

# NCMR's Contribution to MAMA-Net

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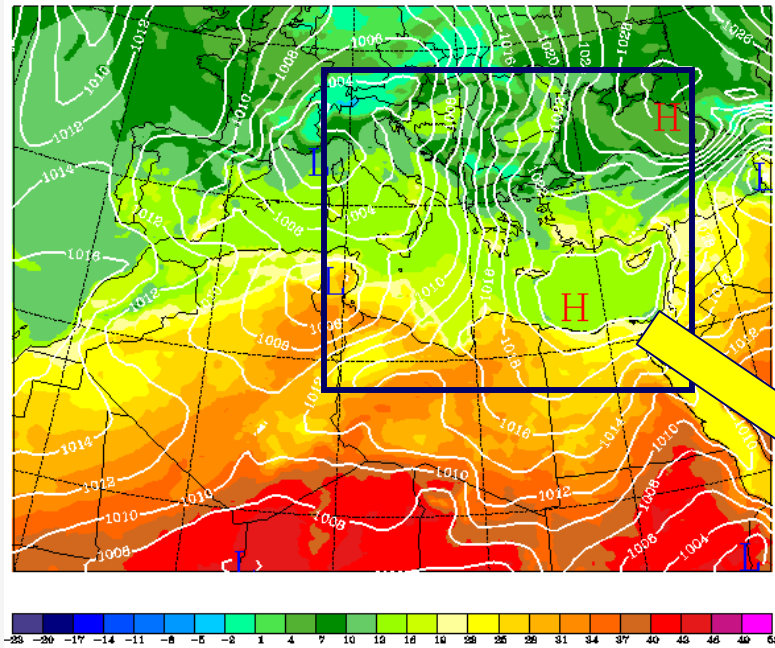
Presented by Anastasios Papadopoulos

# Data availability

<p><b>M3A buoy:</b></p> <ul style="list-style-type: none"> <li>- meteorological</li> <li>- hydrological</li> <li>- biochemical data</li> </ul>	MEDATLAS	<p>Archived (2000-2001) NRT (2004-2005)</p>
<p><b>M3A buoy:</b> current (ADCP) profiles</p>	ASCII	<p>Archived (2000-2001) 6 months delayed mode (2004-2005)</p>
<p><b>POSEIDON forecasts:</b></p> <ul style="list-style-type: none"> <li>- weather</li> <li>- waves</li> </ul>	NetCDF	NRT only
<p><b>POSEIDON buoy network:</b></p> <ul style="list-style-type: none"> <li>- meteorological</li> <li>- wave</li> <li>- hydrological</li> <li>- biochemical</li> </ul>	GTS	NRT only

# The POSEIDON Weather Forecasting System

National Centre for Marine Research POSEIDON Forecast  
Temperature at 2m and Sea Level Pressure 10.04.03 at 12 UTC



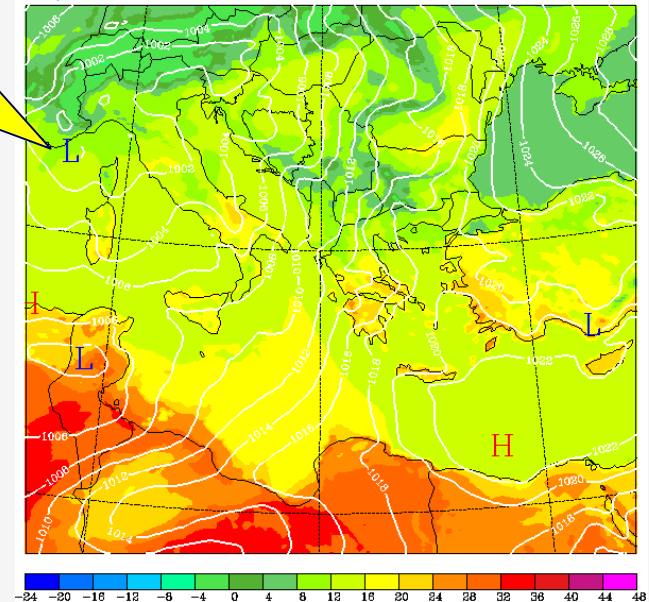
## COARSE Atmospheric Model

- ✓ Based on : SKIRON/Eta LAM
- ✓ Resolution :  $0.24^\circ$  (~25 Km)
- ✓ Vertical Res : 32 eta levels (up to 16 Km)
- ✓ Initial and boundary conditions from the NCEP global model  $1.25^\circ$ , 10 s.p.l every 6h
- ✓ 6 soil layers

