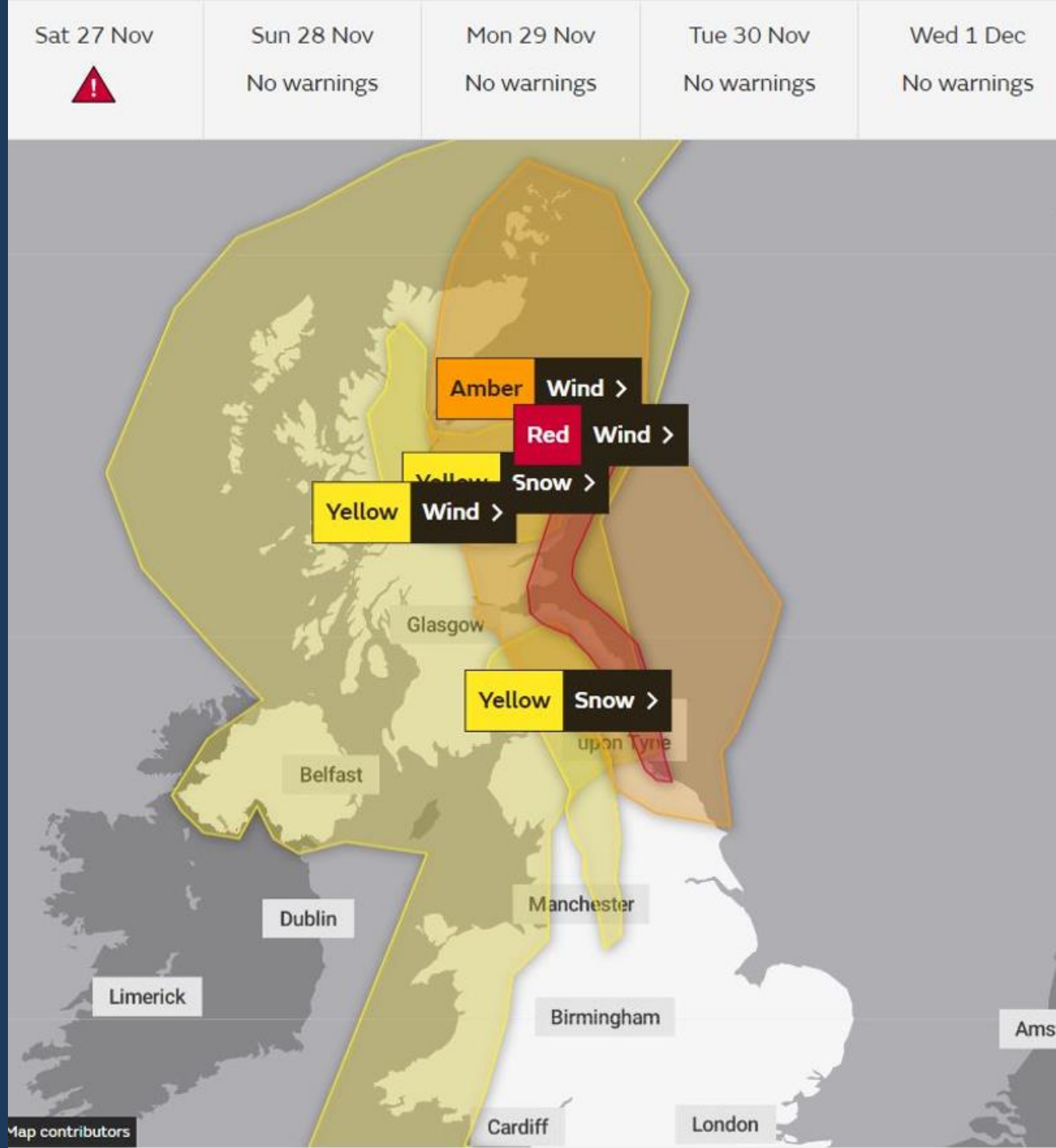
Operational Warnings in the UK

National Severe Weather Warning Service (NSWWS)



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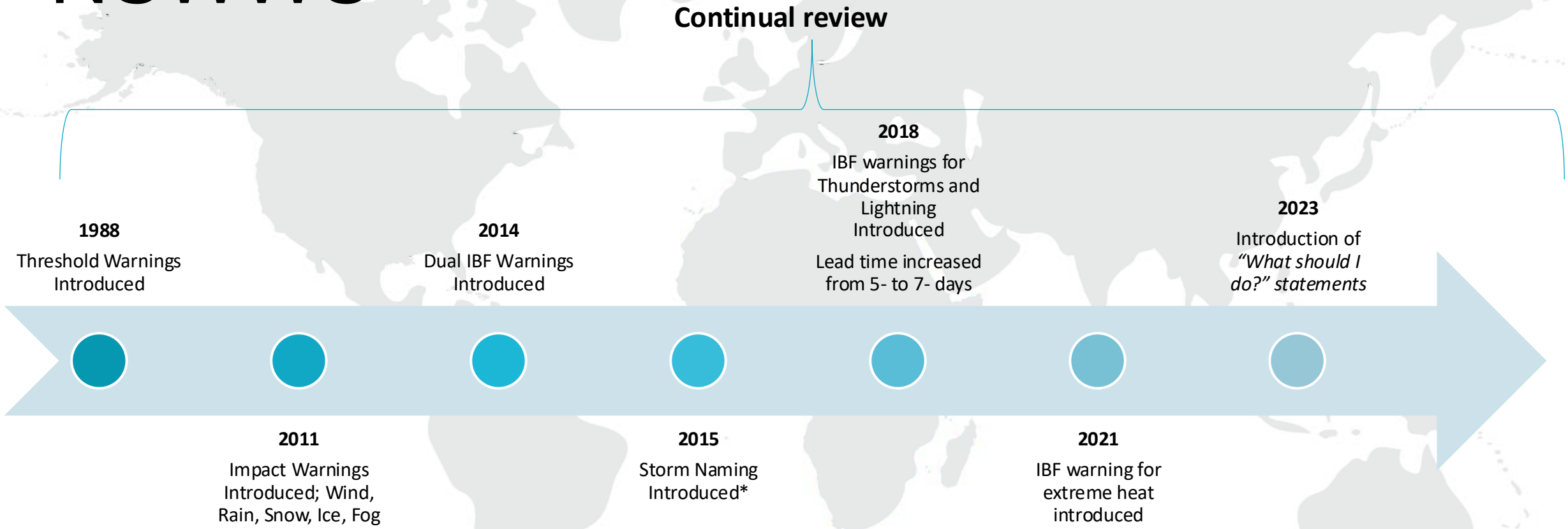
Timeline of Key Developments to NSWWS



*Not directly a development of the NSWWS service but used effectively in conjunction to increase awareness amongst the public.

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NSWWS Warnings

We warn the **public and emergency services** of severe or hazardous weather which has the potential to cause damage, widespread disruption and/or danger to life.

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The Role of the Met Office within UK Resilience

- The UK's Civil Contingencies Act (2004) sets out the legal responsibilities of 'Emergency Responders'
- The Act states that responders……
- ***'must have regard to the Met Office's duty to warn the public, and provide information and advice, if an emergency is likely to occur or has taken place.'***
- Therefore, the role of the Met Office is to keep responders up to date with the latest weather information and to warn and inform the public. The Met Office is designated as a 'Category 2 Responder'
- **This is why NSWWS became impact-based, and why we have the Civil Contingencies Advisors to interpret warnings for responders at local level**

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The Process

GATHER INTELLIGENCE

Forecast of 'severe weather'

Consult Civil Contingencies Advisors

Seek information from emergency responders & partner organisations

Some questions to consider
Forecast uncertainty?
Impact uncertainty?
Intensity of weather?
Time of day?
Time of year?
Location? Rural or urban?
What is 'normal' for the area?
Local vulnerabilities?
Recent conditions?

