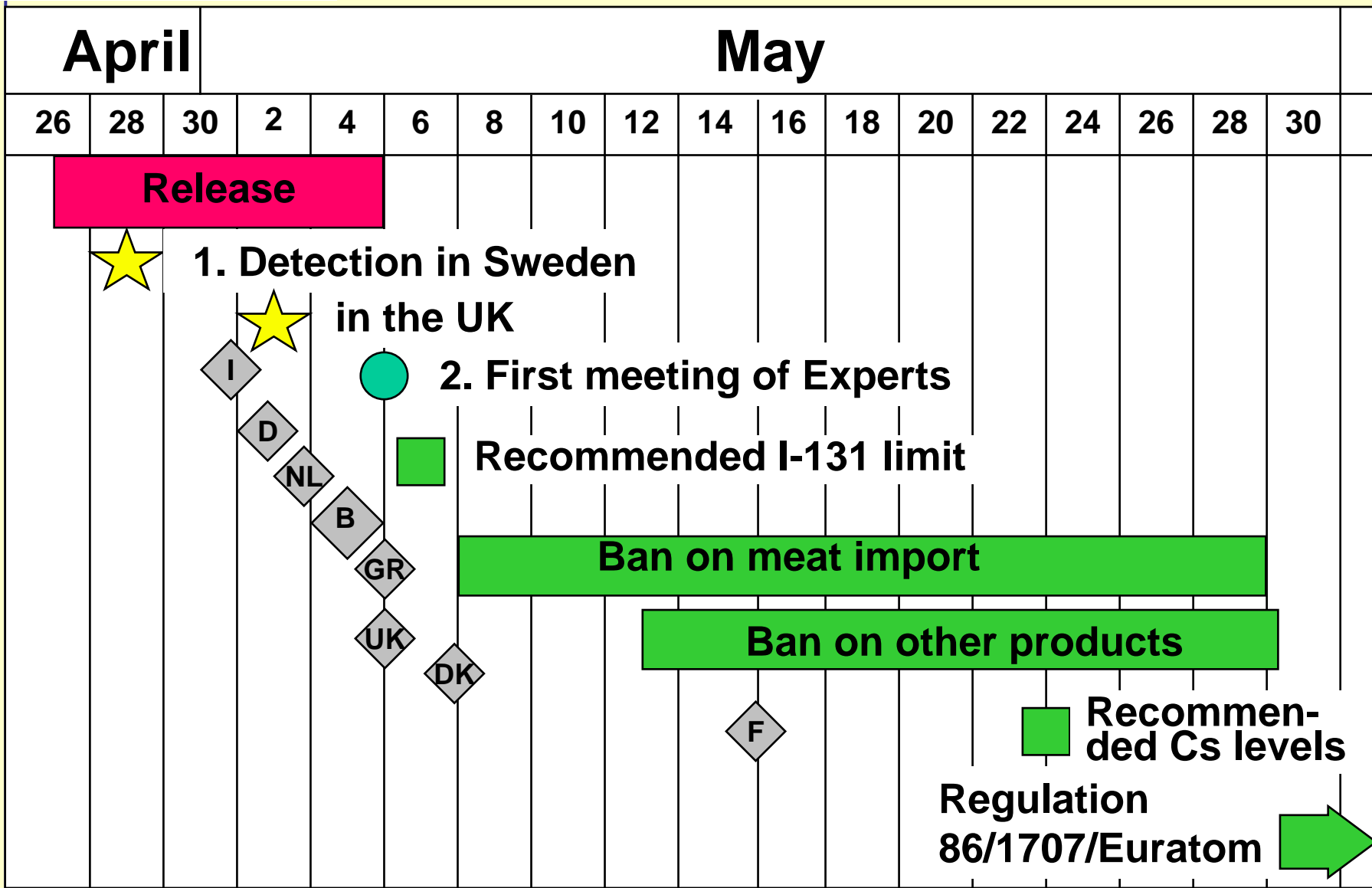
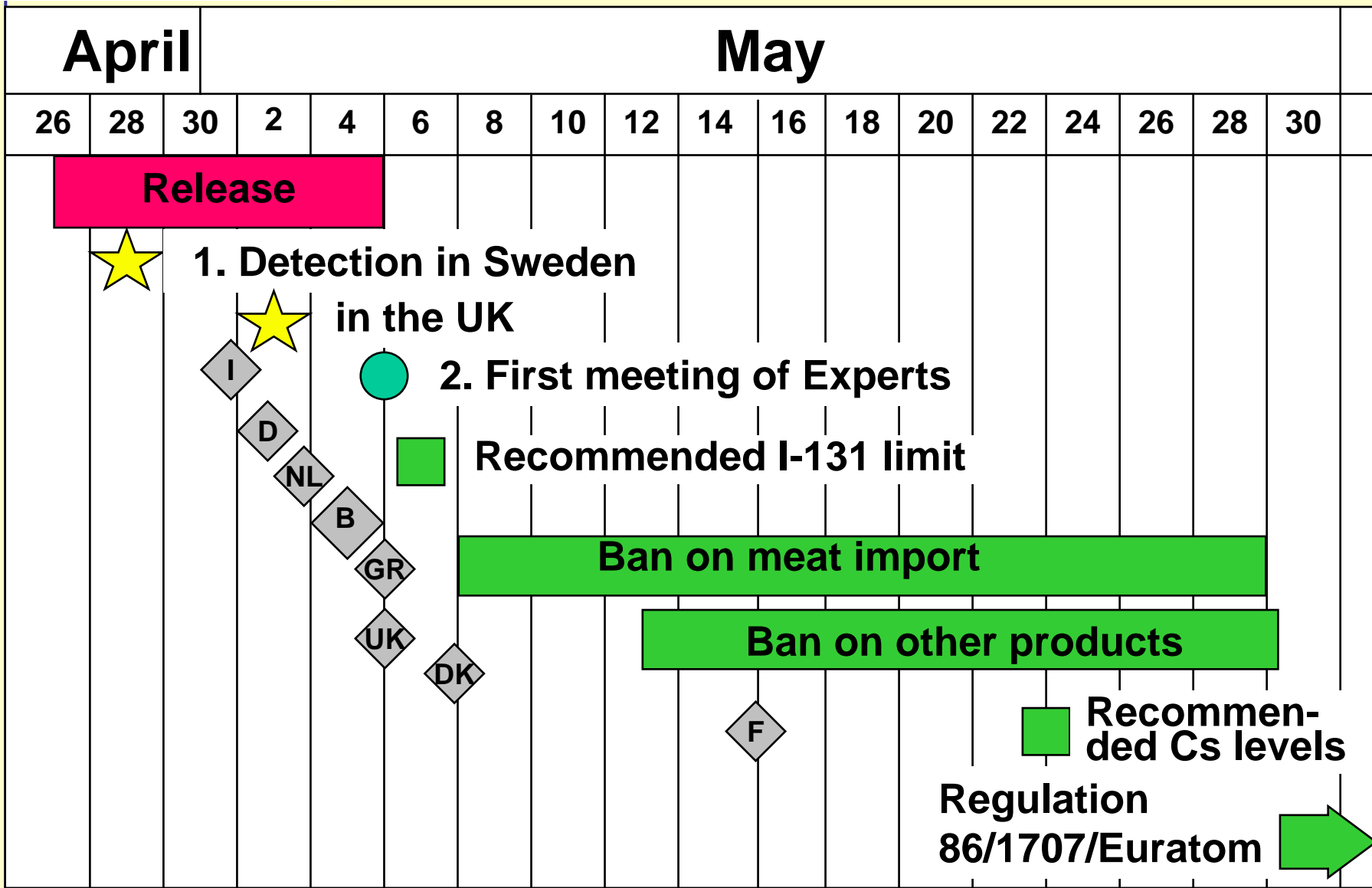
An aerial photograph of the Chernobyl nuclear power plant. The image shows the main reactor building, which is heavily damaged and partially collapsed. A large, white, cylindrical containment structure is visible in the foreground, partially obscured by the damaged building. The surrounding area is a mix of industrial structures and open land. The sky is overcast.

