CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE

IN2P3
INSTITUT NATIONAL DE PHYSIQUE NUCLÉAIRE ET DE PHYSIQUE DES PARTICULES

IPHC
Institut Pluridisciplinaire Hubert CURIEN STRASBOURG

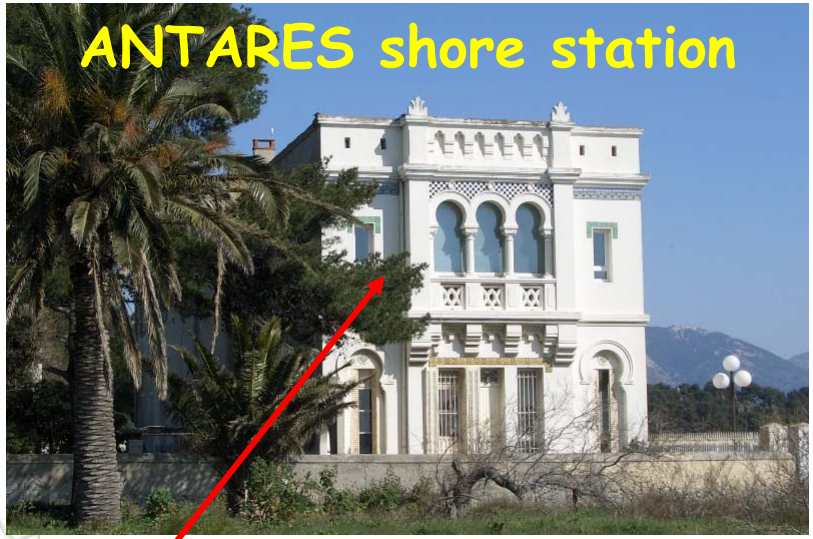
ANTARES

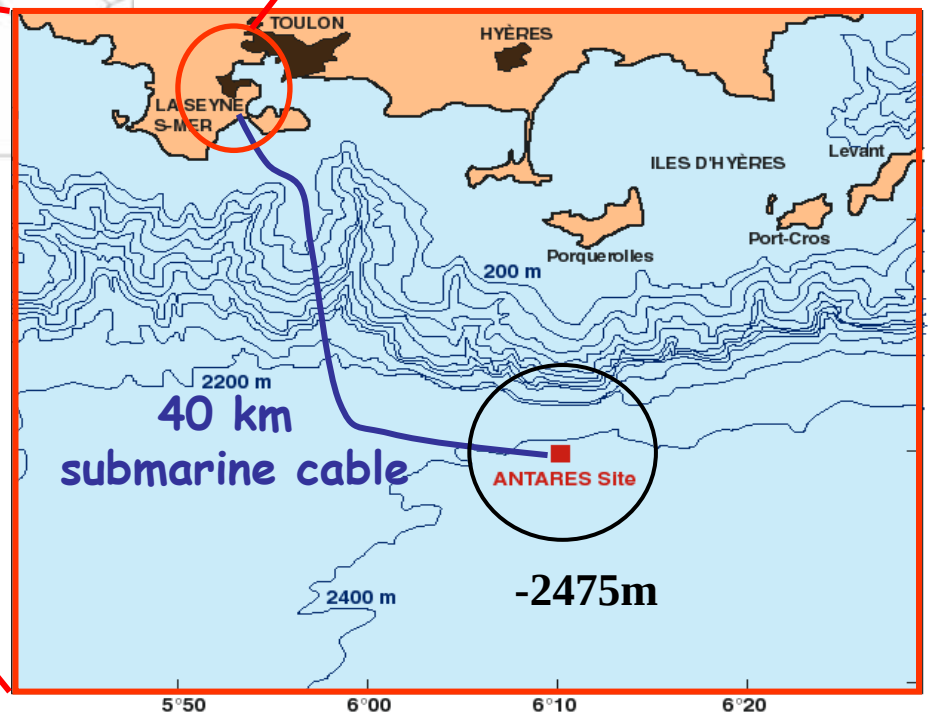
Antares Slow Control Status

Jean-Michel Gallone
on behalf of the ANTARES Collaboration

2007 International Conference on Accelerator and Large Experimental Physics Control Systems - Knoxville, Tennessee - October 15-19, 2007

