Network Manager
nominated by
the European Commission

EUROCONTROL

Monthly Network Operations Report

Analysis – September 2018

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NOTICE

Complete traffic data – 3 April
NM operational data archive for 3 April is complete.

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 sections 2, 3 and 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**.

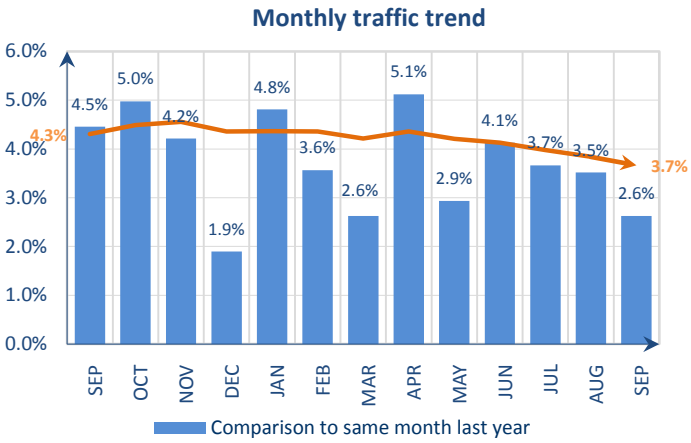
Regulation Reason Groupings
The table below shows the colour coding used in the report charts.

	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

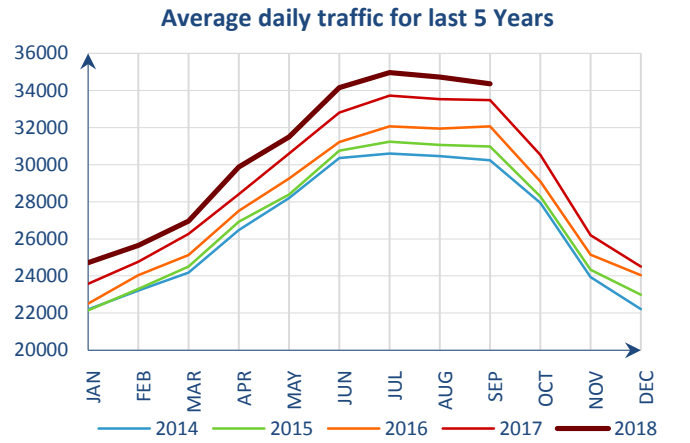
For further information on the regulation reason groupings, go to the Reporting Assumptions and Descriptions document available on the EUROCONTROL website at **http://www.eurocontrol.int/articles/network-operations-monitoring-and-reporting**.

ATFM Statistics dashboard
More detailed information available via the new **ATFM Statistics dashboard.**

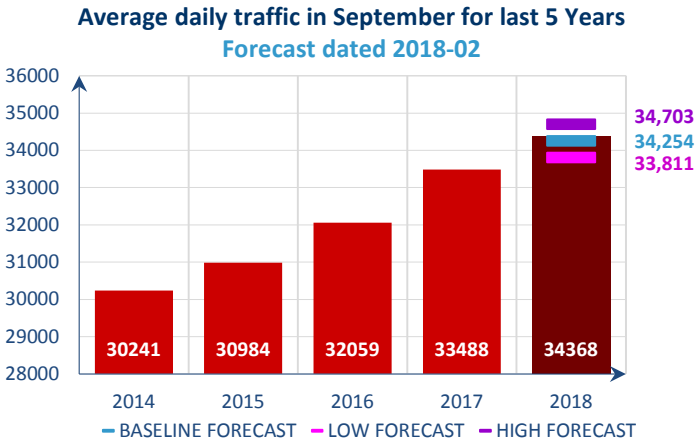
1. TOTAL TRAFFIC



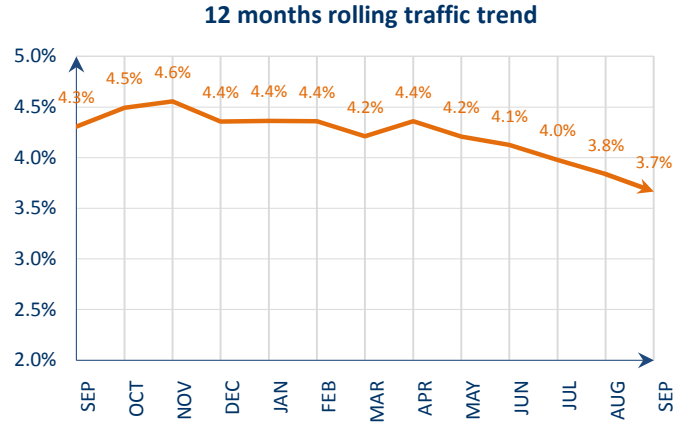
Traffic increased by 2.6% in September 2018[i].



Average daily traffic in September 2018 was the highest ever recorded for September. Traffic is still at summer levels. There were 37,101 flights on 07 September, which was a record for the network.



The traffic increase of 2.6% for September was in line with the baseline forecast published in February 2018.



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 October 2017 to September 2018 was 3.7% higher than the average from October 2016 to September 2017.

Ten states added more than 50 flights per day to the European local[ii] traffic growth. Spain (excl. Canary Islands) was the main contributor, adding 207 flights per day to the network thanks to a dynamic internal flow (+39 flights/day) but also to its flows to and from Germany (+32 flights/day), Italy (+31 flights/day) and France (+28 flights/day). Germany was next with 191 extra flights per day owing mainly to its flow to and from Turkey (+51 flights/day), Greece (+35 flights/day), Spain (+33 flights/day) and flows to and from Egypt which continued to grow (+19 flights/day, +35%). Greece was the third contributor and saw its local traffic increase by 10.6% (+188 flights/day) thanks to its internal flow (+32 flights/day) and its flows to and from Western Europe. Italy and Poland added each 129 and 126 flights per day and completed the top five contributors. The following states were amongst the 10 contributors: France (+99 flights/day), Turkey (+74 flights/day), Ukraine (+58 flights/day), Finland (+58 flights/day), Austria (+51 flights/day). At the other end of the scale, two states saw fewer daily flights: UK had 76 fewer daily flights owing primarily to its weak internal flow (-73 flights/day) but also to its flow to and from Spain and Canary islands (-42 flights/day). Sweden saw 58 fewer flights owing mainly to its weak internal flow (-39 flights/day).

The charter segment continued to record the fastest growth and was up 9.9%. The traditional scheduled segment saw a 4.1% increase whereas the low-cost segment grew 1.4%. The all-cargo and business aviation segments declined by 7.7% and 1.1% respectively.

The top five external partners in average daily flights on flows in both directions were the United States (1,198 flights, up 5.3%), the Russian Federation (1,193 flights, up 9.5%), the United Arab Emirates (336 flights, up 2.1%) and Egypt (282 flights, up 34.6%).

The airlines which added the most flights to the European network on a daily basis compared with September 2017 were easyJet UK (+209 flights), Ryanair (+103 flights), Lufthansa (+97 flights), Wizz Air (+72 flights), LOT (+58 flights), Vueling (+58 flights) and Jet2.com (+57 flights).

For more information on EUROCONTROL Statistics and Forecasts, go to **http://www.eurocontrol.int/statfor/sid**

Six of the top ten airports had positive traffic growth. Overall, the largest traffic increases in September 2018 were at Antalya, Athens, Budapest, Milano/Malpensa and Tel Aviv/Ben Gurion airports. The largest traffic decreases were at Birmingham, Stockholm/Arlanda, Hamburg, Manchester and Düsseldorf airports. Traffic recovery in Turkey explained the traffic variation at Antalya airport. Athens traffic increase is mainly attributed to the expanded route network from summer 2018. Birmingham airport traffic variation is partially due to the Monarch cessation of operations. Traffic decrease at Hamburg airport is due in part to Air Berlin cessation of operations.

Eight of the top ten aircraft operators flew more compared to September 2017. The operators with the highest traffic growth were Eurowings, Condor, Jet2.com, Air Europa and Volotea airlines. The highest traffic decreases were recorded by Flybe, Royal Air Maroc, Wideroe, Transavia.com and HOP.

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. Condor airline has also recuperated routes from Air Berlin cessation of operations and particularly long haul to the Caribbean.

N°	ADEP	ADEP NAME	201809	%
1	EDDF	FRANKFURT MAIN	766	5.7%
2	EHAM	AMSTERDAM/SCHIPHOL	755	-0.1%
3	LFPG	PARIS CH DE GAULLE	722	2.0%
4	EGLL	LONDON/HEATHROW	677	-0.4%
5	LTBA	ISTANBUL-ATATURK	662	-2.6%
6	EDDM	MUENCHEN	621	1.5%
7	LEMD	ADOLFO SUAREZ MADRID-BARAJA	602	6.7%
8	LEBL	BARCELONA/EL PRAT	527	3.4%
9	LIRF	ROMA/FIUMICINO	471	2.6%
10	EGKK	LONDON/GATWICK	449	-0.9%
11	LEPA	PALMA DE MALLORCA	444	5.7%
12	LSZH	ZURICH	401	1.6%
13	EKCH	KOBENHAVN/KASTRUP	398	2.2%
14	LOWW	WIEN SCHWECHAT	398	6.6%
15	LTAI	ANTALYA	398	16.2%
16	ENGM	OSLO/GARDERMOEN	384	1.8%
17	ESSA	STOCKHOLM-ARLANDA	359	-5.3%
18	LGAV	ATHINAI/ELEFTHERIOS VENIZELOS	359	13.0%
19	EIDW	DUBLIN	353	3.9%
20	LFPO	PARIS ORLY	353	2.7%
21	EBBR	BRUSSELS NATIONAL	347	-1.5%
22	EDDL	DUESSELDORF	338	-3.1%
23	LTFJ	ISTANBUL/SABIHA GOKCEN	332	2.4%
24	LPPT	LISBOA	326	4.7%
25	EGCC	MANCHESTER	319	-3.6%
26	EGSS	LONDON/STANSTED	312	6.6%
27	LIMC	MILANO MALPENSA	302	9.6%
28	EDDT	BERLIN-TEGEL	296	7.8%
29	EPWA	CHOPINA W WARSZAWIE	292	7.5%
30	EFHK	HELSINKI-VANTAA	283	8.9%
31	LSGG	GENEVA	254	-2.9%
32	LKPR	PRAHA RUZYNE	250	4.9%
33	LLBG	TEL AVIV/BEN GURION	246	9.5%
34	LFMN	NICE-COTE D'AZUR	241	1.5%
35	EDDH	HAMBURG	227	-4.7%
36	LEMG	MALAGA/COSTA DEL SOL	225	-0.2%
37	EDDK	KOELN-BONN	223	2.9%
38	EDDS	STUTTGART	208	9.0%
39	EGGW	LONDON/LUTON	203	-2.2%
40	EGPH	EDINBURGH	197	-0.1%
41	LROP	BUCURESTI/HENRI COANDA	188	6.4%
42	LHBP	BUDAPEST LISZT FERENC INT.	175	12.3%
43	LIML	MILANO LINATE	172	-2.4%
44	EGBB	BIRMINGHAM	171	-10.7%
45	LFLL	LYON SAINT-EXUPERY	170	-0.4%
46	LIPZ	VENEZIA TESSERA	168	7.6%
47	GCLP	GRAN CANARIA	165	0.0%
48	LEIB	IBIZA	162	1.2%
49	LEAL	ALICANTE	159	1.8%
50	UKBB	KYIV/BORYSPIL	154	0.0%
	TOTALS and % TOTAL TRAFFIC		17204	56.2%