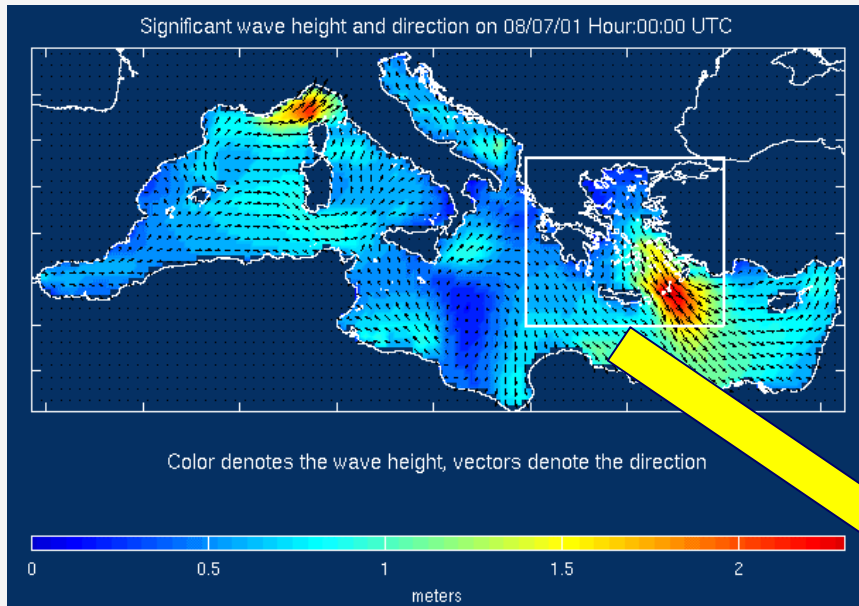
## FINE Atmospheric Model

- ✓ Nested in the COARSE model
- ✓ Resolution :  $0.10^\circ$  (~10 Km)
- ✓ Initial and boundary conditions from the COARSE model  $0.25^\circ$ , 24 s.p.l every 1h
- ✓ 6 soil layers

National Centre for Marine Research POSEIDON Forecast  
Temperature at 2m and Sea Level Pressure 10.04.03 at 12 UTC



