



Network Manager
nominated by
the European Commission



Monthly Network Operations Report

Analysis – December 2017



TABLE OF CONTENTS

TABLE OF CONTENTS	2
NOTICE	2
1. TOTAL TRAFFIC	3
2. ATFM DELAY AND ATTRIBUTIONS	6
3. EN-ROUTE ATFM DELAYS	7
En-Route ATFM Delay per Location	7
En-Route ATFM Delay per Delay Group	8
En-Route ATFM Delay per Flight	9
En-Route ATFM Delay Year-To-Date	10
4. AIRPORT/TMA ATFM DELAYS	11
Airport/TMA ATFM Delay per Location	11
Airport/TMA ATFM Delay per Delay Groups	11
Airport/TMA ATFM Delay per Flight	12
Airport/TMA ATFM Delay Year-To-Date	12
5. DAILY EVOLUTION	12
6. ALL AIR TRANSPORT DELAYS (SOURCE: CODA)	13
7. ATFM SLOT ADHERENCE	14
8. SIGNIFICANT EVENTS AND ISSUES	14
Planned Events	14
ACC	14
Airports	15
Disruptions	15
9. NM ADDED VALUE	16

NOTICE

Traffic and Delay Comparisons

All traffic and delay comparisons are between report month and equivalent month of previous year, unless otherwise stated.

Graphics















All graphs in chapter 3 and chapter 4 are in average minutes of ATFM delay per day, unless otherwise stated.

NM Area

All figures presented in this report are for the geographical area that is within Network Manager's responsibility (NM area). For further information on the NM Area go to the Reporting Assumptions and Descriptions document available on the EUROCONTROL website at <http://www.eurocontrol.int/articles/network-operations-monitoring-and-reporting>.

Regulation Reason Groupings

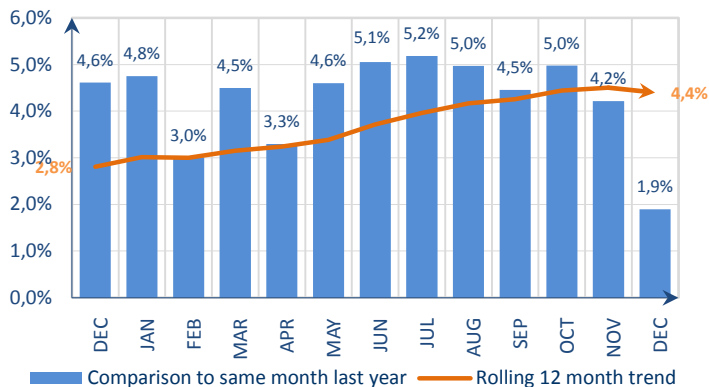
The table below shows the colour coding used in the report charts.

	EN-ROUTE CAPACITY (ATC)		AIRPORT CAPACITY (ATC)
	EN-ROUTE STAFFING (ATC)		AIRPORT STAFFING (ATC)
	EN-ROUTE DISRUPTIONS (ATC)		AIRPORT DISRUPTIONS (ATC)
	EN-ROUTE CAPACITY		AIRPORT CAPACITY
	EN-ROUTE DISRUPTIONS		AIRPORT DISRUPTIONS
	EN-ROUTE EVENTS		AIRPORT EVENTS
	EN-ROUTE WEATHER		AIRPORT WEATHER

For further information on the regulation reason groupings, go to the Reporting Assumptions and Descriptions document available on the EUROCONTROL website at <http://www.eurocontrol.int/articles/network-operations-monitoring-and-reporting>.

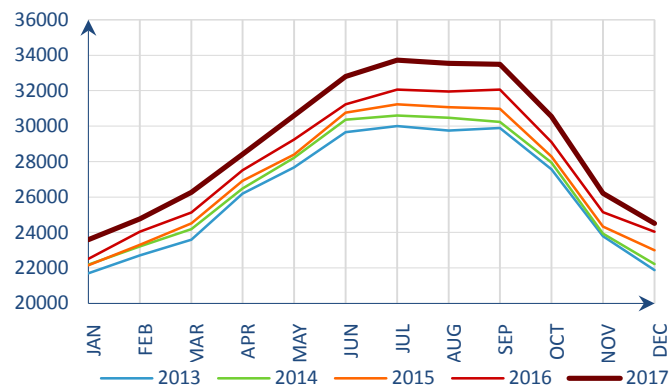
1. TOTAL TRAFFIC

Monthly traffic trend



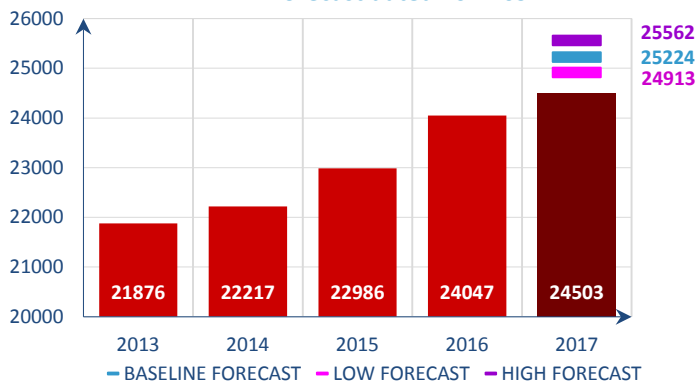
Traffic increased by 1.9% in December 2017ⁱ.

Average daily traffic for last 5 Years



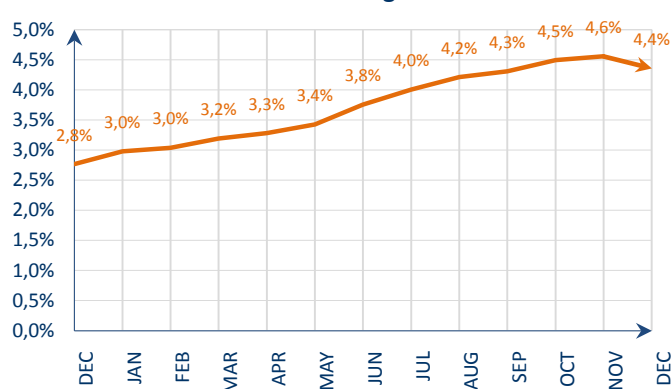
Average daily traffic in December 2017 was the highest for December in the last five years.

Average daily traffic in December for last 5 Years
Forecast dated 2017-09



The traffic increase of 1.9% for December was below the low forecast updated in September 2017.

12 months rolling traffic trend



This graph shows the variation in average daily traffic for the last 12-month period relative to the previous 12-months. The average daily traffic from January 2017 to December 2017 was 4.4% higher than the average from January 2016 to December 2016.

The traffic increase of 1.9% was below the low end of the forecast updated in September. This slowdown is mainly related to the particularly high traffic levels in December 2016, coupled with impact of Monarch Airlines and Air Berlin ceasing operations in October 2017 and Niki in December 2017. Some cancellations related to a few days of snow in early December at main European airports also explain the lower than expected growth rate.

In December, only five states contributed more than 50 additional daily flights to the European local traffic growthⁱⁱ. Spain was the top contributor and added 153 flights to the network owing to the growth on its flows from/to UK, Germany, France and Italy. Turkey was the second biggest contributor adding 134 daily flights with strong domestic growth (+8%) and important increase on flows from/to Russian Federation. The third contributor was Poland with 76 additional flights per day (when compared to December last year) explained by additional overflights between Europe and Russian Federation as well as an increase on flows between Poland and Israel/Ukraine. Canary Islands and Portugal added 70 flights per day (each) to the network. At the other end of the scale, Germany saw a reduction of 147 flights per day in December, mainly due to the Air Berlin ceasing operations (100 fewer flights per day on its internal flow), though the decline was limited as some flights were taken over by Lufthansa via Eurowings and easyjet. UK lost 66 flights per day in December due to both the Monarch ceasing operations and cancellations (British Airways) related to weather.

The all-cargo segment and the low-cost segment recorded a decline of 1.2% and 0.6% respectively. The low-cost segment was affected by Monarch, Air Berlin and Niki ceasing operations. The charter segment had the fastest growth and surged to an increase of 19% compared with December 2016, boosted by the recovery of leisure traffic to Egypt from Ukraine and Germany. The traditional scheduled segment took over from low-cost as the main driver of growth and was up 3.2%. The business aviation segment grew by 1%.

The top three external partners (for average daily flights on flows in both directions) were the United States with 826 flights (+3.5%), the Russian Federation with 664 flights (+13%) and the United Arab Emirates with 339 flights (+1.6%). Traffic flows between Europe and Egypt increased by 35% on December last year, with circa 230 flights per day between ECAC and Egypt but still 25% below the December 2010 record levels.

The aircraft operators which added the most flights to the network on a daily basis were Eurowings (+352 flights per day, taking over from Air Berlin), Turkish Airlines (+116 flights), Binter Canarias (+60 flights), Vueling (+60 flights) and Wizz Air (+60 flights).

For more information on EUROCONTROL Forecasts, go to <http://www.eurocontrol.int/statfor/sid>

Seven of the top ten airports had positive traffic growth. Overall, the largest traffic increases in December 2017 were at Tel Aviv/Ben Gurion, Ankara, Gran Canaria, Lisboa and Budapest airports. The largest traffic decreases were at Berlin/Tegel, Düsseldorf, Birmingham, Copenhagen and Berlin/Schoenefeld airports. Tel Aviv/Ben Gurion traffic increase was due to the expansion of routes made available by low-cost airlines and increase of tourism. Traffic decreases at Berlin/Tegel, Düsseldorf, Hamburg and Berlin/Schoenefeld are due in part to Air Berlin cessation of operations.

Seven of the top ten aircraft operators flew more compared to December 2016. The operators with the highest traffic growth were Eurowings, Jet2.com, Norwegian Air International, Qatar Airways and Blue Air. The highest traffic decreases were recorded by Wideroe, Brussels Airlines, Scandinavian Airlines System, Alitalia and Transavia.com.

Norwegian Air International traffic variation comes from a change in fleet size following new aircraft deliveries, as well as aircraft moving from using NAX to the IBK callsign. The traffic variation of Eurowings follows the continued integration of Germanwings, some Lufthansa routes and more recently ex Air Berlin operated routes into the Eurowings operation.

