COLDEX WP4

Seismic Scenarios

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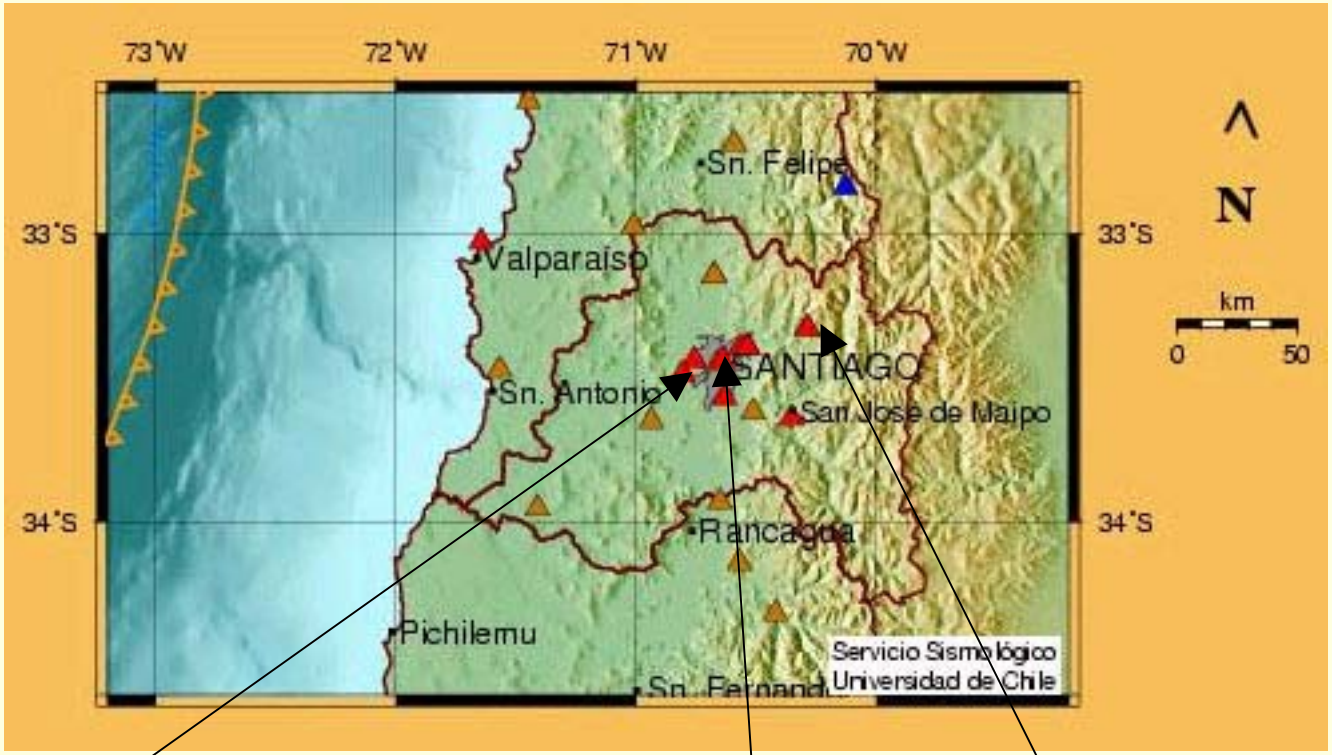
UCH

Introduction

- Pedagogical Goals
  - Context situated learning
  - Social construction of knowledge
- Opportunities
  - Using an already existing network of seismic sensors
- Problems
  - Current analysis software is too powerful and complex, high-end scientific tools
  - No collaboration support
  - Not pedagogically oriented