# The POSEIDON Wave Forecasting System

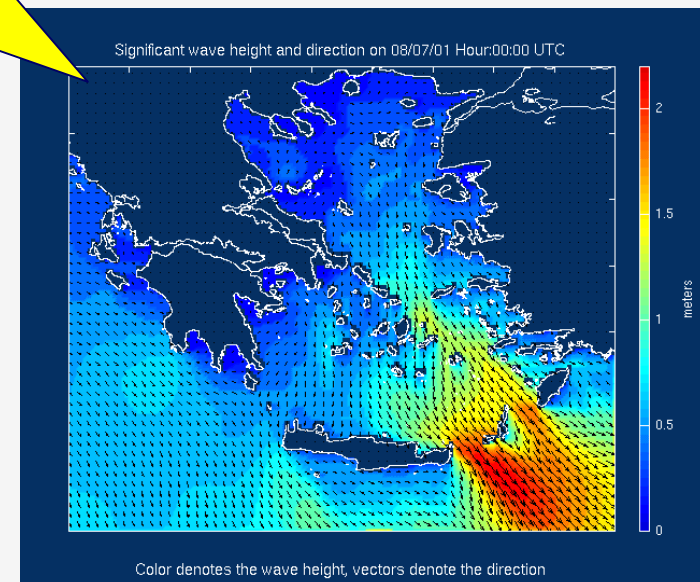


## Mediterranean Wave Model

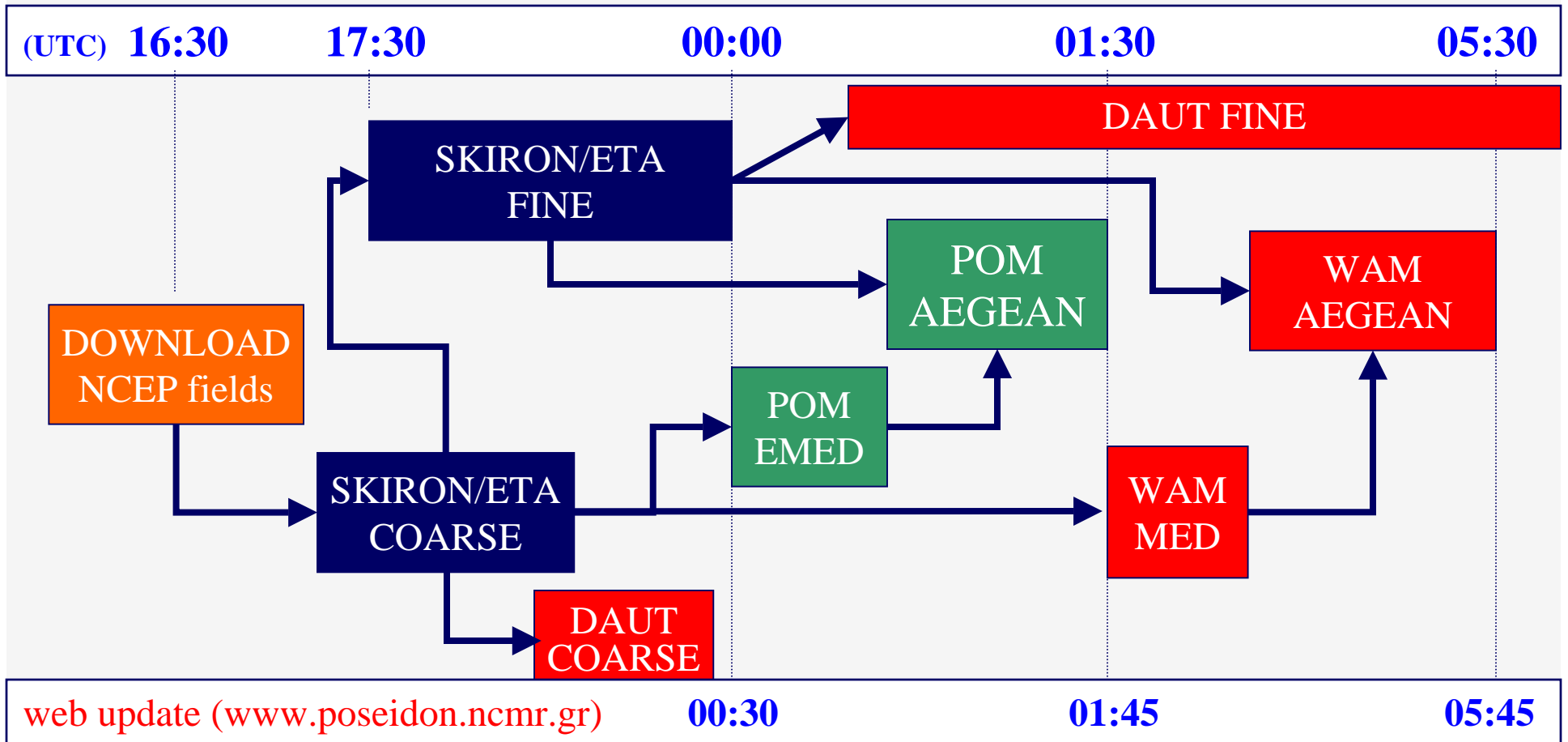
- ✓ Based on : WAM
- ✓ Resolution :  $0.25^\circ$  (~25 Km)
- ✓ Forced by the COARSE atmospheric model

## Aegean Wave Model

- ✓ Nested to Mediterranean model
- ✓ Resolution :  $0.05^\circ$  (~5 Km)
- ✓ Forced by the FINE atmospheric model



# The Operational Procedure



web visitors : > 250,000/month  
 other site links to POSEIDON > 200



# The POSEIDON monitoring system

## 11 Seawatch Buoys

Height: 7.9 m

Weight: 900Kg

Width: 1.75m

Energy: Solar panels+batteries

Communication: Inmarsat C, GSM (3h)