**International environmental
radioactivity information exchange:
the Chernobyl experience**

Marc De Cort



| National control measures | BE | DE | DK | ES | FR | GR | IE | IT | LU | NL | PT | UK |
|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|
| wash vegetables | * | | * | | | * | | * | | * | | |
| avoid vegetables | | | | | | * | | | * | * | | |
| 250 Bq/kg vegetables | | * | | | | | | | | | | |
| 1000 Bq/kg vegetables | * | | | | | | | | | | | |
| prohibit vegetables | | | | | | | | * | | | | |
| storage of food | | | | | * | * | | | | | | |
| do not drink rainwater | | | | | | * | | | | | | * |
| 500 Bq/l I Milk | * | * | | | | * | | | | * | | |
| prohibit sheep and goats milk | | | | | | * | | | | * | | |
| prohibit sheep and goats meat | | | | | | * | | | | | | * |
| no fresh fodder | * | | * | | | | | * | | * | | |
| frequent washing | | | | | | * | | | | | | |



Chernobyl Regulation

- **30 May 1986**
- **Cesium isotopes**
 - **370 Bq/kg for dairy produce/babyfood**
 - **600 Bq/kg for other foodstuffs**
- **extended till 31 March 2010**

http://europa.eu.int/comm/energy/nuclear/radioprotection/index_en.htm

The role of the European Community since the Chernobyl accident

- **ECURIE-Decision (87/600/Euratom)**
- **Information Directive (89/618/Euratom)**
- **Basic Safety Standards (96/29/Euratom)**
- **Foodstuff legislation**
 - **Post Chernobyl**
 - **In case of a future accident**

http://europa.eu.int/comm/energy/nuclear/radioprotection/index_en.htm

Commission Recommendation

COMMISSION RECOMMENDATION
of 14 April 2003
on the protection and information of the public with regard to exposure resulting from the continued radioactive caesium contamination of certain wild food products as a consequence of the accident at the Chernobyl nuclear power station

(notified under document number C(2003) 510)

(2003/274/EC)

- **On health protection from certain wild food products contaminated as a result of the Chernobyl accident**
 - game, mushrooms, berries
 - information to local population
 - restriction on placing on the market
 - 600 Bq/kg

http://europa.eu.int/comm/energy/nuclear/radioprotection/index_en.htm

EU maximum permitted levels in foodstuffs (future accident)

| Nuclide | Reconstituted FOODSTUFFS | | | |
|-------------------|--------------------------|---------------|-------------|-------------|
| | Baby food | Dairy produce | Other | Beverage |
| Sr-90 | 75 | 125 | 750 | 125 |
| I-131 | 150 | 500 | 2000 | 500 |
| Pu-239 | 1 | 20 | 80 | 20 |
| Cs-134/137 | 400 | 1000 | 1250 | 1000 |

