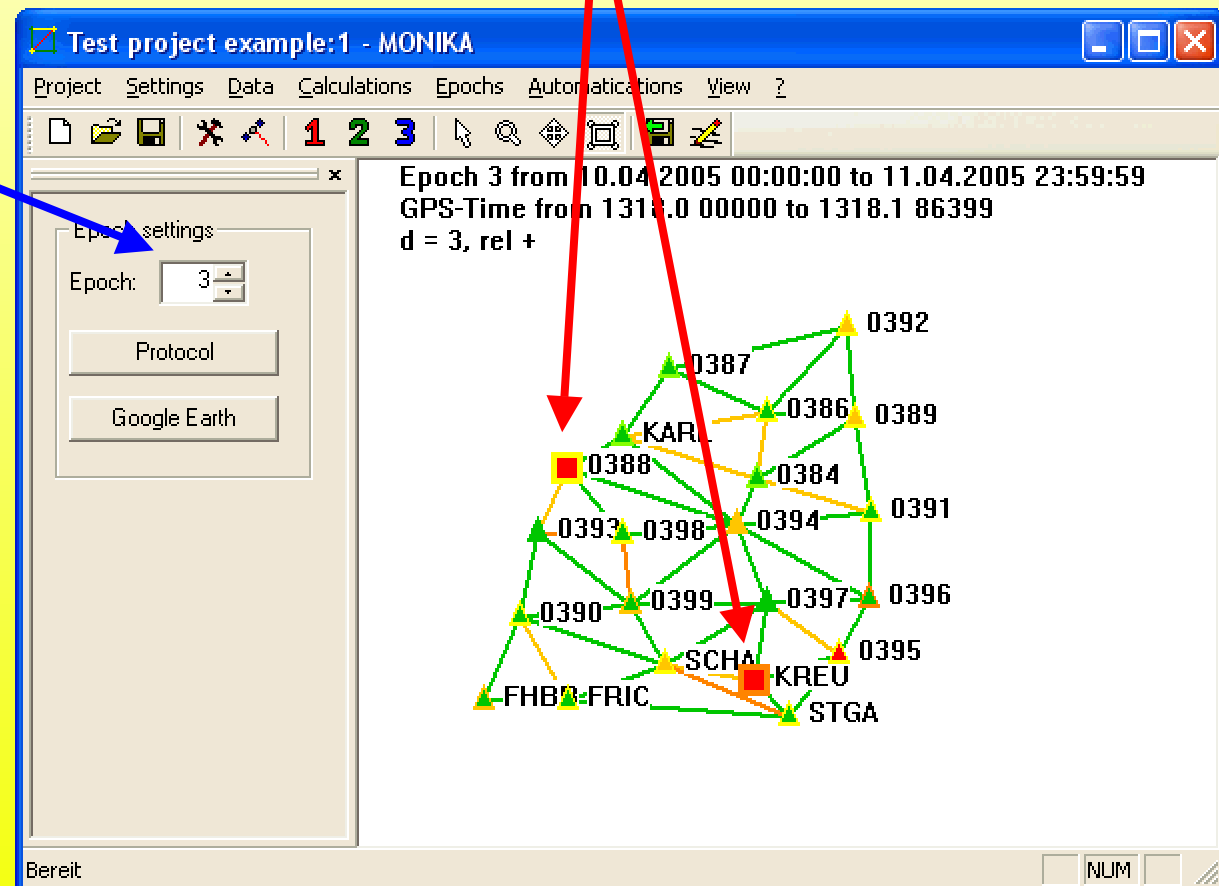
deformed
 reference point
 (square)

reference point
 (triangle)

