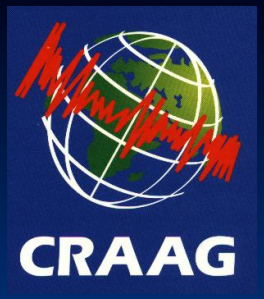


Centre de Recherche en Astronomie Astrophysique et Géophysique

CRAAG, Algeria

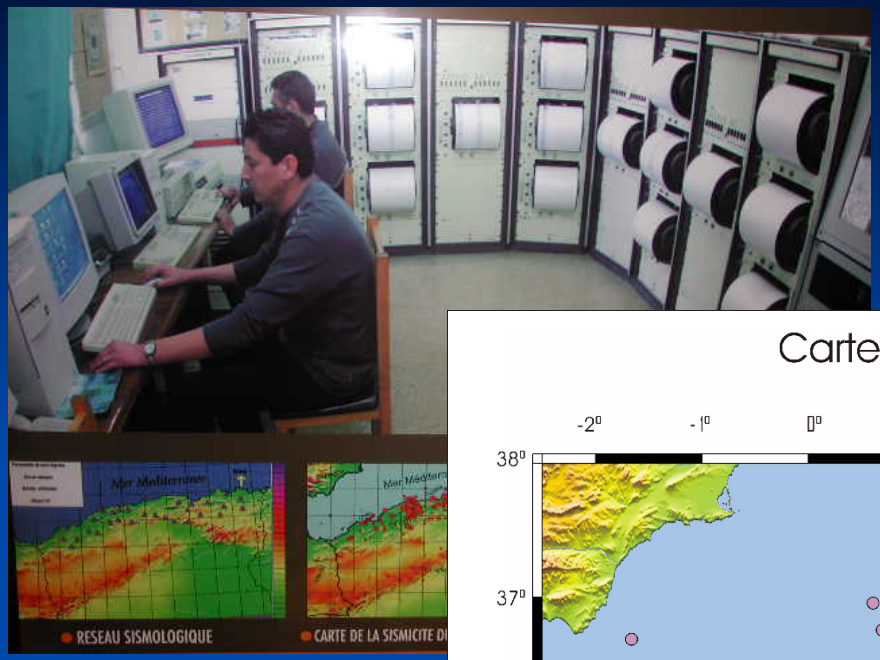
The New Algerian Digital Seismic Network

T.ALLILI, AK YELLES,
CRAAG, Algeria

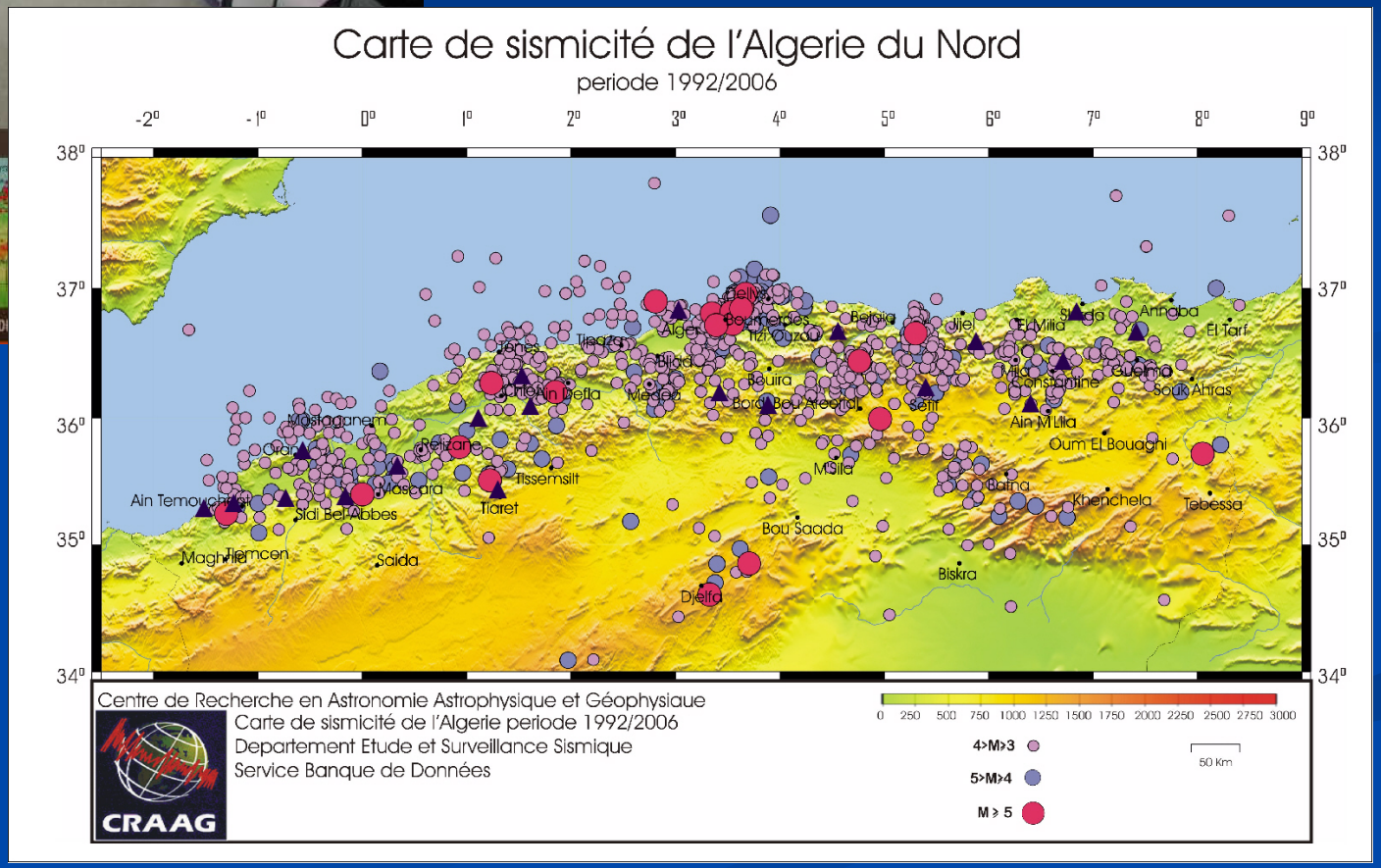
The New Algerian Digital Seismic Network

- State of the Algerian Seismic Network Before 2007
- The New Digital Seismic Network
- Data recorded
- Antelope System (Acquisition, Automatic processing, Archiving Data and Monitoring, Data exchange)
- Seismic Alert
- Futur Actions

Seismicity recorded by Telemetry Network (1992 – 2006)

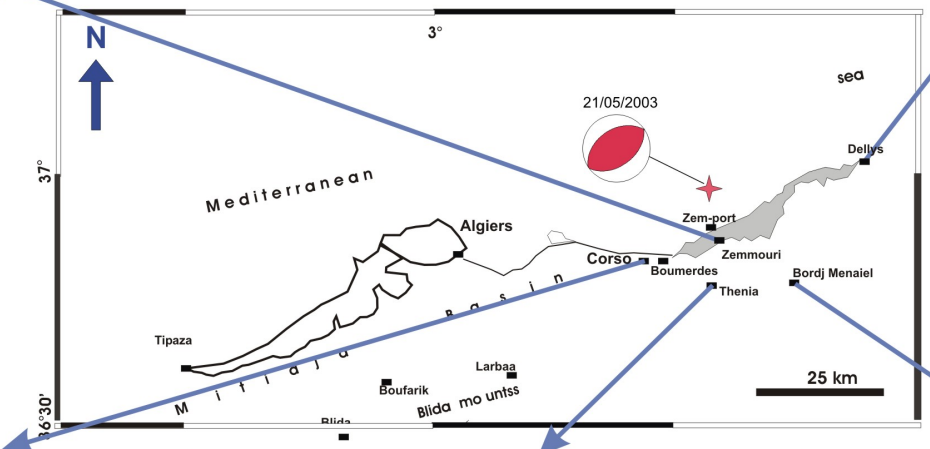


Several strong events during history
Algiers 1716, Blida 1825….



BOUMERDES EARTHQUAKE OF MAY 21 st,2003 M:6.8

CEM TOUBAL -LA VEILLE CE DORTOIR GROUILLAIT D'ELEVES- PHOTO- R/ABDELLALI



New Digital Seismic Network

- **(08) BB stations and (02) VBB stations installed (2006 – 2007)**
  Sensor BBVS-60 and BBVS-120
  Digitizer EDAS-24IP 6 channels