http://europa.eu.int/comm/energy/nuclear/radioprotection/index_en.htm

Joint Research Centre

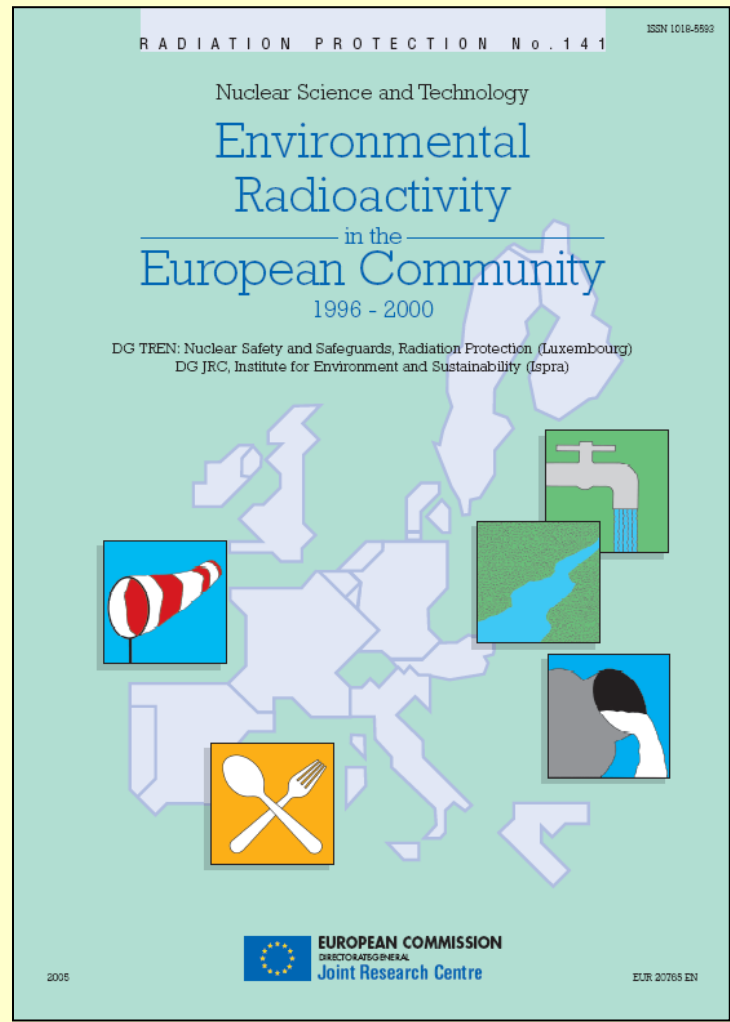
Basic EC legislation

Euratom Treaty, chapter III: Health and Safety

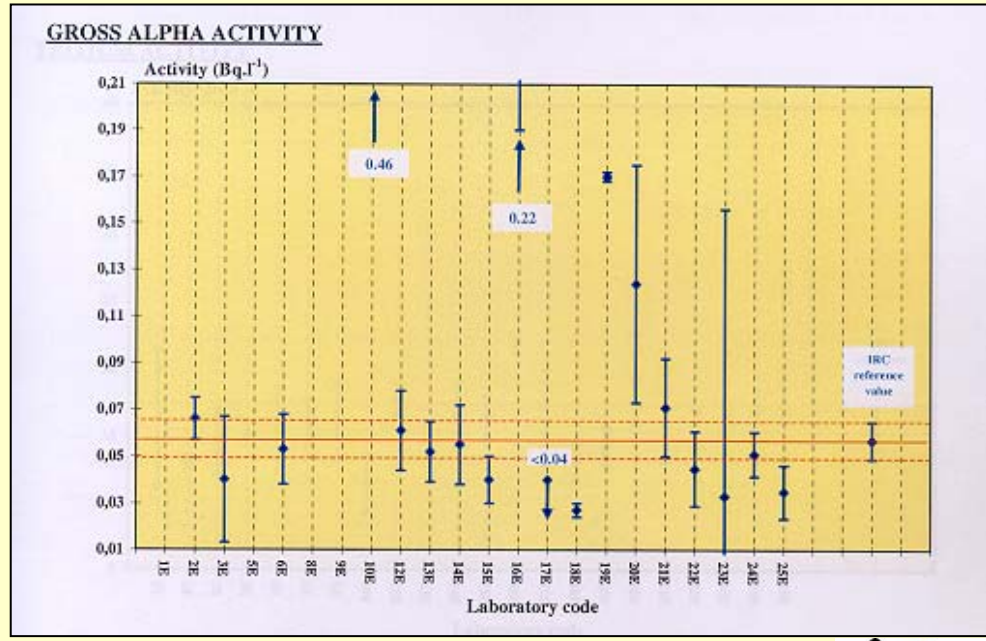
- **Art 35:** Each MS shall establish the facilities necessary to carry out continuous monitoring of the level of radioactivity in the air, water and soil and to ensure compliance with the basic standards.
The Commission shall have the right of access to such facilities, it may verify their operation and efficiency.
- **Art 36:** The appropriate authorities shall periodically communicate information on the checks referred to in art. 35 to the Commission so that it is kept informed of the level of radioactivity to which the public is exposed.

http://europa.eu.int/comm/energy/nuclear/radioprotection/index_en.htm

REM db + reporting:



- REMdb: > 1.8 M records from 1984 onwards
- On-line access (<http://rem.jrc.cec.eu.int>)
- Standardisation of data-input
- input processing software (EasyProteo)
- Use of reporting levels
- international inter-comparison exercises

