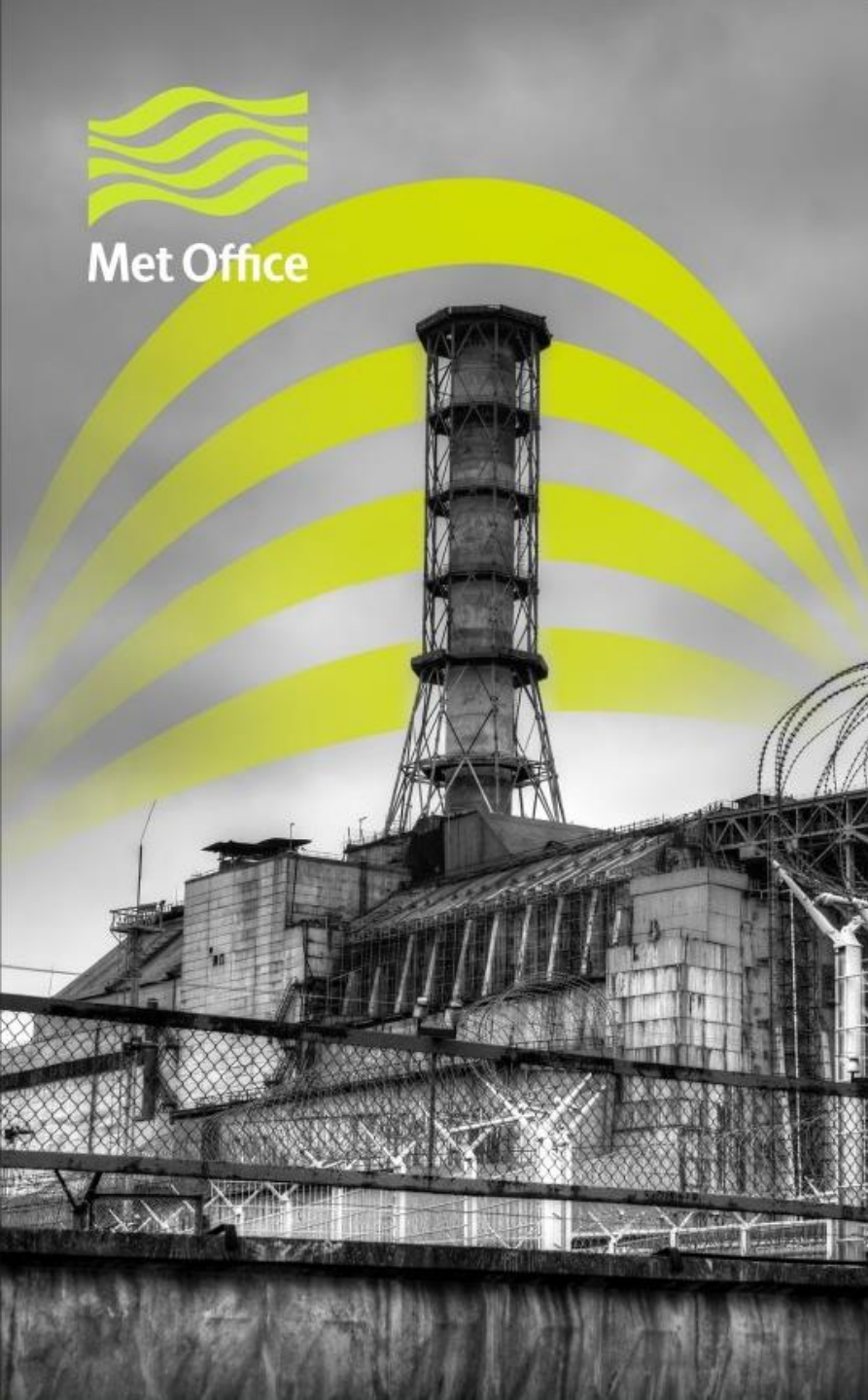




Met Office



# Role of the Met Office in the UK Response to Nuclear Emergencies

Susan Leadbetter, Matthew  
Hort and Sarah Millington



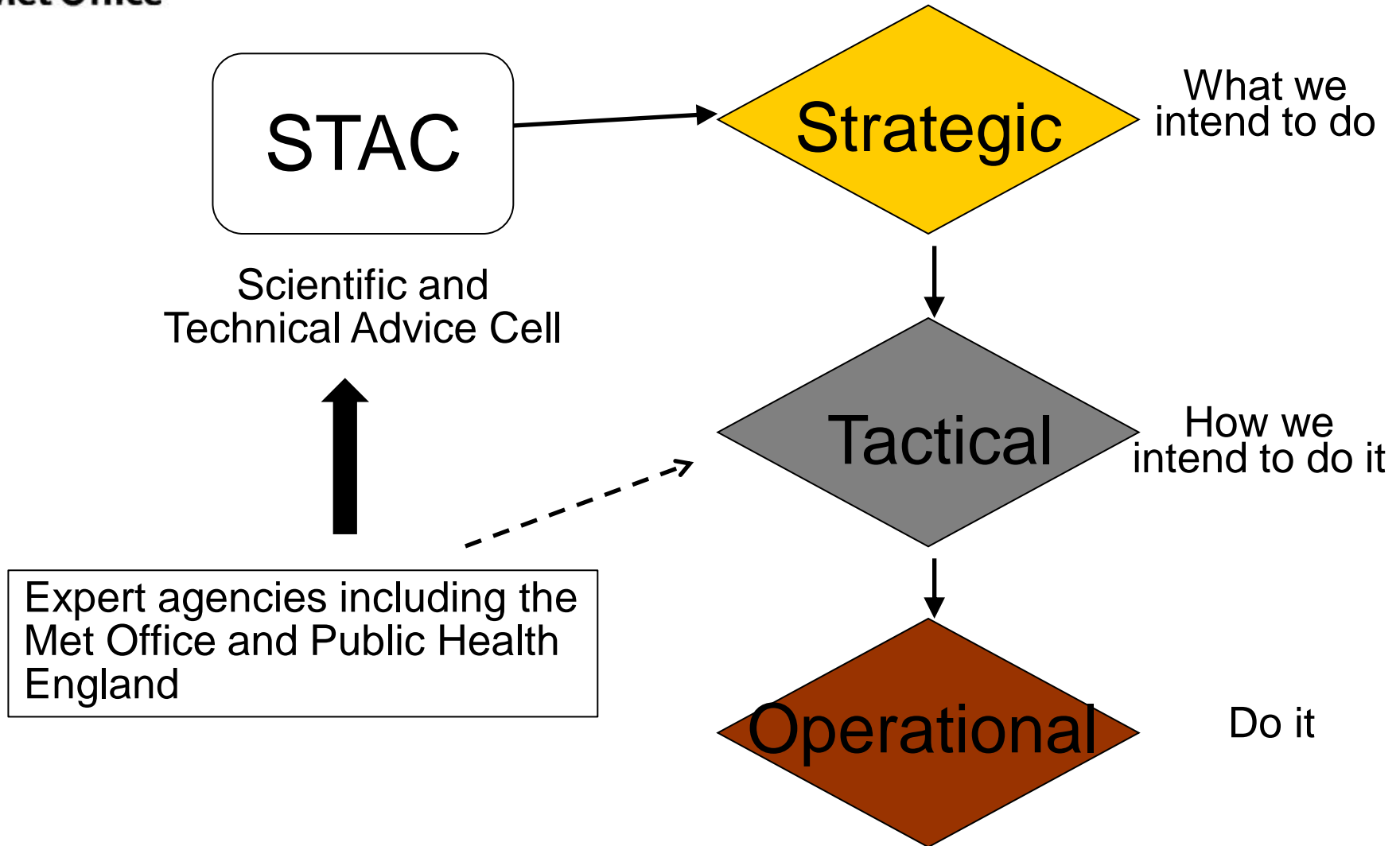
# Local Response

# National Response

- UK response to UK emergency is controlled at the local level
- For larger events government response may be mobilised to provide advice and resources
- UK response to overseas emergency is controlled by government
- Met Office has a support role at both the local and government level



