

MONIKA

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

Datasheet

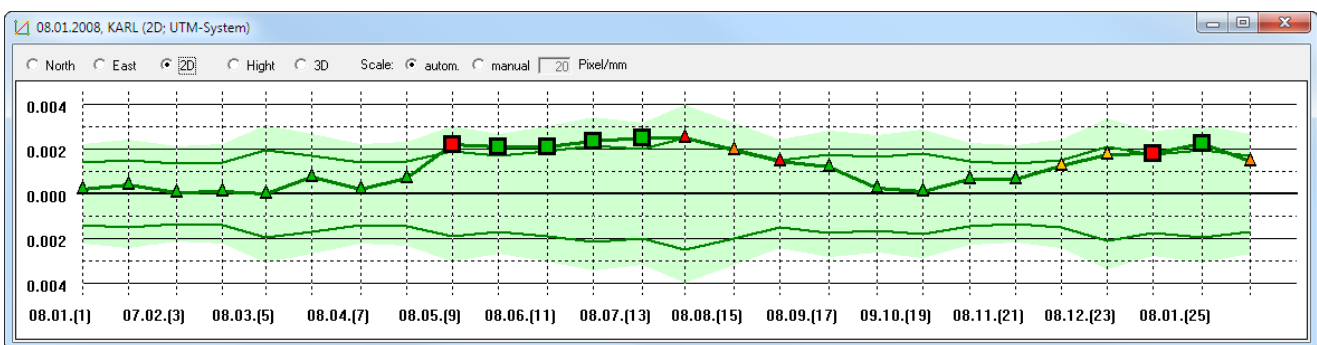


Figure 1: Time series from MONIKA V3.0

Summary

Due to a worldwide development of GNSS state and private positioning services these services increasingly play the role of an interdisciplinary application for accurate or highly accurate georeferencing. Along with the positioning of their clients, providers guarantee for the accuracy of their coordinates. As a result, even the slightest changes of a reference station's coordinates must be detected so that the coordinates can be corrected. This should also be a standard for the networked use of precise GNSS-reference services.

MONIKA puts these requirements into practice with the help of a powerful two-step coordinate-related, multi-epochal deformation-analysis. Furthermore MONIKA can handle epochs with different reference points configuration (multi-variate design). Besides the analysis of the congruency of the GNSS reference stations, the displacement monitoring of priori moving object points is implemented. All analysis can be done in post- as well as in near online-processing. Antenna changes and tectonic plate rotations (see fig. 4) are part of the modelling in MONIKA with the additional GNSS-Control software ©GOCA/MONIKA project the whole geo-monitoring-chain can be supported (fig.2, fig. 4)

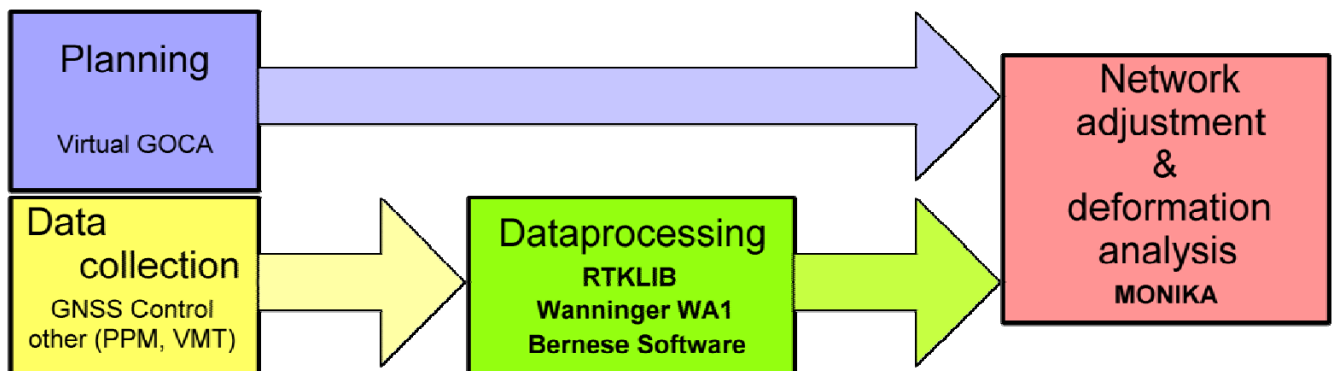


Figure 2: Geo-Monitoring-Chain for MONIKA

Interfaces in MONIKA

- Data communication interfaces
 - + TCP/IP, RS232, Email, SMS
- Open I/O-Interfaces
 - + RINEX-/SINEX-Interface
 - + Epoch- and other open Interfaces
 - + GOCA-Interfaces (www.goca.info)
- GNSS Receiver Types

