



Network Manager
nominated by
the European Commission



Monthly Network Operations Report

Analysis – November 2017



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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

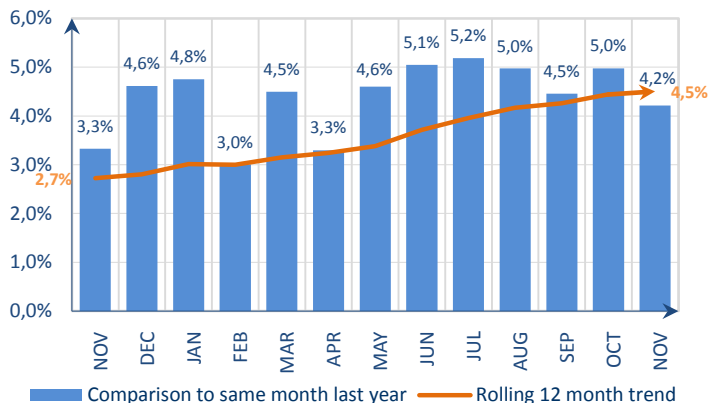
The table below shows the colour coding used in the report charts.

	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>.

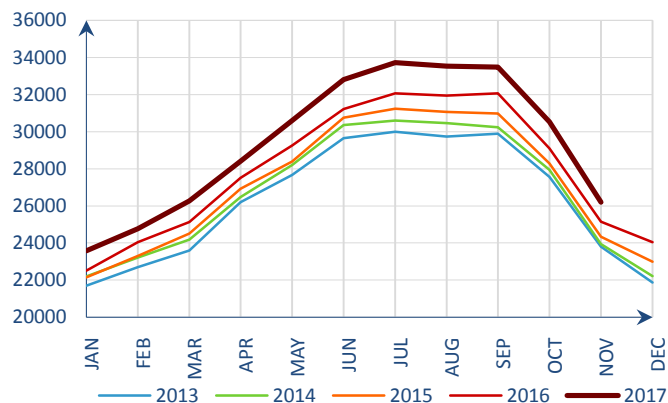
1. TOTAL TRAFFIC

Monthly traffic trend



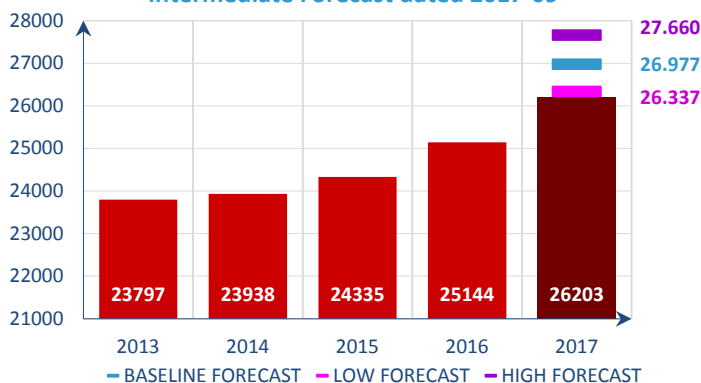
Traffic increased by 4.2% in November 2017ⁱ.

Average daily traffic for last 5 Years



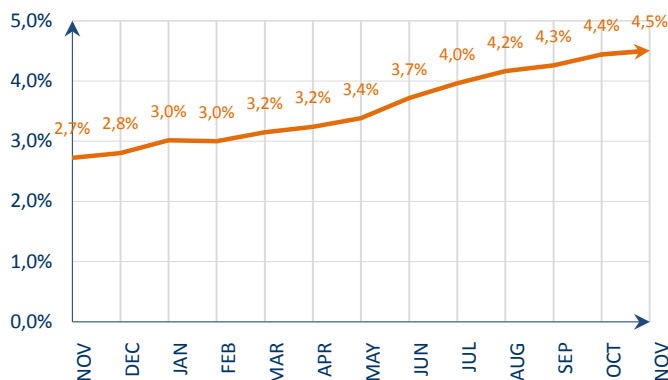
Average daily traffic in November 2017 was the highest for November in the last five years.

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



The traffic increase of 4.2% for November was at the low-end of the 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 December 2016 to November 2017 was 4.5% higher than the average from December 2015 to November 2016. The trend shows a continuous growth in traffic.

The traffic increase of 4.2% was at the low end of the forecast updated in September. This slowdown was partly due to the collapse of Monarch Airlines and Air Berlin in October.

In November, nine states contributed to more than 50 additional daily flights to the European local traffic growthⁱⁱ. Continuing from September, Spain was the top contributor and added 194 flights to the network owing mainly to the growth on its flows from/to Germany, Italy and France. Turkey and Germany came next adding each 122 daily flights although Germany suffered from the bankruptcy of Air Berlin which led to 59 fewer daily flights in its internal flow, and 36 fewer daily flights in its flows from/to Austria, Switzerland and Italy. These losses were compensated by 100 extra daily flights on Germany's flows from/to Spain, Portugal and Greece and the recovery of traffic between Germany and Egypt (+31 flights/day). Poland, Canary Islands, Portugal (excl. Azores) added together 254 daily flights whereas France, Italy and the Netherlands added a combined 180 daily flights and completed the list. Only three states saw a minor decrease in their local traffic: Denmark (-12 flights/day), Austria (-7 flights/day) and the Azores (-3 flights/day).

The low-cost segment was the weakest and shrank to a growth of 0.6% as it was sharply impacted by Monarch and Air Berlin ceasing operations on 2 October and 28 October respectively. In November last year, Air Berlin and Monarch contributed to 7% and 1% to the growth of the segment. Ryanair has cut capacity this winter by flying 25 less aircraft from November onwards in an attempt to avoid roster-related cancellations. The charter segment had the fastest growth and surged to an increase of 27% compared with November 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 5.3%. The business aviation and all-cargo segments grew 5% and 2.5% respectively.

The top three external partners (for average daily flights on flows in both directions) were the United States with 847 flights (+5.1%), the Russian Federation with 678 flights (+14.7%) and the United Arab Emirates with 333 flights (+0.8%). Traffic flows between Europe and Egypt had the best progression and were up 47.7% on November 2016.

The aircraft operators that added the most flights to the network on a daily basis were Turkish Airlines (+102 flights), Ryanair (+74 flights), LOT Polish Airlines (+65 flights), Wizz Air Hungary (+58 flights) and Vueling (+53 flights).

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

Nine of the top ten airports had positive traffic growth. Overall, the largest traffic increases in November 2017 were at Tel Aviv/Ben Gurion, Ankara, Frankfurt, Gran Canaria and Lisboa airports. The largest traffic decreases were at Berlin/Tegel, Düsseldorf, Birmingham, Hamburg and Berlin/Schoenefeld airports. Traffic increase at Frankfurt Airport is due to the comparison with November 2016 when there was a Lufthansa strike for seven days. Tel Aviv/Ben Gurion traffic increase was due to the expansion of routes made available by low-cost airlines. Traffic decreases at Berlin/Tegel, Düsseldorf, Hamburg and Berlin/Schoenefeld are due to Monarch and Air Berlin bankruptcies.

Seven of the top ten aircraft operators had more traffic compared to November 2016. The operators with the highest traffic growth were Binter Canarias, Eurowings, Norwegian Air International, LOT-Polish airline and Lufthansa. The highest traffic decreases were recorded by Alitalia, Transavia.com, Norwegian Air Shuttle, Wideroe and HOP.