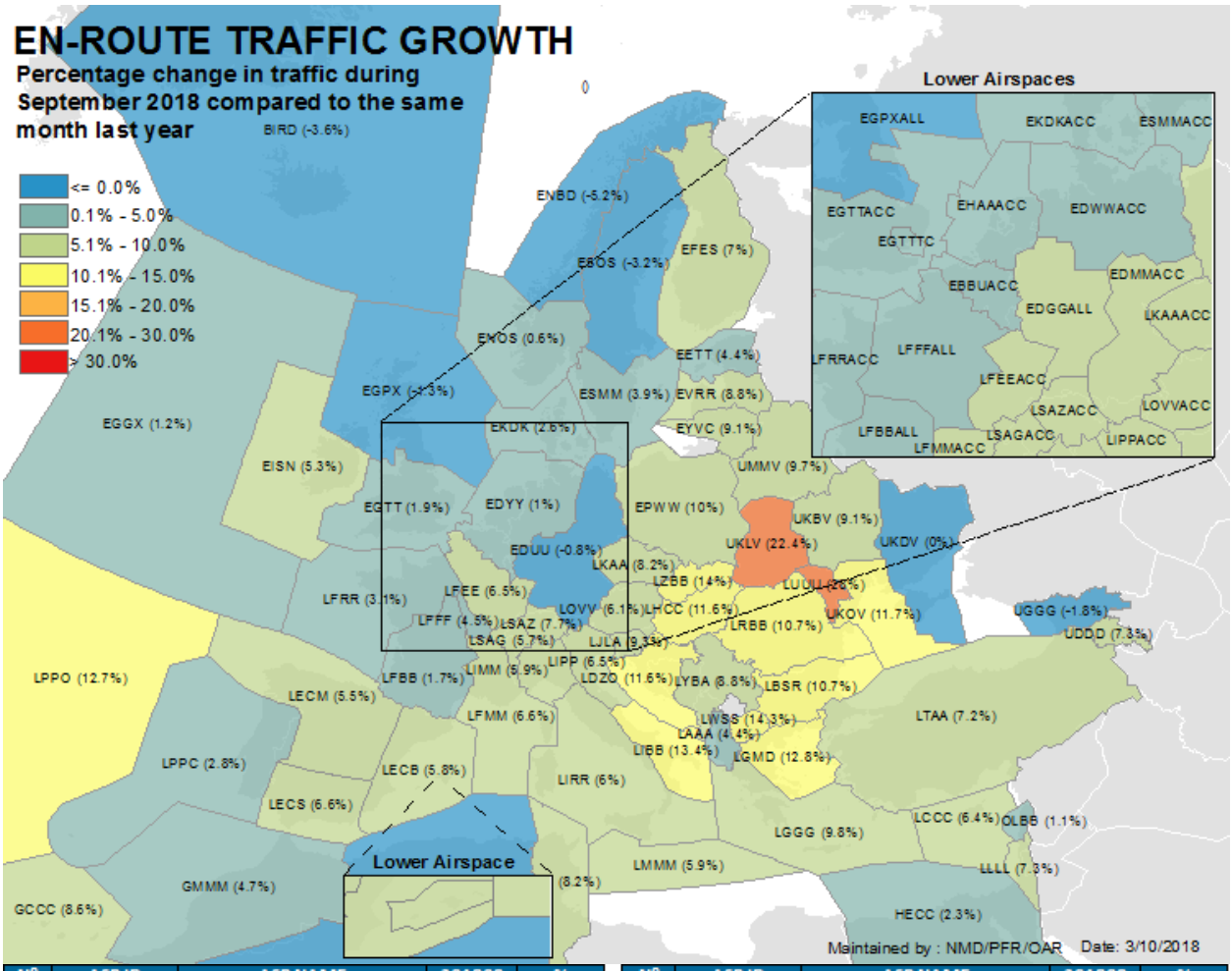
Top 50 Departure Airports with average daily traffic and percentage compared to same period of previous year

N°	ICAO	AIR OPERATOR	201809	%
1	RYR	RYANAIR	2281	5.1%
2	EZY	EASYJET	1693	14.1%
3	DLH	DEUTSCHE LUFTHANSA	1585	6.5%
4	THY	TURKISH AIRLINES	1444	-1.8%
5	AFR	AIR FRANCE	937	0.5%
6	SAS	SCANDINAVIAN AIRLINES SYSTEM	925	-1.7%
7	EWG	EUROWINGS AG	753	94.7%
8	BAW	BRITISH AIRWAYS	744	1.8%
9	KLM	KLM ROYAL DUTCH AIRL	716	1.9%
10	VLG	VUELING AIRLINES SA	691	9.2%
11	AZA	ALITALIA	584	0.5%
12	WZZ	WIZZ AIR	578	14.3%
13	PGT	PEGASUS HAVA TASI.	524	6.9%
14	SWR	SWISS INTERNATIONAL	423	4.9%
15	AUA	AUSTRIAN AIRLINES	422	2.9%
16	BEE	JERSEY EUROPEAN T/A FLYBE	418	-10.5%
17	TAP	TAP/AIR PORTUGAL	402	7.4%
18	LOT	LOT-POLISH AIRLINES	382	18.1%
19	NAX	NORWEGIAN AIR SHUTTLE	378	3.7%
20	FIN	FINNAIR O/Y	376	11.0%
21	AFL	AEROFLOT-RUSSIAN	339	13.7%
22	WIF	WIDEROE	323	-3.6%
23	IBK	NORWEGIAN AIR INTERNATIONAL	318	6.7%
24	EXS	JET2.COM	312	22.6%
25	AEA	AIR EUROPA	287	22.0%
26	IBE	IBERIA	268	5.7%
27	BEL	BRUSSELS AIRLINES	251	0.1%
28	QTR	QATAR AIRWAYS COMP.	250	17.7%
29	TOM	THOMSON FLY LTD	245	3.1%
30	EIN	AER LINGUS TEORANTA	240	3.5%
31	HOP	HOP (MERGE OF BZH + RAE + RLA)	232	-3.1%
32	ANE	AIR NOSTRUM	231	0.7%
33	VOE	VOLOTEA	229	19.1%
34	RAM	ROYAL AIR MAROC	208	-4.8%
35	UAE	EMIRATES	205	5.6%
36	OAL	OLYMPIC	203	2.7%
37	TRA	TRANSAVIA.COM	198	-3.5%
38	SXS	SUNEXPRESS AIRLINES	197	6.8%
39	AUI	UKRAINE INTERNATIONA	193	9.6%
40	CFG	CONDOR FLUGDIENST	186	26.7%
41	AEE	AEGEAN AIRLINES	180	-2.5%
42	TVS	TRAVEL SERVIS	174	14.3%
43	TCX	THOMAS COOK AIT LTD	169	9.5%
44	BTI	AIR BALTIC CORPORAT.	169	11.8%
45	BCS	EUROPEAN AIR TRANSP.	167	3.8%
46	EZS	EASY JET SWITZERLAND	164	8.2%
47	NJE	NETJETS	158	3.5%
48	DAL	DELTA AIR LINES INC.	154	0.8%
49	UAL	UNITED AIRLINES INC.	150	-0.7%
50	JAF	TUI AIRLINE BELGIUM	147	12.4%
	TOTALS and % TOTAL TRAFFIC		22803	66.4%

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

N°	ICAO	AIR OPERATOR	201809	%
		Unidentified	2261	-3.1%

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

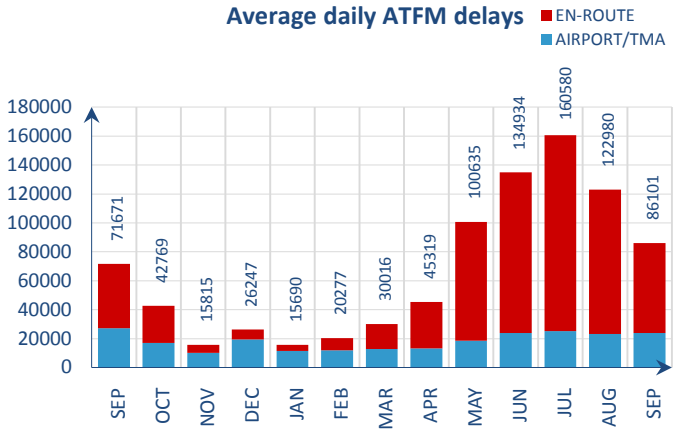


Nº	ASP ID	ASP NAME	201809	%
1	BIRDACC	REYKJAVIK ACC	458	-3.6%
2	DAAAACC	ALGERS ACC	514	-0.6%
3	DTTCACC	TUNIS ACC	384	8.2%
4	EBBUACC	BRUSSELS CANAC	1989	2.5%
5	EDGGALL	LANGEN ACC_FIR	4180	5.4%
6	EDMMACC	MUNCHEN ACC	3743	6.4%
7	EDUUUAC	KARLSRUHE UAC	5791	-0.8%
8	EDWWACC	BREMEN ACC	2117	3.3%
9	EDYYUAC	MAASTRICHT UAC	5705	1.0%
10	EETTACC	TALLIN ACC	687	4.4%
11	EFESACC	TAMPERE ACC	564	7.0%
12	EGGXOCA	SHANWICK OACC	1540	1.2%
13	EGPXALL	SCOTTISH ACC	3156	-1.3%
14	EGTTACC	LONDON ACC	6563	1.9%
15	EGTTTC	LONDON TMA TC	4437	2.8%
16	EHAAACC	AMSTERDAM ACC(245-)	1807	1.9%
17	EIDWACC	DUBLIN ACC	782	4.7%
18	EISNACC	SHANNON ACC	1451	5.3%
19	EKDKACC	COPENHAGEN ACC	1719	2.6%
20	ENBDACC	BODO ACC	604	-5.2%
21	ENOSACC	OSLO ATCC	1093	0.6%
22	ENSVACC	STAVANGER ATCC	690	-1.2%
23	EPWWACC	WARSZAWA ACC	2701	10.0%
24	ESMMACC	MALMO ACC	1758	3.9%
25	ESOSACC	STOCKHOLM ACC	1259	-3.2%
26	EVRRACC	RIGA ACC	904	8.8%
27	EYVCACC	VILNIUS ACC	803	9.1%
28	GCCCACC	CANARIAS ACC/FIC	945	8.6%
29	GMMMACC	CASABLANCA ACC	1172	4.7%
30	HECCACC	CAIROACC	675	2.3%
31	LAAAACC	TIRANA ACC	761	4.4%
32	LBSRACC	SOFIA ACC	2891	10.7%
33	LCCCACC	NICOSIA ACC	1224	6.4%
34	LDZOACC	ZAGREB ACC	2259	11.6%
35	LECBACC	BARCELONA ACC	3209	5.8%
36	LECMALL	MADRID ALL ACC	3476	5.5%
37	LECPACC	PALMA ACC	1361	5.3%
38	LECSACC	SEVILLA ACC	1270	6.6%