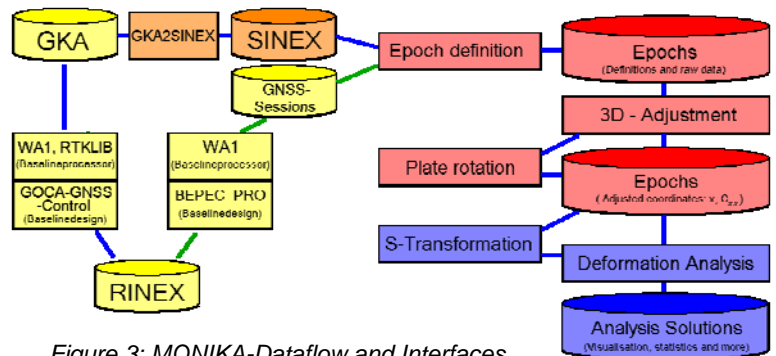


Figure 3: MONIKA-Dataflow and Interfaces



Features in MONIKA

- Online data processing
 - + continuous error propagation
- Consideration of tectonic plate movements
- S-Transformation in case of free epochs
- Powerful multi-epoch deformation analysis
 - + including automatic datasnooping
- GoogleEarth-Visualisation

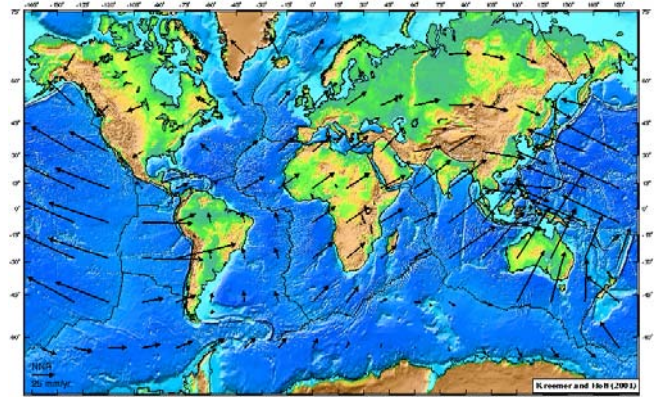


Figure 4: Earth-Plate-Rotation

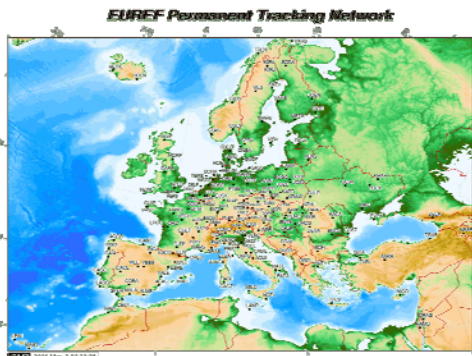


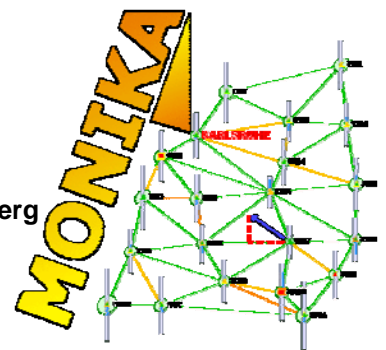
Figure 5: Overview of the EUREF-reference-network

Accuracy of MONIKA Solutions

- Local GNSS networks (300 x 300 km)
 - + Plane: 1.5 mm with high significance (*)
 - + Height: 4.0 mm with high significance (*)
 - Global GNSS networks (4000 x 4000 km)
 - + Plane: 2.0 mm with high significance (*)
 - + Height: 7.0 mm with high significance (*)
- (*) depending on appropriate time-span standards for the GNSS observations

References for MONIKA

- University of Applied Sciences Karlsruhe, Germany
 - + Weekly automatic EUREF network monitoring (see www.monika.ag)
- University of Darmstadt (TUD)
 - + GNSS-based Monitoring of tectonic areas
- State Agency for Spatial Information and Land Development, Baden-Württemberg
 - + Daily automatic SAPOS GNSS network deformation integrity monitoring
 - + Monitoring of the upper Rhein-Graben tectonic zone
- State Agency for Geodesy and Geoinformation, Rheinland-Pfalz, Germany
 - + Daily automatic SAPOS GNSS network deformation integrity monitoring
 - + Monitoring of the eifel-plume volcano area, <http://www.volcano.si.edu/world/volcano.cfm?vnum=0100-01-&volpage=sources>
- Real-Time-Positioning Austria (EPOSA)
 - + Daily automatic GNSS network deformation integrity monitoring and additional object monitoring



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MONIKA Web-Site:

www.monika.ag (MONIKA Software, Version 3.0)