### ✓ **Meteorological sensors**

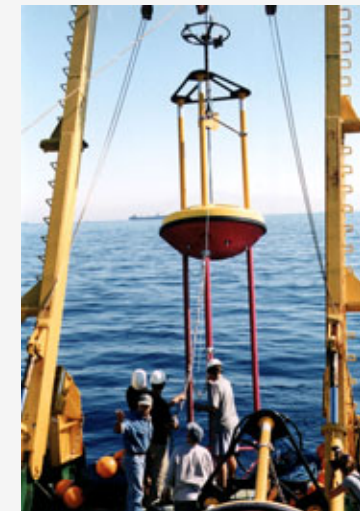
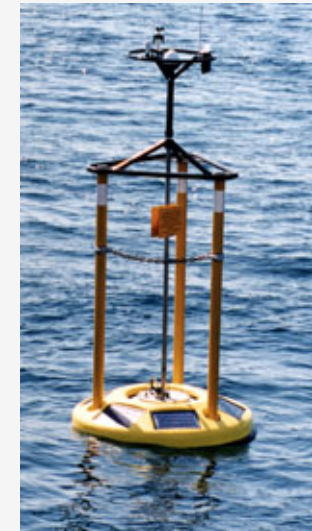
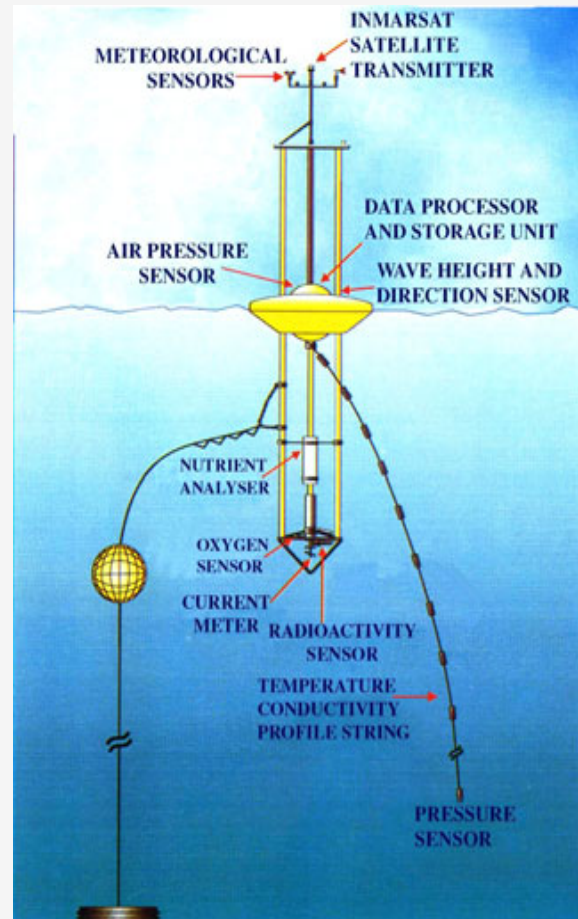
- Air Temperature
- Atmospheric Pressure
- Wind speed/direction

### ✓ **“Blue” sensors (sea state)**

- Temperature (3, 10, 20, 30, 40m)
- Salinity (3, 10, 20, 30, 40m)
- Current (3m)
- Waves

