MicroStep-MIS

Your partners in any weather

ERM 2026
IFATSEA Euro - conference 2026
Sarajevo, BiH

bhansa

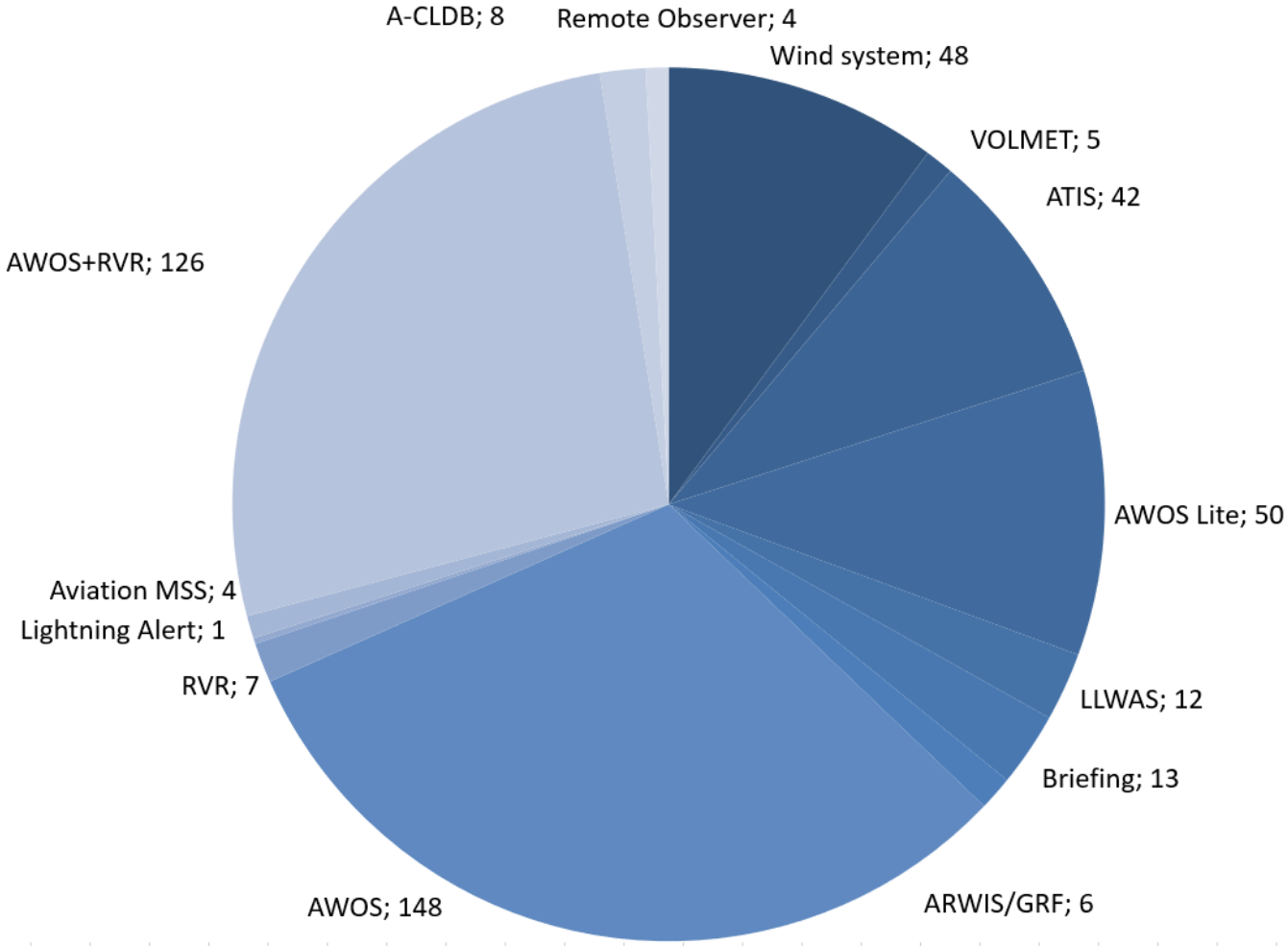
UNIS Telekom d.d.

BHANSA Meteorological System

IFATSEA Euro-Conference 2026 | June 11 - 13, 2026, Sarajevo

30+ YEARS OF EXPERIENCE IN AVIATION

MORE THAN 470 AVIATION SYSTEMS SINCE 1995 SERVING 200,000,000 PASSENGERS ANNUALLY



- IMS **AWOS**: 148
- IMS **AWOS + IMS4 RVR**: 126
- **Wind System**: 48
- **General Aviation**: 50
- IMS **ATIS**: 48
- IMS **VOLMET**: 5
- IMS **LLWAS**: 12
- IMS **RVR**: 7
- IMS **AERO CLDB**: 8
- IMS **ARWIS/GRF**: 6
- IMS **Pilot Briefing**: 13
- IMS **Aviation MSS**: 4
- IMS **ALAS**: 1
- IMS **Remote Observer**: 4

TENDER 1-25-16-4-5009-6/22 PUBLIC PROCUREMENT OF THE NEW METEOROLOGICAL SYSTEMS FOR BHANSA

Subject:

1. System for collection, processing and distribution of meteorological data for MW and meteorological forecast services at Airport LQs (**hereinafter referred to as: MET system**)

2. Automated Weather Observing System (AWOS) for Airports LQBK, LQSA, LQTZ, and LQMO (**hereinafter referred to as AWOS systems**)

bhansa

AGENCIJA ZA PRUŽANJE USLUGA U ZRAČNOJ PLOVIDBI BOSNE I HERCEGOVINE

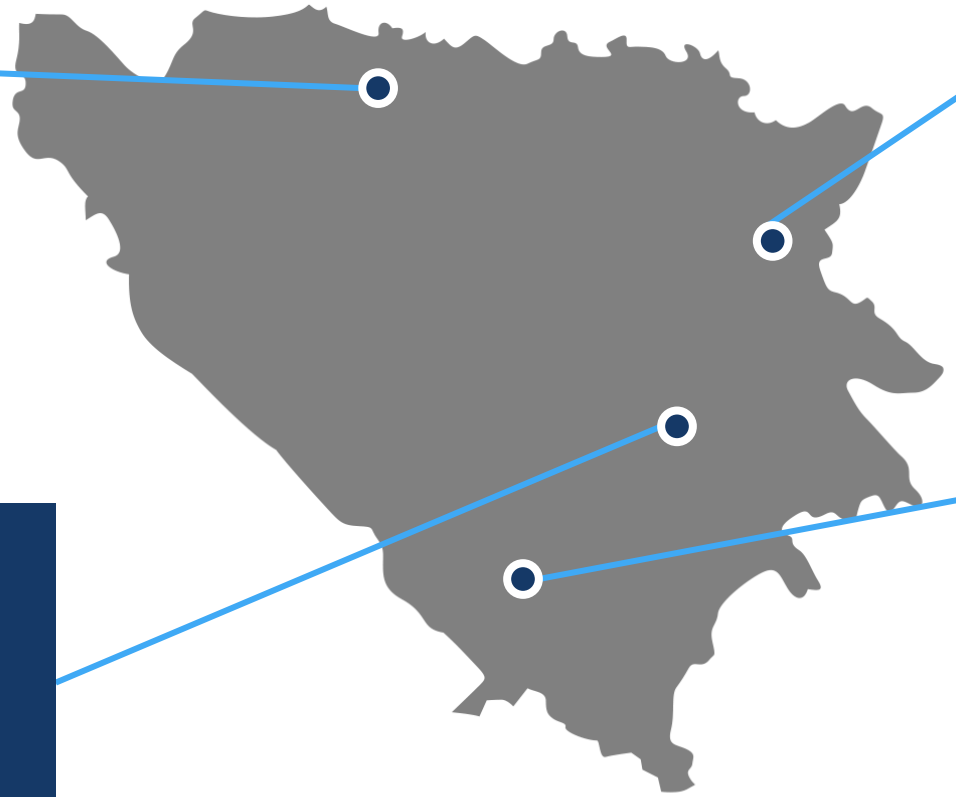
АГЕНЦИЈА ЗА ПРУЖАЊЕ УСЛУГА У ВАЗДУШНОЈ ПЛОВИДБИ БОСНЕ И ХЕРЦЕГОВИНЕ

BOSNIA AND HERZEGOVINA AIR NAVIGATION SERVICES AGENCY

AVIATION METEOROLOGICAL SYSTEMS FOR BHANSA

AWOS, ATIS/VOLMET,
Briefing and Forecasting
EUMETSAT
Message Switching System

Banja Luka International Airport
(ICAO: LQBK)