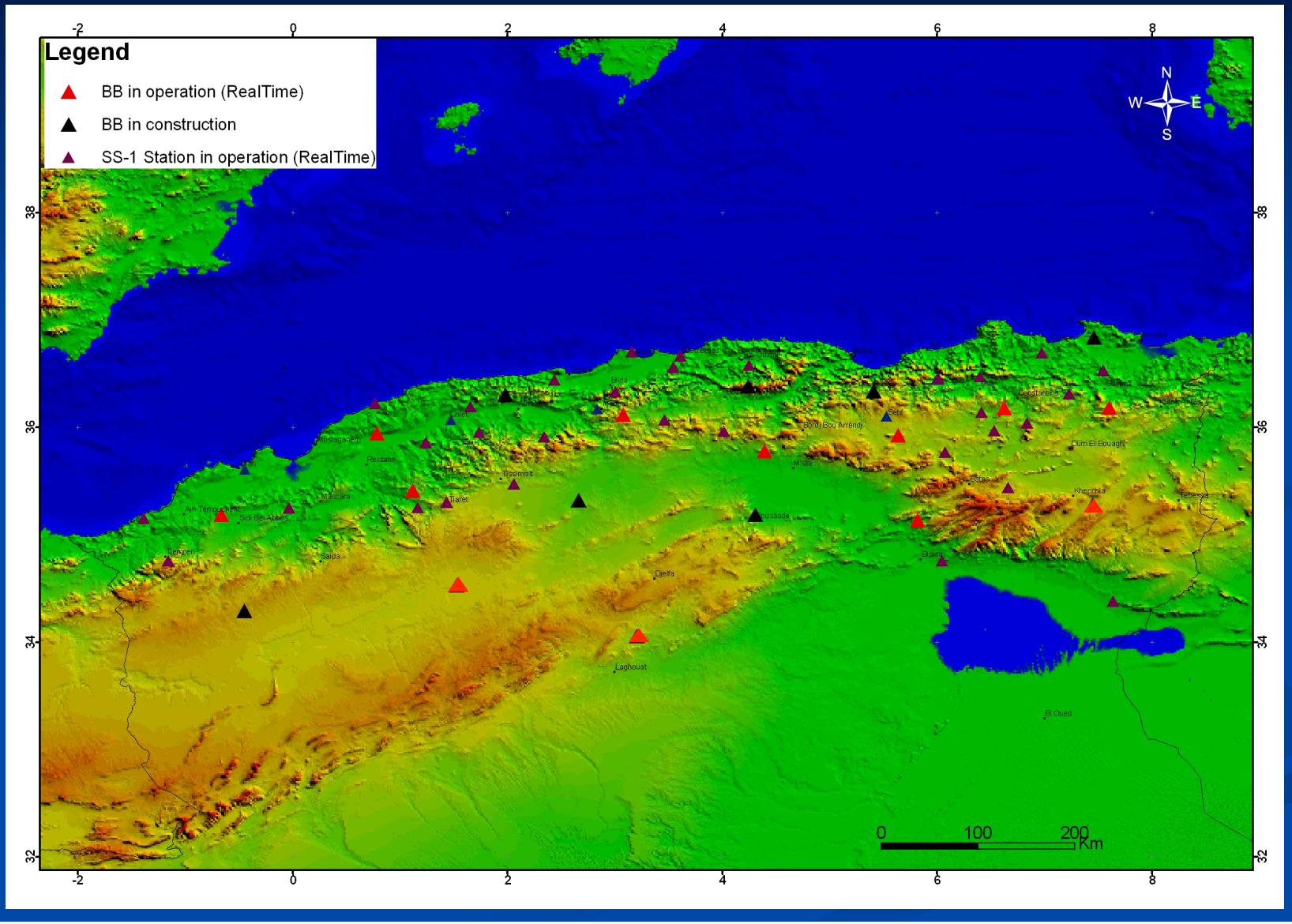
- **50 new digital stations in 2007**
  (10) new Broad Band Stations (03 installed Dec 08 – February 09)
  Sensor STS-2
  Digitizer Q-330 6 channels

  (40) Short Period (30 installed July 08 – February 09)
  Sensor SS-1
  Digitizer Q-330 6 channels

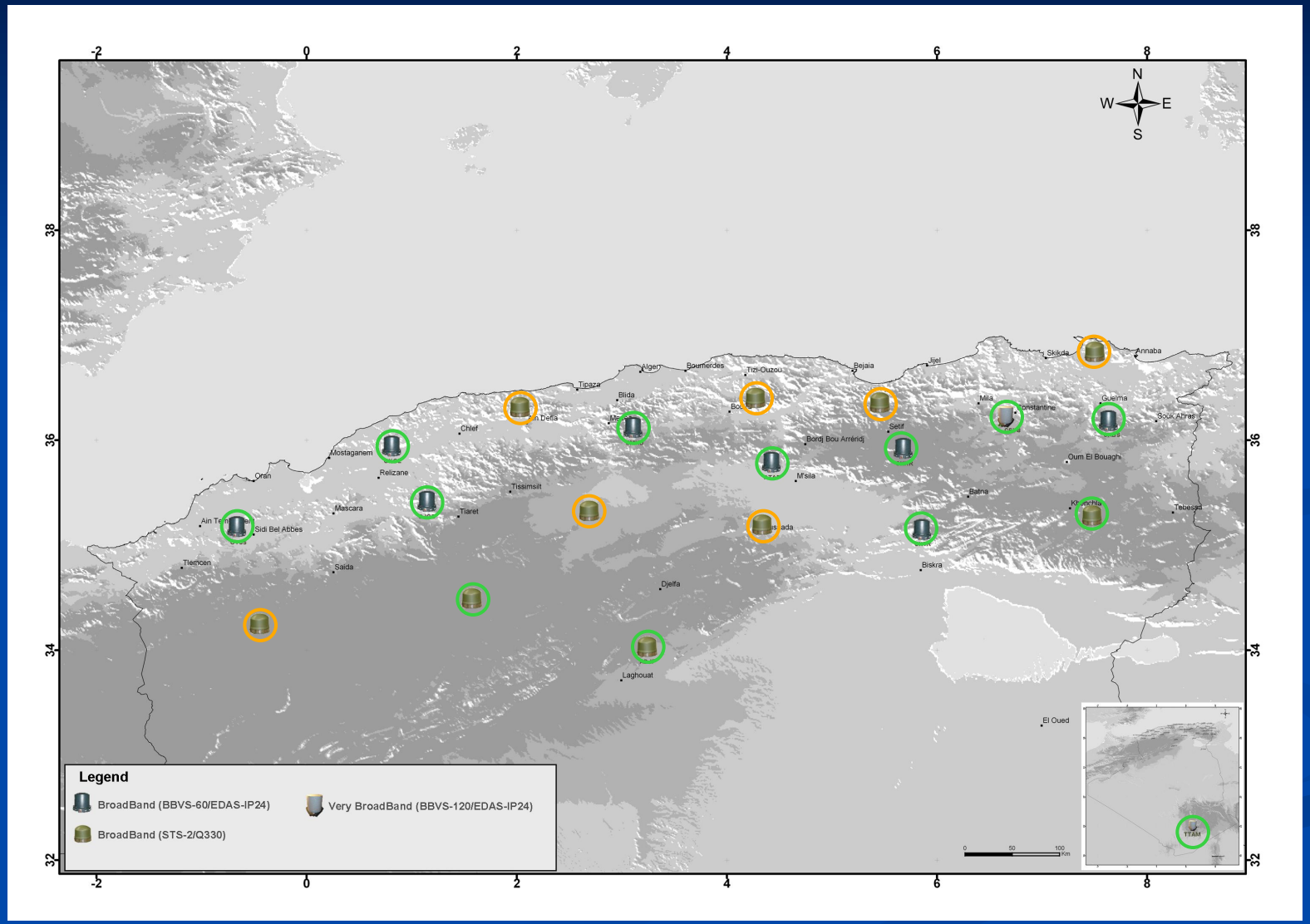
  (22) Episensor (installed July 08 – February 09)
  Sensor : (20) ES-T and (02) BBAS-2
  Digitizer: (20) Q-330 6 channels and (02) EDAS-24IP

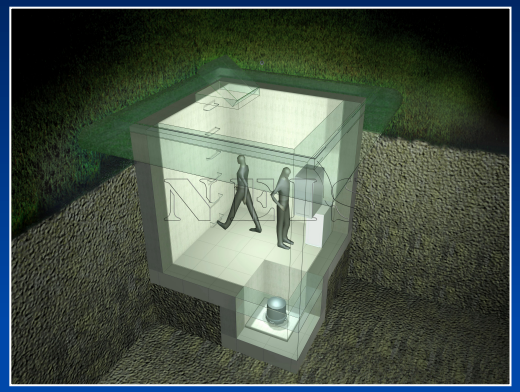
- **Central of data Management with a near Real-Time processing (Antelope System 4.10) (installed 2007).**

Algerian Digital Seismic Network (ADSN, February 2009)

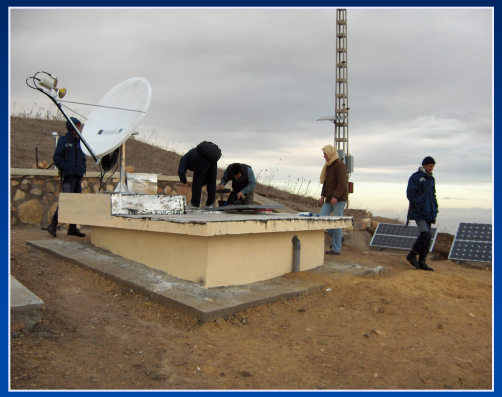


Algerian Digital Seismic Network (BB Stations, February 2009)

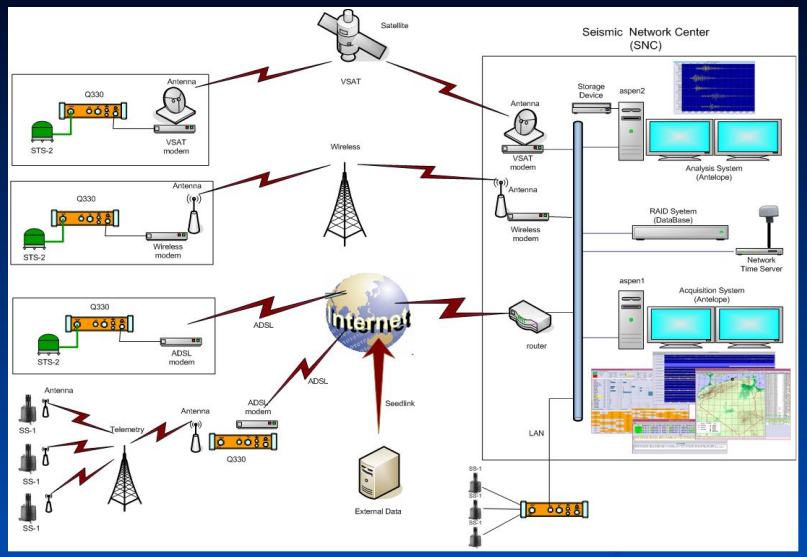




Site model



BB Stations in operation



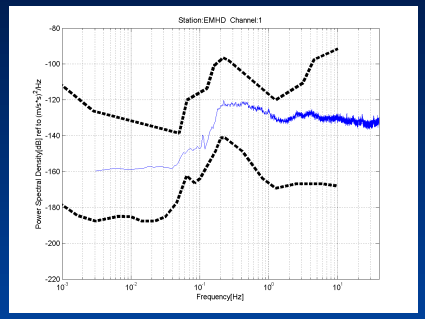
Near Real-time data acquisition and exchange