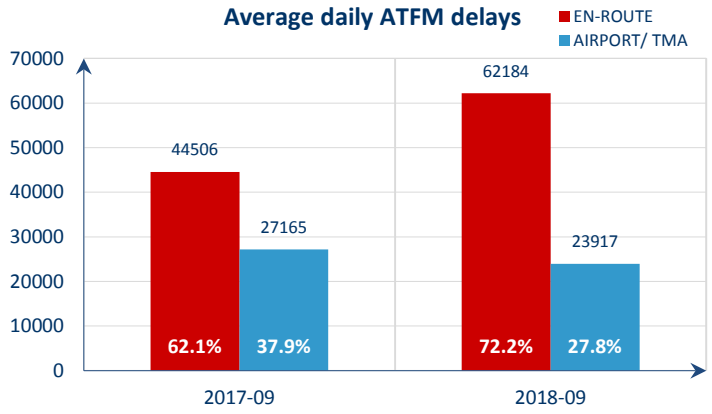
Nº	ASP ID	ASP NAME	201809	%
39	LFBBALL	BORDEAUX ALL ACC	3243	1.7%
40	LFEEACC	REIMS U/ACC	3341	6.5%
41	LFFFALL	PARIS ALL ACC	3833	4.5%
42	LFMMACC	MARSEILLE ACC	3938	6.6%
43	LFMMAPP	MARSEILLE TMA	1057	2.6%
44	LFRRACC	BREST U/ACC	3561	3.1%
45	LGGGACC	ATHINAI CONTROL	2208	9.9%
46	LGMDACC	MAKEDONIA CONTROL	1812	12.8%
47	LHCCACC	BUDAPEST ACC	2975	11.6%
48	LIBBACC	BRINDISI ACC	1213	13.4%
49	LIMMACC	MILANO ACC	2902	6.0%
50	LIPPACC	PADOVA ACC	2476	6.5%
51	LIRRACC	ROMA ACC	2949	6.0%
52	LJLAACC	LJUBLJANA ACC	1226	9.3%
53	LKAAACC	PRAGUE ACC	2713	8.2%
54	LLLLACC	TEL AVIV ACC	605	7.3%
55	LMMMACC	MALTA ACC	378	5.9%
56	LOVVACC	WIEN ACC	3070	6.1%
57	LPPCACC	LISBOA ACC/UAC	1732	2.8%
58	LPPOOAC	SANTA MARIA OACC	470	12.7%
59	LQSBACC	BOSNIA-HERZEGOVINA	159	2.6%
60	LRBBACC	BUCURESTI ACC	2438	10.7%
61	LSAGACC	GENEVA ACC	2225	5.7%
62	LSAZACC	ZURICH ACC	2700	7.7%
63	LTAAACC	ANKARA ACC	4608	7.2%
64	LTBBACC	ISTANBUL ACC	2258	0.5%
65	LUUUACC	CHISINAU ACC	201	28.0%
66	LWSSACC	SKOPJE ACC	753	14.3%
67	LYBAACC	BEOGRADE ACC	2536	8.8%
68	LZBBACC	BRATISLAVA ACC	1941	14.0%
69	OLBBACC	BEIRUT ACC	180	1.1%
70	UDDDACC	YEREVAN ACC	177	7.3%
71	UGGGACC	TBILISI ACC	444	-1.8%
72	UKBVACC	KIEV ACC	562	9.1%
73	UKDVACC	DNIPROPETROVSK ACC	64	0.0%
74	UKLVACC	L'VIV ACC	469	22.5%
75	UKOVACC	ODESSA ACC	372	11.7%
76	UMMVACC	MINSK ACC	941	9.7%

The Santa Maria, Canarias, Lisbon, Madrid and Casablanca ACCs variation is due to increased traffic in the South/West axis. However, the highest relative traffic increases in September 2018 were in Chisinau, L'viv, Skopje, Bratislava and Brindisi ACCs. Traffic increase in Ukraine is partially due to an increase of overflights from/to Turkey. The traffic increase in Turkish airspace is due to domestic and Russian flights recovery. The 4 ACCs project has successfully redistributed traffic out of Karlsruhe UAC, which explains the low percentage growth.

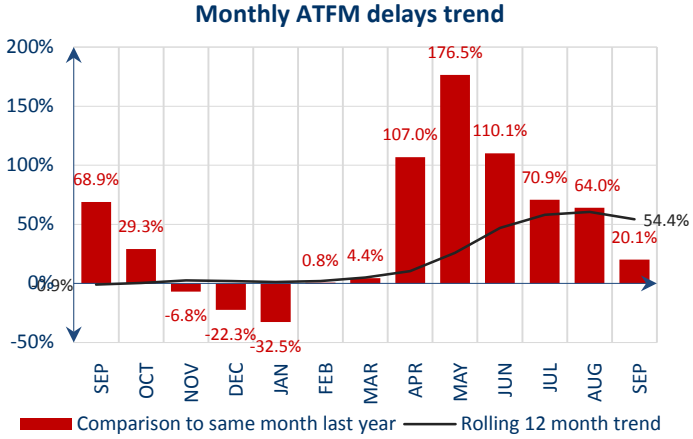
2. ATFM DELAY AND ATTRIBUTIONS



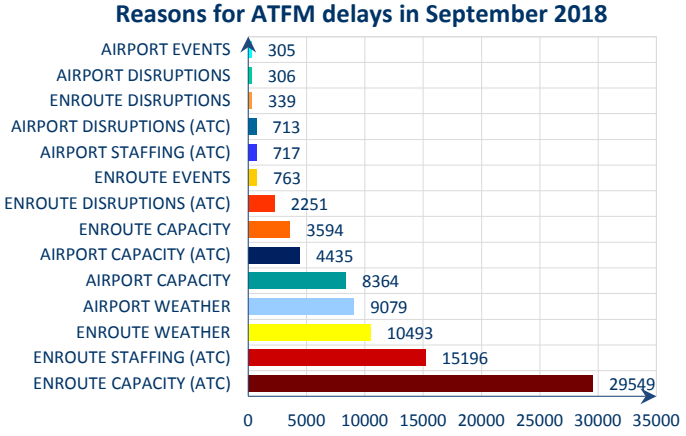
Total ATFM delays increased by 20.1% in September 2018[I].



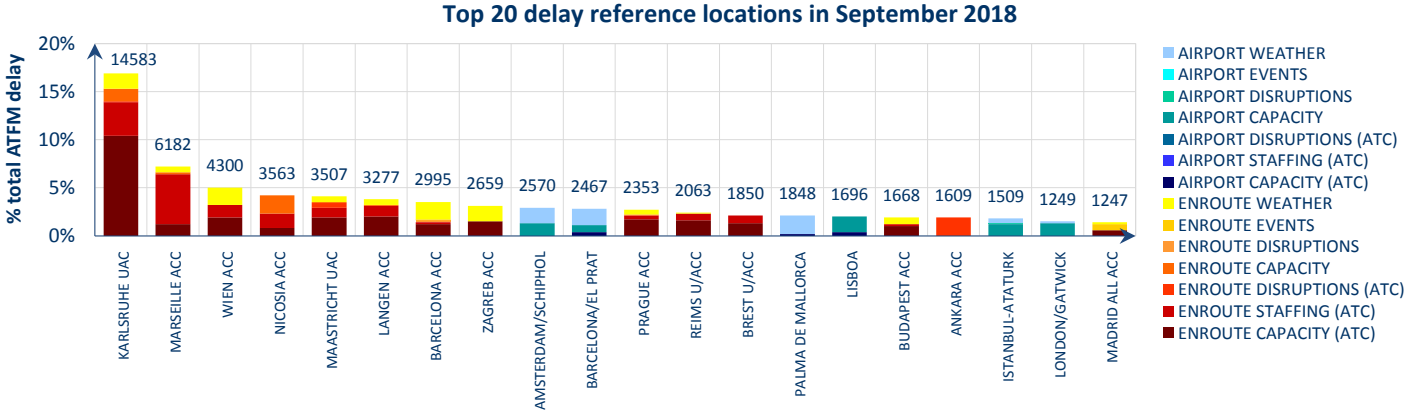
En-route ATFM delays increased by 39.8% and airport ATFM delays decreased by 12.0%.



The rolling 12-month trend shows that ATFM delay was 54.4% higher during the period October 2017 – September 2018 compared to October 2016 – September 2017.



En-route ATC capacity (34.3%), en-route ATC staffing (17.7%) and en-route weather (12.2%) were the main causes of ATFM delays in September 2018.