Finalise and issue (or update) warning

ISSUE

Monitor weather / forecast & impacts

Review Warning

Some questions to consider
Are the impacts as expected?
Are the timings as expected?
Are impacts within the warning area?

EVALUATE & UPDATE

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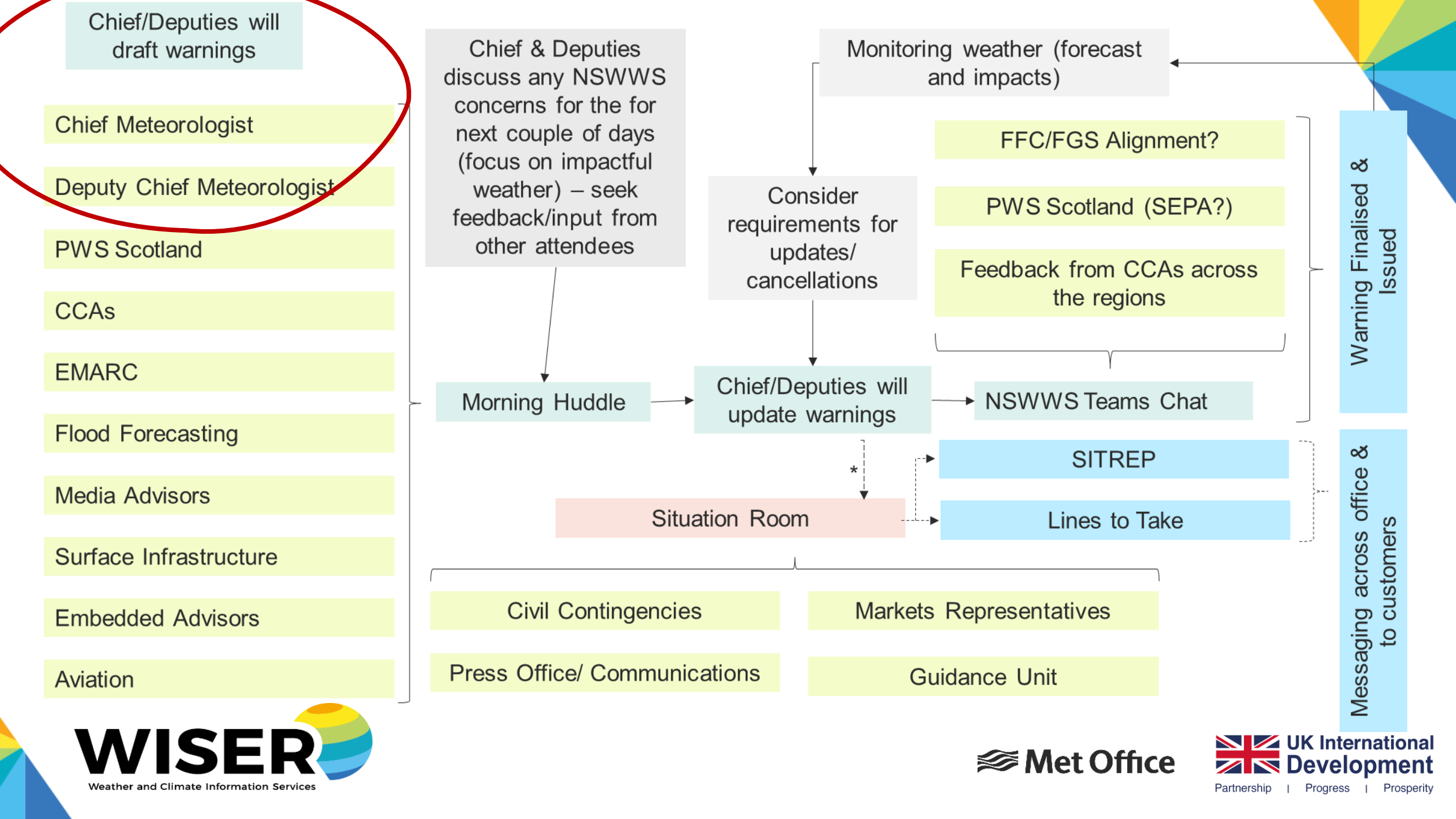
Chief/Deputies will draft warnings
Chief Meteorologist
Deputy Chief Meteorologist
PWS Scotland
CCAs
EMARC
Flood Forecasting
Media Advisors
Surface Infrastructure
Embedded Advisors
Aviation
Chief & Deputies discuss any NSWWS concerns for the for next couple of days (focus on impactful weather) – seek feedback/input from other attendees
Monitoring weather (forecast and impacts)
Consider requirements for updates/ cancellations
FFC/FGS Alignment?
PWS Scotland (SEPA?)
Feedback from CCAs across the regions
Morning Huddle
Chief/Deputies will update warnings
NSWWS Teams Chat
Warning Finalised & Issued
*
SITREP
Lines to Take
Situation Room
Civil Contingencies
Markets Representatives
Press Office/ Communications
Guidance Unit
Messaging across office & to customers
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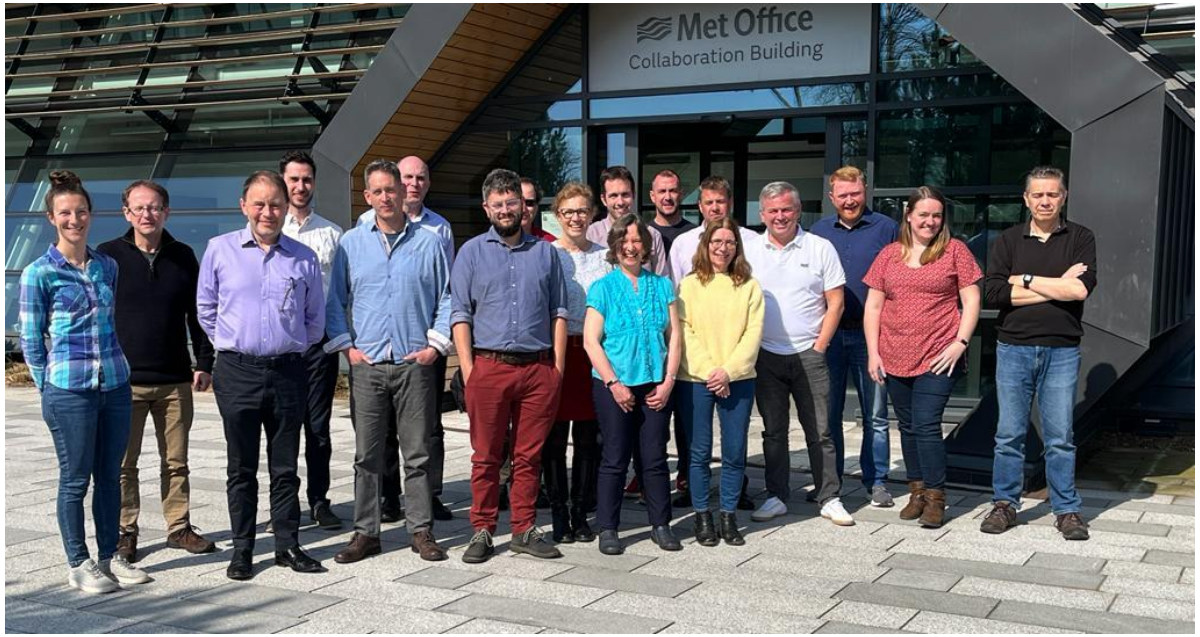
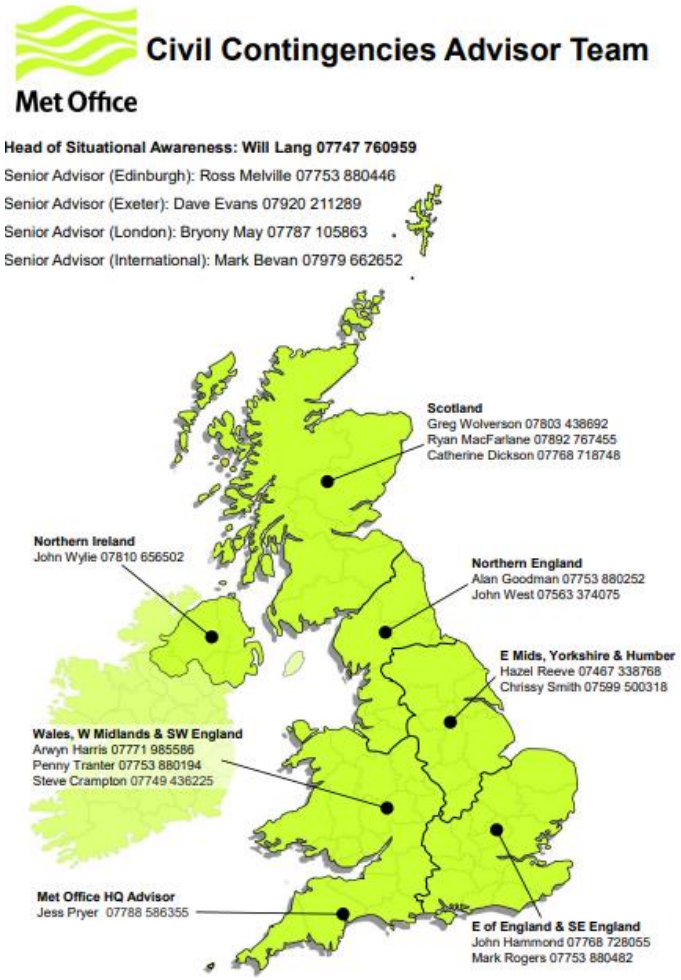
The Civil Contingency Advisor Team

