

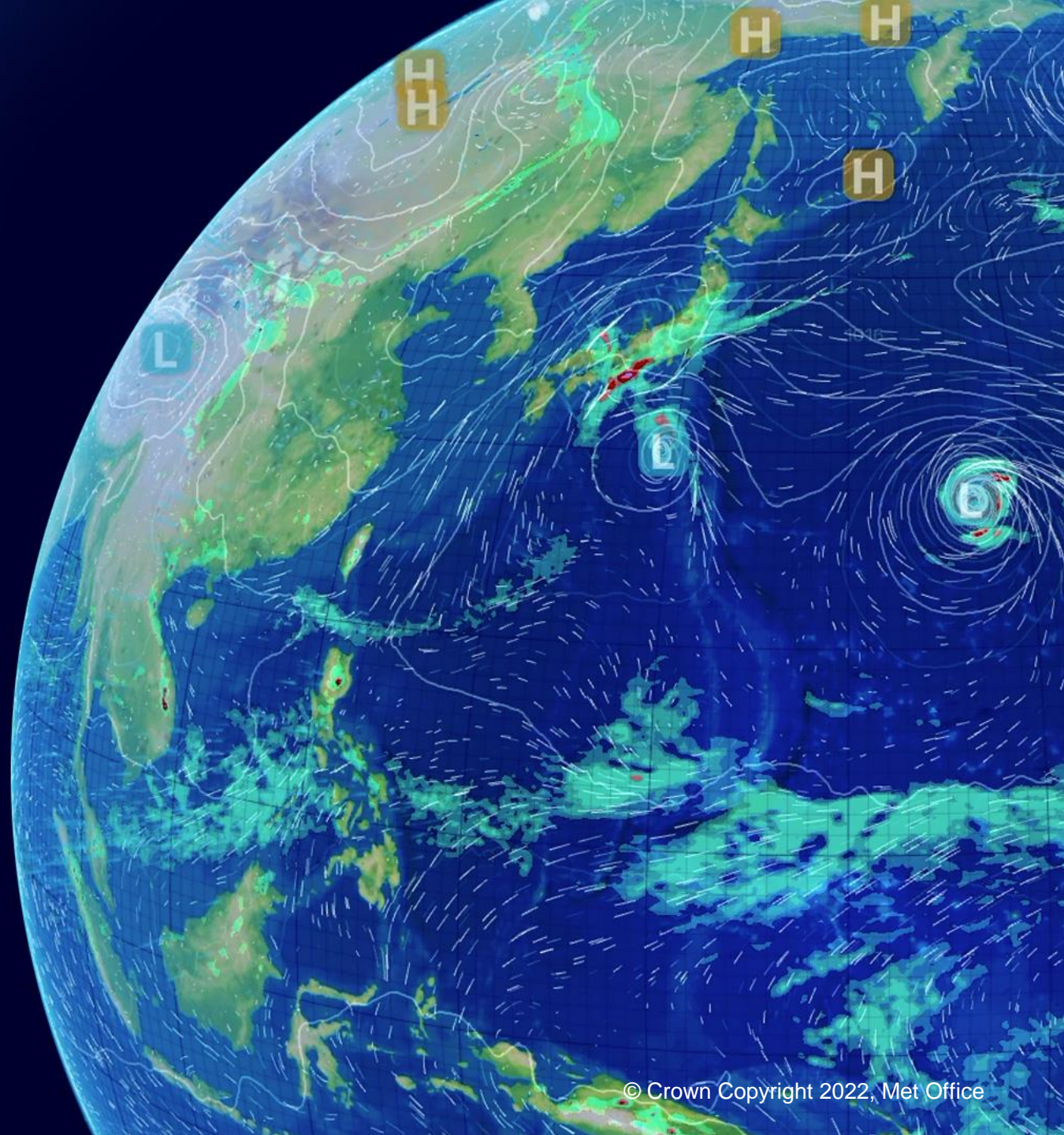
Met Office Supporting UK Aviation

Lauren Donohue and Andrew Ward

Wednesday 19th June 2024

11th Safety Forum

Aviation Weather Resilience



Summary

- Who are the Met Office and our work as a MET ANSP
- Forecasting overview
- Forecasting team at Heathrow Airport
- Storm Isha overview (21st January 2024)

Services provided on behalf of the UK CAA



Technical advice on meteorological issues



Support at ICAO working groups and panels



Audits of meteorological observation facilities at UK aerodromes



Supplying weather information to assist with weather related investigations



Aviation research and development



Information on the [performance of our forecasts](#)