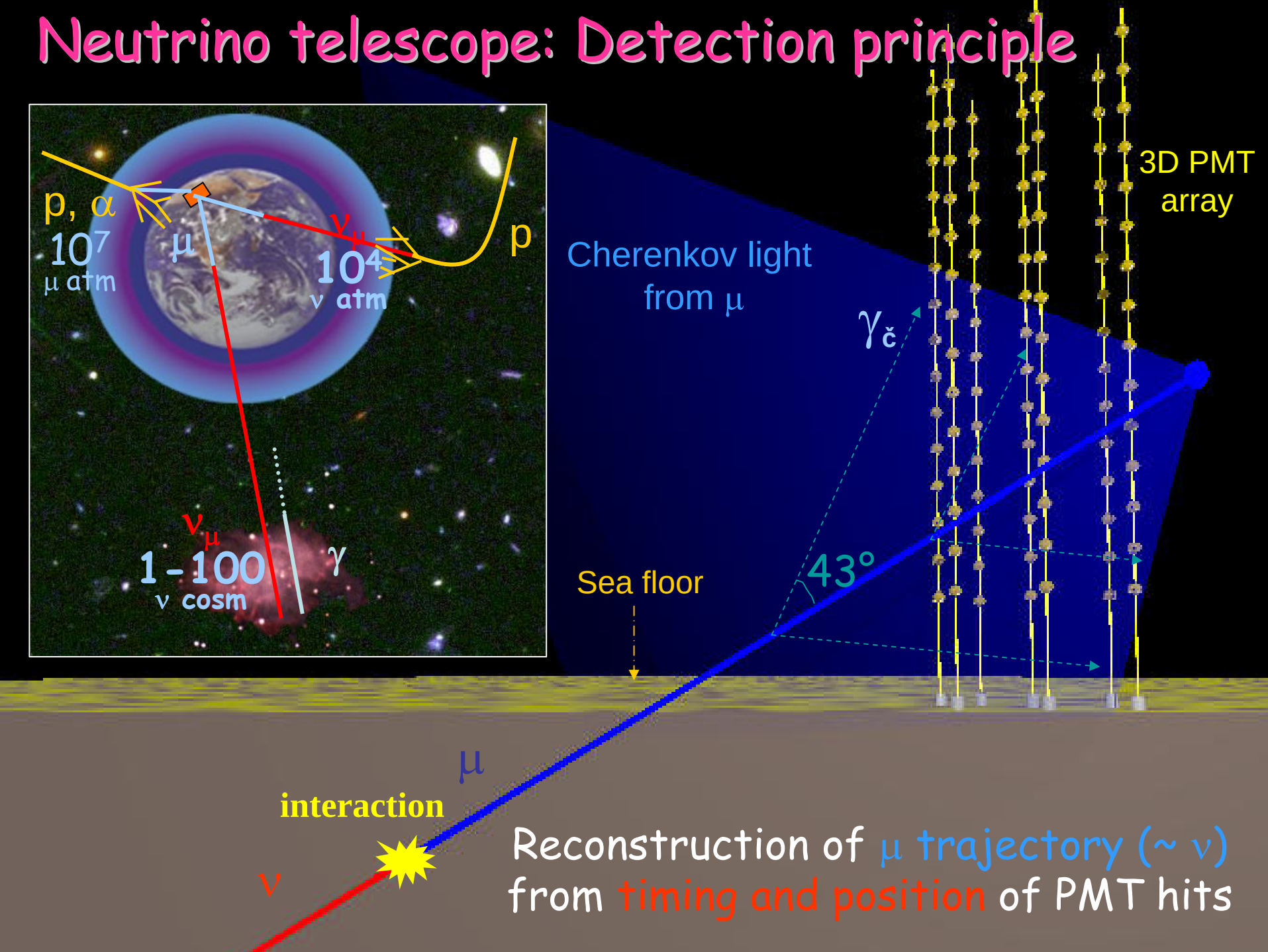
ANTARES collaboration and location





23 Institutes from
7 European countries

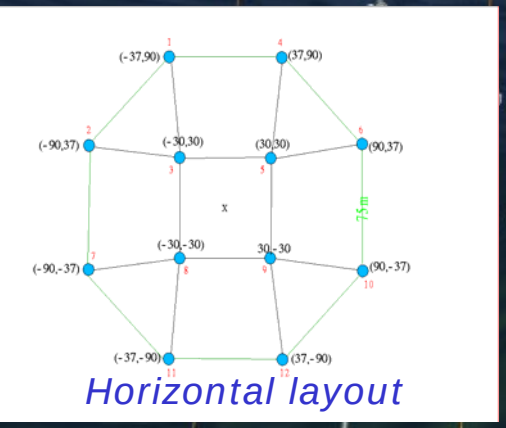
Neutrino telescope: Detection principle



Reconstruction of μ trajectory (~ ν) from timing and position of PMT hits

Detector layout

12 lines (900 PMTs)
25 storeys / line
3 PMTs/storey



a storey

14.5 m

350 m

40 km to shore

100 m

Junction box

~70 m

