SCEC

an NSF+USGS center

Current Processing at CSEP

M. Liukis, D. Schorlemmer, F. Euchner (ETH),

P. Maechling, T.H. Jordan

Southern California Earthquake Center

CSEP Meeting, April 23, 2007

SED

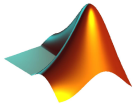
W. M. Keck Foundation

GNS SCIENCE TE PŪ AO

CSEP V1.0

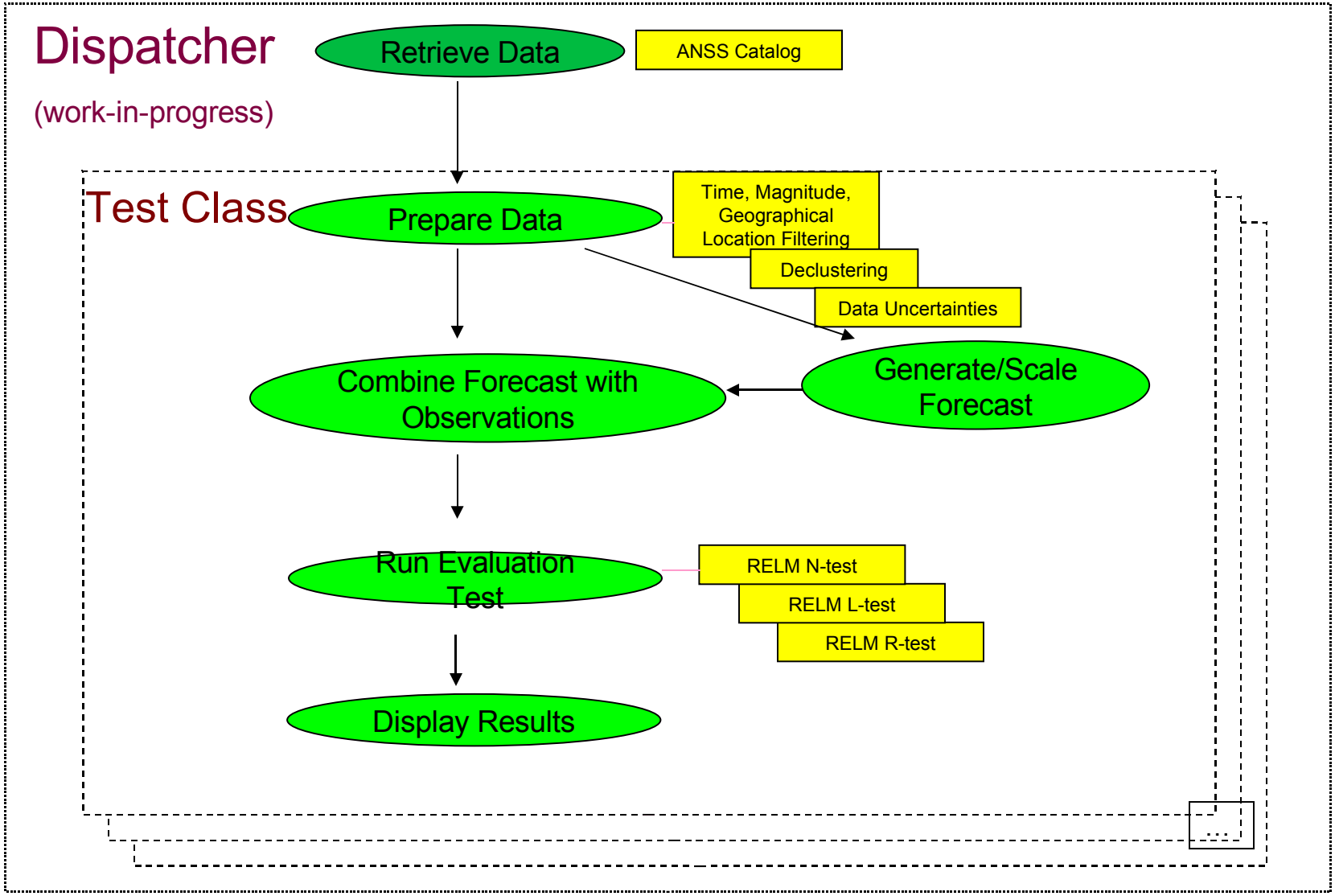
- Based on ***RELM*** testing center
- Controlled integration environment with standardized software stack