Regulated services combined with Commercial activity

Network of Meteorologists

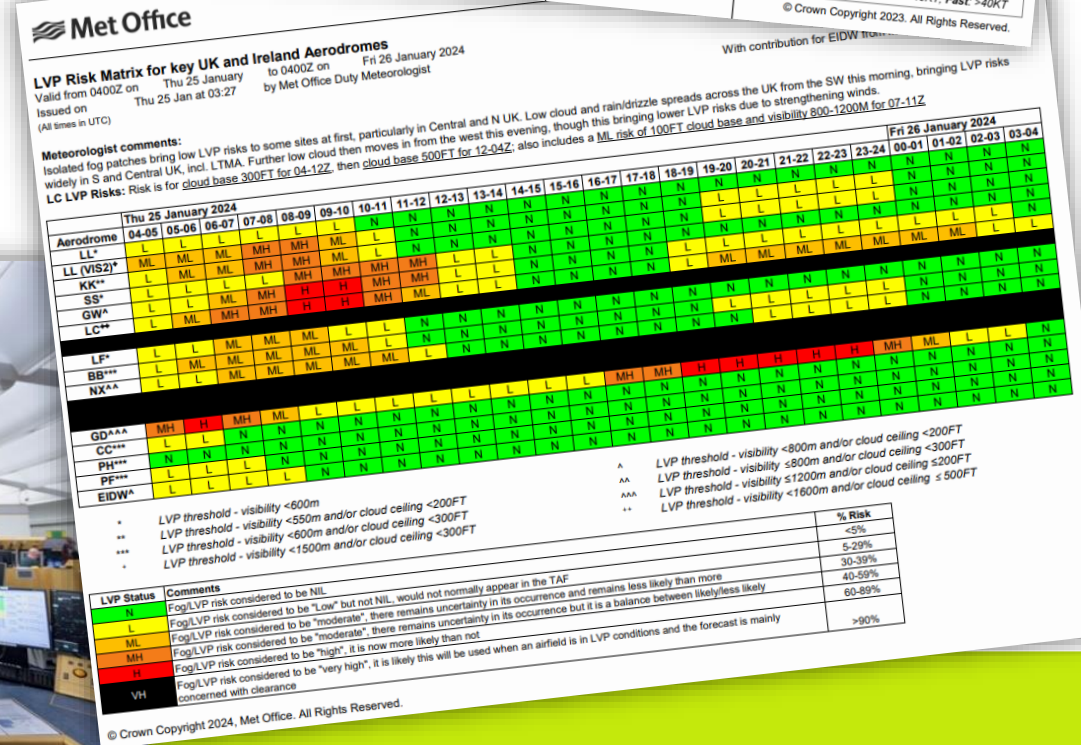
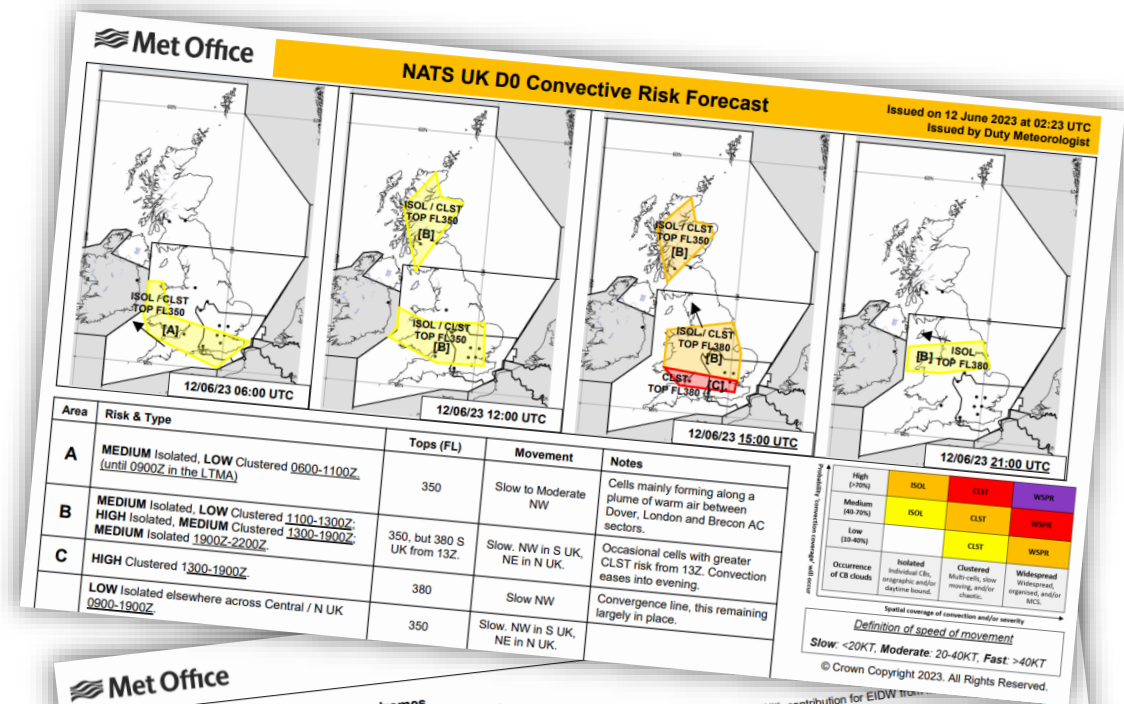
- Onsite aviation advisors (NATS, Heathrow, Aberdeen, Belfast)
- Aviation Forecasters / Team leaders at Exeter
- Chief Meteorologist



- Accurate and Timely forecast
- Allow operations managers to mitigate against the weather
 - Turn a **red** day into an **amber** day, **amber** day into a **green** day*
- Every operation has varying sensitivities and pinch points – aim of an advisor is to identify these and tailor services to their requirements
- N.B. A perfect forecast will *not stop the impact*, however it will enable the operation to mitigate against the weather

Met Office Team at NATS

- Forecasts and advice
 - Directly to operational staff
 - Communication across the wider network
 - Responsible for providing tailored advice in a timely manner
 - Met briefs delivered to business aviation community ahead of busy weekends.
- Collaboration
 - With NATS
 - Within the Met Office



Civil Aviation Resurgence

- Met Office consolidated civil airport forecasts in the 1990's.
- Met Office maintained onsite presences at RAF stations globally.
- **Saturday 18th December 2010** – snow event lasting 5 days. 9cm depth of snow reported. 4000 flights cancelled over 5 days. 9,500 people slept in the terminals on the first night.