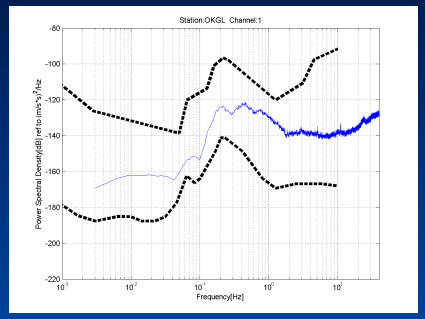
VBB Stations in operation

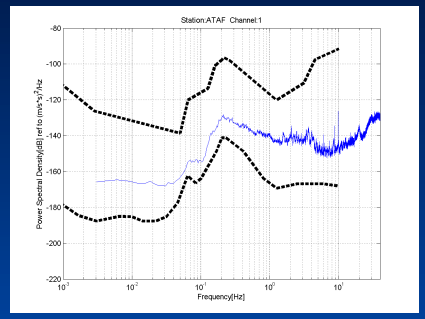
SP Stations in operation

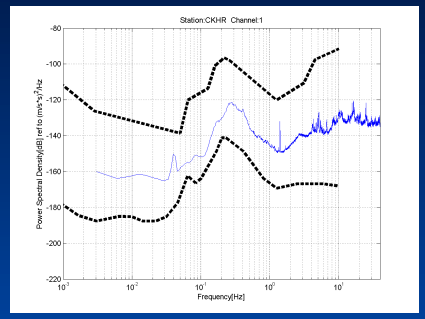
DC Power (Solar Panel)

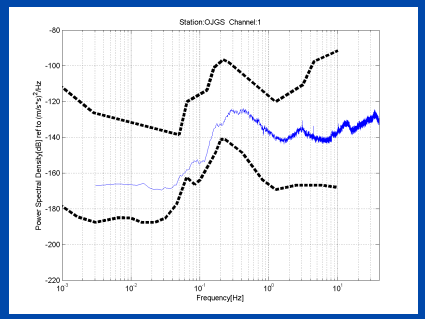
Site Survey for 10 BB Stations before Installation (2006)

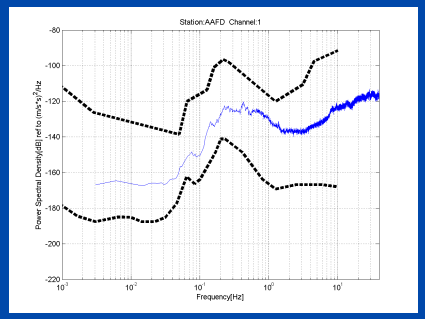


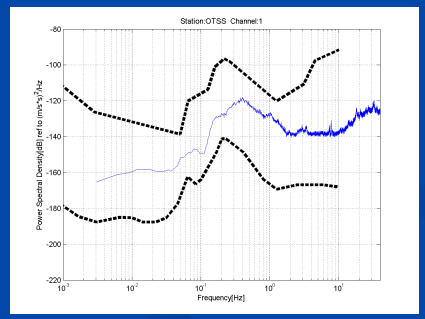


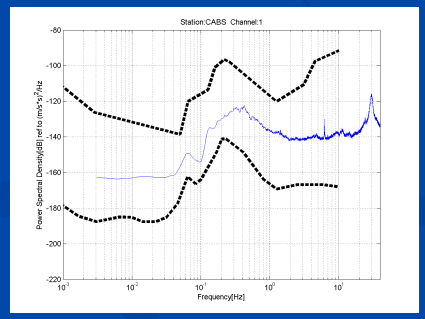


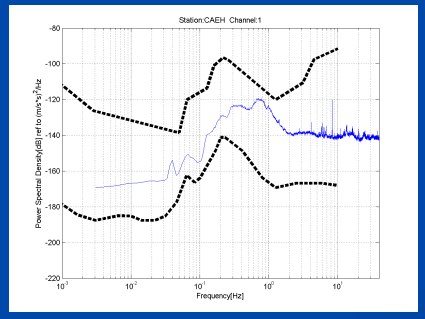


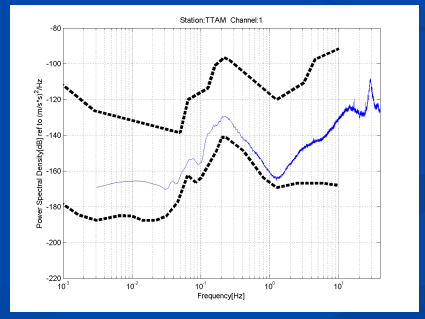








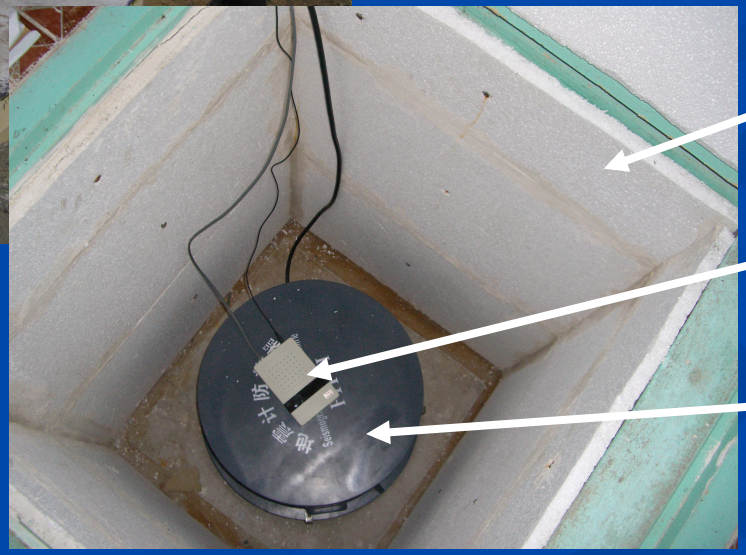




Example of BB station installed (OTSS, Jan 2007)

VSAT Antenna

Digitizer: EDAS-24IP



Hole

Environment Equipment

Cover

BBVS-60

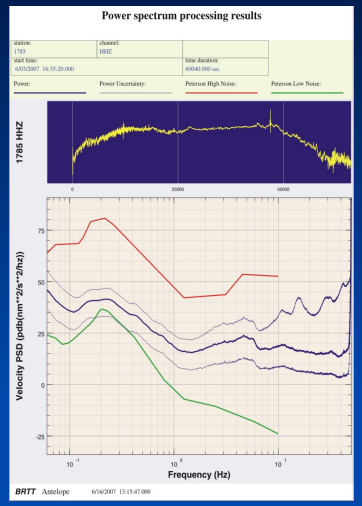
Site Survey for New BB Stations (Geological criteria)

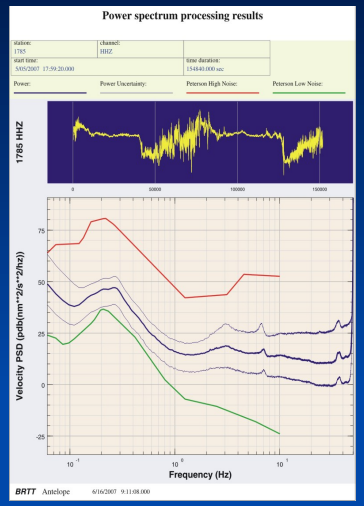


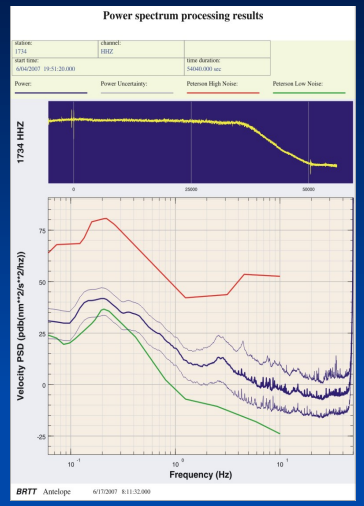


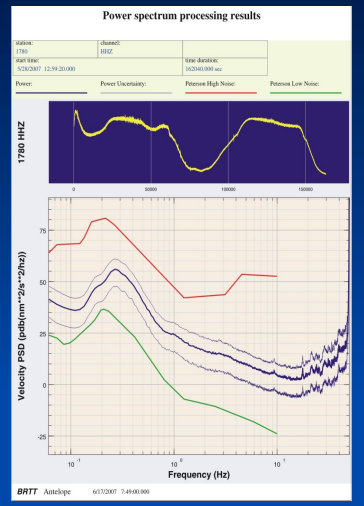


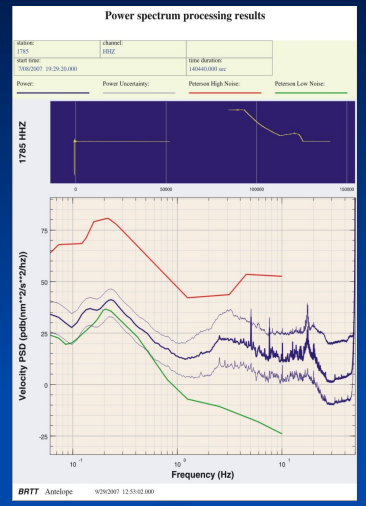
Site Survey for New BB Stations (PSD)