Sensor network in Metropolitan Region



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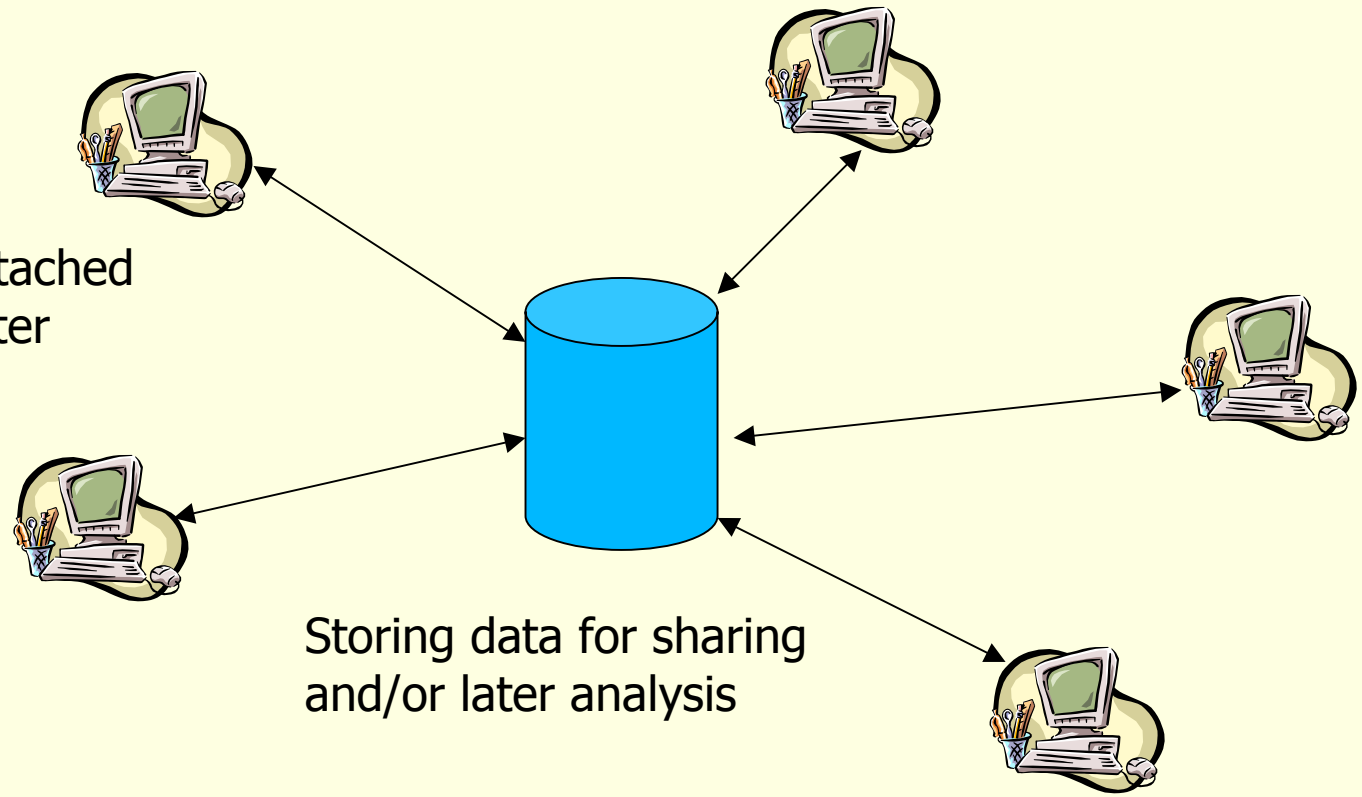
"Instituto Nacional"

"Colegio Alemán de Santiago"