# Local Response Structure

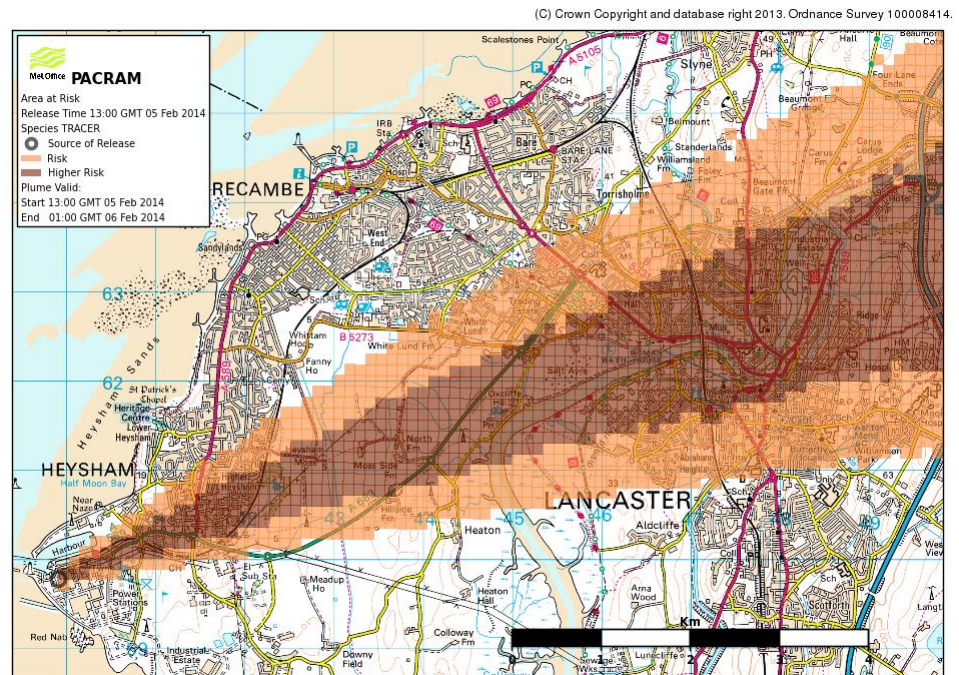




# PACRAM:

Procedures And Communications following Release of rAdioactive Material

- Default response
- Short range forecast (3 hours, 10km)
- Used when information is sparse
- Provided to operators, agencies and emergency services
- Quick to produce. Produces within 20 minutes.

