

Early Diversion Detection System - EDDY

The Early Diversion Detection System (EDDY) is used to identify the risk of diversion due to adverse weather at the airport of destination.

An AO can use EDDY to support the pilot at an early stage in his/her decision to divert or hold, based on risk of diversion and fuel estimations.

The main motivations for an AO to use EDDY are:

- **Operational:** Anticipate a flight diversion to limit fleet and/or crew schedules disruptions and maintain passenger satisfaction.
- **Economical:** Reduce diversion costs.
- **Environmental:** Reduce fuel consumption by avoiding diversion; better plan the logistics from the service provider to transport cargo at the airport of destination.

Note: This innovative tool is at the end of the validation process. It reached the end of a live trial run with 5 airlines and 3 airports and will soon move to the last step of the process which is deployment. The tool is currently available via an API or a R&D prototype accessible in your OCC.

THE PROCESS

To display the flights with high risk of diversion, the AO shall open its **FLIGHT LIST**, where each row corresponds to one flight, and each column shows different attributes of the flight. The detailed description of each column can be obtained by hovering the cursor over its name.

The screenshot shows the EDDY Flight List interface. At the top, there are filters for date (Thu 21 Dec), airline (SAS), and various other parameters. The main table lists flights with columns for ENTRY, ARCID, ATYP, ADEP, ADES, D, RM, T, IOBT, U, E/CTOT, X, S, TOBT, A/TTOT, DELAY, E/C/ATA, MPR, O, OAO, RVR, DIV, DIV NATURE, and REG @ ADES. Below the table, a detailed view for flight SAS2746 is shown, including forecast data and diversion probability. At the bottom, there are navigation buttons and a filter for 'Min Diversion Probability(%)' set to 80.

ENTRY ↑	ARCID	ATYP	ADEP	ADES	D	RM	T	IOBT	U	E/CTOT	X	S	TOBT	A/TTOT	DELAY	E/C/ATA	MPR	O	OAO	RVR	DIV	DIV NATURE	REG @ ADES
12:45E	SAS2746	CRJ9	EKCH	EYPA			I	21-12:35		12:45E			I			13:35E		N	BCY	350	88	TEMPO	
13:35E	SAS1215	AT76	EKCH	EKYT			I	21-13:25		13:35E			I			14:19E		N	EST	300	93	TEMPO	
16:40E	SAS1203	CRJ9	EKCH	EKYT			I	21-16:30		16:40E			I			17:13E		N	BCY	350	93	TEMPO	
16:50E	SAS1921	AT76	ENGM	EKYT			I	21-16:40		16:50E			I			17:40E		N	EST	300	93	TEMPO	

Regulations at flight ADES

SAS2746(AT03087327):6570(OBSERVATION):Flight Diversion Probability:0.00 Ceiling:10000 Cover:SCT Cumulonimbus:N Direction:SSW Gust:0 Speed:4 Visibility:10000 Shear:N Release time:21-08:20
 9140(FORECAST):Applicability:21-06:00 - 21-11:00 Flight Diversion Probability:1.00 Ceiling:2000 Cover:SCT Cumulonimbus:N Direction:SW Gust:0 Speed:5 Visibility:9000 Shear:N Release time:21-05:00
 9141(FORECAST):Applicability:21-06:00 - 21-12:00 Flight Diversion Probability:20.00 Ceiling:1200 Cover:SCT Cumulonimbus:Y Descriptor:SH Direction:WSW Gust:0 Phenomena:RA Speed:7 Visibility:5000 Shear:N Release time:21-05:00
 9142(FORECAST):Applicability:21-11:00 - 21-18:00 Flight Diversion Probability:24.00 Ceiling:500 Cover:OVC Cumulonimbus:N Direction:SSE Gust:14 Speed:7 Visibility:9000 Shear:N Release time:21-05:00
 9143(FORECAST):Applicability:21-13:00 - 21-18:00 Flight Diversion Probability:24.00 Ceiling:500 Cover:OVC Cumulonimbus:N Direction:SSE Gust:14 Speed:7 Visibility:9000 Shear:N Release time:21-05:00

Details Map TVs Impact Regul Risks AOWIR Op Log FPL History FPL Fit Msg Measure Upd eHelpDesk A/C Rotation Quick Info Human No filtering Min Diversion Probability(%) + 80 -

4 of 226 Flights

The **DIVERSION INFORMATION**, at the right part of the flight list, includes:

- **DIV:** Probability of flight diversion (%)
- **DIV NATURE:** Source of the weather data used to perform the prediction (TAF or METARS).

DIV	DIV NATURE
88	TEMPO
93	TEMPO
93	TEMPO
93	TEMPO

Risk of diversion can be filtered by setting the **MIN DIVERSION PROBABILITY (%)** value at the bottom of the flight list.

Min Diversion Probability(%) + 80 -

To have *details about the weather observation and forecast* that are used to predict the likelihood of diversion for a specific flight, the user can select the flight and click the “**Quick info**” button at the bottom of the window.

The user can choose to display the **raw METAR / TAF format** or the **processed fields** Human

The “**Quick info**” cell for a specific flight shows the METAR (Observation) and TAF (Forecast), including all applicability periods with the associated probability of diversion.

```
time:21-05:00
9140(FORECAST):Applicability:21-06:00 - 21-11:00 Flight Diversion Probability:1.00 Ceiling:2000 Cover:SCT Cumulonimbus:N Direction:SW Gust:0 Speed:5 Visibility:9000 Shear:N Release time:21-05:00
9141(FORECAST):Applicability:21-06:00 - 21-12:00 Flight Diversion Probability:20.00 Ceiling:1200 Cover:SCT Cumulonimbus:Y Descriptor:SH Direction:WSW Gust:0 Phenomena:RA Speed:7 Visibility:5000 Shear:N Release
time:21-05:00
9142(FORECAST):Applicability:21-11:00 - 21-18:00 Flight Diversion Probability:24.00 Ceiling:500 Cover:OVC Cumulonimbus:N Direction:SSE Gust:14 Speed:7 Visibility:9000 Shear:N Release time:21-05:00
9143(FORECAST):Applicability:21-13:00 - 21-18:00 Flight Diversion
Probability:88.00 Ceiling:1200 Cover:BKN Cumulonimbus:Y Descriptor:SH Direction:SSE Gust:14 Phenomena:RA Speed:7 Visibility:3000 Shear:N Release time:21-05:00
```

Less than 3 hours before E/C/ATA, the predictions for diversion are based on observations (METARS), otherwise forecasts (TAF).

In the example above, the TAF was released at 21/12 05:00 and is composed of four applicability periods:

- 21/12 06:00 - 21/12 11:00,
- 21/12 06:00 - 21/12 12:00,
- 21/12 11:00 - 21/12 18:00,
- 21/12 13:00 - 21/12 18:00.

Note that when the TAF is composed by several periods, the *periods that include the ETA of the selected flight* are **highlighted in blue** to easily identify them. In this case, the consideration of the probability for diversion follows the priority rule:

- 1) **TEMPO without probability associated**
- 2) **TEMO with probability associated**
- 3) **BECMG**
- 4) **Prevailing conditions**

Here, the probability of diversion of the selected flight is 88% (TAF released at 21/12 05:00, applicability period 21/12 13:00 - 21/12 18:00).