N°	ADEP	ADEP NAME	201712	%	N°	ICAO	AIR OPERATOR	201712	%
1	EGLL	LONDON/HEATHROW	611	2,3%	1	RYR	RYANAIR	1683	1,6%
2	LFPG	PARIS CH DE GAULLE	609	0,5%	2	THY	TURKISH AIRLINES	1214	10,6%
3	EHAM	AMSTERDAM/SCHIPHOL	602	0,6%	3	DLH	DEUTSCHE LUFTHANSA	1199	3,7%
4	LTBA	ISTANBUL-ATATURK	595	6,1%	4	EZY	EASYJET	1111	1,7%
5	EDDF	FRANKFURT MAIN	566	3,6%	5	AFR	AIR FRANCE	837	-0,9%
6	LEMD	ADOLFO SUAREZ MADRID-BARAJA	504	3,5%	6	SAS	SCANDINAVIAN AIRLINES SYSTEM	665	-7,6%
7	EDDM	MUENCHEN	469	-1,8%	7	BAW	BRITISH AIRWAYS	619	3,1%
8	LEBL	BARCELONA/EL PRAT	373	6,9%	8	KLM	KLM ROYAL DUTCH AIRL	588	2,8%
9	LIRF	ROMA/FIUMICINO	350	-3,3%	9	EWG	EUROWINGS AG	488	260,1%
10	EGKK	LONDON/GATWICK	330	-1,4%	10	AZA	ALITALIA	462	-7,4%
11	LSZH	ZURICH	320	-1,3%	11	VLG	VUELING AIRLINES SA	446	15,8%
12	ENGM	OSLO/GARDERMOEN	292	1,6%	12	WZZ	WIZZ AIR	433	15,8%
13	EKCH	KOBENHAVN/KASTRUP	291	-6,7%	13	PGT	PEGASUS HAVA TASI	429	11,7%
14	ESSA	STOCKHOLM-ARLANDA	290	-1,7%	14	BEE	JERSEY EUROPEAN T/A FLYBE	376	-3,1%
15	LOWW	WIEN SCHWECHAT	286	-2,5%	15	SWR	SWISS INTERNATIONAL	351	-3,5%
16	LFPO	PARIS ORLY	281	-5,2%	16	TAP	TAP/AIR PORTUGAL	347	14,0%
17	LTJF	ISTANBUL/SABIHA GOKCEN	281	3,0%	17	AUA	AUSTRIAN AIRLINES	302	2,9%
18	EBBR	BRUSSELS NATIONAL	267	-5,6%	18	FIN	FINNAIR OY	300	6,6%
19	LPPT	LISBOA	267	12,5%	19	NAX	NORWEGIAN AIR SHUTTLE	289	-3,8%
20	EIDW	DUBLIN	266	3,8%	20	LOT	LOT-POLISH AIRLINES	285	17,1%
21	LSGG	GENEVA	235	-3,1%	21	AFL	AEROFLOT-RUSSIAN	284	11,7%
22	EFHK	HELSINKI-VANTAA	228	6,0%	22	WIF	WIDEROE	282	-3,3%
23	EGCC	MANCHESTER	226	-3,2%	23	AEA	AIR EUROPA	234	7,6%
24	LIMC	MILANO MALPENSA	223	4,2%	24	IBE	IBERIA	228	4,1%
25	EGSS	LONDON/STANSTED	222	-2,2%	25	QTR	QATAR AIRWAYS COMP.	221	18,5%
26	EDDL	DUESSELDORF	215	-15,7%	26	IBK	NORWEGIAN AIR INTERNATIONAL	211	29,8%
27	EPWA	CHOPINA W WARSZAWIE	213	8,7%	27	RAM	ROYAL AIR MAROC	198	0,7%
28	LGAV	ATHINA/IELEFTHERIOS VENIZELOS	212	5,8%	28	UAE	EMIRATES	192	1,0%
29	GCLP	GRAN CANARIA	188	14,5%	29	HOP	HOP (MERGE OF BZH + RAE + RLA)	186	-3,6%
30	EDDH	HAMBURG	175	-5,3%	30	ANE	AIR NOSTRUM	181	-1,8%
31	LKPR	PRAHA RUZYNE	172	5,9%	31	BEL	BRUSSELS AIRLINES	180	-7,7%
32	LLBG	TEL AVIV/BEN GURION	166	22,6%	32	EIN	AER LINGUS TEORANTA	171	8,4%
33	LTAC	ANKARA-ESENBOGA	166	20,2%	33	BCS	EUROPEAN AIR TRANSP.	148	-5,4%
34	EDDK	KOELN-BONN	163	0,2%	34	AUI	UKRAINE INTERNATIONAL	144	3,1%
35	EGGW	LONDON/LUTON	155	-4,0%	35	BTI	AIR BALTIC CORPORAT.	127	14,9%
36	EDDT	BERLIN-TEGEL	154	-31,8%	36	EZS	EASY JET SWITZERLAND	124	1,6%
37	EGPH	EDINBURGH	145	1,1%	37	OAL	OLYMPIC	116	4,2%
38	LROP	BUCURESTI/HENRI COANDA	140	-0,9%	38	AEE	AEGEAN AIRLINES	112	2,9%
39	LIML	MILANO LINATE	139	-3,3%	39	LOG	LOGANAIR	106	11,9%
40	LFLL	LYON SAINT-EXUPERY	136	0,3%	40	NJE	NETJETS	105	7,2%
41	LFMN	NICE-COTE D'AZUR	135	1,1%	41	UAL	UNITED AIRLINES INC.	104	-1,7%
42	EDDS	STUTTGART	130	-0,4%	42	DAL	DELTA AIR LINES INC.	103	4,8%
43	LHBP	BUDAPEST LISZT FERENC INT.	130	10,1%	43	DAH	AIR ALGERIE	103	3,9%
44	LEMG	MALAGA/COSTA DEL SOL	129	7,7%	44	TOM	THOMSON FLY LTD	101	4,0%
45	LFBO	TOULOUSE BLAGNAC	125	1,6%	45	TRA	TRANSVIA.COM	101	-6,5%
46	EGBB	BIRMINGHAM	123	-11,7%	46	SHT	BAW SHUTTLE	95	-0,3%
47	EDDB	SCHOENEFELD-BERLIN	122	-6,2%	47	IBS	IBERIA EXPRESS	92	11,8%
48	GMMN	CASABLANCA/MOHAMMED	121	3,9%	48	EXS	JET2.COM	90	42,4%
49	LEPA	PALMA DE MALLORCA	120	2,1%	49	BMS	BLUE AIR AIRLINE MANAGEMENT SOLUTIONS	88	18,0%
50	LFML	MARSEILLE PROVENCE	117	-0,4%	50	ROT	TAROM	88	0,4%
TOTALS and % TOTAL TRAFFIC			12775	59,2%	TOTALS and % TOTAL TRAFFIC			16939	69,1%

Top 50 Departure Airports with average daily traffic and percentage compared to same period of previous year

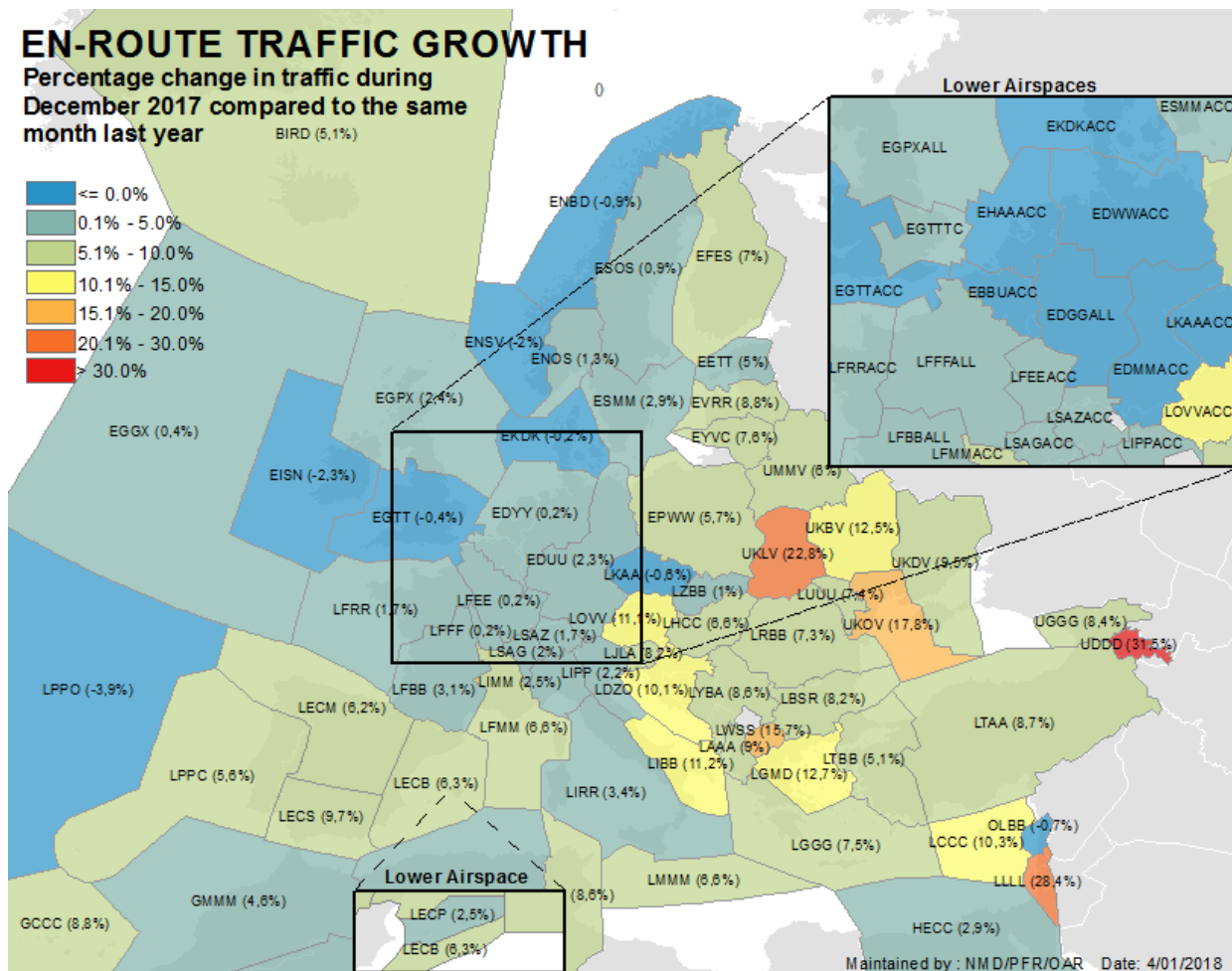
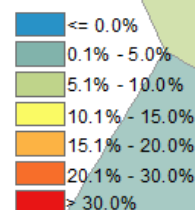
Top 50 Air Operators with average daily traffic and percentage compared to same period of previous year

N°	ICAO	AIR OPERATOR	201712	%
		Unidentified	1481	-6,5%

Average daily traffic and percentage compared to same period of previous year for all flights where Air Operators can't be identified

EN-ROUTE TRAFFIC GROWTH

Percentage change in traffic during December 2017 compared to the same month last year