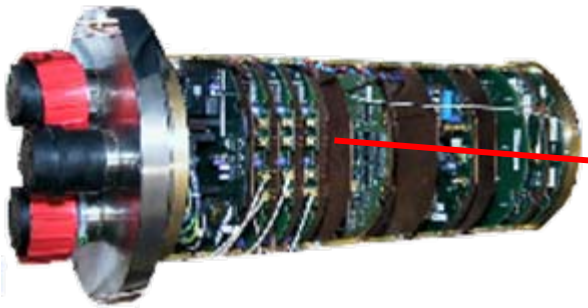
Sea bed ~ -2500 m

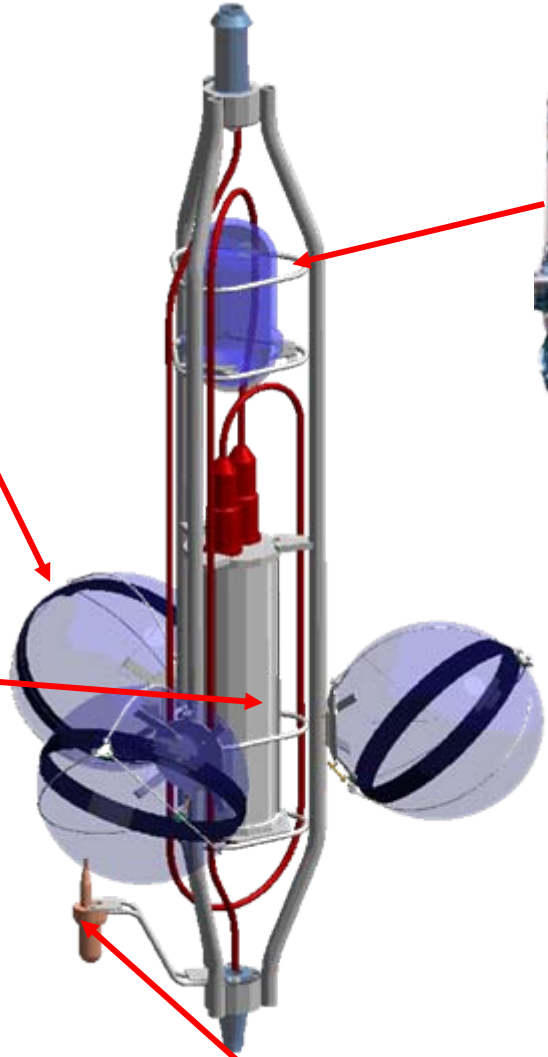
Readout cables

Basic detection and calibration elements

Optical Module:
10" PMT in 17" glass sphere
photon detection

Optical Beacon
with blue LEDs:
timing calibration

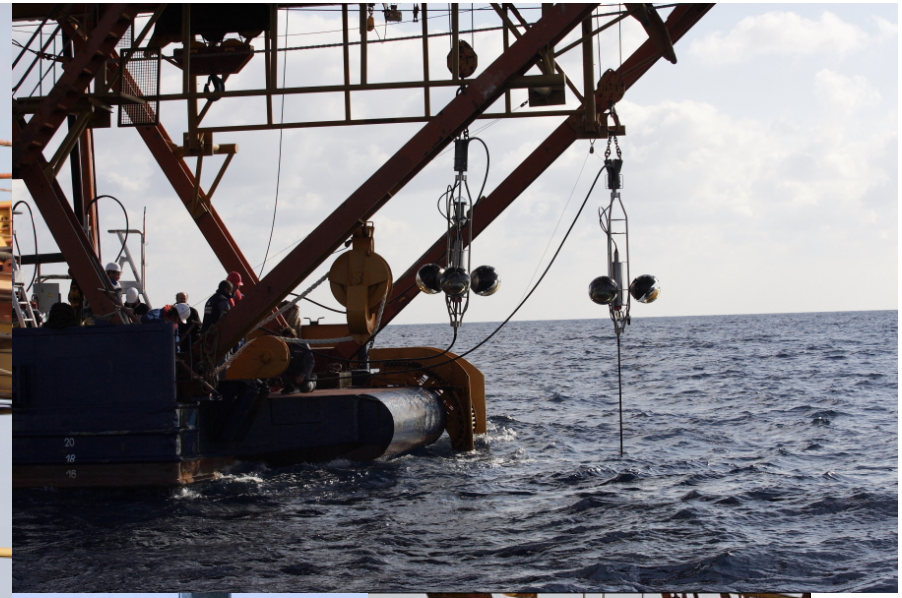




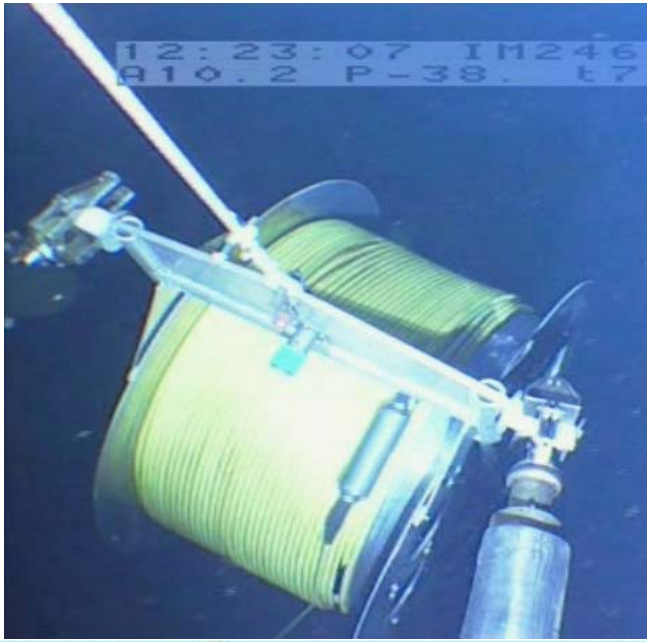
Local Control Module
(in Ti container):
Front-end ASIC,
Clock, DAQ/SC,
compass/roll/pitch