AWOS, ATIS

Tuzla International Airport
(ICAO: LQTZ)

AWOS, ATIS

Mostar International
Airport (ICAO: LQMO)

AWOS, ATIS,
Briefing and Forecasting
EUMETSAT

Sarajevo International Airport
(ICAO: LQSA)

AWOS **VOLMET** **EUMETSAT**
ATIS **Briefing and Forecasting**

PROJECT GOALS AND TIMELINE

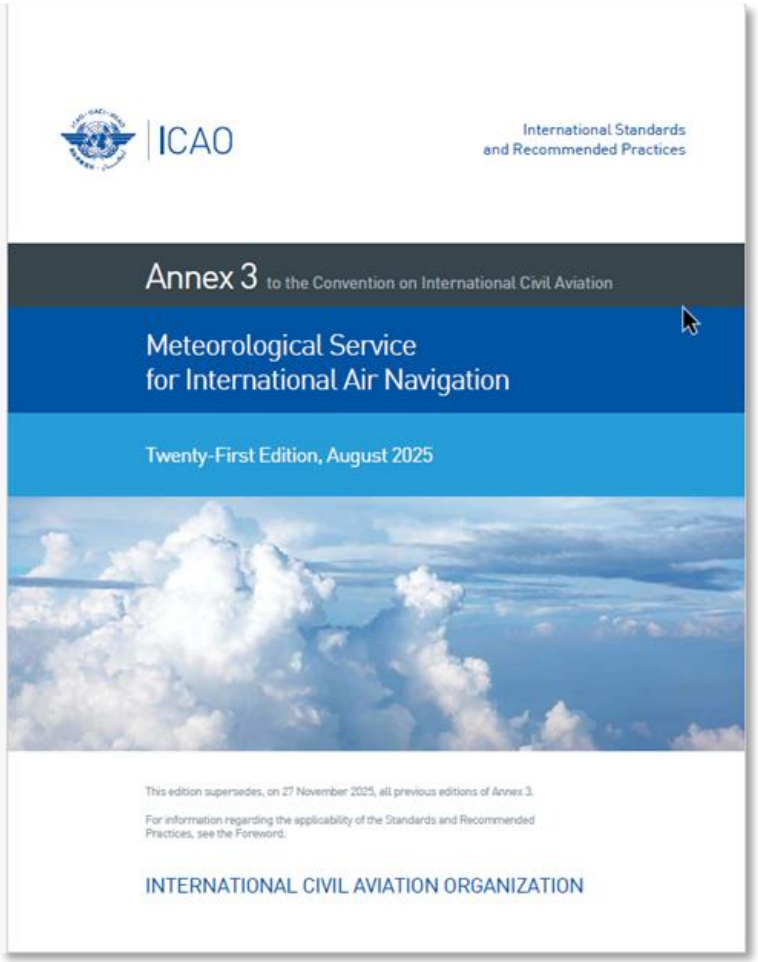
- MET Systems shall be designed to operate 24 hours a day, 365 days a year.
- AWOS system architecture shall be scalable in order to support **ICAO CAT I** to **CAT IIIB** operations
- All software shall meet the **SWAL 4** safety level
- Compliance with applicable **ICAO, WMO, Eurocontrol, EASA, EC** standards
- **IWXXM, SADIS, AMHS, EUMETSAT MSG/MTG**

- **Tender award to consortium MicroStep-MIS/UNIS Telekom:** April 17, 2023
- **Contract:** May 16, 2023

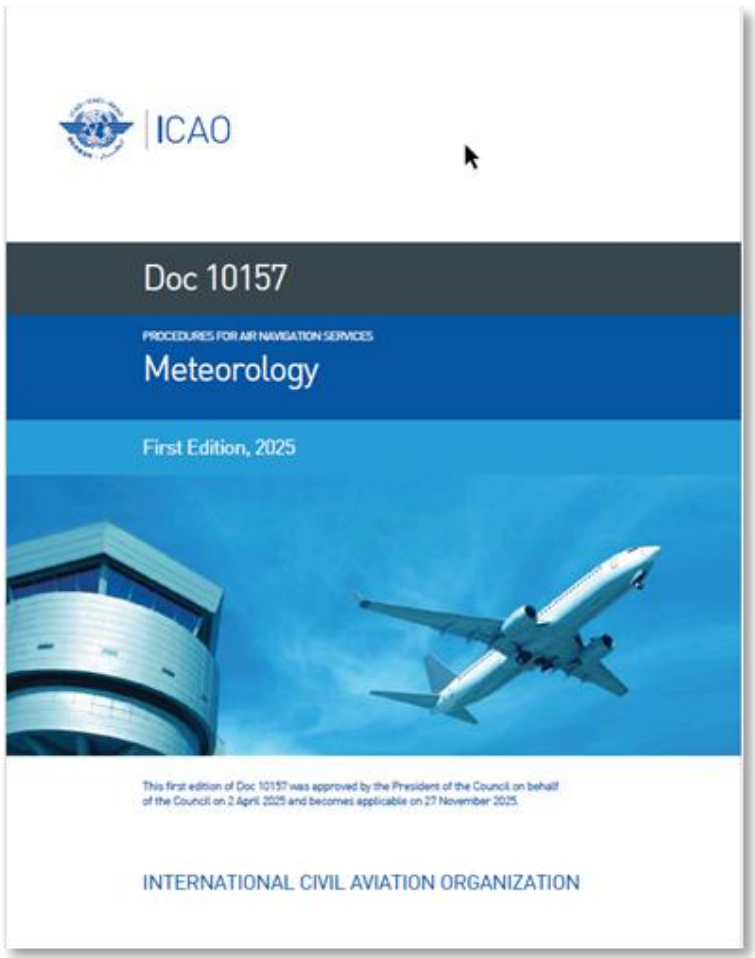
- **Phase 1 (AWOS, ATIS) Site Acceptance:**
  - **AWOS** May 2024
  - **ATIS** May 24, 2024
  - **VOLMET** June 26, 2024
- **Phase 2 (Forecasting System) Site Acceptance:** November 26, 2024

COMPLIANCE

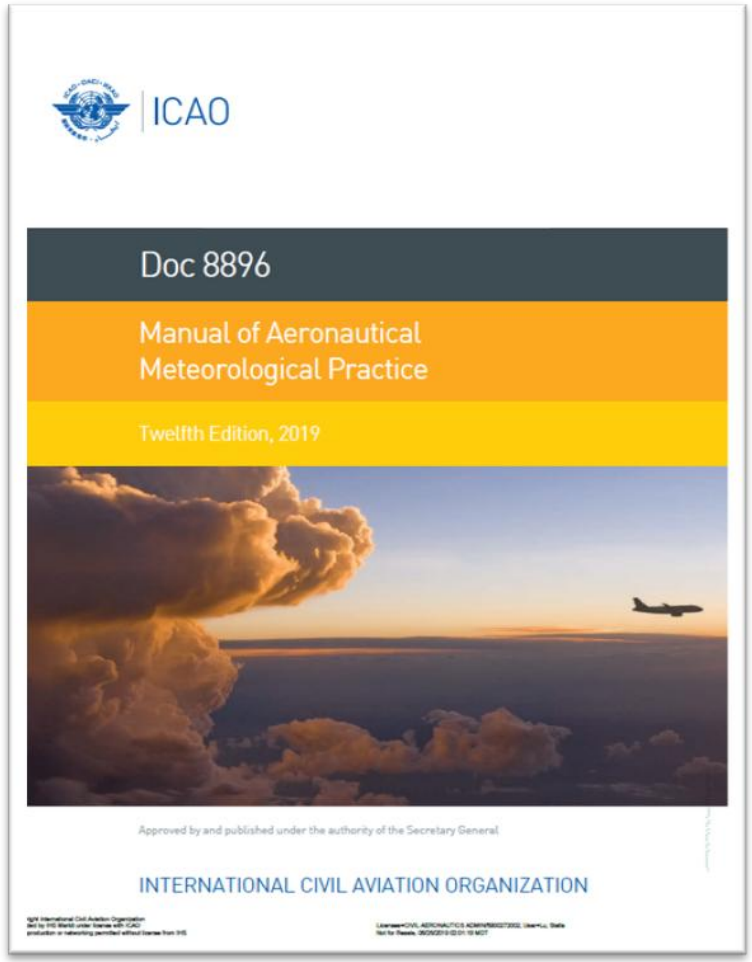
IMS4 complies with ICAO (International Civil Aviation Organization), WMO (World Meteorological Organization) and EUROCAE requirements and recommendations.