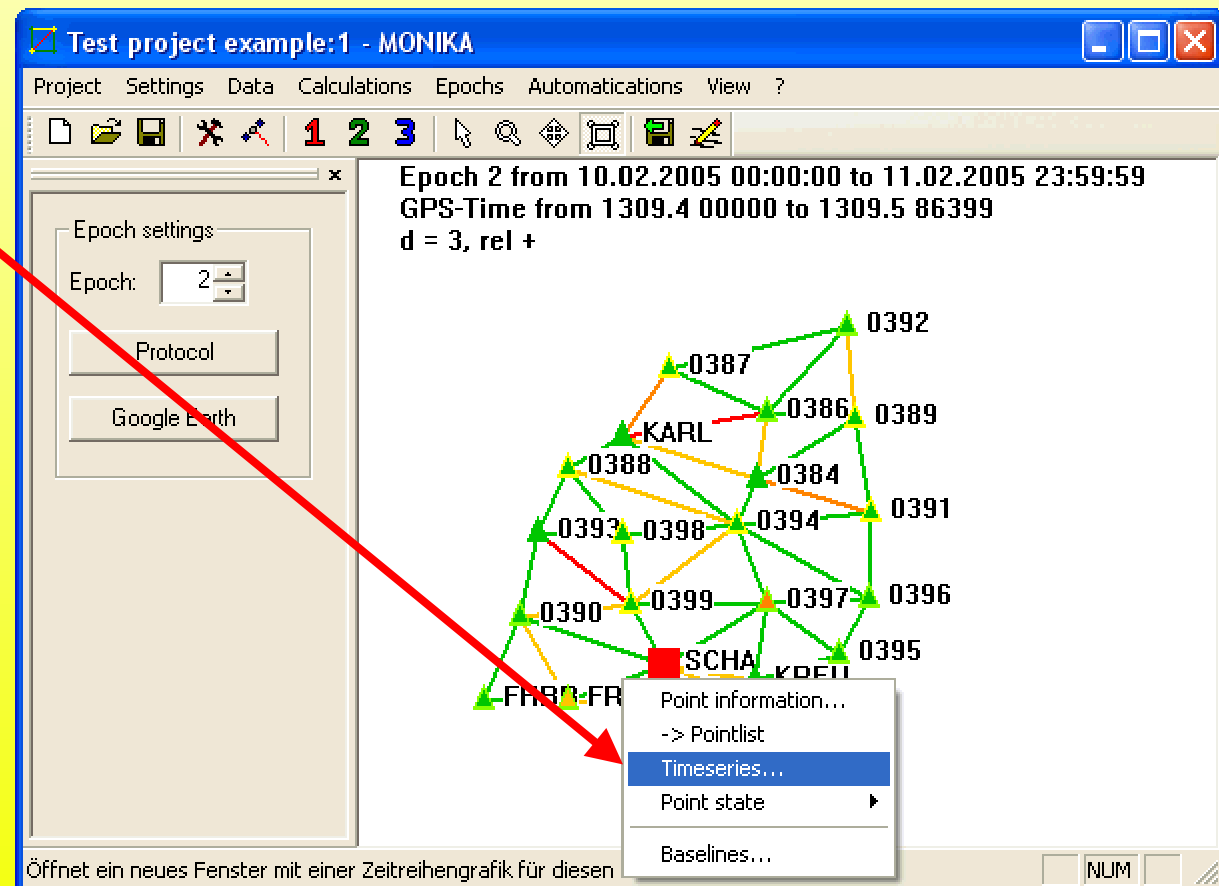


search for deformed reference points

switch through
all epochs



open time
series diagramm
at point
(right click)



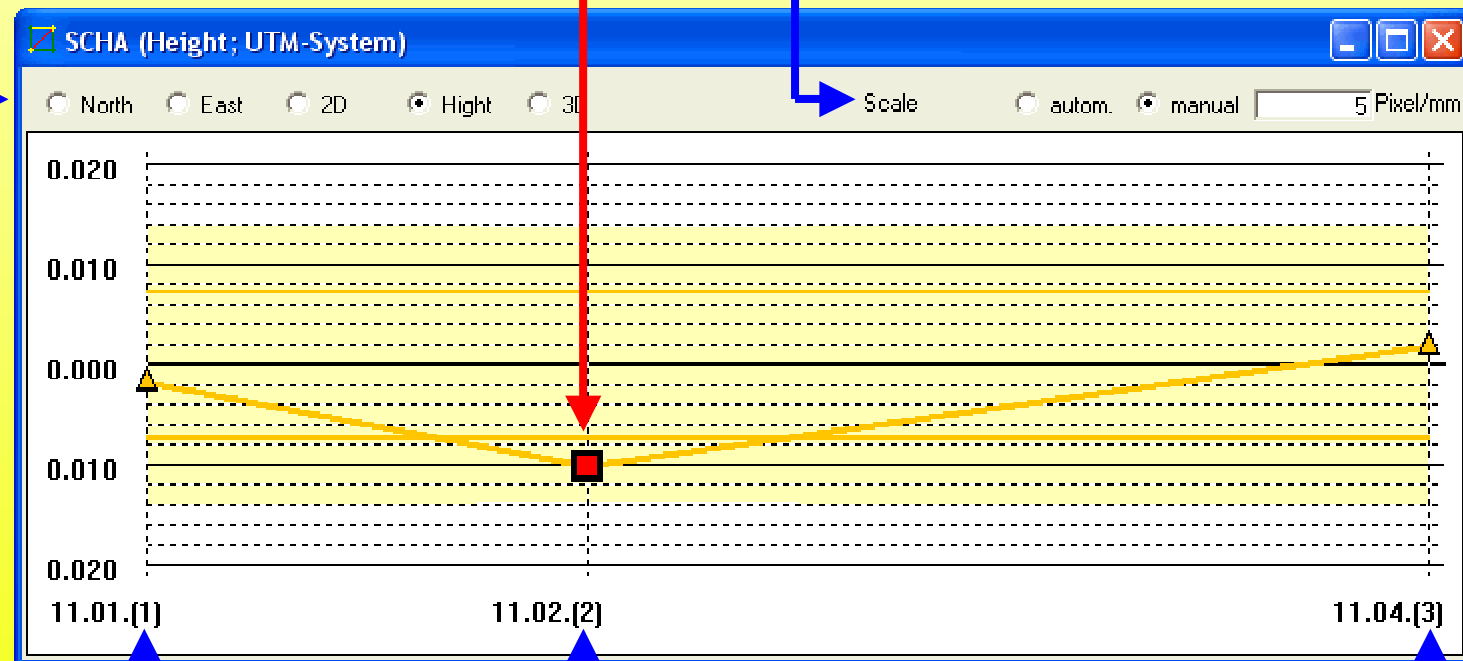
deformed reference point (2. epoch)