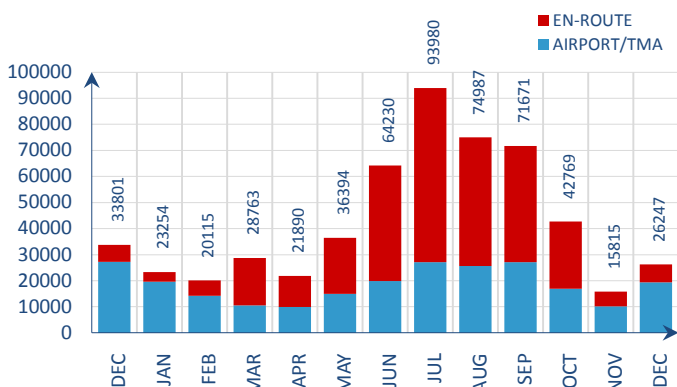


Nº	ASP ID	ASP NAME	201712	%	Nº	ASP ID	ASP NAME	201712	%
1	BIRDACC	REYKJAVIK ACC	351	5,1%	39	LFBBALL	BORDEAUX ALL ACC	2039	3,1%
2	DAAAACC	ALGERS ACC	477	2,4%	40	LFEACC	REIMS U/ACC	2302	0,2%
3	DTTACC	TUNIS ACC	265	8,6%	41	LFFFALL	PARIS ALL ACC	2894	0,2%
4	EBBUACC	BRUSSELS CANAC	1434	0,0%	42	LFMACC	MARSEILLE ACC	2311	6,6%
5	EDGGALL	LANGEN ACC_FIR	2834	-1,2%	43	LFMMAPP	MARSEILLE TMA	648	0,8%
6	EDMMACC	MUNCHEN ACC	2577	-0,9%	44	LFRACC	BREST U/ACC	2279	1,7%
7	EDUUUAC	KARLSRUHE UAC	4226	2,3%	45	LGGGACC	ATHINAI CONTROL	943	7,5%
8	EDWWACC	BREMEN ACC	1368	-12,3%	46	LGMACC	MAKEDONIA CONTROL	719	12,7%
9	EDYYUAC	MAASTRICHT UAC	4313	0,2%	47	LHCCACC	BUDAPEST ACC	1702	6,6%
10	EETTACC	TALLIN ACC	488	5,0%	48	LIBBACC	BRINDISI ACC	605	11,2%
11	EFESACC	TAMPERE ACC	501	7,1%	49	LIMMACC	MILANO ACC	1815	2,5%
12	EGGXOCA	SHANWICK OACC	1153	0,4%	50	LIPPACC	PADOVA ACC	1378	2,2%
13	EGPXALL	SCOTTISH ACC	2361	2,4%	51	LIRRACC	ROMA ACC	1760	3,4%
14	EGTTACC	LONDON ACC	4655	-0,4%	52	LJLAACC	LJUBLJANA ACC	582	8,2%
15	EGTTTC	LONDON TMA TC	3345	0,4%	53	LKAAACC	PRAGUE ACC	1777	-0,6%
16	EHAACC	AMSTERDAM ACC(245-)	1378	-1,5%	54	LLLLACC	TEL AVIV ACC	429	28,4%
17	EIDWACC	DUBLIN ACC	569	2,9%	55	LMMMACC	MALTA ACC	274	6,6%
18	EISNACC	SHANNON ACC	1015	-2,3%	56	LOVVACC	WIEN ACC	1812	11,1%
19	EKDKACC	COPENHAGEN ACC	1342	-0,2%	57	LPPCACC	LISBOA ACC/UAC	1481	5,6%
20	ENBDACC	BODO ACC	543	-0,9%	58	LPOOACC	SANTA MARIA OACC	368	-3,9%
21	ENOSACC	OSLO ATCC	874	1,3%	59	LQSBACC	BOSNIA-HERZEGOVINA	89	18,7%
22	ENSVACC	STAVANGER ATCC	549	-2,0%	60	LRBBACC	BUCURESTI ACC	1534	7,3%
23	EPWWACC	WARSAWA ACC	1790	5,7%	61	LSAGACC	GENEVA ACC	1459	2,0%
24	ESMMACC	MALMO ACC	1309	2,9%	62	LSAZACC	ZURICH ACC	1739	1,7%
25	ESOSACC	STOCKHOLM ACC	1061	0,9%	63	LTAACC	ANKARA ACC	3240	8,7%
26	EVRACC	RIGA ACC	640	8,8%	64	LTBBACC	ISTANBUL ACC	1870	5,1%
27	EYVACC	VILNIUS ACC	567	7,6%	65	LUUUACC	CHISINAU ACC	102	7,4%
28	GCCACC	CANARIAS ACC/FIC	1014	8,8%	66	LWSSACC	SKOPJE ACC	251	15,7%
29	GMMMACC	CASABLANCA ACC	1198	4,6%	67	LYBAACC	BEOGRADE ACC	1251	8,6%
30	HECCACC	CAIRO ACC	633	2,9%	68	LZBBACC	BRATISLAVA ACC	1068	1,0%
31	LAAACC	TIRANA ACC	374	9,0%	69	OLBBACC	BEIRUT ACC	138	-0,7%
32	LBSRACC	SOFIA ACC	1701	8,2%	70	UDDACC	YEREVAN ACC	142	31,5%
33	LCCACC	NICOSIA ACC	864	10,3%	71	UGGACC	TBILISI ACC	376	8,4%
34	LDZOACC	ZAGREB ACC	1026	10,1%	72	UKBVACC	KIEV ACC	360	12,5%
35	LECBACC	BARCELONA ACC	1633	6,3%	73	UKDVACC	DNIPROPETROVSK ACC	46	9,5%
36	LECMALL	MADRID ALL ACC	2716	6,2%	74	UKLVACC	L'VIV ACC	264	22,8%
37	LECPACC	PALMA ACC	325	2,5%	75	UKOVACC	ODESSA ACC	205	17,8%
38	LECSACC	SEVILLA ACC	915	9,7%	76	UMMVACC	MINSK ACC	675	6,0%

The Sevilla, Lisboa, Canarias, Madrid and Casablanca ACCs variation is due to increased traffic in the South/West axis. However, the highest relative traffic increases in December 2017 were in Yerevan, Tel Aviv, L'viv, Bosnia-Herzegovina and Odessa ACCs. Israel is now integrated in IFPS and the inclusion of Israeli domestic traffic explains much of the traffic growth for Tel Aviv ACC. Vienna ACC variation is due to increased traffic of Eurowings and Ryanair in Vienna airspace.

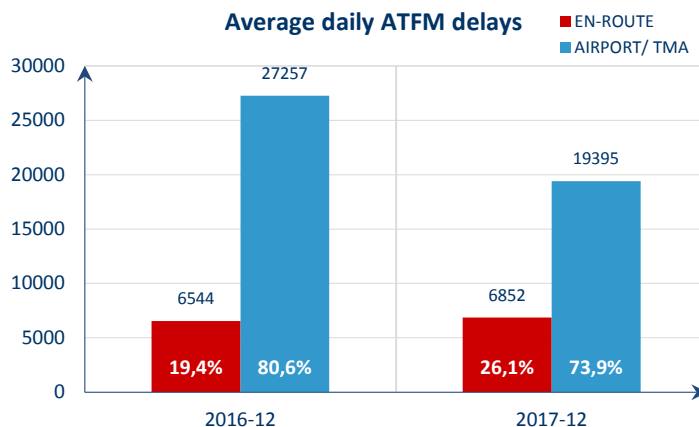
2. ATFM DELAY AND ATTRIBUTIONS

Average daily ATFM delays



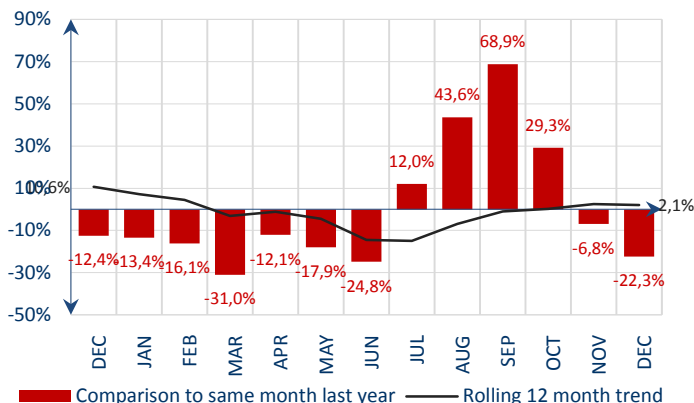
Total ATFM delays decreased by 22.3% in December 2017¹.

Average daily ATFM delays



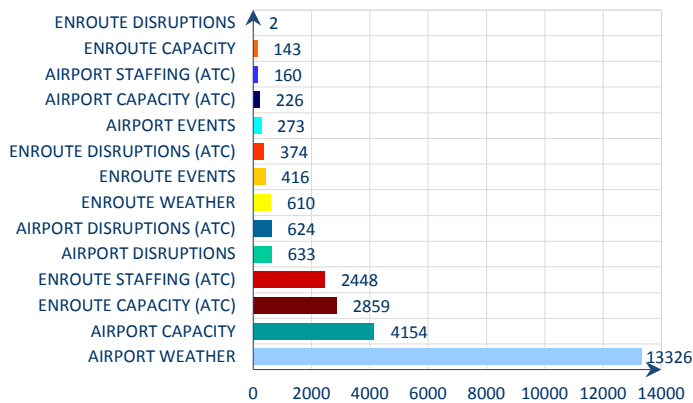
En-route ATFM delays increased by 4.7% and airport ATFM delays decreased by 28.8%.

Monthly ATFM delays trend



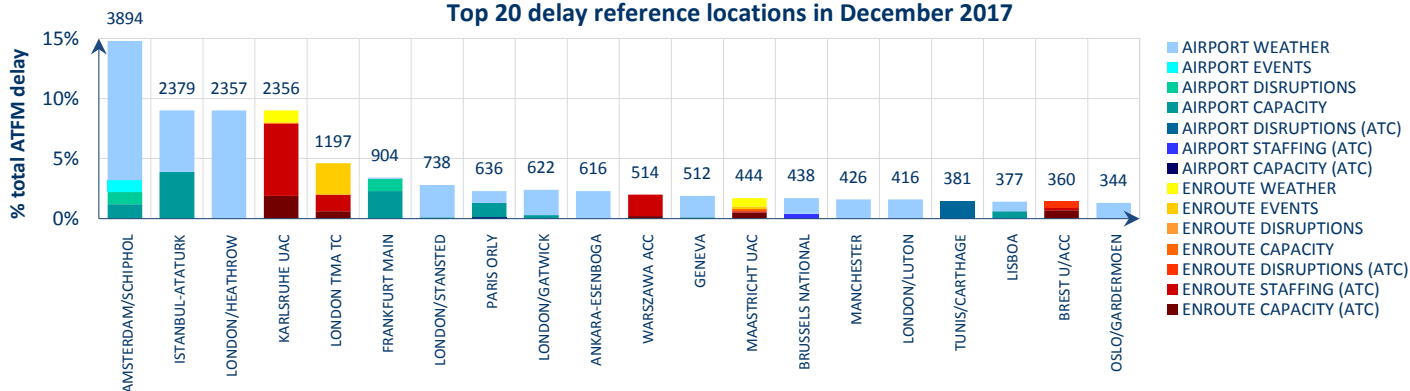
The rolling 12-month trend shows that ATFM delay was 2.1% higher during the period January 2017 – December 2017 compared to January 2016 – December 2016.

Proportion of ATFM delays in December 2017



Airport weather (50.8%), airport capacity (15.8%) and en-route ATC capacity (10.9%) were the main causes of ATFM delays in December 2017.