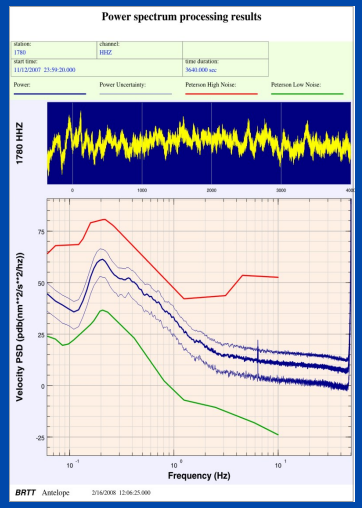


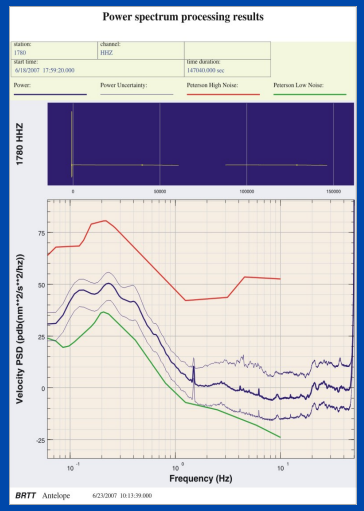


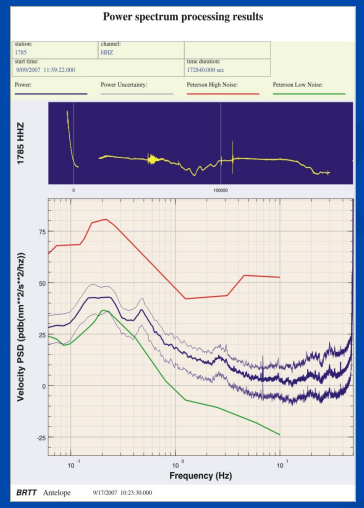


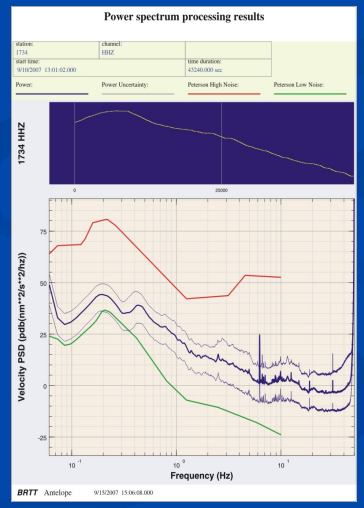


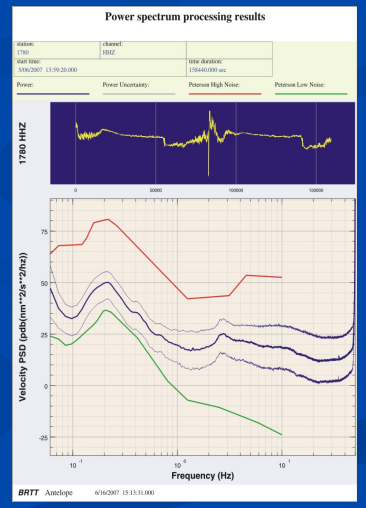




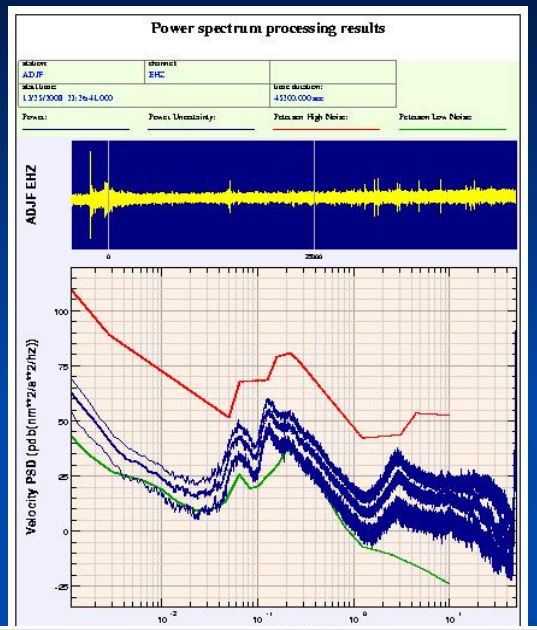


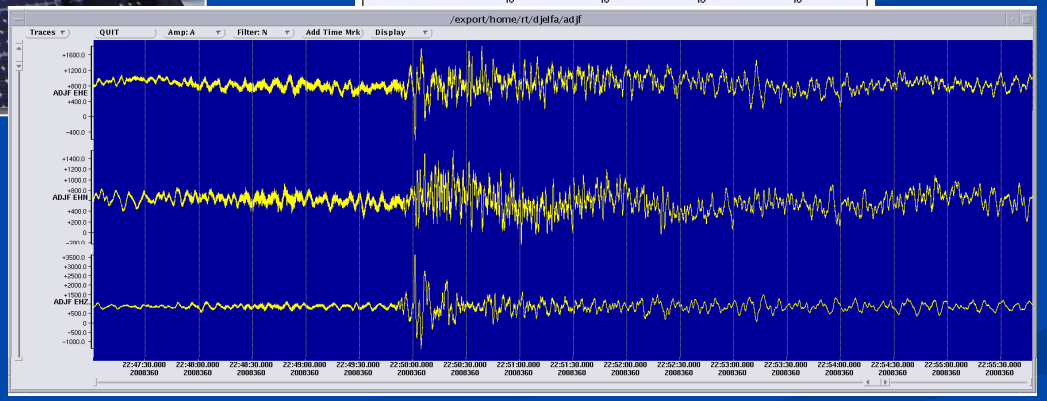






Example of New BB station installed (ADJF , Dec 2008)





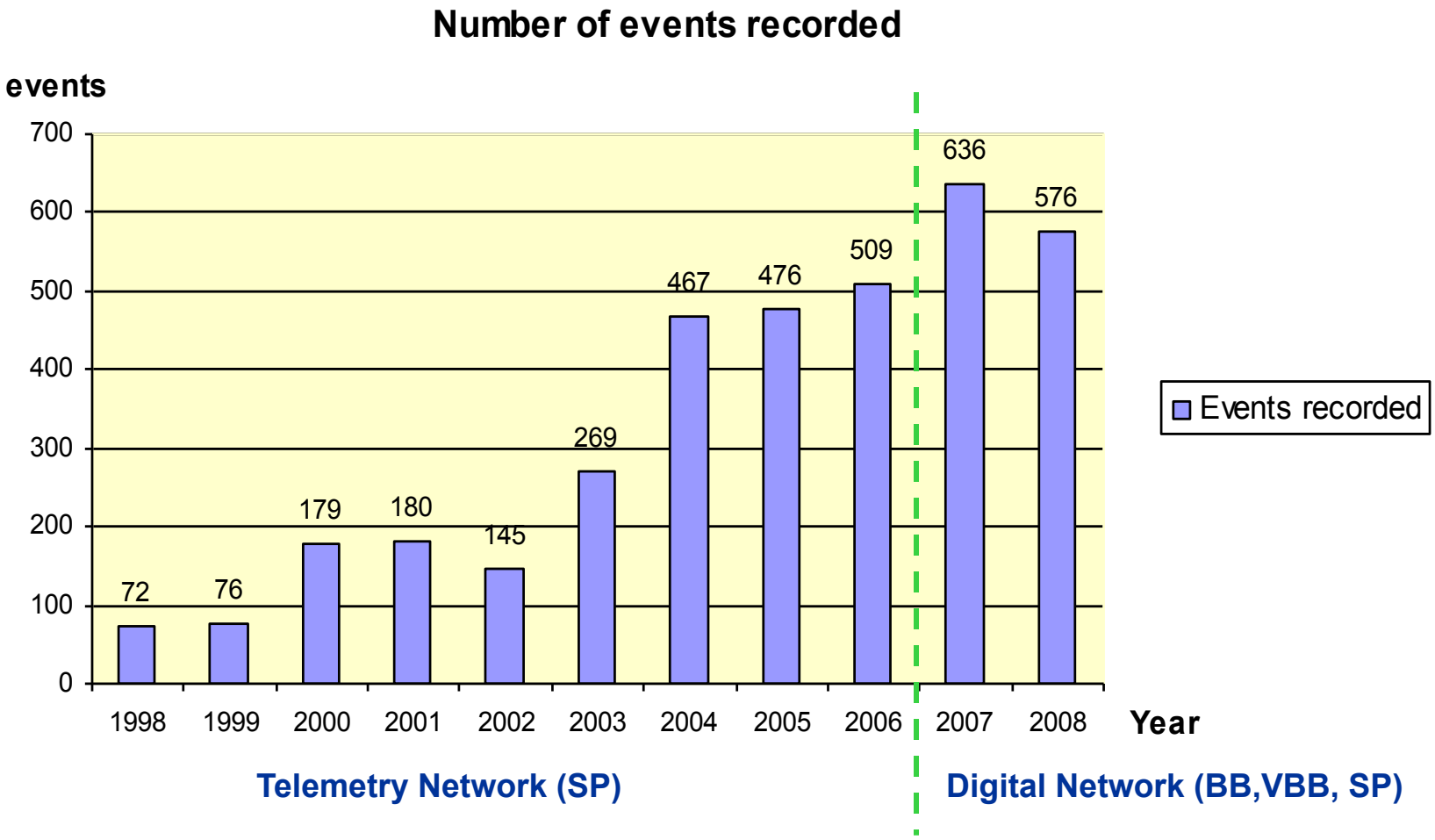
Digitizer: Q330

STS-2

time=25.Dec 22:40:33, mb= 5.65 NEAR COAST OF PAKISTAN

Data Recorded

Event Recorded by Algerian Seismic Network



Continuous Data Recorded by Digital Network

BB stations

BBVS-60 / EDAS-24IP
Number : 08
Channels : 3 (BHZ, BHN, BHE)
Sampling rate : 100Hz
Started to record : December 2006
Continous Data available : 2 years and 01 month
Acquisition mode : Real Time using VSAT Transmission