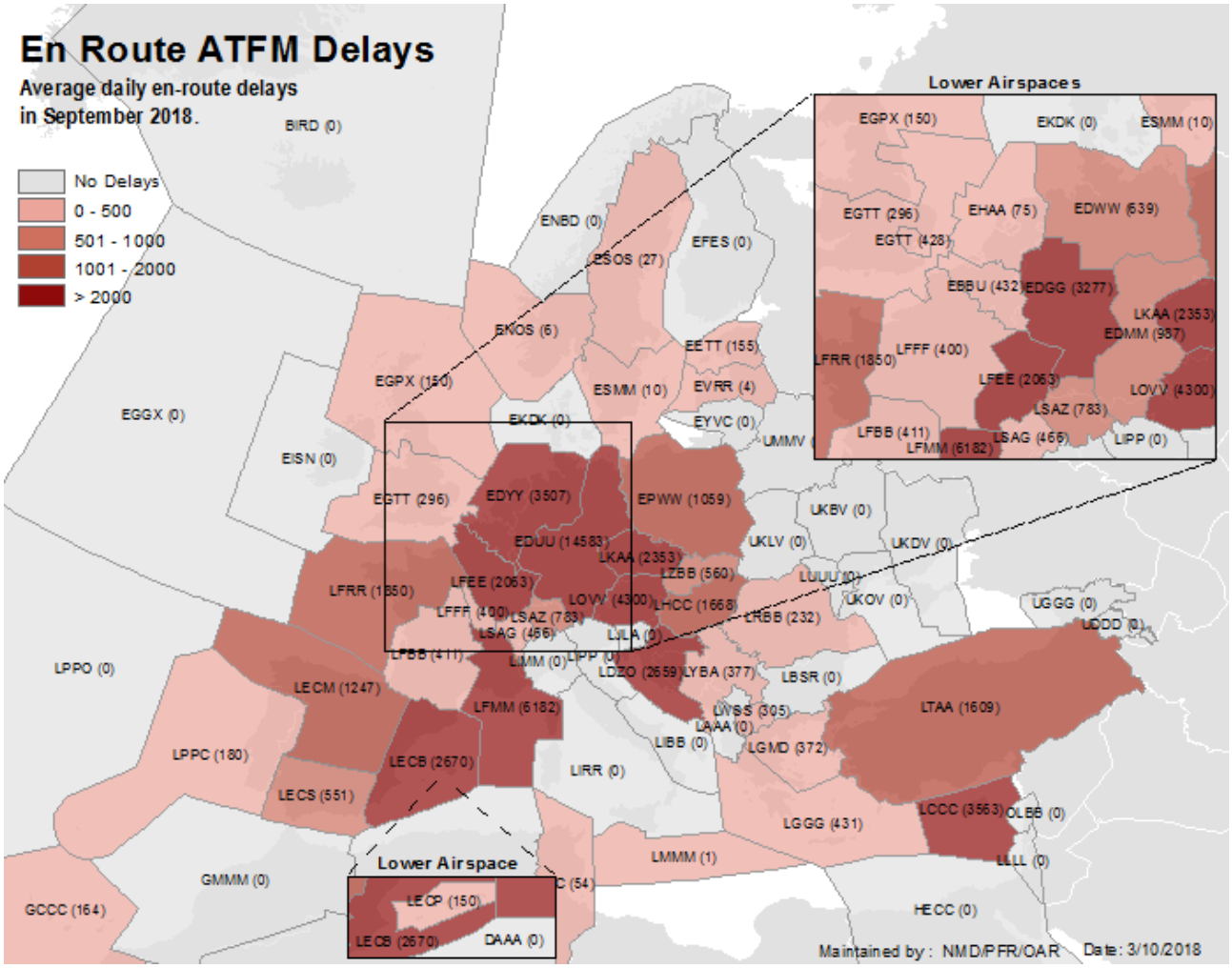


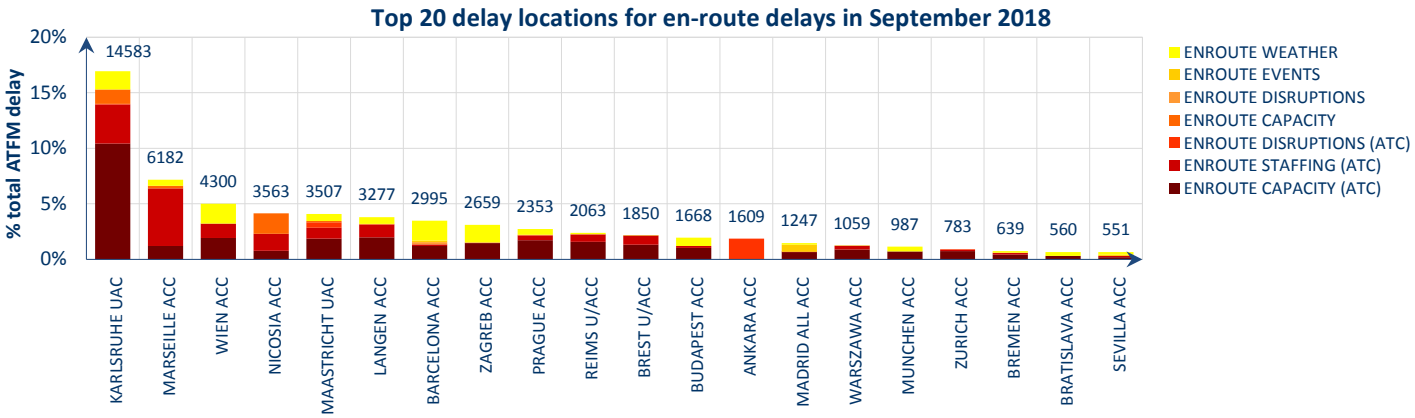
These are the top 20 delay generating locations for the reporting month with respect to total ATFM delays. Figures are the average daily delays in minutes for the individual locations.

- High en-route capacity delays in Karlsruhe UAC, and to a lesser extent in Langen, Vienna, Maastricht and Prague ACCs;
- High en-route staffing delays in Marseille and Karlsruhe ACCs, and to a lesser extent in Vienna and Nicosia ACCs;
- En-route weather issues in Barcelona, Vienna, Karlsruhe and Zagreb ACCs;
- Thunderstorms impacted operations at Amsterdam/Schiphol, Barcelona and Palma de Mallorca airports;
- Russian navy military activity restricted operations in Nicosia ACC.

3. EN-ROUTE ATFM DELAYS

EN-ROUTE ATFM DELAY PER LOCATION



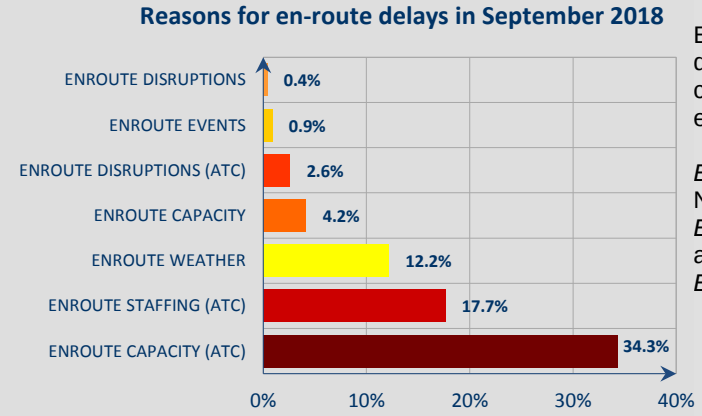


These are the top 20 en-route ATFM delay generating locations for the reporting month with respect to total ATFM delays. Figures are the average daily delays in minutes for the individual locations.

The top 20 en-route ATFM delay locations generated **65.6%** of the monthly total (network) ATFM delay.
The top 5 en-route ATFM delay locations generated **37.3%** of the monthly total (network) ATFM delay.

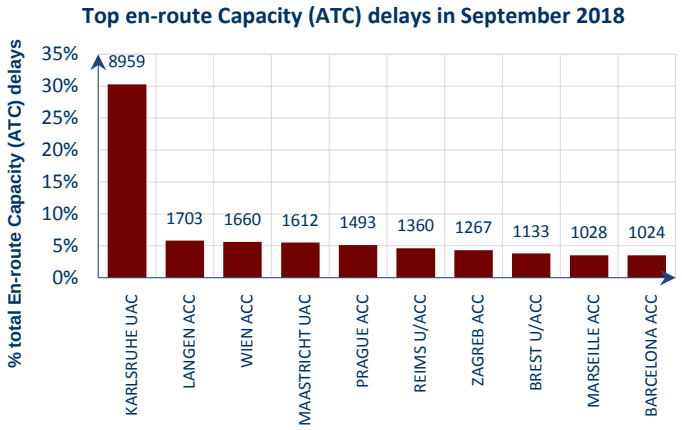
More detailed information available in the Airspace dashboard via the **ATFM Statistics dashboard.**

EN-ROUTE ATFM DELAY PER DELAY GROUP

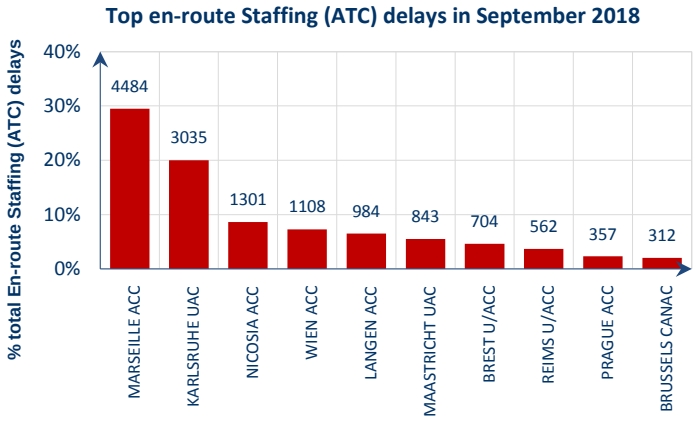


En-route ATFM delays accounted for 72.2% of all ATFM delays. Most of this delay was caused by en-route ATC capacity, en-route ATC staffing and en-route weather as explained in detail below. The other causes were:

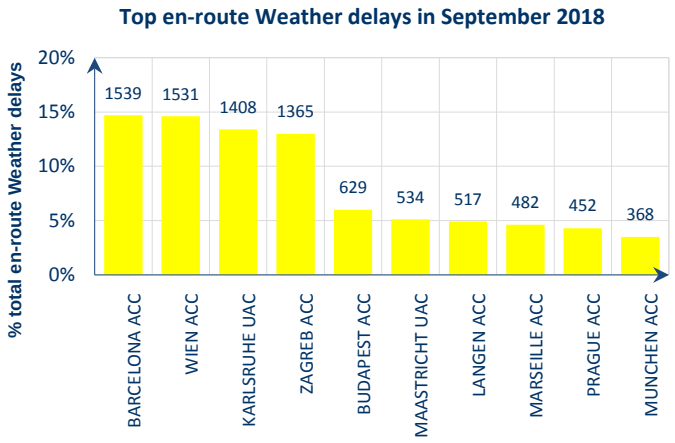
En-route capacity; Military exercises restricted operations in Nicosia, Karlsruhe, Beograd, Marseille and Maastricht ACCs;
En-route ATC disruptions; ATC equipment issues in Ankara and Maastricht ACCs;
En-route events; Planned military exercises in Madrid ACC.



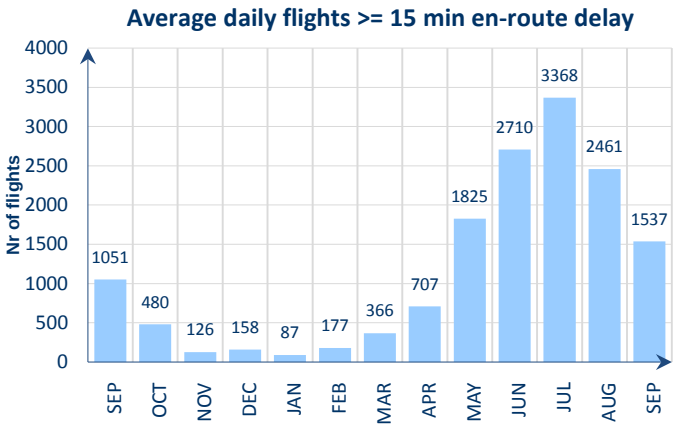
Karlsruhe UAC generated a total of 268,776 minutes of en-route ATC capacity delay throughout the month.



50% of ATFM delays due to staff shortage were generated in Marseille and Karlsruhe ACCs. Marseille ACC generated 75% of its delays during weekends.