Top 20 delay reference locations in December 2017

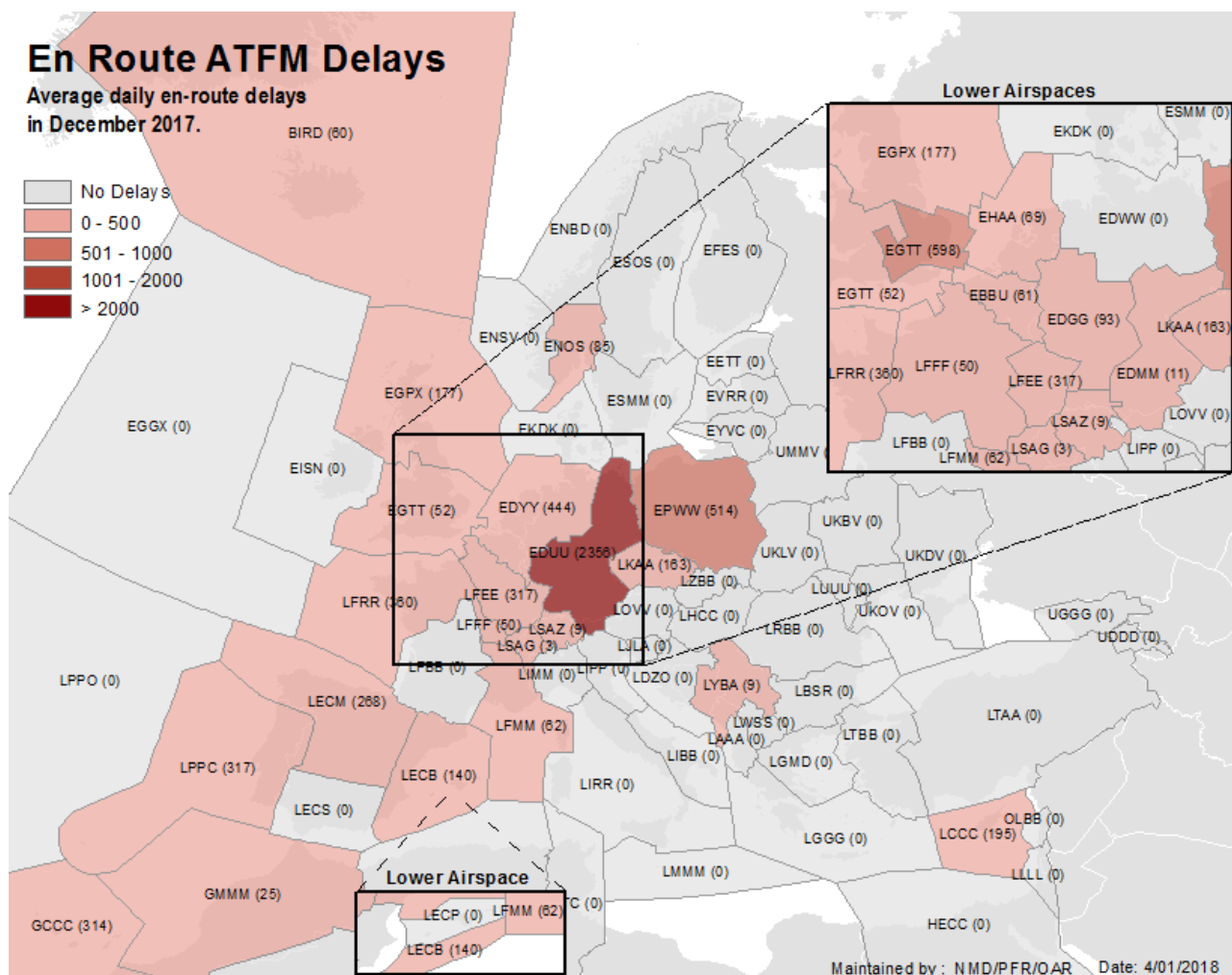


These are the top 20 delay generating locations for the reporting month with respect to total ATFM delays. Figures are the average daily delays in minutes for the individual locations.

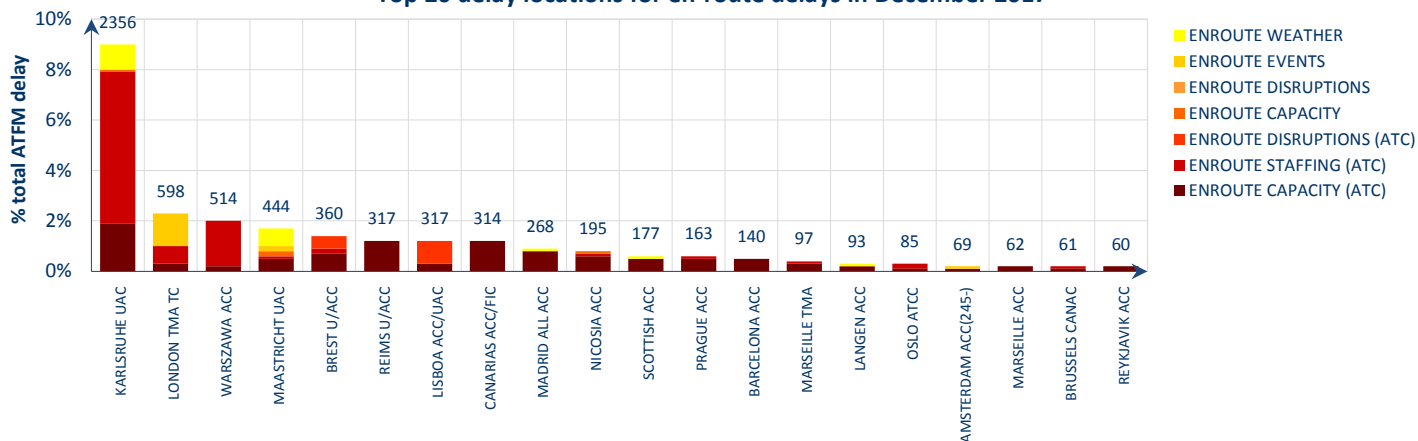
- Seasonal weather impacted operations strongly at Amsterdam/Schiphol and London/Heathrow airports and, to a lesser extent, at Istanbul/Atatürk, London/Stansted, London/Gatwick, Ankara, Geneva, Manchester and London/Luton airports;
- Capacity issues at Istanbul/ Atatürk, Frankfurt and Amsterdam/Schiphol airports;
- Tower/taxiway maintenance in conjunction with airport capacity at Paris/Orly airport;
- En-route ATC staffing and ATC capacity issues in Karlsruhe and Warsaw ACCs;
- Implementation of Extended Computer Display system in London TMA;
- Co-location of the Dutch civil and military air traffic control organisations to Amsterdam/Schiphol airport on 07 December.

3. EN-ROUTE ATFM DELAYS

EN-ROUTE ATFM DELAY PER LOCATION



Top 20 delay locations for en-route delays in December 2017



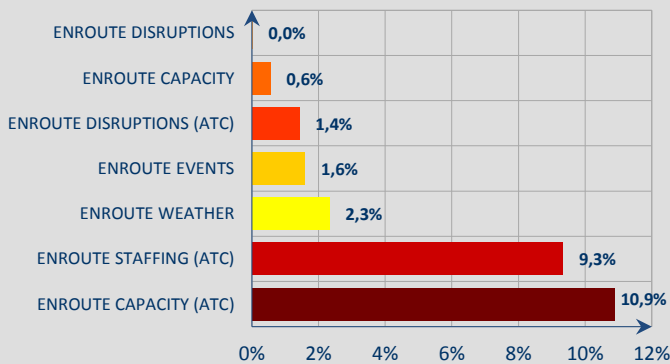
These are the top 20 en-route ATFM delay generating locations for the reporting month with respect to total ATFM delays. Figures are the average daily delays in minutes for the individual locations.

The top 20 en-route ATFM delay locations generated **25.2%** of the monthly total (network) ATFM delay.
 The top 5 en-route ATFM delay locations generated **16.4%** of the monthly total (network) ATFM delay.

More detailed information available in the Monthly per ACC Summary Report via the [NM ATFCM Statistics website](#).

EN-ROUTE ATFM DELAY PER DELAY GROUP

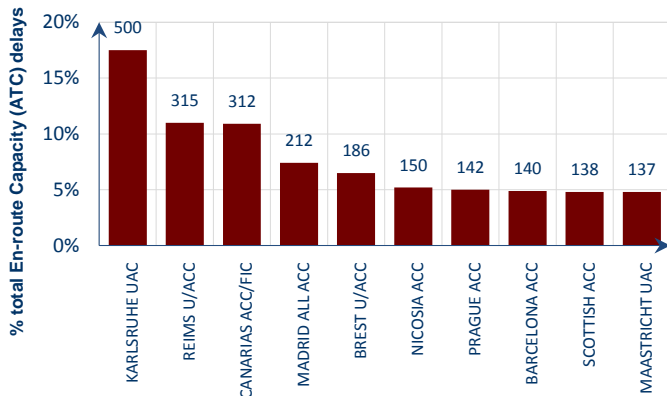
Reasons for en-route delays in December 2017



En-route ATFM delays accounted for 26.1% of all ATFM delays. Most of this delay was caused by en-route ATC capacity, en-route ATC staffing and en-route weather as explained in detail below. The other causes were:

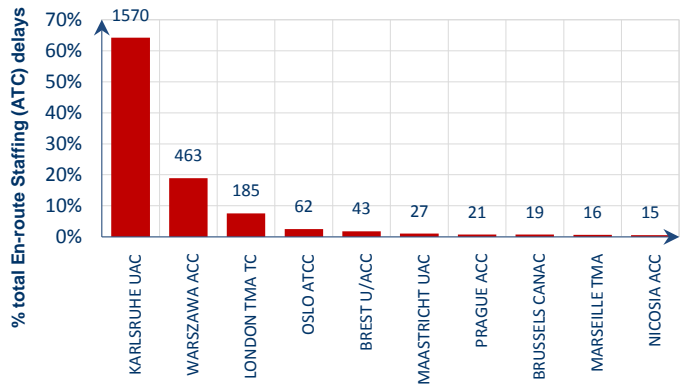
En-route events; Implementation of Extended Computer Display system in London TMA;
En-route ATC disruptions; Technical issues with the SSR code allocation between Madrid and Brest ACCs on 10 and 11 December generated delays in Brest ACC; Frequency problems in Lisbon ACC from 19 to 30 December;
En-route capacity; Military activities in Maastricht UAC.

