EUMETNET

The Network of European Meteorological Services

EUCOS

THE EUCOS OPERATIONAL PROGRAMME

Bruce Truscott - EUCOS Operations Manager

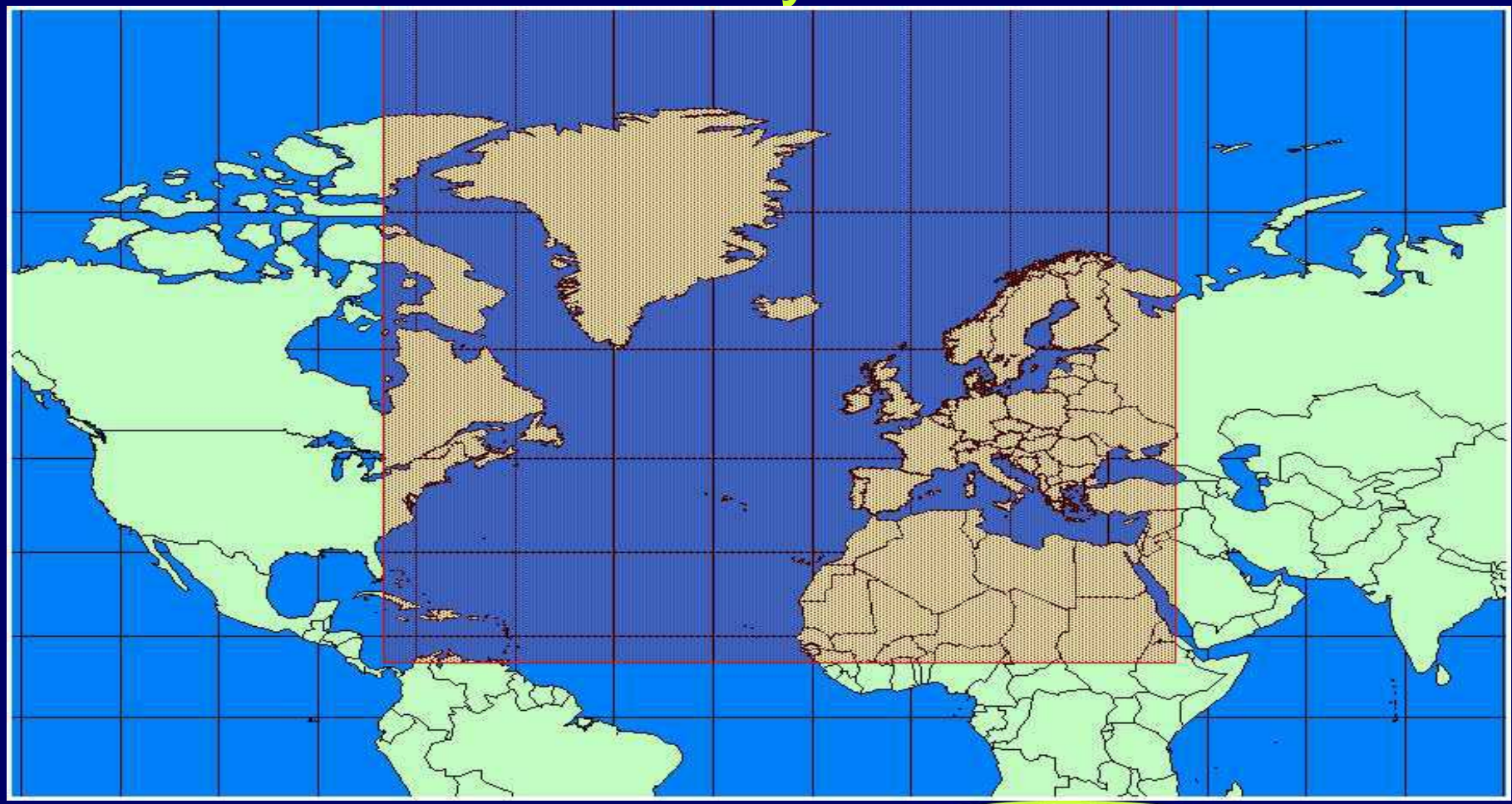
Met Office

EUMETNET
The Network of European Meteorological Services

- A network grouping 18 European NMS's
- Provides a framework for co-operative programmes relating to:
  - observing systems
  - data processing
  - basic forecasting products
  - research and development
  - training
  - etc
- EUCOS Aims to:
  - Establish and operate a truly European observing network
  - To deliver increased efficiency and establish non-territorial observing systems
  - Leading to better-quality numerical and general forecasts, initially on a European scale.