BBVS-120 / EDAS-24IP
Number : 02
Channels : 3 (BHZ, BHE, BHN / LHZ, LHE, LHN)
Sampling rate : 100Hz, 1Hz
Started to record : December 2006
Continous Data available : 2 years and 1 month
Acquisition mode : Real Time using VSAT Transmission

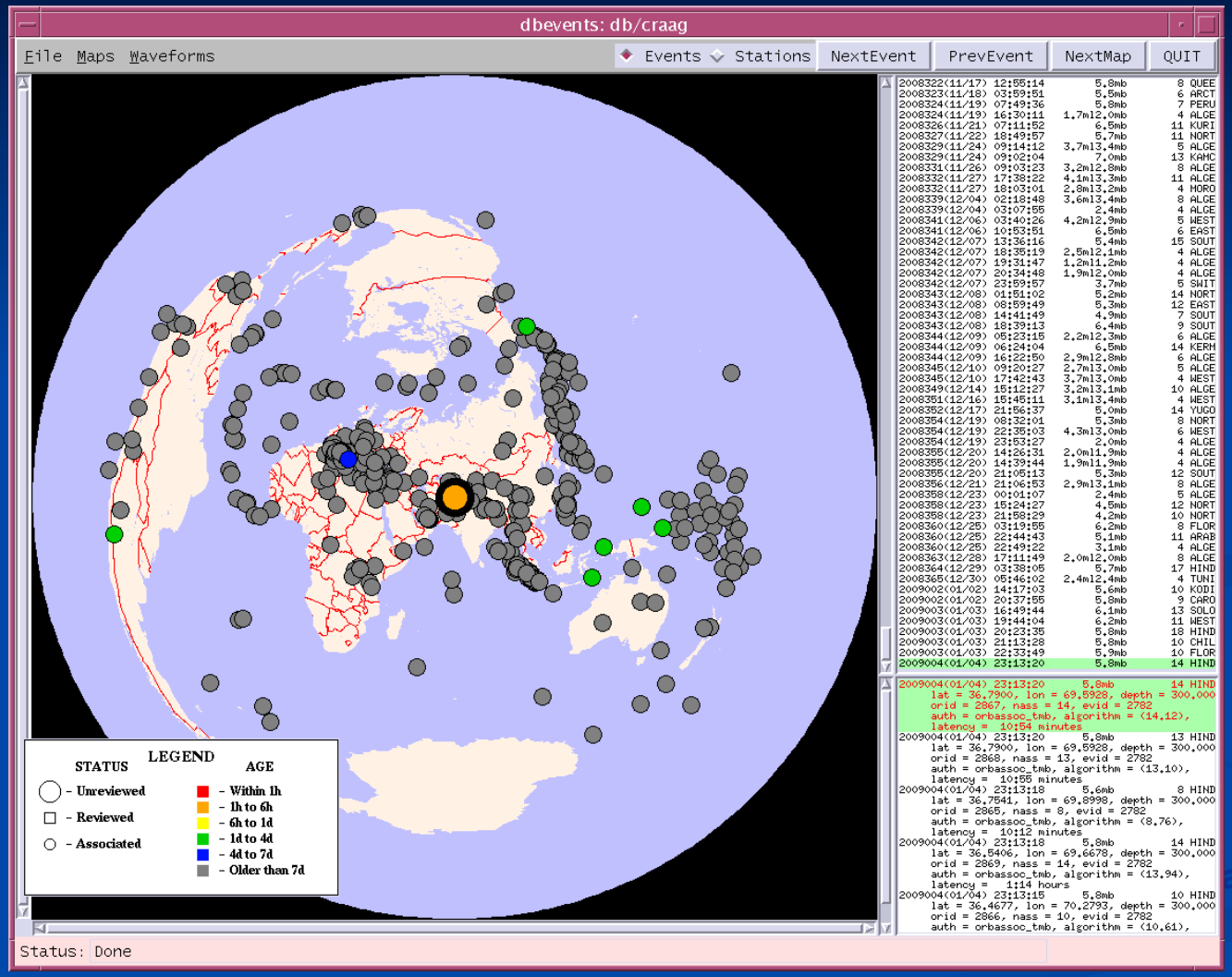
STS-2 / Q330
Number : 03
Channels : 3 (HHZ, HHE, HHN / BHZ, BHE, BHN / LHZ, LHE, LHN)
Sampling rate : 100Hz, 20Hz, 1Hz
Started to record : January 2009
Continous Data available : Less than 1 month
Acquisition mode : Real Time using VSAT Transmission

Short Period stations

DS-A / Q330
Number : 01
Channels : 3 (EHZ, EHN, EHE)
Sampling rate : 100Hz
Started to record : April 2007
Continous Data available : 1 year and 10 months
Acquisition mode : Cable Transmission

SS-1 / Q330
Number : 30
Channels : 1 (EHZ)
Sampling rate : 100Hz
Started to record : November 2008
Continous Data available : 03 Months
Acquisition mode : Wireless Transmission

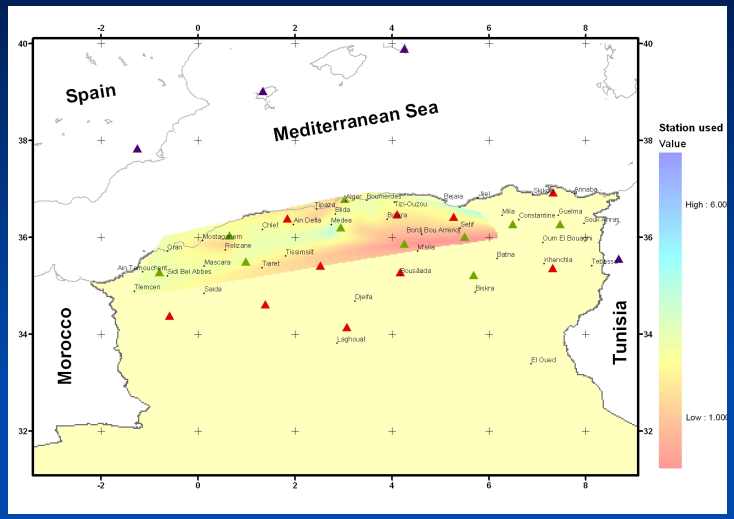
Event Recorded by Digital Network



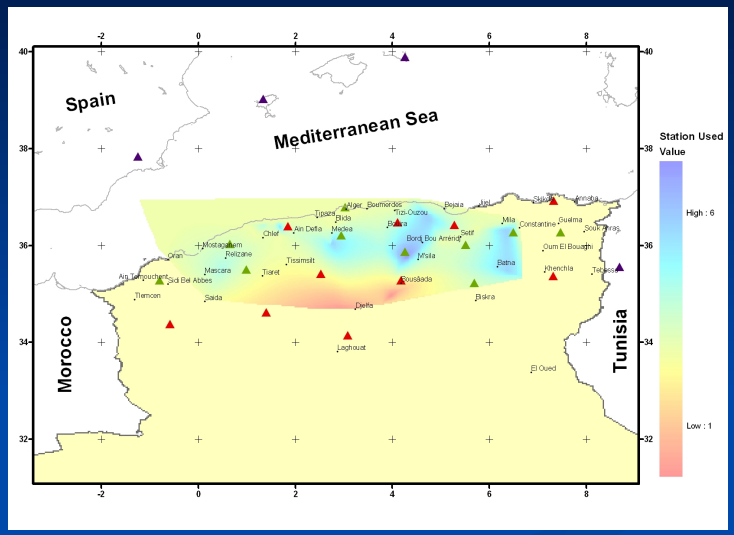
Automatic location :

- **Local event : 506**
- **Regional event : 43**
- **Teleseismic event : 279**

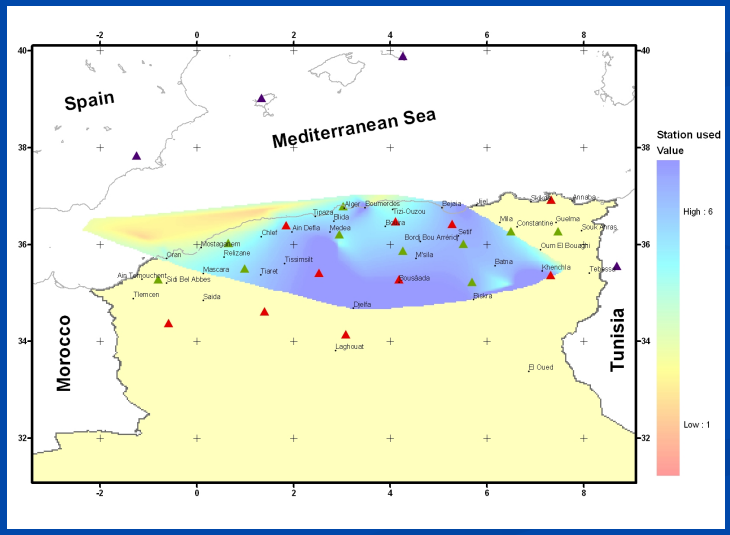
Area covered by the Network (Only Data recorded by BB station since December 2006)