- Advisors cover Local Resilience Groups
- Senior Advisors cover the UK Government and devolved administrations.





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The MOACC Role

In severe weather:

- Understand the potential impacts for their local area
- Communicate the weather expected, what warnings have been issued and the potential impacts to emergency responders
- Participate in multi-agency teleconferences

Business as Usual:

- Build relationships with responders
- Help assess weather related risks and develop severe weather plans
- Support exercises by;
  - helping to develop weather scenarios
  - providing mock weather forecasts and warnings
  - attending as subject matter experts (SMEs)

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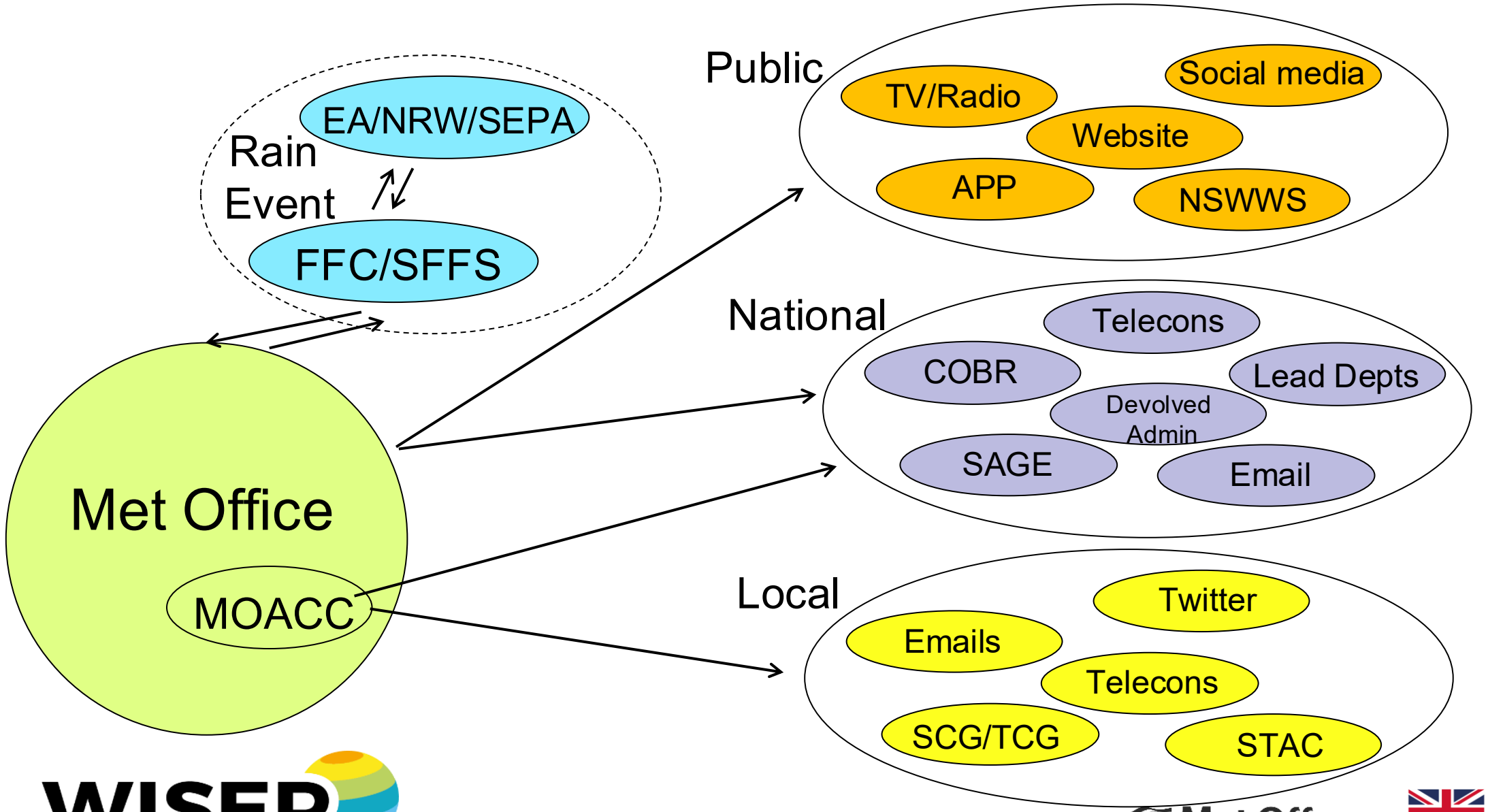
Where do the Advisors fit in?