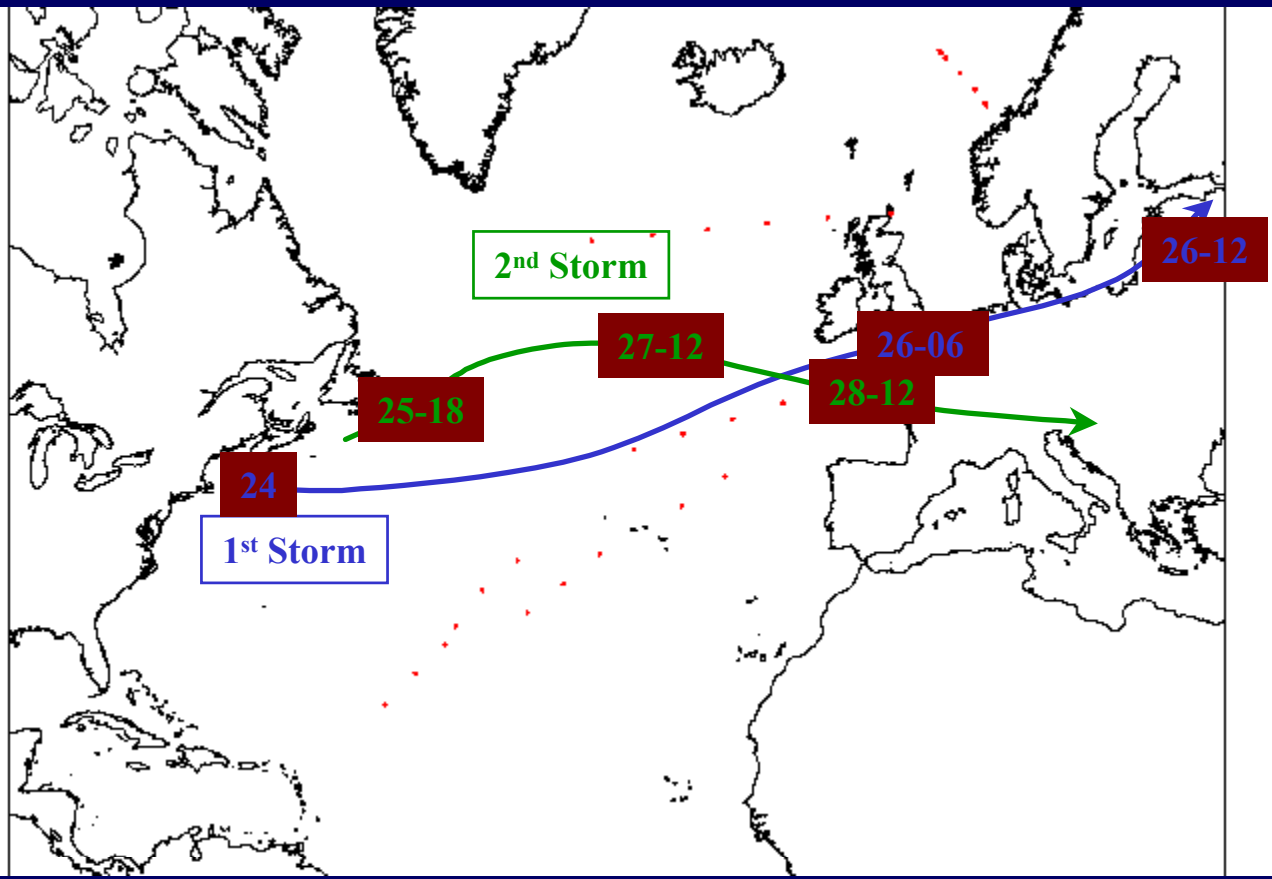
Met Office

EUMETNET Composite Observing System

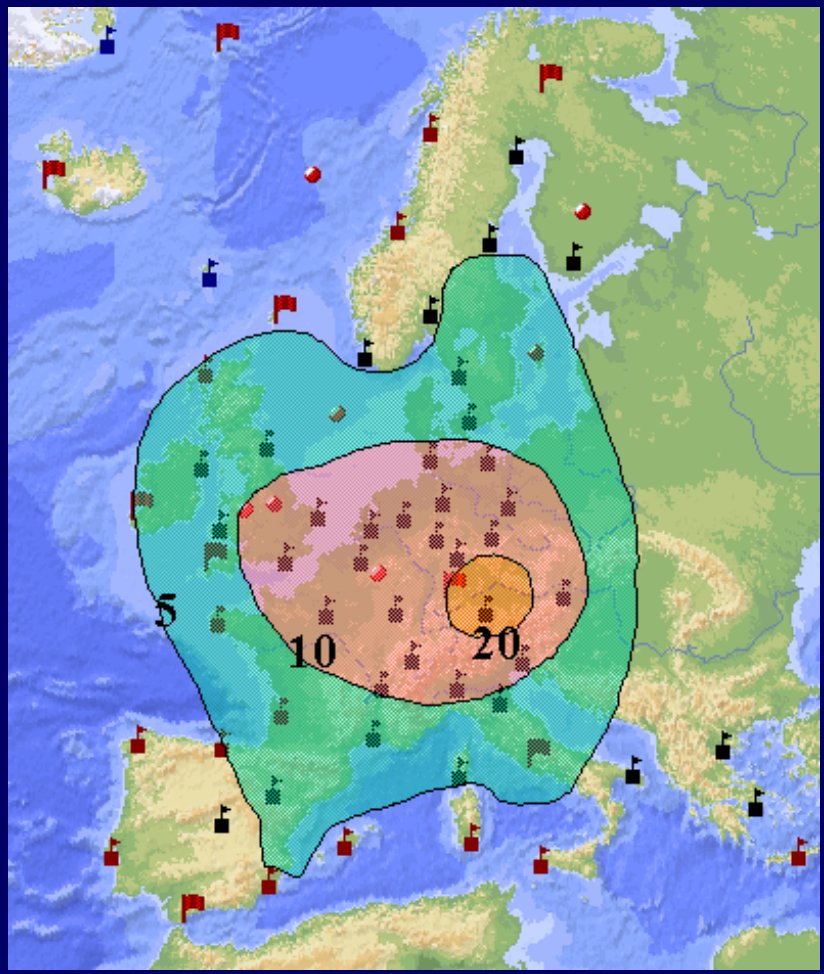


10N-90N, 70W-40E

Current oceanic undersampling



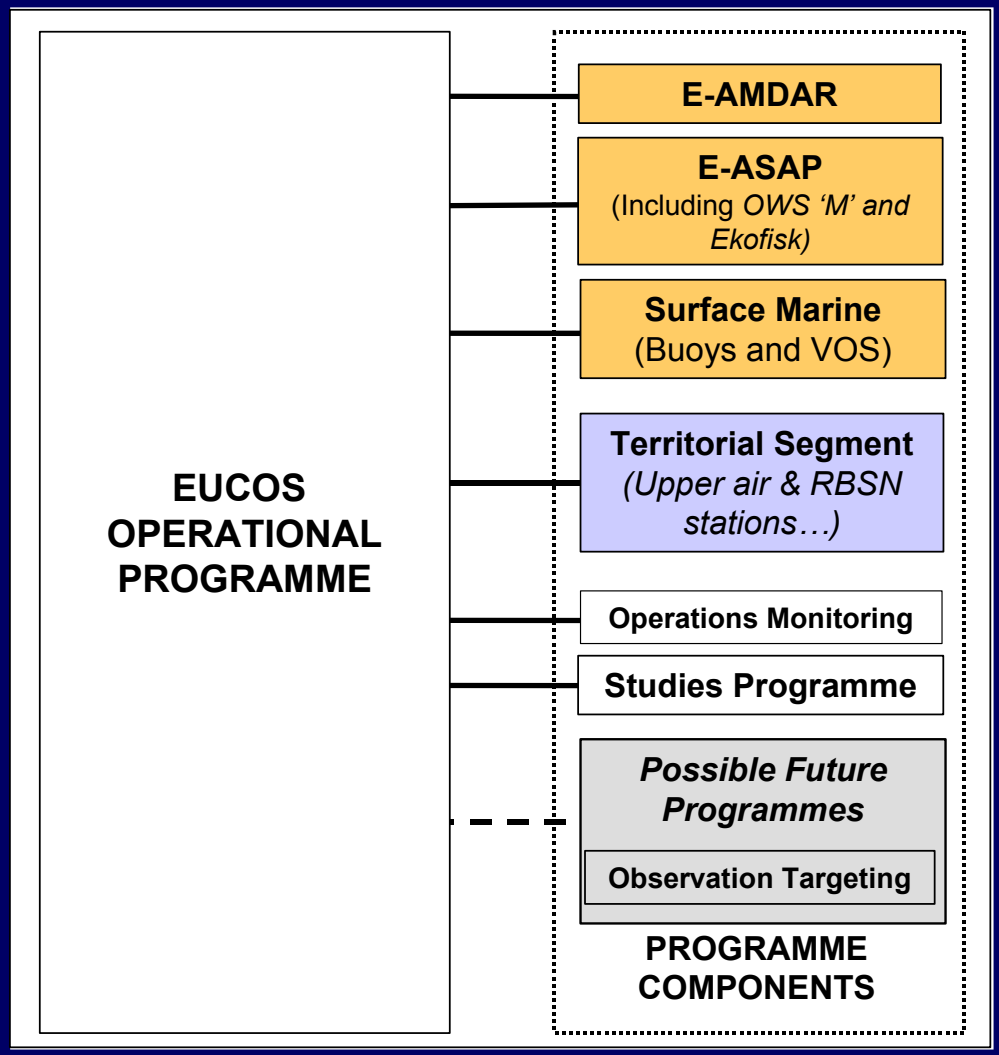
Current continental 'oversampling'