reference system

set scale

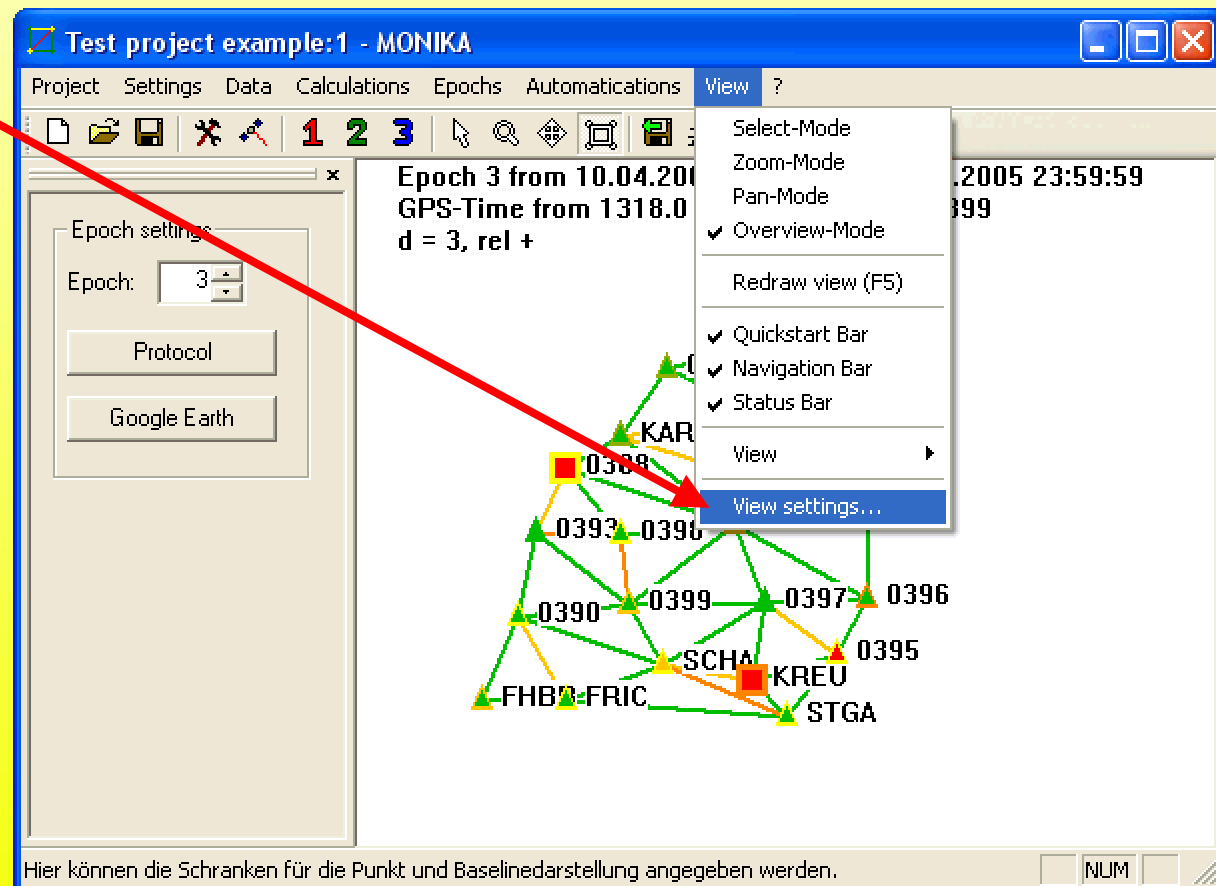
scale

epochs



7.4 View settings

open the view settings



The screenshot shows the MONIKA software interface. The title bar reads "Test project example:1 - MONIKA". The menu bar includes "Project", "Settings", "Data", "Calculations", "Epochs", "Automations", "View", and "?". The "View" menu is open, showing options: "Select-Mode", "Zoom-Mode", "Pan-Mode", "Overview-Mode" (checked), "Redraw view (F5)", "Quickstart Bar" (checked), "Navigation Bar" (checked), "Status Bar" (checked), "View" (with a right-pointing arrow), and "View settings..." (highlighted in blue). A red arrow points from the text "open the view settings" to the "View settings..." option. The main window displays a network graph with nodes labeled "KAR", "0388", "0393", "0396", "0390", "0399", "0397", "0396", "SCHA", "KREU", "0395", "FHBB-FRIC", and "STGA". The graph is connected by green lines. The left sidebar shows "Epoch settings" with "Epoch: 3" and buttons for "Protocol" and "Google Earth". The top status bar shows "Epoch 3 from 10.04.2005 23:59:59" and "GPS-Time from 1318.0 d = 3, rel +". The bottom status bar contains the text "Hier können die Schranken für die Punkt und Baselinendarstellung angegeben werden." and a "NUM" button.

View settings

Point view settings	Deformation view settings
Test (yellow): 0.5	Deformation (dark green): 5e-005 m
Test (orange): 0.75	Deformation (green): 0.0005 m
Test (red): 1	Deformation (light green): 0.001 m
	Deformation (yellow): 0.002 m
	Deformation (yellow-orange): 0.0035 m
	Deformation (orange): 0.005 m
	Deformation (red): 0.01 m
	Deformation (dark red): 0.05 m
	Deformation (crimson): 0.1 m

Baseline view settings
Test (yellow): 0.5
Test (orange): 0.75
Test (red): 1

Scale factors
Confidence scale factor: 25
Print scale factor: 5

Time series settings
Scale (Pixel/mm): 0

Standard OK Abbrechen

(inner triangle)

(outer triangle)

0395

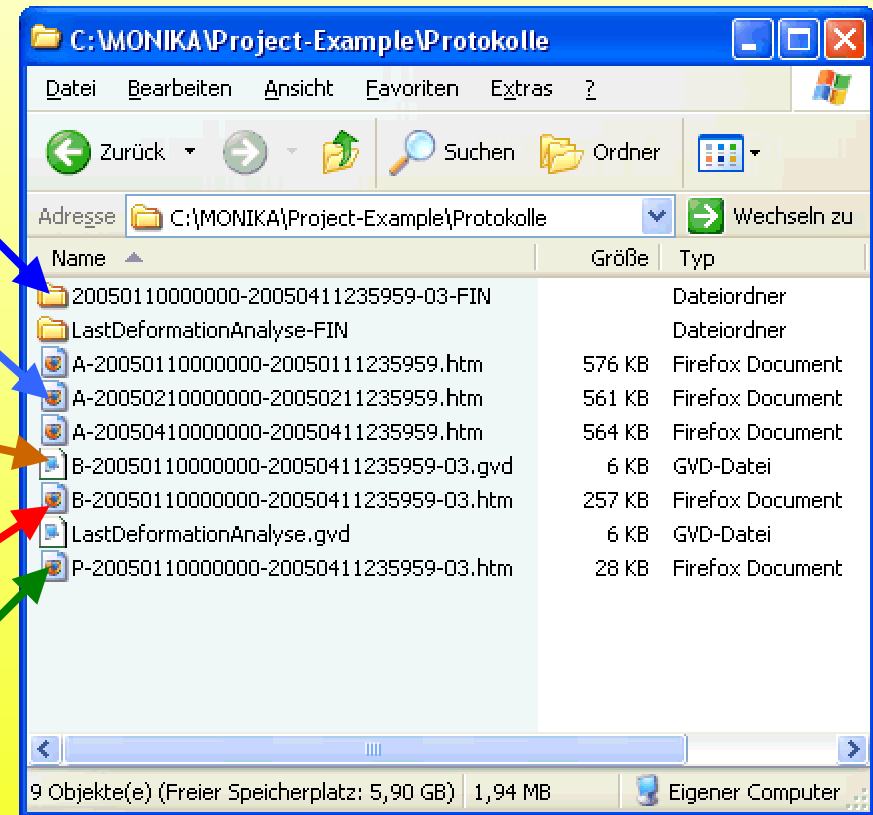
FIN-Files for GOCA

HTML-GPS3D-Protocol

GVD-File for GOCA-Earth
(identical points + deformations)