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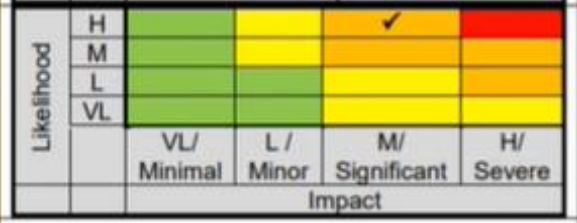
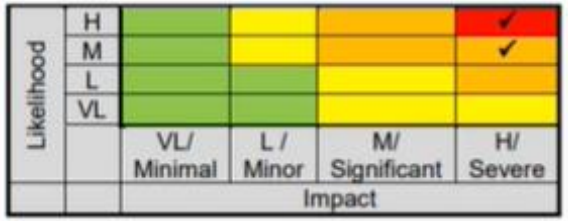
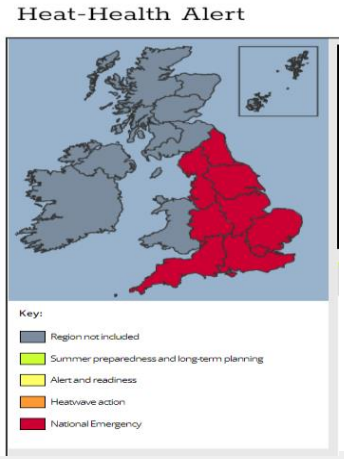
Severe Weather Plan – Focused Action Plans

Escalation Level	Met Office / Scottish Flood Forecasting Service Risk Level Matrix	Multi-Agency Considerations / Actions *(Local Resilience Partnership)*	Single Agency Considerations *(Generic)*
Level 1 *Normal Business*		• Normal Business Arrangements	• Normal Business Arrangements
Level 2 *Event Monitoring*		• Normal Business Arrangements - consider monitoring in the lead up to medium or high impacts weather events -if AMBER, **any** partner can suggest the need to arrange an ALRP Teleconference to consider escalation to level	• Alert Senior Officers where applicable • Monitor weather warning for potential escalation • Distribute to relevant personnel/service areas • Consider potential impacts on service provision • Undertake pre-emptive tasks to mitigate the impacts to service provision and/or infrastructure
Level 3 *Enhanced Event Monitoring*		• Trigger ALRP Disruptive Weather Arrangements (if not already established) • An ALRP Teleconference will be triggered (see Section 2.2 and 2.2.1 for teleconference info) • Consider escalation to Level 4 following consultation with key stakeholders (if advice from Met Office, SEPA or other partners suggests this)	• Alert Senior Officers • Distribute warning to relevant personnel/service areas • Consider potential impacts on service provision • Key Personnel/Services alerted • Undertake pre-emptive tasks to mitigate the impacts to service provision and/or infrastructure
Level 4 *Active Event Monitoring & Pre-Response Planning*		• Strategic leads alerted & briefed • Trigger ALRP Disruptive Weather Arrangements (if not already established) • Consider need to set up Multi-Agency Coordination Centre • Consider need to issue Public Information • Liaison with Met Office and SEPA • Decision on initiating Coordination Centre • Key Personnel alerted and on standby • Alert Community Resilience Groups • Issue media briefing / alerts via relevant channels (incl. Social Media) • Consider staffing arrangements and cover for the response	• As above • Consider resources which may be required to aid the response • Consider the impact on normal service delivery • Critical Services to be prioritised • Consider whether it is safe for staff to travel for non-essential journeys • Alert Lead Officers to potential issues which could disrupt either the response or service delivery

Example: 40C heat in July 2022 (Extreme Heat)

- Longest lead time ever for
  - **AMBER** extreme heat warning (6 days in advance)
  - **RED** extreme heat warning (3 days in advance)

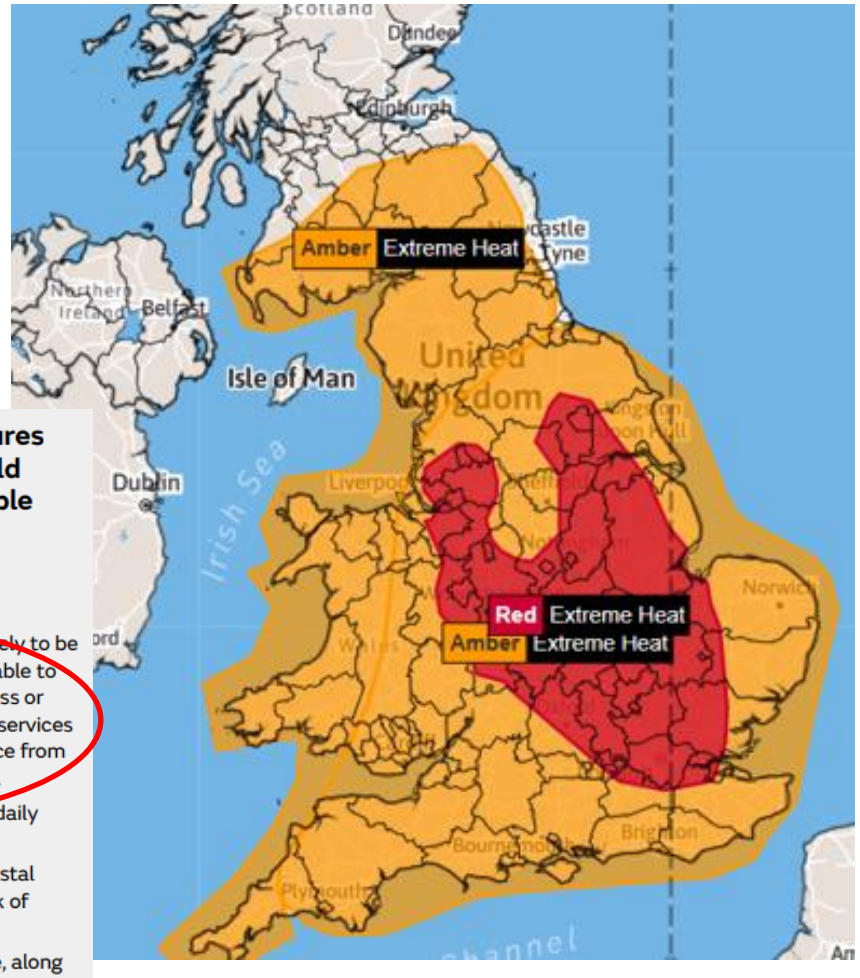
- Input from govt depts, health agencies and others (eg Network Rail) into warning content – coproduction and working in partnership.
- Met Office closely coordinated with UKHSA Heat Health Alerts for England
- …and coordinated cross-government communications to ensure consistency of messaging.



Some exceptionally high temperatures are possible during Sunday and could lead to widespread impacts on people and infrastructure.

What to expect

- Population-wide adverse health effects are likely to be experienced, not limited to those most vulnerable to extreme heat, leading to potential serious illness or danger to life. Government advice is that 999 services should be used in emergencies only; seek advice from 111 if you need non-emergency health advice.
- Substantial changes in working practices and daily routines likely to be required
- Significantly more people are likely to visit coastal areas, lakes and rivers leading to increased risk of water safety incidents
- Delays on roads and road closures are possible, along with delays and cancellations to rail and air travel, with potential for significant welfare issues for those who experience even moderate delays



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Met Office | Extreme Heat Timeline, July 2022

EARLY WARNING

Week Ahead forecast signalled warming trend and potential above average temperatures.

4 JUL

CONSTANT UPDATES

210 multi-agency briefings including 8 COBR & 2 SGORR.

4 JUL

GOVERNMENT ADVISED

First contact with Government (Cabinet Office) and resilience partners (UKHSA) to advise of possibility of impactful heat. Initial stages of cross -government heat escalation protocols triggered.

SUMMER RESILIENCE NETWORK

Extraordinary meeting of the cross -government Summer Resilience Network attended, to consider preparation and communication around forecast heat.

7 JUL

10 DAY TREND

Regular video forecast updates start.

UKHSA HEAT HEALTH ALERTS

Level 3 Heat Health Alert issued for England for 11-15 July, the beginning of the hot spell.

8 JUL

7 JUL

PRESS RELEASE

'Heatwave on the way?' press release issued. First of 8 releases which had **1.3M+ web views**.

COBR

First of a series of officials-led COBR meetings.

11 JUL

8 JUL

NATIONAL SEVERE WEATHER WARNINGS

Furthest ahead for any Amber warning - issued 6 days before.