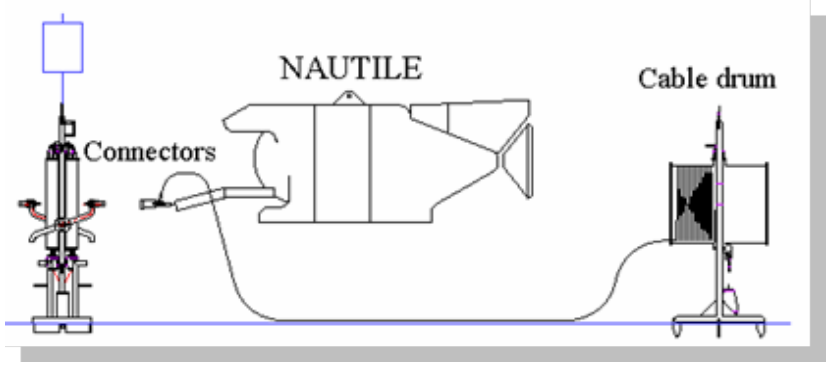
Hydrophone:
acoustic positioning

Detector line deployment

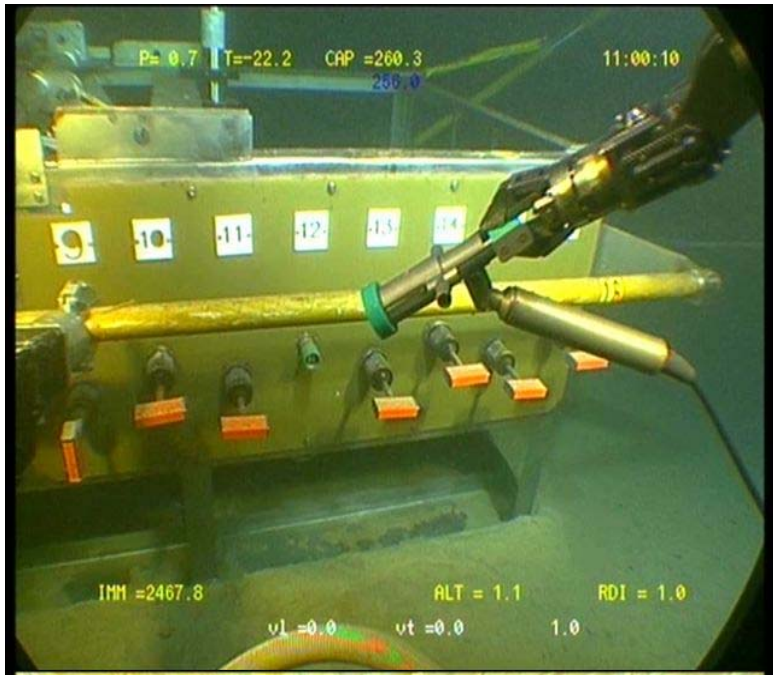


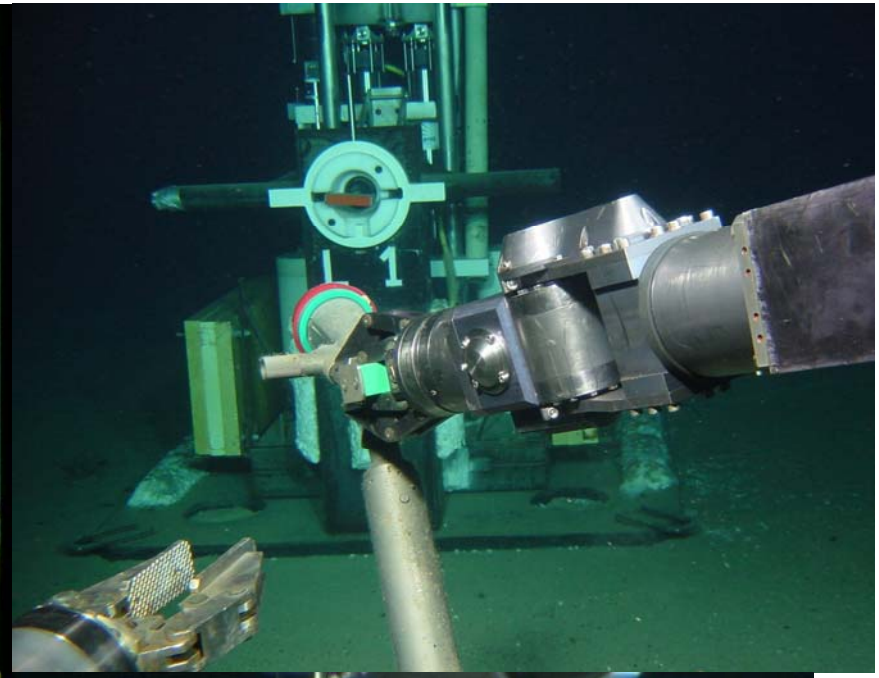
Submarine detector line connection