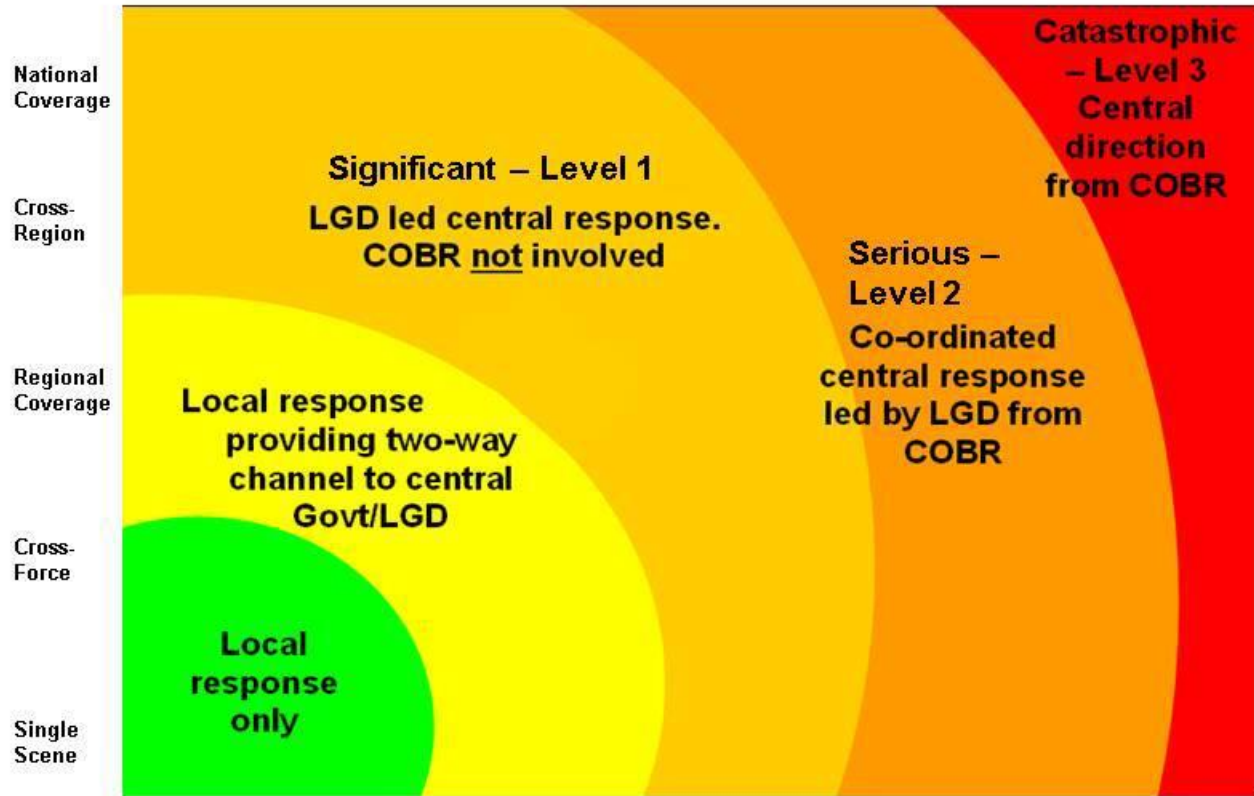




# National Response

## Escalation of the Central