

ATC and Environmentally Friendly Operations - Role and Requirements -

Vilnius, 22-23 September 2021



DFS Deutsche Flugsicherung

ATC and Environmentally Friendly Operations

- Role and Requirements -

- 1) The 'Normal' Challenge – Volume and Complexity
- 2) Environmental and Sustainable ATS – A Demanding Task
- 3) Environmental and Sustainable ATS – Prerequisites for an ANSP
- 4) Learning from „Day-to-Day“ OPS
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The 'Normal' Challenge – Volume and Complexity

Since the COVID-19 pandemic, air traffic declined by 60% in 2020. For „post COVID-19 era“ we have to prepare for „pre COVID-19“ situation.



2019

Air Traffic within German Airspace

Ground Coverage
of Airspace

390.000

Square-Kilometer

IFR-Flights

3.334

Million

IFR-Take-Offs and
-Landings

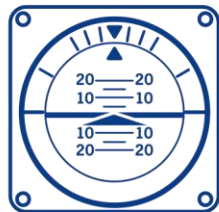
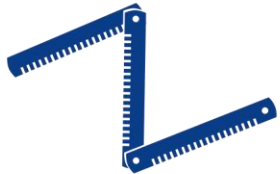
2.295

Million

Busiest
Day

11,012

IFR-Flights



Horizontal Flight Efficiency 98.8%

2019

One day in German Airspace



Environmental and Sustainable ATS – A Demanding Task

Until “today” ...

... environmental and sustainable ATS focussed on fuel efficient flight operation and noise abatement.

... providing flight trajectories to enable

- safe and orderly flow of air traffic
- noise abatement around airports
- fuel saving based on horizontal flight efficiency

is already daily business of ANSPs.

But “tomorrow” ...

... ANSPs service scope is requested to enable “Green Flying” by **environmental friendly** flight trajectories.

Environmental and Sustainable ATS – Prerequisites for an ANSP

To enable ANSPs to provide **environmental friendly** flight trajectories within ATS requires

Prerequisites (strategic / tactical / operational / regulatory) e.g.

- definition what “Green Flying” and “environmental friendly flight trajectory” are,
- set of rules / standards (e.g. ICAO DOCs etc.) addressing the “environmental friendly service provision”,
- an appropriate regulatory framework e. g. addressing priorities (e.g. CO2 vs. Noise Abatement),
- proper forecast and up-to-date information on “no go areas” (contrail avoidance),
- set up appropriate infrastructure and information flow to enable proper planning and to take right operational decision when and where needed.

“Rules – Tools – Information” (RTI)

Learning from “Day-to-Day” OPS

Air Traffic Noise Impact is Local – Air Traffic Climate Impact is Global

- The challenge of climate impact for operation is by far more demanding as it was / is with noise impact, but ...
- the basic approach is the same:
 - ATS ensures safe separation between aircraft,
 - ATS arranges for orderly flow of air traffic within given environment,
 - ATS applies established Noise Abatement Procedures at airports,
 - (in future)** → ATS will apply “Green Flying Procedures” ...

... which all will have to be based on sound data / metrics, appropriate operational and technical infrastructure and extensive up-to-date-information exchange to enable proper planning and to take right operational decision when and where needed.

Cross Border Weather Forecast and Assessment

Thunderstorm cells become more intensive. They reach higher ceilings and larger lateral dimensions with gaps between cells decreasing.

- By-passing cells require spacious deviations (trajectories) ...
- ... requiring cross border coordination and activities.

A potential approach e.g. to support avoidance of contrails?

Learning from “Day-to-Day” OPS - “Global” forecast meets local ANSP procedure

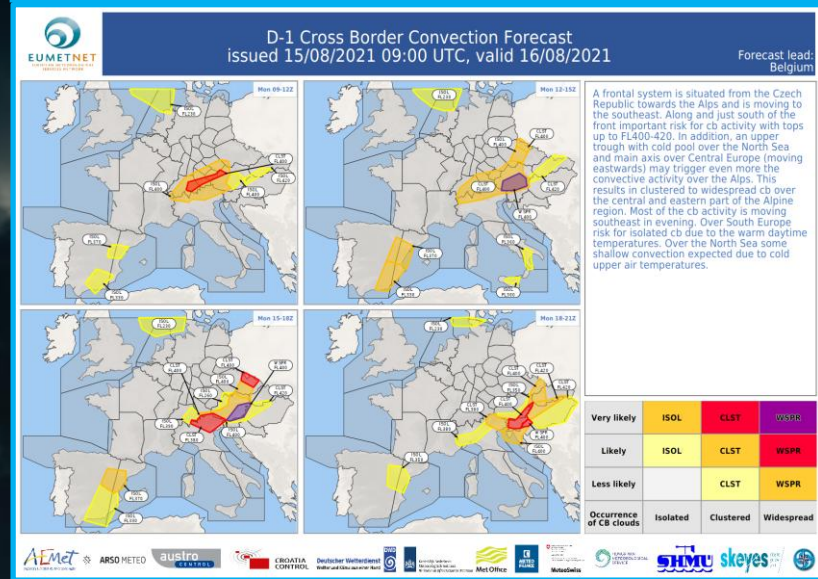
Cross Border Weather Forecast by NM EUROCONTROL Brussels