Top en-route Capacity (ATC) delays in December 2017



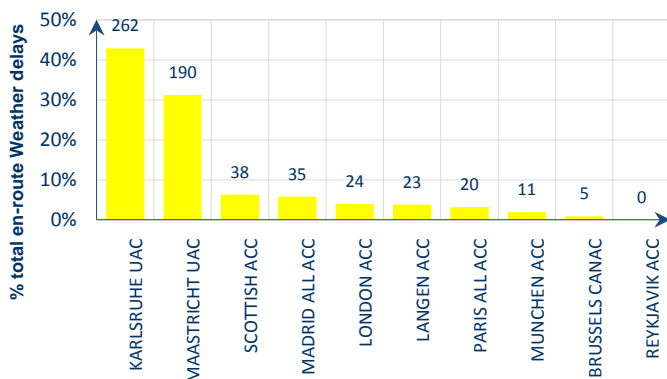
Karlsruhe, Reims and Canarias ACCs were the biggest generators of en-route ATC capacity delays in December.

Top en-route Staffing (ATC) delays in December 2017



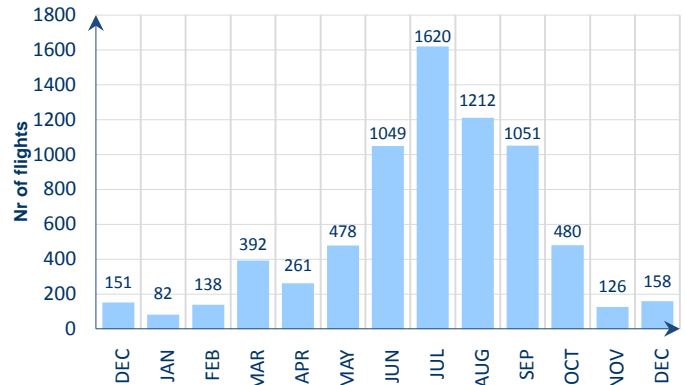
Karlsruhe UAC generated 64% of en-route ATC staffing delays due to staff shortage.

Top en-route Weather delays in December 2017



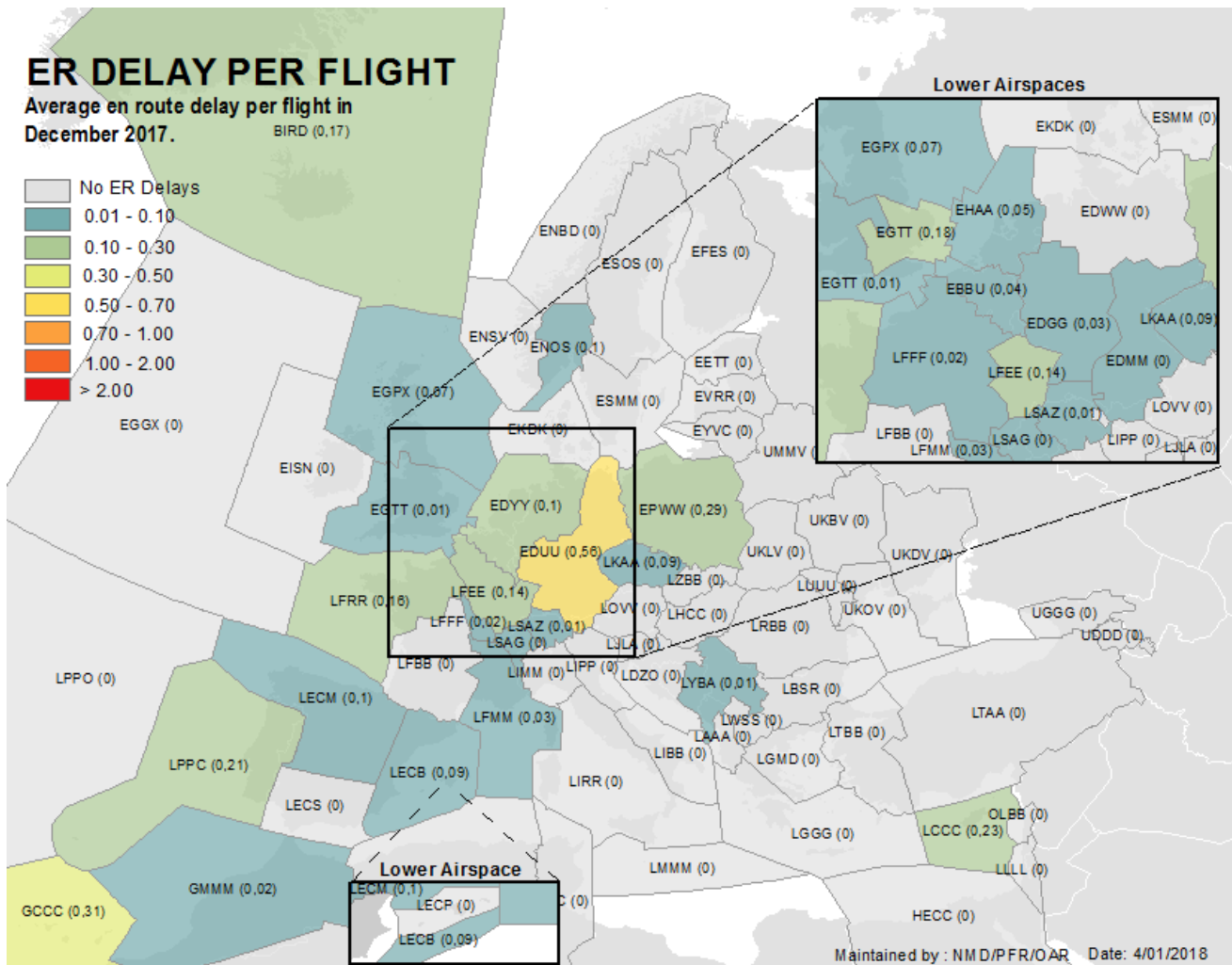
En-route complexity due to snow in Munich and Frankfurt generated 6,876 minutes of ATFM delay in Karlsruhe UAC on 10 December. Turbulence in Maastricht UAC on 30 December impacted operations with 3,069 minutes of ATFM delay.

Average daily flights >= 15 min en-route delay

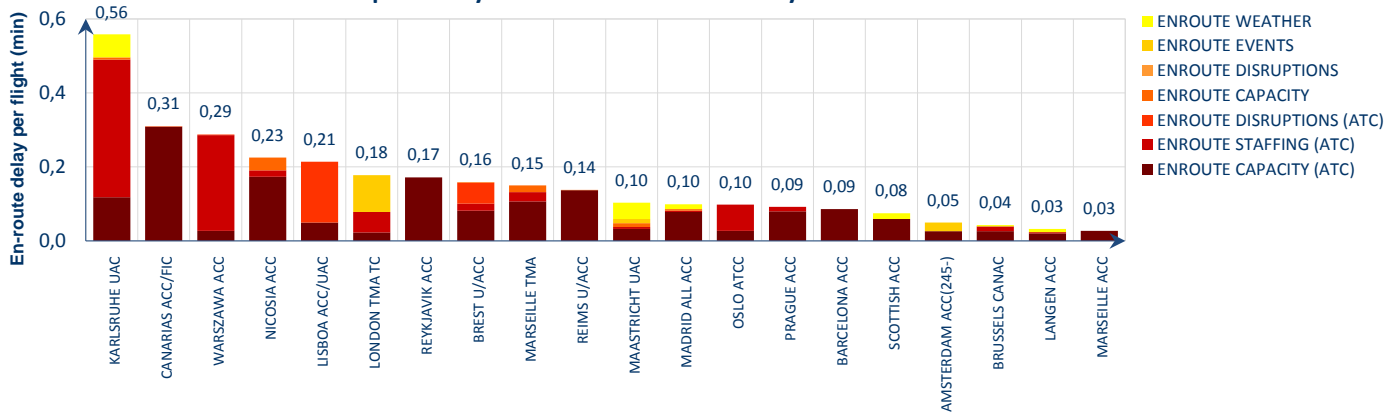


The average daily flights with an en-route ATFM delay of at least 15 minutes increased from 151 flights/day in December 2016 to 158 flights/day in December 2017.

EN-ROUTE ATFM DELAY PER FLIGHT



Top 20 delay locations for en-route delays in December 2017



These are the top 20 average en-route ATFM delay per flight generating locations for the reporting month. Figures are the average en-route ATFM delay per flight in minutes for the individual locations.

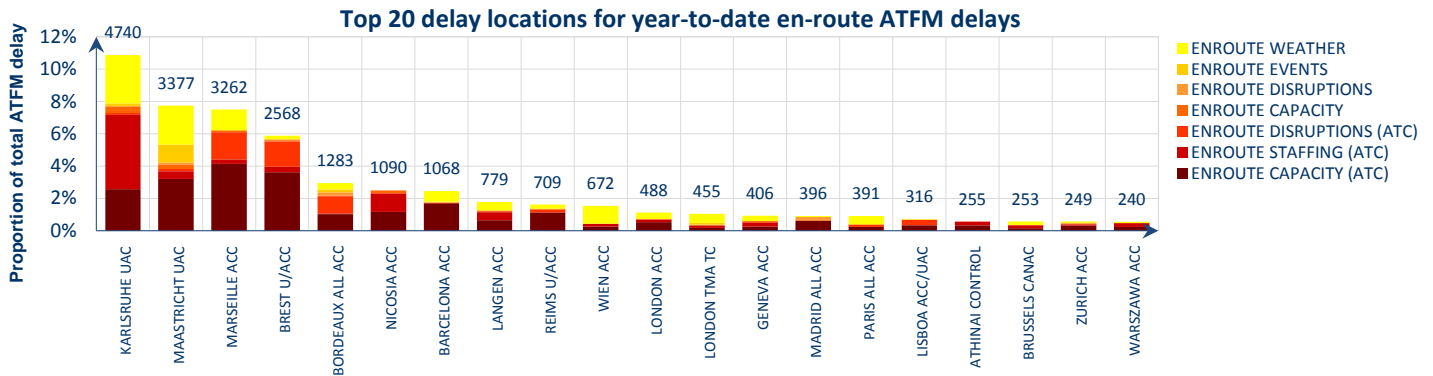
Karlsruhe UAC en-route ATFM delay/flight increased from 0.24 min/flight in November 2017 to 0.56 min/flight in December 2017, mainly due to ATC staffing issues;

Warsaw ACC en-route ATFM delay/flight increased from 0.16 min/flight in November 2017 to 0.29 min/flight in December 2017;

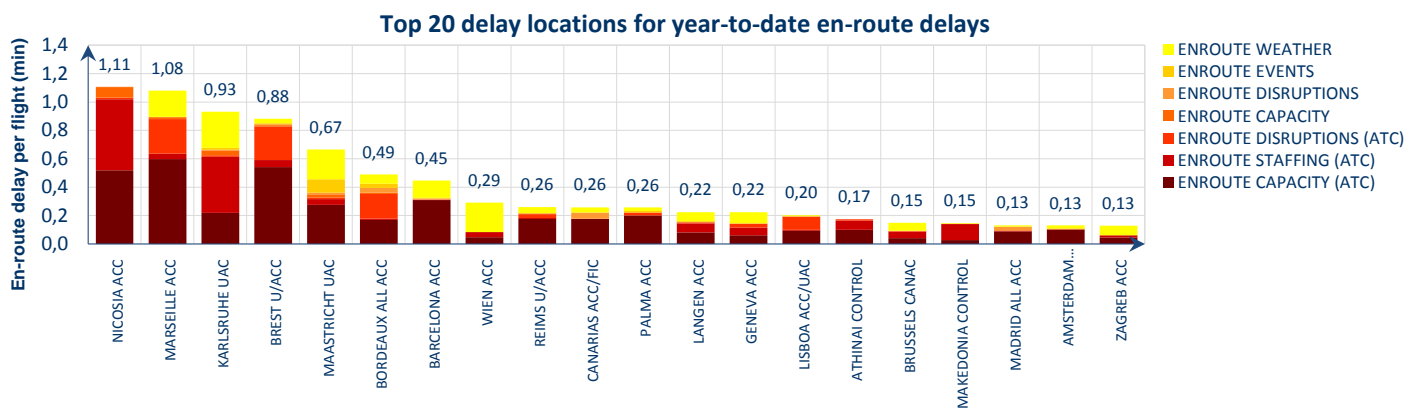
Despite a strong traffic growth Canarias ACC en-route ATFM delay/flight decreased from 0.40 min/flight in November 2017 to 0.31 min/flight in December 2017;

Brest ACC en-route ATFM delay/flight decreased from 0.31 min/flight in November 2017 to 0.16 min/flight in December 2017.