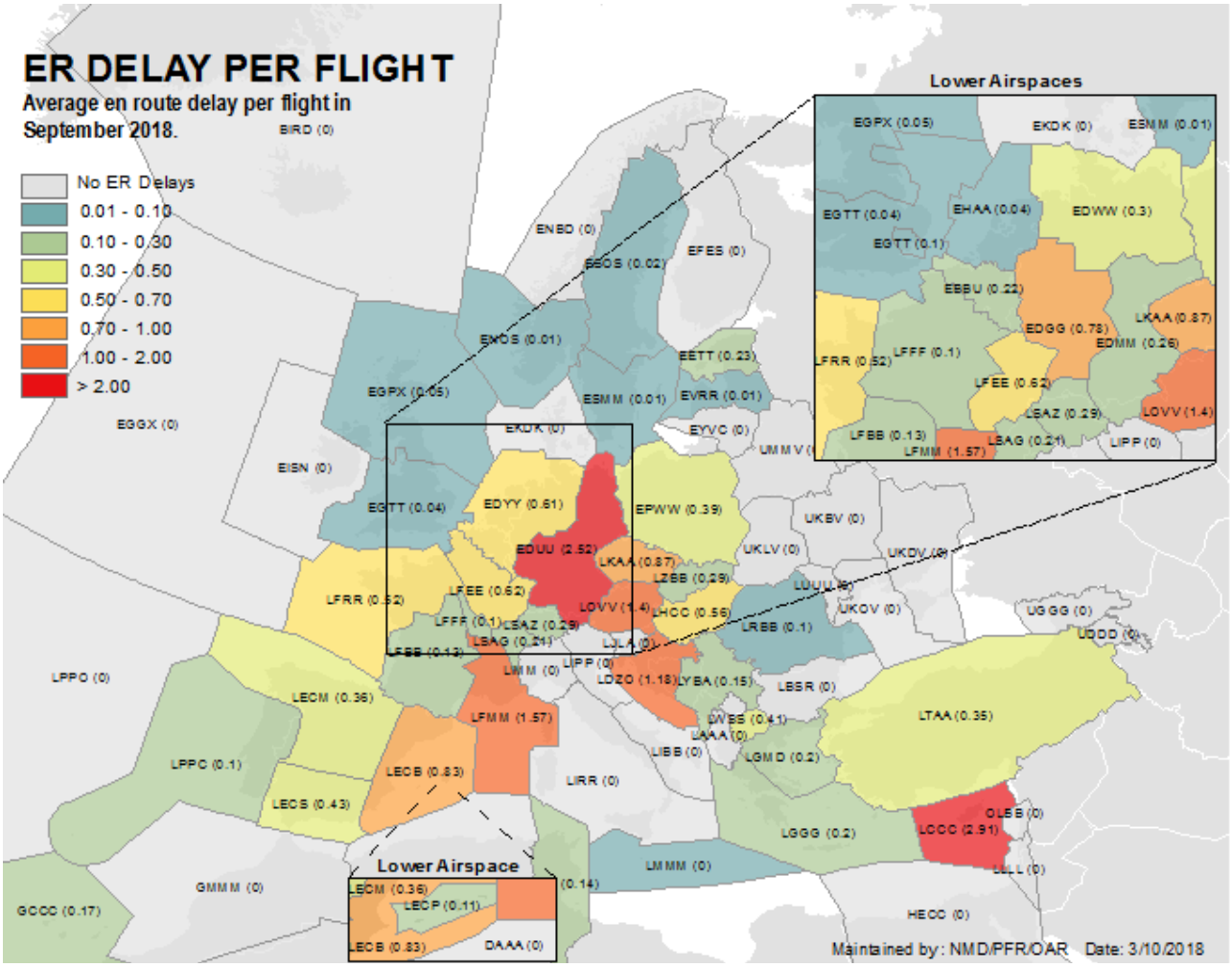


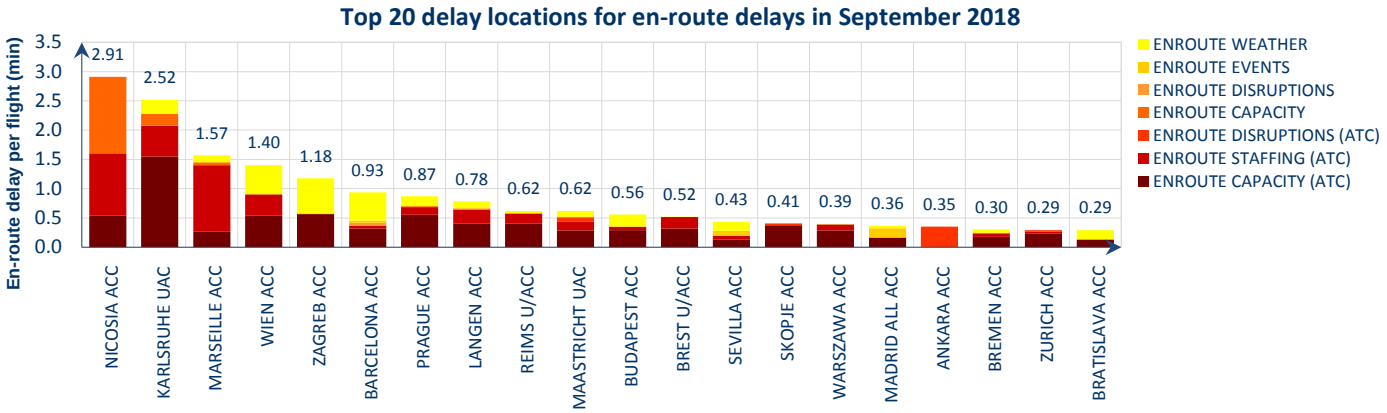
Convective activity impacted operations strongly in Barcelona, Vienna, Karlsruhe and Zagreb ACCs.



The average daily flights with an en-route ATFM delay of at least 15 minutes increased from 1,051 flights/day in September 2017 to 1,537 flights/day in September 2018, which represents 4.5% of all traffic.

EN-ROUTE ATFM DELAY PER FLIGHT





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.

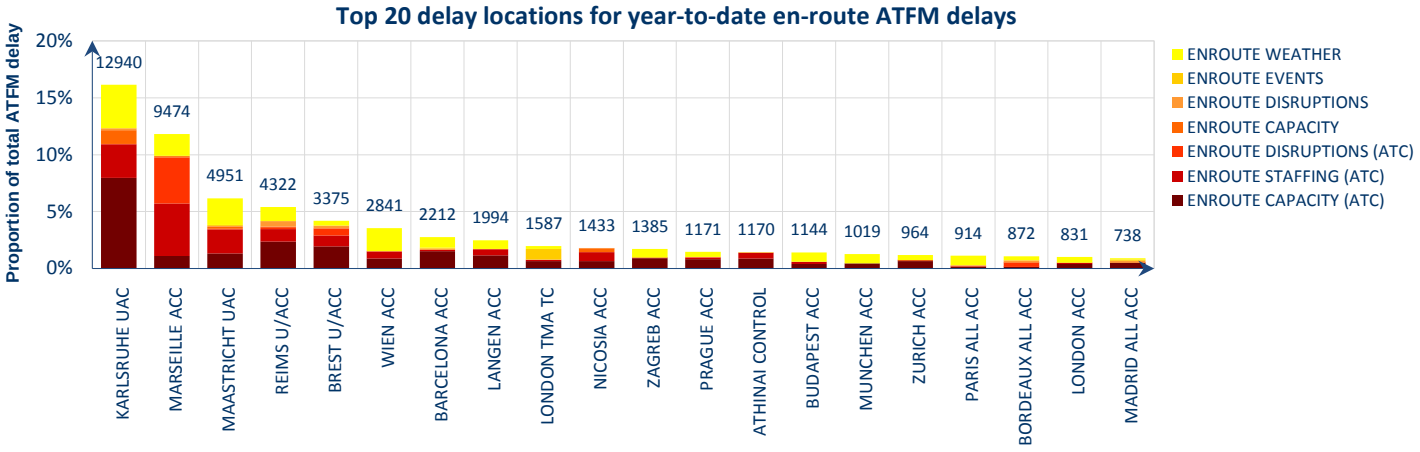
The biggest differences from the previous month are highlighted below:

Karlsruhe UAC en-route ATFM delay/flight decreased from 3.14 min/flight in August 2018 to 2.52 min/flight in September 2018 due to fewer weather delays;

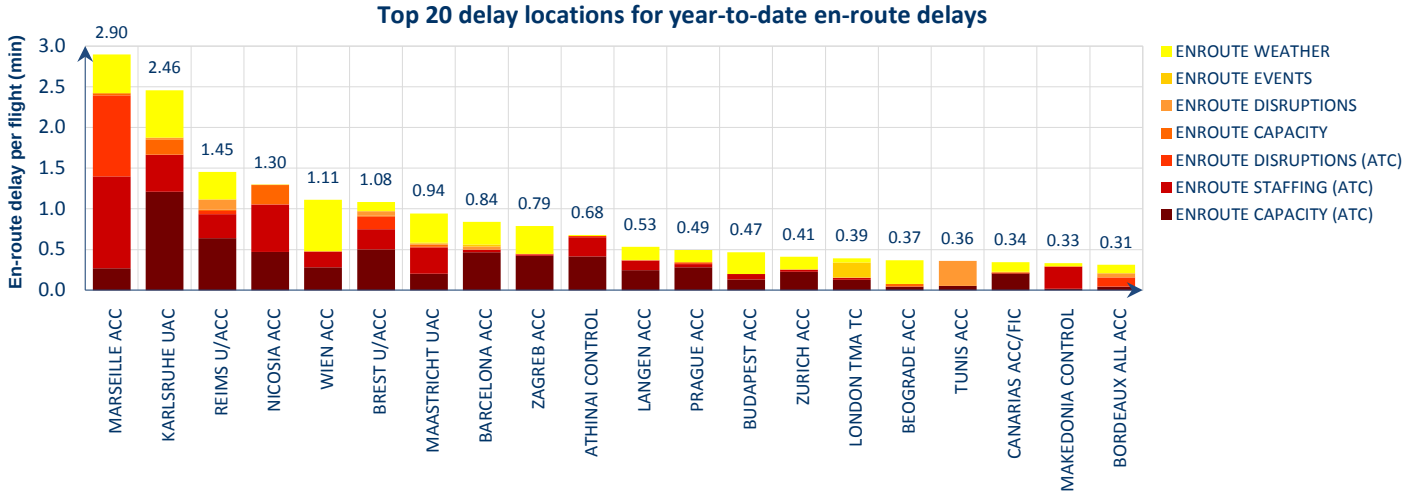
Marseille ACC en-route ATFM delay/flight decreased from 4.57 min/flight in August 2018 to 1.57 min/flight in September 2018, mainly due to fewer ATC staffing and weather issues;

Vienna ACC en-route ATFM delay/flight decreased from 2.59 min/flight in August 2018 to 1.40 min/flight in September 2018, mainly due to fewer weather delays;

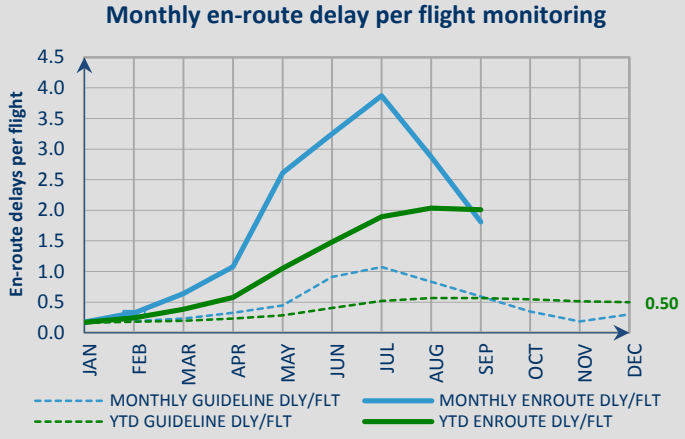
EN-ROUTE ATFM DELAY YEAR-TO-DATE

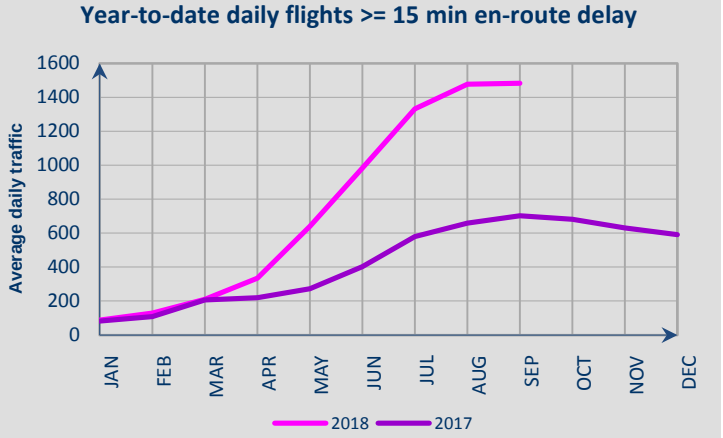


These are the top 20 en-route delay locations for 2018 with respect to the total ATFM delay. Figures are the average daily en-route delay in minutes for the individual locations.
The top 20 en-route delay locations generated **69.0%** of the total ATFM (network) delay.
The top 5 en-route delay locations generated **43.7%** of the total ATFM (network) delay.



These are the top 20 average en-route ATFM delay per flight generating locations in 2018. Figures are the average daily en-route delay in minutes for the individual locations.