Magnitude ~ 2



Magnitude ~ 3



Magnitude ~ 4

Antelope System 4.10

Data Acquisition

Data Analysis (Automatic processing)

Monitoring

Archiving Data

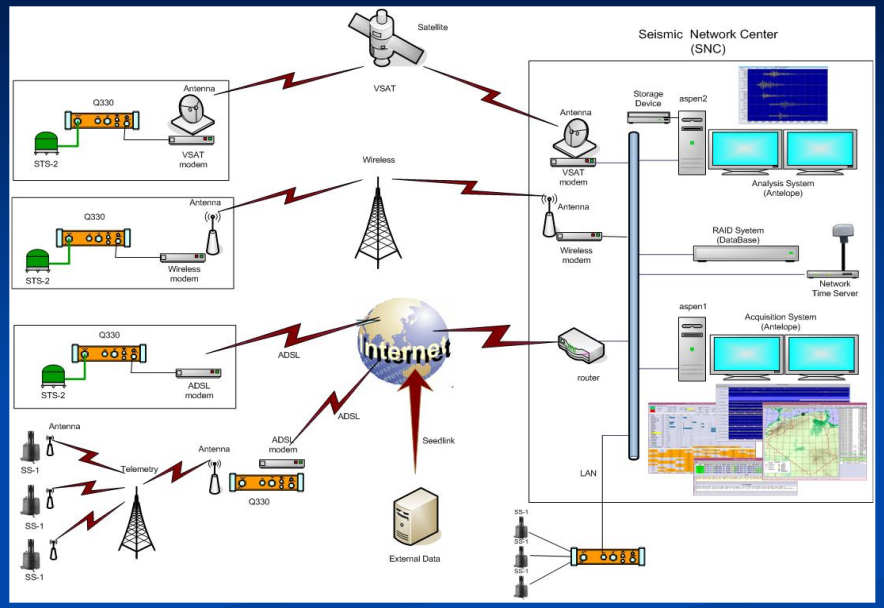
Data Exchange

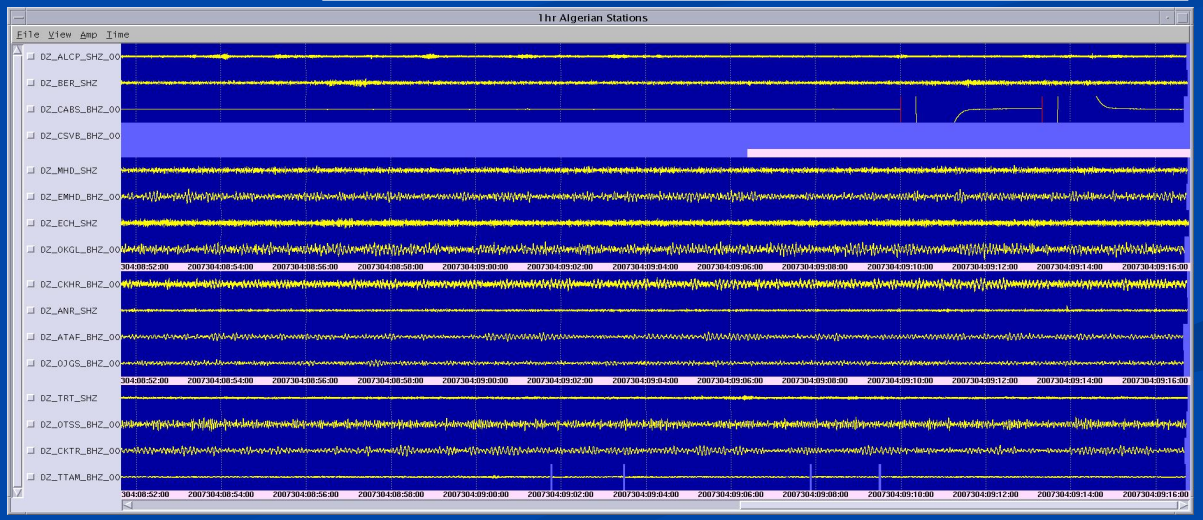
Seismic Alert

Data Acquisition

Number of Stations Connected :

- (13) BB Stations
  (RealTime / VSAT)
- (30) SP Stations
  (RealTime / GSM, ADSL)
- (22) Episensor
  (RealTime / GSM, ADSL)
- (09) External Stations
  (Seedlink, orb2orb, Liss)