MPICH

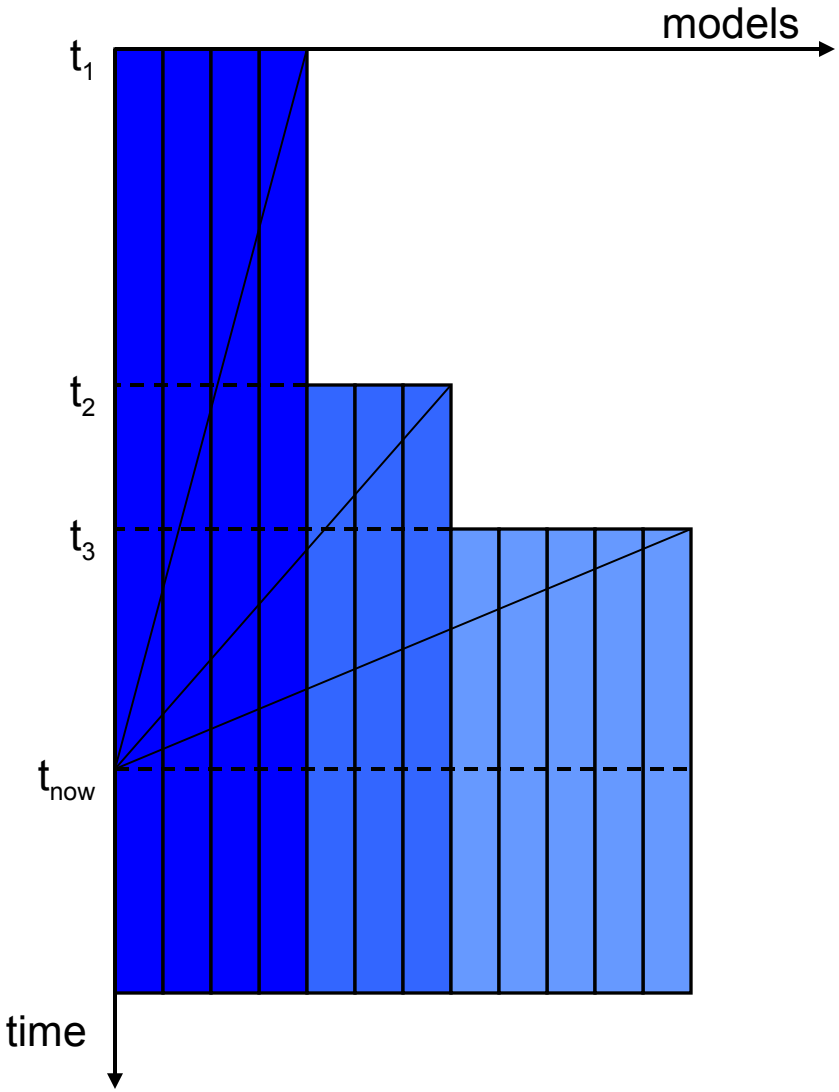


Matlab

- Focuses on:
  - End-to-end processing
  - Reproducibility of any forecast experiment
- Automated build and test framework

CSEP V1.0 - End-to-End Data Flow



CSEP V1.0 - Test Class



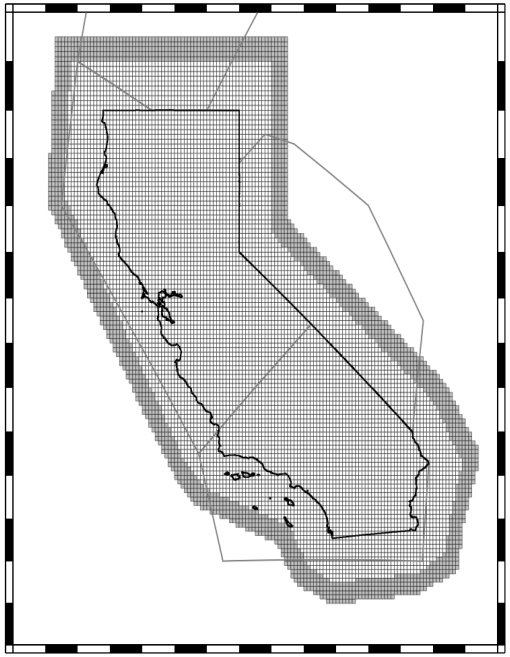
CSEP V1.0 - Retrieve Data

- ANSS catalog data for California Natural Laboratory
  - Using GNU Wget which is a free software package for retrieving files using HTTP, HTTPS and FTP, the most widely-used Internet protocols.
  - ~500Mb in size

ANSS

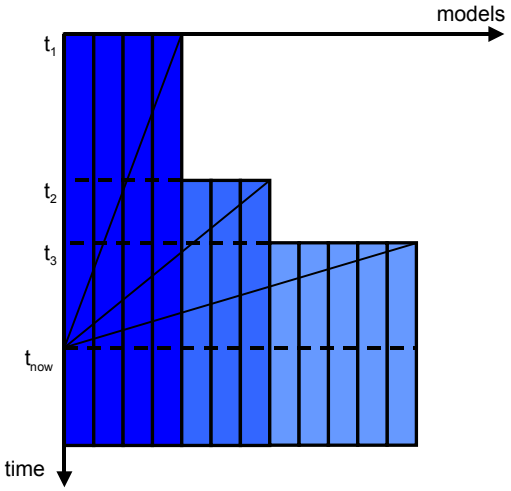
CSEP V1.0 - Prepare Data

- Filter catalog based on
  - Geographical region
    - Longitude, Latitude, Depth
  - Magnitude
  - Time range
- Decluster catalog
  - Reasenberg algorithm
- Apply catalog uncertainties
  - Horizonal error
  - Magnitude error
  - Depth error