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	201711	%	N°	ICAO	AIR OPERATOR	201711	%
1	EDDF	FRANKFURT MAIN	652	16,7%	1	RYP	RYANAIR	1721	4,5%
2	EHAM	AMSTERDAM/SCHIPHOL	650	4,7%	2	DLH	DEUTSCHE LUFTHANSA	1413	21,2%
3	EGLL	LONDON/HEATHROW	643	2,0%	3	THY	TURKISH AIRLINES	1209	9,2%
4	LFPG	PARIS CD DE GAULLE	619	1,5%	4	EZY	EASYJET	1045	3,5%
5	LTBA	ISTANBUL-ATATURK	599	5,8%	5	AFR	AIR FRANCE	857	-0,8%
6	EDDM	MUENCHEN	527	3,8%	6	SAS	SCANDINAVIAN AIRLINES SYSTEM	854	-3,6%
7	LEMD	ADOLFO SUAREZ MADRID-BARAJA	520	3,4%	7	BAW	BRITISH AIRWAYS	651	1,7%
8	LEBL	BARCELONA/EL PRAT	391	7,1%	8	KLM	KLM ROYAL DUTCH AIRL	635	6,7%
9	LIRF	ROMA/FIUMICINO	360	-3,6%	9	EWG	EUROWINGS AG	525	261,2%
10	ENGM	OSLO/GARDERMØEN	351	1,9%	10	AZA	ALITALIA	481	-7,8%
11	EKCH	KOBENHAVN/KASTRUP	341	-2,7%	11	VLG	VUELING AIRLINES SA	459	13,2%
12	ESSA	STOCKHOLM-ARLANDA	341	2,0%	12	PGT	PEGASUS HAVA TASI.	426	11,1%
13	LSZH	ZURICH	333	0,5%	13	WZZ	WIZZ AIR	424	15,7%
14	LOWW	WIEN SCHWECHAT	314	-0,5%	14	BEE	JERSEY EUROPEAN T/A FLYBE	411	-1,2%
15	EGKK	LONDON/GATWICK	310	-0,8%	15	SWR	SWISS INTERNATIONAL	359	-1,6%
16	EBBR	BRUSSELS NATIONAL	299	0,1%	16	AUA	AUSTRIAN AIRLINES	345	5,6%
17	LFPO	PARIS ORLY	286	-3,7%	17	TAP	TAP/AIR PORTUGAL	340	13,4%
18	EIDW	DUBLIN	279	5,1%	18	WIF	WIDEROE	334	-5,2%
19	LTFJ	ISTANBUL/SABIHA GOKCEN	277	-0,3%	19	NAX	NORWEGIAN AIR SHUTTLE	332	-5,8%
20	LPPT	LISBOA	269	14,6%	20	FIN	FINNAIR OY	326	5,7%
21	EFHK	HELSINKI-VANTAA	250	5,7%	21	LOT	LOT-POLISH AIRLINES	304	27,3%
22	EDDL	DUESSELDORF	247	-13,7%	22	AFL	AEROFLOT-RUSSIAN	288	11,4%
23	EGCC	MANCHESTER	233	-1,2%	23	IBE	IBERIA	240	3,1%
24	EGSS	LONDON/STANSTED	233	5,8%	24	AEA	AIR EUROPA	231	6,2%
25	LIMC	MILANO MALPENSA	227	6,0%	25	IBK	NORWEGIAN AIR INTERNATIONAL	223	31,3%
26	EPWA	CHOPINA W WARSZAWIE	227	9,7%	26	HOP	HOP (MERGE OF BZH + RAE + RLA)	217	-5,0%
27	LSGG	GENEVA	217	1,2%	27	QTR	QATAR AIRWAYS COMP.	212	14,0%
28	LGAV	ATHINA/ELEFTHERIOS VENIZELOS	212	6,2%	28	BEL	BRUSSELS AIRLINES	205	-1,7%
29	EDDH	HAMBURG	191	-4,6%	29	AME	AIR NOSTRUM	196	-4,3%
30	GCLP	GRAN CANARIA	190	15,7%	30	UAE	EMIRATES	189	1,0%
31	LKPR	PRAHA RUZYNĚ	182	9,5%	31	RAM	ROYAL AIR MAROC	184	0,1%
32	EDDK	KOELN-BONN	180	5,5%	32	EIN	AER LINGUS TEORANTA	175	8,2%
33	LLBG	TEL AVIV/BEN GURION	175	25,1%	33	BCS	EUROPEAN AIR TRANSP.	172	4,1%
34	EDDT	BERLIN-TEGEL	167	-31,8%	34	AUI	UKRAINE INTERNATIONAL	145	3,9%
35	LTAC	ANKARA-ESENBAGA	166	18,0%	35	BTI	AIR BALTIC CORPORAT.	128	13,2%
36	EGPH	EDINBURGH	156	3,7%	36	LOG	LOGANAIR	125	18,5%
37	EDDS	STUTTGART	150	3,3%	37	OAL	OLYMPIC	120	6,0%
38	EGGW	LONDON/LUTON	150	-3,3%	38	AEE	AEGEAN AIRLINES	114	8,1%
39	LIML	MILANO LINATE	150	-3,7%	39	NJE	NETJETS	112	12,1%
40	LROP	BUCURESTI/HENRI COANDA	150	2,1%	40	SHT	BAW SHUTTLE	108	-1,6%
41	LEPA	PALMA DE MALLORCA	144	8,5%	41	EZS	EASY JET SWITZERLAND	108	-1,0%
42	LFMN	NICE-COTE D'AZUR	144	2,7%	42	CFE	CITYFLYER EXPRESS	107	5,2%
43	LFLL	LYON SAINT-EXUPERY	143	2,2%	43	UAL	UNITED AIRLINES INC.	107	1,5%
44	LEMG	MALAGA/COSTA DEL SOL	139	8,8%	44	IBB	BINTER CANARIAS	101	295,1%
45	LHBP	BUDAPEST LISZT FERENC INT.	135	12,5%	45	DAL	DELTA AIR LINES INC.	97	-0,1%
46	LFBO	TOULOUSE BLAGNAC	132	3,0%	46	DAH	AIR ALGERIE	97	4,9%
47	EDDB	SCHOENEFELD-BERLIN	131	-4,5%	47	ROT	TAROM	97	-0,7%
48	EGBB	BIRMINGHAM	129	-6,4%	48	TRA	TRANSVIA.COM	97	-6,9%
49	LFML	MARSEILLE PROVENCE	123	0,2%	49	SXS	SUNEXPRESS AIRLINES	96	4,6%
50	EGPF	GLASGOW	119	0,0%	50	TAY	TNT INTERNATIONAL	95	-0,1%
TOTALS and % TOTAL TRAFFIC			13553	58,1%	TOTALS and % TOTAL TRAFFIC			17837	68,0%

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

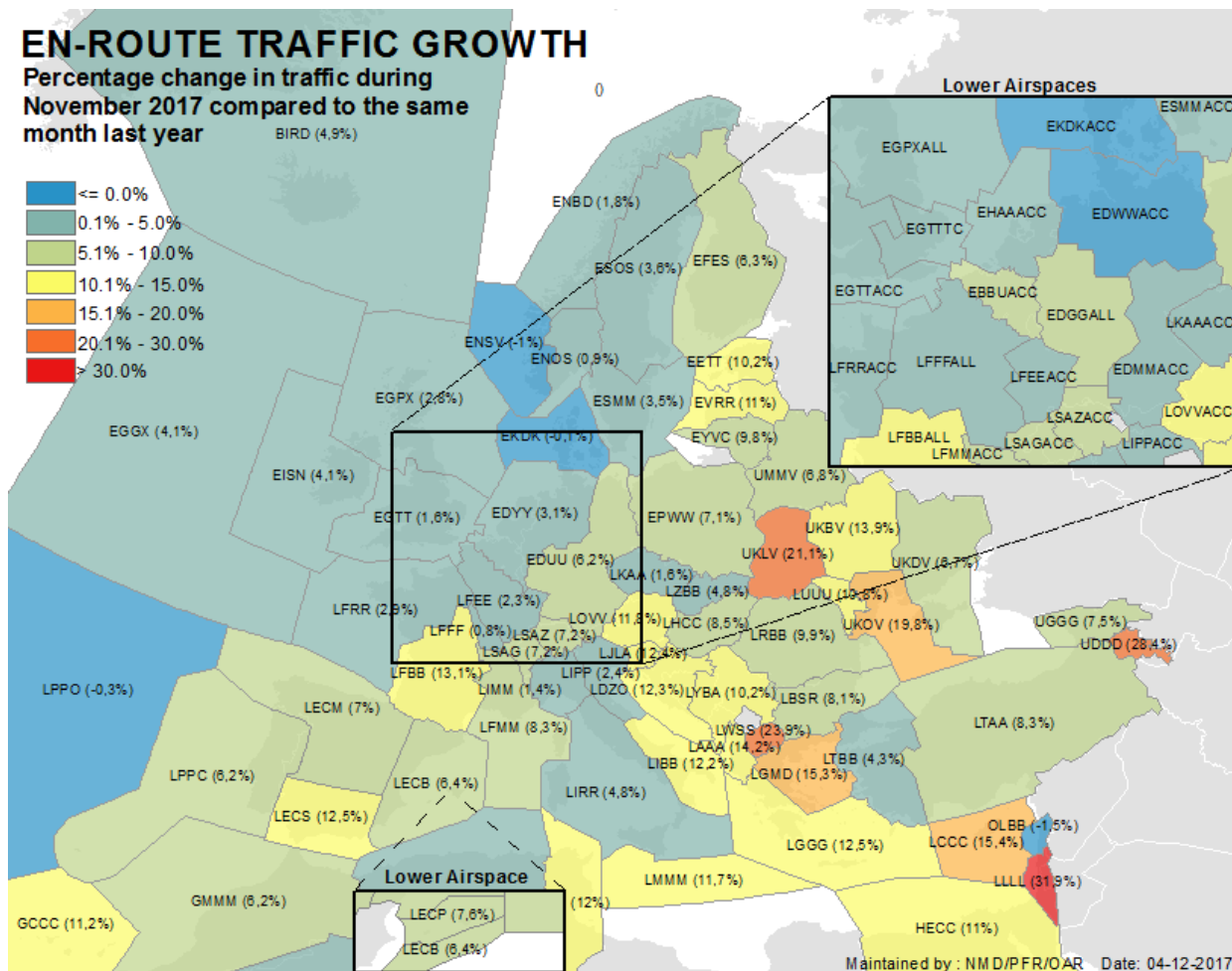
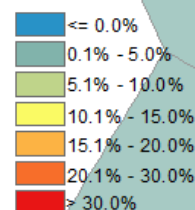
Top 50 Air Operators with average daily traffic and percentage compared to same period of previous year

N°	ICAO	AIR OPERATOR	201711	%
		Unidentified	1884	0,8%

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 November 2017 compared to the same month last year



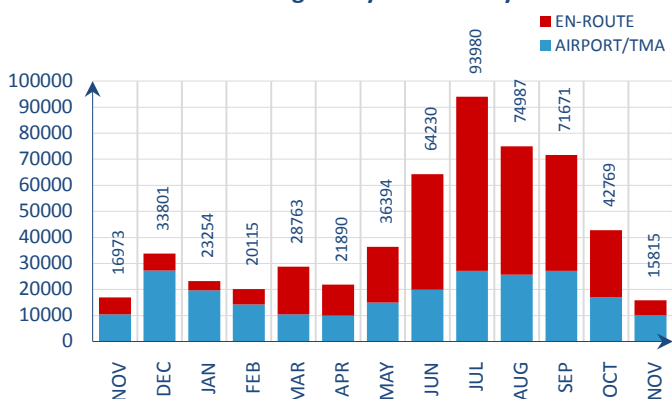
Maintained by : NMD/PFR/OAR Date: 04-12-2017