Response

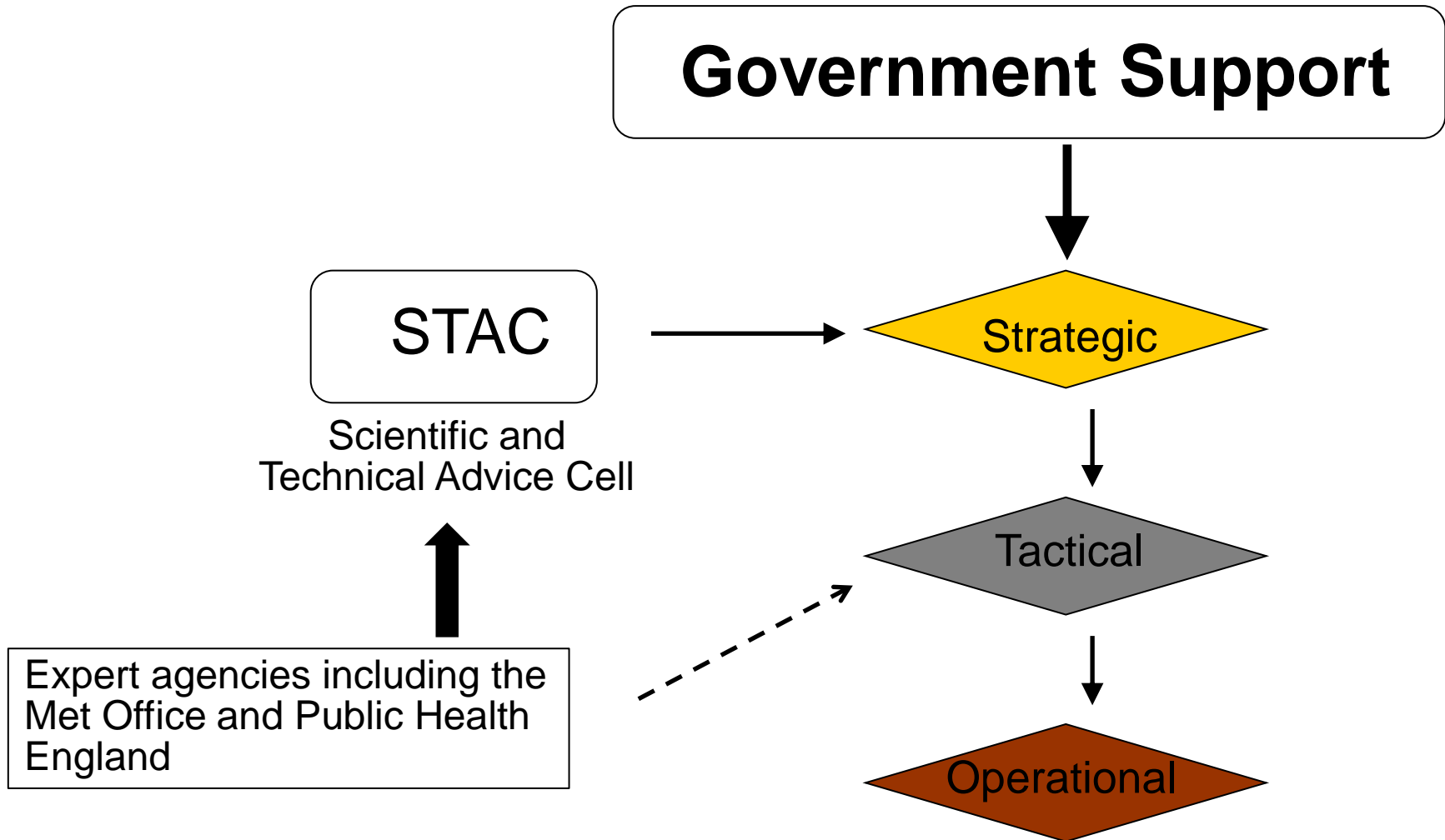
↑  
Increasing Coverage  
(area and/or population)