HTML-Deformation-Protocol

HTML-Plate-Rotation-Protocol



FIN-Interface (Final)

```

091103.fin - Editor
Datei Bearbeiten Format Ansicht ?
T1 -1.29901 -0.37949 0.37555 27150.0000
0.0000000087169258754 -0.0000000060674040853 0.0000000000000000000
-0.0000000060674040853 0.0000000199786815072 0.0000000000000000000
0.0000000000000000000 0.0000000000000000000 0.00000001065871042387
P5 0.18725 -3.46002 -0.04877 27150.0000
0.00000248378665916727 -0.00000514210981530576 0.0000000000000000000
-0.00000514210981530576 0.00001065715190070168 0.0000000000000000000
0.0000000000000000000 0.0000000000000000000 0.00000005239566280155
P6 0.18950 -0.97751 -0.15772 27150.0000
0.00001034312579925855 -0.00000415535804120103 0.0000000000000000000
-0.00000415535804120103 0.00000167034088810475 0.0000000000000000000
0.0000000000000000000 0.0000000000000000000 0.00000026074921198357
P4 2.52691 -2.40692 -0.05351 27270.0000
0.00011205002619283439 -0.00010646789130682839 0.0000000000000000000
-0.00010646789130682839 0.00010149390440442442 0.0000000000000000000
0.0000000000000000000 0.0000000000000000000 0.00000001862410205237
P5 0.18493 -3.46247 -0.04872 27270.0000
0.00000079346142515079 -0.00001151036927514386 0.0000000000000000000
-0.00001151036927514386 0.00021275521303185181 0.0000000000000000000
0.0000000000000000000 0.0000000000000000000 0.00000001761929231334
P6 0.18501 -0.98147 -0.15693 27270.0000
0.00000733132477916905 -0.00003835284541358984 0.0000000000000000000
-0.00003835284541358984 0.00020103618430872454 0.0000000000000000000
0.0000000000000000000 0.0000000000000000000 0.000000051839297813137
T1 -1.29901 -0.37949 0.37554 27390.0000
0.0000000087169258751 -0.0000000060674040850 0.0000000000000000000
-0.0000000060674040850 0.0000000199786815065 0.0000000000000000000
0.0000000000000000000 0.0000000000000000000 0.00000001065878815999
P5 0.18724 -3.46000 -0.04879 27390.0000
0.00000248378545075480 -0.00000514210731063362 0.0000000000000000000
-0.00000514210731063362 0.00001065714670927650 0.0000000000000000000
0.0000000000000000000 0.0000000000000000000 0.00000005239730079908
P6 0.18958 -0.97753 -0.15776 27390.0000
0.00001034315010221117 -0.00000415536780499440 0.0000000000000000000
-0.00000415536780499440 0.00000167034481074172 0.0000000000000000000

```

Number

Coordinates

Covariance

Timestamp

GVD-Interface (GOCA-Earth)

```

LastDeformationAnalyse.gvd - Editor
Datei Bearbeiten Format Ansicht ?
Passpunkte (Initialisierung)
0519 50.1998601828 6.8212055133 511.1491
0576 50.6759364371 7.1587646254 128.4975
0526 50.2101426688 6.4275337534 498.3127
0524 49.7568634415 6.6474022162 205.2019
0592 50.6379856203 6.6305873576 290.0184
0618 50.3165646597 6.0853249819 607.2990
0579 51.2587648073 6.3921873888 105.4500
0608 50.9545168662 6.9852319220 95.9458
0611 51.4121433940 5.5551299121 73.2301
titz 51.0353027020 6.4316236628 156.1716
0591 50.7678843507 6.0884306498 263.2688
0531 49.9921058163 6.1948540378 559.4596
0594 51.0290837709 7.5680289343 339.0304
0513 50.3292984605 7.2430702611 336.2052
0527 49.6475167388 7.1657762278 441.6379
0514 49.9844964361 7.5249685627 419.4282
0525 49.9160764953 7.0665298174 184.3183
0512 50.3582902276 7.5697068563 183.9993
Epoche - Initialisierung
Epoche - 1
0519 4062178.0911 485910.2935 4877441.5820 0 01 17.10.2007 12:00:00
0576 4018492.6004 504715.7028 4910877.5915 1 01 17.10.2007 12:00:00
0526 4064539.3197 457889.0487 4878163.8444 1 01 17.10.2007 12:00:00
0524 4100920.3630 477931.2180 4845518.6789 1 01 17.10.2007 12:00:00
0592 4026319.3851 468039.4091 4908326.0149 1 01 17.10.2007 12:00:00
0618 4058218.2896 432647.1596 4885815.7121 1 01 17.10.2007 12:00:00
0579 3974817.9180 445298.4652 4951693.0252 1 01 17.10.2007 12:00:00
0608 3996139.0958 489618.6769 4930433.2803 1 01 17.10.2007 12:00:00
0611 3967617.4841 385891.5010 4962328.9653 1 01 17.10.2007 12:00:00
titz 3993780.8692 450206.4910 4936136.6696 0 01 17.10.2007 12:00:00
0591 4019430.9329 428732.3808 4917457.6606 1 01 17.10.2007 12:00:00
0531 4084903.1170 443391.2791 4862653.1048 1 01 17.10.2007 12:00:00
0594 3984713.7819 529411.4450 4935843.7523 1 01 17.10.2007 12:00:00
0513 4047394.8954 514396.2311 4886511.4740 1 01 17.10.2007 12:00:00
0527 4105784.1203 516189.7483 4837832.7710 1 01 17.10.2007 12:00:00
0514 4074063.5411 538166.9265 4862001.6351 0 01 17.10.2007 12:00:00
0525 4083870.5136 506250.4720 4856924.6196 1 01 17.10.2007 12:00:00
0512 4041839.0505 537121.5963 4888452.4544 1 01 17.10.2007 12:00:00
Epoche - 2
0576 4018492.6062 504715.7034 4910877.5965 1 02 16.04.2008 12:00:00