Reporting month: The average en-route ATFM delay per flight in the NM area[iii] in September was 1.81 min/flt, which is well above the corresponding monthly guideline[iv] value of 0.59 min/flt.
Year To Date: The average YTD en-route ATFM delay per flight in 2018 in the NM area[iii] is 2.01 min/flt which is more than three times the corresponding guideline value of 0.57 min/flt.

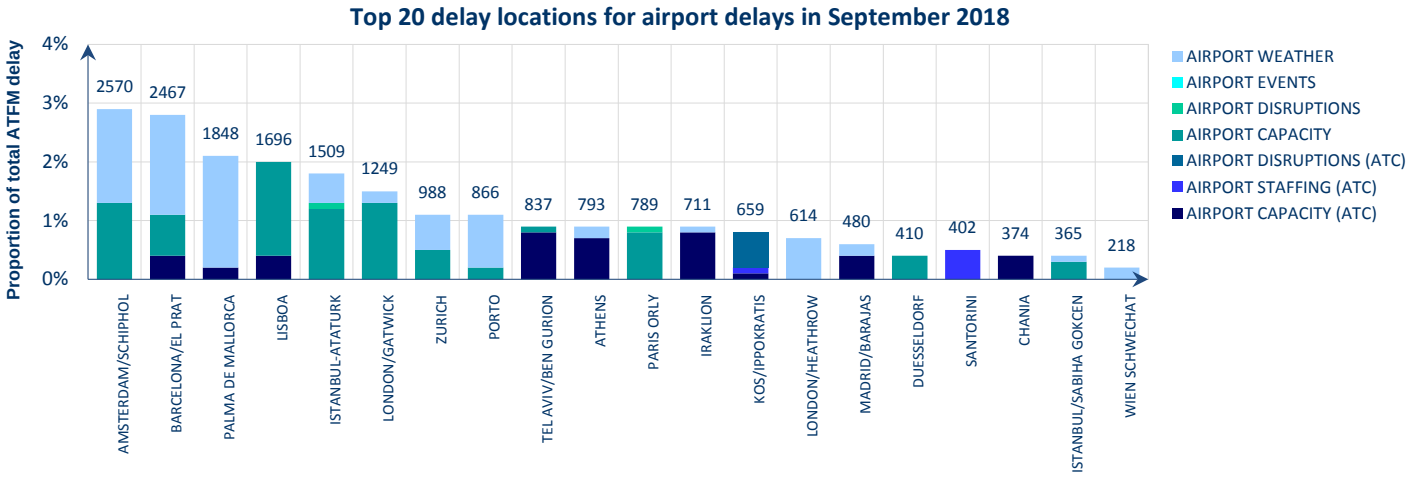
An average of 1,483 flights/day had an en-route ATFM delay of at least 15 minutes in 2018. The corresponding figure in 2017 was 703 flights/day.

The top 3 locations for flights with 15 minutes or more en-route ATFM delay (year-to-date) are:

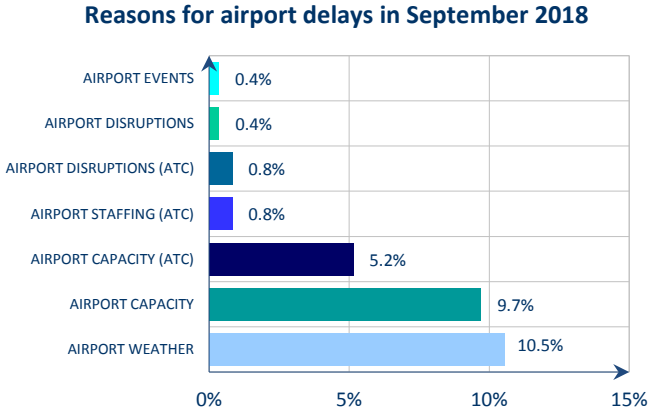
- Karlsruhe UAC with 304 flights/day
- Marseille ACC with 222 flights/day
- Maastricht UAC with 119 flights/day

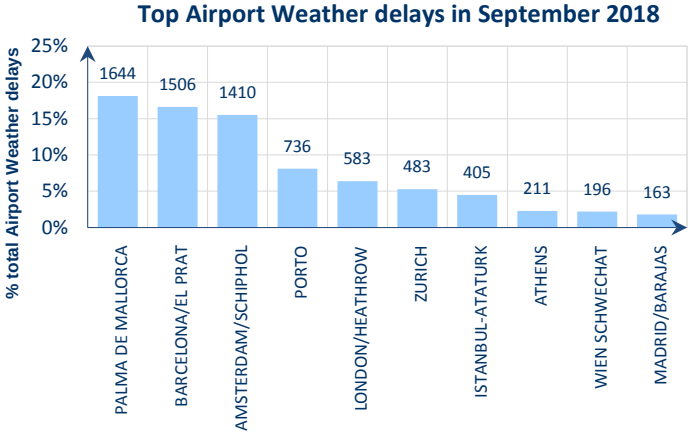
4. AIRPORT/TMA ATFM DELAYS

AIRPORT/TMA ATFM DELAY PER LOCATION



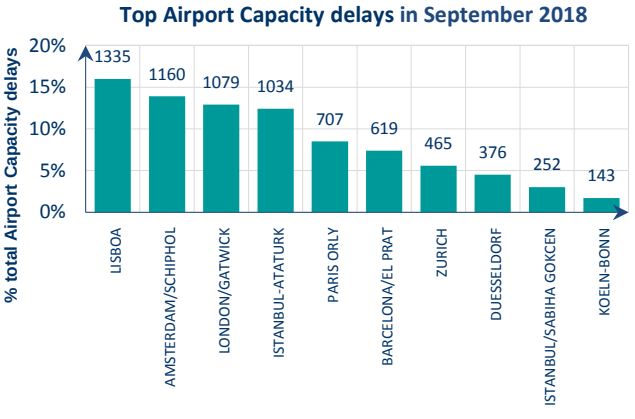
AIRPORT/TMA ATFM DELAY PER DELAY GROUPS

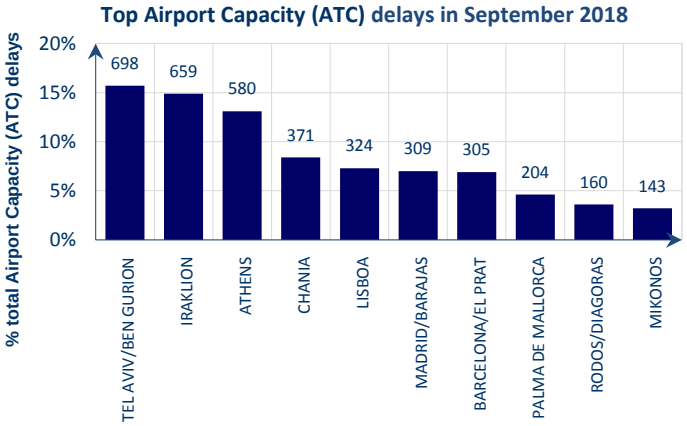




Airports accounted for 27.8% of all ATFM delays in September 2018, mainly due to airport weather, capacity and ATC capacity.

Thunderstorms impacted operations at Palma de Mallorca, Barcelona and Amsterdam/Schiphol airports. A peak of 21,302 minutes was recorded at Palma de Mallorca on 15 September.

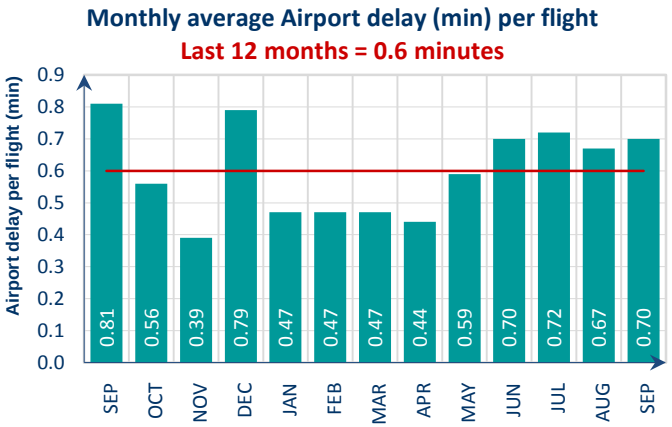


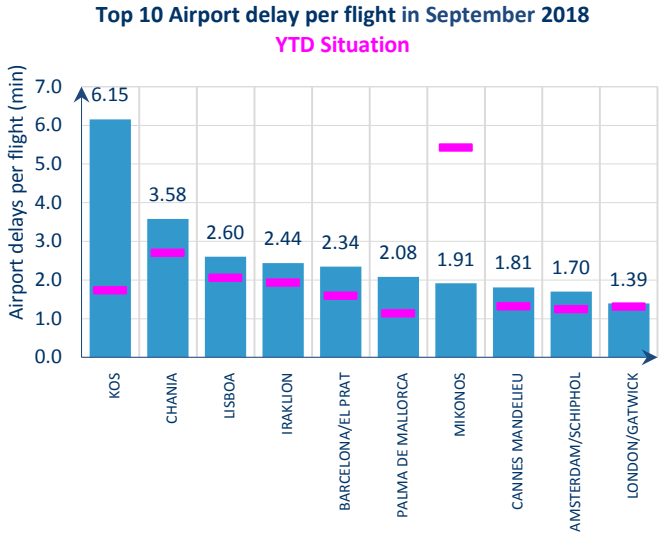


Early arrivals and constraints elsewhere in the network are having an operational impact at Lisbon airport. High demand in conjunction with runway maintenance at Amsterdam/Schiphol airport generated delays. Arrivals regulated in London/Gatwick airport to balance with departures throughout the month. Airport capacity issues at Istanbul/Atatürk airport with arrivals regulated early morning and early afternoon.

Arrivals regulated at Tel Aviv/Ben Gurion to facilitate departures. Athens and Greek island airports generated delays due to high demand relative to their capacity throughout the month.