Supplemented by the common alpine weather procedure between Skyguide, ENAV, Austrocontrol and DFS

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Cross Border Weather Forecast D-1

→ Published on the NOP Network Operations Portal for D-1 and D-0



→ Published in all LoAs (Letter of Agreement) for bilateral use between all contributing ANSPs

Consisting of:

- **Monitoring phase**
- **Supporting phase and**
- **Deviating phase**

→ Circumnavigating thunderstorm areas with a valuable predict is something ANSPs can do pro-actively

→ Overflying thunderstorm areas is much more unlikely, more risky and can only be done with the close partnership of all concerned flight-crews and their individual cockpit procedures

LoA

G.6 Adverse Weather Situation Procedure

G.6.1 With the aim to commonly handle traffic within and adjacent to areas of adverse weather situations during phases of heavily deviating traffic, specific procedures, as prescribed below, shall be applied.

G.6.2 This procedure applies to ACC München, Karlsruhe UAC, ACC Padova, ACC Zürich and ACC Wien and will be applied between the involved Units.

G.6.3 The procedure is divided into three phases as follows:

G.6.3.1. Monitoring Phase:

G.6.3.1.1 Adverse weather is known in the own AoR and is likely to affect the agreed conditions for transfer of control (e.g. flight trajectories, handover levels) as indicated in Annex D of the commonly agreed LoAs between Karlsruhe UAC, ACC München, ACC Padova, ACC Zürich and ACC Wien and ACC Zürich. Adjacent units originally not planned for these flights might be affected.

G.6.3.1.2 The SUP (LOW) / SV (Karlsruhe) of the unit becoming aware of a possible adverse weather situation affecting one or more of the participating adjacent units shall initiate a telephone conference with all possible affected units (including NM).

G.6.3.1.3 In course of the telephone conference/call each unit shall inform about the following topics as applicable:

- current weather situation
- expected development (forecast)
- hotspots and affected traffic flows
- possible vertical and/or lateral deviations from standard procedures
- ATFCM measures
- timeline / next steps

Access Number for the Telephone Conference:

Austria	+43 12288545
Germany	+49 3052002084
Italy	+39 045236790
Belgium / NM	+32 23510103
Switzerland	+41 220544750

TELEPHONE NUMBERS:

ACC Padova CSO	+39 0498230207
ACC-FIC Wien SEC/FMP	+43 51703 2145
ACC München SV	+49 898765339 / 331
ACC Zürich SPVR	+41 43 631 69 40
UAC Karlsruhe SV	+49 721693903
NM Ops Manager	+32 495569913
Deputy Ops Manager	+32 495569963

