The Bernese Software
in the Reprocessing Environment

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2010 IGS Workshop, Newcastle, U.K.

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■ all input values/options need a history ⟶ time windows

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FORMAT:  1
MODELS:  2
DATUM : IGS05
ALOAD : LPRESS  PRESS0815.GRD  COEFF0815.

TYPE 001: STATION COORDINATES
-----------------------------
DEFAULT EPOCH: 2005 01 01 12 00 00

STATION NAME              VALIDITY INTERVAL (FROM -> TO)        FLAG      SYS            X (M)         Y (M)
***************    YYYY MM DD HH MM SS  YYYY MM DD HH MM SS  ******** ********  *********.**** *********.*...
ZIM2 14001M008                                               PPP      GR         4331299.8232    567537.3...
ZIMM 14001M004                         2006 09 30 23 59 59   ITRFxx   G          4331297.0136    567555.9...
ZIMM 14001M004         2006 10 01 00 00 00                   ITRFxx   G          4331297.0336    567555.9...
...

TYPE 002: STATION VELOCITIES
----------------------------

STATION NAME              VALIDITY INTERVAL (FROM -> TO)        FLAG      SYS           VX (M/Y)       VY (...
***************    YYYY MM DD HH MM SS  YYYY MM DD HH MM SS  ******** ********  *********.**** *********.*...
ZIM2 14001M008                                               PPP      GR              -0.0126        0.0...
ZIMM 14001M004                         2009 10 24 23 59 59   ITRFxx   G              -0.0126        0.0...
ZIMM 14001M004         2009 10 24 00 00 00                   ITRFxx   G              -0.0138        0.0...
...
```
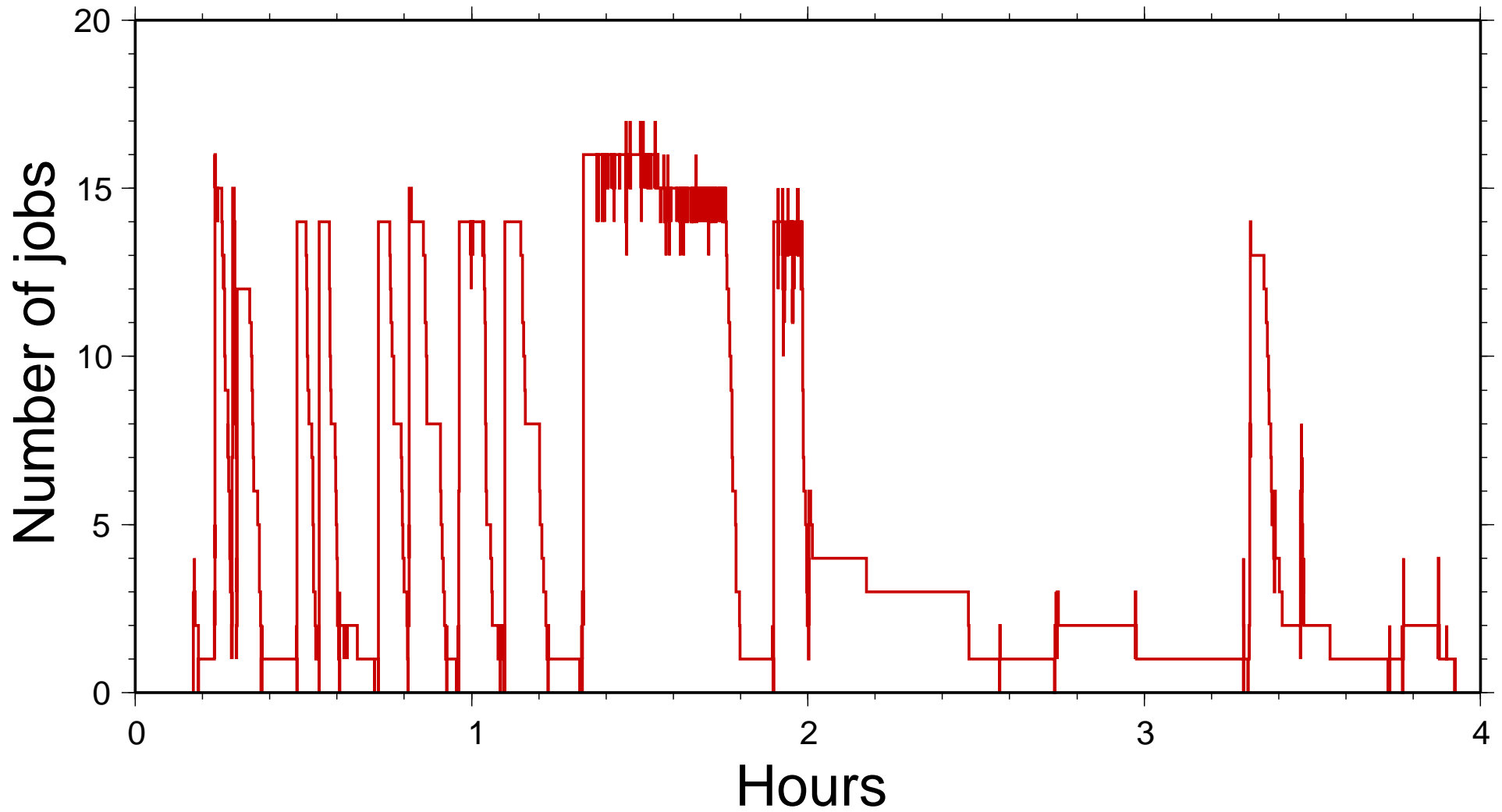
Reprocessing means going back in time. . .

- all input values/options need a history $\longrightarrow$ time windows

- "Déjà–vu" with old known problems:

  - L2 data gaps during the period with high activity of the ionosphere

  - AS–off period: need to be considered in DCB handling

  - receivers with squaring technique to recover L2 phase measurements

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■ job and control system need to be extended

  – new features for the Bernese Processing Engine required

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■ preparation of different levels for a repetition of the reprocessing effort

Looking into the results. . .

■ **FODITS**: Find Outliers and Discontinuities in Time Series

 – new component of the Bernese Software

 – automated analysis of time series (mainly station coordinates)

 – poster Ostini et al., panel 56

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- Review of the generation of cumulative solutions

    – a reasonable default behavior of the station is assumed

    – only the exceptions from the defaults shall need an interaction by the operator (Event handling)

Looking into the results...