- Number of RS stations within 500 km distance of any of those included in the EUCOS network;

The Challenge & Strategy for EUCOS

- Is to improve the quality and make more cost-effective Regional NWP at European scale.
  - through resource transfer from the mainly well observed territorial areas to the poorly observed maritime regions which exert a crucial influence on European weather at the 12 to 48 hour timescale.
  - achieved by EUMETNET Members committing themselves to co-funding the new optimised facilities through a fair (GNI) cost sharing system.

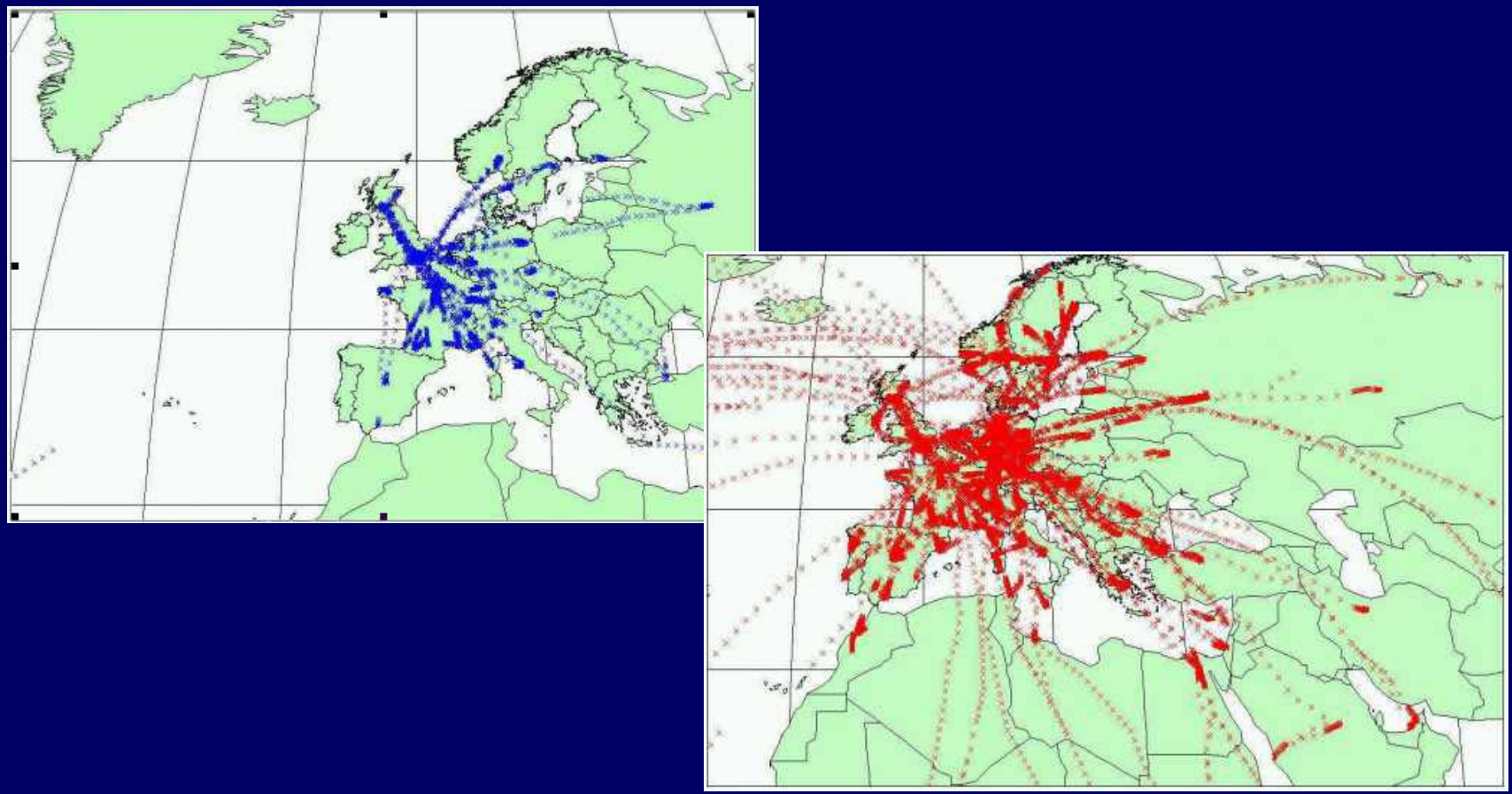

EUCOS OPERATIONAL PROGRAMME
E-AMDAR
E-ASAP
(Including OWS 'M' and Ekofisk)
Surface Marine
(Buoys and VOS)
Territorial Segment
(Upper air & RBSN stations…)
Operations Monitoring
Studies Programme
Possible Future Programmes
Observation Targeting
PROGRAMME COMPONENTS

E-AMDAR

E-AMDAR Objectives

- Implement the EUCOS requirement (in order of importance):
  - 3 hourly profiles over Europe
  - Enroute and profile data over data sparse / sensitive areas
  - Procure data in support of WWW
  - Expected to total around 13 million messages per year by 2006