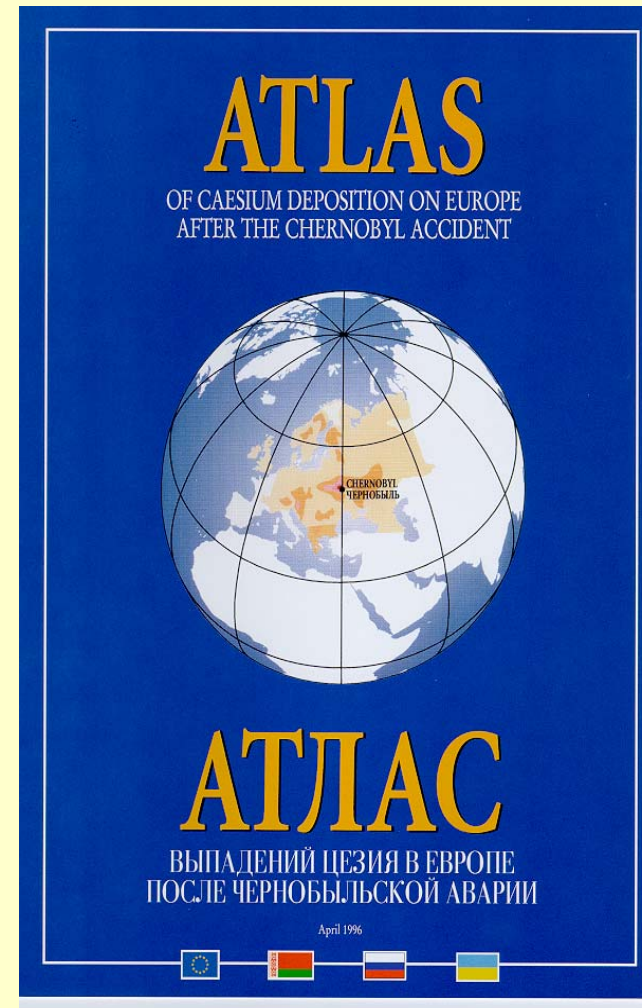


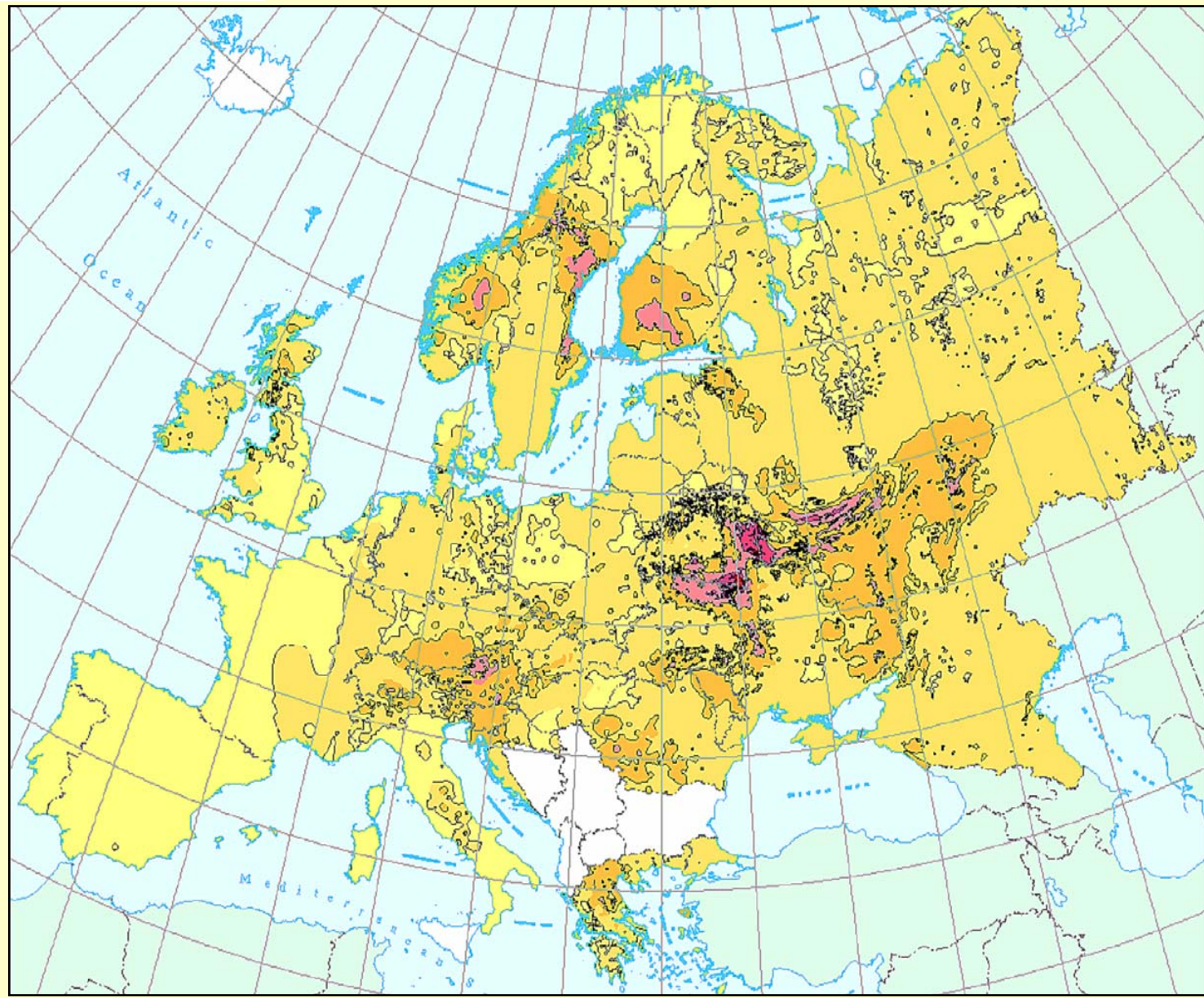
Chernobyl Atlas

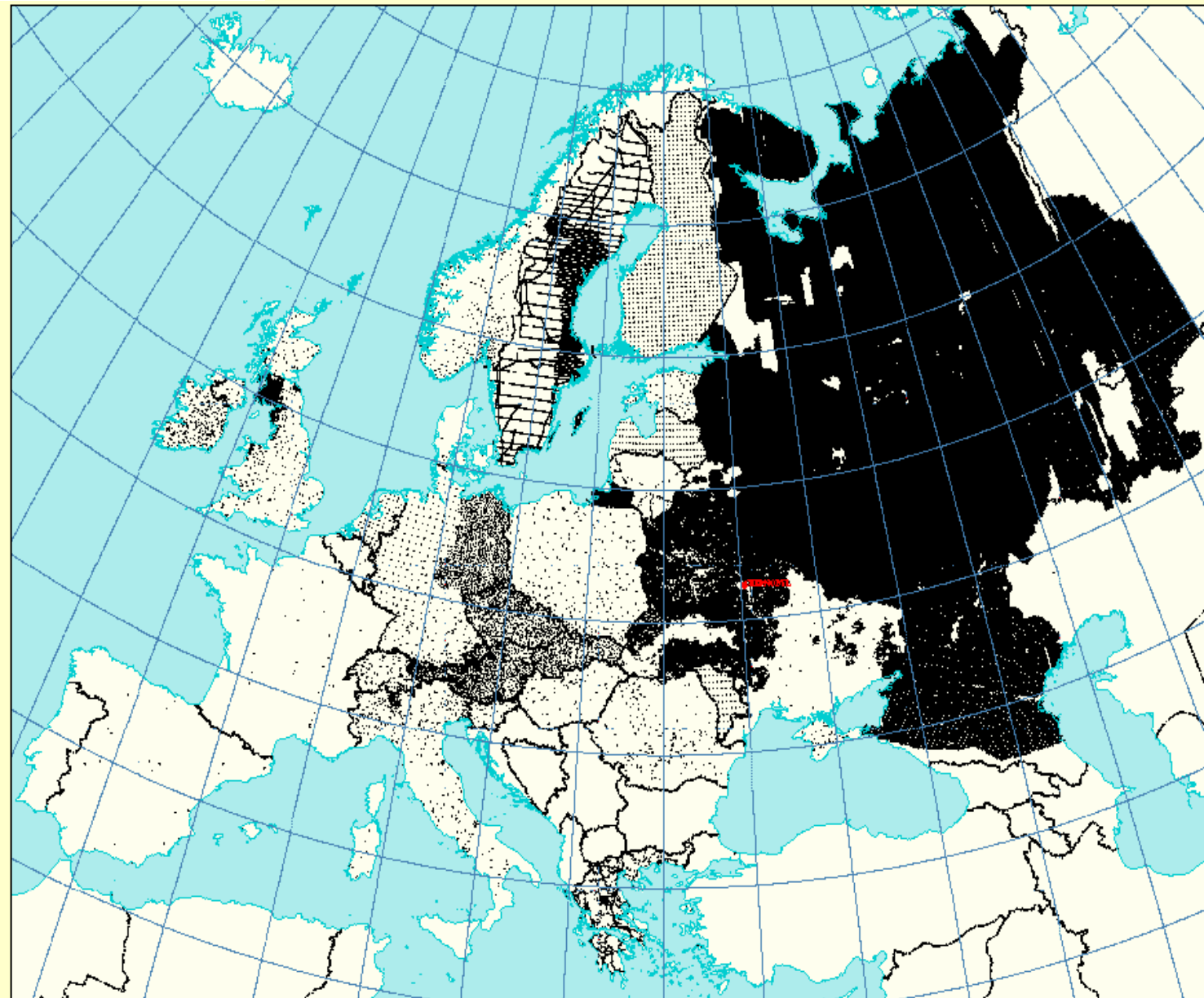
Objectives

- collection and harmonised storage of ^{137}Cs deposition data ($\pm 400,000$) in 31 European countries
- describe ^{137}Cs deposition patterns: use of GIS and development of spatial data analysis / geo-statistical techniques for data interpolation and presentation
- estimation of total amount of deposited ^{137}Cs
- training of CIS scientists