ICAO Annex 3 (2025)

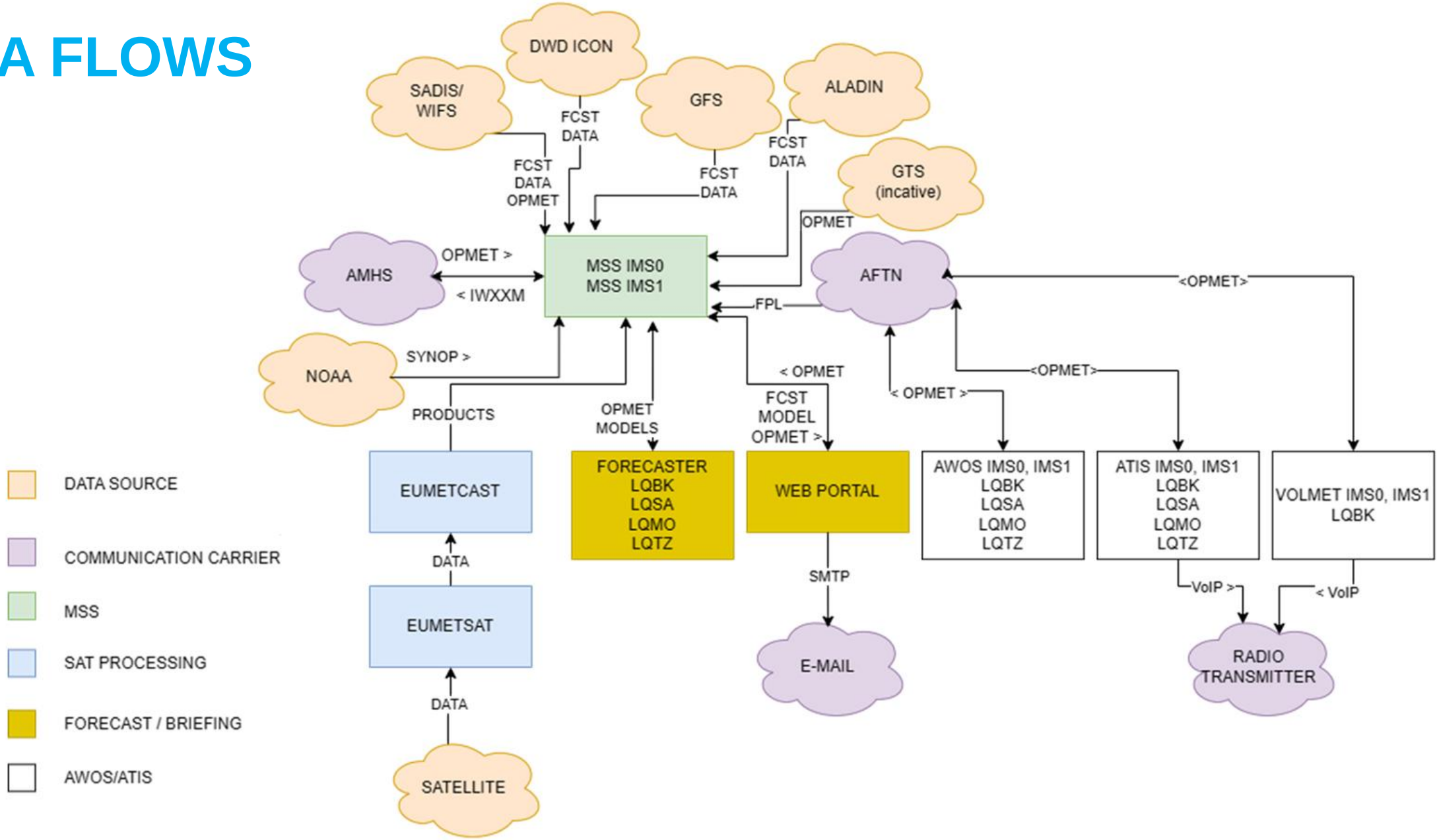


ICAO Doc 10157 PANS-MET (2025)