```
TYPE 003: HANDLING STATION TYPES
--------------------------------
STATION NAME         FLG         FROM                    TO          MARKER TYPE          REMARK
****************     ***  YYYY MM DD HH MM SS  YYYY MM DD HH MM SS  ********************  **********************
JAPA ERDBEBEN_       ERQ  2011 08 01 00 10 00  2011 08 01 00 20 00  KINEMATIC

TYPE 004: HANDLING OF STATION PROBLEMS
--------------------------------------
STATION NAME         FLG         FROM                    TO          PARAM   ELIM        REMARK
****************     ***  YYYY MM DD HH MM SS  YYYY MM DD HH MM SS  ******  **********  **********************
MDVJ 12309M005       RNX  2008 09 16 00 00 00  2008 09 24 00 00 00  CRD     ASAP        do not use this station
ZIMJ 14001M006       IGS  2008 09 18 00 00 00  2008 09 19 00 00 00  CRD     NO_STACK    not in cumulative sol.
ZIMJ 14001M006       SNX  2008 09 18 00 00 00  2008 09 19 00 00 00  TRP     A_STACK     problem with trop.modell
ZIMJ 14001M006       EPN  2008 09 18 00 00 00  2008 09 19 00 00 00  VEL     DATUM       do not use for datum def
ZIMJ 14001M006       EPN  2008 09 18 00 00 00  2008 09 19 00 00 00  AMB     NO_RESOLVE  no ambiguity resolution

TYPE 005: STATION EVENTS
------------------------
STATION NAME 1       FLG      EPOCH           PARAM   GRP    REMARK
****************     ***  YYYY MM DD HH MM SS  ******  ***    **********************
ZIM2 14001M008       NEQ  2008 01 01 00 00 00  VEL     002    diff. velocity as the group
ZIM2 14001M008       NEQ  2010 06 30 00 00 00  VEL     001    now same vel. as the group

TYPE 006: STATION ECCENTRICITIES
--------------------------------
STATION NAME 1       STATION NAME 2       FLG      EPOCH STA1          EPOCH STA2       PARAM   SYS    ...
****************     ****************     ***  YYYY MM DD HH MM SS  YYYY MM DD HH MM SS  ******  ***  ***...
HELG 14264M001                             1  2008 08 31 00 00 00                       CRD     NEU    ...
TERS 13534M001       TERS 13534M003        1  2008 09 18 00 00 00  2008 09 19 00 00 00  TRP     NEU    ...
```

What to do with a reprocessed set of solutions?

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More implementations were motivated due to the availability of the reprocessed time series solution:

- higher order ionosphere corrections

- considering, investigating non-tidal loading effects

- spherical harmonics development for loading and CM realization issue

- . . .

PDR–group did a reasonable part of the implementation