December 2010 – 12:00L



Met Office December 2010 – 14:00L





Met Office Press – December 2010

Transport
Heathrow admits chaos will carry on for days as more snow is forecast
Philip Hammond says government needs to consider whether Britain is experiencing 'step change' in weather



Luggage at St Pancras. Air De Souza/AP/Getty Images

23 December 2010 Last updated at 21:06

BAA launches inquiry into Heathrow Airport snow chaos

An inquiry has been launched by BAA to look into "what went wrong" at Heathrow Airport as flights were grounded for days following snowfall.

The panel of experts from other airports and airlines will judge BAA's "planning, execution and recovery".

Thousands of passengers were stranded and hundreds had to sleep in the terminals after the west London airport closed its runways.



Heathrow Airport is running 91% of its schedule

Related Stories

FINANCE - NEWS BY SECTOR - TRANSPORT
Heathrow operator BAA says December snow cost

Britain's biggest airports operator, said December's heavy snow cost it £24m, and caused a 10.9pc drop in passenger numbers for the month.



Heathrow airport all but shut as snow hits Christmas travel plans

Warnings of more heavy snow over the next few days as government



COLIN MATTHEWS
BAA Chief Executive Officer

LIVE Heathrow
BBC NEWS 19:35 5 PASSENGERS TODAY ARE YOU STRANDED AT



SOZEN BRITAIN

BBC NEWS 19:35 CHRISTMAS TRAVEL PLAN FOR

19 December 2010 Last updated at 18:57

Snow at Heathrow and Gatwick ruins plans of thousands

The Christmas travel plans of thousands of Britons are in disarray after snow left Heathrow Airport all but shut.

Thousands remained in terminals for hours as few flights departed on Sunday. Knock-on delays hit most UK airports, including Gatwick.

The Met Office warns of more heavy snow in Yorkshire, north-east England and eastern Scotland, advising essential travel only in the Edinburgh area.



Many people were forced to sleep at Heathrow overnight (photo: Sue Kerslake)



Stranded passengers sleep on terminal floors as all arrivals at Heathrow were cancelled, and just seven Photograph: Luke MacGregor/Reuters

Civil Aviation Resurgence

- Resultant government report (Begg Report) stated that Heathrow Airport should:
 1. Develop integrated Operations Centre
 2. Investment in clearance equipment and Snow plan required
 3. Clear Communication across stakeholders and passengers
 4. BAA to review meteorological provision – suggest 2 Met Providers
- 2011 – Met Office invited to provide trial onsite meteorologists
- 2014 – 5 year contract signed between Met Office and Heathrow
- 2018 – Contract extended and expanded
- 2020 – COVID reduced 24/7 service to 4h per day
- 2023 – Increase in hours to 8h per day

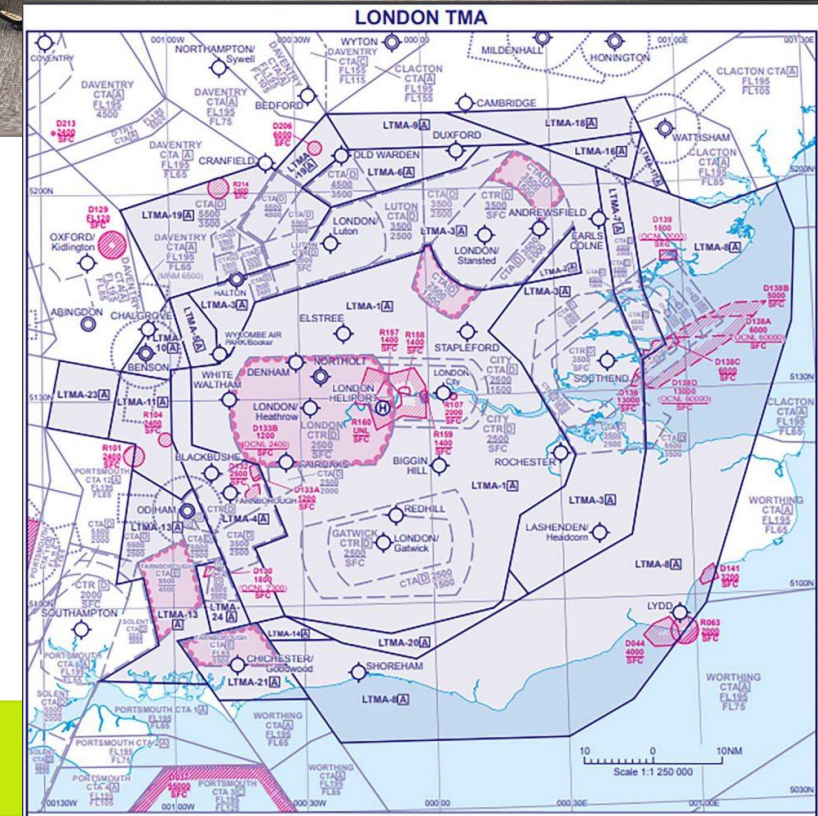
Heathrow Team Structure

- Team of 12 Op Mets plus Onsite Ops Manager embedded within APOC
 - 12 hour shifts, with onsite presence required.
- **LTMA bench**
 - Provide regulated aviation products for the London Terminal Manoeuvring Area
 - Oversight and manual intervention of AUTO-METAR observations
- **Commercial Advisor**
 - Responsible for supporting a number of aviation customers, predominantly Heathrow Airport Limited and stakeholders, but also easyJet, Jet2, Gatwick and others.
 - Provide a number of commercial products as well as tailored advice in a timely manner.