RED HEAT WARNING

First ever for heat and the earliest Red warning of any weather type.

Level 4 UKHSA Heat Health Alert also issued for much of England.

13 JUL

11 JUL

CROSS-GOVERNMENT

Daily briefings and twice daily written lines (guidance).

15 JUL

PARTNER CONTENT

We collaborated with **more than 12** other organisations to help get important messages to the public. Amplified by other partners.

APP USE

Almost **6 million users** accessed the iOS and Android apps between 17-19 July.

17 JUL

WEBSITE TRAFFIC

On a single day, our webpages were viewed **3.6M times by 1.9M users.**

Between 11-19 July, Red warning webpage had **1.17M page views.**

18 JUL

SOCIAL MEDIA

High quality content across our 6 social media channels helps to keep the public informed. **346 posts across 6 platforms** equates to 69% higher frequency than previous year. Live content featuring 5 partners generated **186K+ views** across Twitter, YouTube, Facebook, TikTok, Instagram & LinkedIn.

19 JUL

NEW UK RECORD

40.3 °C reached in Lincolnshire.

New temperature records for England, Scotland, and Wales.

Highest night-time temperature record was also broken.

MEDIA COVERAGE

41K+ mentions of Met Office in print, online and broadcast media

120+ TV/Radio interviews.

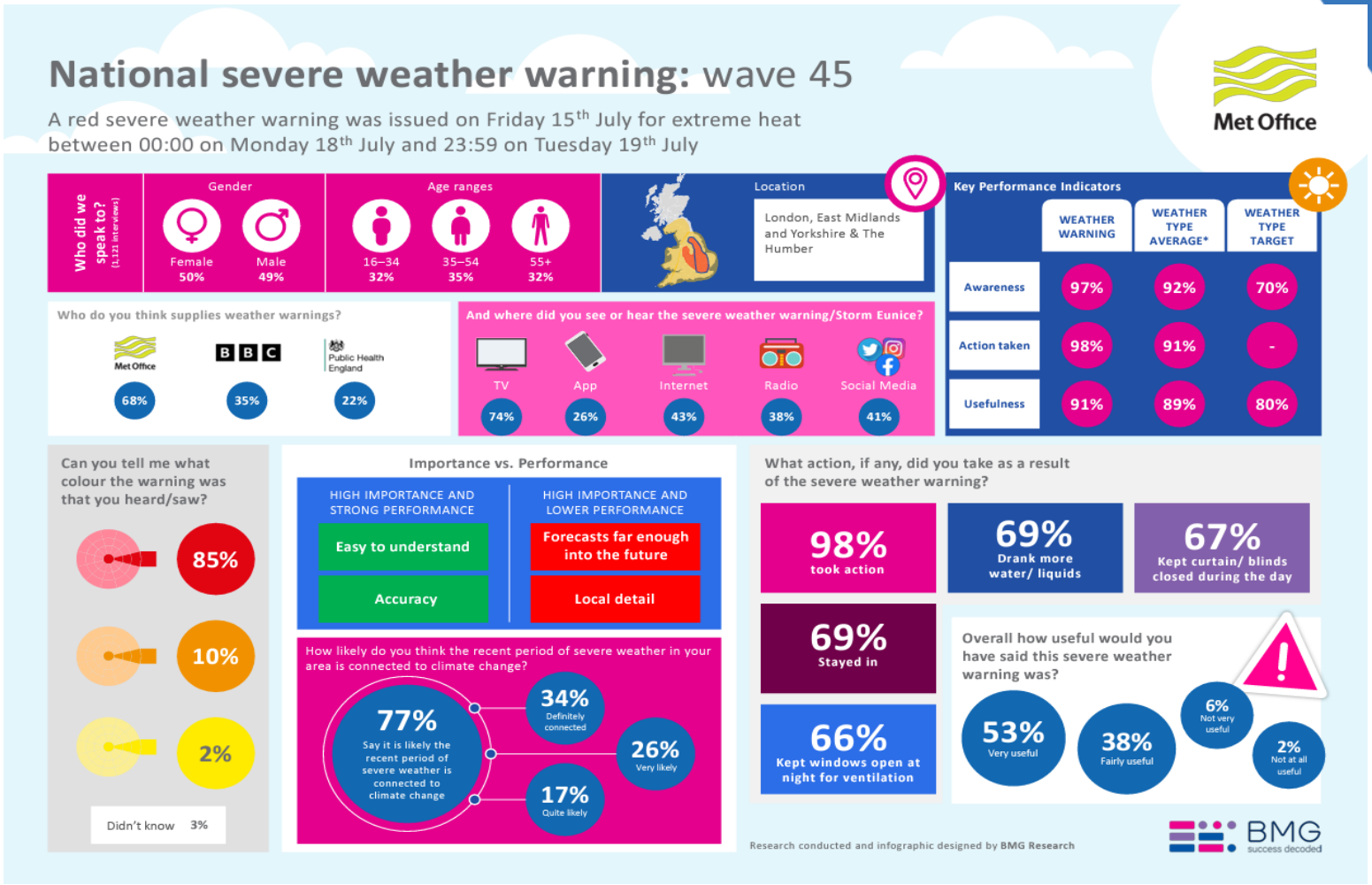
Over 500 media calls answered in 2 days (18/19 July).

ACTION TAKEN

Survey shows **97% awareness** of warnings in impacted areas with **98%** of people in Red warning areas **'taking action'** as a result.

Feedback on extreme heat warnings…

- Minister praised the ‘accuracy and professionalism of the Met Office’
- PWS surveys showed extremely high awareness and action taken on the warnings (97%+)
- High impact RED and AMBER warnings agreed as ‘excellent’ by PWSCG Sec
- Footfall at London stations reduced
- Visits to NHS health advice increased 5x
- Mortality was much lower than expected
- Calls to 999 reduced
- Broadcasters appreciated early engagement



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IBF Workflows Elsewhere

Nepal (DHM)

Production of standard MFD Forecast

Analysis of any new impacts from relevant sources

- Social media (Facebook/Twitter) etc.,
- Traditional media outlets (Newspaper, Radio, TV) etc.,
- Feedback channels (Google Forms Survey, emails, phone calls or WhatsApp/Viber group)

Based on the standard MFD forecast a discussion between duty forecasters and met assistants on whether any warning is needed for any point in the next 36/48-72 hours (approx.)

Things to consider in the assessment of whether a warning is required;

Weather Information

- Is there significant weather in the forecast period i.e. a westerly disturbance causing a peak in rainfall totals or intensity.
- Has there been a period of significant antecedent conditions i.e. persistent rain and wetting of the catchments for some time (are we close to a tipping point even with a lesser amount of rainfall)
- Is there a component of the forecast that we can say is likely to cause enhanced rainfall in certain areas e.g. uplift over hills/mountains.

Impact Information

- Are there significant vulnerabilities or exposure considerations i.e. has an area experienced recent impacts from which they are still recovering.
- Are there current impacts being observed/reported in the pilot area? Are these "typical" monsoon impacts or more significant.

Decision: No Warning Required

NOTE: If the decision is no warning is required then end of the process. However, be mindful that if new information comes to light may need to revisit the decision process.