Nº	ASP ID	ASP NAME	201711	%	Nº	ASP ID	ASP NAME	201711	%
1	BIRDACC	REYKJAVIK ACC	342	4,9%	39	LFBBALL	BORDEAUX ALL ACC	2115	13,1%
2	DAAAACC	ALGERS ACC	460	4,6%	40	LFEACCC	REIMS U/ACC	2348	2,3%
3	DTTCACC	TUNIS ACC	251	12,1%	41	LFFFALL	PARIS ALL ACC	2911	0,8%
4	EBBUACC	BRUSSELS CANAC	1578	5,6%	42	LMMMACC	MARSEILLE ACC	2389	8,3%
5	EDGGALL	LANGEN ACC_FIR	3263	6,2%	43	LMMMAPP	MARSEILLE TMA	701	2,3%
6	EDMMACC	MUNCHEN ACC	2836	4,2%	44	LFRRACC	BREST U/ACC	2333	2,9%
7	EDUUUAC	KARLSRUHE UAC	4498	6,2%	45	LGGGACC	ATHINAI CONTROL	987	12,5%
8	EDWWACC	BREMEN ACC	1535	-10,4%	46	LGMDDACC	MAKEDONIA CONTROL	771	15,3%
9	EDYYUAC	MAASTRICHT UAC	4582	3,2%	47	LHCCACC	BUDAPEST ACC	1776	8,5%
10	EETTACC	TALLIN ACC	519	10,2%	48	LIBBACC	BRINDISI ACC	606	12,2%
11	EFESACC	TAMPERE ACC	524	6,3%	49	LIMMACC	MILANO ACC	1909	1,4%
12	EGGXOCA	SHANWICK OACC	1177	4,1%	50	LIPPACC	PADOVA ACC	1442	2,4%
13	EGPXALL	SCOTTISH ACC	2489	2,8%	51	LIRRACC	ROMA ACC	1801	4,8%
14	EGTTACC	LONDON ACC	4813	1,6%	52	LJLAACC	LJUBLJANA ACC	618	12,4%
15	EGTTTTC	LONDON TMA/TC	3487	1,7%	53	LKAAACC	PRAGUE ACC	1856	1,6%
16	EHAACC	AMSTERDAM ACC(245-)	1514	2,6%	54	LLLLACC	TEL AVIV ACC	451	31,9%
17	EIDWACC	DUBLIN ACC	601	4,9%	55	LMMMACC	MALTA ACC	277	11,7%
18	EISNACC	SHANNON ACC	1091	4,1%	56	LOVVACC	WIEN ACC	1918	11,8%
19	EKDKACC	COPENHAGEN ACC	1441	-0,1%	57	LPPCACC	LISBOA ACC/UAC	1464	6,2%
20	ENBDACC	BODO ACC	619	1,8%	58	LPOOACC	SANTA MARIA OACC	367	-0,3%
21	ENOSACC	OSLO ATCC	974	0,9%	59	LQSBACC	BOSNIA-HERZEGOVINA	93	29,2%
22	ENSVACC	STAVANGER ATCC	607	-1,0%	60	LRBBACC	BUCURESTI ACC	1593	9,9%
23	EPWWACC	WARSAWA ACC	1854	7,1%	61	LSAGACC	GENEVA ACC	1485	7,2%
24	ESMMACC	MALMO ACC	1424	3,5%	62	LSAZACC	ZURICH ACC	1823	7,2%
25	ESOSACC	STOCKHOLM ACC	1190	3,6%	63	LTAACC	ANKARA ACC	3292	8,3%
26	EVRACC	RIGA ACC	665	11,0%	64	LTBBACC	ISTANBUL ACC	1877	4,3%
27	EYVACC	VILNIUS ACC	595	9,8%	65	LUUUACC	CHISINAU ACC	103	10,8%
28	GCCCACC	CANARIAS ACC/FIC	1006	11,2%	66	LWSSACC	SKOPJE ACC	275	23,9%
29	GMMMACC	CASABLANCA ACC	1157	6,2%	67	LYBAACC	BEOGRADE ACC	1281	10,2%
30	HECCACC	CAIRO ACC	615	11,0%	68	LZBBACC	BRATISLAVA ACC	1119	4,8%
31	LAAACC	TIRANA ACC	379	14,2%	69	OLBBACC	BEIRUT ACC	128	-1,5%
32	LBSRACC	SOFIA ACC	1742	8,1%	70	UDDACC	YEREVAN ACC	140	28,4%
33	LCCACC	NICOSIA ACC	899	15,4%	71	UGGGACC	TBILISI ACC	372	7,5%
34	LDZOACC	ZAGREB ACC	1047	12,3%	72	UKBVACC	KIEV ACC	361	13,9%
35	LECBACC	BARCELONA ACC	1741	6,4%	73	UKDVACC	DNIPROPETROVSK ACC	48	6,7%
36	LECMALL	MADRID ALL ACC	2774	7,0%	74	UKLVACC	L'VIV ACC	264	21,1%
37	LECPACC	PALMA ACC	384	7,6%	75	UKOVACC	ODESSA ACC	206	19,8%
38	LECSACC	SEVILLA ACC	947	12,5%	76	UMMVACC	MINSK ACC	677	6,8%

The Madrid, Sevilla, Lisboa, Casablanca and Canarias ACCs variation is due to increased traffic in the South/West axis. However, the highest relative traffic increases in November 2017 were in Tel Aviv, Yerevan, Skopje, L'viv and Odessa ACCs. Tel Aviv ACC variation is due to increase of domestic flights and integration of Israël in IFPS. Athens ACC variation is partially due to an increase of traffic of Eurowings from/to Germany and El Al from/to Israël. Traffic increase in Bordeaux ACC is partially due to the comparison with November 2016 when ERATO implementation started.

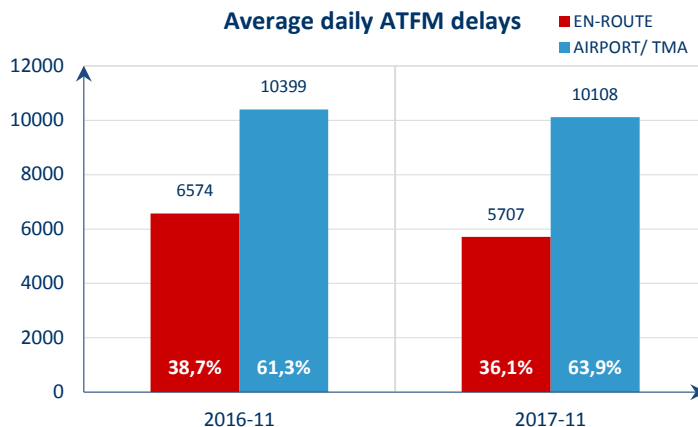
2. ATFM DELAY AND ATTRIBUTIONS

Average daily ATFM delays



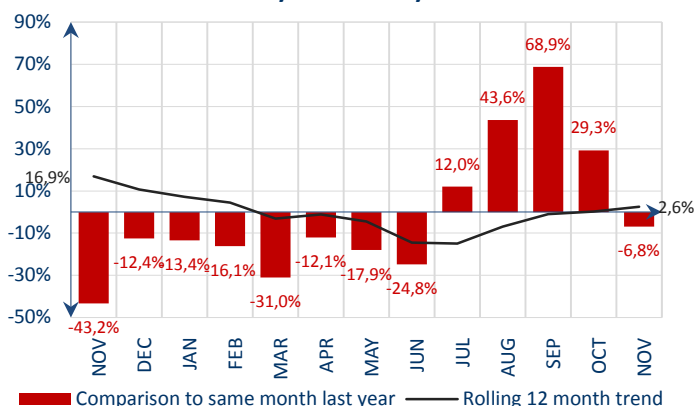
Total ATFM delays decreased by 6.82% in November 2017.

Average daily ATFM delays



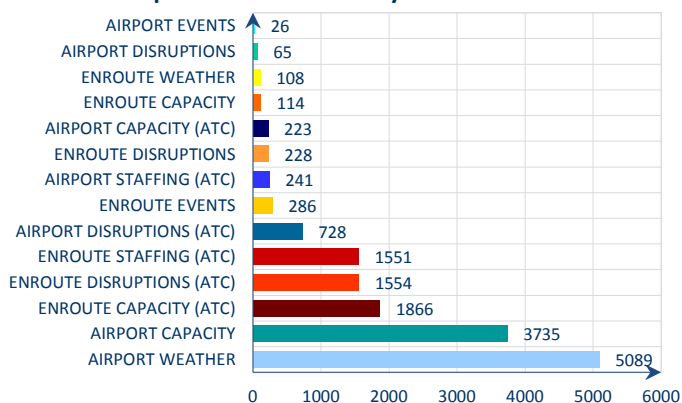
En-route ATFM delays decreased by 13.2% and airport ATFM delays decreased by 2.8%.

Monthly ATFM delays trend



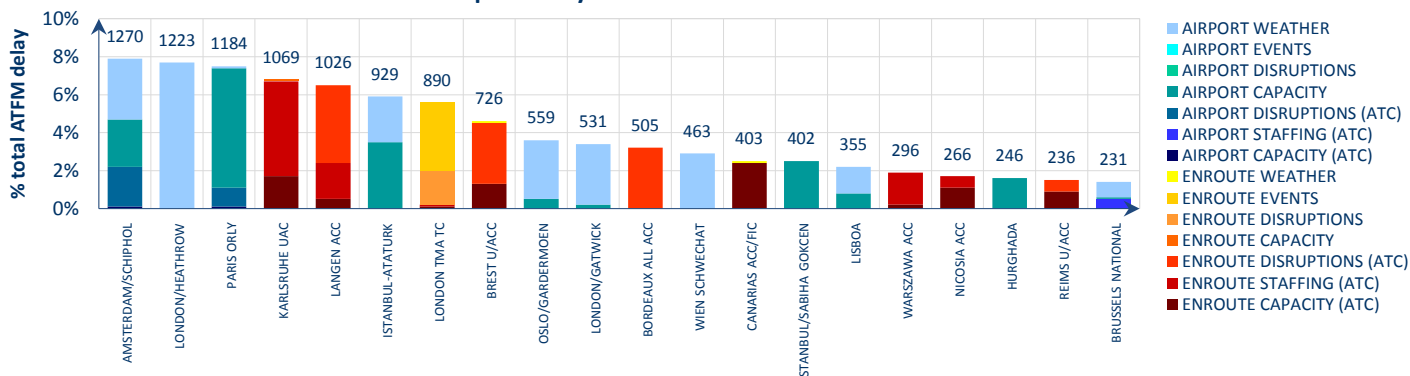
The rolling 12-month trend shows that ATFM delay was 2.6% higher during the period December 2016 – November 2017 compared to December 2015 – November 2016.

Proportion of ATFM delays in November 2017



Airport weather (32.2%), airport capacity (23.6%) and en-route ATC capacity (11.8%) were the main causes of ATFM delays in November 2017.