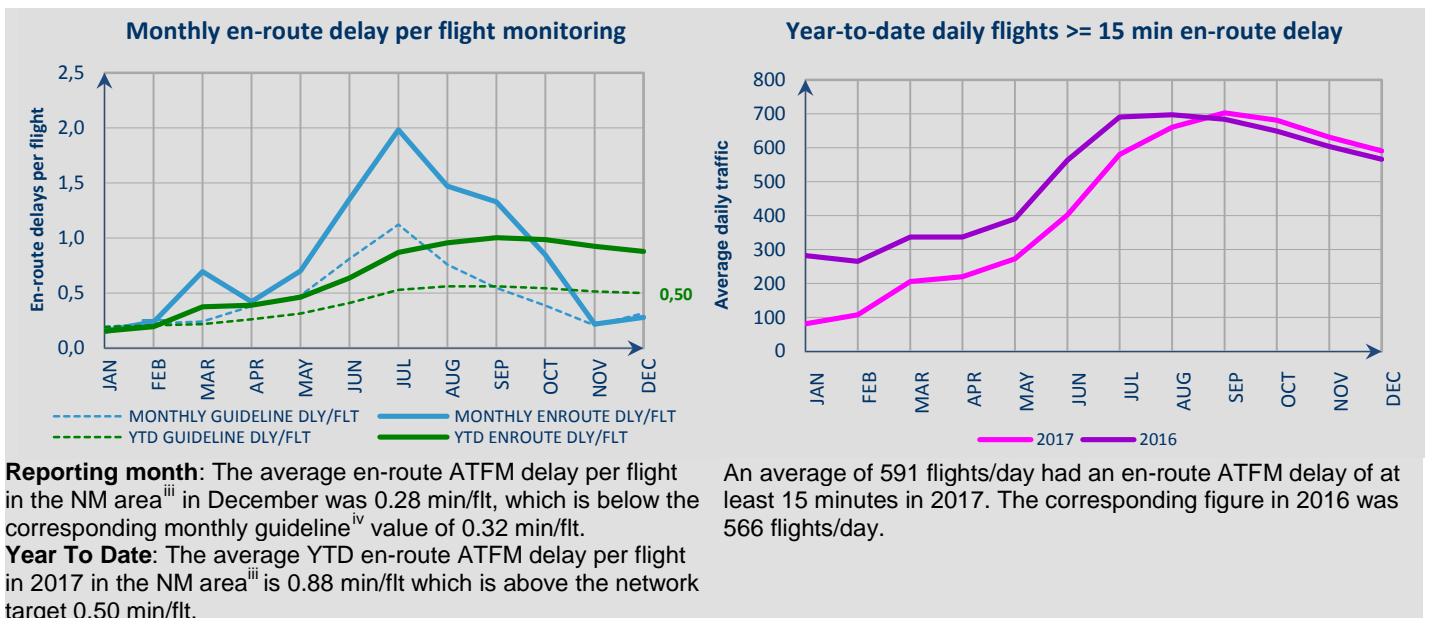
EN-ROUTE ATFM DELAY YEAR-TO-DATE



These are the top 20 en-route delay locations for 2017 with respect to the total ATFM delay. Figures are the average daily en-route delay in minutes for the individual locations.
 The top 20 en-route delay locations generated **52.8%** of the total ATFM (network) delay.
 The top 5 en-route delay locations generated **35%** of the total ATFM (network) delay.

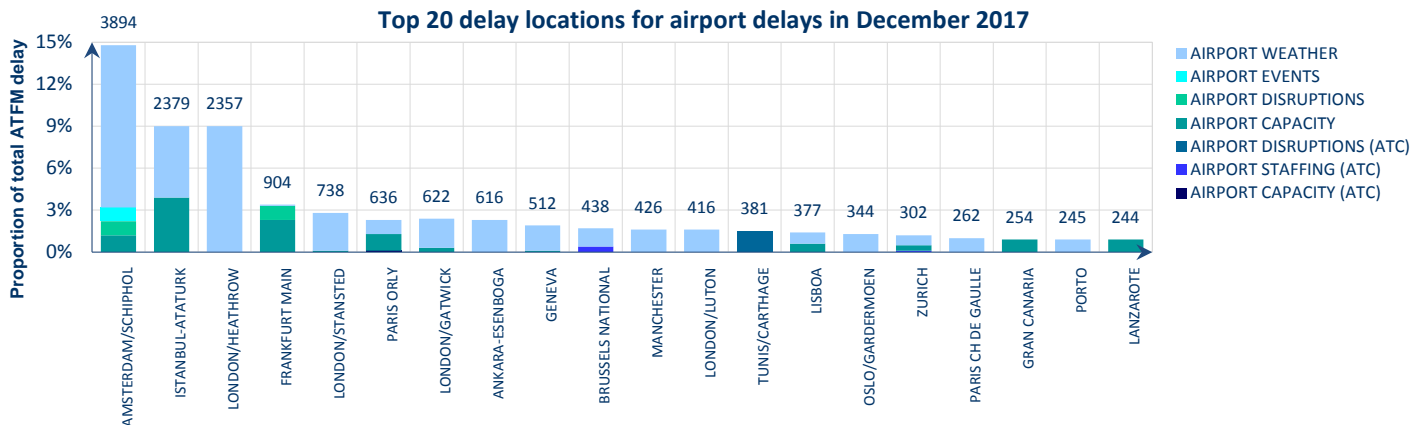


These are the top 20 locations for average en-route ATFM delay per flight for 2017. Figures are the average daily en-route delay in minutes per flight for the individual locations.



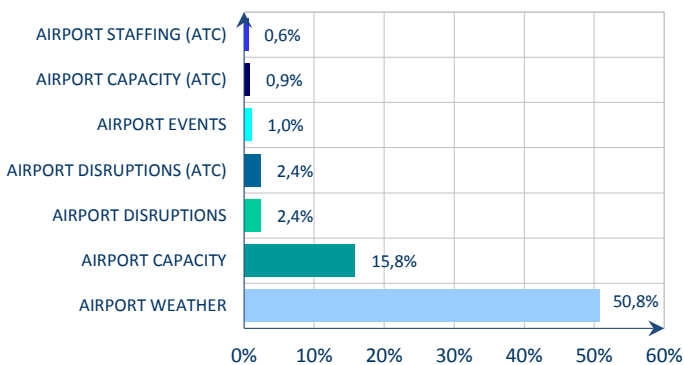
4. AIRPORT/TMA ATFM DELAYS

AIRPORT/TMA ATFM DELAY PER LOCATION



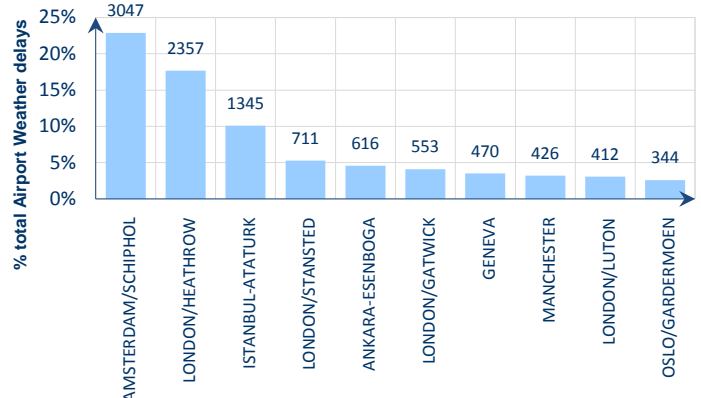
AIRPORT/TMA ATFM DELAY PER DELAY GROUPS

Reasons for airport delays in December 2017



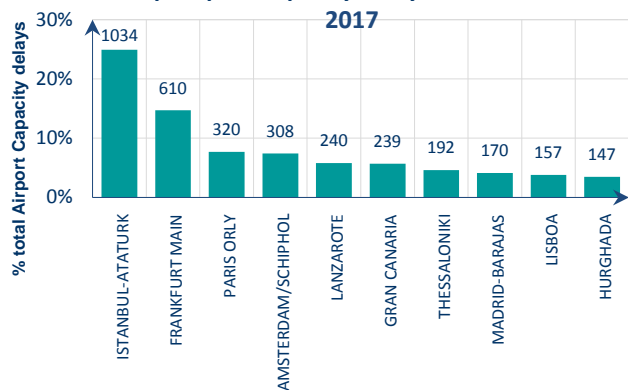
Airports accounted for 73.9% of all ATFM delays in December 2017, mainly due to airport weather and aerodrome capacity.

Top Airport Weather delays in December 2017



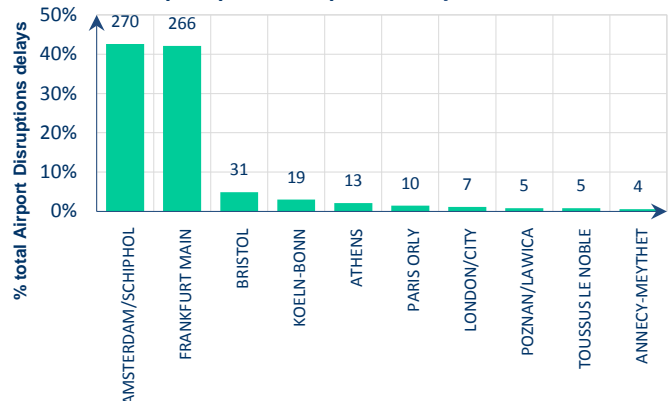
Seasonal weather impacted operations strongly at Amsterdam/Schiphol and London/Heathrow airports and, to a lesser extent, at Istanbul/Atatürk airport.