Warnings are unlikely to be required if;

- Minimal impacts currently being reported
- No known vulnerabilities/exposure in the pilot districts
- Antecedent conditions within expected
- Forecast weather is BAU and on it's own would likely not trigger a warning

Decision: Warning Required

Decide on the following:

- Locations likely to be impacted to a warnable level (use both forecast conditions and known vulnerabilities to decide on levels of likely impact/confidence in impacts occuring)
- When are the impacts likely to begin (not just when is the hazard going to start i.e. when is the rain going to get to the "tipping point" whether that's intensity or amounts)
- How long is the forecast hazard likely to continue to produce impacts at a warnable level

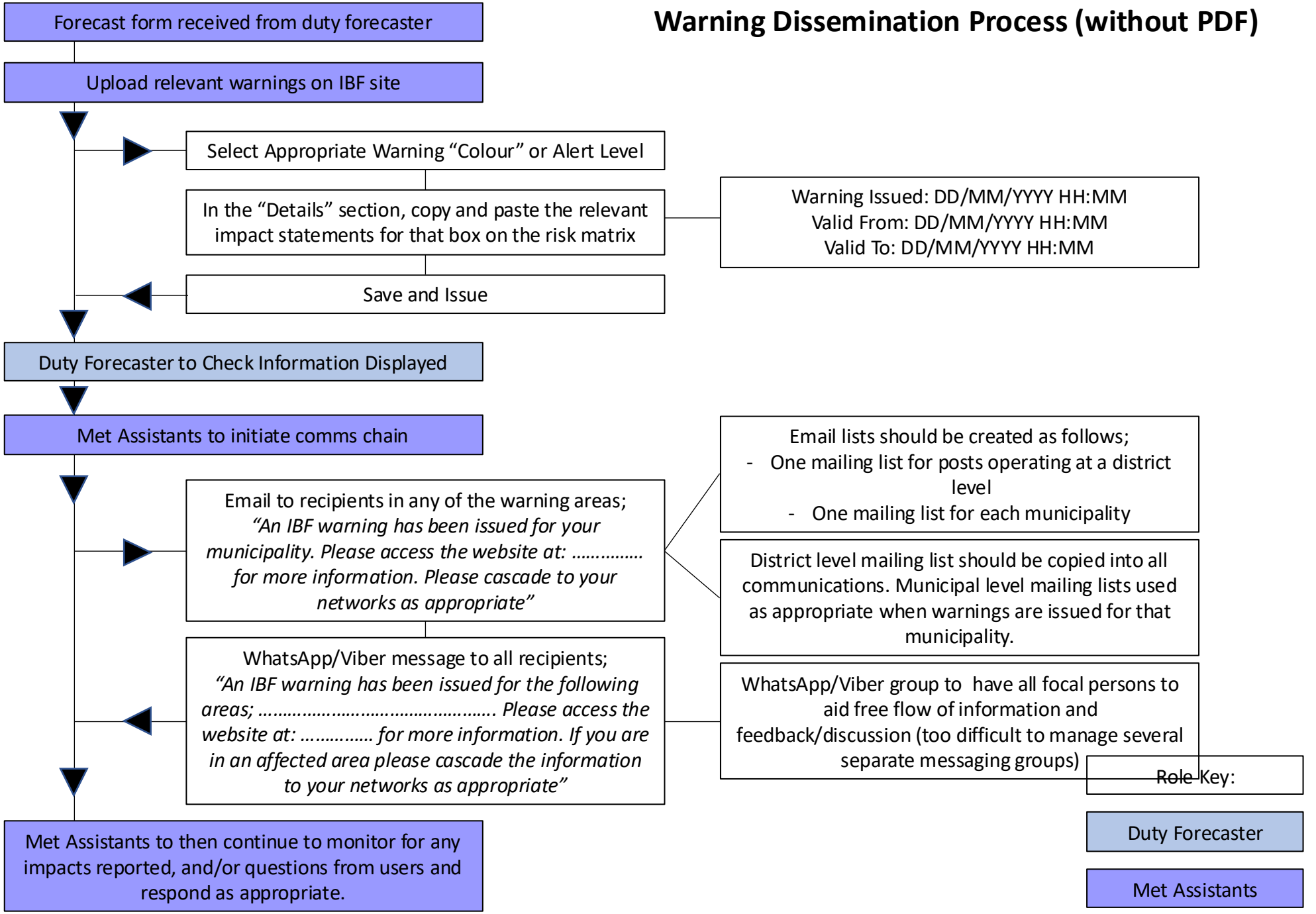
Warning Production & Dissemination Processes

Role Key:

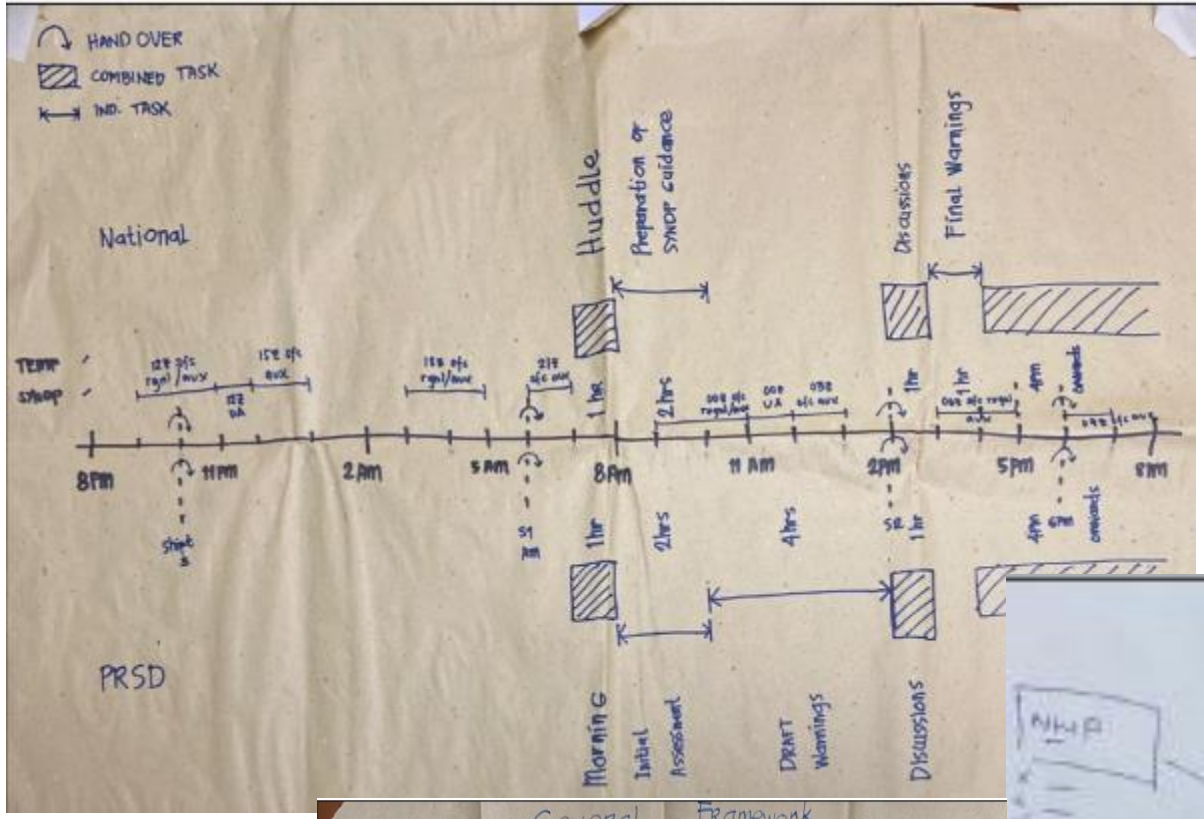
- Duty Forecaster
- Met Assistants

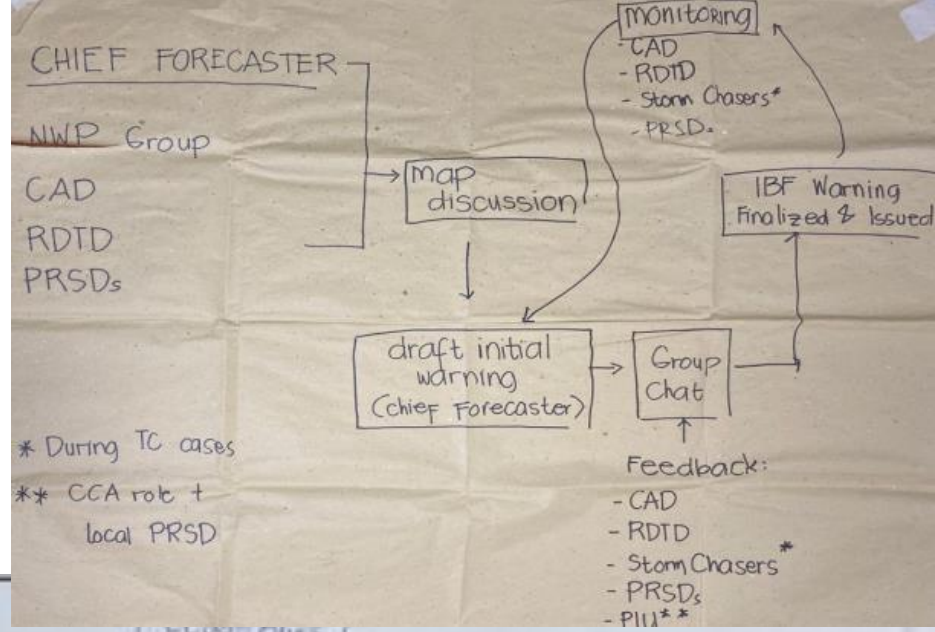
Nepal (DHM)

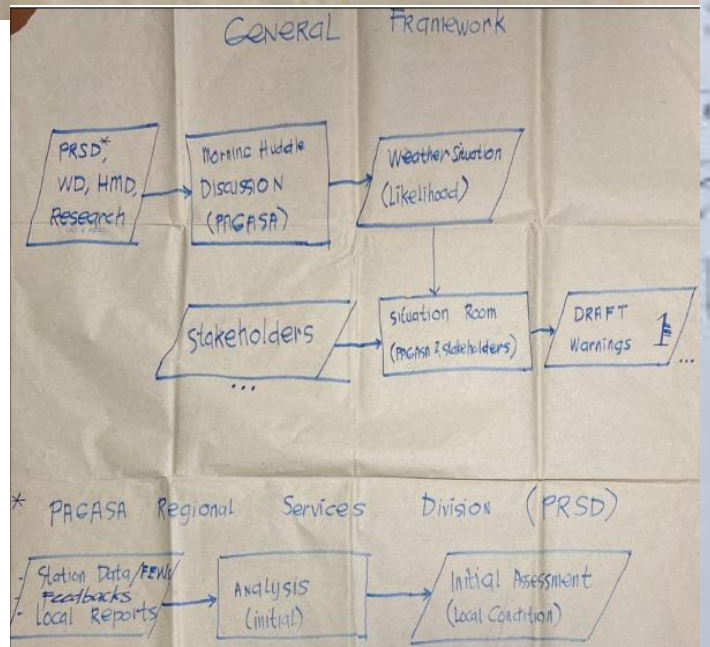
Warning Dissemination Process (without PDF)

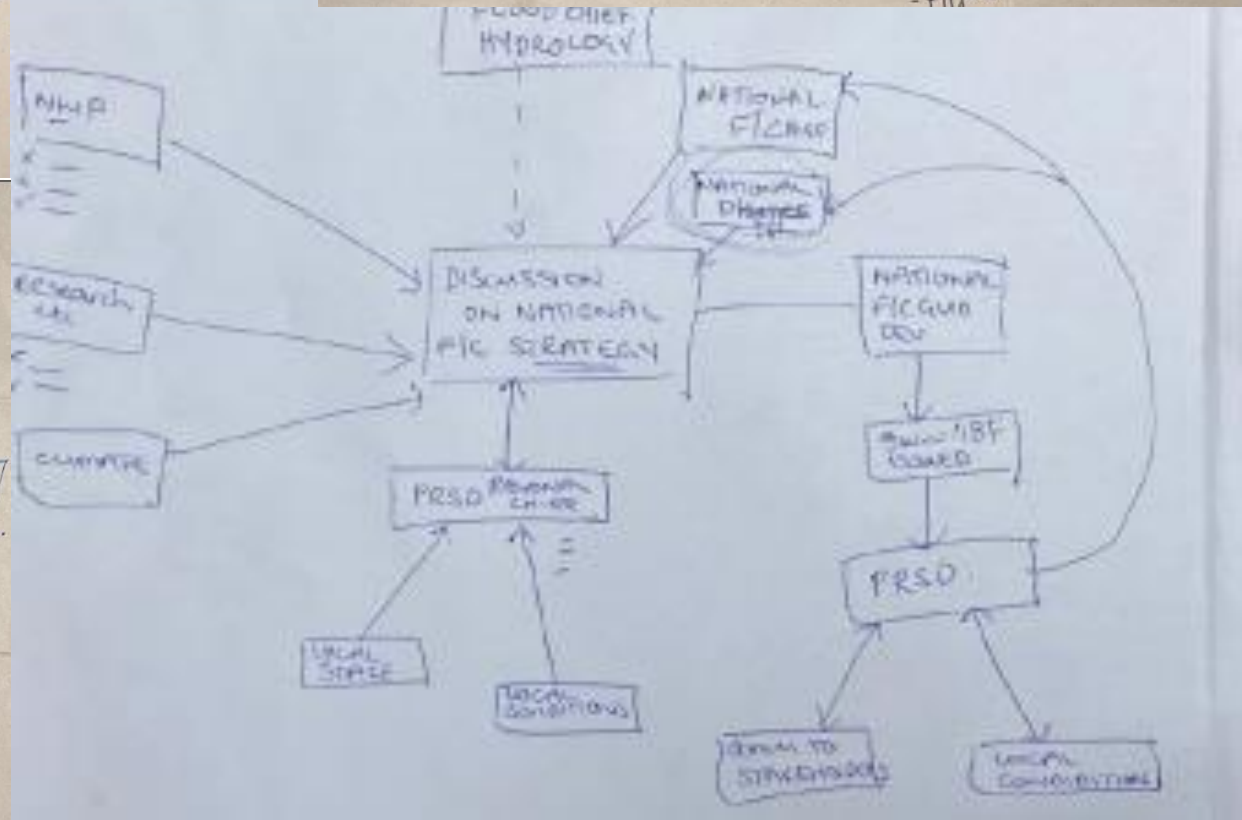


Philippines (PAGASA)









