EUROCONTROL Aviation Data Repository for Research – Metadata

EUROCONTROL releases flight data for R&D purposes, subject to users agreeing the terms and conditions, which in summary are:

- **I shall use the Aviation Data Repository for Research only for research & development**
- **I shall not share or distribute the Aviation Data Repository for Research**
- **I shall duly acknowledge EUROCONTROL as the source of the Aviation Data Repository for Research**
- **I am aware of and accept the fact that EUROCONTROL provides the Aviation Data Repository for Research as-is, without warranties of any kind.**

We release traffic datasets covering all historic commercial flights in all twelve months of the years from 2015 onwards, while remaining within the restrictions of use placed on EUROCONTROL. 'Historic' means a delay of one year before release. 'Commercial' means excluding military, state and general aviation flights.

This meets the research need while remaining consistent with our data policy.

The data are provided 'as is', with no quality guarantees, and no support beyond the provision of metadata that is given in this document.

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1. INTRODUCTION

EUROCONTROL releases flight data for R&D purposes, subject to users agreeing the terms and conditions ("Terms of Use").

Flight and profile data for points and airspaces are derived from flight plans submitted by airlines and other aircraft operators to the EUROCONTROL Network Manager (NM), together with flight profiles generated by NM's ATFM systems. Flight plans must be submitted to NM for all instrument flight rules (IFR) flights within the NM Area.

In some cases, the aircraft operator value in the flight plan has been updated with more accurate values from the EUROCONTROL Central Route Charges Office (CRCO) data. The point and airspace profile in the 'actual' version of the data includes some updates from radar observation of the flight's path.

The data source for the ATFM environment data is the EUROCONTROL Network Manager database of airspace and route structures used by NM's ATFM systems.

Each monthly batch of flight and profile data includes flights whose planned departure time occurred in the month delivered. Flight data is filtered to include flights of ICAO flight types 'S' (scheduled) and 'N' (non-scheduled flight), excluding ICAO types General aviation, Military and Other.

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2. FLIGHTS

Flights File - flight details from Eurocontrol Network Manager flight plans in PRISME Data Warehouse (DWH)

ECTRL_ID	Unique numeric identifier for each flight in Eurocontrol PRISME DWH
ADEP	ICAO airport code for the departure airport of the flight. The ICAO airport code or location indicator is a four-letter alphanumeric code designating each airport around the world. These codes are defined by the International Civil Aviation Organization, and published in ICAO Document 7910: Location Indicators. Unknown airport is encoded as 'ZZZZ' (latitude/longitude: 0.0, 0.0 respectively)
ADEP Latitude	Latitude of departure airport in decimal degrees. Unknown airport is encoded as 'ZZZZ' (latitude/longitude: 0.0, 0.0 respectively)
ADEP Longitude	Longitude of departure airport in decimal degrees. Unknown airport is encoded as 'ZZZZ' (latitude/longitude: 0.0, 0.0 respectively)
ADES	ICAO airport code for the destination airport of the flight. The ICAO airport code or location indicator is a four-letter alphanumeric code designating each airport around the world. These codes are defined by the International Civil Aviation Organization, and published in ICAO Document 7910: Location Indicators. If a flight is diverted, then the ADES will be the actual airport where it landed. Unknown airport is encoded as 'ZZZZ' (latitude/longitude: 0.0, 0.0 respectively)
ADES Latitude	Latitude of destination airport in decimal degrees. Unknown airport is encoded as 'ZZZZ' (latitude/longitude: 0.0, 0.0 respectively)
ADES Latitude	Latitude of destination airport in decimal degrees. Unknown airport is encoded as 'ZZZZ' (latitude/longitude: 0.0, 0.0 respectively)
FILED ARRIVAL TIME	Time of arrival (UTC) based on the last filed flight plan. It is the time at which the aircraft will land at the aerodrome according to the planned profile calculated for the flight.
ACTUAL OFF BLOCK TIME	Off-Block Time (UTC) based on the ATFM-updated flight plan. The time that an aircraft departs from its parking position.

	This time may be known from flight data updates received by NM, or in the absence of such updates may be calculated from the known take-off time minus a standard taxi time value for the airport.
ACTUAL ARRIVAL TIME	Time of arrival (UTC) based on the ATFM-updated flight plan. It is the time at which the aircraft lands at the aerodrome, reflecting the best picture that NM has based on available radar updates, ATFM messages received etc.
AC Type	The ICAO aircraft type designator is a two-, three- or four-character alphanumeric code designating every aircraft type that may appear in flight planning. These codes are defined by the International Civil Aviation Organization, and published in ICAO Document 8643 Aircraft Type Designators.
AC Operator	Three-letter ICAO operator code. Aircraft operator codes are defined by ICAO and published in Document 8585. If the operator is unknown, not provided in the flight plan or not present in Document 8585 the value will be "ZZZ".
AC Registration	Aircraft registration. In accordance with the Convention on International Civil Aviation, all civil aircraft must be registered with a national aviation authority (NAA) using procedures set by each country. Every country, even those not party to the Chicago Convention, has an NAA whose functions include the registration of civil aircraft. An aircraft can only be registered once, in one jurisdiction, at a time. The NAA allocates a unique alphanumeric string to identify the aircraft, which also indicates the nationality of the aircraft, and provides a legal document called a Certificate of Registration, one of the documents which must be carried when the aircraft is in operation.
ICAO Flight Type	ICAO Flight Type: S – Scheduled, N - Non-scheduled commercial operation
STATFOR Market Segment	Market segment definitions can be found in Market segment rules | EUROCONTROL
Requested FL	Requested cruising flight level from the flight plan.
Actual Distance Flown (nm)	Distance flown in nautical miles, corresponding to the 'actual' profile below.