→ Increasing Impact →

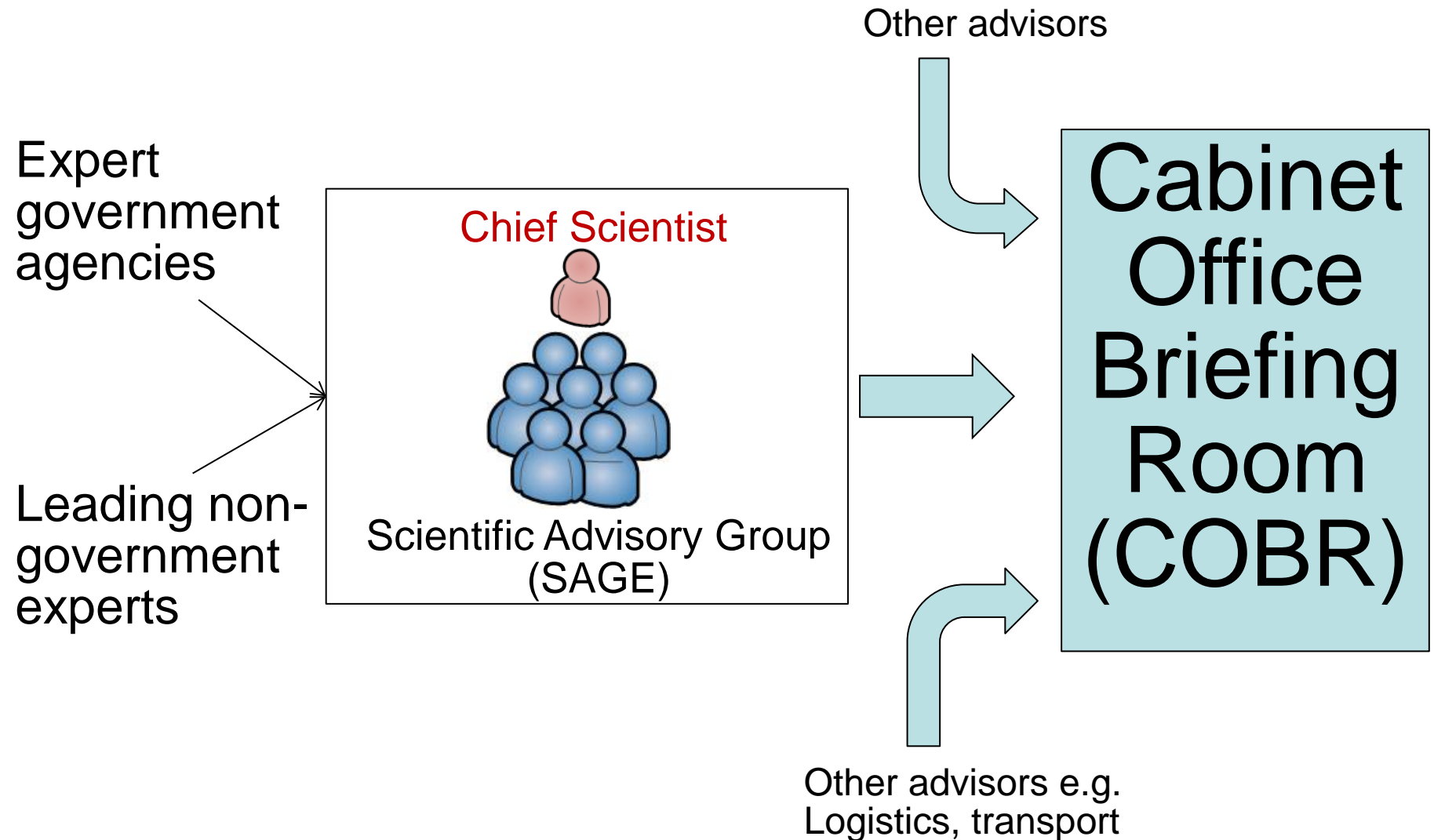


# Government Response

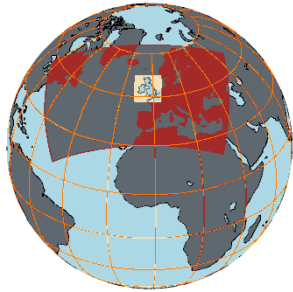




# Scientific Advisory Group for Emergencies



# Example of advice prepared within framework of SAGE



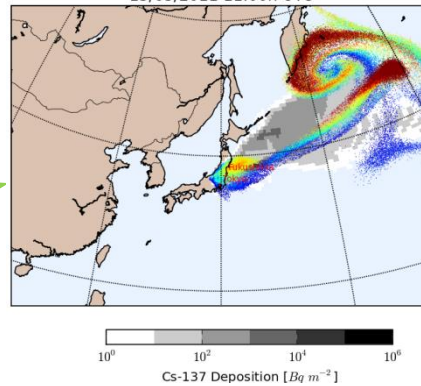
Inputs:

Source information

Weather forecast models

## Dispersion modelling

Fukushima  
15/03/2011 11:00h UTC



## Impact modelling



Dissemination

Everyone responsible for own inputs but

Response is joint

Communication is key

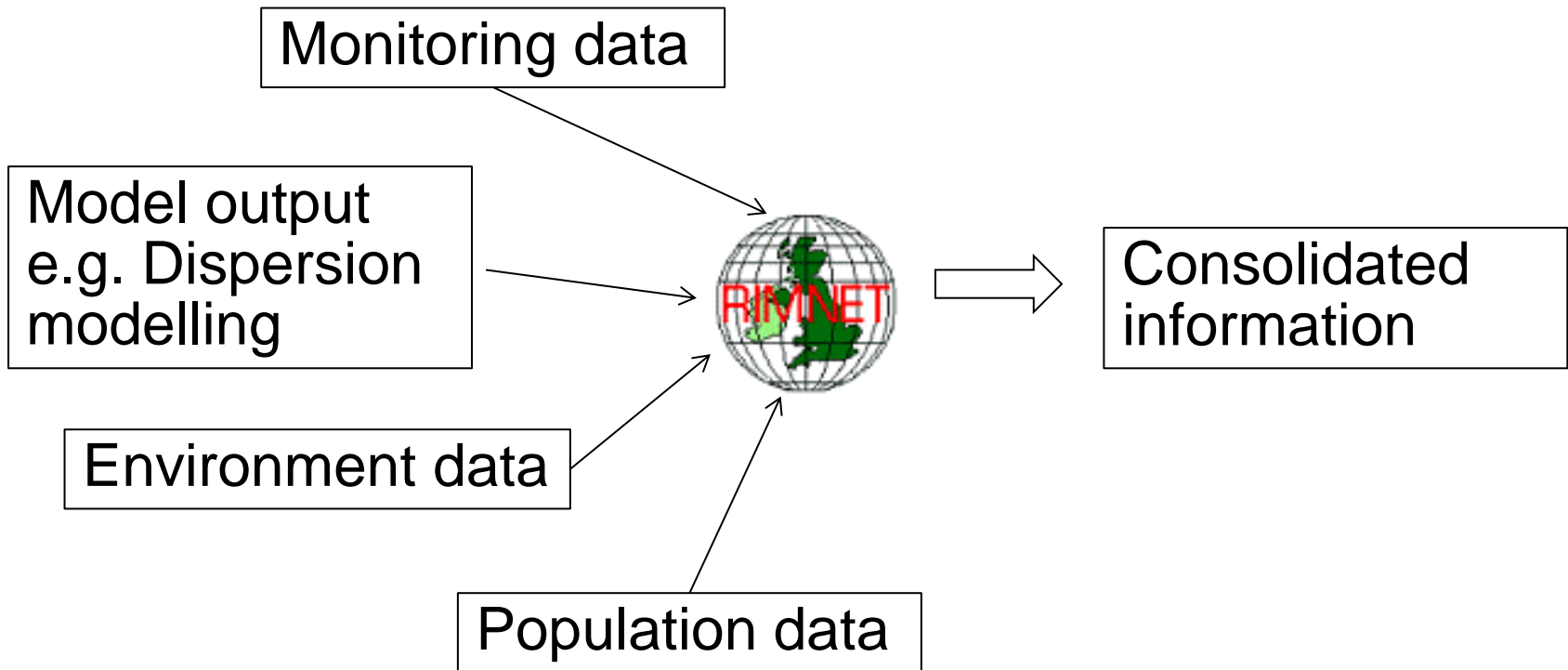




# RIMNET:

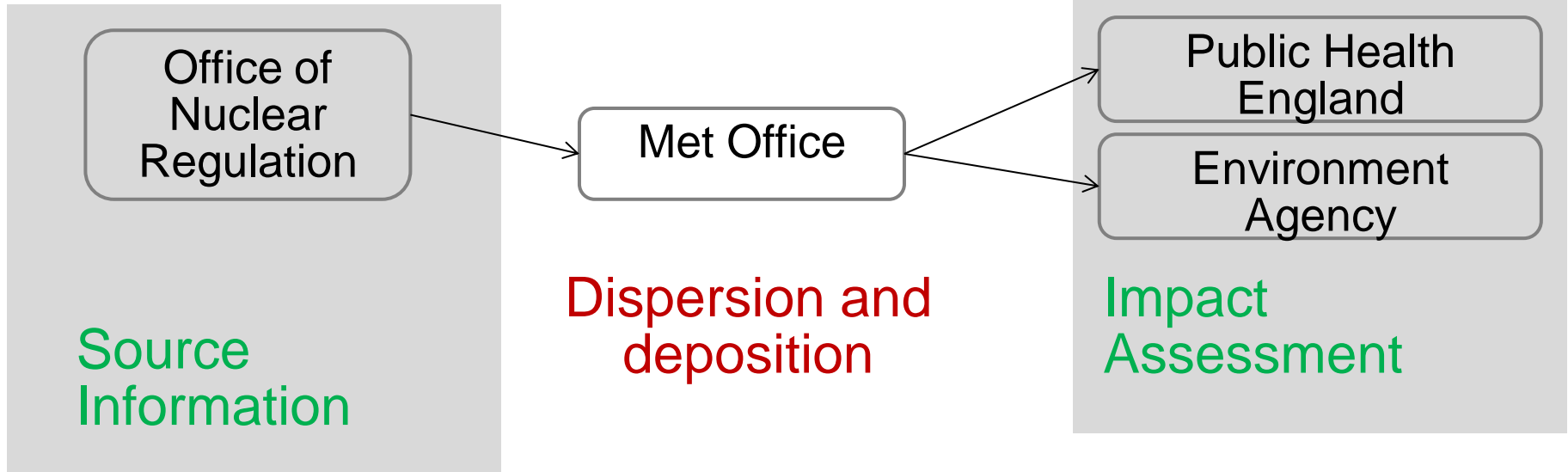
Radiological Incident Monitoring NETwork