### ✓ **“Green” sensors (environment)**

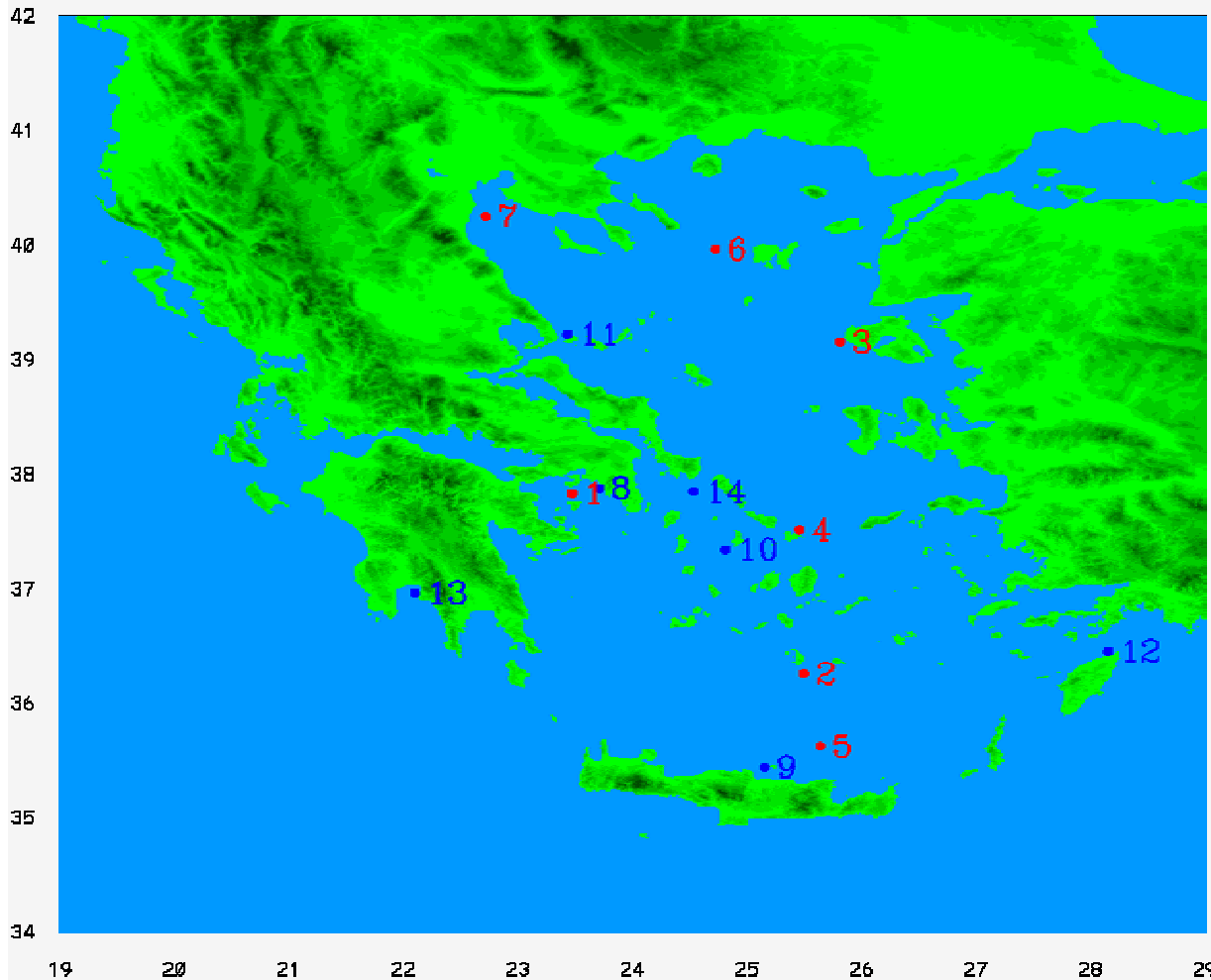
- Dissolved Oxygen
- Chlorophyll-A
- Light Attenuation
- Radioactivity



## 10 Smart-800 Buoys (waves)



# The POSEIDON buoy network



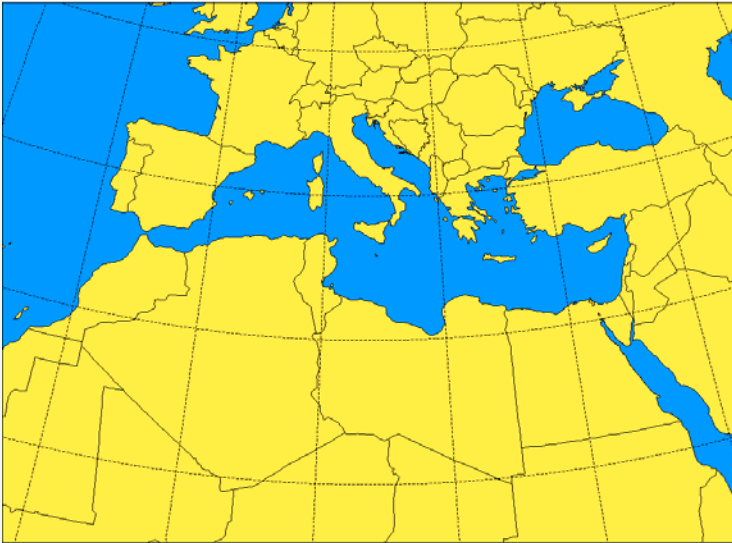
1. Aegina (10/98 - now)
2. Santorini (12/98 - now)
3. Lesvos (12/98 - now)
4. Mykonos (05/99 - now)
5. Avgo-Crete (05/00 - now)
6. Athos (05/00 - now)
7. Katerini (09/01 - now)