Top 20 delay reference locations in November 2017

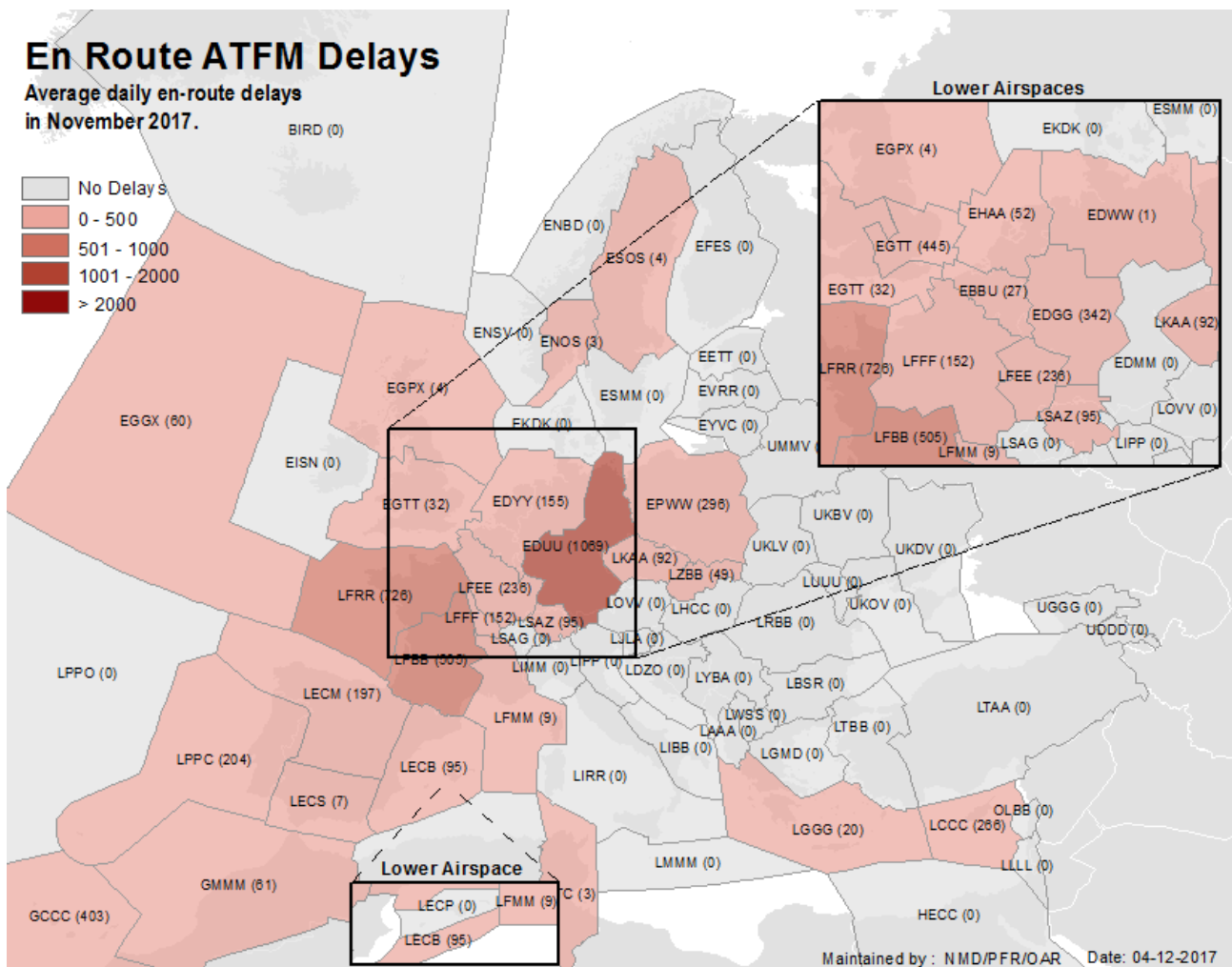


These are the top 20 delay generating locations for the reporting month with respect to total ATFM delays. Figures are the average daily delays in minutes for the individual locations.

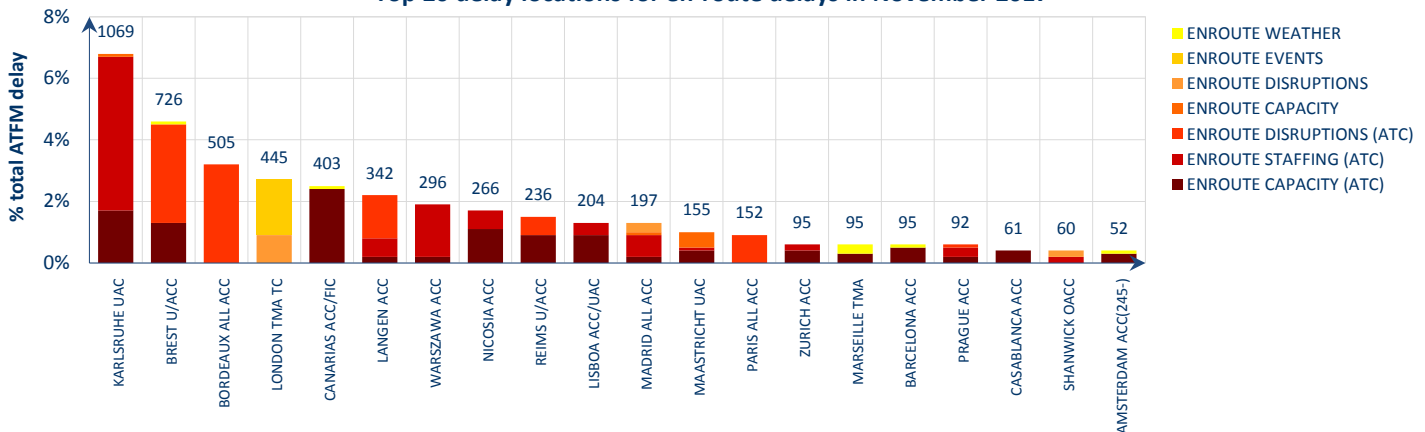
- French ATC industrial action from 15 to 17 November resulted in disruption delays for all French ACCs;
- En-route ATC capacity issues in Karlsruhe, Brest, Canarias and Nicosia;
- En-route ATC staffing issues in Karlsruhe, Langen and Warsaw ACCs;
- Capacity issues at both Istanbul airports and Amsterdam/Schiphol airports;
- Tower and taxiway maintenance in conjunction with airport capacity at Paris/Orly airport;
- Seasonal weather impacted operations strongly at London/Heathrow and, to a lesser extent, at Amsterdam/Schiphol, Istanbul/Ataturk, Oslo/Gardermoen, London/Gatwick, Vienna and Lisbon airports;
- Communication system failure in Langen ACC on 15 November;
- Implementation of Extended Computer Display system in London TMA;
- ATM system failure in Amsterdam ACC on 21 November affected operations at Amsterdam/Schiphol airport.

3. EN-ROUTE ATFM DELAYS

EN-ROUTE ATFM DELAY PER LOCATION



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



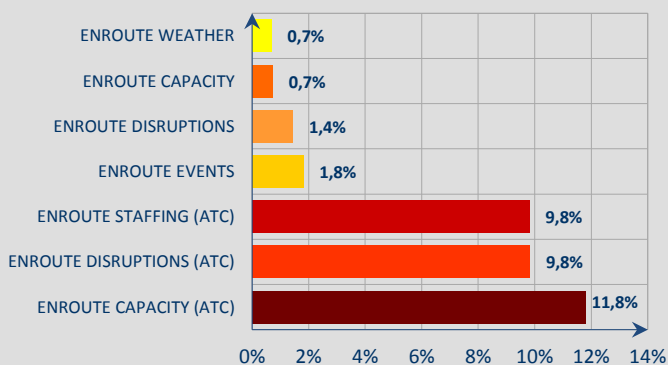
These are the top 20 en-route ATFM delay generating locations for the reporting month with respect to total ATFM delays. Figures are the average daily delays in minutes for the individual locations.

The top 20 en-route ATFM delay locations generated **35.2%** of the monthly total (network) ATFM delay.
 The top 5 en-route ATFM delay locations generated **19.8%** 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

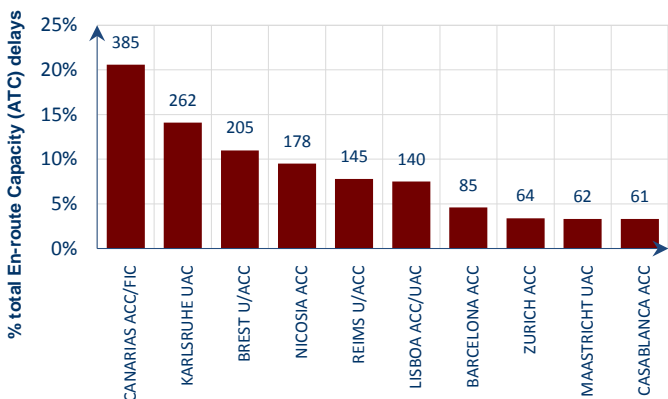
Reasons for en-route delays in November 2017



En-route ATFM delays accounted for 36.1% of all ATFM delays. Most of this delay was caused by en-route ATC capacity, en-route ATC disruptions and en-route ATC staffing as explained in detail below. The other causes were:

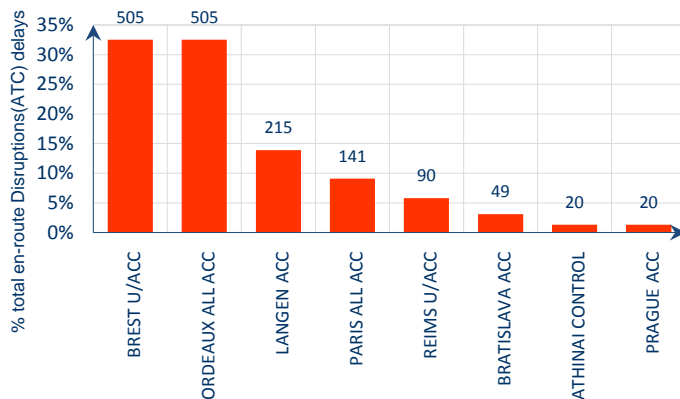
- En-route events*; Implementation of Extended Computer Display system in London TMA;
- En-route disruptions*; Madrid and London ACCs generated delays to the application of ATFM protective measures during the French ATC industrial action from 15 November to 17 November;
- En-route capacity*; Military activities in Maastricht ACC.

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



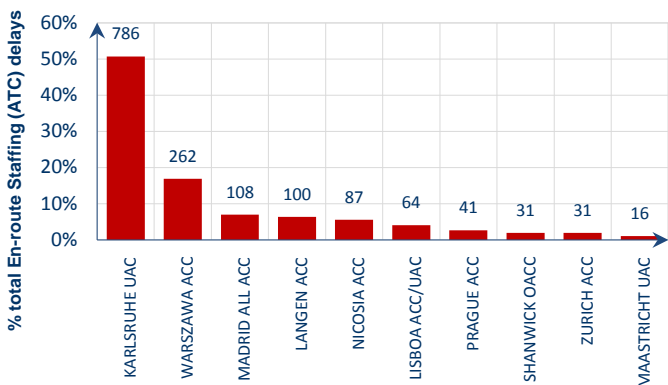
Canarias, Karlsruhe and Brest ACCs were the biggest generators of en-route ATC capacity delays in November.