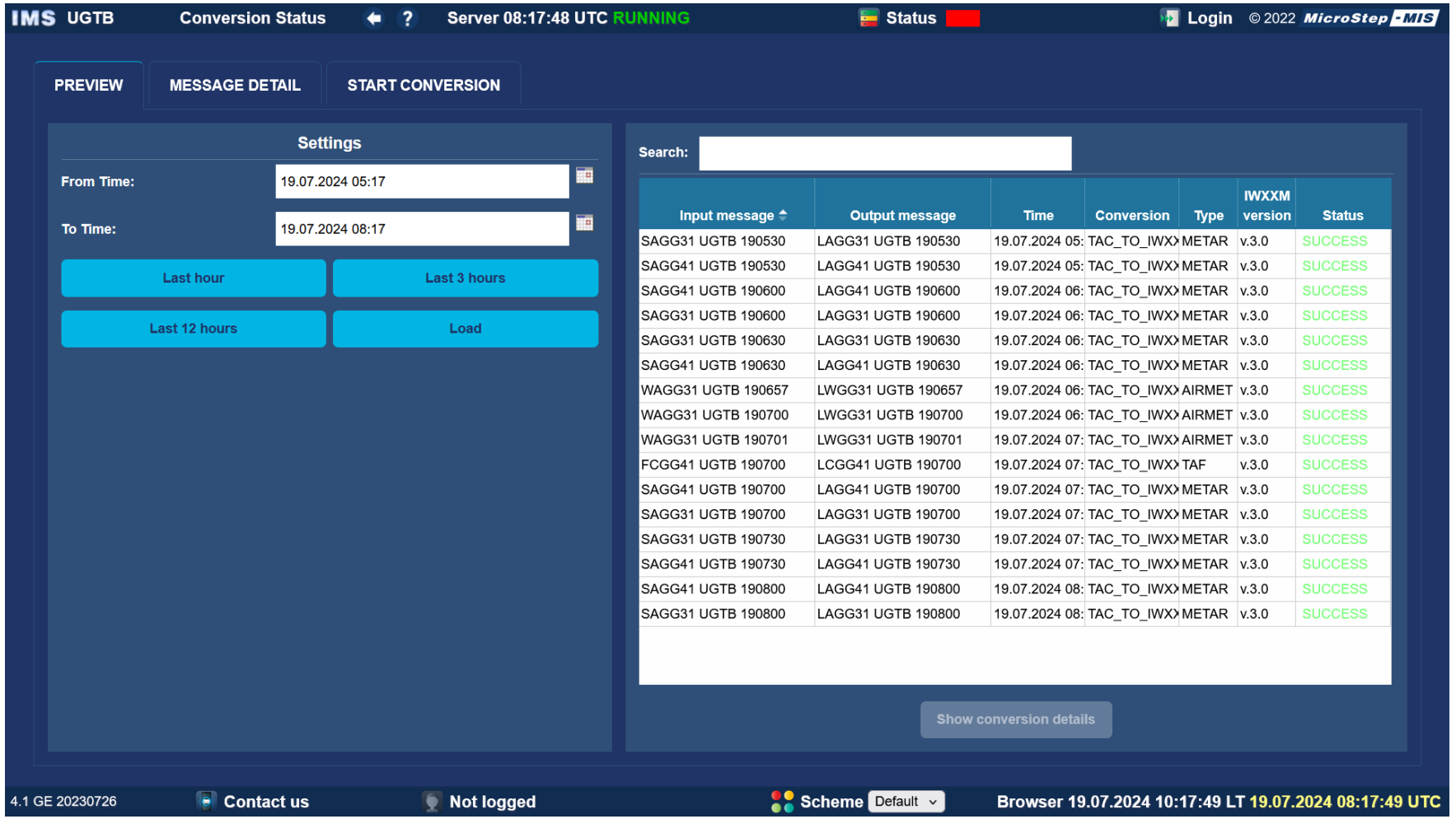
ICAO Doc 8896

DATA FLOWS



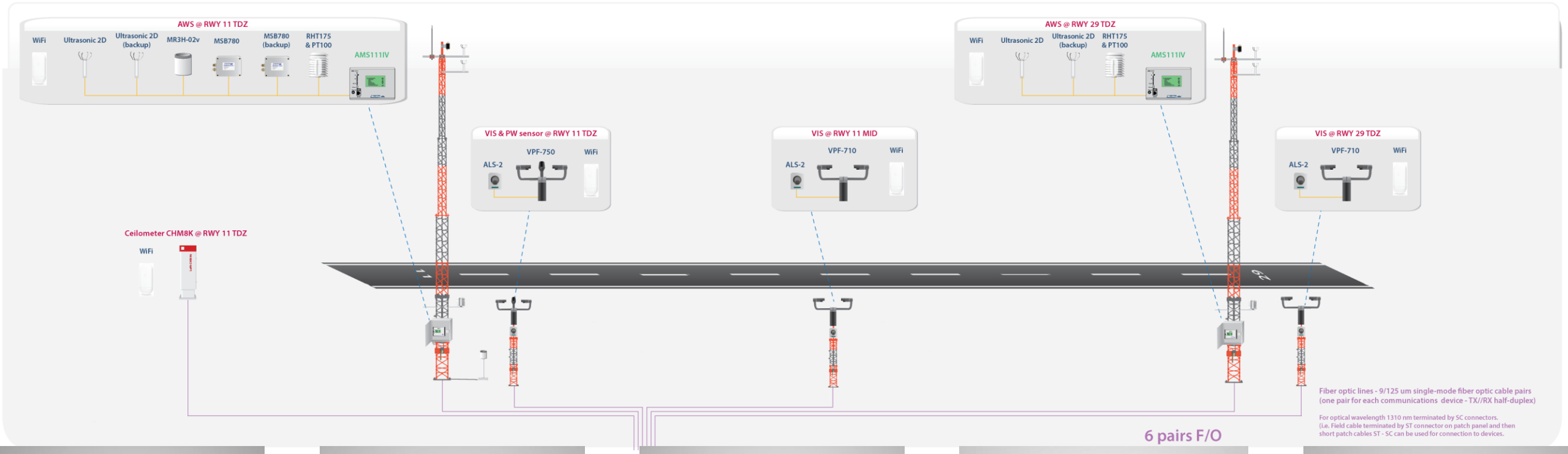
MicroStep-MIS

AERONAUTICAL METEOROLOGICAL MESSAGE SWITCH



- ICAO **AFTN**, **AMHS** and WMO **GTS** message switching functionality fully incorporated.
- Local data switching among AWOS, ATIS, VOLMET, Briefing and Forecasting System
- **TAC to IWXXM** bi-directional conversion
- **SADIS**
- **EUMETSAT**
- NWP models: **DWD-Icon**, **Aladin**, **GFS**, **NOAA**
- **OGIMET** data
- Forecast e-mail dissemination

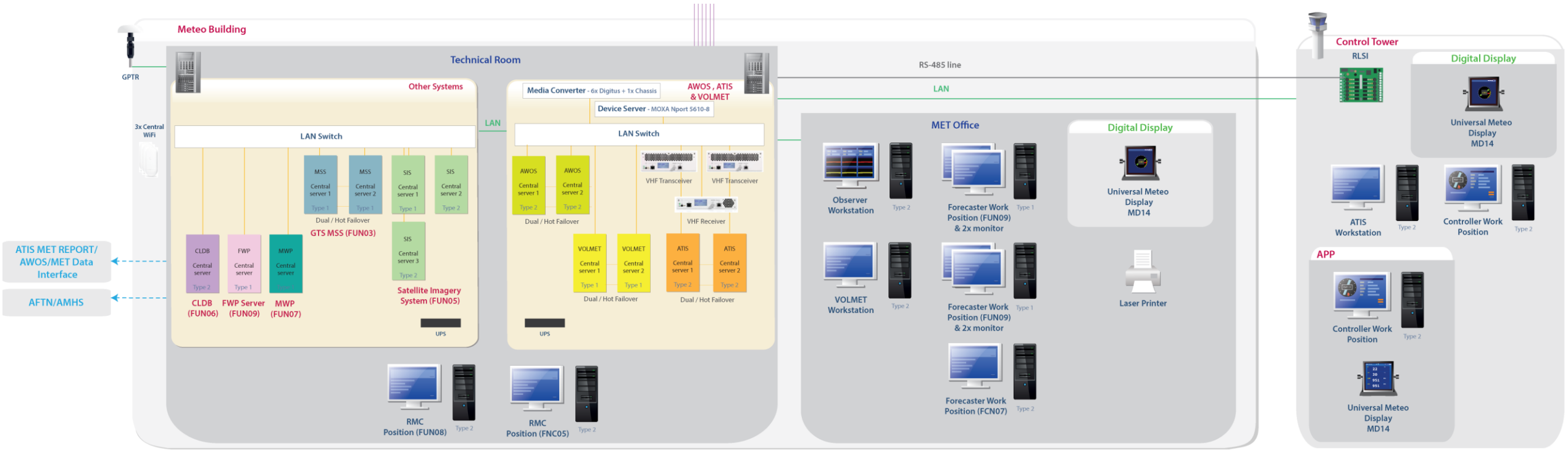
FIELD MEASUREMENT SYSTEM



IMS AWOS SOFTWARE: ADAPTED TO BHANSA PRACTICES

- Custom display
- Sunset/sunrise information from AIP documentation
- Custom MET REPORT editor in order to support local reporting practices (especially in LQSA)
- Additional QC rules for METAR, MET REPORT, TAF, WS WRNG, AD WRNG editors
- Integration of WS WRNG and METAR

BANJA LUKA: ICT + SOFTWARE



2x AWOS server
2x ATIS Server
2x VOLMET server

2x Aviation Message Switching System Server
3x Satellite Imagery System Servers
3x Forecasting and Climatological Database Servers

Duplicated communication from sensors (fibre optic, Wifi)
AWOS, ATIS/VOLMET, Forecaster working positions

MicroStep-MIS

IMS4 ATIS/VOLMET

MicroStep-MIS

VOLMET BANJA LUKA

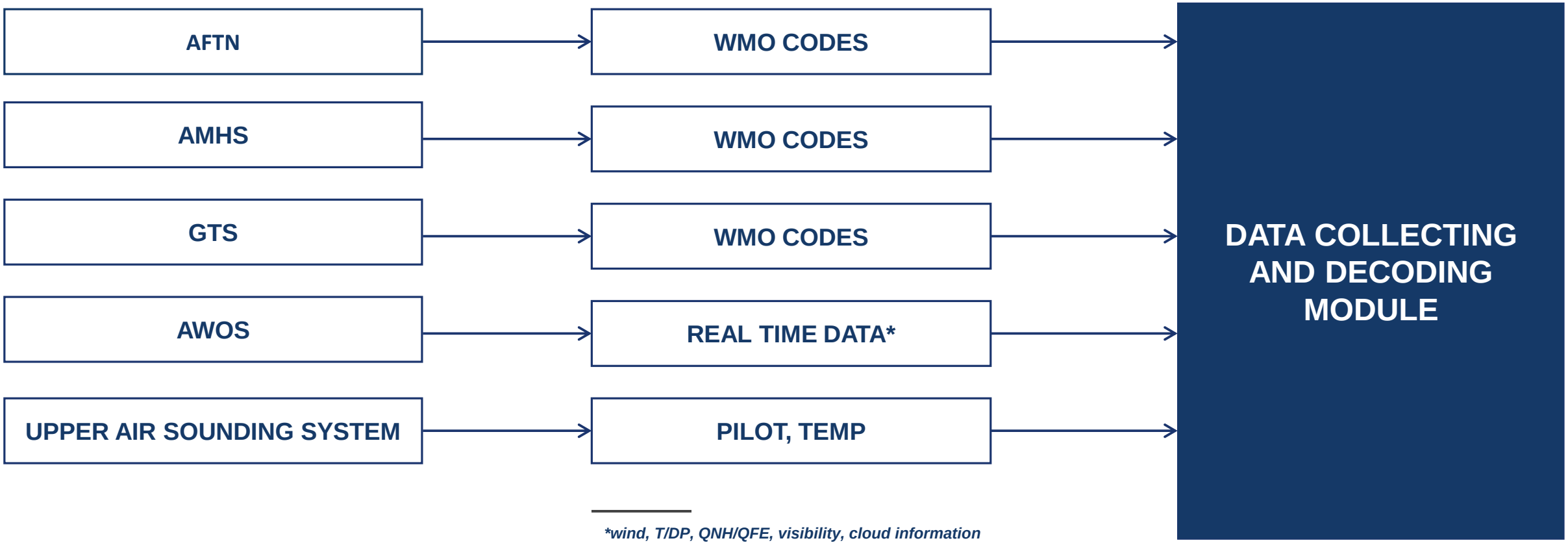
Dual hot-failover system

VOLMET Broadcast:

- **METAR:**
  - LQBK (Banja Luka), LQTZ (Tuzla), LQSA(Sarajevo), LQMO (Mostar)
- **TAF:**
  - LQBK (Banja Luka), LQTZ (Tuzla), LQSA(Sarajevo), LQMO (Mostar)
- **SIGMET/SIGMETVA LQSB**

AERONAUTICAL CLIMATOLOGICAL DATABASE

AERONAUTICAL CLIMATOLOGICAL DATABASE



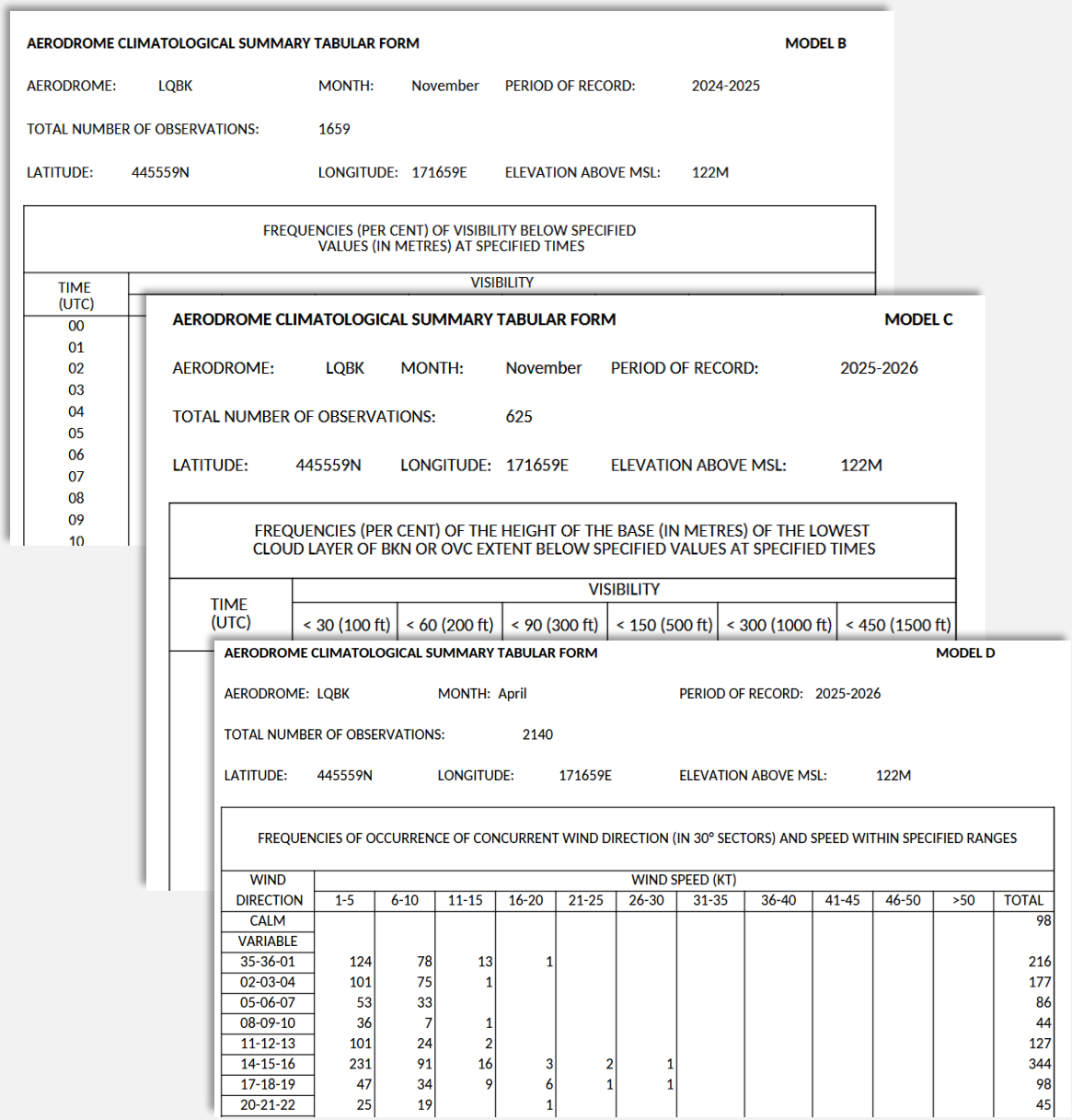
**wind, T/DP, QNH/QFE, visibility, cloud information*

IMS AERO CLDB

Aerodrome climatological summaries:

- for planning of aerodrome operations
- indicate probability of occurrence of low visibility, low cloud base etc. throughout year and for specific hours a day

ICAO/WMO prescribed forms (MODEL B, C, D, E)



AERODROME CLIMATOLOGICAL SUMMARY TABULAR FORM **MODEL B**

AERODROME: LQBK MONTH: November PERIOD OF RECORD: 2024-2025

TOTAL NUMBER OF OBSERVATIONS: 1659

LATITUDE: 445559N LONGITUDE: 171659E ELEVATION ABOVE MSL: 122M

FREQUENCIES (PER CENT) OF VISIBILITY BELOW SPECIFIED VALUES (IN METRES) AT SPECIFIED TIMES

TIME (UTC)	VISIBILITY
00	
01	
02	
03	
04	
05	
06	
07	
08	
09	
10	

AERODROME CLIMATOLOGICAL SUMMARY TABULAR FORM **MODEL C**

AERODROME: LQBK MONTH: November PERIOD OF RECORD: 2025-2026

TOTAL NUMBER OF OBSERVATIONS: 625

LATITUDE: 445559N LONGITUDE: 171659E ELEVATION ABOVE MSL: 122M

FREQUENCIES (PER CENT) OF THE HEIGHT OF THE BASE (IN METRES) OF THE LOWEST CLOUD LAYER OF BKN OR OVC EXTENT BELOW SPECIFIED VALUES AT SPECIFIED TIMES

TIME (UTC)	VISIBILITY					
	< 30 (100 ft)	< 60 (200 ft)	< 90 (300 ft)	< 150 (500 ft)	< 300 (1000 ft)	< 450 (1500 ft)