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8. Ag.Kosmas (10/98 - 05/00)
9. Dia-Crete (12/98 - 07/00)
10. Syros (11/99 - 05/00)
11. Skiathos (05/99 - 11/99)
12. Rhodes (09/99 - 07/00)
13. Kalamata (10/99 - 07/00)
14. Kafireas (04/00 - 06/00)

# Data coverage

COARSE DOMAIN



**COARSE** 1/4°

LON\_W = -10°

LON\_E = 38°

LAT\_S = 20°

LAT\_N = 51°

**FINE** 1/10°

LON\_W = 8°

LON\_E = 33°

LAT\_S = 29°

LAT\_N = 48°

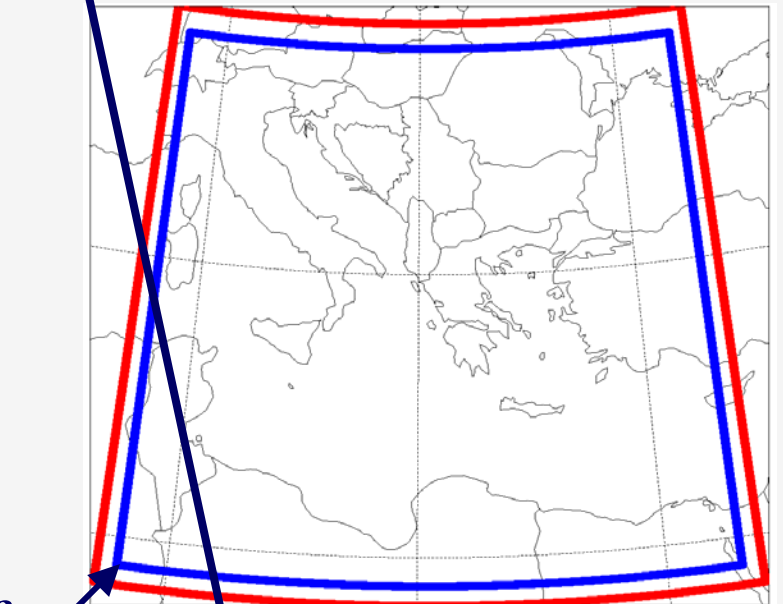
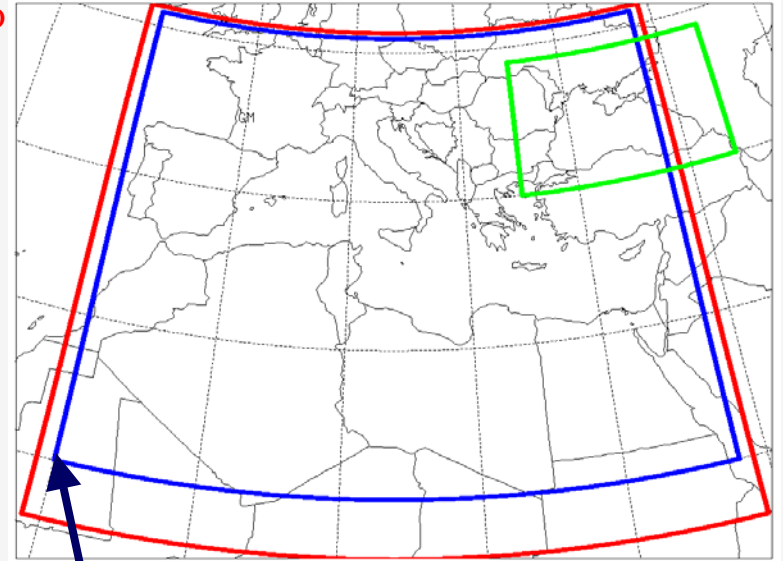
**WAVE** 1/4°