Heathrow Team

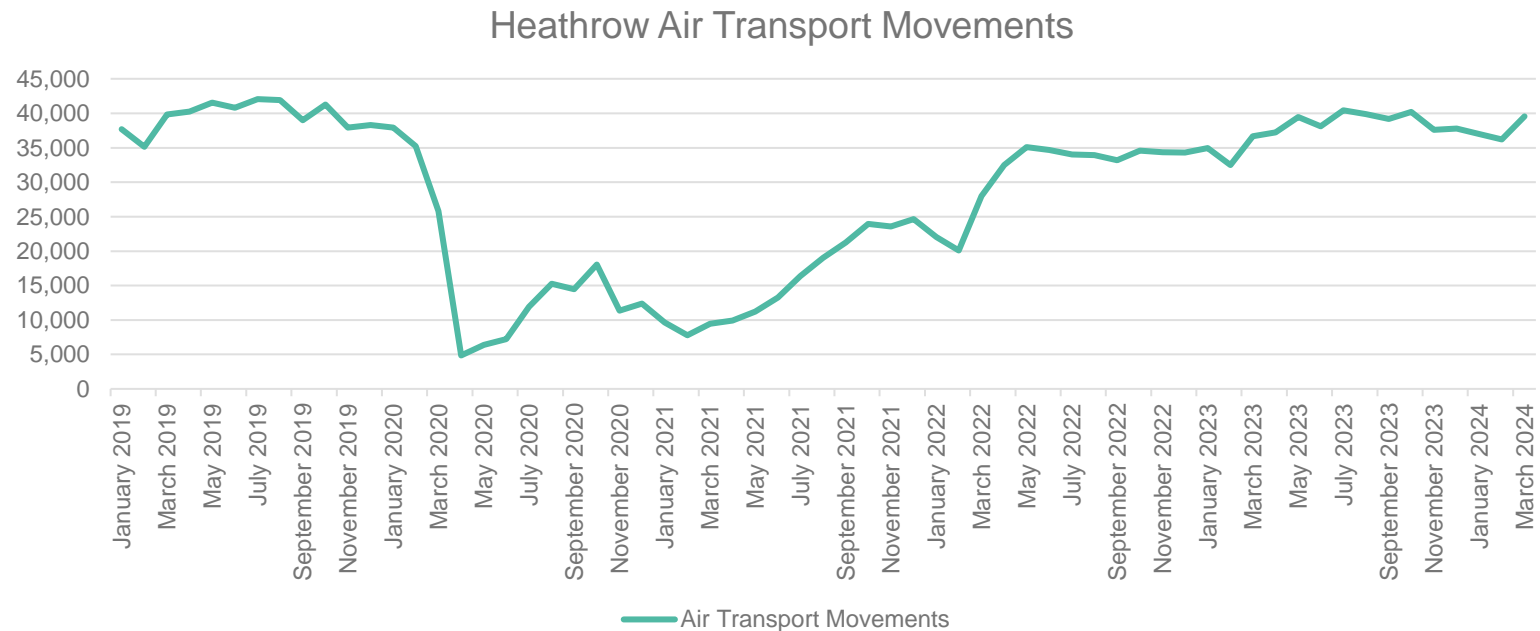
- Forecasters coordinate across the Network of civil and military sites.
- The goal is to ensure a wider range of OpMet staff can undertake some Heathrow tasks (e.g. observations) to support resilience
- LTMA focus of OM to have awareness of the wider impact of the weather in the SE.

Since COVID additional commercial activity is undertaken meaning that full attention is distributed across different stakeholders' operations



Busyness of Heathrow

- Demand vs Capacity procedures to deliver optimum throughput
- Hub Airport
- Runway Replacement
- Olympic traffic