- Consolidating information and advice
- Sharing information





# Working Together: During Fukushima

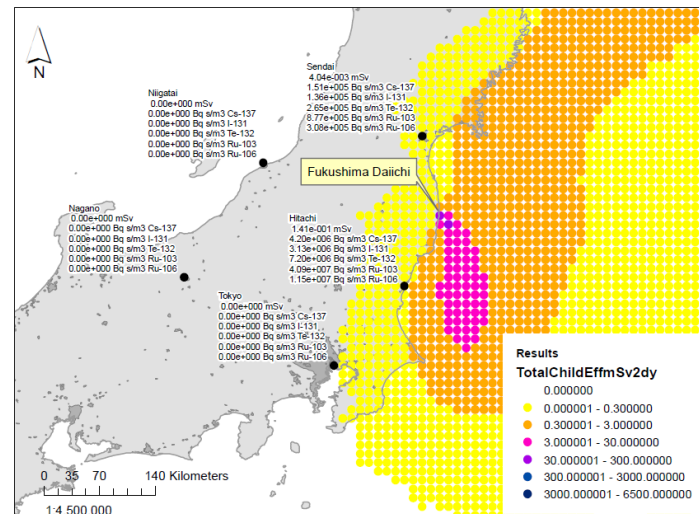


Source Information

Dispersion and deposition

Impact Assessment

- Assessment of current conditions
- What if scenarios (reasonable worst case)





# Working Together:

## After Fukushima

- Aim: Provide rapid assessments of the consequences of radiological releases for emergency response
- Requires joint Agency expertise
- Building relationships
- Requires regular communication (during and outside of events)



Source terms



Weather,  
dispersion



Consequence  
assessment



Display &  
Dissemination



# Operational Model Description

Items	Met Office
Code name	NAME (Numerical Atmospheric-dispersion Modelling Environment)
Development organization	Met Office
Operational organization	Met Office
Air flow model	4 dimensional meteorology from model (e.g. Unified Model or ECMWF)
Gas dispersion model	Lagrangian Particle Model
Dry deposition model Wet deposition model	Deposition velocity or resistance analog model Parametrised with separate coefficients for wash out, rain out, rain and snow
Precipitation data	Input from meteorological model or observed data (radar)
Calculation spatial domain	Variable
Calculation time step	Variable
Output data	Air concentration, deposition, meteorological parameters, cloud gamma dose
Terrain effect	Imported from meteorological model
Source term estimation	Provided by other agencies



# Useful Web Pages

## UK Government Emergency Documentation

- <https://www.gov.uk/preparation-and-planning-for-emergencies-responsibilities-of-responder-agencies-and-others>
- <https://www.gov.uk/emergency-response-and-recovery>

## RIMNET

- <https://www.gov.uk/government/collections/radioactive-incident-monitoring>

## Met Office –Hazard information services

- <http://www.metoffice.gov.uk/publicsector/cbrn>



Met Office



Questions?