LON\_W = -5.75°

LON\_E = 36.25°

LAT\_S = 30.25°

LAT\_N = 46.00°



Beginning at lower left corner



# Forecasts gridded data

## ➤ Meteorological parameters

- air temperature at 2 m (K)
- u-v wind components at 10 m (m/s)
- relative humidity at 2 m (%)
- accumulated precipitation (m)
- mean sea level pressure (hPa)
- net short wave radiation ( $\text{W}/\text{m}^2$ )
- incoming long wave radiation ( $\text{W}/\text{m}^2$ )

## ➤ Wave parameters

- significant wave height ( m)
- mean wave direction (degrees)
- mean wave period (sec)

## Data available in the test period

The forecasts gridded data are available via anonymous FTP from the directory

<ftp://poseidon.ncmr.gr>

or

[ftp poseidon.ncmr.gr](ftp://poseidon.ncmr.gr)

In this directory you can find the

NetCDF files : [/pub/MAMA/DATA](#)

maps (gif) : [/pub/MAMA/IMAGES/COARSE](#)  
[/pub/MAMA/IMAGES/FINE](#)  
[/pub/MAMA/IMAGES/WAVE](#)

# NetCDF files in /pub/MAMA/DATA

**namefiles** : SSDDMMYY.coarse  
SSDDMMYY.fine  
DDMMYY.wave

**SS** : initial time

**DDMMYY** : starting date (DD:day, MM:month, YY:year)

**an example** : 12040603.coarse

72h forecasts from COARSE meteorological model  
starting at 04 June 2003, 12UTC and  
ending at 07 June 2003, 12UTC

## Structure of the NetCDF files

SSDDMMYY.coarse	SSDDMMYY.fine	DDMMYY.wave
<p>dimensions</p> <ul style="list-style-type: none"> <li>lon = 193</li> <li>lat = 125</li> <li>time = 12</li> </ul> <p>variables</p> <ul style="list-style-type: none"> <li>flon(lon)</li> <li>flat(lat)</li> <li>t2m(time, lat, lon)</li> <li>u10(time, lat, lon)</li> <li>v10(time, lat, lon)</li> <li>rh2m(time, lat, lon)</li> <li>aprec(time, lat, lon)</li> <li>pres(time, lat, lon)</li> <li>rsnet(time, lat, lon)</li> <li>rlwin(time, lat, lon)</li> </ul>	<p>dimensions</p> <ul style="list-style-type: none"> <li>lon = 251</li> <li>lat = 191</li> <li>time = 12</li> </ul> <p>variables</p> <ul style="list-style-type: none"> <li>flon(lon)</li> <li>flat(lat)</li> <li>t2m(time, lat, lon)</li> <li>u10(time, lat, lon)</li> <li>v10(time, lat, lon)</li> <li>rh2m(time, lat, lon)</li> <li>aprec(time, lat, lon)</li> <li>pres(time, lat, lon)</li> <li>rsnet(time, lat, lon)</li> <li>rlwin(time, lat, lon)</li> </ul>	<p>dimensions</p> <ul style="list-style-type: none"> <li>lon = 169</li> <li>lat = 64</li> <li>time = 12</li> </ul> <p>variables</p> <ul style="list-style-type: none"> <li>flon(lon)</li> <li>flat(lat)</li> <li>hs(time, lat, lon)</li> <li>dir(time, lat, lon)</li> <li>peak(time, lat, lon)</li> </ul>

An example on NetCDF processing can be found at  
[ftp://poseidon.ncmr.gr/pub/MAMA/read\\_netCDF.f](ftp://poseidon.ncmr.gr/pub/MAMA/read_netCDF.f)

## Maps (gif format) in /pub/MAMA/IMAGES/

COARSE	FINE	WAVE
HHH.temp2mGH.gif HHH.wind10m.gif precHHH-HHH <sub>n</sub> .gif	HHH.temp2mGH.gif HHH.wind10m.gif precHHH-HHH <sub>n</sub> .gif	waveheight.HHH.gif waveperiod.HHH.gif

## GTS format

The POSEIDON buoy network observations,  
will be available in the GTS format, soon ...

This presentation can be also found in the directory

[ftp://poseidon.ncmr.gr/pub/MAMA/  
NCMR\\_MAMAnet\\_Rome2003.ppt](ftp://poseidon.ncmr.gr/pub/MAMA/NCMR_MAMAnet_Rome2003.ppt)