Aviation and Weather Forecasting

Weather forecasting plays a key role in the safety and economy of aviation around the globe. There are two "World Area Forecast Centres" or WAFC's around the world. The First is the Meteorological Office in the UK, and the second is based in Washington, North America. The WAFC's are responsible for supplying data from and to the world. This data is about Upper Wind speed and direction and also temperatures. This data is collected and analysed by the WAFC's and is then sent around the globe via a "Satellite Distribution" system, or SADIS, which the Met Office operates. This allows data of upper wind speeds and direction and upper temperatures to be distributed around the globe in a cost effective manner.

This data then helps airliners and Operators to fly in a safer environment and it also helps them fly in a more economic fashion, which saves fuel and money for the airliner. They provide this data twice a day and give Significant Weather Data charts, or SIGWX, every 6 hours for FL250 and above. SIGWX data covers Europe, the Middle East, Asia, Australasia, Africa and The Atlantic.

The data provided is not only about wind speed and temperatures but it can also help deduce where turbulence may occur and also it can let the pilot know about visibility while taking off, in flight and while landing. This can help the pilot prepare for any uncertainties that may occur during flight. Weather forecasts can help airliners avoid storms, turbulence and other dangerous weather that may cause problems or reduce the economy of the flight. This will increase the safety of the crew and passengers and will also reduce the cost of flying from A to B.

Not only do they produce data on upper winds, temperature and visibility, but they also have a Volcanic Ash Advisory Center. This is used to make sure that any airliner flying over the North East Atlantic is not in at risk from the volcanic ash that may be produced by nearby volcanoes. The centre provides up to date reports and forecasts on the movements of Volcanic Ash plumes in the area. They help decide when it is safe for an airliner to travel and which areas/routes that should be avoided or cancelled. This may have to occur as concentrates of volcanic ash can have a serious impact on jet engines of aircraft which can cause them to fail.

In wintry conditions airliners may be grounded due to ice, however the Met Office has provided the de-icing service which can help airliners continue to run smoothly in freezing conditions. It is developed for airlines and airports and the service is proved to reduce ice delays by 84% and reduce costs by up to 30%.

The Met Office also provides many different courses for Airliners and Airports, for example they provide Aeronautical Meteorological Forecasting. This courses aim is 'To increase knowledge of aviation weather hazards and review new developments in aviation meteorology'. This course will help improve awareness of potential weather hazards that may occur while the plane is in flight.

The Met Office also works with the Special Forces (Navy, Army and RAF) and provides them with detailed environmental analyses from anywhere all over the Globe. Each force has an aviation fleet and the Met office provides them with up to date weather analysis in their field and helps them be more
aware of the environment they are in. This helps them fly better and carry out tasks easier and more effectively. They are kept aware of developments in weather systems.

The Met office has certain responsibilities to the CAA and NATS. These include supplying:

- Gridded winds and temperature of Atlantic Tracks
- Inspections of aerodrome observing services
- Investigation of meteorological-related mandatory occurrence reports
- Offshore helicopter forecasts and observer training.

MeteoGroup also provides weather services for Aviation. They provide comprehensive weather forecasting services to airports and airlines focusing on improving efficiency without compromising safety. They provide accurate forecast data and they work closely with airports around the globe to provide accurate data. This information means that the airports and airlines have increased efficiency. It also helps improve the routes of aircrafts by using global models and predicting the weather patterns along a specific route. This helps ensure that the route that the aircraft flies by is the safest and most efficient.

MeteoGroup also has a de-icing service which helps manage and minimise the effect of adverse weather. It is developed with AviaCast and provides winter hazard forecasts which can help reduce delay times due to wintry conditions which will ice the plane up.

All this data is sent to Air Traffic Control centres at each airport around the globe who then, from training, decide which routes the aircrafts should fly by, which provide the safest and most economic route. The met office have provided a weather service with SITA which provides a programme which integrates the latest weather information with flight routes to create the most comprehensive briefing possible. It combines graphical images and weather information with flight routes. This provides a real time, route specific information which will greatly help the airliners operators. It automatically generates weather charts with a flight plan. It can provide accurate forecasts for up to five days in advance for anywhere in the world.

The Met office provides airline consultancy services which can help airliners on the road to reducing their environmental impact, give them advice on future planning or understanding the challenges that are presented by climate change. This consultancy service helps make airliners and companies in the aviation industry able to make a more informed strategic decision based on the information provided.