



**SESAR  
Harmonised  
Turbulence and 3D  
RADAR Services  
User Guide**

## Contents

Contents.....	2
Introduction .....	3
Document history .....	3
What are the different products available? .....	4
Who is eligible for access to these services? .....	5
How do I register my organisation for access to these services? .....	6
Setting up your Met Office Account.....	6
Configuring systems to access SESAR Services endpoint .....	7
Further information for developers .....	7
Contact us .....	7

## Introduction

The SESAR Harmonised Turbulence and 3D Radar services build a common aviation weather reference wherever you are in Europe, so that more optimal flight planning decisions can be made to avoid disruption and delays for passengers and cargo.

Through a better understanding of where potentially hazardous weather conditions will occur en-route, airlines and Air Traffic Control can reduce the number of reactive diversions which cause additional fuel burn resulting in increased CO2 emissions and costs.

The Met Office has worked with partners across Europe on three SESAR Deployment projects which provide aviation stakeholders with new tools to make dynamic decisions based on the prevailing weather conditions for all stages of a flight. The partners contributing to these operational services are DWD, Météo-France and the Met Office.



## Document history

Edition	Date	Reason	Impacted Areas
V0.0	02/07/2021	First Draft	All
V1.0	16/07/2021	First Edition (fully approved)	All
V1.1	12/10/2021	Update	Configuring systems to access SESAR Services Endpoint
V1.2	15/07/2022	Update	Minor updates

## What are the different products available?

There are two services, the Harmonised Turbulence service and the 3D RADAR service, each with a variety of different products available. These are:

### Harmonised Turbulence:

Product Type	Format	Horizontal Resolution	Vertical Pressure Levels	Timesteps	Update Frequency	Duration (hours)
Full pan-European spatial gridded dataset	GRIB2	0.0625	9	28	Every 6 hours	T+36
Choice of pre-defined FAB area sub-sets for gridded datasets	GRIB2	0.0625	9	28	Every 6 hours	T+36
Full pan-European spatial area polygon features service	GeoJSON	n/a. Separated by turbulence severity values	9	28	Every 6 hours	T+36

### 3D RADAR

Product Type	Domain Area	Format	Horizontal Resolution	Vertical Unit	Vertical Levels	Update Frequency
Full high-resolution dataset	Covering FABEC and UK-Ireland FAB	ODIM HDF5	1 km	Metres	24	Every 5 minutes
Full low-resolution dataset	Wider pan-European geographical area	ODIM HDF5	2 km	Metres	24	Every 15 minutes
Full high-resolution dataset*	Covering FABEC and UK-Ireland FAB	GRIB2	1 km	Flight Levels	24	Every 5 minutes
Subset of high-resolution datasets*	Choice of pre-defined FAB area subsets	GRIB2	1 km	Flight Levels	24	Every 5 minutes
Full low-resolution dataset*	Wider pan-European geographical area	GRIB2	2 km	Flight Levels	24	Every 15 minutes

\*Please note, these services are initially being made available as SWIM candidate services only and will not currently be used operationally, only for further user testing.

4

## Who is eligible for access to these services?

The Harmonised Turbulence and 3D RADAR services are primarily intended for use by aeronautical users for aviation purposes as defined in Annex 3 of the ICAO Chicago Convention of 1944 and regulation (EU) 2017/373 Annex V – Part-MET in MET.OR.100. These regulations indicate there are many types of aeronautical user, such as:

1. Airlines
2. Air Traffic Control
3. Airport Management
4. Flight Crew
5. Search and Rescue Services
6. Handling Agencies
7. Flight planning companies
8. EUROCONTROL Network Manager
9. MET Air Navigation Service Providers

A small number of other uses are permitted, specifically by National Meteorological and Hydrological Services for Official Duty Purposes only. Please check the following table to see if your organisation is eligible to use these services:

User Type/ license conditions	Official Duty - real time forecasting duty for regulated aviation	Use of IRMA in Aeronautical domain	Official Duty - real time forecasting duty other use covered by 'Official Duty' definition	Official Duty - for national infrastructure/ regulated bodies. Product cannot be altered for any onward transmission	Aeronautical Commercial contract within the aeronautical service provision domain	Commercial contract non-aviation	Aeronautical and Official Duty Research - not in real time, outcome of research cannot be used for future commercial activities
Aeronautical	N/A	Yes	N/A	N/A	Yes	No	Yes
MET ANSP	Yes	Yes	N/A	N/A	(Yes)	No	Yes
NMHS (not in the capacity of MET ANSP)	N/A	N/A	Yes	(Yes)	No	No	Yes
Commercial weather provider	N/A	N/A	No	No	Yes	No	No
Research institutions	N/A	N/A	No	No	No	No	No
General Public	N/A	N/A	No	No	No	No	No
Special category single site weather radar provider	N/A	N/A	N/A	N/A	No	No	N/A

If you are unsure whether your organisation is eligible for access to these services, please contact [SESARServicesManager@metoffice.gov.uk](mailto:SESARServicesManager@metoffice.gov.uk).

## How do I register my organisation for access to these services?

The SESAR Services datasets are available via our https: endpoint, therefore it is most likely an engineer or technician will need to set up the credentials for the “machine-to-machine” communications to download the data via API.

1. Please contact the Met Office [SESAR Services Manager](#) to request access to the services, providing your full name, job role, organisation, business email address, business telephone number and stating which industry you are in (European Air Traffic management, State Air Navigation Service Provider, Airline, Airport – if ‘other’ please specify).
2. We will also require a specific email address which will be used to set up the account for accessing the SESAR endpoint via API.

(We recommend using a group email address, for example in the format [groupemailaddress@businessdomain.com](#), rather than your personal email address. This is so that the registered email address is unique to your machine systems and technical personnel can have access to the inbox, but your account will not be dependent on an individual’s personal email address.)

### **Your organisation must be approved to use the SESAR Harmonised Turbulence and 3D RADAR Services**

## Setting up your Met Office Account

The SESAR Services Manager will provide a confirmation email when your email address has been approved for use, where you will be supplied with a link to set up your Met Office account.

1. Click on the link provided to set up your Met Office account.
2. The system will guide you through the rest of the process to set up your user account, using your approved group business email address.
3. You will be prompted to set up a password for your account which is required to ingest SESAR Services data via the SWIM Compliant Endpoint.
4. Your account will now be set up and your machine will be able to retrieve the SESAR Services data successfully. You can now log in to the SESAR Services access point with your username (email address) and password on the Login page.

### **You must set a password for your account. Keep your password private.**

## Configuring systems to access SESAR Services endpoint

To configure your systems to access the SESAR endpoint and retrieve the data successfully, you will require the following:

1. An approved business email address which has been registered via the process above.
2. Your password as described above.
3. SWAGGER definition, which can be found either in the relevant SWIM Service Description on the [SWIM Registry](#) or in the SESAR Services API Specification document on [our website](#).
4. Client ID and Scope information. The following supplementary information will also be required for authentication and to complete the set-up process:

```
Client ID = 5f6e8834-2d01-4645-84f5-0f7ba4ff52df
```

```
Scope = 5f6e8834-2d01-4645-84f5-0f7ba4ff52df offline_access
```

## Further information for developers

More information about the products available can be found in the following documents on our website ([www.metoffice.gov.uk/sesarprojects](http://www.metoffice.gov.uk/sesarprojects)):

1. [SESAR Hazards Turbulence Service Polygons guidance](#)
2. [SESAR Hazards Turbulence Service Subset Maps](#)

## Contact us

If you have any questions about the onboarding process or setting up the APIs, [please visit our FAQs](#) or contact: [SESARServicesManager@metoffice.gov.uk](mailto:SESARServicesManager@metoffice.gov.uk)