Storm Isha 21 January 2024

 **Met Office**  @metoffice · Follow

⚠️ Weather warnings for #StormIsha have been updated ⚠️

Latest info bit.ly/WxWarning

Here are the latest details 📌



11:35 AM · Jan 21, 2024

889 Reply Copy link

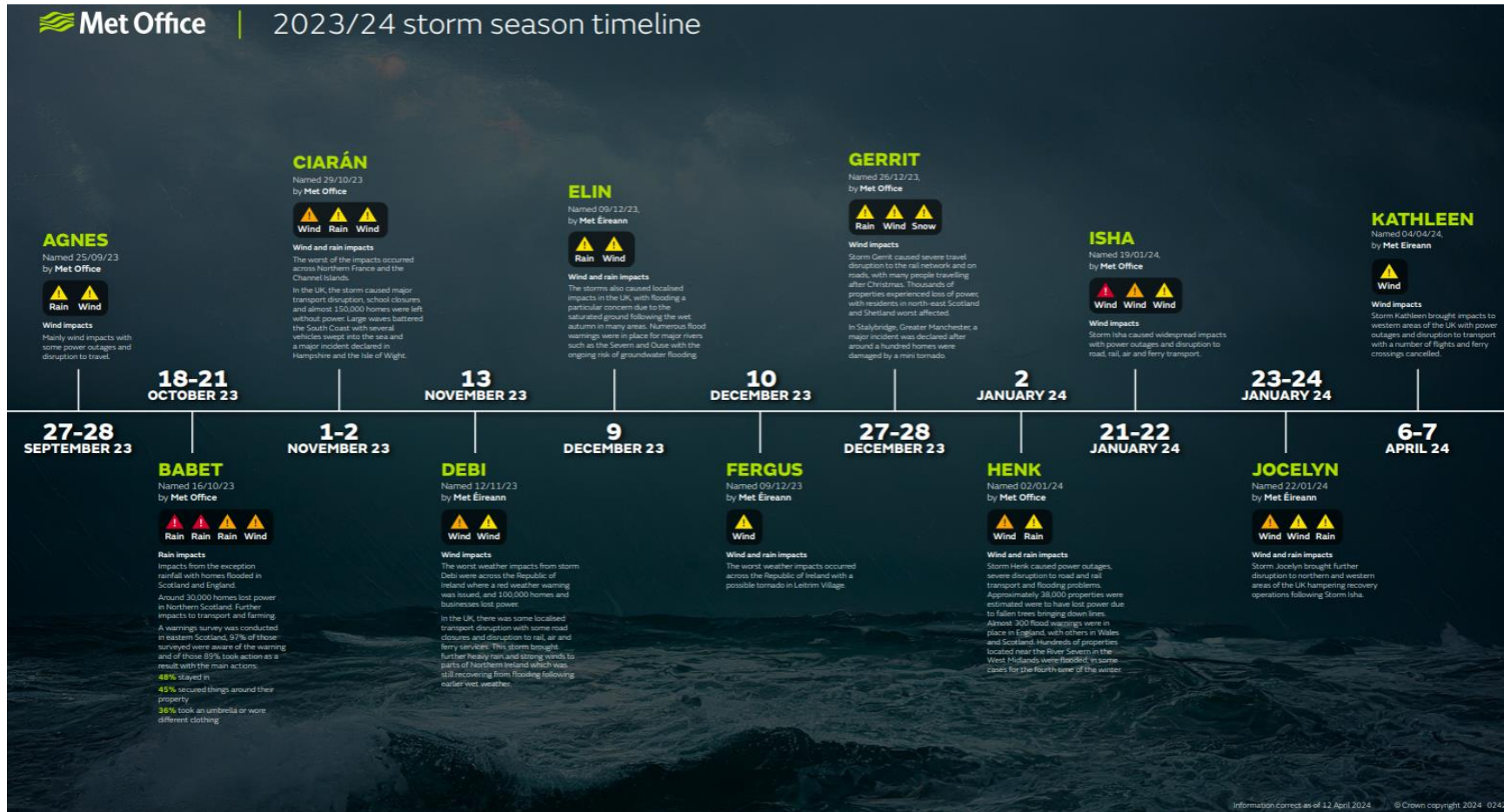
 **Met Office**



 Royal Netherlands
Meteorological Institute
Ministry of Infrastructure
and Water Management