Submarine detector line connection



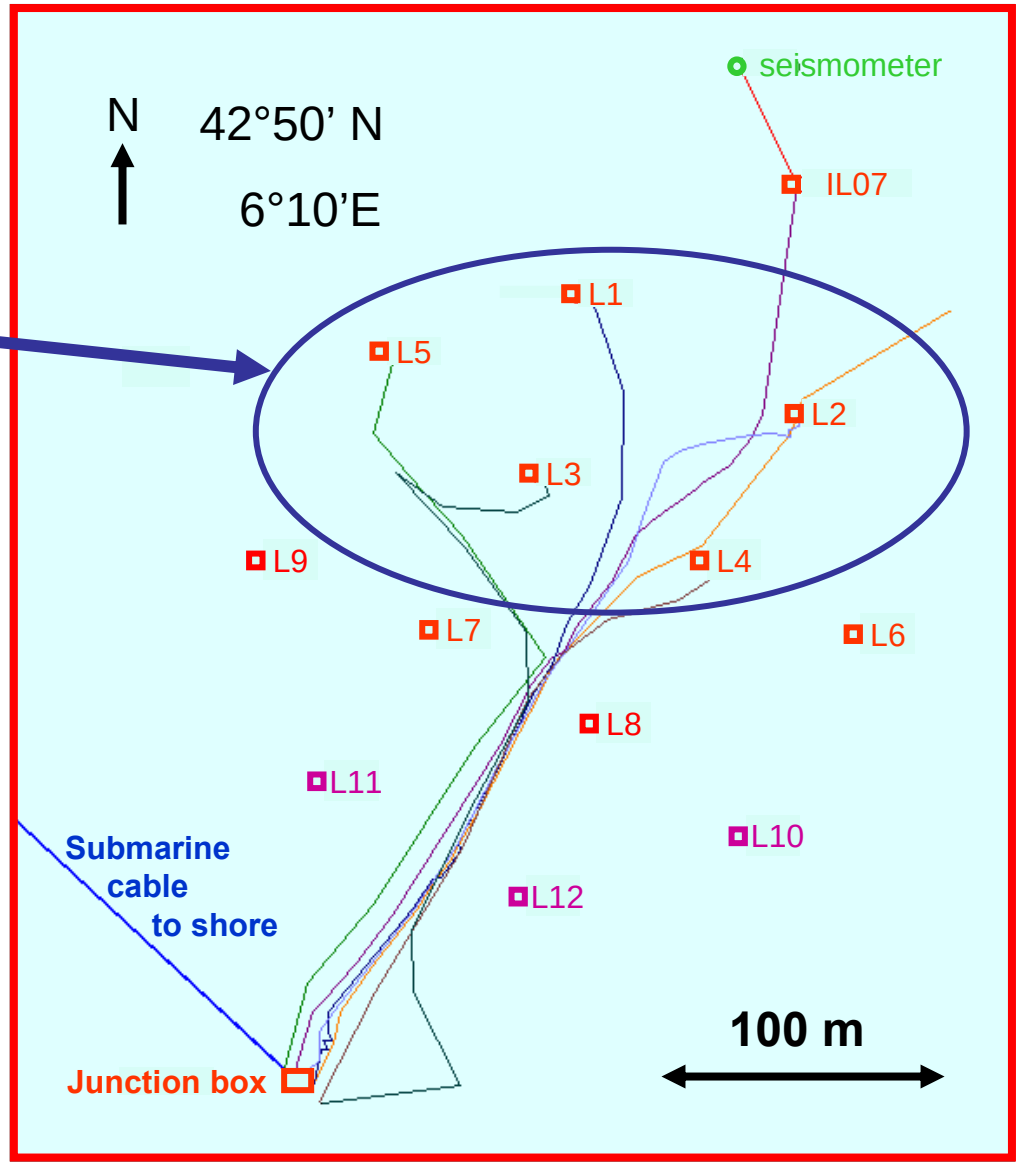


9+1 lines in sea, 5 in operation

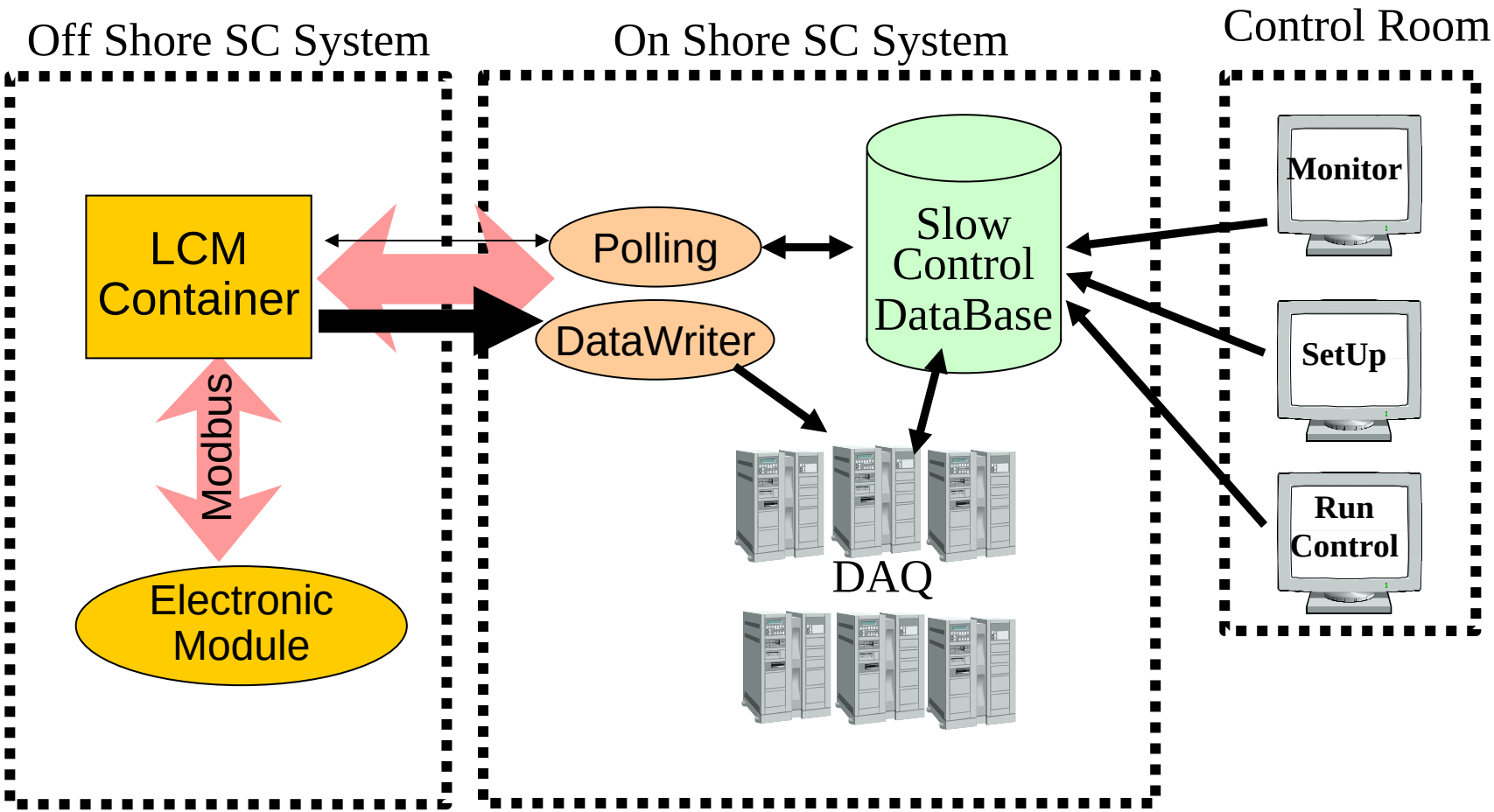
(Sept. 2007)

5 lines detector

(since January 29th)