```

Initialisation/reference
coordinates

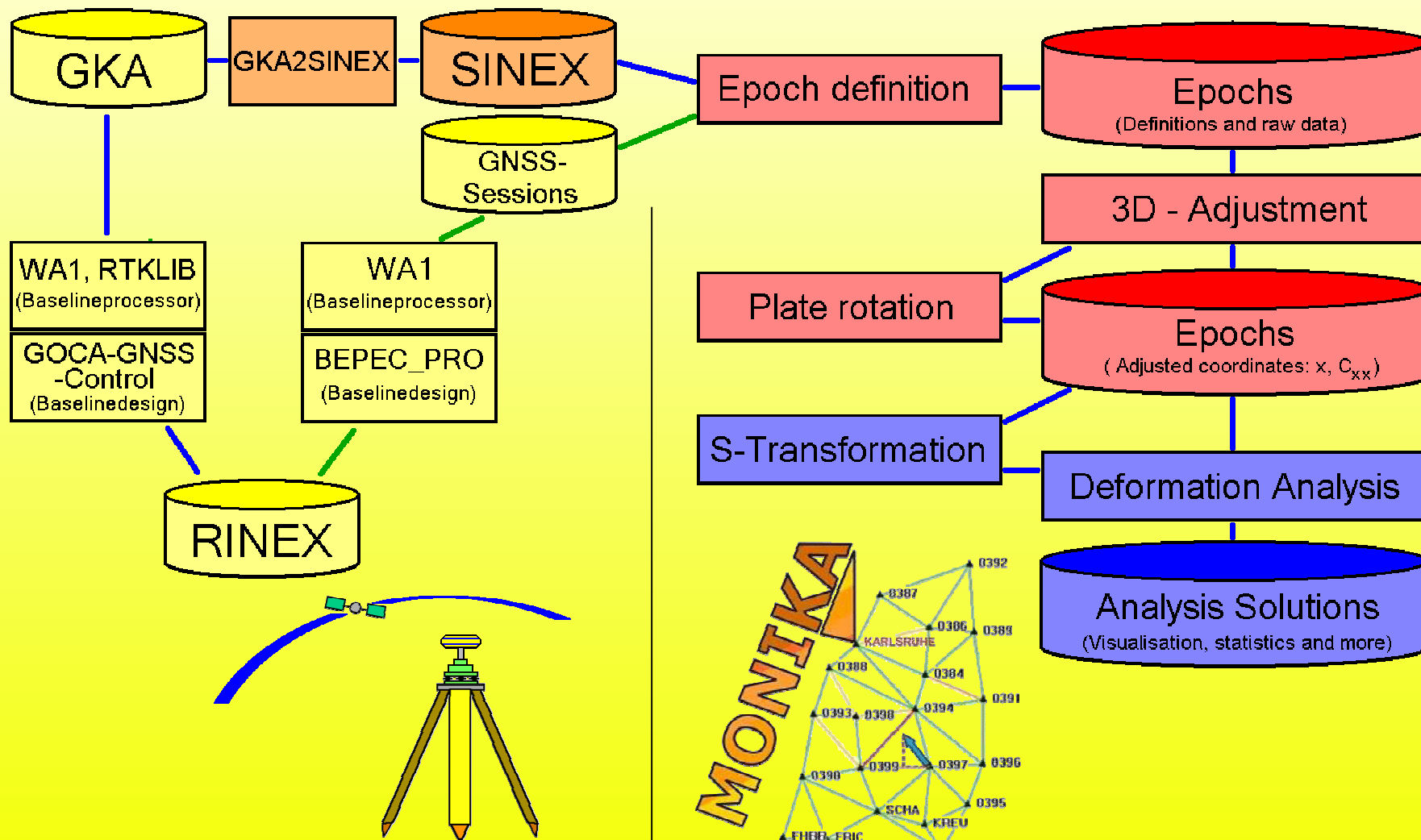
Epoch coordinates

Objekt point

Epoch number

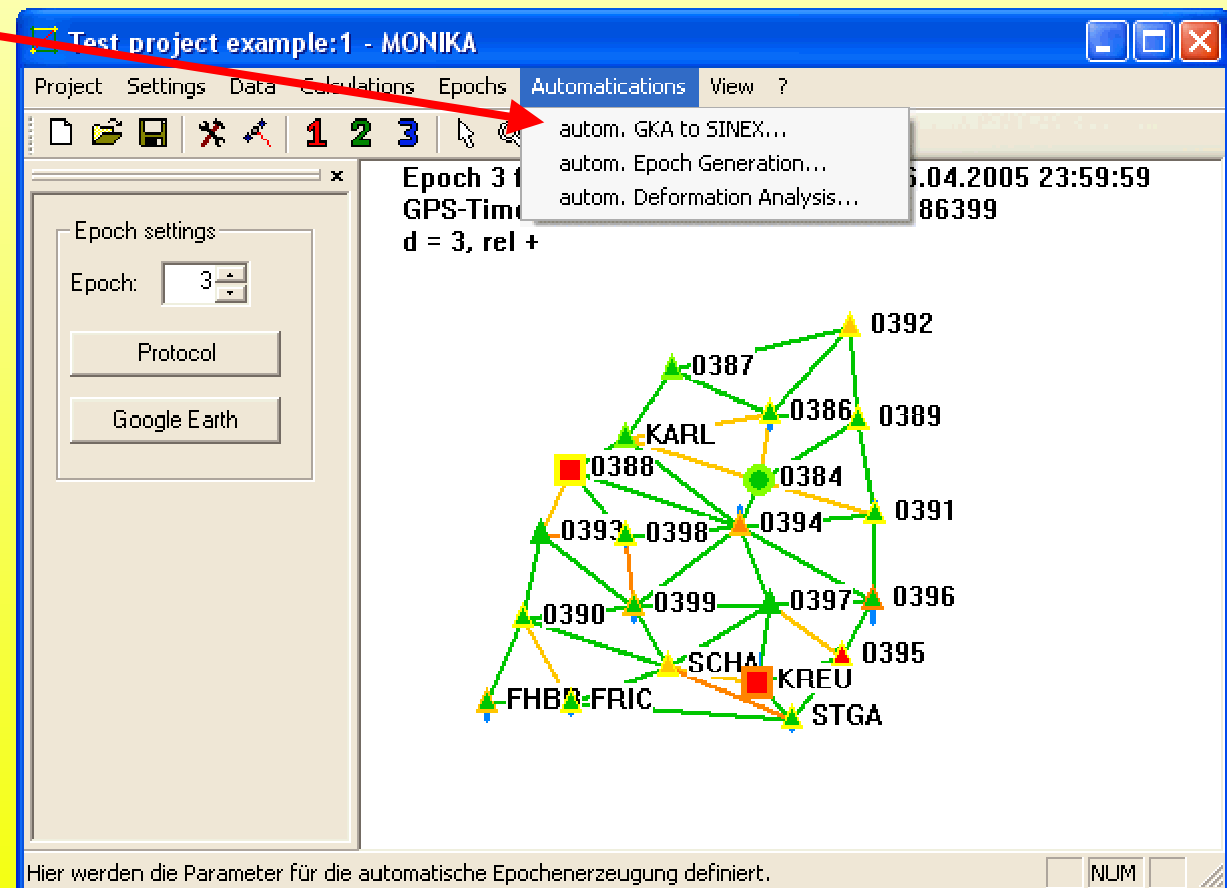
Timestamp

Overview



8. Automations

automatic GKA conversation

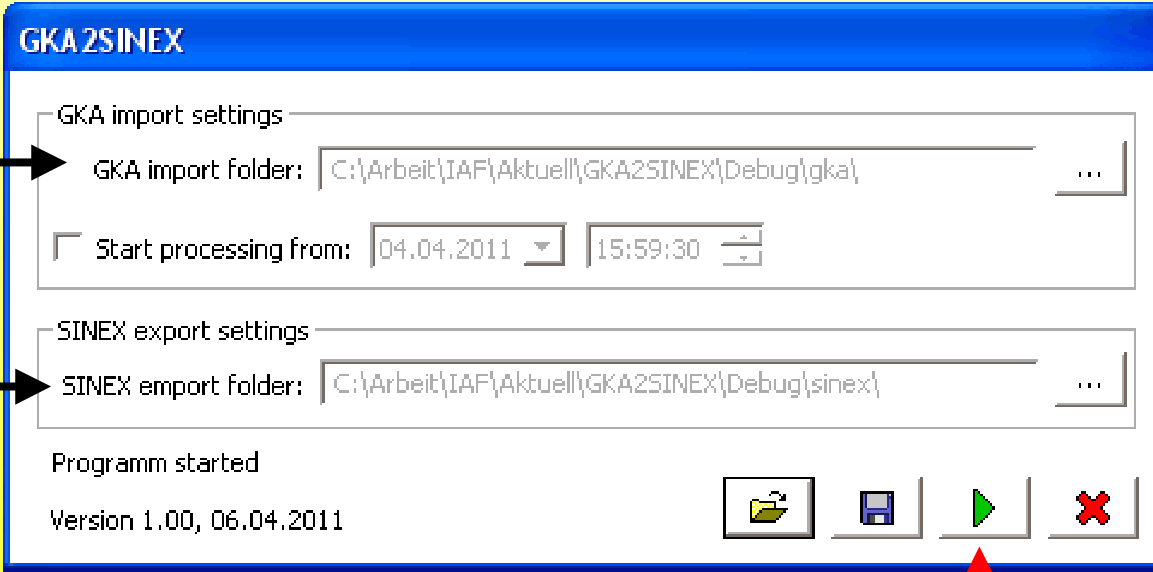


8.1 GKA to SINEX conversation

GKA2SINEX is an independant module

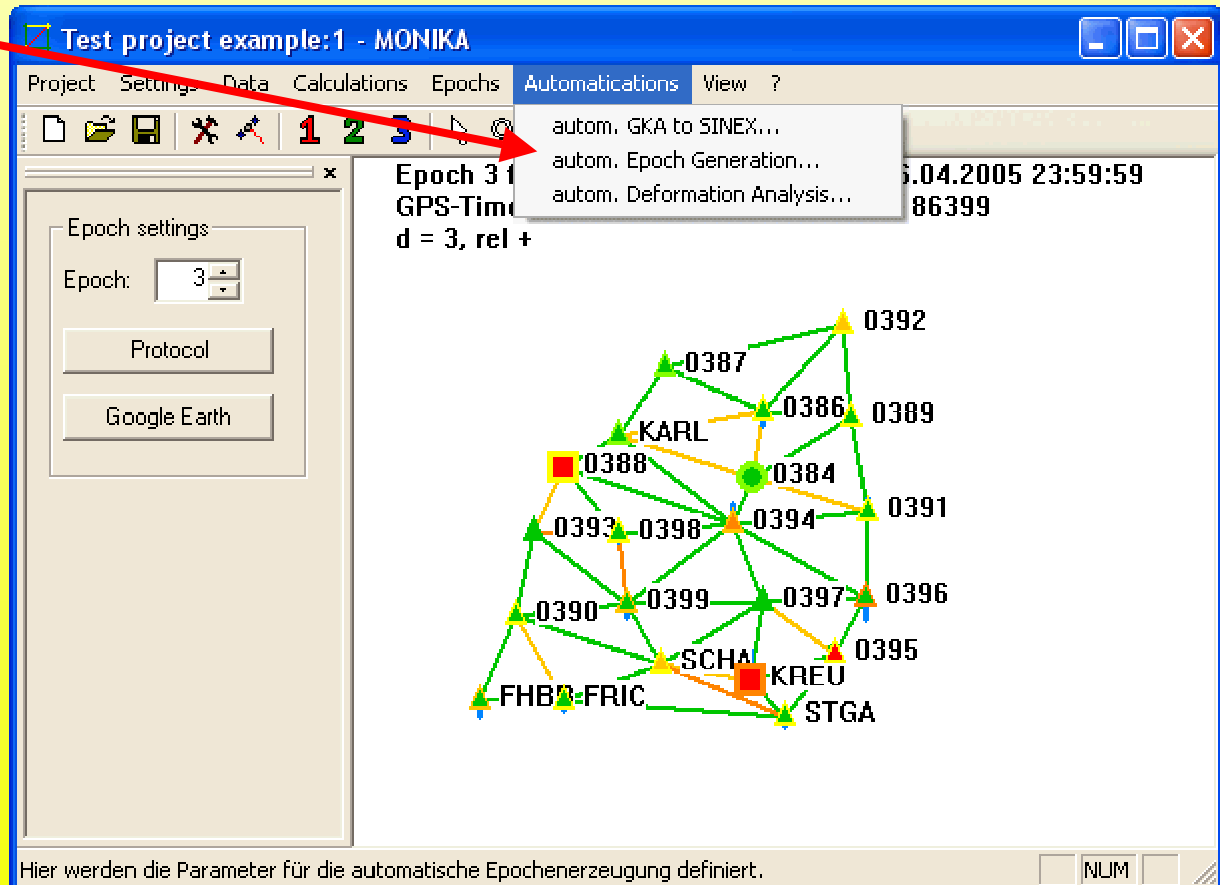
GKA Input folder →

SINEX Output folder →



Start automatic conversation

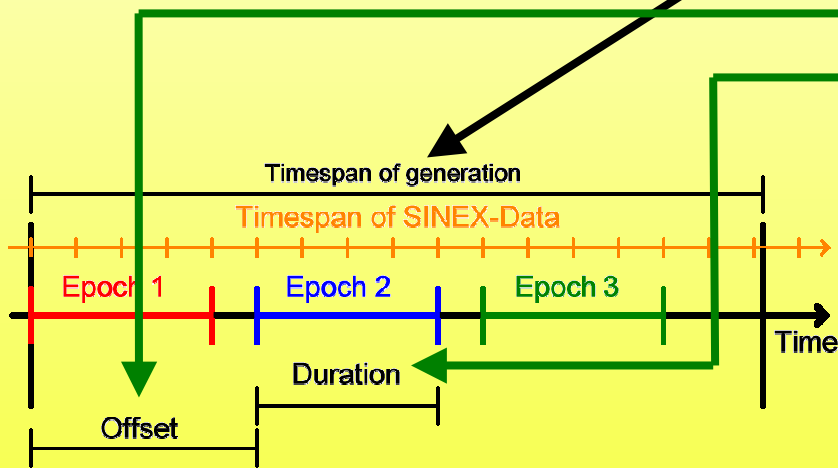
automatic epoch generation



The screenshot shows the MONIKA software interface for a project titled "Test project example:1 - MONIKA". The "Epochs" menu is open, highlighting the "autom. Epoch Generation..." option. The "Epoch settings" panel on the left shows "Epoch: 3" and buttons for "Protocol" and "Google Earth". The main display area shows "Epoch 3" with "GPS-Time" and "d = 3, rel +". Below this is a network diagram with nodes labeled with station IDs: 0387, 0386, 0388, 0384, 0392, 0389, 0393, 0398, 0394, 0391, 0390, 0399, 0397, 0396, 0395, 0395, KREU, STGA, SCHA, FRIC, and FHBB. The bottom status bar contains the text "Hier werden die Parameter für die automatische Epochenerzeugung definiert." and a "NUM" field.

8.2 Epoch Generation

Input folder
Output folder
Archive folder
(for old files)



Epoch generation settings

General settings

Name: Epoch generation 1

SINEX folder: C:\Arbeit\IAF\Aktuell\MONIKA\Testprojek\SINEX\ Change