E-AMDAR Coverage 1999 / 2003

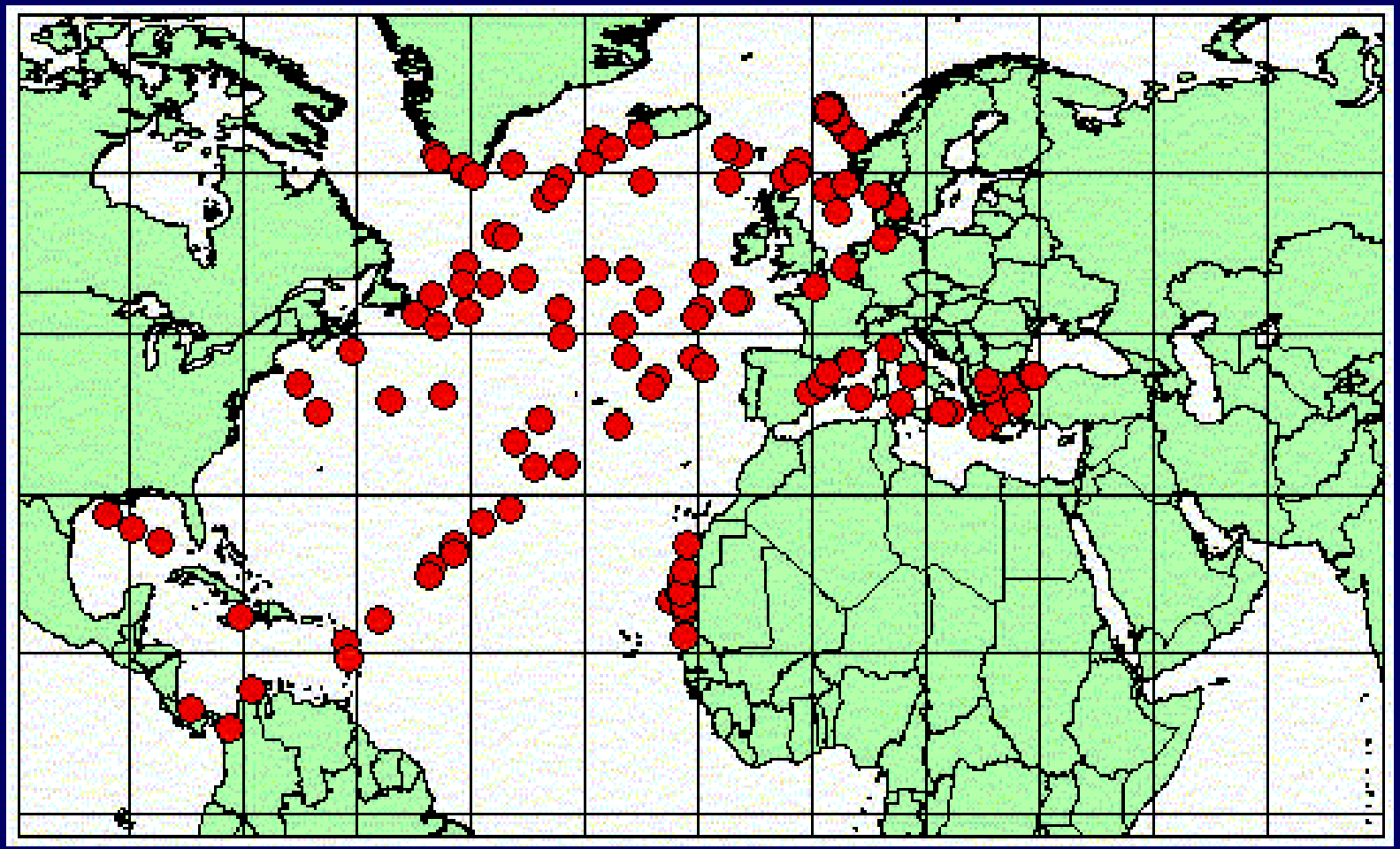


E-ASAP

ASAP Objectives

- Reach a total of ***18 ASAP units producing 6,300 soundings per year***
- ***Contribute to WWW***
- ***Optimise*** the overall system
- ***Reduce the average cost*** per ASAP profile
- ***Maintain*** and (if necessary) replace the major components

E-ASAP Soundings Feb 2003



Surface Marine Programme Activities

The Programme will be divided into two clear stages, each with a duration of 2-years.

Stage 1 (2003 - 2004)

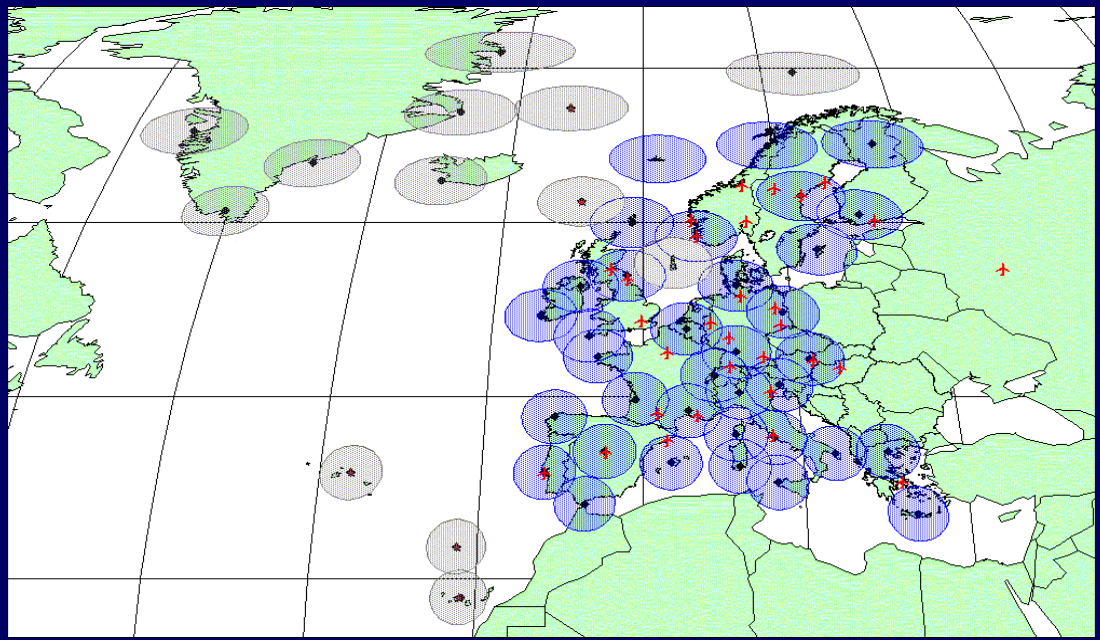
Principal Objective: agree the EUCOS Surface Marine Network design and management structure.

Stage 2 (2005 - 2006)

Principal Objective: Implement the EUCOS Surface Marine Network design.