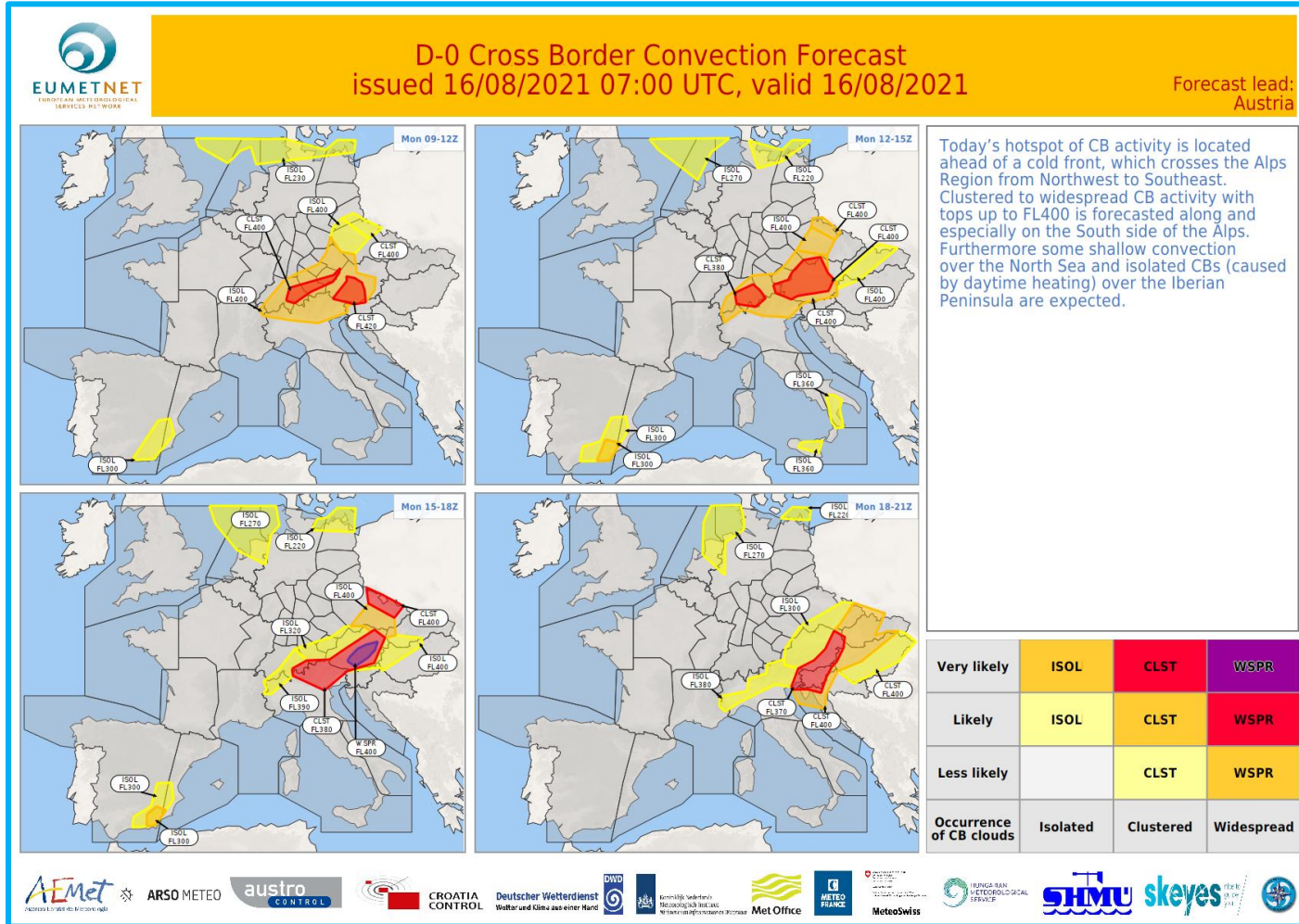
Note: For this procedure the given Telephone Number shall be used for ACC Wien, SUP ACC is involved at any time.

EMAIL ADDRESSES:

Padova CSO	cs0.acnpadova@enav.it
ACC-FIC Wien SUP	svaacc@eurocontrol.at
München ACC SV	sv.edmm@dfs.de
Karlsruhe UAC SV	svaio-sv@dfs.de
ACC Zürich SPVR	dom.acc@skyguide.ch
NM	nm.om@eurocontrol.int

Learning from “Day-to-Day” OPS

First vital component: Situation Awareness through Information



“Rules – Tools – Information”

Cross Border MET Forecast for ...

... pre-tactical planning (Day-1) when creating shift roster for ACC day before operation.

Cross Border Convection Forecast is considered for sector configuration, sector opening and/or closing times.

... tactical planning (Day-0) during day of operation when need is given to react on short term development (2-3 hours from present) with e.g. changing sector configuration or sector opening / closing time, traffic regulation etc.

Learning from “Day-to-Day” OPS

“Rules – Tools – Information”

Second vital component: „Agreed or given set of rules / regulations / easy to be applied and used“

LoA

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G.6.3.1 Monitoring Phase:

G.6.3.1.1 Adverse weather is known in the own AOR and is likely to affect the agreed conditions for transfer of control (e.g. flight trajectories, handover levels) as reflected in Annex D of the commonly agreed LoAs between Karlsruhe UAC, ACC München, ACC Padova, ACC Wien and ACC Zürich. Adjacent units originally not planned for these flights might be affected.

G.6.3.1.2 The SUP (LOWW) / SV (Karlsruhe) of the unit becoming aware of a possible adverse weather situation affecting one or more of the participating adjacent units shall initiate a telephone conference with all possible affected units (including NM). A 10-15 minutes pre-notification shall be effected by the initiating unit.