Epoch folder: C:\Arbeit\IAF\Aktuell\MONIKA\Testprojek\Epochen Change

Archive folder: C:\Arbeit\IAF\Aktuell\MONIKA\Testprojek\SINEX-Ar Change

Time settings

Generation period: from 06.04.2011 00:00:00 to 04.04.2012 23:59:59
 GPS: 1630.3 00000 GPS: 1682.3 86399

Epoch offset: 7 days 0 seconds (1 day = 86400 sec)

Epoch duration: 6 days 86399 seconds

Process settings

GPS-Factor (inner/outer Accuracy)
 GPS-Factor: 0

automatic variance component estimation

Type of observations

absolute observations

relative observations ?

Plate rotation settings

calculate plate rotation Reference time: 04.10.2011 23:59:59

Plate model: C:\Arbeit\IAF\Aktuell\MONIKA\Testprojek\NNR-NU Change

Border file: C:\Arbeit\IAF\Aktuell\MONIKA\Testprojek\NNR-NU Change

Station offsets

use antenna offset file C:\Arbeit\IAF\Aktuell\MONIKA\Testprojek\Antennen Change

Process settings

Waiting loop: 60 seconds Message display loop: 300 ms

Abbrechen OK

8.2 Epoch Generation

automatic deformation analysis generation

The screenshot displays the MONIKA software interface for a project titled "Test project example:1 - MONIKA". The menu bar includes "Project", "Settings", "Data", "Calculations", "Epochs", "Automations", and "View". The "Automations" menu is open, showing options: "autom. GKA to SINEX...", "autom. Epoch Generation...", and "autom. Deformation Analysis...". A red arrow points from the text "automatic deformation analysis generation" to the "autom. Deformation Analysis..." menu item.