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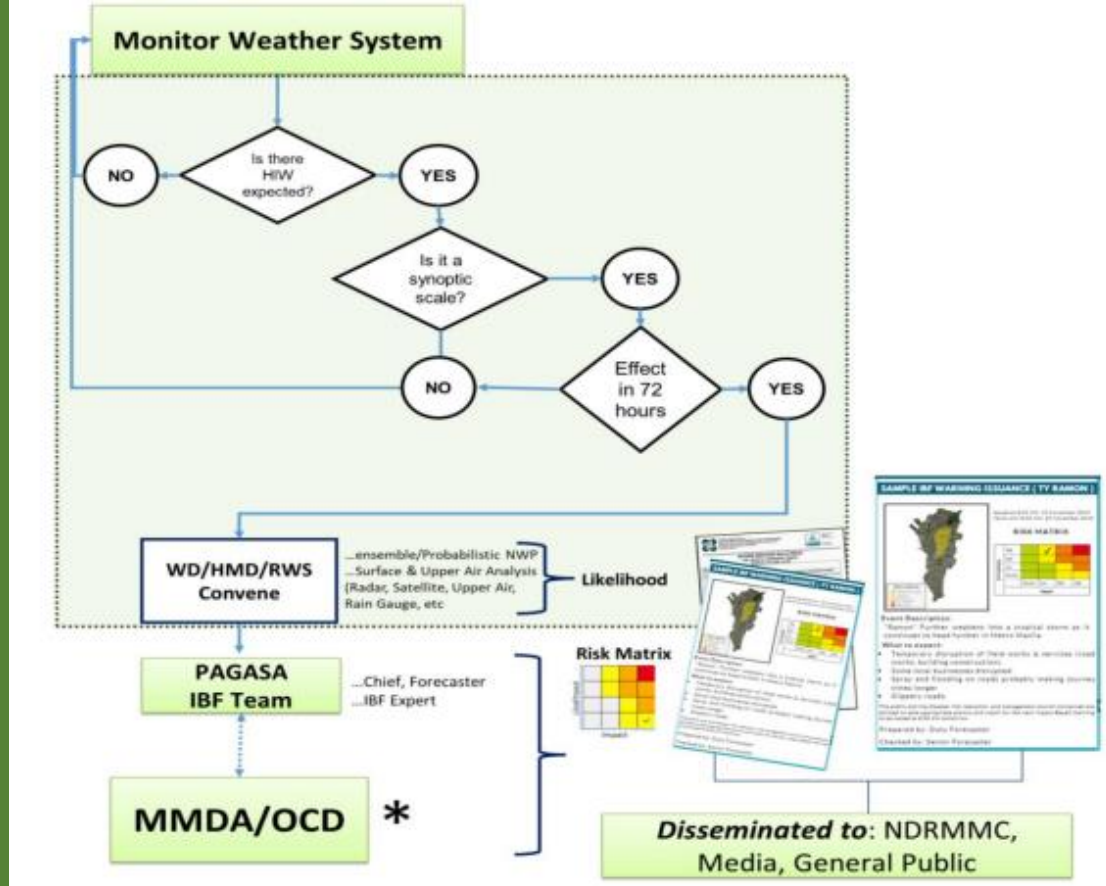

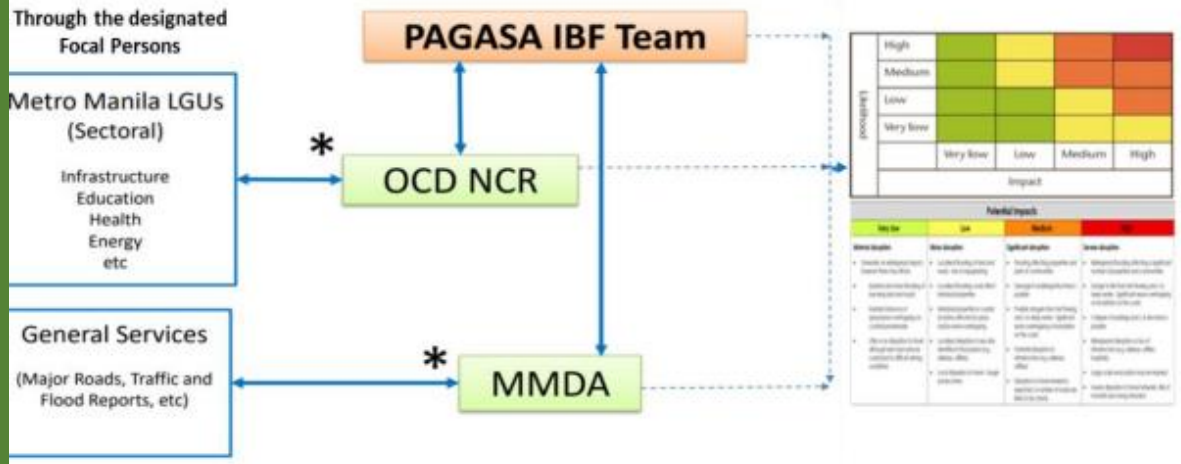

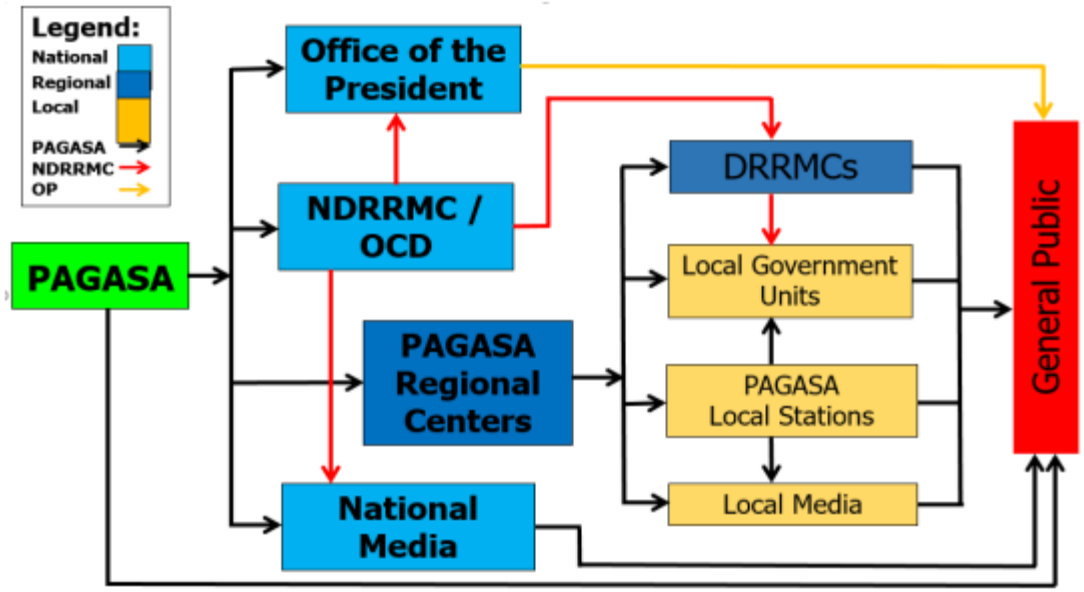

Drafting Impact-Based Forecast Competencies

Workshop on the development of Impact-based Forecasts and Early Warnings Competencies

10-14th November 2026

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IBF Competency Framework Workshop

10th-14th November 2025, Exeter, UK

Workshop Objectives:

- Recommendations to integrate and consolidate updates needed to existing IBFWS training material.
- A set of IBFWS competencies with clearly defined activities, performance criteria, knowledge, skills, and behaviours.
- An outline for a proposal to WMO to include IBFWS in their competency frameworks.
- Establishment of a community of practices to further advance the IBFWS Ecosystem (Service Desk).

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Overview of the competency framework

The resulting framework consists of six top-level competencies covering the full IBFWS process.
These address key aspects of impact-based service delivery, including the translation of meteorological hazards into actionable information, engagement with users and decision-makers, and continuous evaluation and improvement of services.

The six top-level competencies collectively cover:

- Analysing and monitoring the risk context.
- Forecasting hazards and translating them into potential impacts.
- Co-producing warnings and advice with stakeholders.
- Communicating and disseminating information to users.
- Continuously monitoring, updating and adjusting services.
- Evaluating service effectiveness to support learning and continuous improvement.

Each competency is articulated through a structured set of elements:

- A clear description of core responsibilities.
- Performance criteria defining observable and assessable behaviours.
- Supporting background knowledge and skills enabling effective performance.

Any questions?

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