Status store in Database

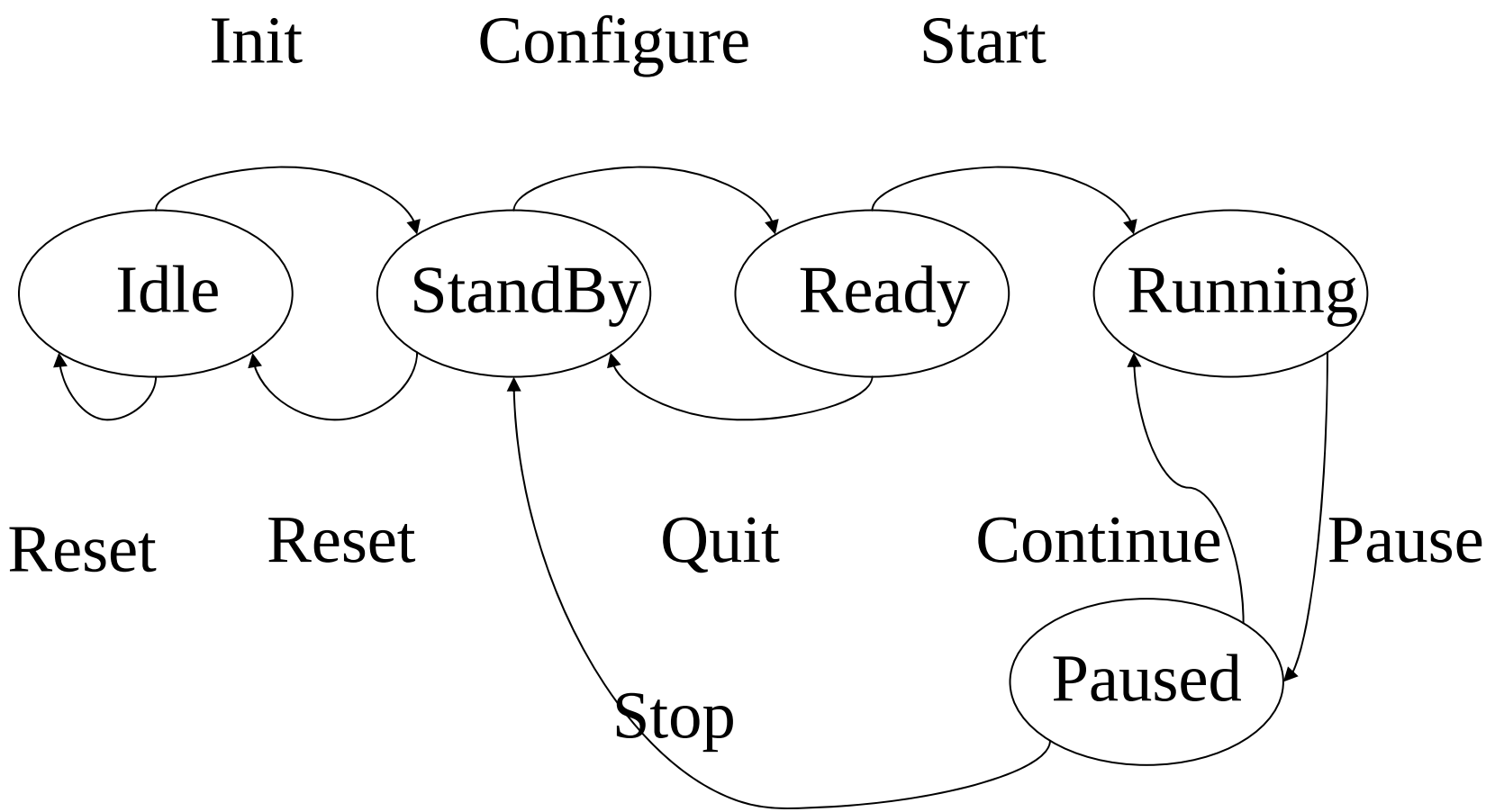


Database Tables

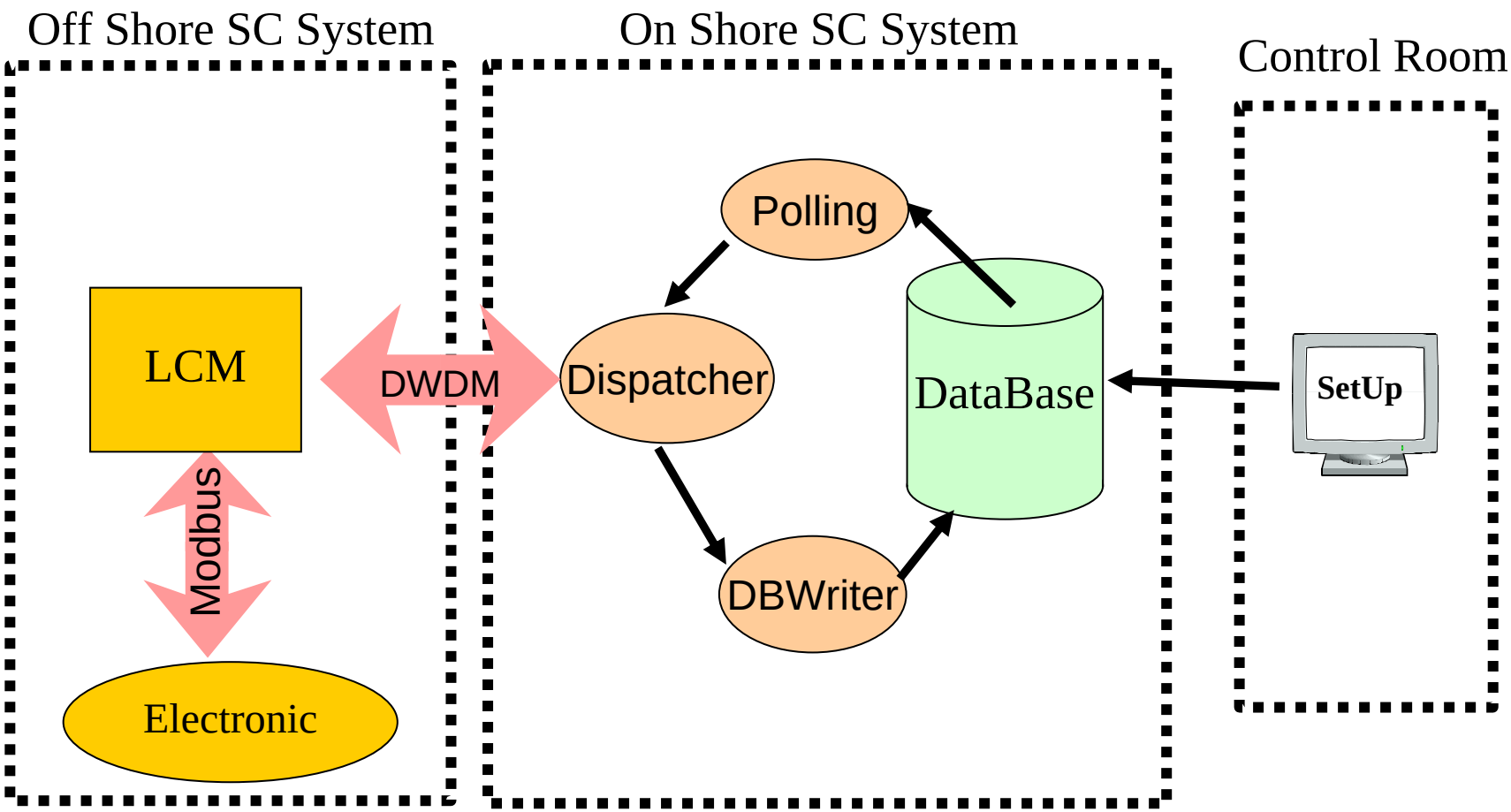
Oracle DataBase – Store in CCIn2p3 @ Lyon

- Product Structure Tables
- Construction Tables
- Integration Tables
- Set Up Tables
- Modbus Tables
- Polling Tables
- Process List Tables
- Raw Data Tables
- Parameter Tables
- Run Tables
- Monitored Values Tables
- Calibration Tables