On the left, the "Epoch settings" panel shows "Epoch: 3" and buttons for "Protocol" and "Google Earth". The main window displays "Epoch 3" and "GPS-Time" with a timestamp "04.2005 23:59:59" and a value "86399". Below this is a network diagram with nodes labeled "0387", "0386", "0388", "0384", "0391", "0392", "0393", "0398", "0394", "0396", "0390", "0399", "0397", "0395", "FHBB-FRIC", "SCHA", "KREU", and "STGA".

At the bottom, a status bar reads: "Hier werden die Parameter für die automatische Epochenerzeugung definiert." and includes a "NUM" field.

8.3 Deformation Analysis generation

Input folder
Output folder
Archive folder
(for old files)

Deformation analysis generations settings

General settings

Name: Deformation 2

Epoch folder: C:\MONIKA\Project-Example\Epochen\ Change

Solution folder: C:\MONIKA\Project-Example\Protokolle\ Change

Archive folder: C:\MONIKA\Project-Example\Protokolle\ Change

Time settings

Generation period: from 29.06.2010 00:00:00 to 28.06.2011 23:59:59

GPS: 1590.2 00000 GPS: 1642.2 86399

Analysis distance: 4 days 0 seconds (1 day = 86400 sec)

Epoch distance: 2 days 0 seconds Abw.: 360 seconds

Epoch duration: 4 days 86399 seconds Abw.: 360 seconds

Number of epochs per deformation analysis: 5 epochs

Reference epoch: chen\B-20050110000000-20050411235959-03.epinfo Change ?