3. FLIGHT POINTS

3.1 Filed flight points

ECTL_ID	As in Flights file above
Sequence Number	Numeric sequence number of the points crossed by the flight in chronological order. (Points can be not only known named waypoints, navaids, etc. but also intermediate points inserted by NM profile-generation processes.)
Time Over	Time (UTC) at which the point was crossed
Flight Level	Altitude in flight levels at which the point was crossed
Latitude	Latitude in decimal degrees
Longitude	Longitude in decimal degrees

3.2 Actual flight points

As for filed flight points.

4. FLIGHT AIRSPACES

4.1 FIRs

4.1.1 FILED

ECTL_ID	As in Flights file above
Sequence Number	Numeric sequence number of the airspace entered by the flight in chronological order
FIR ID	The identifier of the FIR, see FIR Data set
Entry Time	Time (UTC) the flight entered the airspace
Exit Time	Time (UTC) the flight exited the airspace

4.1.2 ACTUAL

As for Filed.

4.2 AUAs

4.2.1 FILED

ECTL_ID	As in Flights file above
Sequence Number	Numeric sequence number of the airspace entered by the flight in chronological order
AUA ID	The identifier of the AUA
Entry Time	Time (UTC) the flight entered the airspace
Exit Time	Time (UTC) the flight exited the airspace

4.2.2 ACTUAL

As for Filed.

5. ATM ENVIRONMENT DATA

Here 'environment' refers to the structure of the airspace.

5.1 AIRAC

External ID	Unique ID of the AIRAC cycle. AIRAC stands for Aeronautical Information Regulation And Control and defines a series of common dates and an associated standard aeronautical information publication procedure for States. It consists of four digits. The first two digits represent the year in which the AIRAC was published. The third and the forth digits represent the sequential number of the AIRAC cycle.
Date From	First date at which AIRAC data is valid.
Date To	Last date at which AIRAC data is valid.

5.2 Routes

Route ID	Unique route identifier. According to ICAO Annex 11 basic designators for ATS routes shall consist of a maximum of five, in no case exceed six, alpha/numeric characters in order to be usable by both ground and airborne automation systems. The designator shall indicate the type of the route: high/low altitude, specific airborne navigation equipment requirements (RNAV), aircraft type using the route primarily or exclusively. A. The basic designator consists of one letter of the alphabet followed by a number from 1 to 999. The letters may be: 1. A, B, G, R — for routes which form part of the regional networks of ATS routes and are not area navigation routes; 2. L, M, N, P — for area navigation routes which form part of the regional networks of ATS routes; 3. H, J, V, W — for routes which do not form part of the regional networks of ATS routes and are not area navigation routes; 4. Q, T, Y, Z — for area navigation routes which do not form part of the regional networks of ATS routes. B. Where applicable, one supplementary letter shall be added as a prefix to the basic

	designator as follows: 1. K — to indicate a low level route established for use primarily by helicopters; 2. U — to indicate that the route or portion thereof is established in the upper airspace; 3. S — to indicate a route established exclusively for use by supersonic aircraft during acceleration/deceleration and while in supersonic flight. C. Where applicable, a supplementary letter may be added after the basic designator of the ATS route as a suffix as follows: 1. F — to indicate that on the route or portion thereof advisory service only is provided; 2. G — to indicate that on the route or portion thereof flight information service only is provided; 3. Y — for RNP1 routes at and above FL200 to indicate that all turns on the route between 30 and 90 degrees shall be made within the tolerance of a tangential arc between the straight leg segments defined with a radius of 22.5 NM; 4. Z — for RNP1 routes at and below FL190 to indicate that all turns on the route between 30 and 90 degrees shall be made within the tolerance of a tangential arc between the straight leg segments defined with a radius of 15 NM.
Sequence Number	Numeric sequence number of a point on the route
Latitude	Latitude in decimal degrees of a point on the route
Longitude	Longitude in decimal degrees of a point on the route

5.3 Flight Information Regions (FIRs)

Airspace ID	Unique identifier of the FIR (could also be a UIR, Upper Information Region)
Min Flight Level	Minimum vertical boundary of the airspace volume expressed as a flight level, repeated for each point
Max Flight Level	Maximum vertical boundary of the airspace volume expressed as a flight level, repeated for each point
Sequence Number	Numeric sequence number of a boundary point of the FIR's shape
Latitude	Latitude in decimal degrees
Longitude	Longitude in decimal degrees

6. GLOSSARY

AC	aircraft
ADEP	airport of departure
ADES	airport of destination
AIRAC	aeronautical information regulation and control
ATC	air traffic control
ATM	air traffic management
ATS	air traffic services
AUA	ATC unit airspace
CRCO	EUROCONTROL Central Route Charges Office
DWH	data warehouse
IFR	instrument flight rules
FIR	flight information region
FL	flight level
ICAO	International Civil Aviation Organisation
ID	identifier
NAA	national aviation authority
NM	EUROCONTROL Network Manager
NM	nautical mile
PRISME	EUROCONTROL data warehouse of flights and related information
R&D	research and development
STATFOR	Statistics and Forecast Service of EUROCONTROL
UTC	universal time coordinated (also known as Z-time or Greenwich Mean Time), as opposed to local time

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