Top Airport Capacity delays in December 2017



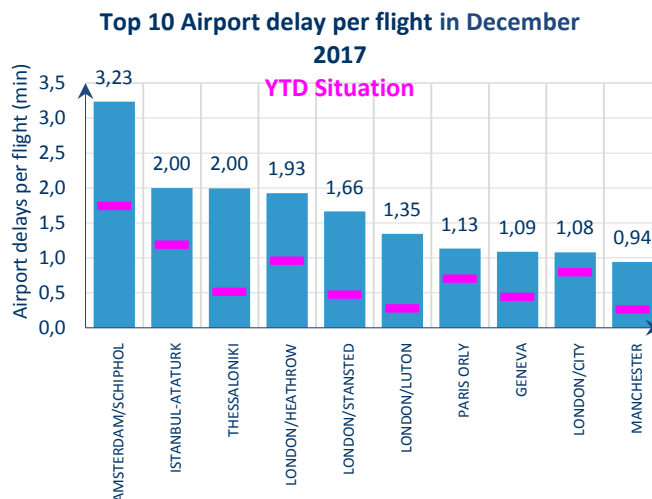
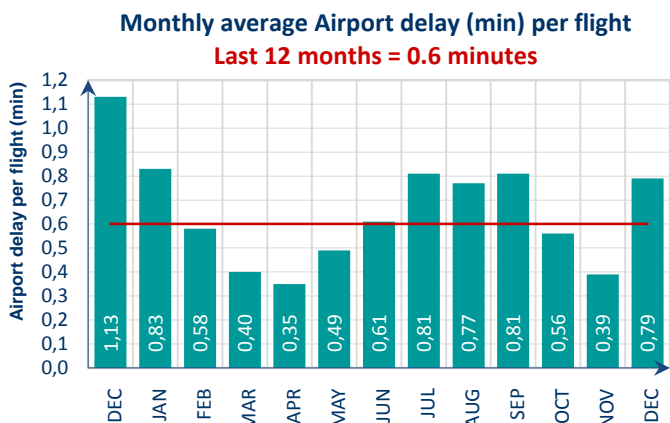
Capacity issues in conjunction with weather at Istanbul/Atatürk and Frankfurt airports. Tower/taxiway maintenance in conjunction with airport capacity at Paris/Orly airport.

Top Airport Disruption delays in December 2017



Delays generated due to de-icing capacity reduction and stand availability as a result of heavy snow at Frankfurt and Amsterdam on the 10th and 12th respectively.

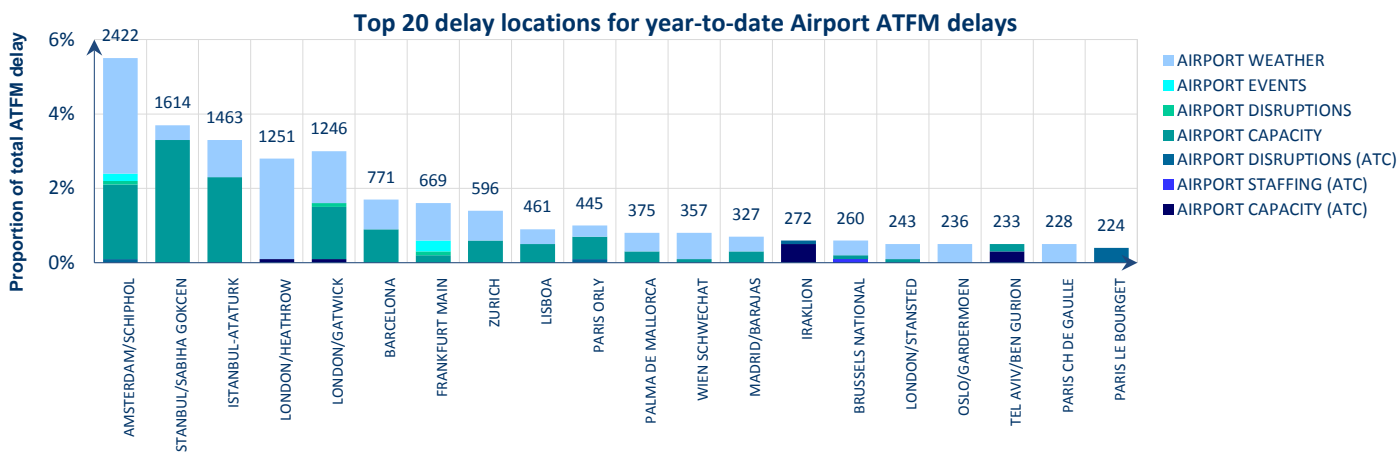
AIRPORT/TMA ATFM DELAY PER FLIGHT



Average airport/TMA delay per flight decreased from 1.13 min/flt in December 2016 to 0.79 min/flt in December 2017.

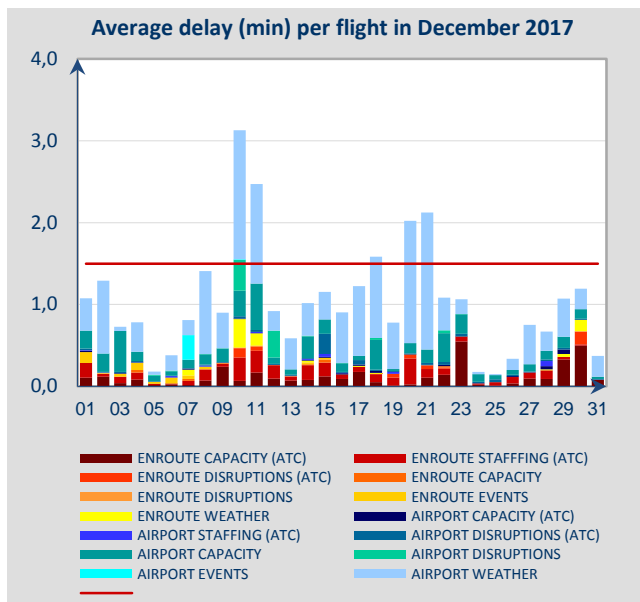
All of the top 10 airports generated an average delay per flight above their year to date average.

AIRPORT/TMA ATFM DELAY YEAR-TO-DATE



The top 20 Airport/TMA delay locations have generated **30.8%** of the total ATFM (network) delay in 2017. The top 5 Airport/TMA delay locations have generated **18.3%** of the total ATFM (network) delay in 2017.

5. DAILY EVOLUTION

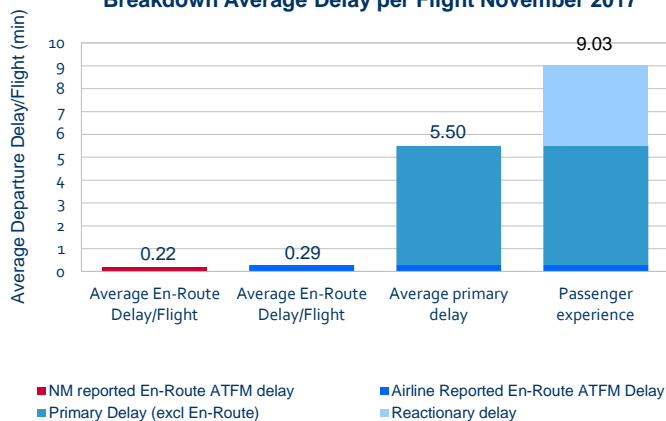


Five days in December 2017 had an average ATFM delay/flt exceeding 1.5 min/flt. These were the most significant days:
10-11 December: Wintry conditions affected the majority of north-west Europe with significant delays at London/Heathrow, Amsterdam/Schiphol, London/Stansted, London/Luton, Brussels and Geneva airports; Turbulence impacted operations in Maastricht and Karlsruhe UACs; Airport disruptions delays at Frankfurt airport due to snow removal and de-icing; Aerodrome capacity delays at Istanbul/Ataturk airport due to unavailability of optimum runway ; En-route ATC staffing issue in Karlsruhe UAC; Technical issues with the SSR code allocation between Madrid and Brest ACCs generated disruptions delays in Brest ACC;
20-21 December: Visibility issues impacted airport operations in north west Europe with significant delays at London/Heathrow, London/Stansted, London/City, Amsterdam/Schiphol, Manchester, London/Gatwick and Oslo/Gardermoen airports; En-route ATC staffing issues in London TMA, Warsaw and Karlsruhe ACCs; Frequency problems in Lisbon ACC.

6. ALL AIR TRANSPORT DELAYS (SOURCE: CODA)

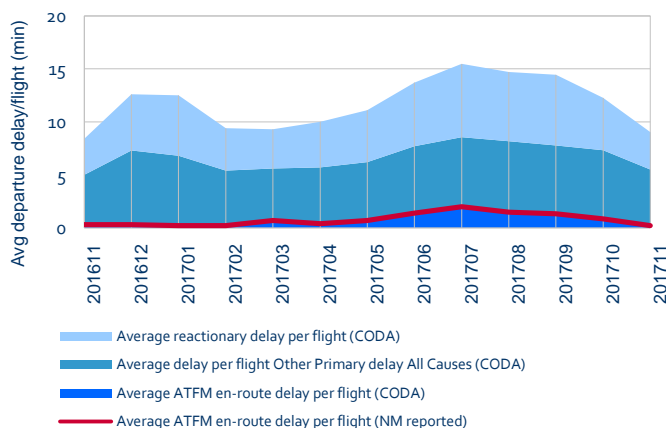
This section presents the all air transport delay situation as seen from the airlines by using the data collected by Central Office for Delay Analysis (CODA) from airlines. Data coverage is 65% of the commercial flights in the ECAC region for November 2017. ATFM delays reported by airlines could be lower than the NM calculated ATFM delays due to difference in methods: ATFM delays of NM are the (flight) planned “delays”; the airlines report the “actual” experienced ATFM delay on departure. For instance, a flight with an ATFM delay may also have a handling delay absorbed within the ATFM delay. In the event of a long delay an example being during ATC industrial action a flight may keep its original schedule however when its flight plan is submitted for example a day later any ATFM delay allocated may be lower or zero, in this case airline reported delay will exceed NM reported ATFM delay.

Breakdown Average Delay per Flight November 2017



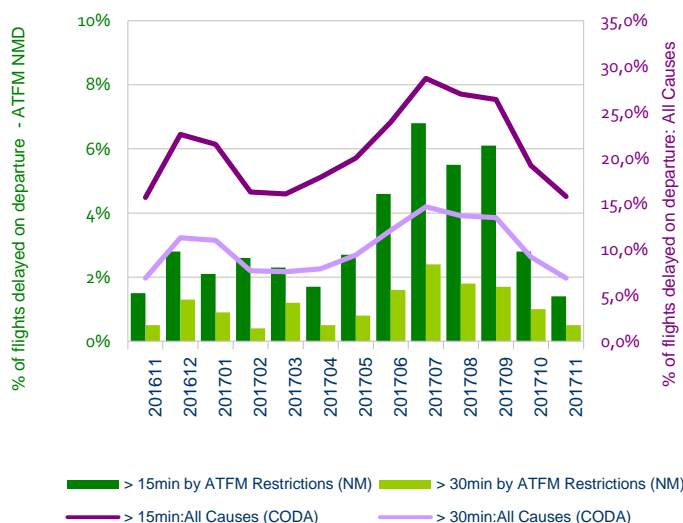
Based on airline data, the average departure delay per flight from ‘All-Causes’ was 9.03 minutes per flight, an increase in comparison to November 2016 where the average delay was 8.60 minutes per flight. Primary delays counted for 61% (or 5.50 min/flt), with reactionary delays representing the smaller remaining share of 40% at (3.53 min/flt).