AERODROME CLIMATOLOGICAL SUMMARY TABULAR FORM **MODEL D**

AERODROME: LQBK MONTH: April PERIOD OF RECORD: 2025-2026

TOTAL NUMBER OF OBSERVATIONS: 2140

LATITUDE: 445559N LONGITUDE: 171659E ELEVATION ABOVE MSL: 122M

FREQUENCIES OF OCCURRENCE OF CONCURRENT WIND DIRECTION (IN 30° SECTORS) AND SPEED WITHIN SPECIFIED RANGES

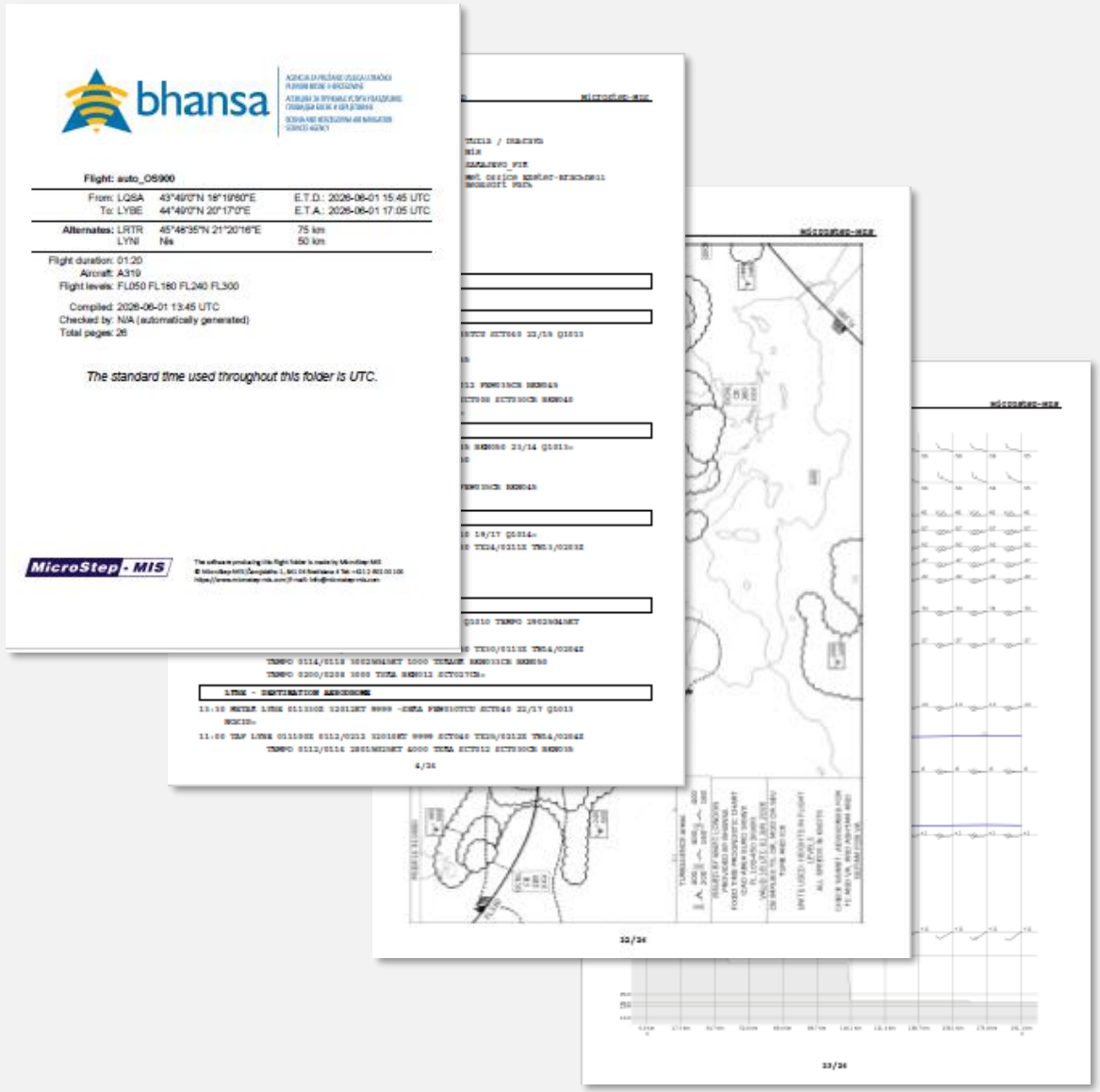
WIND DIRECTION	WIND SPEED (KT)											
	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	>50	TOTAL
CALM												98
VARIABLE												
35-36-01	124	78	13	1								216
02-03-04	101	75	1									177
05-06-07	53	33										86
08-09-10	36	7	1									44
11-12-13	101	24	2									127
14-15-16	231	91	16	3	2	1						344
17-18-19	47	34	9	6	1	1						98
20-21-22	25	19		1								45

IMS PILOT BRIEFING

MicroStep-MIS

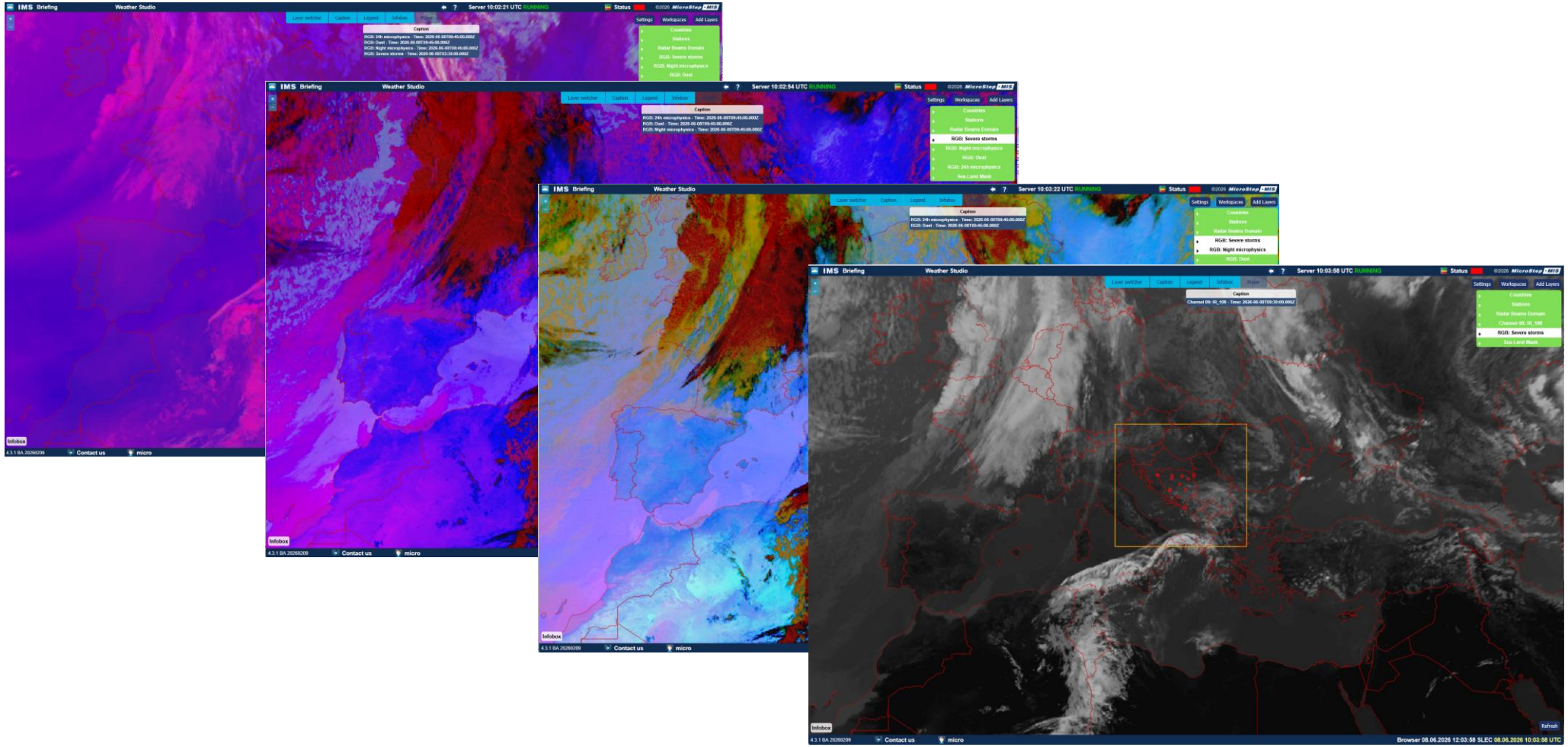
PRE-FLIGHT DOCUMENTATION

- ✓ Actual SADIS / local OPMET data at the departure, arrival and alternative aerodromes and FIR:
  - METAR/SPECI
  - TAF
  - SIGMET, VA SIGMET, TC SIGMET
  - GAMET
  - AIRMET
  - AIREP
- ✓ Advisory information:
  - Tropical Cyclone Advisories (TCA)
  - Volcanic Ash Advisories (VAA)
  - Space Weather Advisories (SWA)
- ✓ SIGWX charts from WAFS
- ✓ Wind and temperature charts from WAFS
- ✓ Compliant with ICAO / WMO / EU / ISO regulations



MicroStep - MIS

IMS SATELLITE WEATHER DATA



IMS SATELLITE WEATHER DATA

Generation of the products:

- **MSG 0° – Single-band channels**
  - 01: VIS006, 02: VIS008, 03: IR_016, 04: IR_039, 05: WV_062, 06: WV_073, 07: IR_087, 08: IR_097, 09: IR_108, 10: IR_120, 11: IR_134, 12: HR
- **MSG 0° – RGB composites**
  - Natural colors, Airmass (mid-latitudes), Airmass (tropics), Dust, Day microphysics, Night microphysics (mid-latitudes), Night microphysics (tropics), 24h microphysics, Severe storms (mid-latitudes), Severe storms (tropics), Ash, Snow, HRV Fog, HRV Clouds
- **MSG RSS (Rapid Scan Service) – Single-band channels**
  - 01: VIS006, 02: VIS008, 03: IR_016, 04: IR_039, 05: WV_062, 06: WV_073, 07: IR_087, 08: IR_097, 09: IR_108, 10: IR_120, 11: IR_134, 12: HRV

All products available as JPG and GeoTiff (ready to be used within OGC compatible map server)