<http://rem.jrc.cec.eu.int>







Emergency response

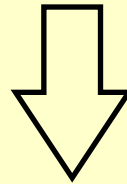
- **short term:**
 - immediate application of pre-established levels
 - immediate countermeasures
 - animals
 - vegetables
 - prompt communication with public
 - envisage need for correction of the levels
- **intermediate term:**
 - rapid assessment of the contaminated area (GIS)
 - evaluation of the economic impact/FAO
 - establishment of adequate restrictions
- **long term:**
 - foodstuff monitoring
 - agricultural countermeasures/food processing
 - stakeholder /consumer involvement
 - return normal

ECURIE

- EC** - Euratom Treaty - art 35-36
- EC** - Basic Safety Standards Directive - art. 45

- IAEA** - Early Notification Convention (27/10/86)
- IAEA** - Early Assistance Convention (26/2/87)

- EC** - Council Decision 87/600 (14/12/87)

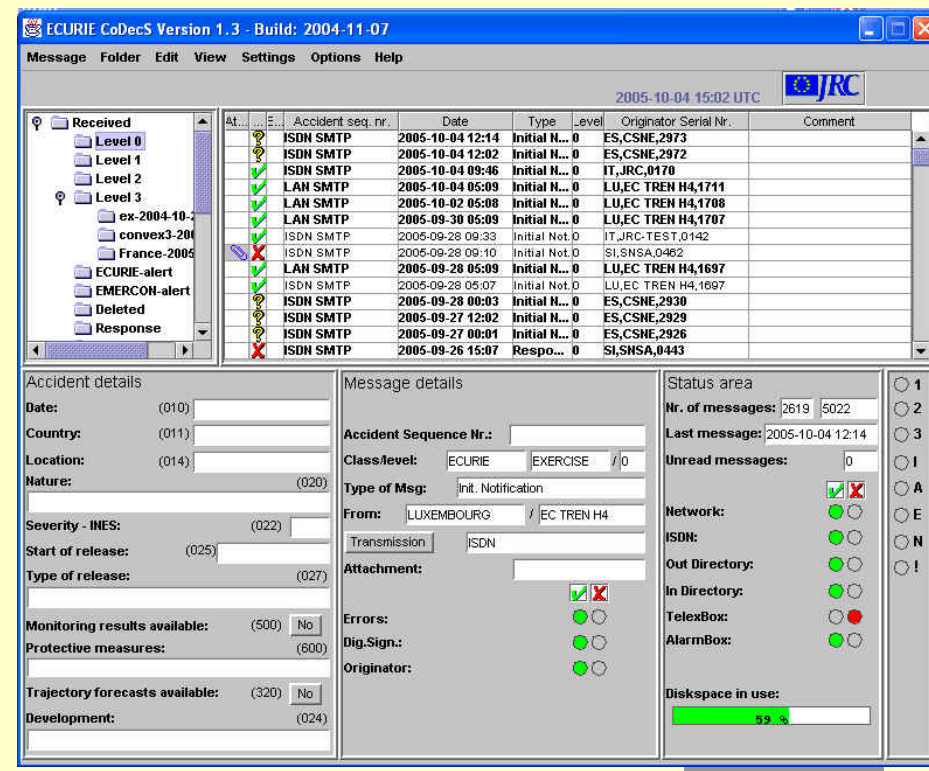


**European Commission Urgent Radiological
Information Exchange (ECURIE)**

European Community Urgent Radiological Information Exchange (ECURIE)

- Early Notification system for Nuclear accidents, based on 87/600 Council Decision;
- 24h Contact Points (EU25 + CH)
- Transmission of Notifications, Information and Data.
- Notifications are created, sent and received by the CoDecS software in use at the CP's and CA's;
- compatibility with IAEA
- Developed by REM, operated by DG TREN H.4 in Luxembourg.

<http://rem.jrc.cec.eu.int>



ECURIE CoDecS Version 1.3 - Build: 2004-11-07

Message Folder Edit View Settings Options Help

2005-10-04 15:02 UTC

| At... | ... | Accident seq. nr. | Date | Type | Level | Originator | Serial Nr. | Comment |
|-------|-----|-------------------|------------------|---------------|-------|--------------------|------------|---------|
| | | ISDN SMTP | 2005-10-04 12:14 | Initial N... | 0 | ES,CSNE,2973 | | |
| | | ISDN SMTP | 2005-10-04 12:02 | Initial N... | 0 | ES,CSNE,2972 | | |
| | | ISDN SMTP | 2005-10-04 09:46 | Initial N... | 0 | IT,JRC,0170 | | |
| | | LAN SMTP | 2005-10-04 05:09 | Initial N... | 0 | LU,EC TREN H4,1711 | | |
| | | LAN SMTP | 2005-10-02 05:08 | Initial N... | 0 | LU,EC TREN H4,1708 | | |
| | | LAN SMTP | 2005-09-30 05:09 | Initial N... | 0 | LU,EC TREN H4,1707 | | |
| | | ISDN SMTP | 2005-09-28 09:33 | Initial Not 0 | | IT,JRC-TEST,0142 | | |
| | | ISDN SMTP | 2005-09-28 09:10 | Initial Not 0 | | SI,SNSA,0462 | | |
| | | LAN SMTP | 2005-09-28 05:09 | Initial N... | 0 | LU,EC TREN H4,1697 | | |
| | | ISDN SMTP | 2005-09-28 05:07 | Initial Not 0 | | LU,EC TREN H4,1697 | | |
| | | ISDN SMTP | 2005-09-28 00:03 | Initial N... | 0 | ES,CSNE,2930 | | |
| | | ISDN SMTP | 2005-09-27 12:02 | Initial N... | 0 | ES,CSNE,2929 | | |
| | | ISDN SMTP | 2005-09-27 00:01 | Initial N... | 0 | ES,CSNE,2926 | | |
| | | ISDN SMTP | 2005-09-26 15:07 | Respo... | 0 | SI,SNSA,0443 | | |