Territorial Networks

- Homogeneous network of upper air stations 500km apart
- Chosen to interleave with AMDAR airport sites
- Providing 2 or 4 soundings per day from each station



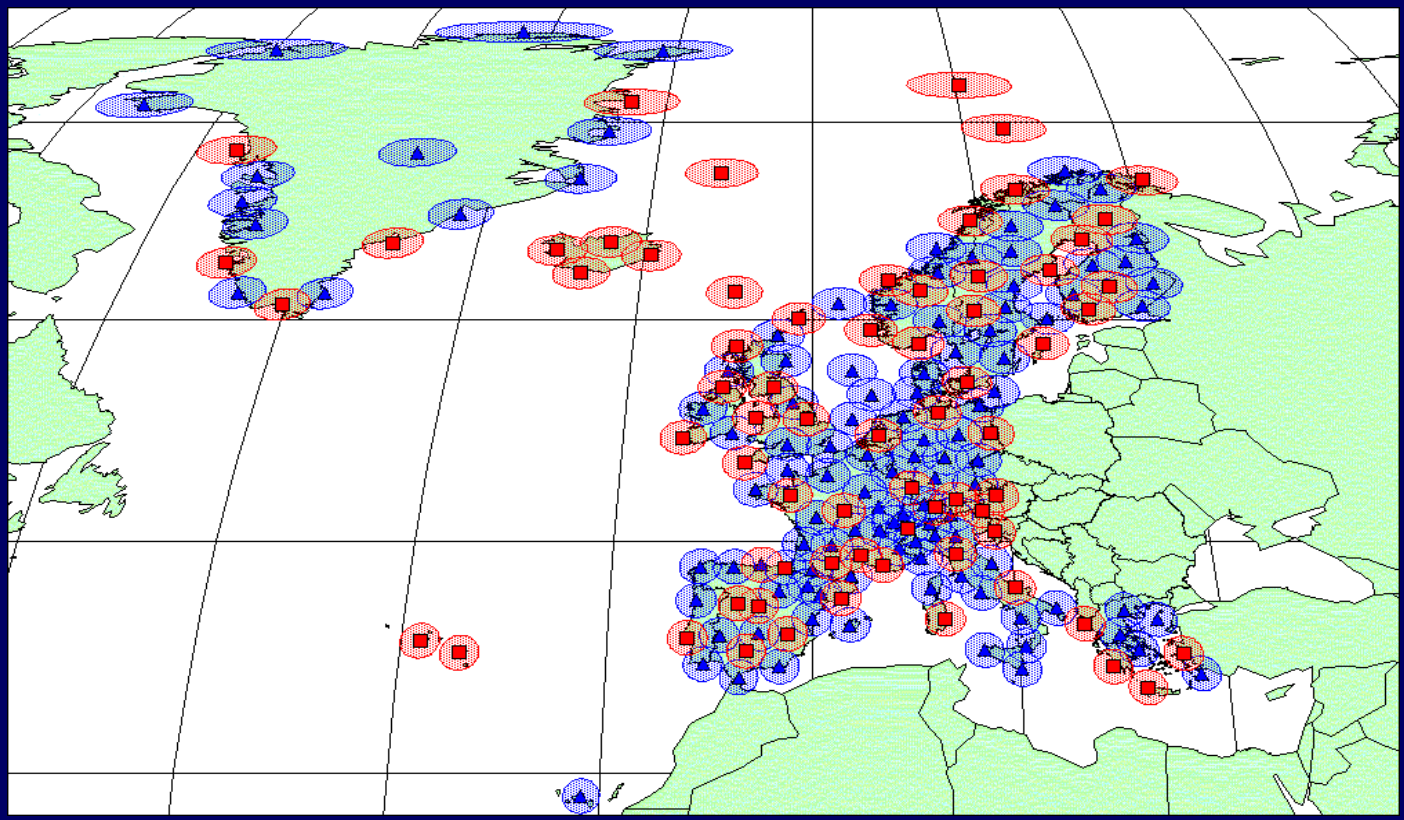
Territorial Networks

Upper air design to be reviewed to include

- Wider availability of AMDAR data
- New technology e.g. Profilers, doppler radar, GPS etc

Territorial Networks

- Preliminary surface design based on 250km spacing, hourly observations



Operational EUCOS

EUCOS Operational System

- Principles that define the tools and procedures that must be developed to monitor and control the network have been agreed by PB-OBS.

EUCOS Information System

- An initial version of the EUCOS website has been developed
- The aim is to present ready access to EUCOS Information
- Including data monitoring statistics

Reporting

- Monitoring reports are generated:
  - Monthly: reviewed by EUCOS Team
  - Quarterly: published on Website
  - Annual: published and presented to PB-OBS and EUMETNET Council

EUCOS Studies Programme
OSEs

- Targeted observing
- Benefit of high frequency AMDAR profiles
- Surface Marine Data

Atlantic THORPEX Regional Campaign (A-TReC)

Rationale:

- To define the benefits of targeted observations
- To test predictability of sensitive areas

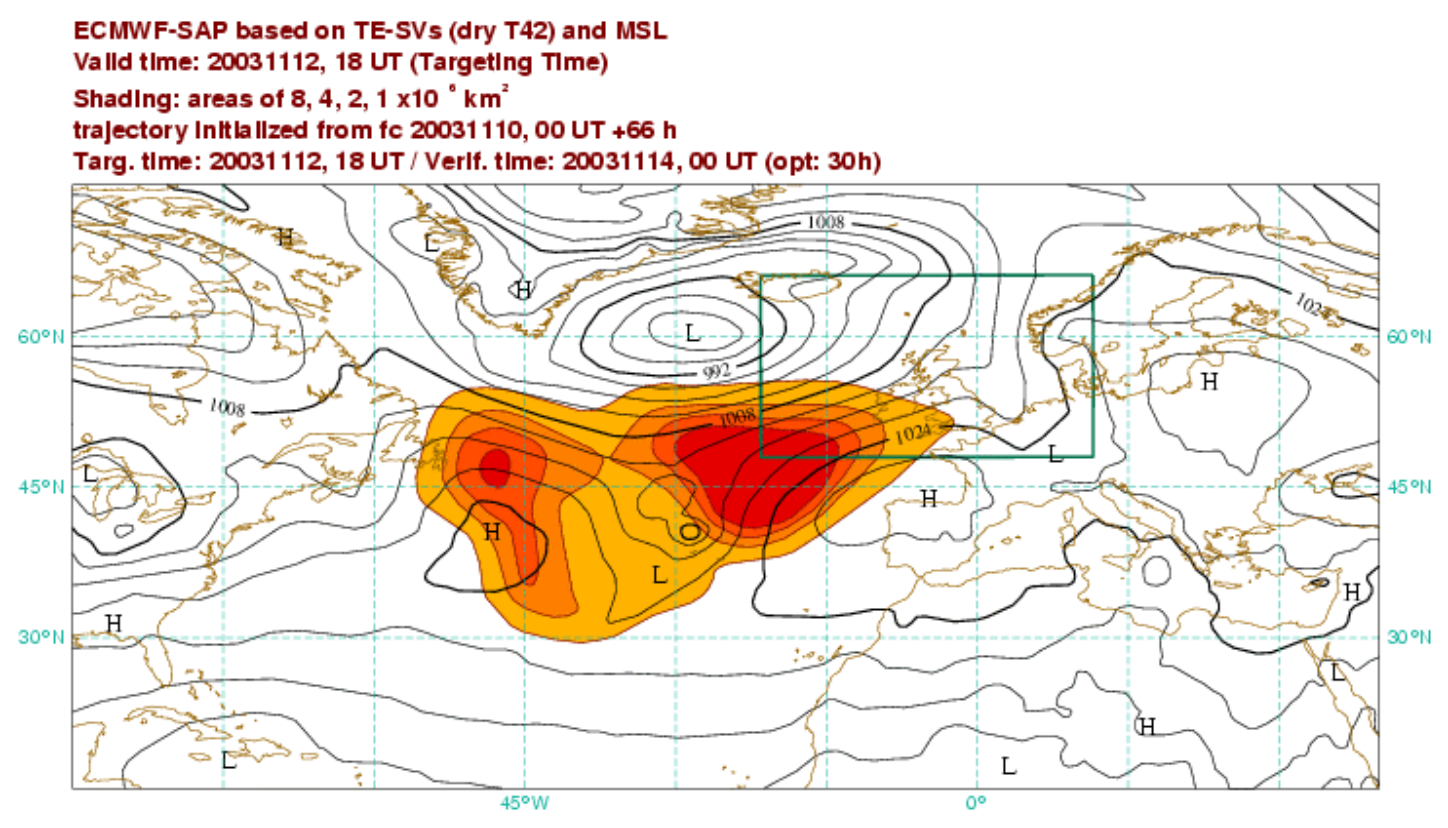
Description:

- Scheduled for mid Oct / mid Dec 2003
- EUCOS and other European / US and Canadian observational assests will be targeted on sensitive areas identified by ECMWF / MeteoFrance / Met Office / NCEP
- Analysis complete by the end of 2004

Observing Systems:

- 600+ AMDAR aircraft
- 9 ASAP ships
- Additional radiosonde ascents
- Research aircraft - DLR Falcon, NOAA, NASA, UUSAF
- Additional drifting buoys
- Possibly Driftsonde flights from US East coast
- Meteosat 6 and GOES - rapid scan winds

Atlantic THORPEX Regional Campaign (A-TReC)



http://nwmstest.ecmwf.int/products/forecasts/d/charts/tost

EUCOS Studies Programme
Technology Demonstration

- AMDAR humidity:
  - Continue to investigate developments and possibilities
  - Organise trial with DWD
- TAMDAR
  - Evaluate THORPEX results
  - Arrange trial with Meteo-France
- Driftsonde:
  - Arrange participation in the EUCOS Targeting OSE
- Robotic Aircraft
  - Continue to monitor development

End Presentation

EUCOS
Operational Principles

- *Performance Standards:* have been defined for each EUCOS component in terms of data availability, accuracy, spatial and temporal resolution.
- *Monitoring Procedures and tools:* have been developed to measure end-to-end network performance
- *Fault Correction Procedures:* have been agreed to ensure effective reporting and rectification of problems
- *Change Control Procedures:* have been developed to ensure that adjustments are made the EUCOS network in a controlled, co-ordinated manner.
- *Implementation:* system was made operational 1st January 2003

Performance Target Example

AMDAR Aircraft

Observation cycle and horizontal resolution: As defined in the EUCOS Detailed Design [ref 4].

Whilst the network will be configured to generate soundings over airports with a maximum frequency of one every 3-hours from each location, inefficiencies within the optimisation systems are expected to result in greater numbers of profiles over some airports.

Data	**Quality** (Ob – Model daily mean difference)	**Availability of data**	**Timeliness Of data**
Temperature	**1.0°K**	**21,500 Observations / day** (Based on 2003 target)	**85% of data received by Observation Time + 45 minutes** 95 % of data received by Observation time + 120 minutes
Wind vector	2.5 m/s		
Spec Humidity	N/A		
Performance statistics based on those already adopted by E-AMDAR			

Performance Target Example

ASAP Ships

Observation cycle and horizontal resolution: As defined in the EUCOS Detailed Design [ref. 4].

The current operating procedure requires each ASAP ship, when en-route, to provide 2 soundings per day, at 00 and 12UTC when at least 75nm away from land stations. When within coastal areas close to land stations taking soundings at 00 and 12 UTC the ships are asked to observe at 06 and 18UTC. An enhanced observing programme is however proposed by the E-ASAP Programme Manager (ref. 2).

Data Element	**Quality** (Ob – Model daily mean difference)	**Availability of data**	**Timeliness Of data**
Temperature	1.0°K	**300 soundings per year / ship** (currently equates to 9 soundings per day from 11 ships)	85% of soundings (Parts A,B,C and D) received by Observation time +120 minutes
Wind vector	2.5 m/s		
Spec Humidity	10%		
O-M 100hPa Geopotential Ht difference	**65 m**		
% Achieving 100hPa	**90%**		
% Achieving 50hPa	**75%**		

Performance Target Target

EGOS Moored Buoys

Observations cycle and network: As defined by the Surface Marine Programme Proposal 2003-2006 [ref. 6]

The moored buoys are expected to provide **hourly** observations.

Data	**Quality** (Ob – Model daily mean difference)	**Availability of data**	**Timeliness Of data**
Pressure	1.0 hPa	90% of the expected reports (260 observations / day based on the 12 selected stations)	**85% of available data received by HH + 15 minutes** **95% of available data received by HH + 120 minutes**
Temperature	**1.0°K**		
Spec Humidity	15%		
Wind vector	**2.5 m/s**		
Sea Surface Temp	1.0°K		