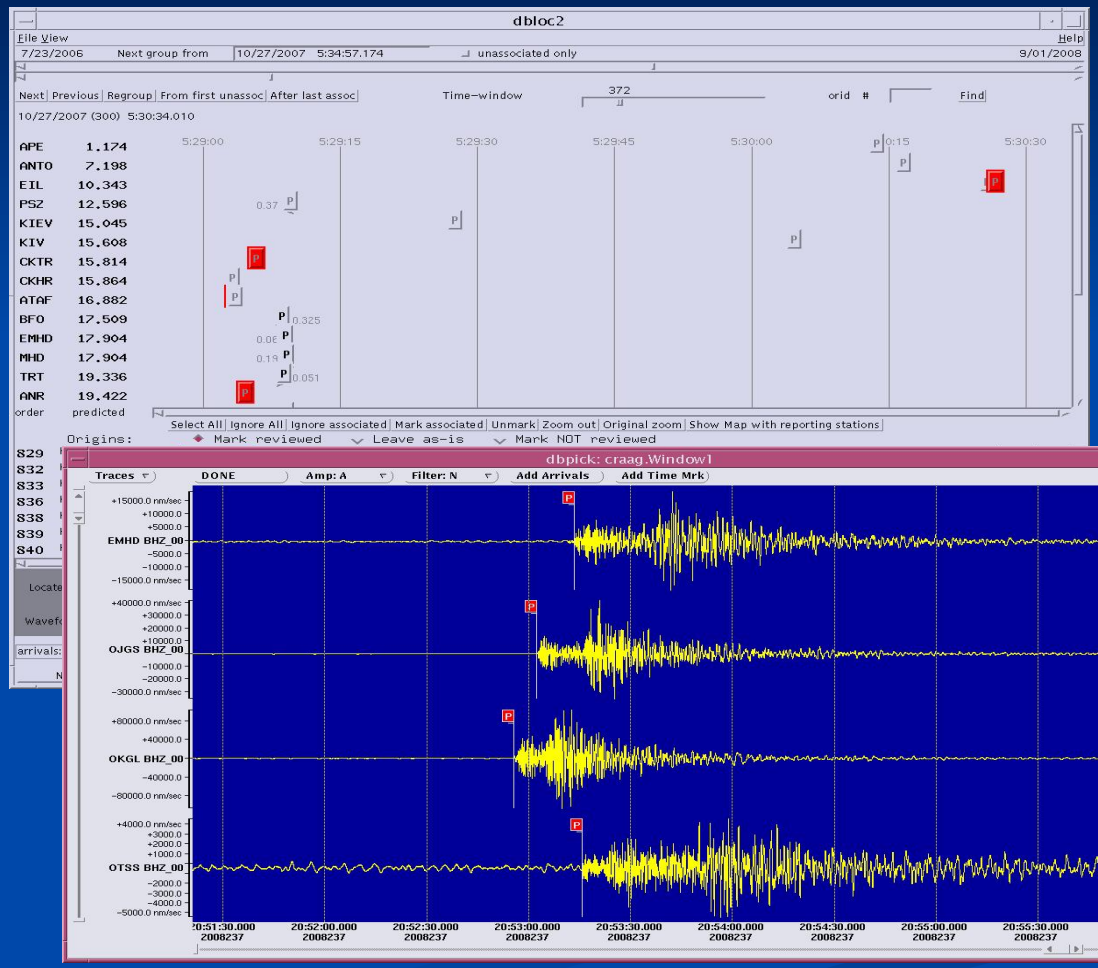
Data Analysis

Automatic processing

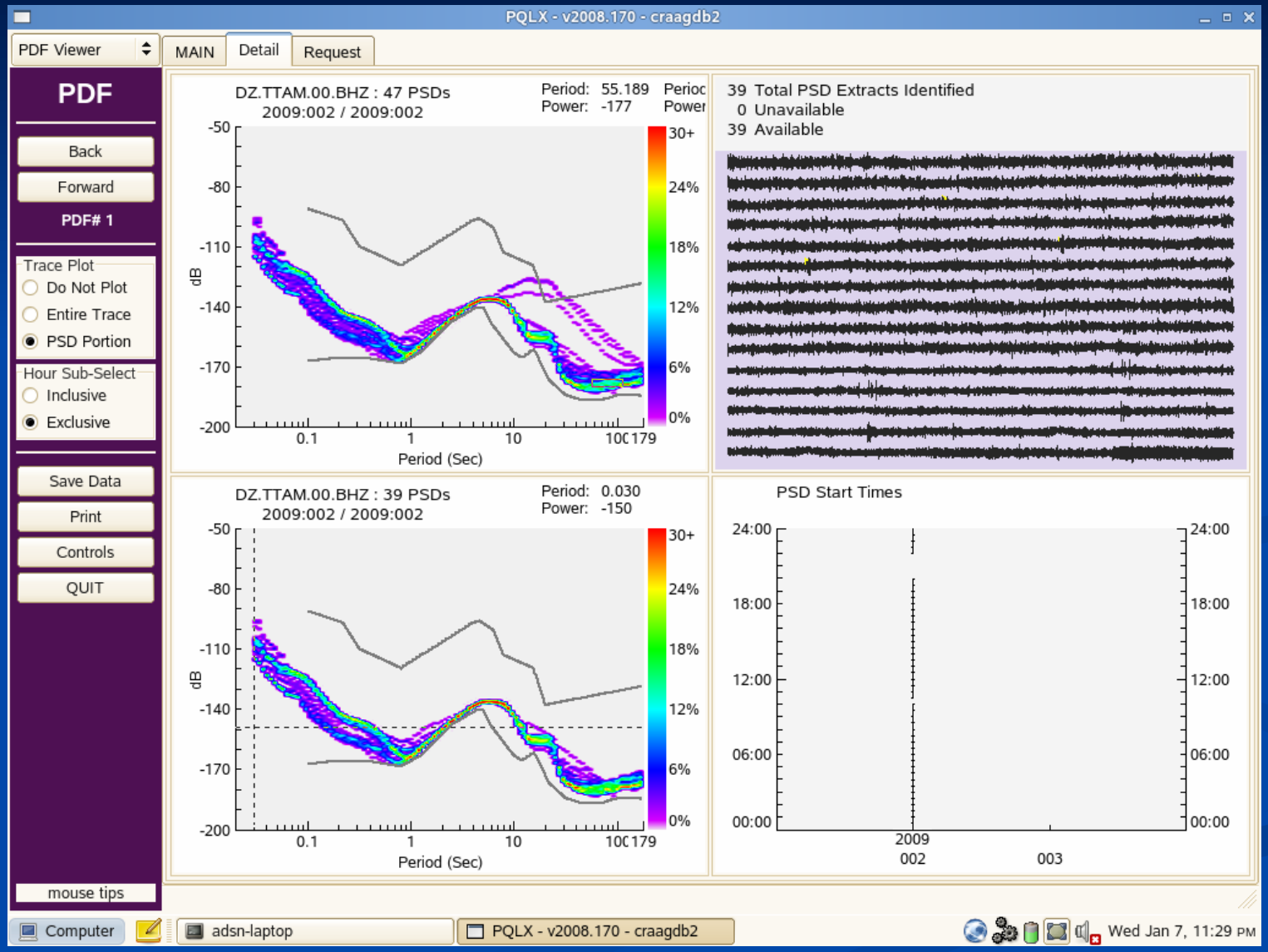
- P-wave picking
- event association
- event localization
- computation of MI or Mb
-creation of www page
- distribution of e-mail/ SMS alerts (<5min)

Manual processing

- phase picking
- event association
- event localization
- computation of MI, Mb
- creation of database
- distribution of reports/ bulletins