Accident details

Date: (010)

Country: (011)

Location: (014)

Nature: (020)

Severity - IHES: (022)

Start of release: (025)

Type of release: (027)

Monitoring results available: (500) No

Protective measures: (600)

Trajectory forecasts available: (320) No

Development: (024)

Message details

Accident Sequence Nr.:

Class/level: ECURIE EXERCISE / 0

Type of Msg: Init. Notification

From: LUXEMBOURG / EC TREN H4

Transmission: ISDN

Attachment:

Errors:

Dig.Sign.:

Originator:

Status area

Nr. of messages: 2619 / 5022

Last message: 2005-10-04 12:14

Unread messages: 0

Network:

ISDN:

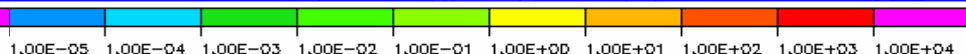
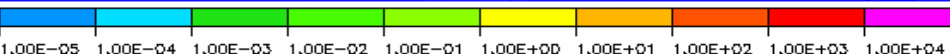
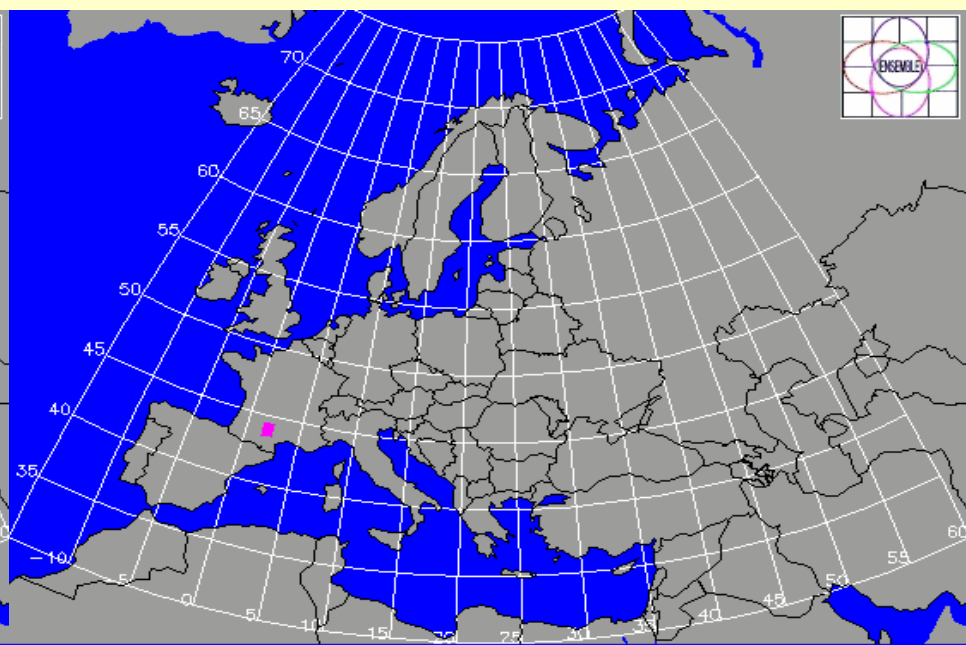
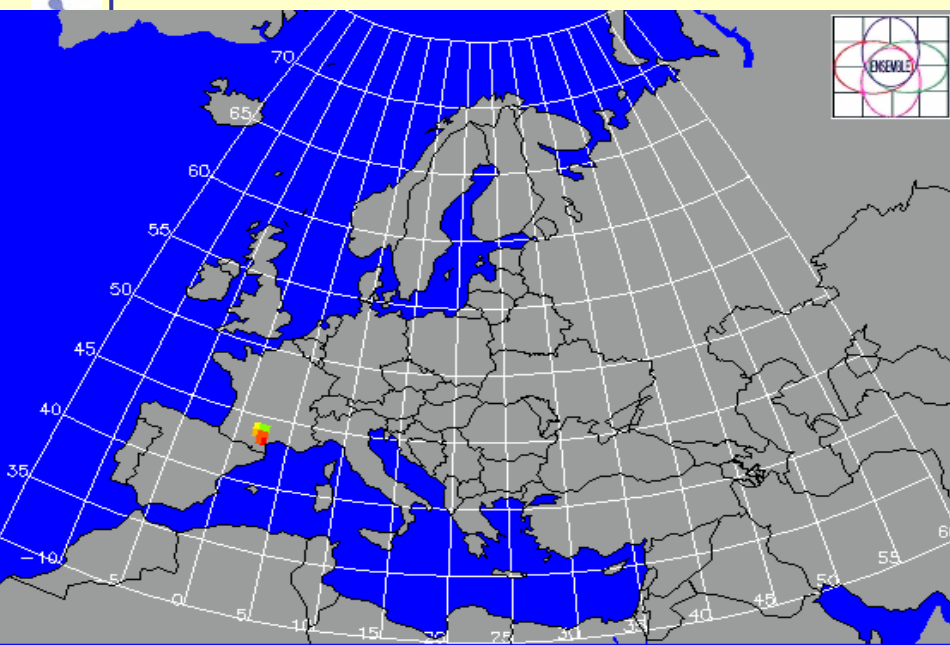
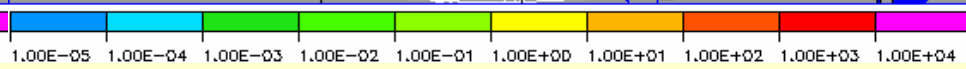
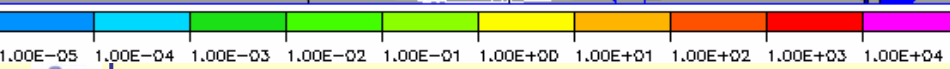
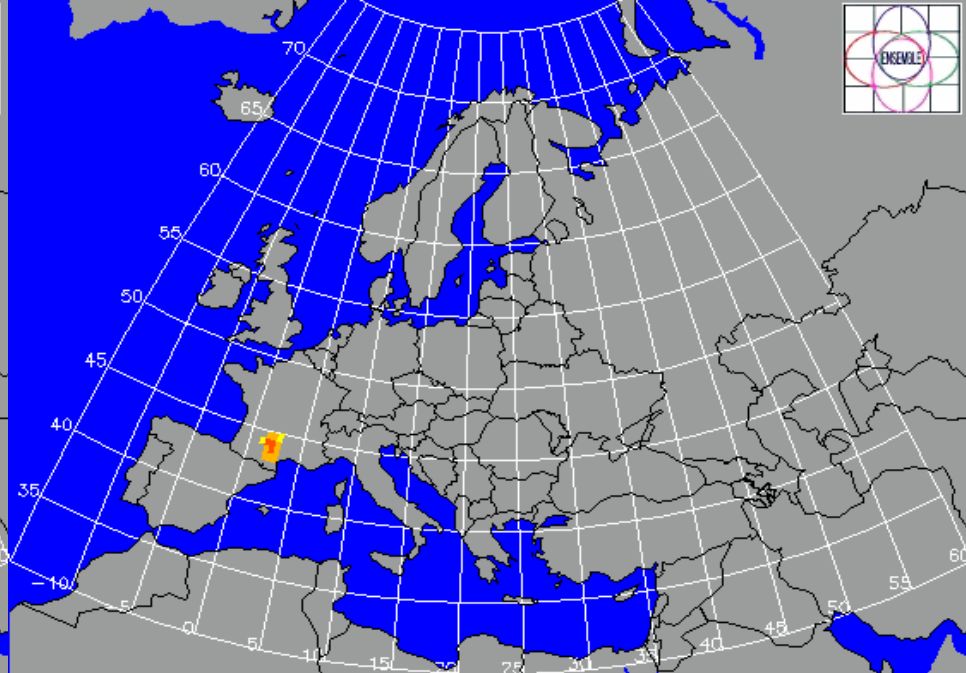
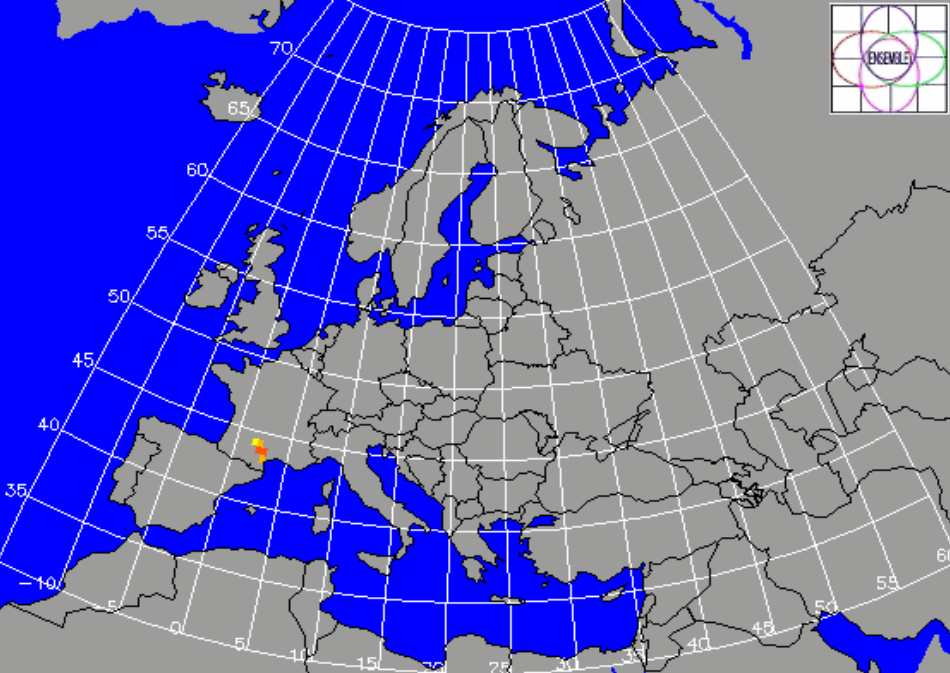
Out Directory:

In Directory:

TelexBox:

AlarmBox:

Diskspace in use: 59 %





What is ENSEMBLE?

Joint Research Centre

- Exercise 99 – Agreement on threshold level for concentration (0 m agl) of PMCH
- Date and time: 1994-10-23 18:00 UTC (+2h0m after release start)
- Threshold level = $1.e-10$ Bq/m³

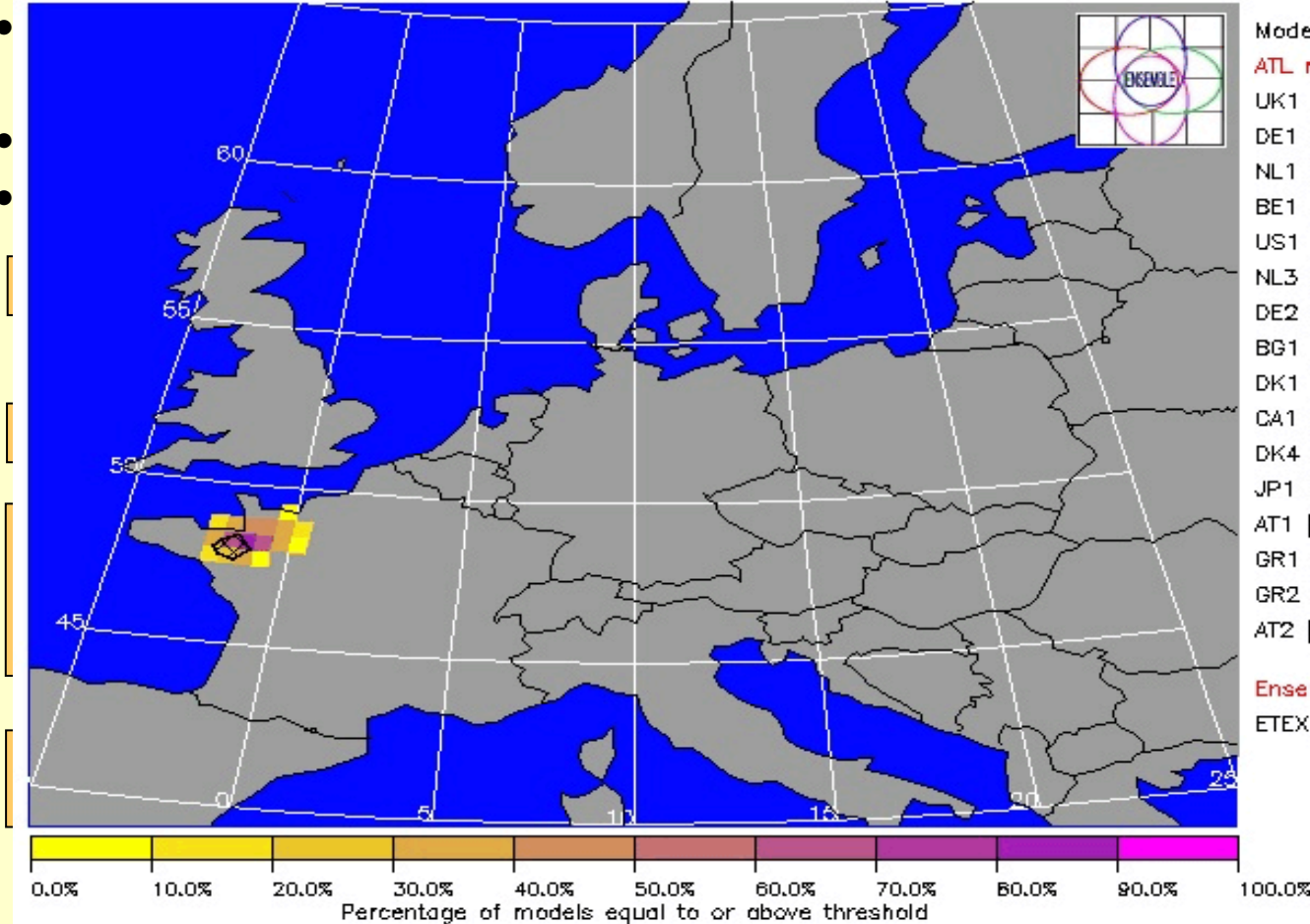
Release from ETEX
 Location: 02:00 W 48:03 N
 Start: 1994-10-23 16:00 UTC
 Duration: 11:50 hours