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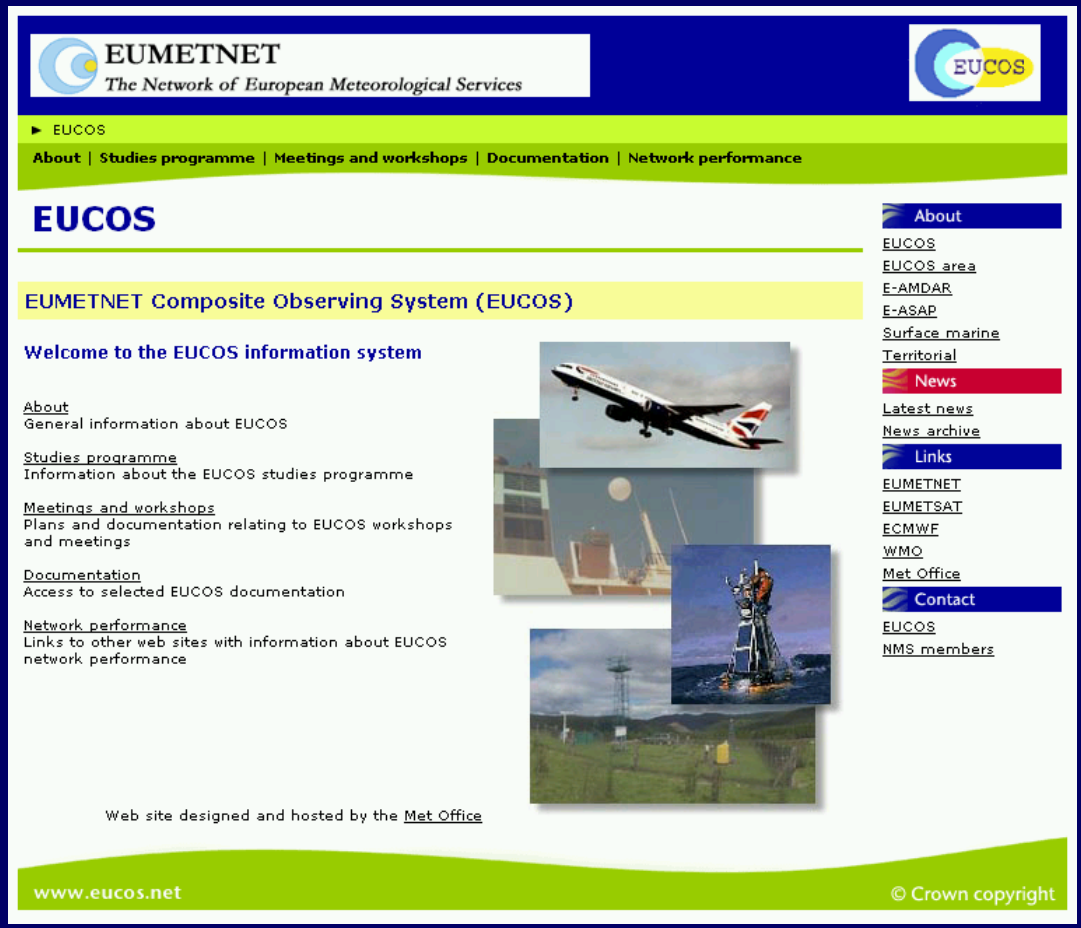
EUCOS Website:
Homepage



EUCOS Website:
Network Performance Statistics

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► EUCOS ► Network performance ► Radiosondes ► Daily statistics

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Network performance: Radiosondes

Data valid for: Monday 27 January 2003 (24-hour period 0000 UTC to 0000 UTC)

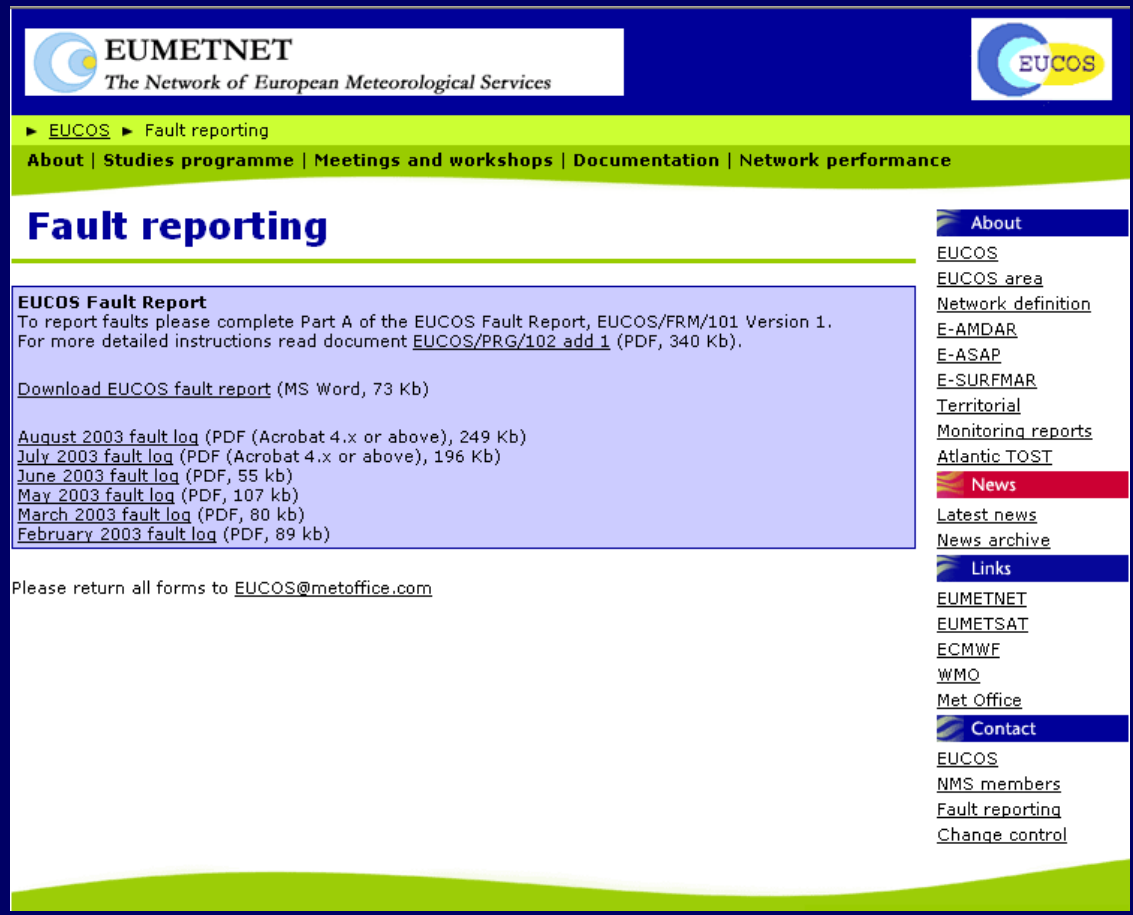
More about the radiosonde statistics

Download raw data as a csv file
(right-click on the link and choose 'Save target/link as...')