AIRPORT/TMA ATFM DELAY PER FLIGHT

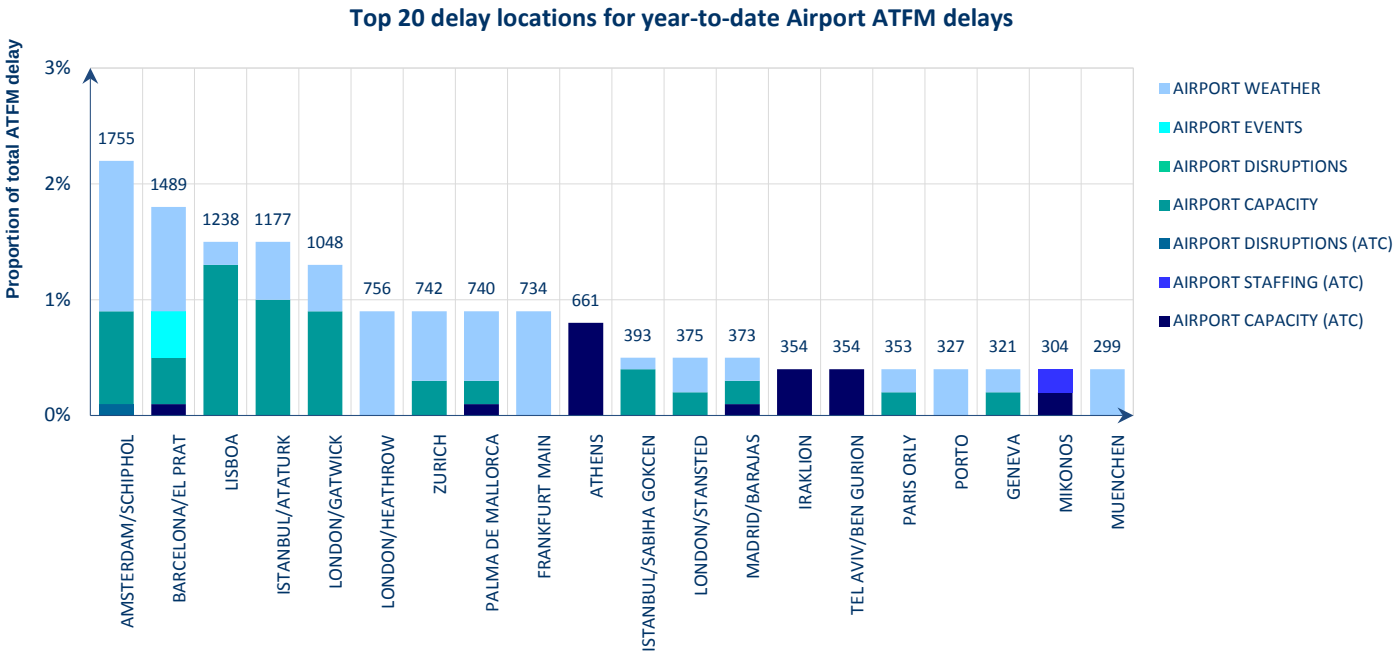




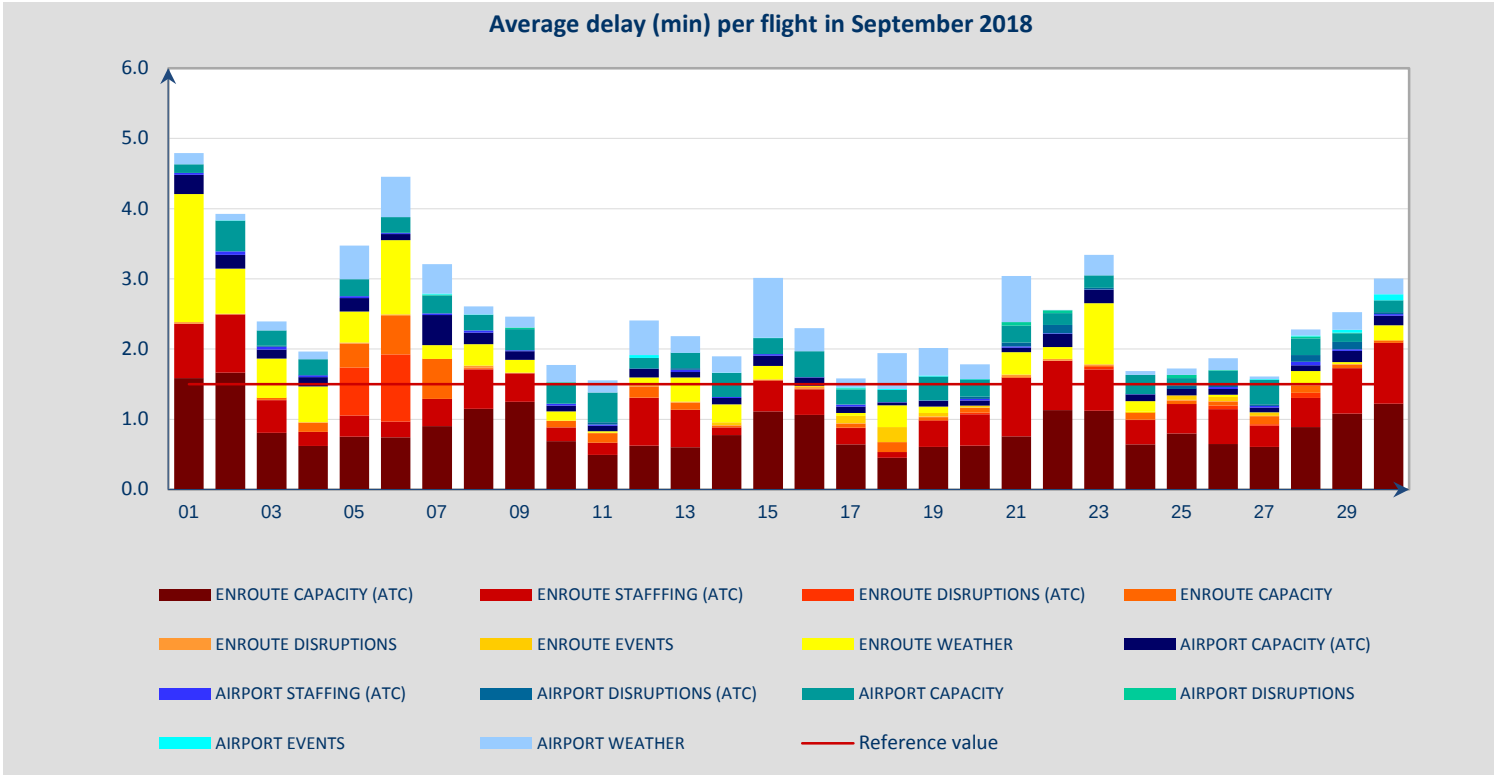
Average airport/TMA delay per flight decreased from 0.81 min/flt in September 2017 to 0.70 min/flt in September 2018.

Kos airport generated an average delay per flight well above its year to date average mainly due to ATC equipment issues. Mikonos airport generated an average delay per flight well below its year to date average due to few capacity issues.

AIRPORT/TMA ATFM DELAY YEAR-TO-DATE



5. DAILY EVOLUTION



All days in September 2018 had an average ATFM delay per flight exceeding 1.5 min and most weekend days had an average over 3 min. These were the most significant days:

01 September: Convective activity concentrated in central Europe and into the Balkan peninsula impacted operations strongly in Vienna, and to a lesser extent in Zagreb, Bratislava, Prague, Budapest and Karlsruhe ACCs; En-route ATC capacity delays in Karlsruhe, Reims, Marseille, Brest and Maastricht ACCs; ATC staffing issues in Marseille, Karlsruhe and Brest ACCs; Airport ATC capacity issues at Palma de Mallorca, Chania and Iraklion airports; Low visibility impacted operations at London/Gatwick airport;

06 September; Weather impacted operations in northern part of Germany with high delays in Karlsruhe UAC; ATC equipment failure in Ankara and Maastricht ACCs; Russian navy activity impacted operations in Nicosia ACC; En-route ATC capacity issues in Karlsruhe, Prague and Zagreb ACCs; Weather delays at Amsterdam/Schiphol, Barcelona , Istanbul/Atatürk and Munich airports; ATC staffing issues in Nicosia and Langen ACCs; Aerodrome capacity issues at Lisbon and Tel Aviv/Ben Gurion airports;

15 September; En-route ATC capacity delays in Karlsruhe, Brest, Maastricht, Reims and Athens ACCs; Thunderstorms impacted operations strongly at Palma de Mallorca, and low visibility impacted Porto airport; ATC staffing issues in Marseille, Brest, Vienna and Makedonia ACCs; Aerodrome capacity issues at Istanbul/Atatürk and Amsterdam/Schiphol airports;

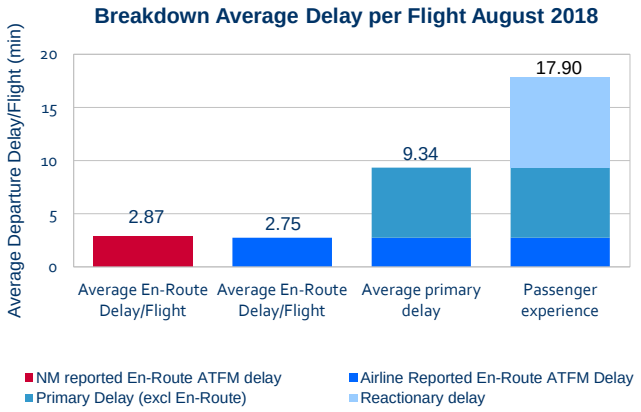
23 September; High en-route ATC capacity delays in Karlsruhe and Maastricht UACs, and to a lesser extent in Zagreb, Langen and Nicosia ACCs; Convective activity impacted operations in Karlsruhe, Langen, Prague, Reims and Maastricht ACCs; ATC staffing issues in Marseille, Vienna, Karlsruhe and Maastricht ACCs; Strong winds impacted operations at Frankfurt, Düsseldorf and Stuttgart airports; Aerodrome capacity issues at Istanbul/Sabiha Gökcen, London/Gatwick and Lisbon airports;

30 September; En-route ATC capacity delays in Karlsruhe, Zagreb, Reims, Maastricht, Prague and Budapest ACCs; High delays due to ATC staffing in Marseille ACC, and to a lesser extent in Brest, Warsaw, Reims and Langen ACCs; Weather impacted operations strongly in Marseille ACC. Strong winds and low visibility generated delays at Athens, Porto and Istanbul/Atatürk airports; Aerodrome capacity issues at Istanbul/Atatürk airport; Military airshow at Toulouse/Blagnac airport generated delays.

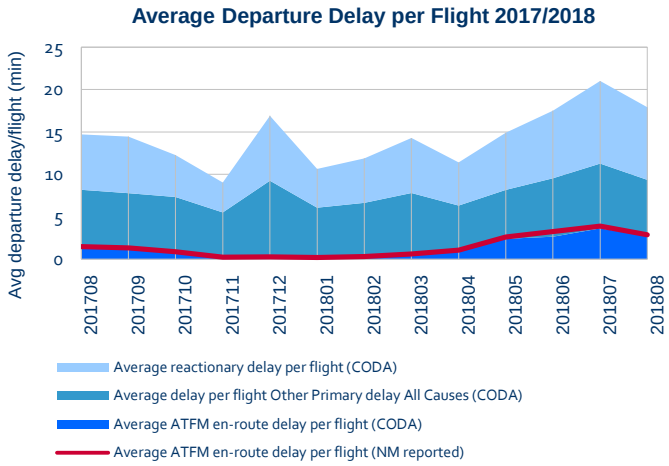
6. ALL AIR TRANSPORT DELAYS (SOURCE: CODA)

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 59% of the commercial flights in the ECAC region for August 2018. 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.

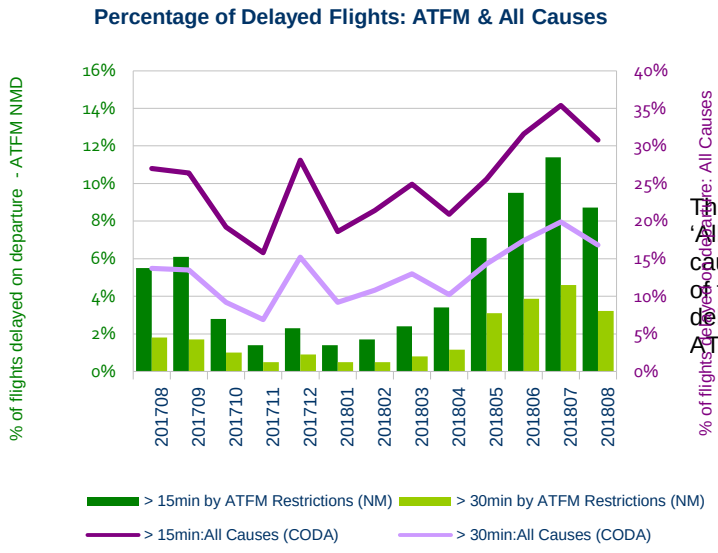
For instance, a flight with an ATFM delay may also have a handling delay absorbed within the ATFM delay. In the event of a long delay an example being during ATC industrial action a flight may keep its original schedule however when it's flight plan is submitted for example a day later any ATFM delay allocated may be lower or zero, in this case airline reported delay will exceed NM reported ATFM delay.



