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# Impact Based Forecasting and Risk Based Warning

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# The Presentation Will Cover

- Moving Towards Forecasting Impacts
- Partnerships and Collaboration
- Risk-based Warnings

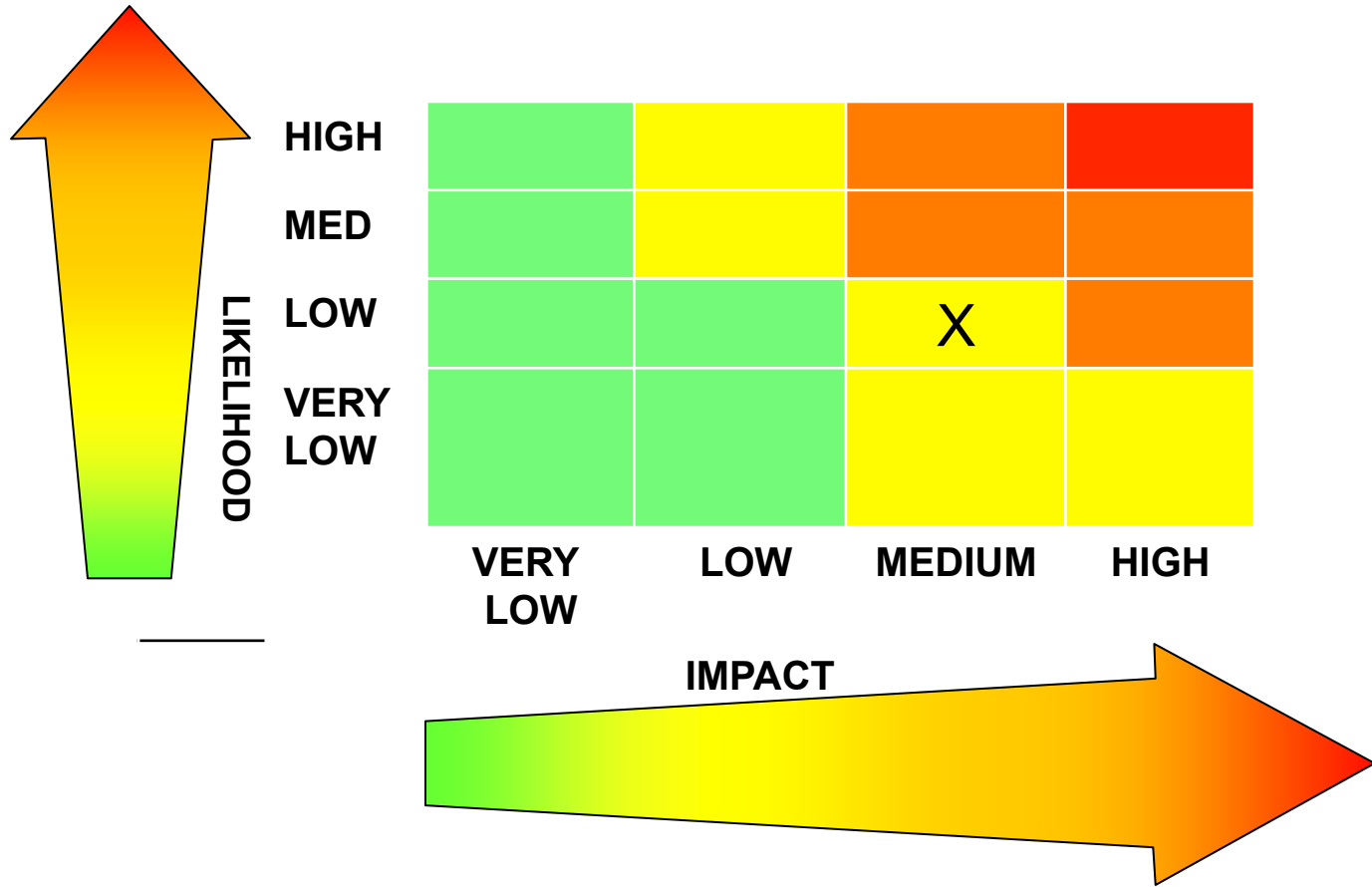


# Moving Towards Forecasting Impacts

- Why impact forecasting?
  - NMHSs' primary responsibility: timely and accurate forecasts and warnings of hydrometeorological hazards and events
  - Governments and public: need to know impact of hazard on lives, livelihood, property and economy
  - Demands for more than just statements on hazards
  - Understanding disaster risk and forecasting impact beyond remit of NMHSs
  - Challenge to developed and developing economies



# Risk Matrix



Green: No severe hydrometeorological hazard is expected

Yellow: Be aware

Orange: Be prepared

Red: Take action

Assign a colour to the warning which is a combination of potential impact and likelihood (source: Met Office)



# Impacts



## Emergency responder impact table

The following table provides examples of the level of disruption that might be experienced at each of the impact levels (high, medium, low) and for each weather element (rain, snow, etc.). Note that weather assessed as having a 'very low' impact may still have some minor impacts.

	Very low	Low	Medium	High
Generic impact levels of ALL SEVERE WEATHER for emergency responder organisations	Nil	Incidents dealt with under 'business as usual response' by emergency services e.g. limited number of road traffic collisions (RTCs).	Short-term strain on emergency responder organisations. Risk of injuries with potential danger to life. Potential for short-term loss of some utilities. Some disruption to travel with potential for commuters to be stranded for short periods.	Prolonged strain on resources of emergency responders. Potential danger to life. Potential for loss of utilities for lengthy periods (perhaps days). Severe disruption to travel with prolonged delays. Commuters may be stranded for long periods. Mutual aid arrangements may require activation.



# Partnerships and Collaboration

- Meteorologists often are reluctant to forecast impact
  - Extensive knowledge of vulnerability and exposure are needed
  - Example - Flood forecasting: additional data required
    - ✓ Ground cover, run off, topography, roads and infrastructures, traffic conditions, crowd sourced information
  - The data allows risks of impact to be forecast and warnings issued targeting those exposed to hazard
  - Authorities can take specific actions: safe routes, closing schools and offices etc.
- Forecasting impact is more important than pure met forecasts: they are more readily understood by:
  - Those at risk and;
  - Those responsible for mitigating those risks



# Partnerships and Collaboration

- Main challenge: NMHSs need to work in partnership with other government agencies and stakeholders (emergency response, mapping agencies, transport, public, etc)
- Data sharing among different agencies and departments vital (demographic, GIS and mapping, economic etc)
- Example of Flood Forecasting Centre in UKMO: collaboration between MO and Environment Agency



# Risk-based Warnings

- Risk matrix to identify likelihood of event and potential impact
- Likelihood relates to uncertainty (location or severity of event)
- Impact relates to vulnerability and exposure and can:
  - define strain on emergency services
  - identify specific groups of people or communities at risk
  - Determine the scale of responsibility from local to national





# Future Direction Future Direction

- Issues for (IBF, RBW) varied and complex: require planning on many levels
- Resources required: extensive collaboration and partnership building. All partners require resources
- Training of NMHSs and partners (especially emergency response) staff
- CBS/OPAG-PWS: WMO Guidelines for NMHSs on multi-hazard impact-based information and warning services ( to be approved by CBS Ext.(14)
- Piloting in countries participating in SWFDP
- ECWG-SD: discuss and recommend to EC on best approach for delivering IBF, RBW.





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Thank you for your attention

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