Back to network performance

Station ID	Timeliness within			Soundings in 24 hours (UT)				100hPa Ht (O-B)		50hPa Ht (O-B)		Terminal sounding height (hPa)	
	HH+15	HH+45	HH+120	0000	0600	1200	1800	Bias	Std Dev	Bias	Std Dev	0000UT	1200UT
01001	0	2	2	1	0	1	0	-29.50	9.19	-2.00	---	100.00	16.00
01028	0	1	2	1	0	1	0	-4.50	7.78	5.00	9.90	14.50	20.00
01152	0	0	2	1	0	1	0	-38.00	9.90	3.50	12.02	20.00	15.30
01400	0	2	2	1	0	1	0	---	---	---	---	300.00	500.00
01415	0	1	2	1	0	1	0	-45.00	72.12	27.00	---	27.70	100.00
02365	0	2	2	1	0	1	0	-34.50	14.85	16.50	4.95	49.20	49.40
02591	0	0	2	1	0	1	0	-32.00	18.38	-19.50	4.95	26.50	20.00
02836	0	0	2	1	0	1	0	-19.00	0.00	6.50	3.54	27.10	10.00
02963	0	2	2	1	0	1	0	-23.00	8.49	12.50	2.12	30.00	30.00
03005	0	0	2	1	0	1	0	-8.50	14.85	15.00	4.24	8.80	3.10
03238	0	2	2	1	0	1	0	-0.50	20.51	-5.50	24.75	26.00	30.20
03808	0	0	2	1	0	1	0	43.50	9.19	32.00	18.38	6.10	5.50
03918	0	0	2	1	0	1	0	39.00	5.66	24.50	16.26	20.60	21.00
03953	0	0	4	1	1	1	1	48.50	27.58	41.00	12.73	10.00	284.00
04018	0	1	2	1	0	1	0	-19.00	31.11	53.00	---	100.00	4.60
04220	0	2	2	1	0	1	0	-17.50	7.78	-23.50	13.44	18.10	18.80
04270	0	0	2	1	0	1	0	-9.00	7.07	1.50	21.92	5.00	7.60
04320	0	1	2	1	0	1	0	-21.50	9.19	-38.50	7.78	10.00	19.30
04339	0	0	2	1	0	1	0	-22.50	4.95	-5.00	15.56	12.90	5.40
04360	0	0	2	1	0	1	0	-33.00	1.41	-4.50	2.12	14.90	13.30

EUCOS Website:
Fault Report Summary



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EUCOS

► EUCOS ► Fault reporting

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Fault reporting

EUCOS Fault Report
To report faults please complete Part A of the EUCOS Fault Report, EUCOS/FRM/101 Version 1.
For more detailed instructions read document EUCOS/PRG/102 add 1 (PDF, 340 Kb).

Download EUCOS fault report (MS Word, 73 Kb)

August 2003 fault log (PDF (Acrobat 4.x or above), 249 Kb)
July 2003 fault log (PDF (Acrobat 4.x or above), 196 Kb)
June 2003 fault log (PDF, 55 kb)
May 2003 fault log (PDF, 107 kb)
March 2003 fault log (PDF, 80 kb)
February 2003 fault log (PDF, 89 kb)

Please return all forms to EUCOS@metoffice.com

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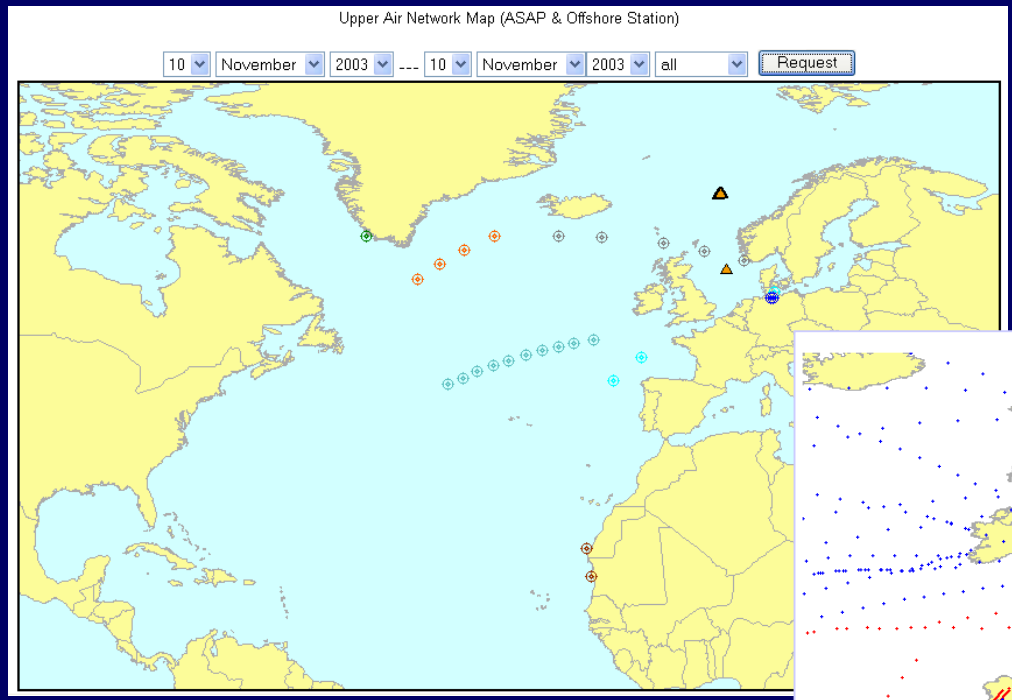

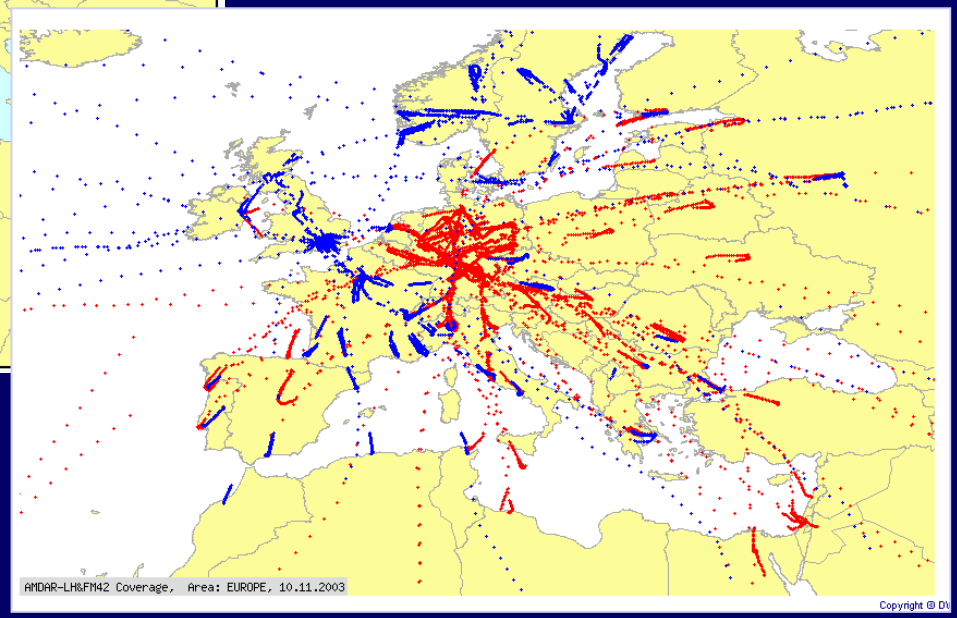

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