G.6.3.1.3 In course of the telephone conference/call each unit shall inform about the following topics as applicable:

- current weather situation
- expected development (forecast)
- hotspots and affected traffic flows
- possible vertical and/or lateral deviations from standard procedures
- ATCOI measures
- timeline / next steps

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ACC Zürich SPVR	+41 43 631 69 46
UAC Karlsruhe SV	+49 72 5930203
NM Ops Manager	+32 49556913
Deputy Ops Manager:	+32 49556993

Note: For this procedure the given Telephone Number shall be used for ACC Wien, SUP ACC is involved as an observer

EMAIL ADDRESSES:

Padova CSO	oso.accpadova@enav.it
ACC-FIC Wien SUP	supacc@aviatranscontrol.at
München ACC SV	sv.admin@dfs.de
Karlsruhe UAC SV	sv.ro-edu@dfs.de
ACC Zürich SPVR	dom.acc@skyguide.ch
NM	nm.dom@eurocontrol.int or nm.dom@eurocontrol.int

Aside the need to know “WHEN” and “WHY” action is needed, the “HOW” to act within cross border environment is needed to know.

Example:

Common alpine weather procedure agreed between Skyguide, ENAV, Austrocontrol and DFS.

Organising the process and activities between ACCs involved in case adverse weather situation is likely to occur addressing a

- **Monitoring phase ...**
... raising awareness; status exchange between concerned ACCs;
- **Supporting phase ...**
... CBs start to develop; first flights leave trajectory; status update and expected actions;
- **Deviating phase ...**
... flights deviating from their planned flight paths → agreed coordination process between ACCs is executed, even with system support (predefined deviation patterns)

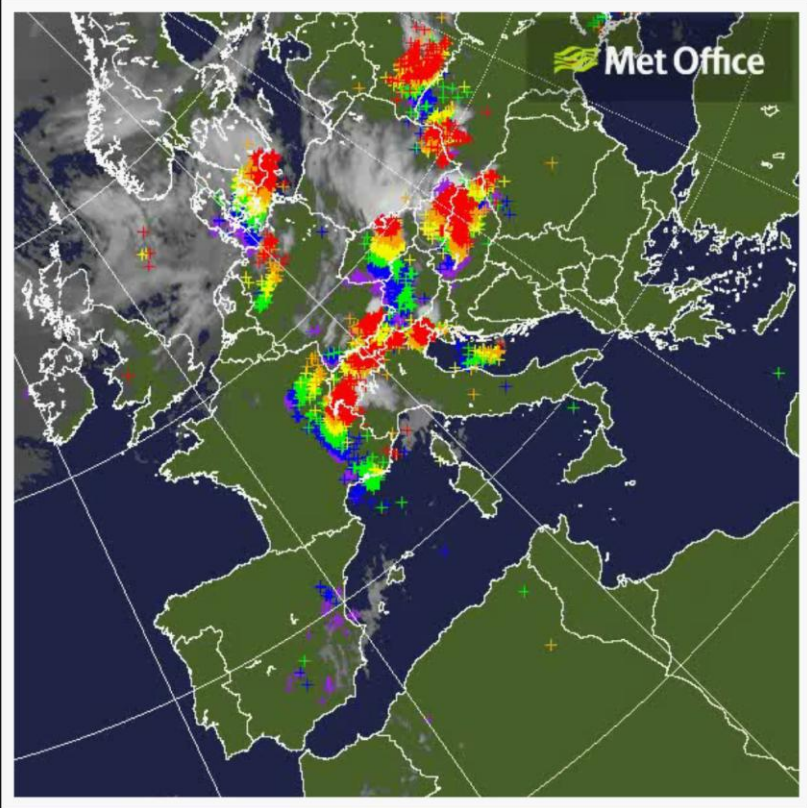
Conclusion

Safety of each individual flight in any case and will always be ANSPs highest priority.

- The operational competence how to handle flights is given with ANSPs.
- To handle flights in an environmental friendly way ANSPs require clear guidance by
 - rules, standards and definitions how an environmental friendly flight looks like,
 - information about relevant aspects and conditions applicable to the individual traffic situation
 - and appropriate tools and proceduresenabling ANSPs to transfer their competence into operational action.
- In particular under conflicting circumstances e.g.
 - avoidance of contrails vs. CO2 emission
 - CO2 emission vs. noise abatement
 - “green flying” vs. capacity requirements

And we ALL need to be much faster than with noise abatement activities during past 50 years.

Thank you for your attention



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Lightning strike chart video 16AUG2021