Average Departure Delay per Flight 2016/2017



Further analysis of the past 12 months shows that the average ‘All-Causes’ en-route ATFM delay reported by airlines in November 2017 was 0.29 minutes per flight. This was higher when compared to the NM reported average en-route ATFM delay of 0.22 minutes per flight in November 2017.

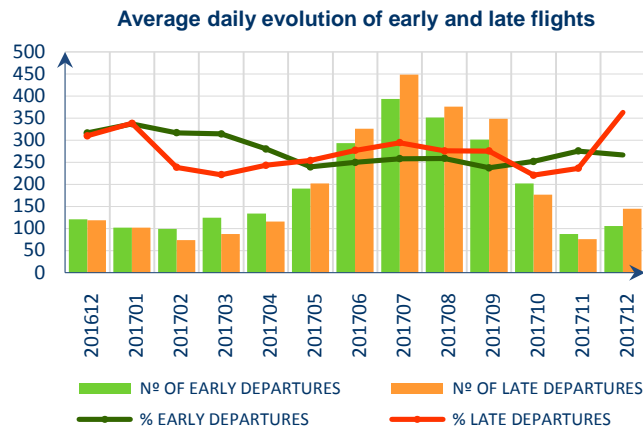
Percentage of Delayed Flights: ATFM & All Causes



The percentage of flights delayed from ‘All-Causes’ remained stable with (those exceeding 15 minutes) increasing by 0.1 percentage points to 15.8%. Those (exceeding 30 minutes) also remained stable with 6.9% of flights being delayed in November 2017.

For more information on CODA delays <http://www.eurocontrol.int/sites/default/files/publication/files/flad-nov-2017.pdf>

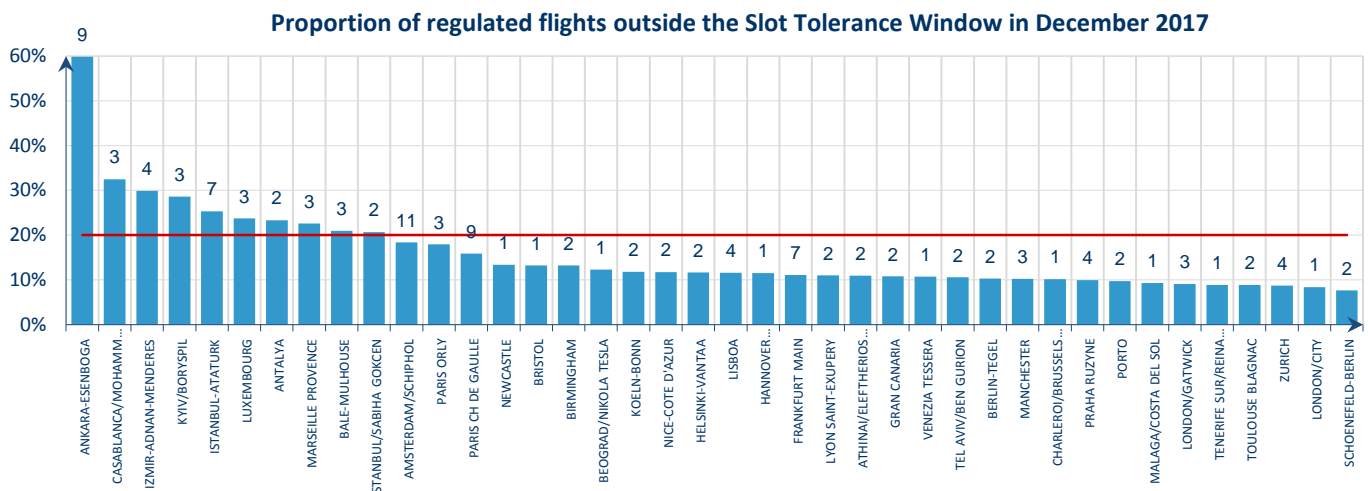
7. ATFM SLOT ADHERENCE



The percentage of early departures for December 2017 is 4.8% of regulated flights, which is a decrease of 0.9 percentage points compared to December 2016.

The percentage of late departures for December 2017 is 6.5% of regulated flights, which is an increase of 1.0 percentage points compared to December 2016.

The chart below shows the airports that have more than 300 regulated flights during the month with their average daily number and proportion of regulated flights that departed outside of the Slot Tolerance Window (STW). Any airport above the red line is non-compliant with the threshold (20%). Those airports with a number of departures outside the slot tolerance window can reduce network predictability.



8. SIGNIFICANT EVENTS AND ISSUES

PLANNED EVENTS

ACC

MAJOR AIRSPACE OR ATM SYSTEM IMPROVEMENT PROJECTS

PLANNED EVENTS

Two ACCs carried out activities involving ATM system changes/upgrades during this reporting period.

Karlsruhe UAC progressed through the fall back phase after migrating to the iCAS ATM system not generating ATFM delay, as expected.

London TC introduced ExCDS (full electronic flight progress strip capability) in TMA North sector generating 10,383 minutes of ATFM delay. Originally, 20% of capacity reduction had been planned in the North sector. This amount of delay presented 56 % of total delay, 18,553 min, generated by London TC during the month.

ADDITIONAL INFORMATION

Amsterdam ACC generated 1,046 minutes of ATFM delay as a result of co-locating civil and military ATS provision in the same ops room. Additional 8,279 minutes of ATFM delay affected arrivals to EHAM.

Maastricht UAC introduced FRAM2 Phase 1 project on 06/07 December generating 1,468 minutes of ATFM delay.

AIRPORTS

Local Plans in December

A number of airports undertook infrastructure and technical system improvement works during December. These improvements as well as some special events had at most a minor impact on local airport operations, unless otherwise stated.

Special Events

- Co-location of the Dutch civil and military air traffic control organisations to Amsterdam/Schiphol airport on 07 December generated 8,279 minutes of ATFM delay;
- Zero rate regulation at Köln/Bonn airport on 18 December due to bomb disposal;

Completed

- Runway maintenance at Athens, Manchester, Nice and Venice airports;
- Taxiways and/or aprons improvements at Athens airport;
- ILS maintenance at Bari airport;

Ongoing

- Runway maintenance at Antalya, Cologne, Dublin, Istanbul/Sabiha Gökçen, Krakow, Tel Aviv/Ben Gurion, Palermo and Thessaloniki airports;
- Taxiways and/or aprons improvements at Antalya, Dublin, Frankfurt/Main, Hamburg, Ibiza, Lanzarote (generated 2,413 minutes of ATFM delay), Lisbon, Palma de Mallorca, Paris/Orly, Rome/Fiumicino, Tenerife/Sur, Thessaloniki (4,782 minutes of ATFM delay) and Zurich airports;
- Tower renovation at Paris/Orly airport in conjunction with taxiway maintenance generated a total of 10,212 minutes of ATFM delay;
- Terminal building improvements/works at Barcelona, Budapest, Frankfurt/Main, Malta and Oslo/Gardermoen airports.

DISRUPTIONS

Industrial action

- Italian ATC industrial action between 1200-1600 UTC on Friday 15 December generated 6,265 min of airport ATFM delay in Italy; Bergamo was the most affected airport with 2,302 minutes of ATFM delay. NM estimates there were 285 fewer flights during the action;

Technical

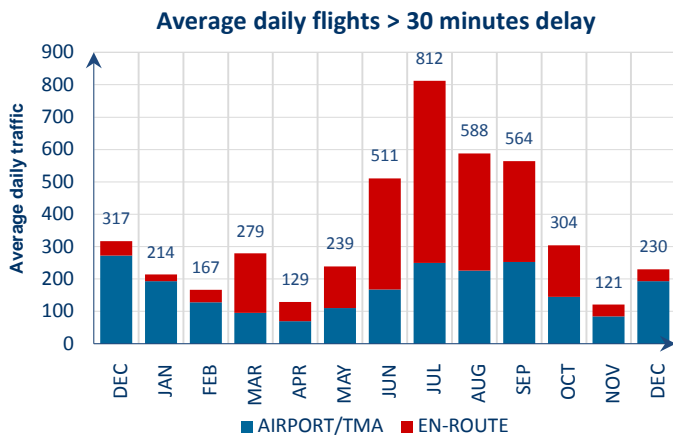
- New radar equipment implementation throughout the month at Tunis/Carthage airport generated 11,822 minutes of ATFM delay;
- Frequency problems in Lisbon ACC between 19 and 30 December generated 7,542 minutes of ATFM delay;
- Technical issues with the SSR code allocation between Madrid and Brest ACCs generated 3,949 minutes of ATFM delay in Brest ACC from 09 to 11 December;
- ILS issues at London/Stansted airport on 27 December generated 3,314 ATFM minutes of delay (combined with weather);

9. NM ADDED VALUE

FLIGHTS WITH DELAY > 30'

The number of flights with more than 30 minutes of ATFM delay decreased between December 2016 and December 2017.

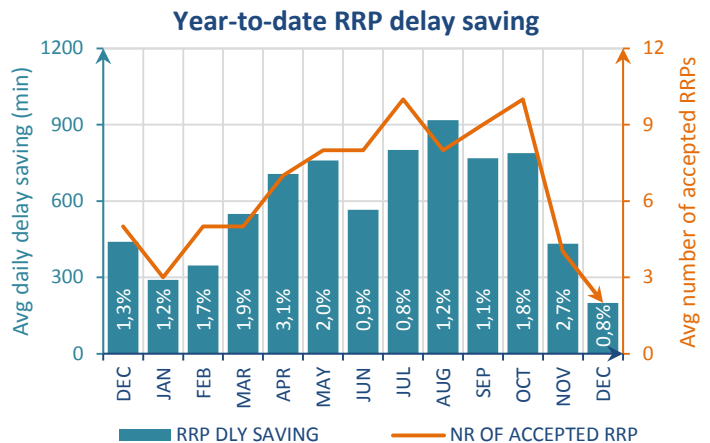
16.1% of flights with more than 30 minutes of ATFM delay in December 2017 were en-route and 83.9% were airport.



RRP DIRECT DELAY SAVINGS

On average 2 RRP/day were executed saving 200 min/day, accounting for 0.8% of ATFM delays.

This graph shows the actual daily averages for the previous 13 months' period^v.



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<http://www.eurocontrol.int/articles/network-operations-monitoring-and-reporting>

i See Notice on page 2 for more information on traffic and delay comparison.

ii International arrivals and departures and internal flights, excluding overflights.

iii See Notice on page 2 for more information on NM Area .

iv NM's calculation that provides the guideline en-route delay (min) requirements to achieve the annual target (0.5 min/flight).

v NM has revised the delay saving method. Where flights are subject to scenarios, delay savings from RRP are considered when the RRP is sent 3 hours (or less) in advance of the EOBT.