IMS AVIATION FORECASTING

IMS AVIATION FORECASTING

Operation of Aerodrome Meteorological Office (**AMO**) at the regional, national and international airports or Meteorological Watch Offices (**MWO**):

- processing, creating, editing and issuing the standard operational forecasts and warnings:
  - TAF
  - AD and WS WARNING
  - GAMET
  - SIGMET
  - AIRMET
  - AIREP
  - and other (local requirements)

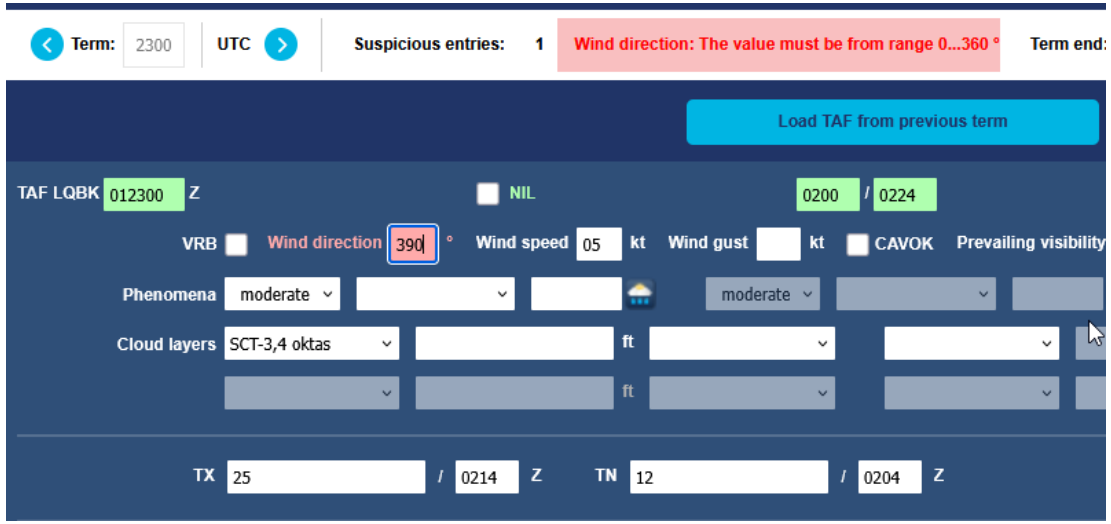
TEMPLATES FOR OPMET DATA (TAF)

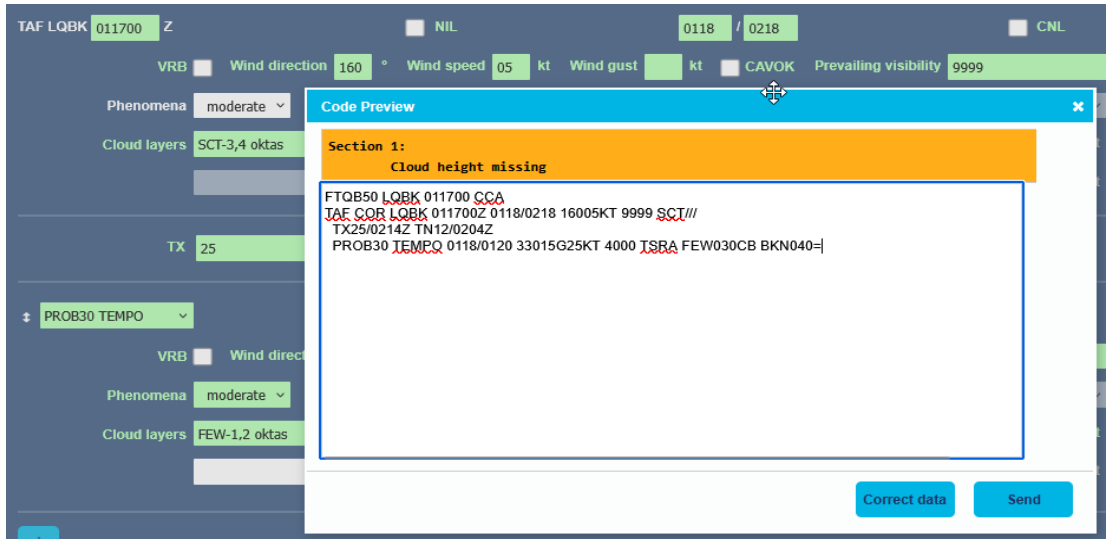
TAF Editor is for issuance of:

- regular TAF
- corrected (TAF COR)
- amended (TAF AMD)
- TAF cancelations (CNL)

Two-step Quality Control:

- The basic syntax check is performed when the user enters the data into the template
- After the message is coded, the list of errors is presented, and the coded message is previewed.





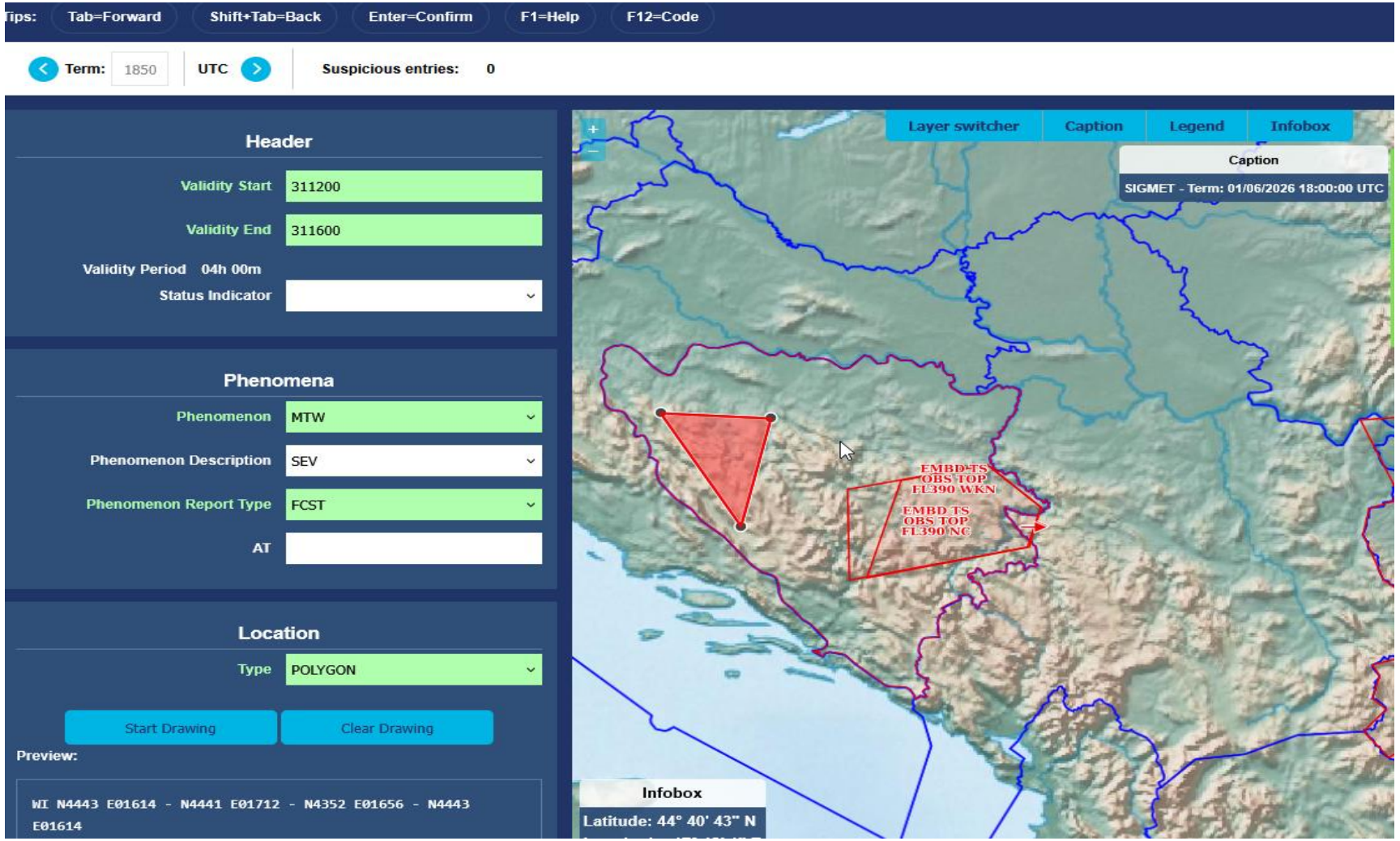
TAF VERIFICATION: MAY 2026 ACCURACY 93%

On-line real time verification of the actual TAF forecast against the METAR/SPECI observations - automatic comparison based on Attachment B PANS-MET: Operationally desirable accuracy of forecasts.