Top en-route Disruption (ATC) delays in November 2017



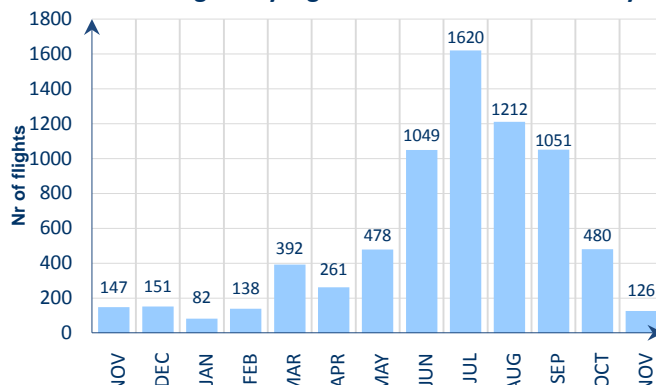
French ATC industrial action generated delays in all French ACCs with a total of 41,830 min of ATFM delays.

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



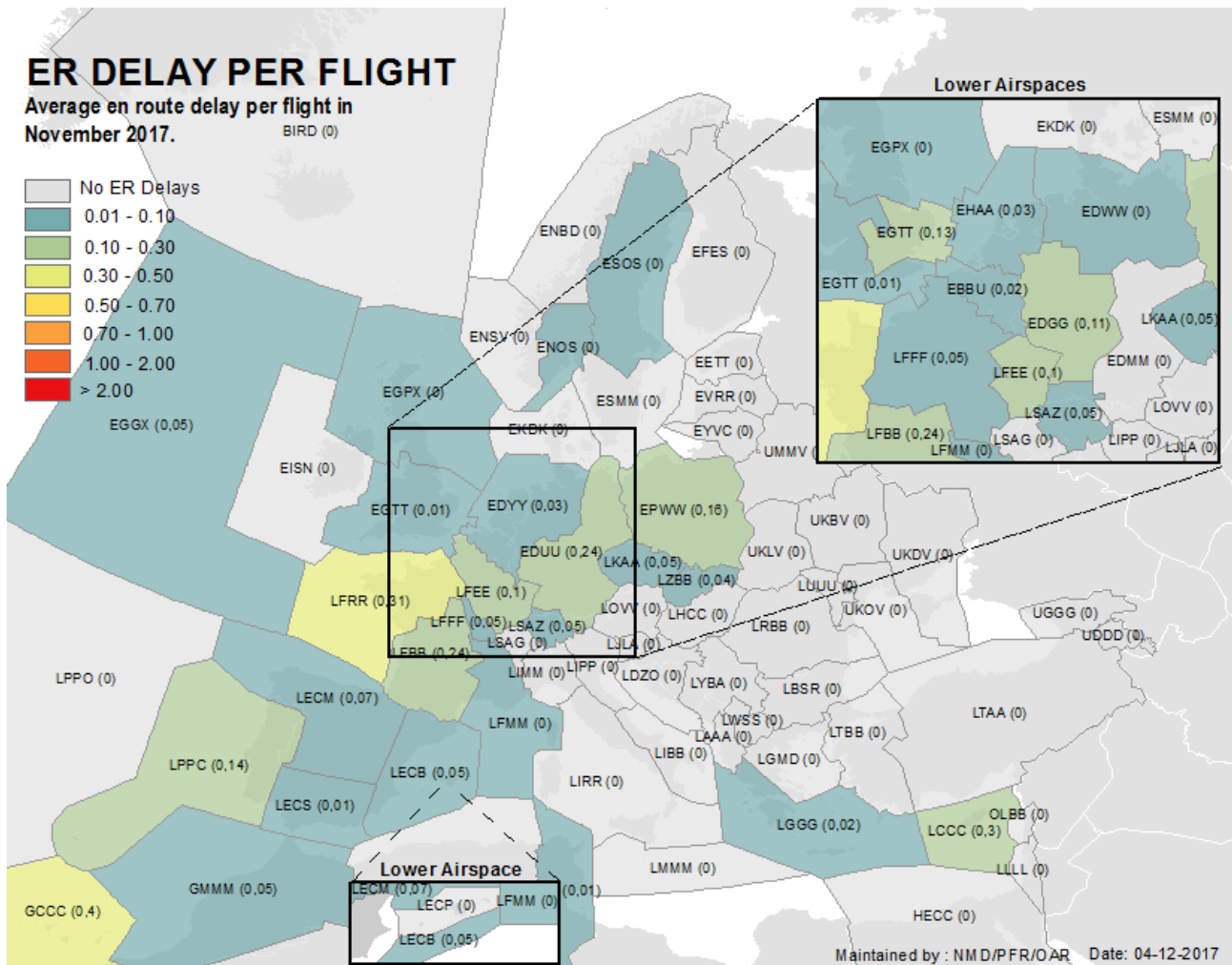
Karlsruhe UAC generated 51% of en-route ATC staffing delays due to staff shortage.

Average daily flights >= 15 min en-route delay

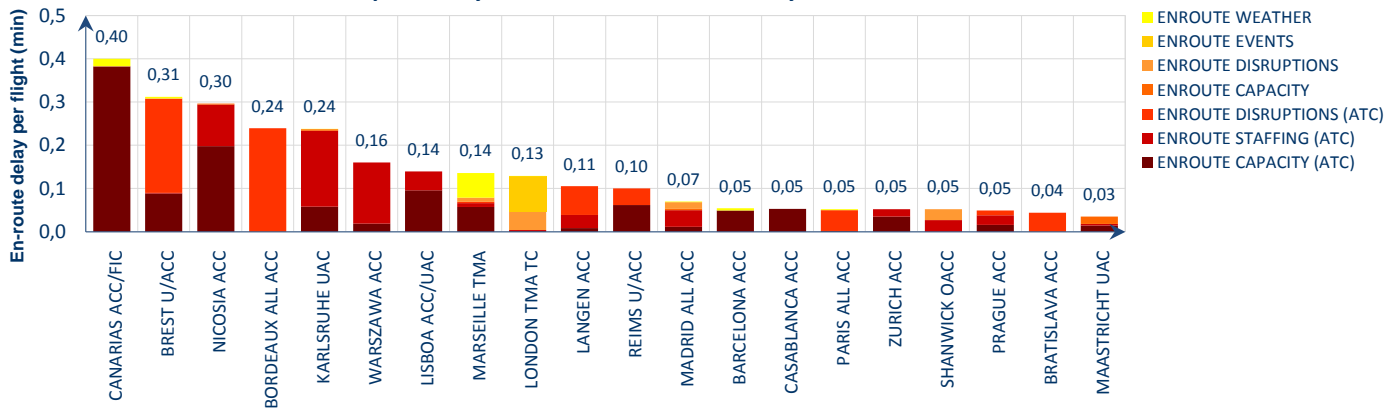


The average daily flights with an en-route ATFM delay of at least 15 minutes decreased from 147 flights/day in November 2016 to 126 flights/day in November 2017.

EN-ROUTE ATFM DELAY PER FLIGHT



Top 20 delay locations for en-route delays in November 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.

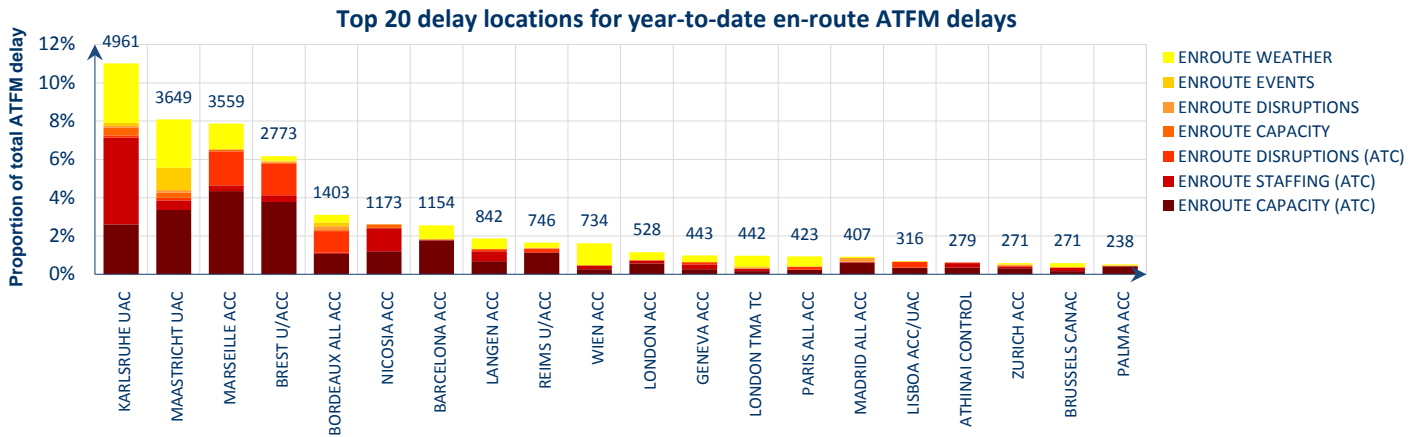
Despite the French ATC industrial action from 15 to 17 November, en-route ATFM delay/flight in all French ACCs decreased compared to October 2017;

Canarias ACC en-route ATFM delay/flight increased from 0.09 min/flight in October 2017 to 0.40 min/flight in November 2017;