Model(s) [delta meteo/delta upload]

ATL members:

- UK1 [+62h0m/+74327h49m]
- DE1 [+62h0m/+74488h23m]
- NL1 [+62h0m/+71947h26m]
- BE1 [+62h0m/+73964h44m]
- US1 [+62h0m/+74020h4m]
- NL3 [+62h0m/+73433h52m]
- DE2 [+62h0m/+74609h29m]
- BG1 [+62h0m/+73796h13m]
- DK1 [+56h0m/+72091h2m]
- CA1 [+56h0m/+74637h10m]
- DK4 [+56h0m/+72091h2m]
- JP1 [-4h0m/+74567h59m]
- AT1 [-16h0m/+73122h8m]
- GR1 [-16h0m/+75529h23m]
- GR2 [-16h0m/+75624h28m]
- AT2 [-16h0m/+73483h3m]

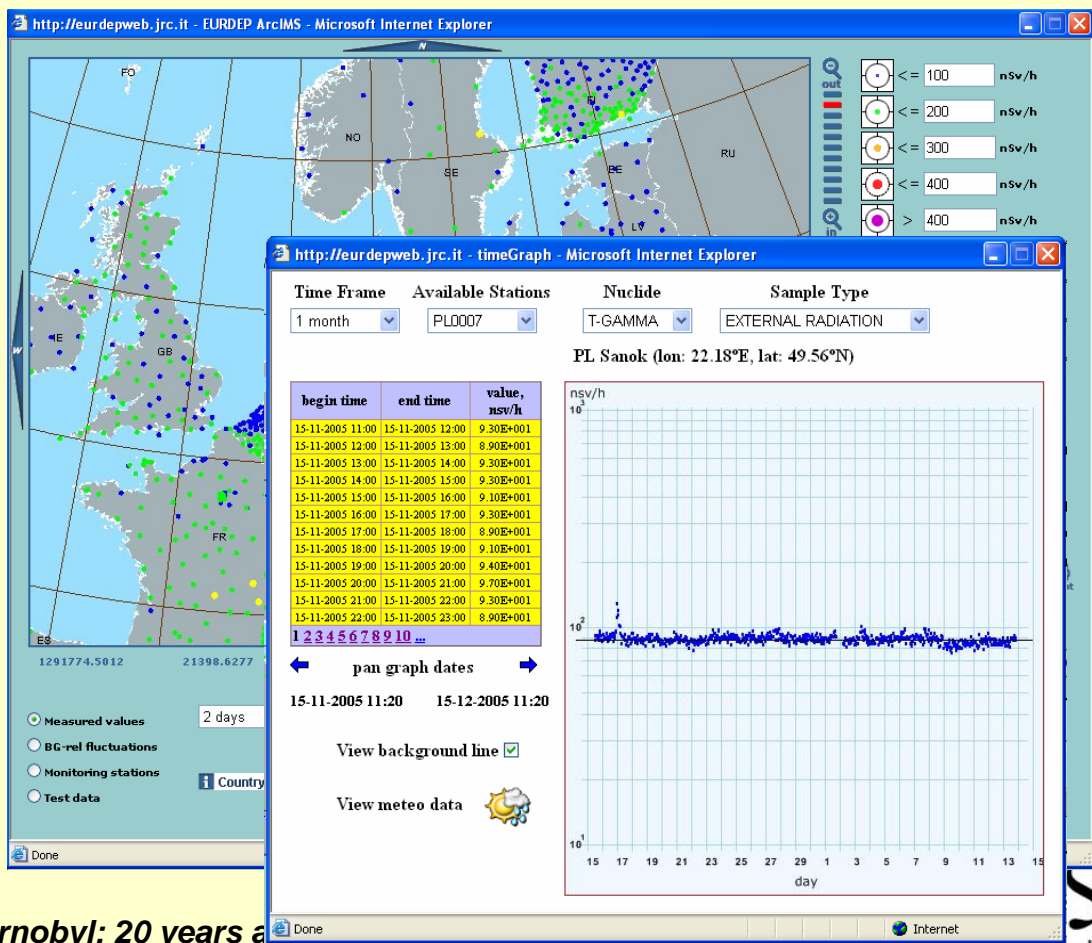
Ensemble (crosshatch): none
 ETEX [-16h0m/+71949h56m]



European Radiological Data Exchange Platform (EURDEP)

Timely, free and continuous exchange with European countries of information relevant to the radiological situation to support nuclear emergency

- Internationally recognized standard format for radiological data;
- Network (30 European countries participate);
- Routine (daily transmissions) and emergency (2-hourly transmissions) mode;
- Currently mostly γ -dose rates;
- Data-exchange by Email, FTP and mirroring of directories;
- Web-site to view and download data.



Coupling of ENSEMBLE and EURDEP

Ensemble connection to EURDEP database established and running

Model results will be presented on a geo-referenced framework including thematic layers

Web facility redesigned to accommodate new features and to a general applicability (variable domain size and positioning)

Multi-users features with varying privileges depending on the involvement

<http://rem.jrc.cec.eu.int>