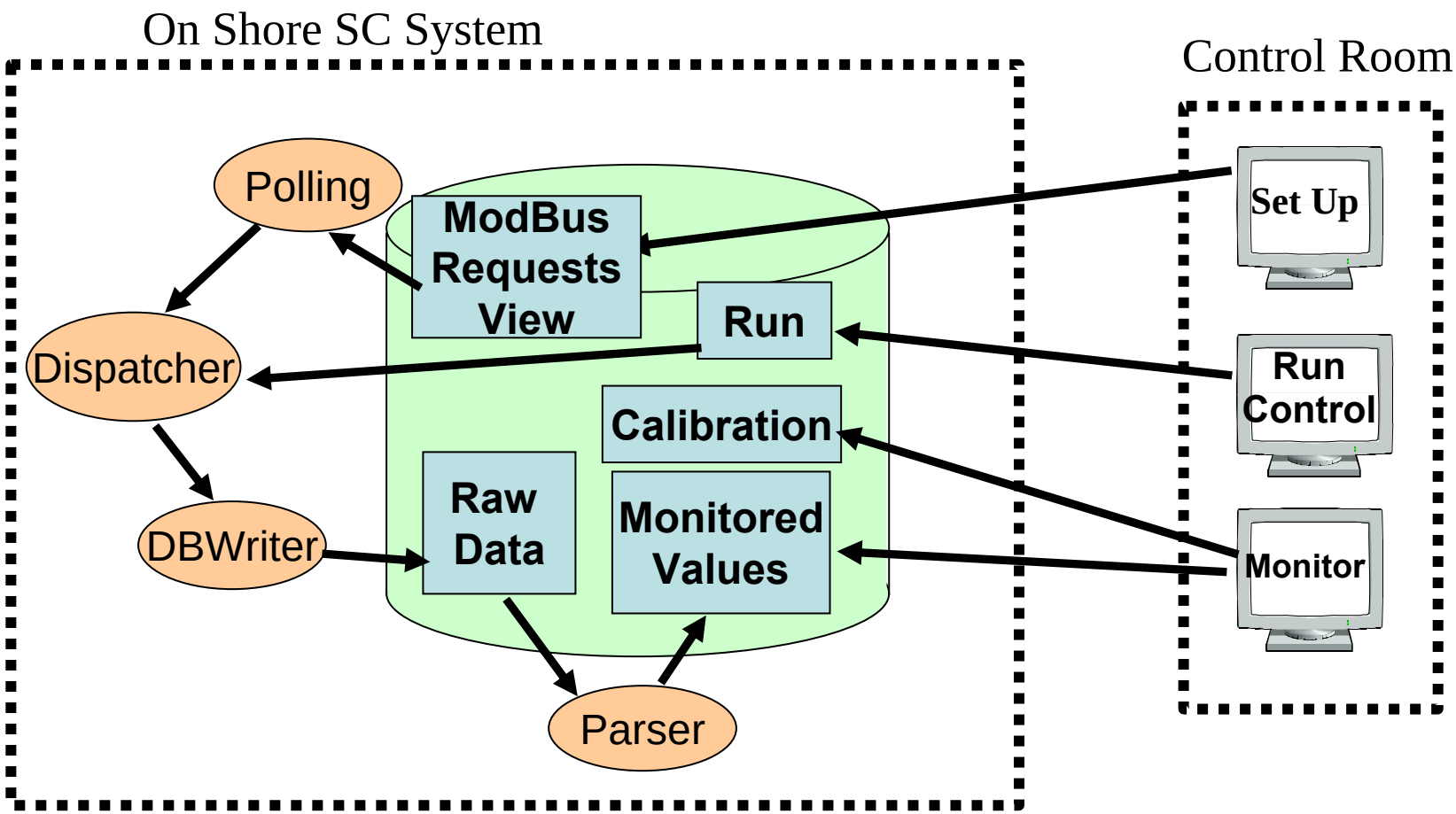
DAQ / SC Synchronisation



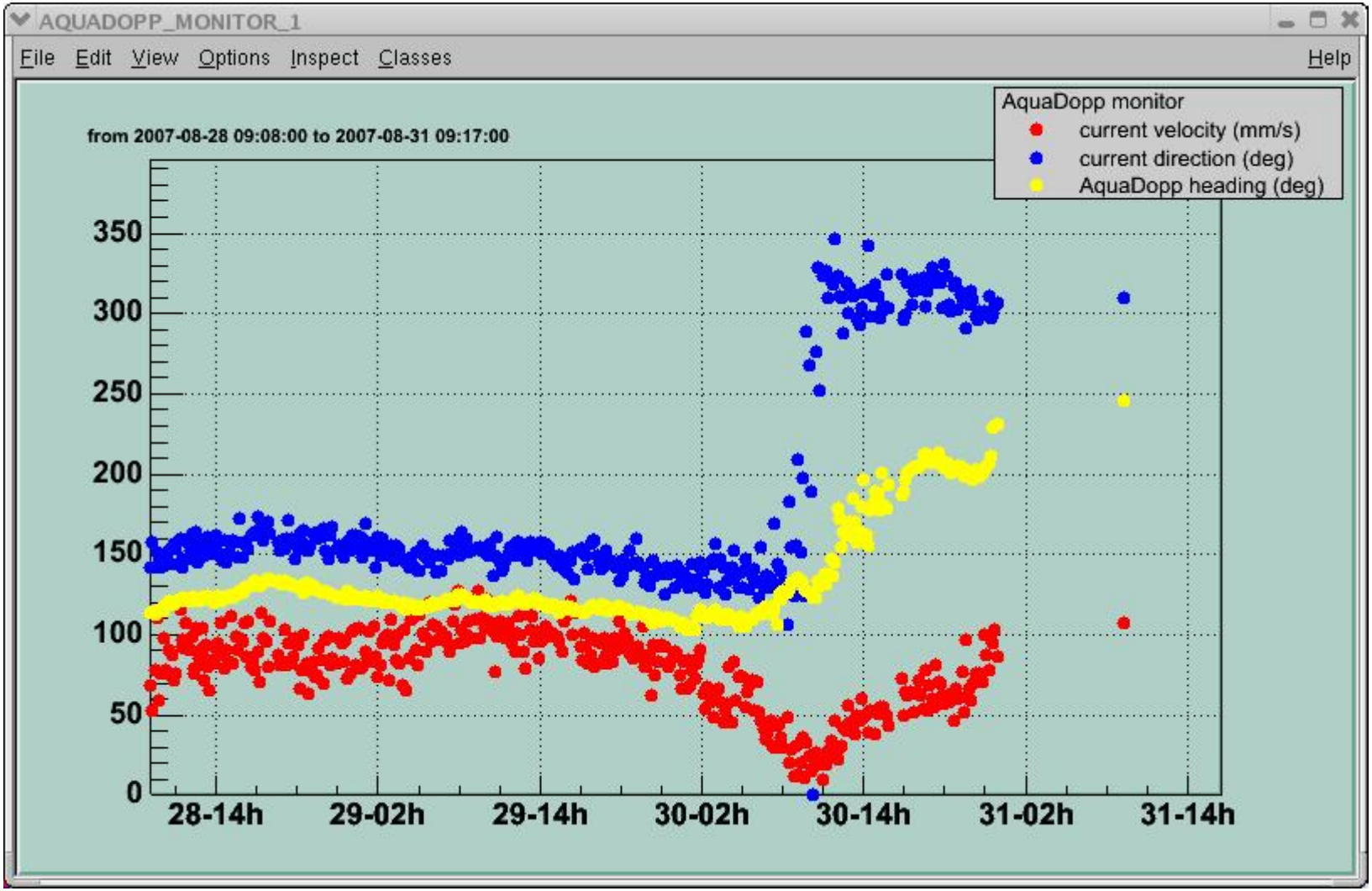
Raw Data Update



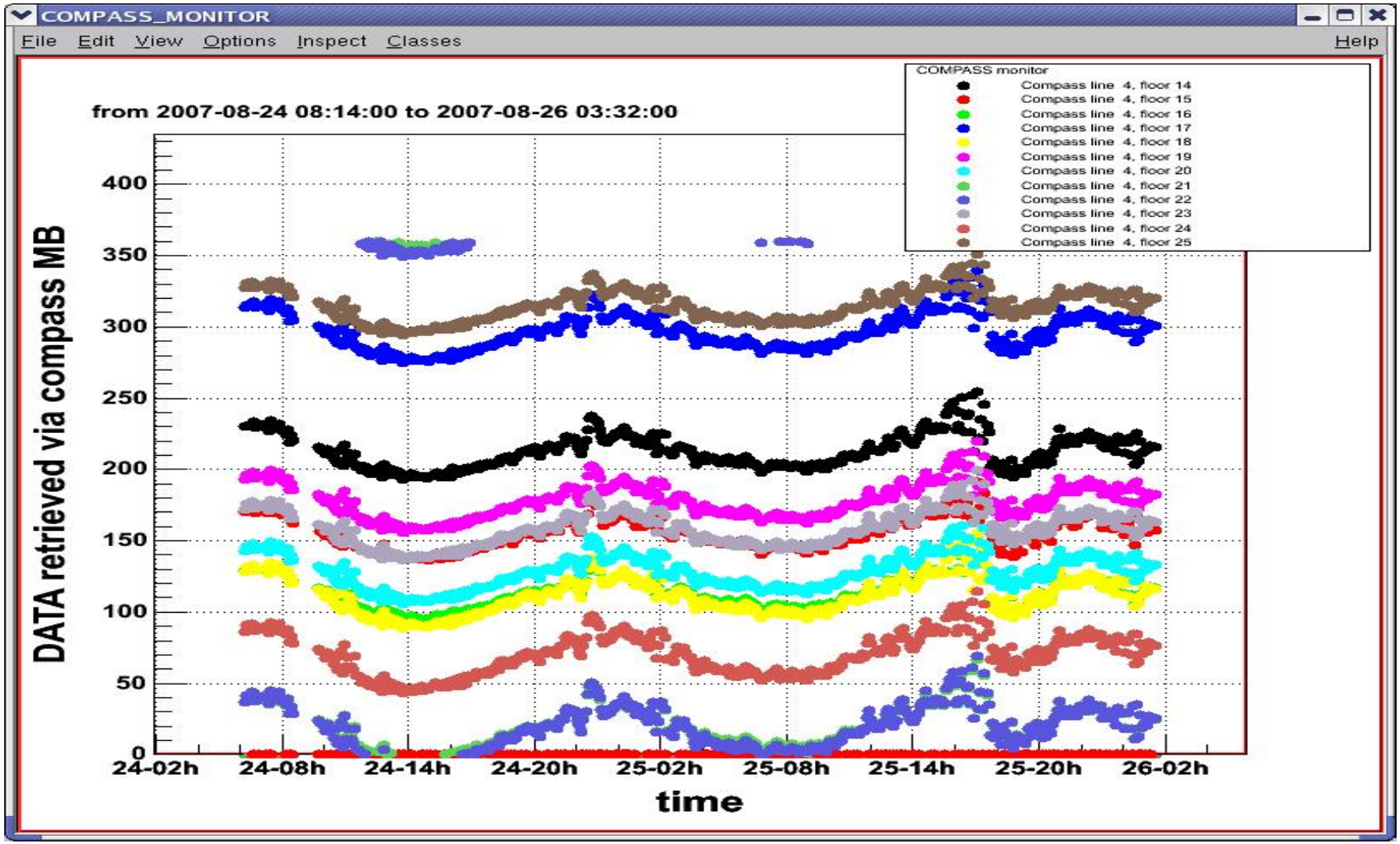
Monitoring Data Path



Sample 1 : Aquadopp Monitor



Sample 2 : Compass Monitor



Summary

- 3D ANTARES detector operational with 5 lines; 4 extra lines in the sea waiting to be connected, 12 lines detector completed early 2008
- Slow control records detector status in database
- Biggest tables are about 1 Go / Years / Line
- Monitor GUI are provided but can be easily generated by users
- Several millions of down going events available to study detector behavior in various bioluminescence conditions
- First underwater neutrino candidates reconstructed in the Mediterranean sea
- MC comparison ongoing, physics results expected soon