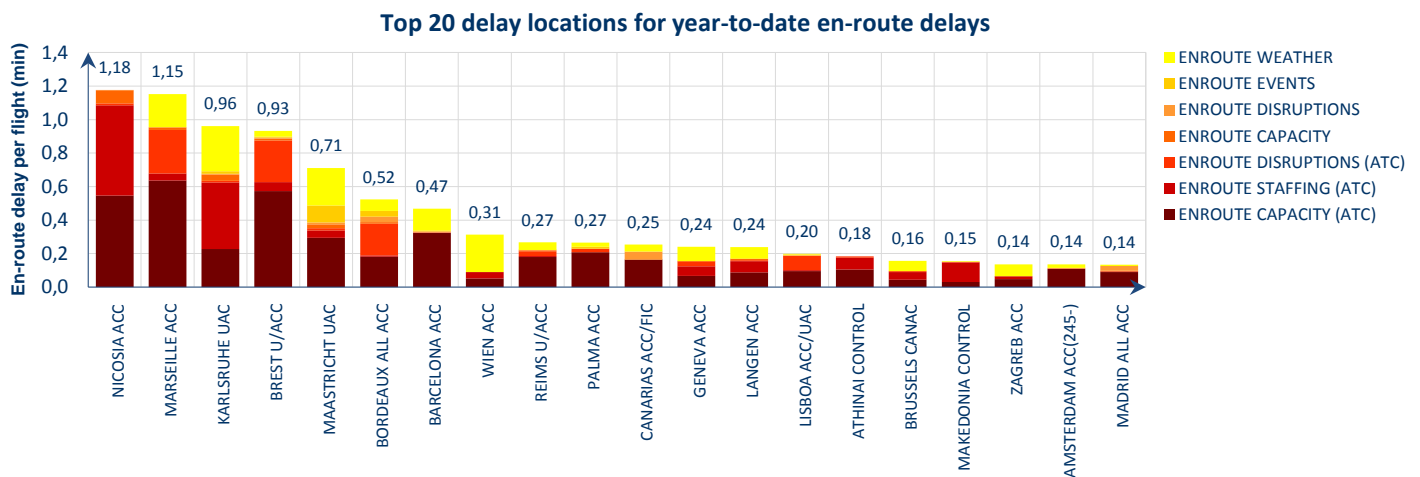
Warsaw ACC en-route ATFM delay/flight increased from 0.10 min/flight in October 2017 to 0.16 min/flight in November 2017;

Karlsruhe UAC en-route ATFM delay/flight decreased from 1.02 min/flight in October 2017 to 0.24 min/flight in November 2017;

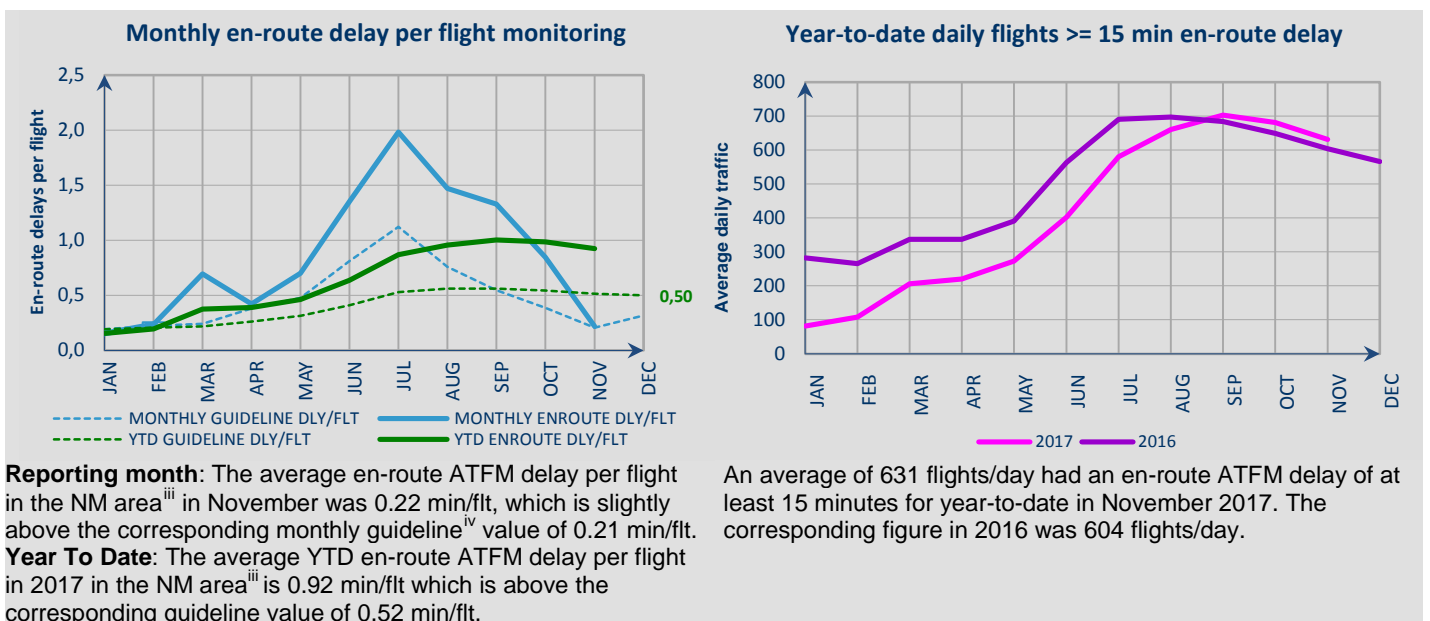
EN-ROUTE ATFM DELAY YEAR-TO-DATE



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 **54.5%** of the total ATFM (network) delay.
 The top 5 en-route delay locations generated **36.3%** of the total ATFM (network) delay.



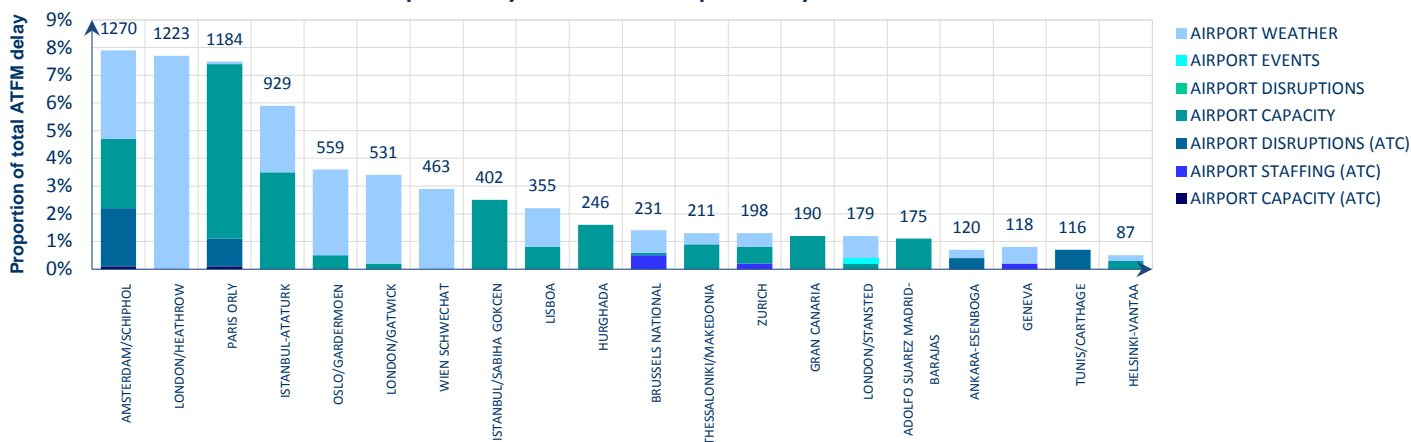
These are the top 20 locations for average en-route ATFM delay per flight for 2017. Figures are the average daily en-route delay in minutes per flight for the individual locations.



4. AIRPORT/TMA ATFM DELAYS

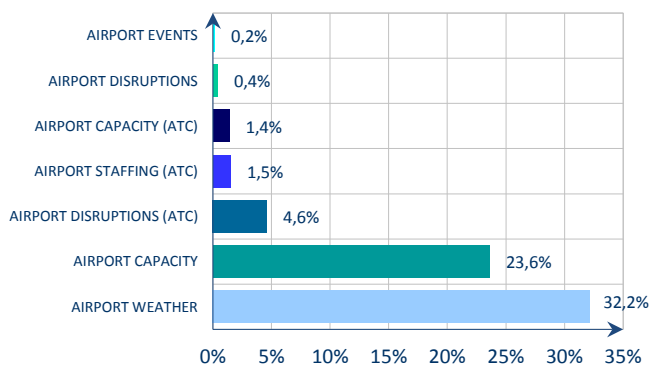
AIRPORT/TMA ATFM DELAY PER LOCATION

Top 20 delay locations for airport delays in November 2017



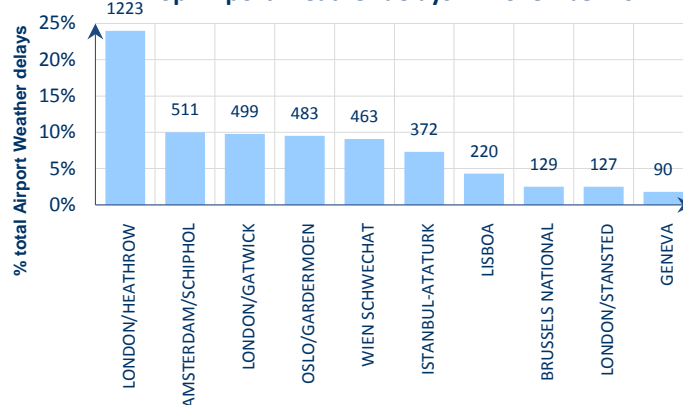
AIRPORT/TMA ATFM DELAY PER DELAY GROUPS

Reasons for airport delays in November 2017



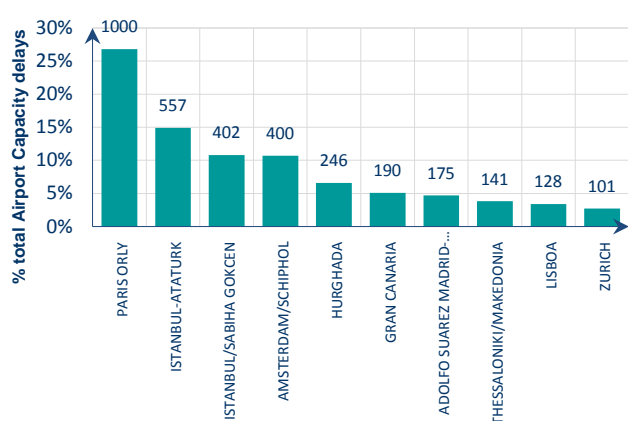
Airports accounted for 63.9% of all ATFM delays in November 2017, mainly due to airport weather, aerodrome capacity and ATC disruptions.