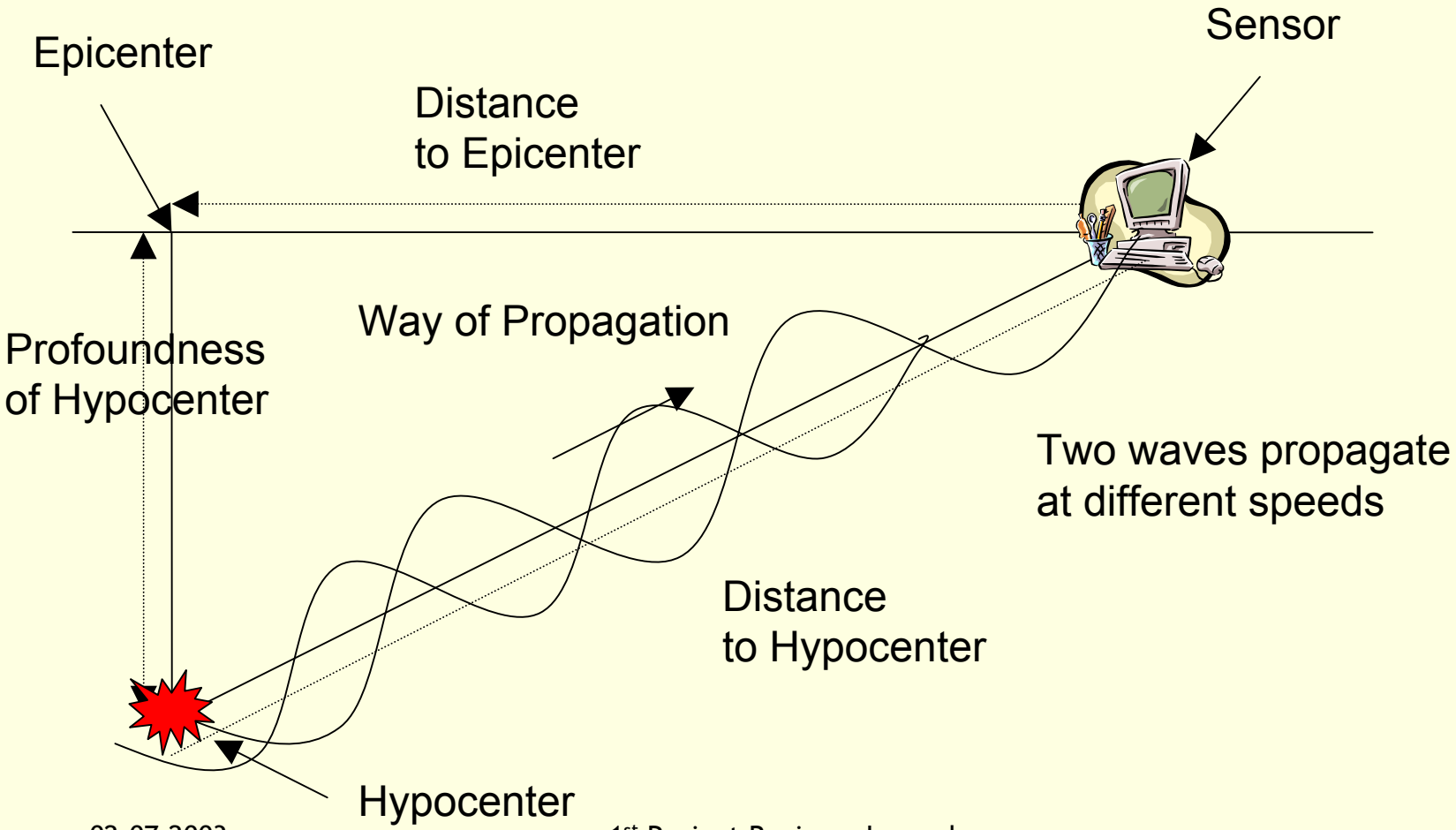
The network



Sensor attached to computer

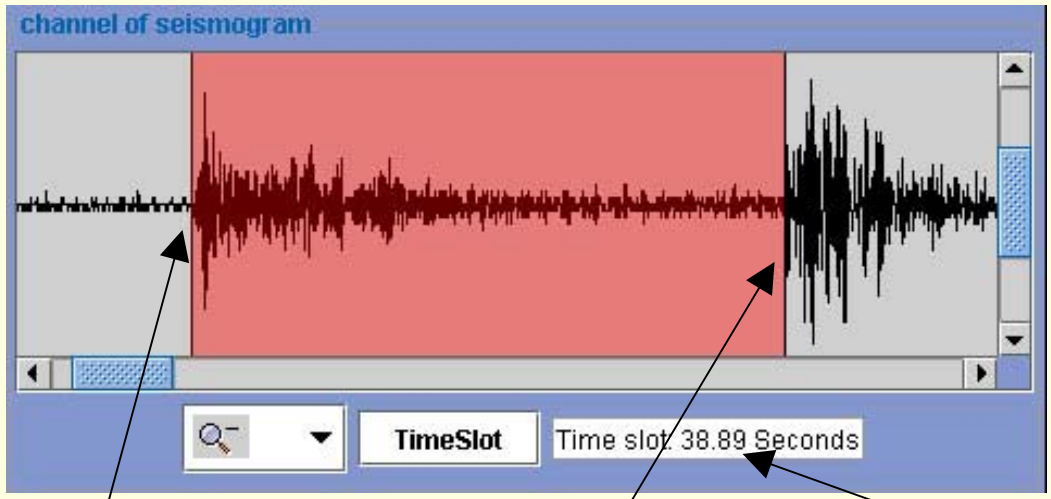
Storing data for sharing and/or later analysis