CSEP V1.0 - Generate/Scale Forecast

- Generate forecast
  - 1-day STEP model
  - 1-day ETES model (work in progress)
- Scale forecast
  - RELM 5-year Mainshock file-based models
    - 13 models



CSEP V1.0 - Combine Forecast with Observations

- Combine forecast with observations
  - Used to compute the “true” test result
- Combine forecast with test catalogs
  - Used to compute results of “modifications”

CSEP V1.0 - Run Evaluation Test

- RELM N (number) test
  - One test per each forecast model
- RELM L (likelihood) test
  - One test per each forecast model
- RELM R (likelihood ratio) test
  - Requires two forecast models
  - Total of 78 tests for 13 models

CSEP V1.0 - Generate Results

- Result XML format

```
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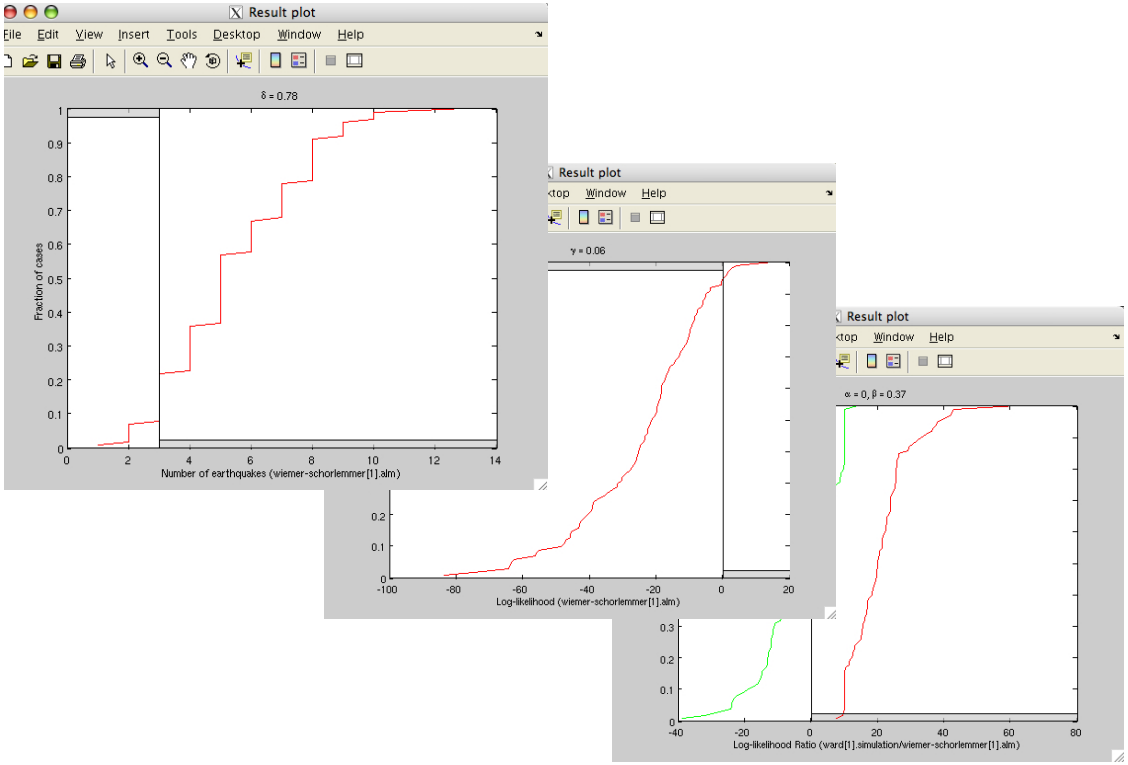
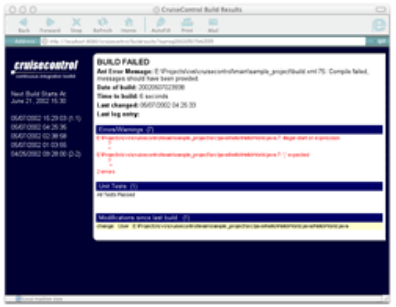
CSEP V1.0 - Display Results

- Generate plots



CSEP V1.0

- Automated Running
  - Dispatcher
- Automated Testing Framework
  - Acceptance tests
    - Considering to use open-source CruiseControl framework
- Results Reproducibility
  - Software version control
  - System configuration
  - Data set archive
- Identical Integration and Operational System
  - Standardized software stack



SUBVERSION

CSEP V1.0

- To be validated and distributed to other than SCEC testing centers