Top Airport Weather delays in November 2017



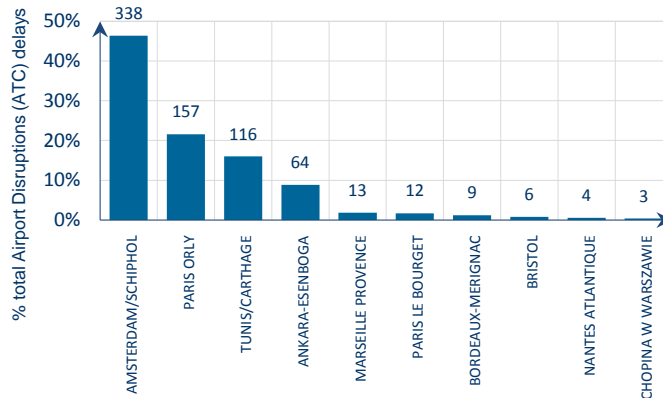
Strong winds and low visibility impacted operations strongly at London/Heathrow and, to a lesser extent, at Amsterdam/Schiphol and London/Gatwick airports.

Top Airport Capacity delays in November 2017



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

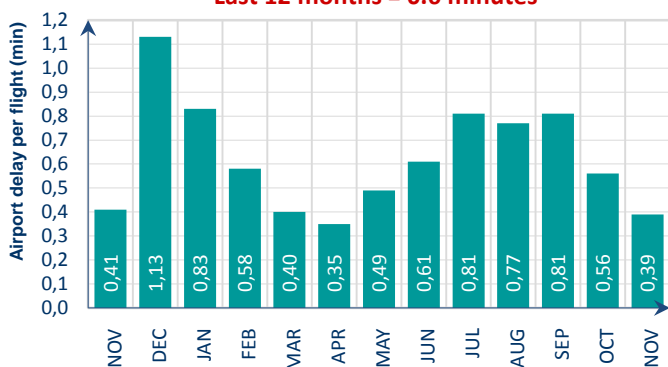
Top Airport Disruption (ATC) delay in November 2017



ATM system failure in Amsterdam ACC on 21 November affected operations at Amsterdam/Schiphol airport.

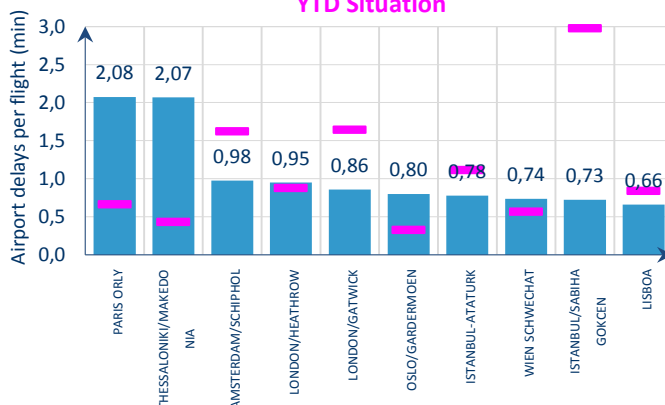
AIRPORT/TMA ATFM DELAY PER FLIGHT

Monthly average Airport delay (min) per flight
Last 12 months = 0.6 minutes



Average airport/TMA delay per flight decreased from 0.41 min/flt in November 2016 to 0.39 min/flt in November 2017.

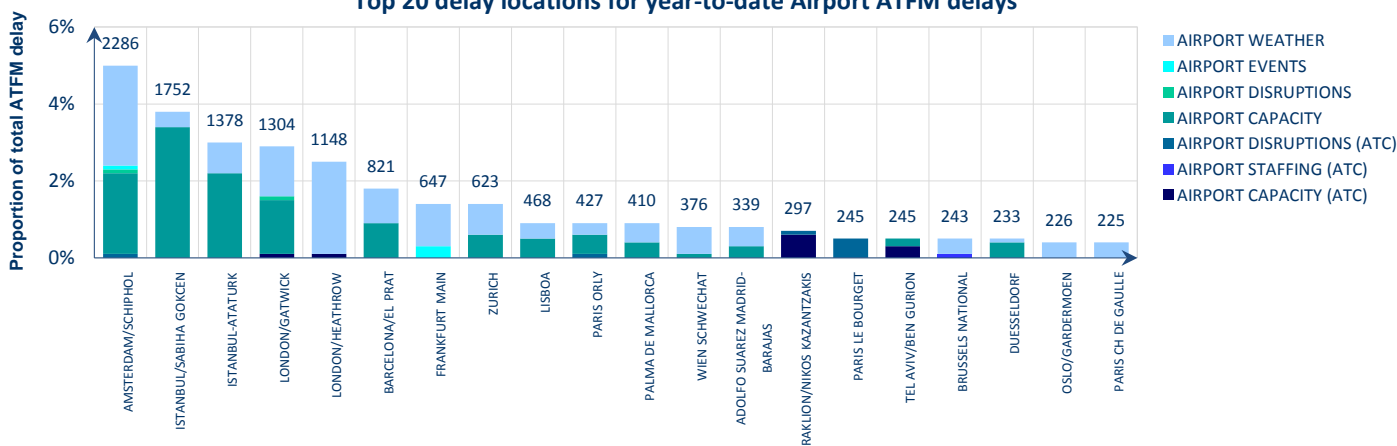
Top 10 Airport delay per flight in November 2017
YTD Situation



Five of the top 10 airports generated an average delay per flight above their year to date average while Amsterdam/Schiphol, London/Gatwick and both Istanbul airports decreased.

AIRPORT/TMA ATFM DELAY YEAR-TO-DATE

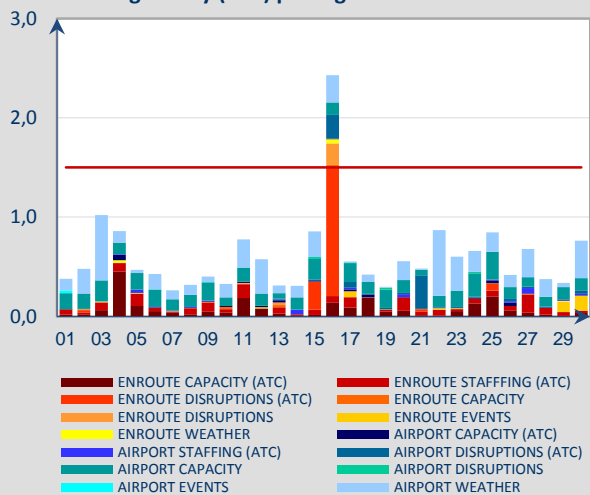
Top 20 delay locations for year-to-date Airport ATFM delays



The top 20 Airport/TMA delay locations have generated 29.6% of the total ATFM (network) delay in 2017. The top 5 Airport/TMA delay locations have generated 17.2% of the total ATFM (network) delay in 2017.

5. DAILY EVOLUTION

Average delay (min) per flight in November 2017



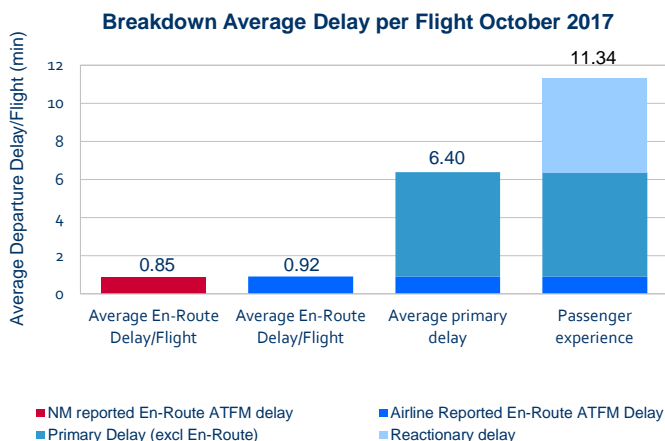
One day in November 2017 had an average ATFM delay/flt exceeding 1.5 min/flt. These were the most significant days:

16 November: En-route ATC disruptions delays in all French ACCs due to French ATC industrial action, with additional delays in Madrid and London ACCs; Paris/Orly was the most affected airport; Weather issues in Amsterdam ACC affected operations at Amsterdam/Schiphol airport; En-route ATC capacity issues in Canarias and Nicosia ACCs.

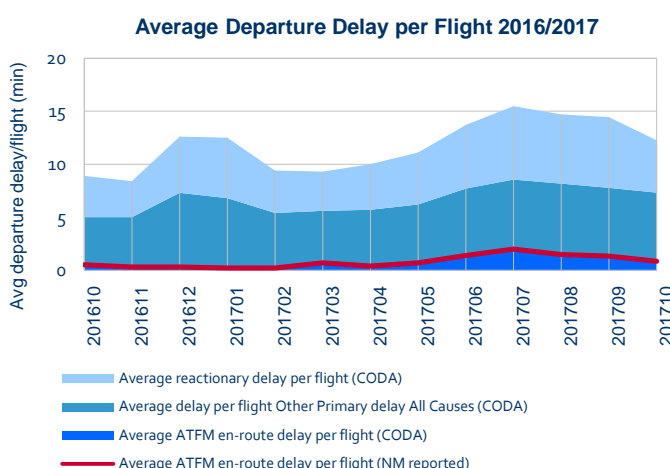
6. ALL AIR TRANSPORT DELAYS (SOURCE: CODA)

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 67% of the commercial flights in the ECAC region for October 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. For the airline, a part of this delay is the ATFM delay and the remaining amount is the handling delay.

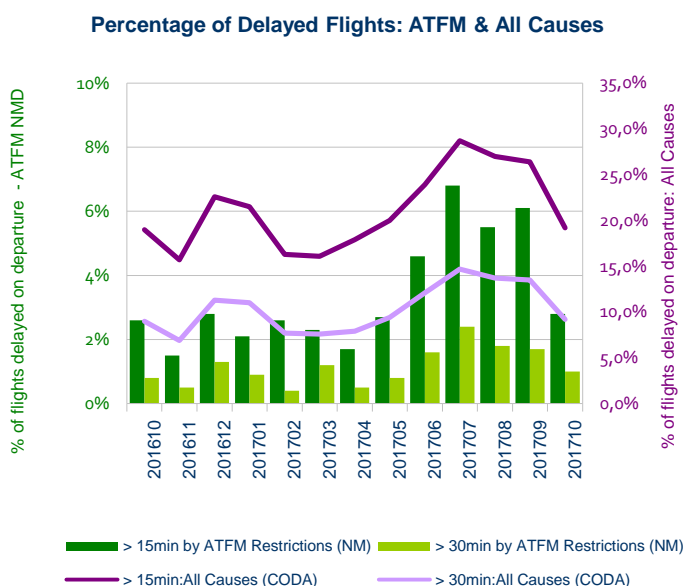
En-route delay reported by airlines increased during October 2017 from 0.5 minutes to 0.9 minute per flight, following a month where French ATC industrial action occurred in Marseille, Brest, Bordeaux and Reims ACCs on the 09, 10 and 11 October, with airlines suffering from the most delay on 10 October



Based on airline data, the average departure delay per flight from ‘All-Causes’ was 11.34 minutes per flight, an increase in comparison to October 2016 where the average delay was 10.04 minutes per flight. Primary delays counted for 56% (or 6.40 min/ft), with reactionary delays representing the smaller remaining share of 44% at (4.94 min/ft).