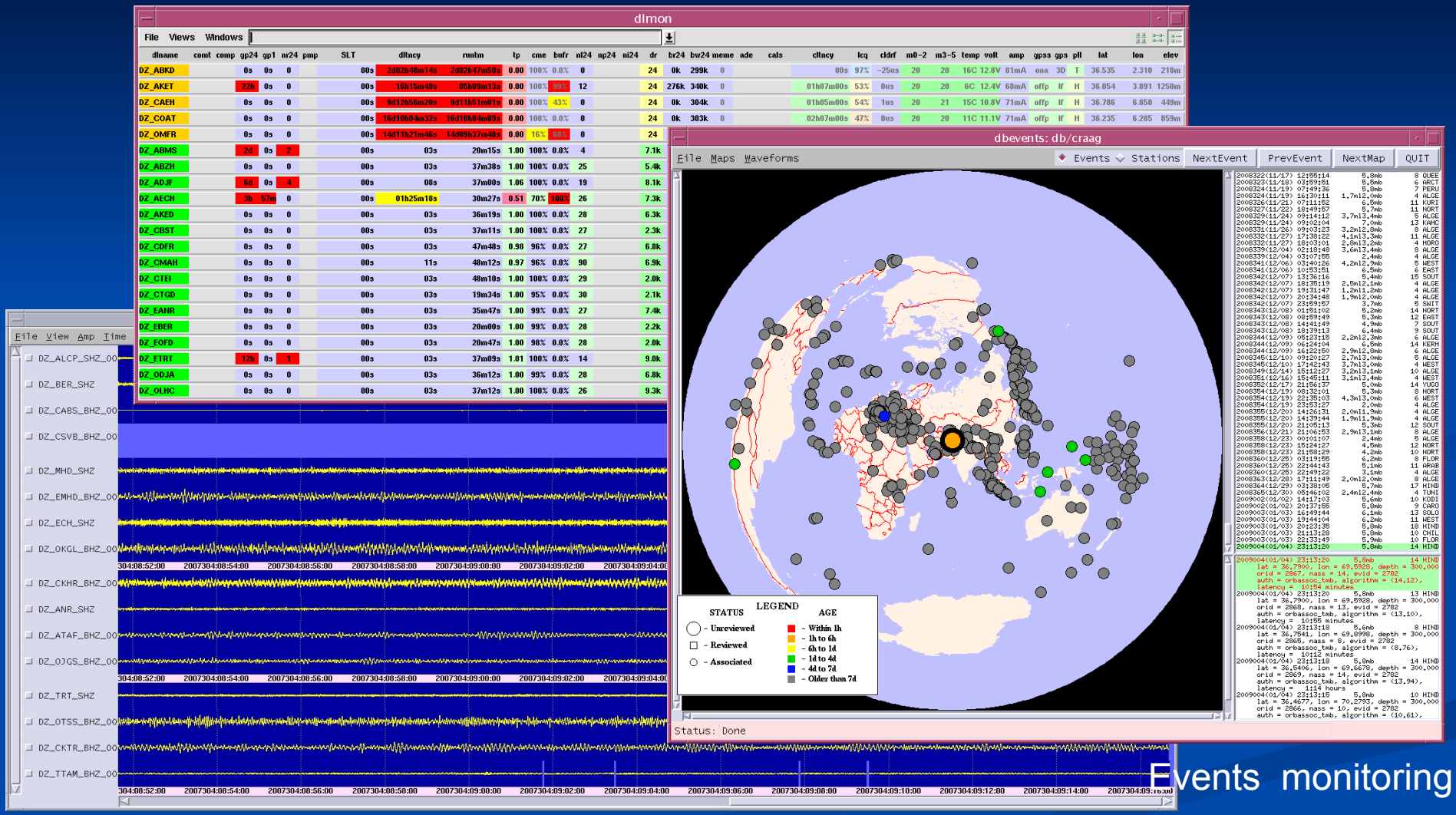


Data Analysis : PQLX



Monitoring

State of health

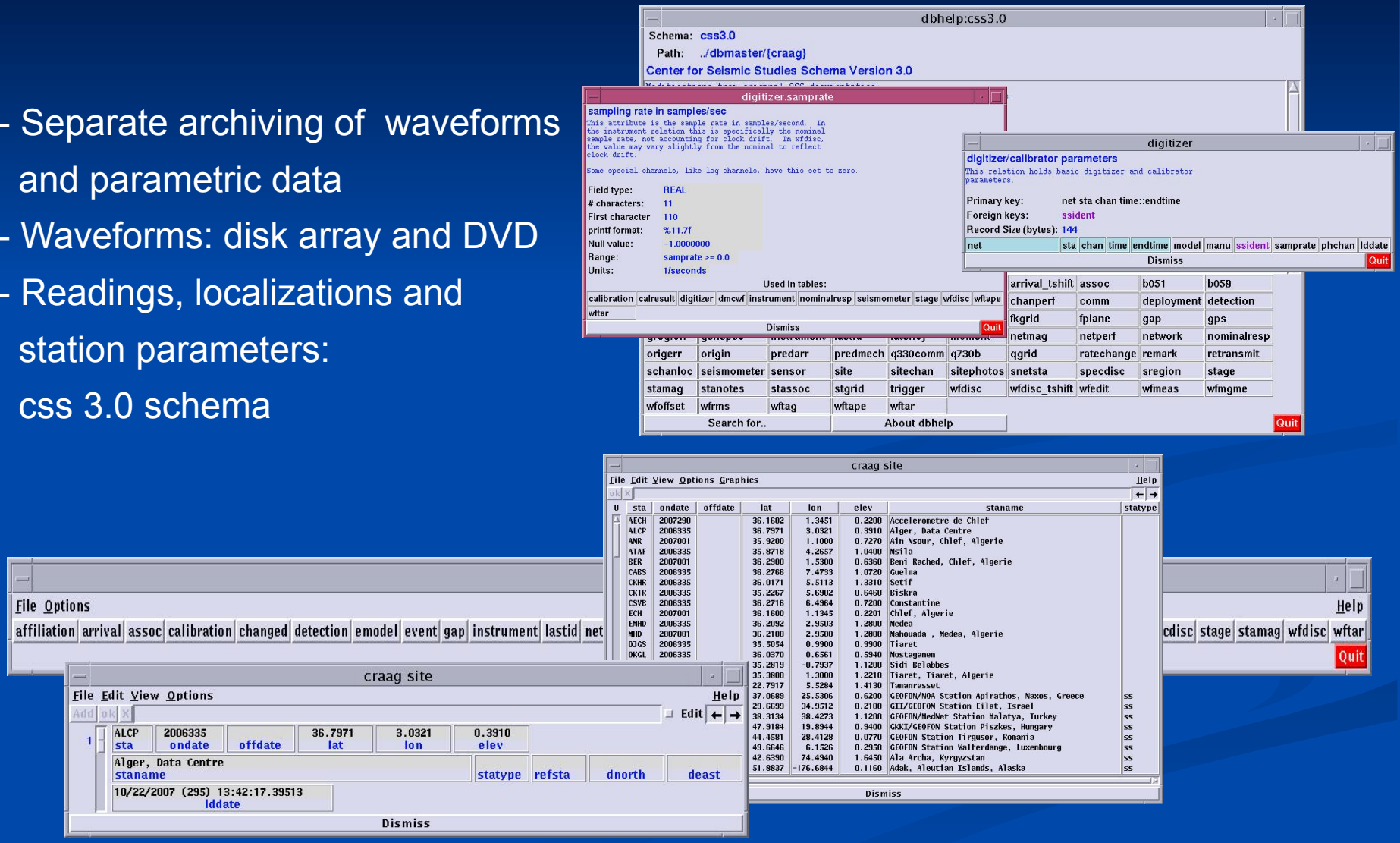


Events monitoring

Stream monitoring

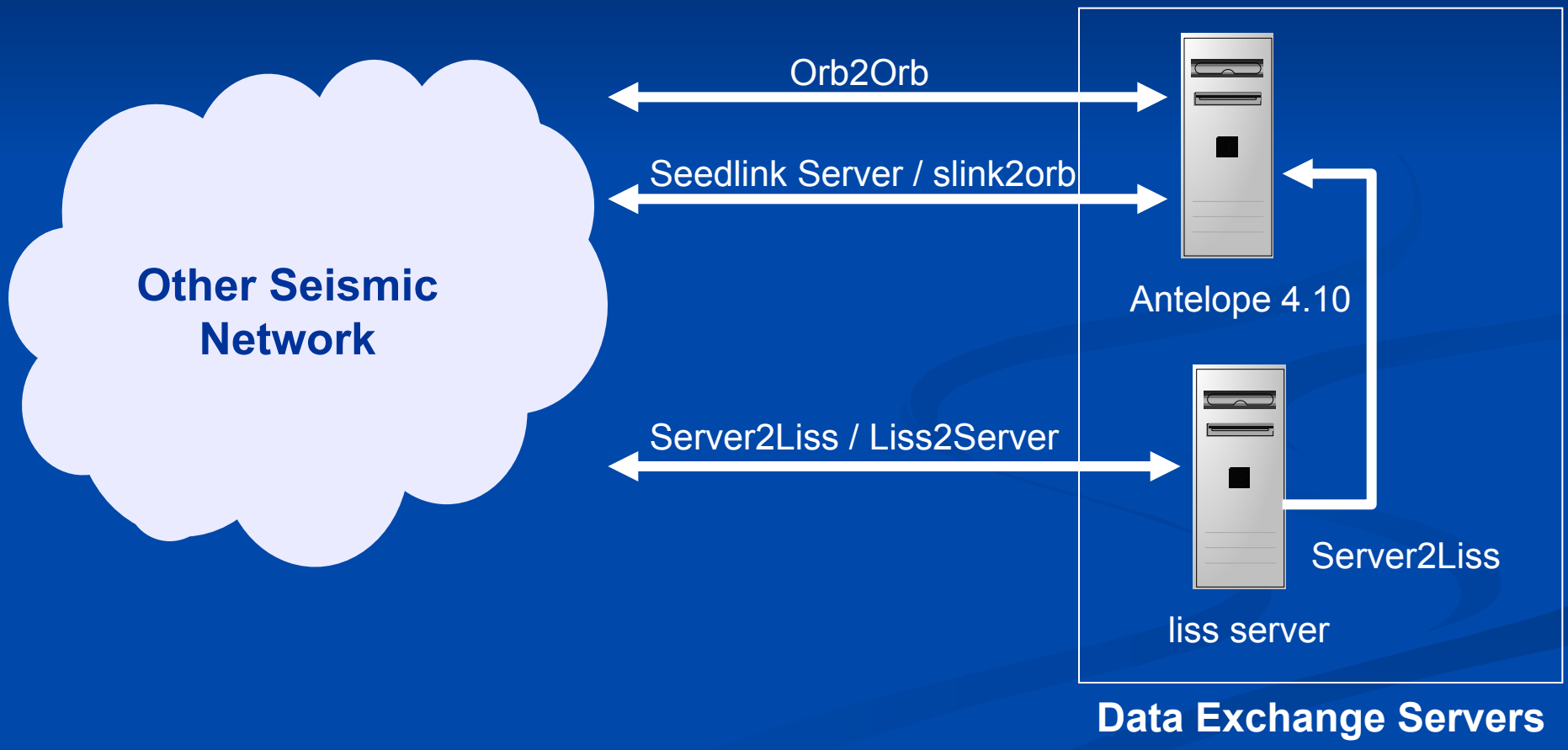
Archiving Data

- Separate archiving of waveforms and parametric data
- Waveforms: disk array and DVD
- Readings, localizations and station parameters: css 3.0 schema

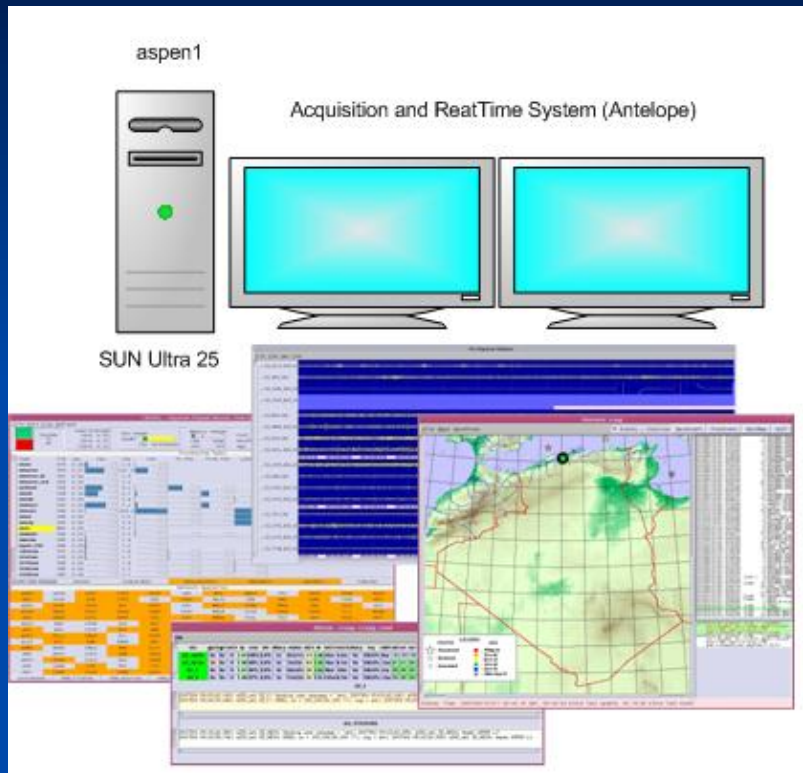


Data Exchange

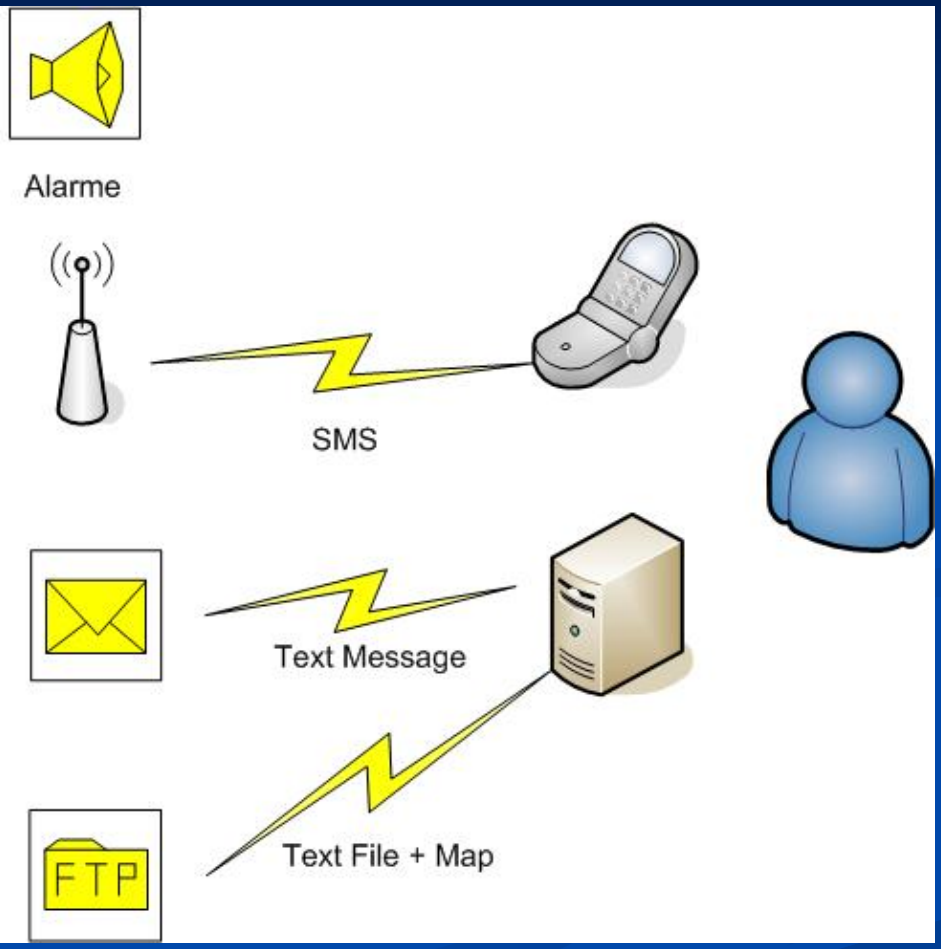
Available protocol to exchange data :



Seismic Alert



Orboriginalerts script



Automatic location and sending Alert less than 5 min

Futur Actions

Futur Actions

- Installation : (07) BB stations (STS-2 / Q330)
- Acquisition in 2009 of 30 new BB , 75 SP and 75 episensor
- Web Site Monitor using BSC method (Balanced SroreCards) and Web Services.
- Data Exchange : Autodrm Server
- Contribution to the Alert system for the tsunami in the Mediterranean region (IOC-EERWEM projects)

…

THANK YOU