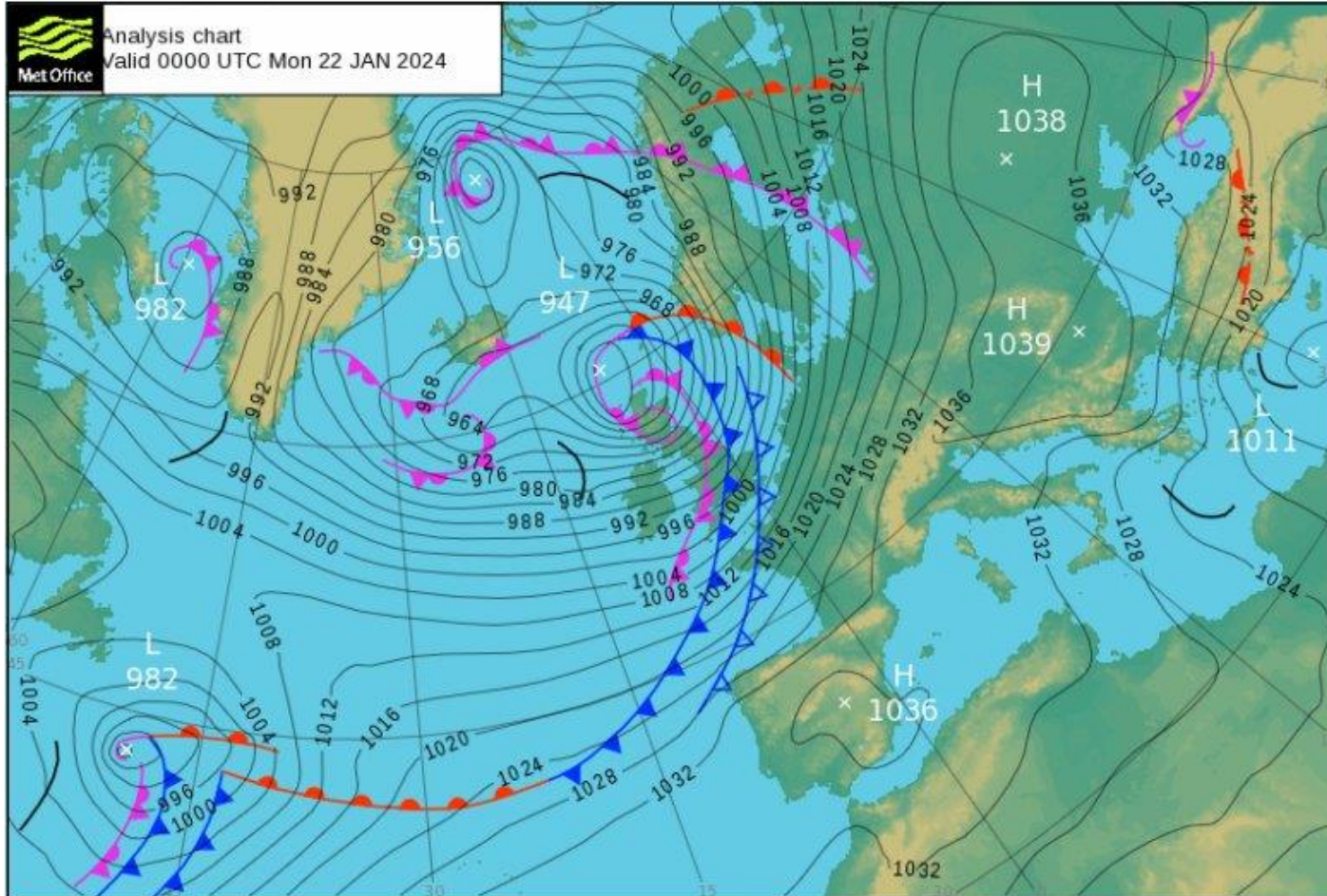
Storm Isha has been named

Storm Isha in wider context



- The 9th named storm of the 2023/2024 Winter season, within the most active spell of stormy weather in northwest Europe since 2013/2014

Storm Isha introduction



- Experienced rapid cyclogenesis on the 19th and 20th with widespread strong winds.
- One of the top 20 most powerful winter storms to affect the UK since 2000 and most significant storm since *Eunice* on 18 February 2022.
- Highest official gust 86KT at Brizlee Wood, Northumberland.

Forecast information ahead

HEATHROW SURFACE AND 3000 FT WIND FORECAST

		Sun 21/01/24								
Time		0000	0300	0600	0900	1200	1500	1800	2100	2400
SURFACE	Direction	190°	190°	210°	220°	210°	210°	200°	200°	210°
	Mean	15	16	15	15	15	19	24	25	25
	Gust	25	28	25	20	25	34	40	47	45
	Mean Crosswind Component	15	16	13	11	13	16	23	23	22
	Max Crosswind Component	25	28	22	15	22	29	38	44	39
3000 FT	Direction	225°	230°	250°	240°	250°	230°	220°	220°	230°
	Mean	50	55	47	50	50	56	60	70	75
	Headwind Component	35	42	44	43	47	43	39	45	57
Weather		(-RA/RA)	(-RA/RA)	(-RA/RA)				(RA)	(RA/+RA)	(RA/+RA)

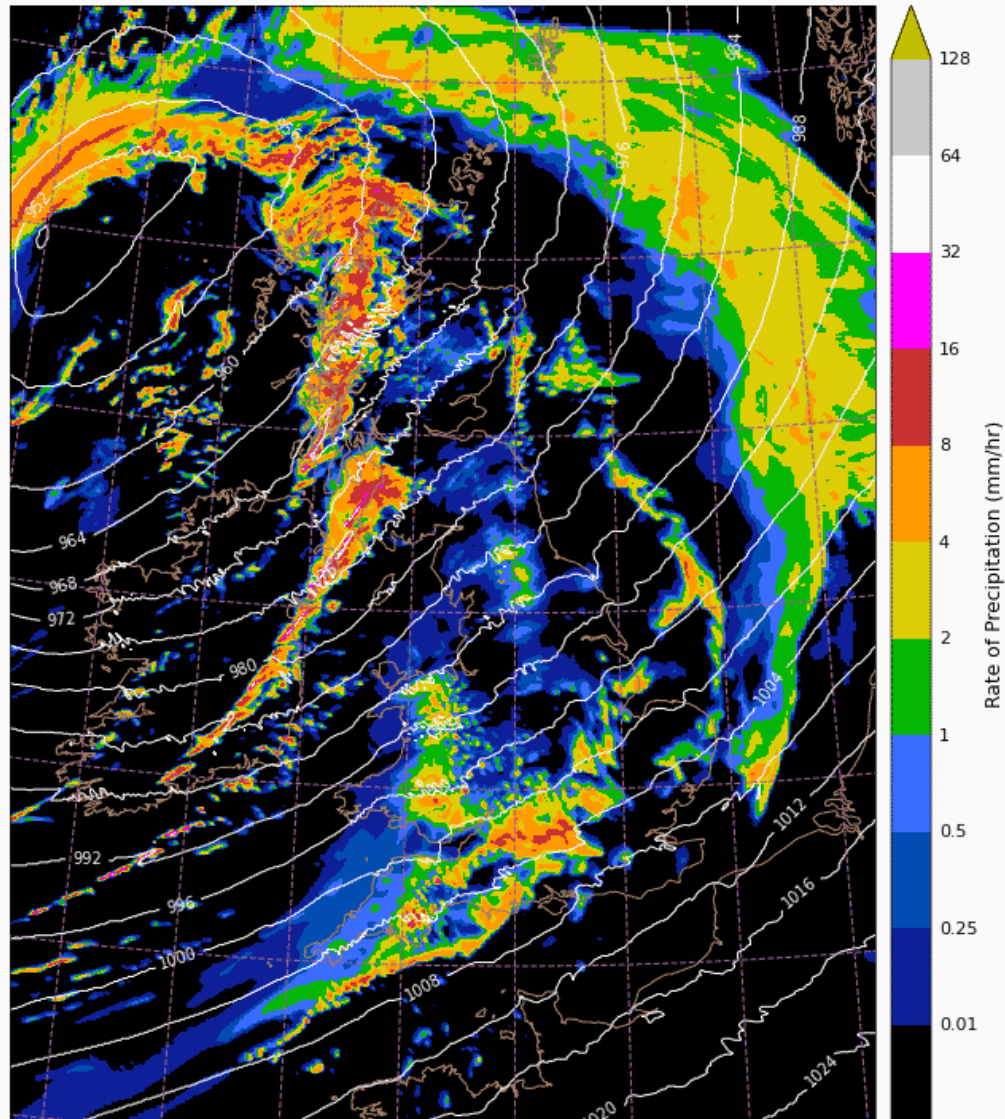
Issued:

1230 Z 20 Jan 2024

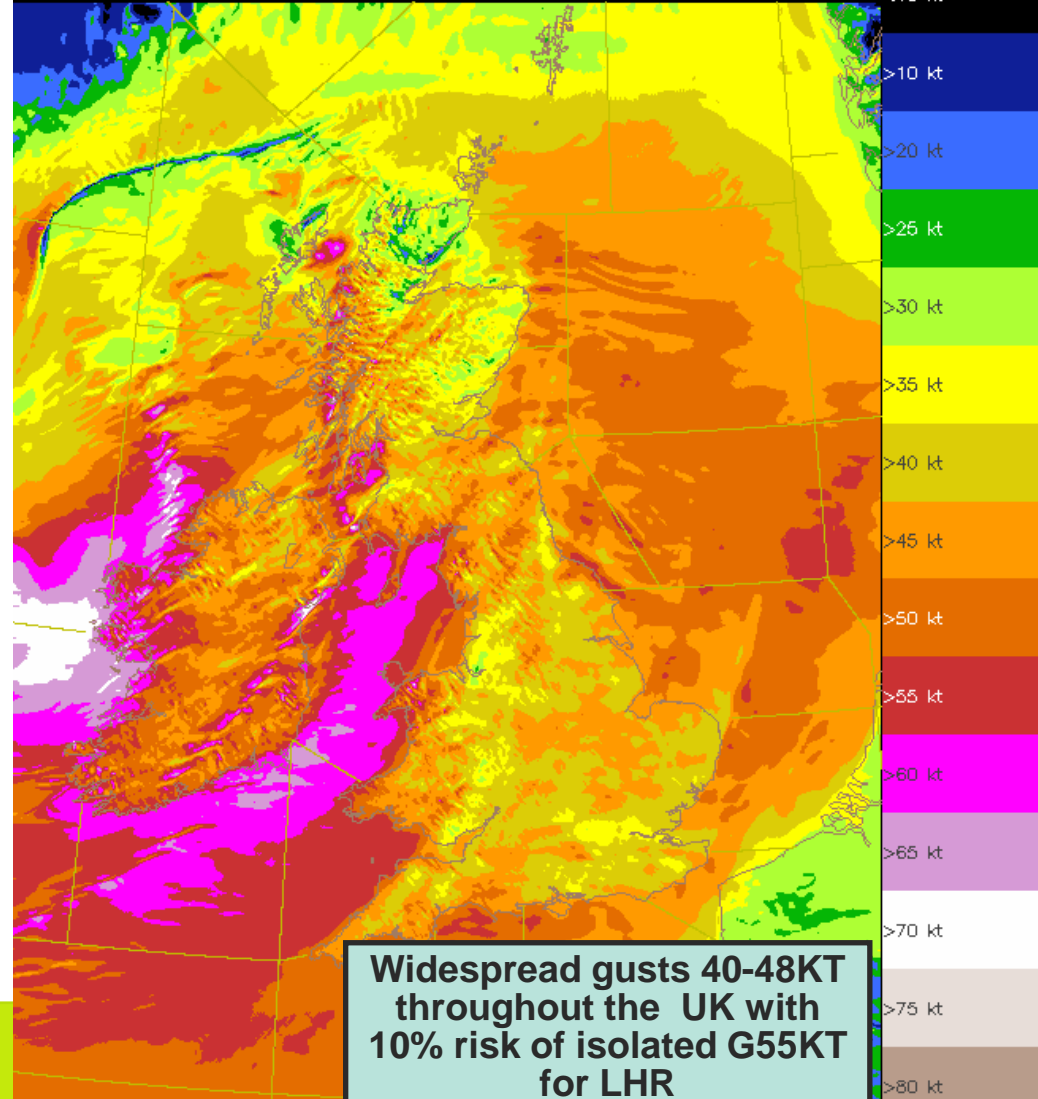
- Gale force winds expected and highlighted on forecast products in week leading up to storm.
- Early Friday 19th – Storm Isha named.
- Forecast to bringing significant winds from 1500Z.
- SSW'ly (200-220°) winds expected:
 - Gusts 35-47KT and strengthening overnight.
 - Crosswinds component 40-44KT very close to operating limits.