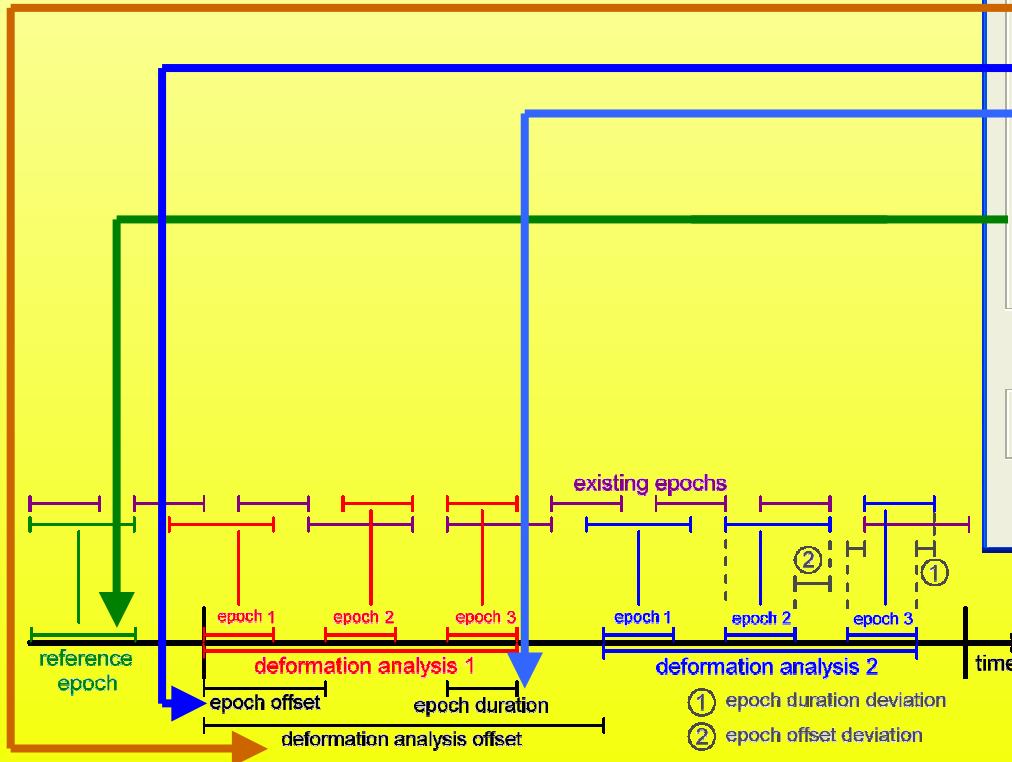
Object point list: Change ?

Deformation analysis parameter View settings

Process settings

Waiting loop: 60 seconds Message display loop: 300 ms

Abbrechen OK



8.3 Deformation Analysis generation

Test: 1 - MONIKA

Projekt Einstellungen Daten Berechnungen Epochen Automatisierung Ansicht ?

Epocheneinstellungen
 Epoche: 2
 Protokoll
 Google Earth

Epoche 2 vom 09.04.2005 00:00:00 bis 11.04.2005 23:59:59
d = 3, rel +

Berechnung läuft
 Deformierte Referenzpunkte werden gesucht...
 Berechnung der 3. Iteration.
 Statistische Berechnungen
 (Deformationswerte 33 von 132).

Bereit

Baselineliste

Baselines am Punkt POU5

Aktiv	von	nach	Länge	rel.Testgröße	max. Def.
<input checked="" type="checkbox"/>	POU5	BADH	263568.1574 m	0.28	
<input checked="" type="checkbox"/>	POU5	SBGZ	266419.3702 m	---	
<input checked="" type="checkbox"/>	POU5	SBGZ	266419.3732 m	0.67	
<input checked="" type="checkbox"/>	POU5	SBGZ	266419.3744 m	0.05	
<input checked="" type="checkbox"/>	POU5	SBGZ	266419.3770 m	0.33	
<input checked="" type="checkbox"/>	POU5	PTBB	272223.0692 m	0.12	
<input checked="" type="checkbox"/>	POU5	PTBB	272223.0697 m	0.07	
<input checked="" type="checkbox"/>	POU5	PTBB	272223.0700 m	0.14	
<input checked="" type="checkbox"/>	POU5	PTBB	272223.0703 m	0.07	
<input checked="" type="checkbox"/>	POU5	KARL	307730.0328 m	0.09	
<input checked="" type="checkbox"/>	POU5	KARL	307730.0331 m	0.16	
<input checked="" type="checkbox"/>	POU5	KARL	307730.0331 m	0.00	
<input checked="" type="checkbox"/>	POU5	KARL	307730.0332 m	0.02	
<input checked="" type="checkbox"/>	POU5	H0BU	347676.7449 m	0.07	
<input checked="" type="checkbox"/>	POU5	H0BU	347676.7454 m	0.14	
<input checked="" type="checkbox"/>	POU5	H0BU	347676.7456 m	0.28	
<input checked="" type="checkbox"/>	POU5	H0BU	347676.7464 m	0.05	
<input checked="" type="checkbox"/>	POU5	BFD1	352255.3404 m	0.00	
<input checked="" type="checkbox"/>	POU5	WROC	354028.2002 m	0.14	
<input checked="" type="checkbox"/>	POU5	WROC	354028.2006 m	0.09	
<input checked="" type="checkbox"/>	POU5	WROC	354028.2017 m	0.09	
<input checked="" type="checkbox"/>	POU5	WROC	354028.2019 m	0.33	
<input checked="" type="checkbox"/>	POU5	TRFB	358025.8340 m	1.07	0.0028 m

OK Abbrechen

RAVE (Hochwert; UTM-System)

Hoch Rechts 2D Höhe 3D

15.01.[1] 29.02.[4] 15.04.[7] 31.05.[10] 15.07.[13] 31.08.[16] 16.10.[19] 30.11.[22] 16.01.[25] 27.02.[28]

Thank you for your attention !

Any questions?