Based on airline data, the average departure delay per flight from 'All-Causes' was 17.9 min/flt, a significant increase in comparison to August 2017 where the average delay was 14.2 min/flt. Primary delays counted for 52.2% or 9.3 min/flt, with reactionary delays representing the smaller remaining share of 47.8% at 8.6 min/flt, an increase of 2.3 min/flt compared to August 2017. The increase in primary delays was mainly driven by the strong increase in reported ATFM en-route delays (+1.3 min/flt) and airline delays (+0.5 min/flt).



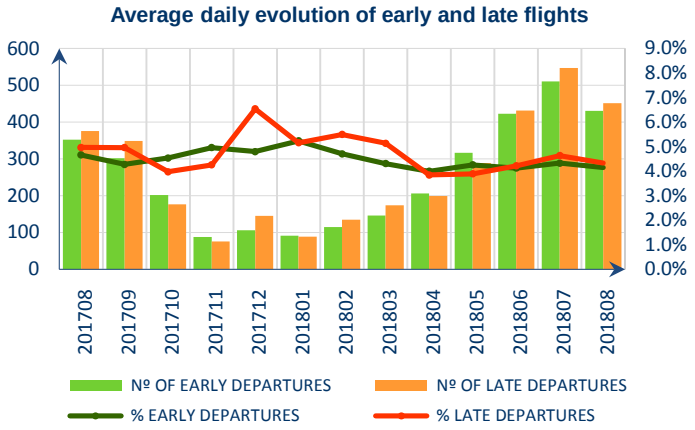
Further analysis of the past 12 months shows that the monthly average 'All-Causes' en-route ATFM delay reported by airlines remains high at 2.8 min/flt in August 2018. ATFM delays in August 2018 were mostly generated by en-route ATFM Regulations caused by weather, ATC capacity delays and ATC staffing. This increase in en-route ATFM delay contributed to the increase in reactionary delay for airlines. The 47.8% share of reactionary delays in August 2018 is the highest share observed over the last 5 years.



The percentage of flights delayed greater than 15 minutes from 'All-Causes' increased by 3.8 percentage points to 30.8%. All-causes delays exceeding 30 minutes also increased to 16.8% of flights. 8.7% of flights in August 2018 experienced an ATFM delay exceeding 15 minutes with 3.2% of flights having an ATFM delay exceeding 30 minutes.

For more information on CODA delays:
https://www.eurocontrol.int/sites/default/files/publication/files/flad-august-2018.pdf

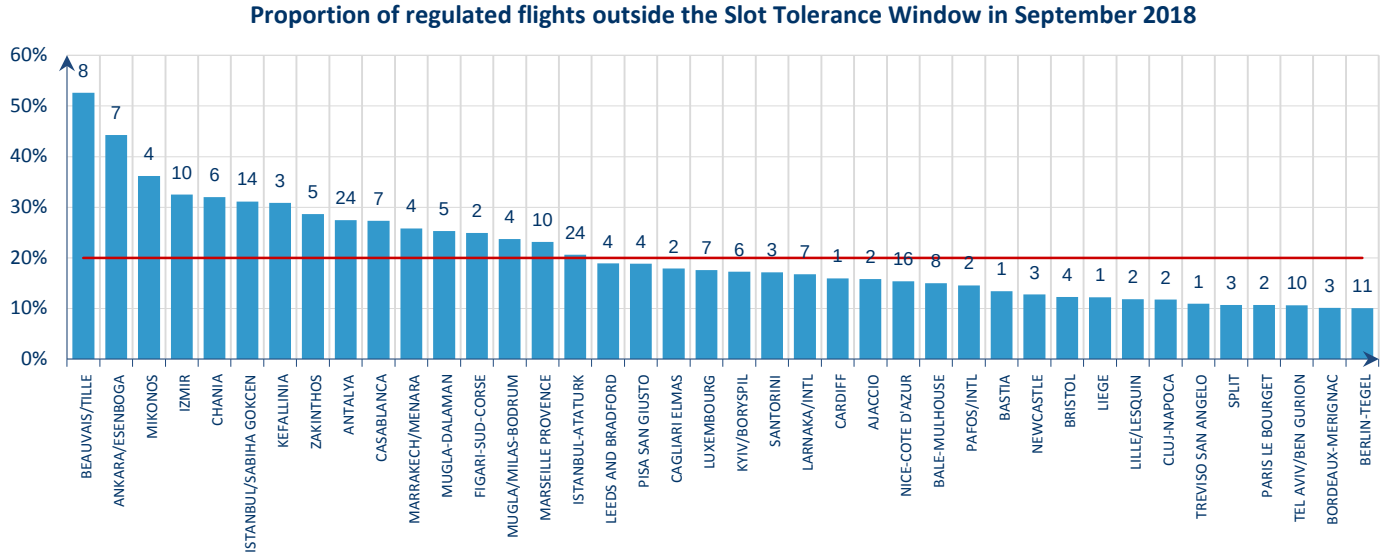
7. ATFM SLOT ADHERENCE



The percentage of early departures for September 2018 is 4.0% of regulated flights, which is a decrease of 0.3 percentage points compared to September 2017.

The percentage of late departures for September 2018 is 4.1% of regulated flights, which is a decrease of 0.9 percentage points compared to September 2017.

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

None of the ACCs had planned implementations of system or airspace related projects subject to the transition planning process during September 2018.

ADDITIONAL INFORMATION

Bordeaux ACC generated 3,904 minutes of ATFM delay due to the reorganized interface with LECB/LEBL.

Barcelona ACC generated 5,257 minutes of ATFM delay due to the improved interface with LFBB.

AIRPORTS

Local Plans in September

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

Special Events

- The Cannes Yachting Festival between 10 and 15 September generated 1,846 minutes of ATFM delay at Cannes/Mandelieu airport;
- Istanbul Air Display on 21 September impacted operations at Istanbul/Ataturk airport generating 1,809 minutes of ATFM delay;
- Military airshow at Toulouse/Francazal airport impacted operations at Toulouse/Blagnac between 28 and 30 September generating 4,320 minutes of ATFM delay;
- Air Display at Kloten impacted Zurich airport on 1 and 2 September, generating 2,179 minutes of ATFM delay.

Completed

- Runway maintenance/closure at Amsterdam/Schiphol (9,808 minutes of ATFM delay), Barcelona and Hamburg airports;
- Taxiway and/or apron improvements at Brussels (1,490 minutes of ATFM delay), Hannover, Helsinki/Vantaa and Venice airports.
- ILS maintenance at Hannover airport;
- Terminal building improvements/works at Budapest airport.

Ongoing

- Runway maintenance/closure at Bologna, Cologne, Copenhagen, Istanbul/Sabiha Gökcen, Krakow, London/Stansted, Olsztyn/Mazury, Paris/Charles de Gaulle and Warsaw/Chopin airports;
- Taxiway and/or apron improvements at Barcelona (8,432 minutes of ATFM delay), Bergamo, Düsseldorf, Frankfurt/Main, Manchester, Paris/Charles de Gaulle, Paris/Orly (13,817 minutes of ATFM delay), Rome/Fiumicino, Stuttgart and Tenerife/Sur airports;
- ILS maintenance at Gran Canaria (generated 1,156 minutes of ATFM delay on 11 September) and Hannover airports;
- VOR maintenances at Kos (16,555 minutes of ATFM delay) airport;
- Terminal building improvements/works at Frankfurt/Main, Manchester, Oslo/Gardermoen and Paris/Charles de Gaulle airports;
- Ongoing PRIDEP trial at Zurich airport generated 2,442 minutes of ATFM delay.

DISRUPTIONS

Technical

- ATC equipment issues in Ankara ACC from 05 to 06 September generated 48,261 minutes of ATFM delay;
- ATC equipment issues in Maastricht UAC on 06 September generated 11,383 minutes of ATFM delay;
- VCS issues in Maastricht UAC on 23 September generated 1,232 minutes of ATFM delay;
- Communication failure in Karlsruhe UAC on 26 September generated 1,620 minutes of ATFM delay;
- Frequency problems in Athens ACC on 28 September generated 1,285 minutes of ATFM delay;
- Radar instability in Zurich ACC on 28 September generated 1,214 minutes of ATFM delay.

Other

- Fire in a forest in the vicinity of Pisa airport impacted operations on 25 and 26 September generating 1,799 minutes of ATFM delay;
- Power-outage of the airport baggage handling system at Berlin/Tegel airport on 22 September generated 1,232 minutes of ATFM delay;
- A brief zero rate ATFM measure was applied for Krakow/Balice on 17 September due to smoke in the airport ATC operational facility resulting in an evacuation.

9. NM ADDED VALUE

FLIGHTS WITH DELAY > 30'

The number of flights with more than 30 minutes of ATFM delay increased by 14.5% between September 2017 and September 2018.

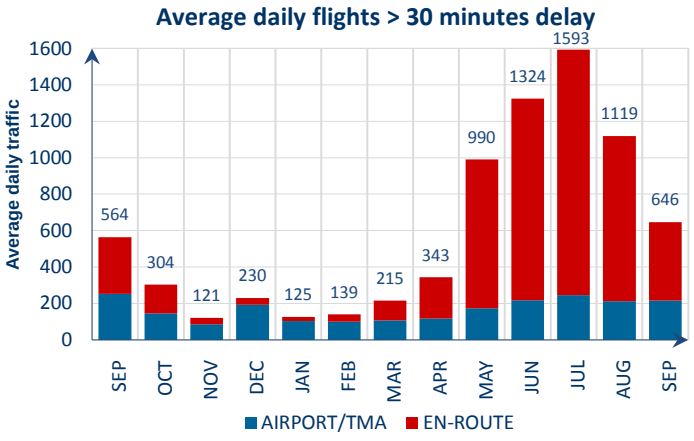
In September 2018, 66.7% of flights with more than 30 minutes of ATFM delay were en-route and 33.3% were airport.

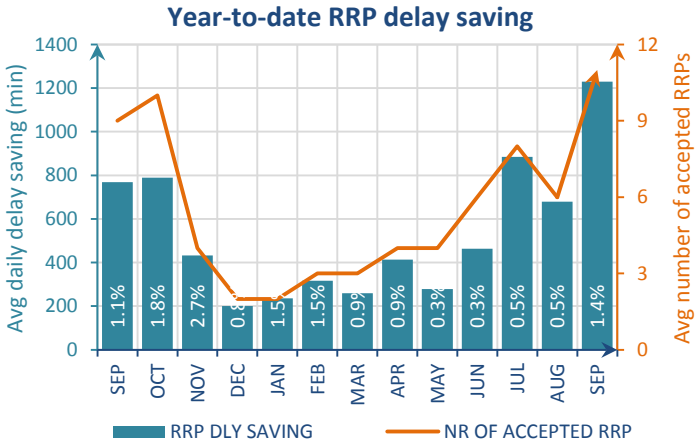
An average 80 flights per day had their delay reduced to less than 30 min by NM.

RRP DIRECT DELAY SAVINGS

On average 11 RRPs/day were executed saving 1,229 min/day, accounting for 1.4% 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 Internals, international arrivals and departures, 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 RRPs are considered when the RRP is sent 3 hours (or less) in advance of the EOBT.