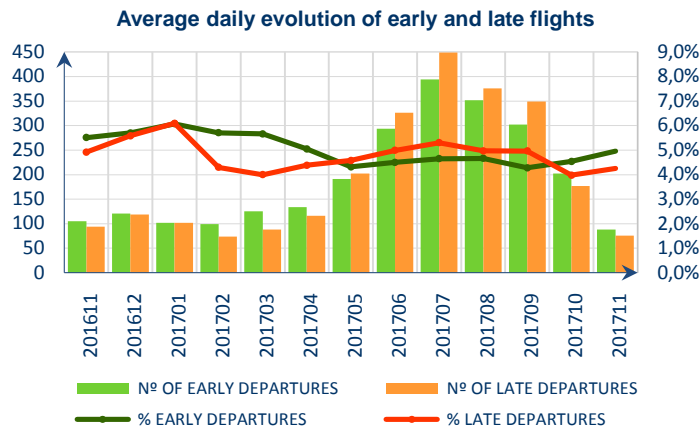


Further analysis of the past 12 months shows that the average ‘All-Causes’ en-route ATFM delay reported by airlines was 0.92 minutes per flight. This higher when compared to the NM reported average en-route ATFM delay of 0.85 minutes per flight in October 2017.



The percentage of flights delayed from ‘All-Causes’ increased with (those exceeding 15 minutes) increasing by 0.2 percentage points to 19.2%. Those (exceeding 30 minutes) also increased, these also by 0.2 percentage points with 9.2% of flights being delayed in October 2017.

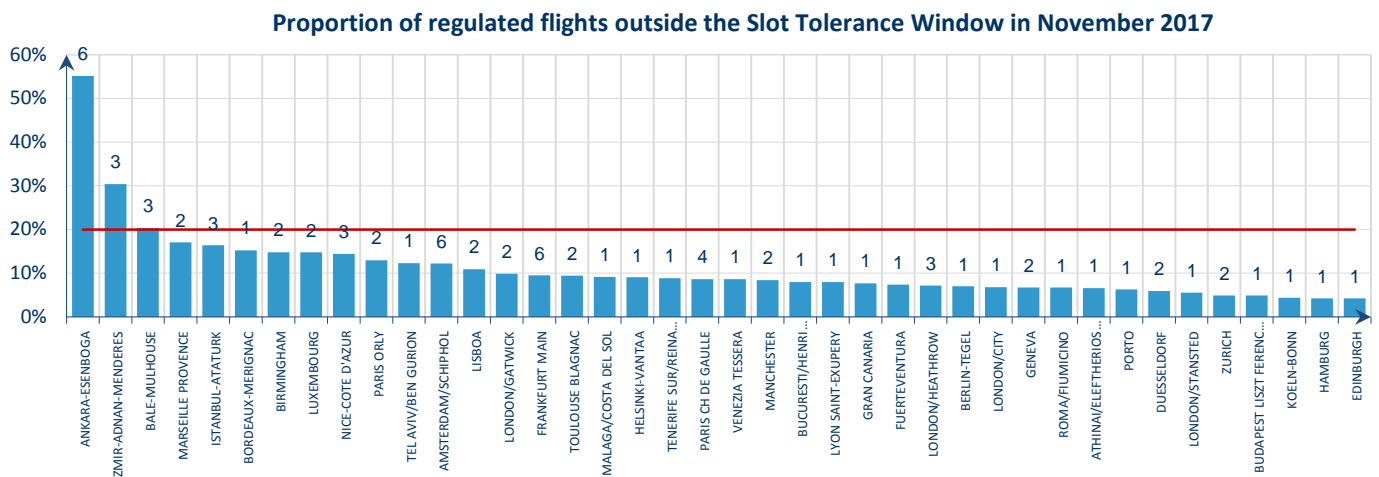
7. ATFM SLOT ADHERENCE



The percentage of early departures for November 2017 is 5.0% of regulated flights, which is a decrease of 0.5 percentage points compared to November 2016.

The percentage of late departures for November 2017 is 4.3% of regulated flights, which is a decrease of 0.6 percentage points compared to November 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

Five ACCs carried out activities involving ATM system changes/upgrades or airspace reorganisations, during this reporting period.

Karlsruhe ACC migrated to the new iCAS ATM system on 12 November, generating only 36 minutes of ATFM delay. A capacity reductions between 10-15%, with maximum configurations had been planned for the cutover day.

London TC introduced ExCDS (full electronic flight progress strip capability) in TMA North sector generating 8,541 minutes of ATFM delay. Originally, 20% of capacity reduction had been planned in the North sector. This amount of delay presented 64 % of total delay, 13,345 min, generated by London TC during the month.

Geneva and Zurich ACCs implemented the first elements of the Virtual Center on 21-24 November not generating any ATFM delay. Both ACCs had estimated capacity reductions of 10% during the said period.

Prestwick ACC implemented Lower Airspace Systematisation (PLAS - Deployment 2) on 09 November. As planned, no ATFM delay was generated.

AIRPORTS

Local Plans in November

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

Special Events

- Lyon airport became fully operational A-CDM airport on 14 November;
- EU Social Summit in Göteborg between 16 and 18 November;
- The United Nations Climate Change Conference in Bonn between 06 and 17 November.

Completed

- Runway maintenance at Birmingham, Larnaca, London/Luton, Nice and Rotterdam airports;
- Taxiways and/or aprons improvements at Berlin/Schönefeld airport;
- Electrical works in Stockholm/Arlanda airport tower.

Ongoing

- Runway maintenance at Antalya, Bucharest, Cologne, Copenhagen, Dublin, Exeter, Dnepropetrovsk, Istanbul/Sabiha Gökçen, Krakow, Manchester, Tel Aviv/Ben Gurion, Palermo, Thessaloniki and Venice airports;
- Taxiways and/or aprons improvements at Antalya, Dublin, Frankfurt/Main, Hamburg, Ibiza, Katowice, Lisbon, Palma de Mallorca, Paris/Orly, Rome/Fiumicino, Tenerife/Sur, Thessaloniki (6,266 minutes of ATFM delay) and Zurich airports;
- ILS maintenance at Antalya and Bari airports;
- Tower renovation at Paris/Orly (in conjunction with taxiway maintenance total of 32,340 minutes of ATFM delay were generated) airport;
- Terminal building improvements/works at Barcelona, Budapest, Frankfurt/Main, Malta and Oslo/Gardermoen airports.

DISRUPTIONS

Industrial action

- French ATC industrial action from 1800UTC on Wednesday 15 November to 0500UTC on Friday 17 November generated 36,274 min of en-route ATFM delay in France; Neighbouring states generated 5,731 minutes due to ATFM protective measures; Paris/Orly was the most affected airport with 4,664 minutes of ATFM delay. NM estimates there were 150 fewer flights during the action;

Technical

- Communication system failure in Langen ACC on 15 November generated 6,464 minutes of ATFM delay;
- Ground radar issues in conjunction with capacity at Amsterdam airport on 16 November generated 1,555 minutes of ATFM delay;
- Frequency problems in Brest ACC on Thursday 16 November generated 1,087 minutes of ATFM delay;
- Technical issues with local flight planning system and communications equipment at Ankara airport on 17 November generated 1,715 minutes of ATFM delay;
- ATC system failure at Amsterdam/Schiphol airport on 21 November generated 8,581 minutes of ATFM delay;
- New radar equipment installation at Tunis airport generated 3,492 minutes of ATFM delay throughout the month.

Other

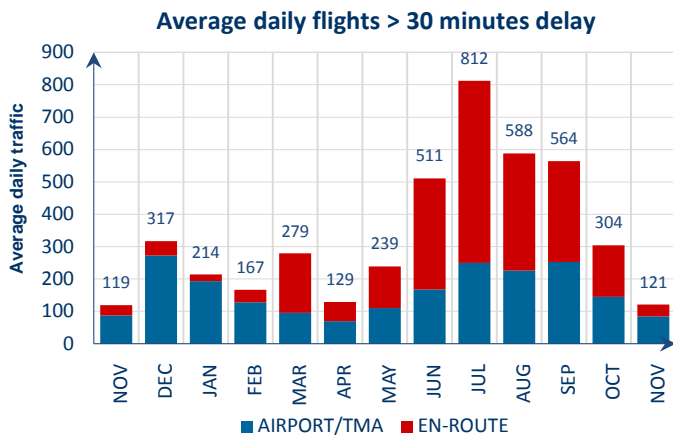
- Unforeseen runway repair works at Helsinki on 1 November generated 1,459 minutes of ATFM delay.

9. NM ADDED VALUE

FLIGHTS WITH DELAY > 30'

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

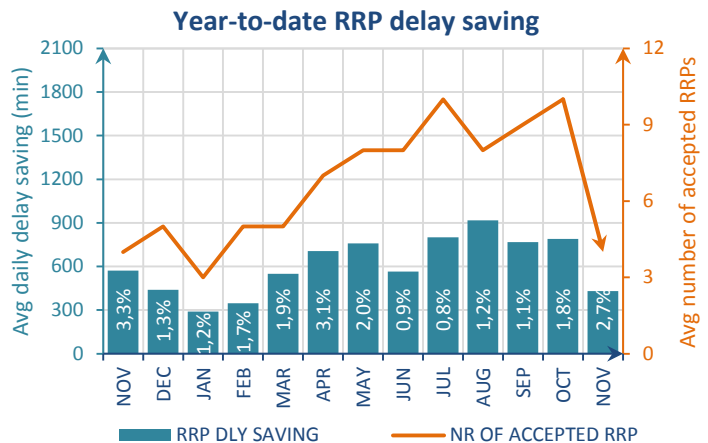
29.8% of flights with more than 30 minutes of ATFM delay in November 2017 were en-route and 70.2% were airport.



RRP DIRECT DELAY SAVINGS

On average 4 RRP/day were executed saving 432 min/day, accounting for 2.7% 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.