Physical model



How can the time lag be measured?

- The „ChannelPlotterNode" from the SeismoPalette displays one channel of a seismogram
- Because the propagation speed is known, distance to the hypocenter can be computed



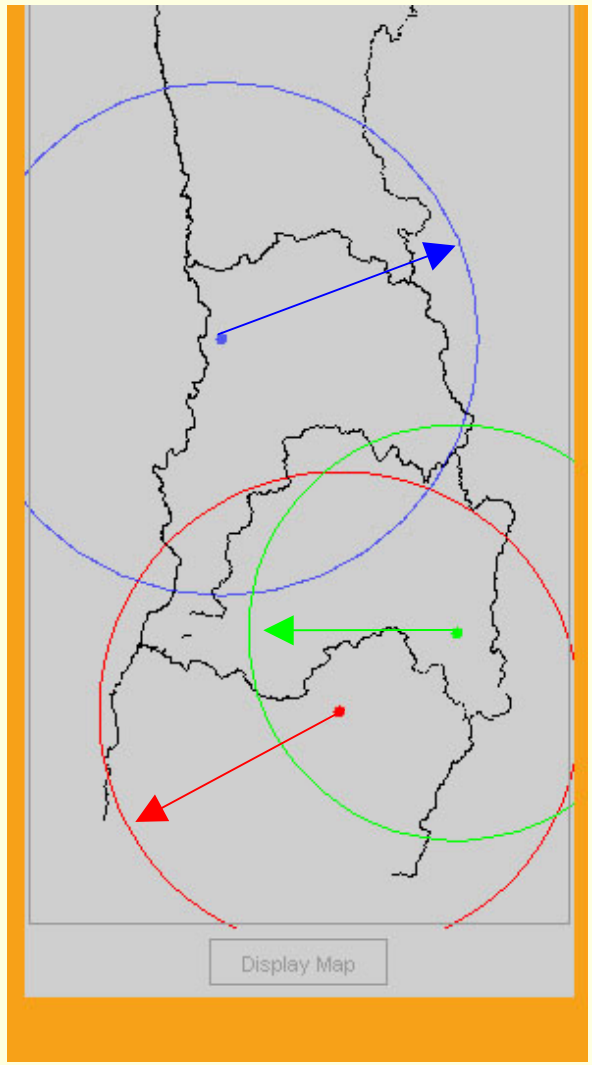
Primary wave front

Secondary wave front

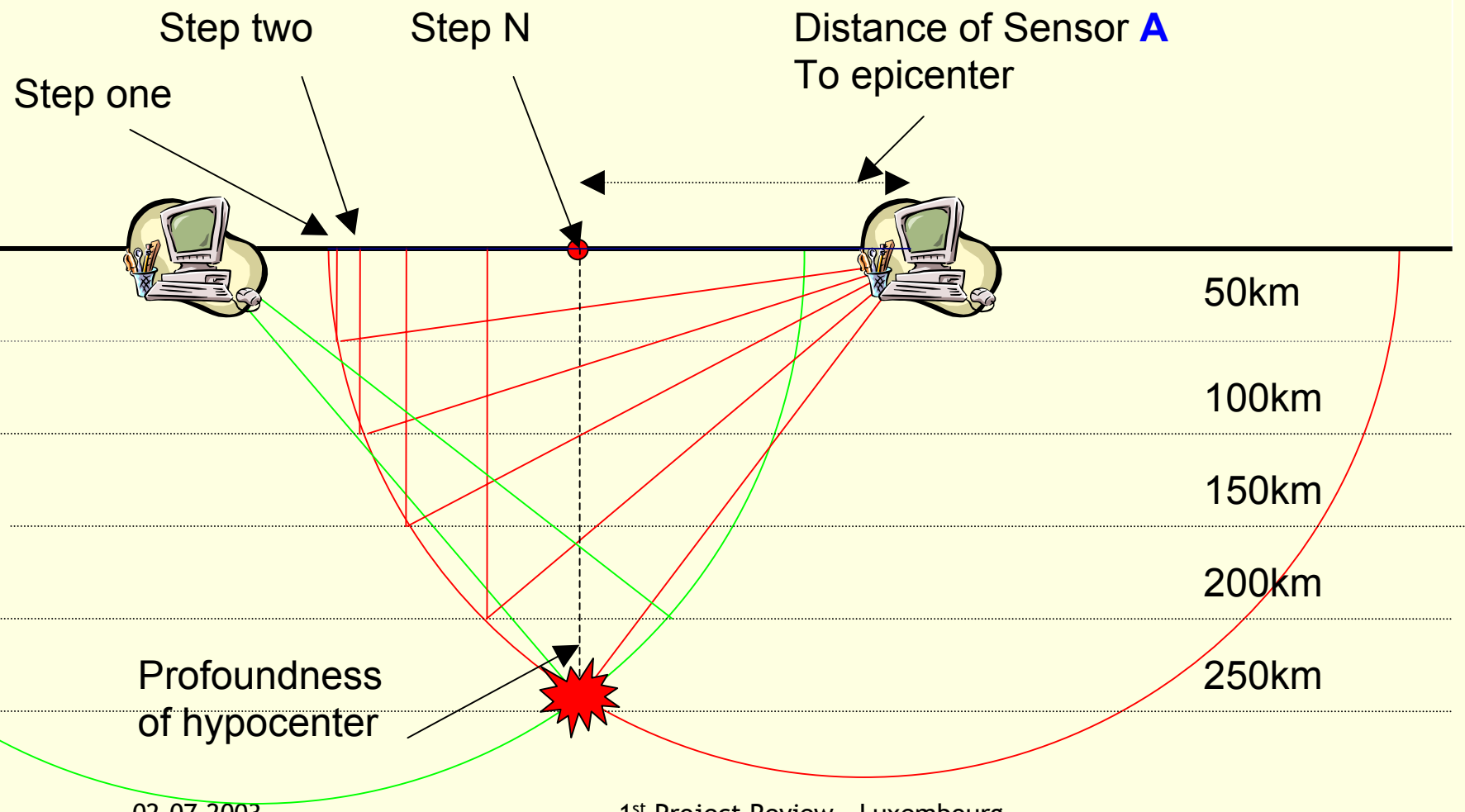
Time lag

Visualisation: top view

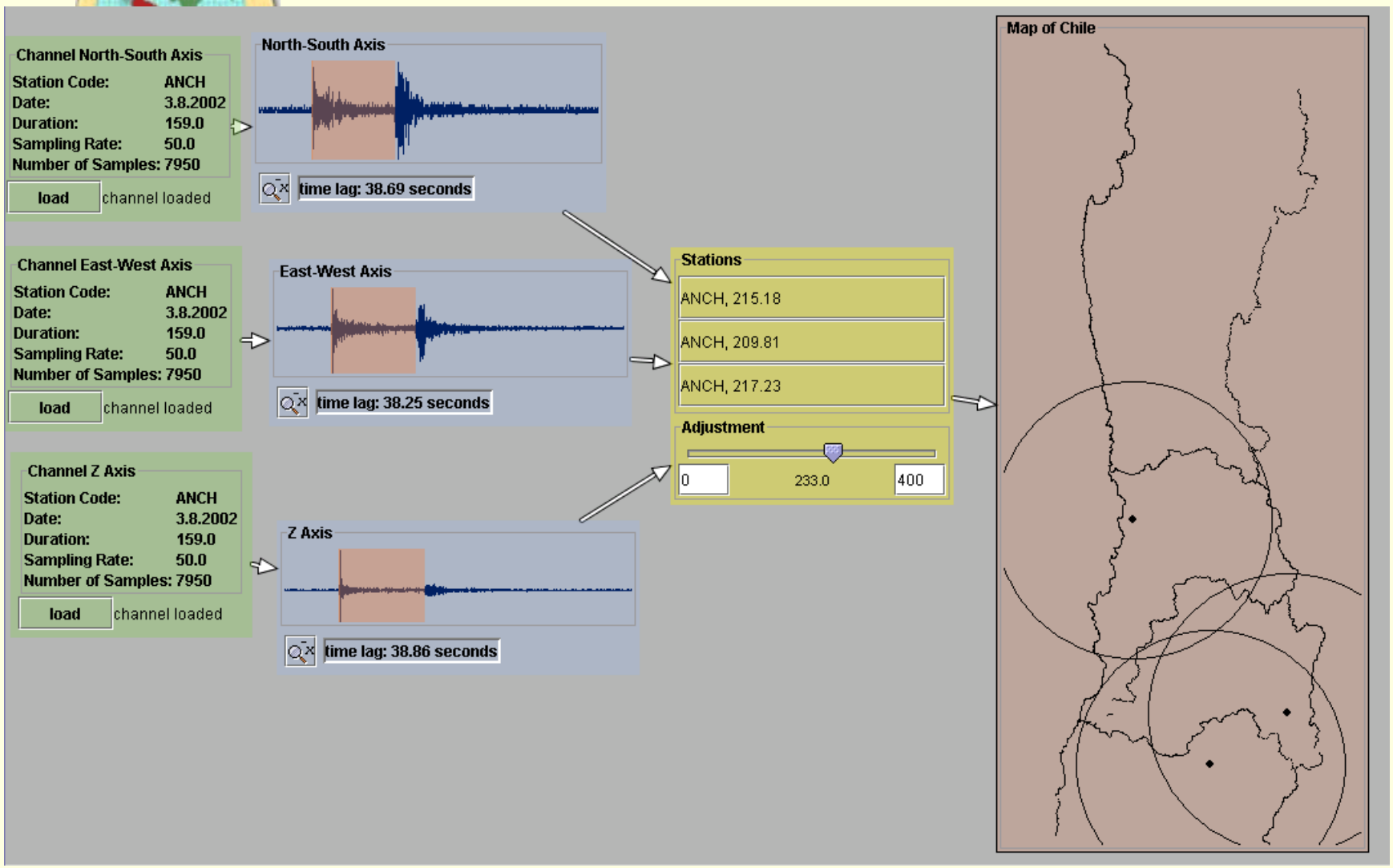
- In this example three sensors report an earthquake
- For each sensor a cricle is calculated and displayed in a top view
- Each circle discribes the distance to one and the same earthquake from different sensors



Visualisation of iterations for finding the hypocenter



Computing graphically the location of the epicentre



Collaboration scenarios

- An exchange of data provided by each sensor is the minimal requirement for collaboration
- A competitive scenario: calculate the most exact position of the hypocenter under the given time constraints
- Possible variations of the results will reveal the quality of the used model (e.g., Is the assumption of straight-line propagation correct?, Is the ground really isotropic?, etc.)
- Share event files, discuss results and find physical models for specific events that motivate collaboration
- Exchange of observations between groups experiencing and not experiencing the phenomena

Contribution to WP4/5

- WP2 Pedagogical model and scenario description: we provide a CSCL platform
- WP4/5 Remote/local scenarios: we provide a scenario for monitoring data produced by a natural phenomena which takes place locally (or in a remote situation)
- WP3 Platforms and tools: we provide a tool for facilitating the data analysis and the construction of seismic platforms with RCX