Forecast rainfall & gusts at 1900Z

1900 UTC on Sun 21/01/2024 (T+7)
Precipitation Rate & MSL Pressure



19:00 Sunday 21/01/2024 (T+07:00)



Decision making ahead



Heathrow runs to a Service Plan – the HSP at 1 and 2 days in advance

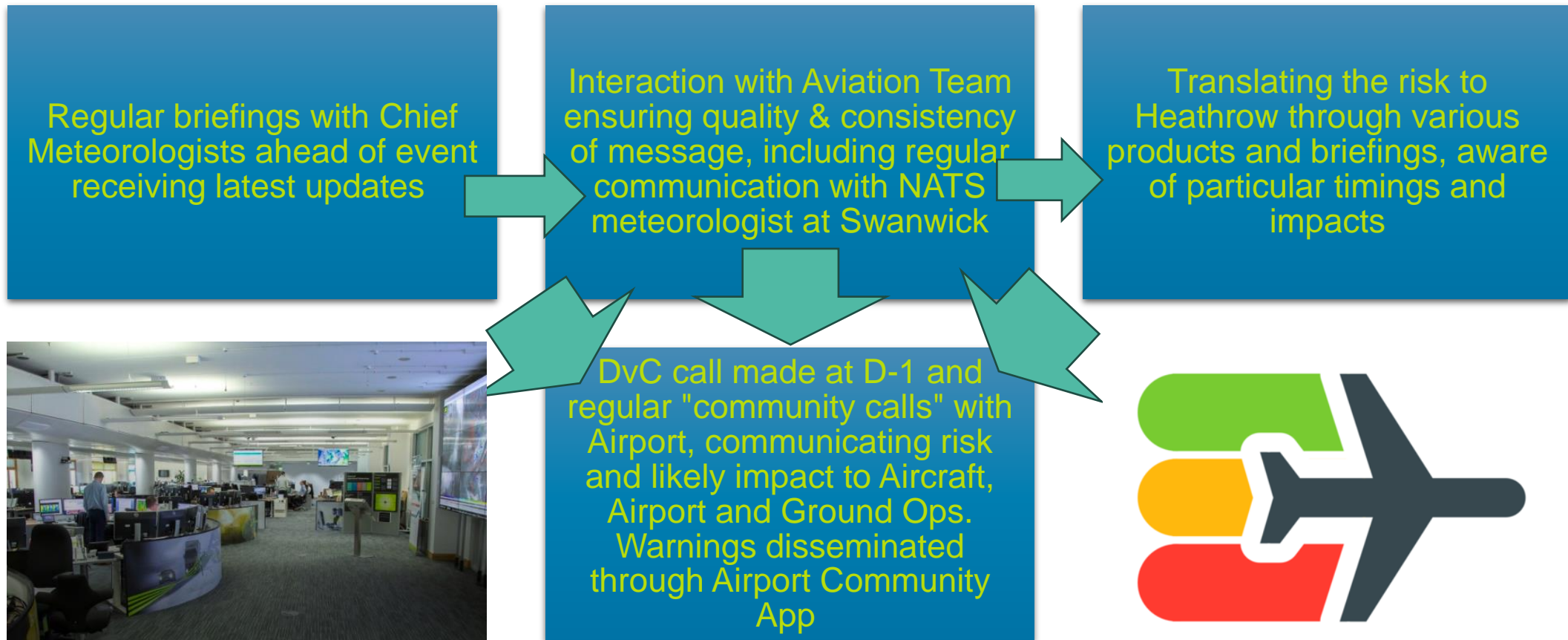


Using known flow and landing rates, NATS Heathrow use weather forecasts from the onsite team to assess the DEMAND (scheduled flights) vs. CAPACITY (what can be achieved)



In this case, the demand exceeded the capacity leading to a schedule intervention 24 hours ahead, reducing the impacts during the event.

Internal and external collaboration



Forecast analysis and event summary

- Accurate forecast, with surface & 3000 FT winds within 5KT of forecast.
- Risk of crosswinds close to limits highlighted far in advance.
- 22 go-arounds in total, mostly after 1800Z
- Demonstrates benefit of pro-active decision making through schedule intervention, reducing on the day delays and cancellations.
- Good confidence in our strong wind forecast, with analysis of 20 wind events since 2017 indicating the D-2 forecast as accurate as D-1

Date	Time (z)	SFC			3000 FT	
		DIR	SPD	Gusts	DIR	SPD
Actual	0300	190	14		240	58
	0600	200	14		240	51
	0900	210	14		240	44
	1200	210	16	26	230	48
	1500	220	21	33	230	56
	1800	200	24	37	220	65
	2100	210	27	43	220	69
	2400	210	24	39	220	74
D-1 forecast	0300	190	16	28	230	55
	0600	210	15	25	250	47
	0900	220	15	20	240	50
	1200	210	15	25	250	50
	1500	210	19	34	230	56
	1800	200	24	40	220	60
	2100	200	25	47	220	70
	2400	210	25	45	230	75

Any questions...

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