TAF accuracy for **May 2026**: overall **93%** (while ICAO minimum is 80%)

- Online color alerts for the forecaster (in the form of the hourly color code bars) upon discrepancy between actual TAF and METAR/SPECI
- Long-term calculation of the **TAF forecast's accuracy**
- TAFs verification results in Excel tables and PDF

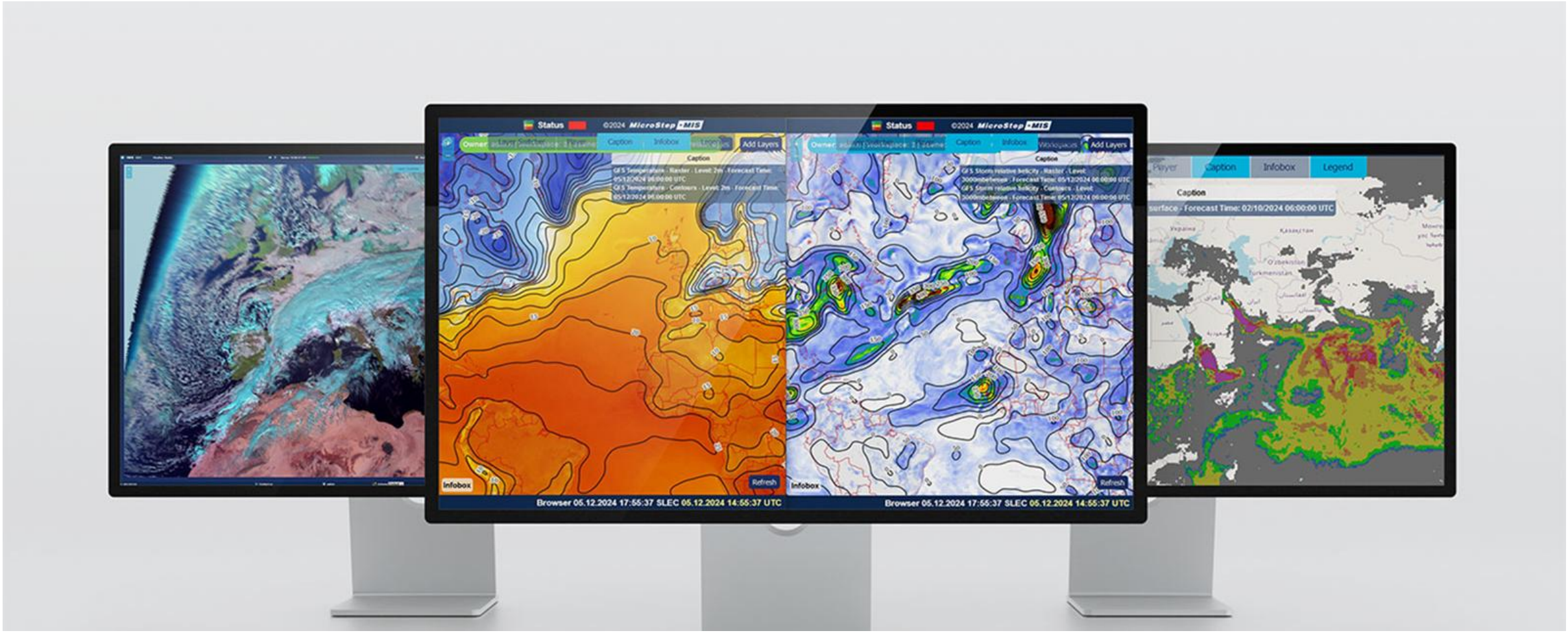
TEMPLATES FOR OPMET DATA (SIGMET / AIRMET)



SIGMET Editor with the function of drawing SIGMET polygons:

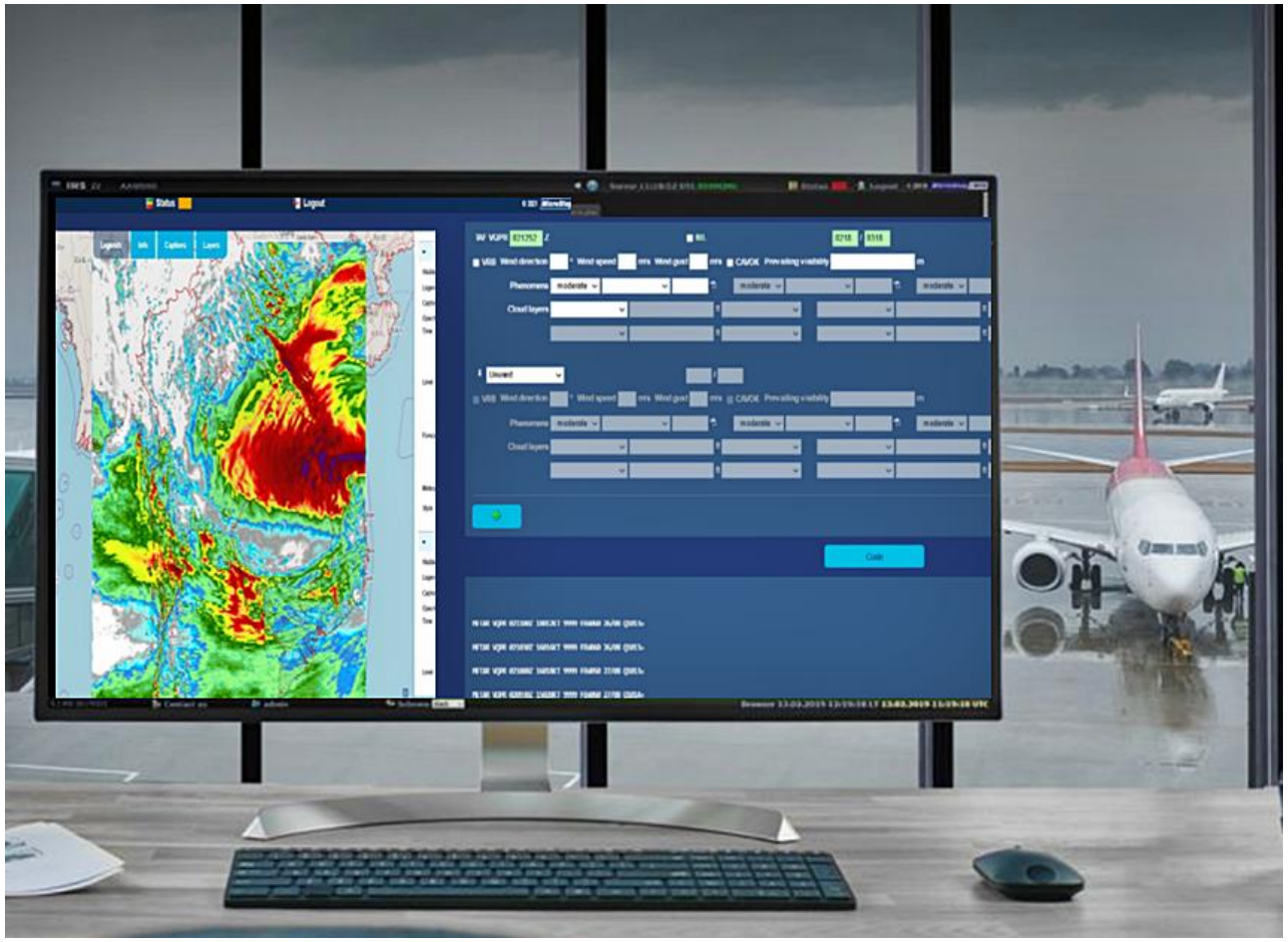
- WS SIGMET (weather phenomena)
- WV SIGMET (volcanic ash)
- WC SIGMET (tropical cyclone)
- SIGMET CNL

IMS WEATHER STUDIO



MicroStep-MIS

IMS AVIATION FORECASTING



Could be either standalone or partly integrated within IMS4 AWOS

ICAO Annex 3 (2025) and PANS-MET compliant:

✓ Chapter 6 Annex 3: Aerodrome and en-route meteorological forecast information

✓ Chapter 7 Annex 3: Meteorological information containing advisories, alerts, warnings, and notices

✓ Chapter 4 PANS-MET: Aerodrome meteorological forecast information

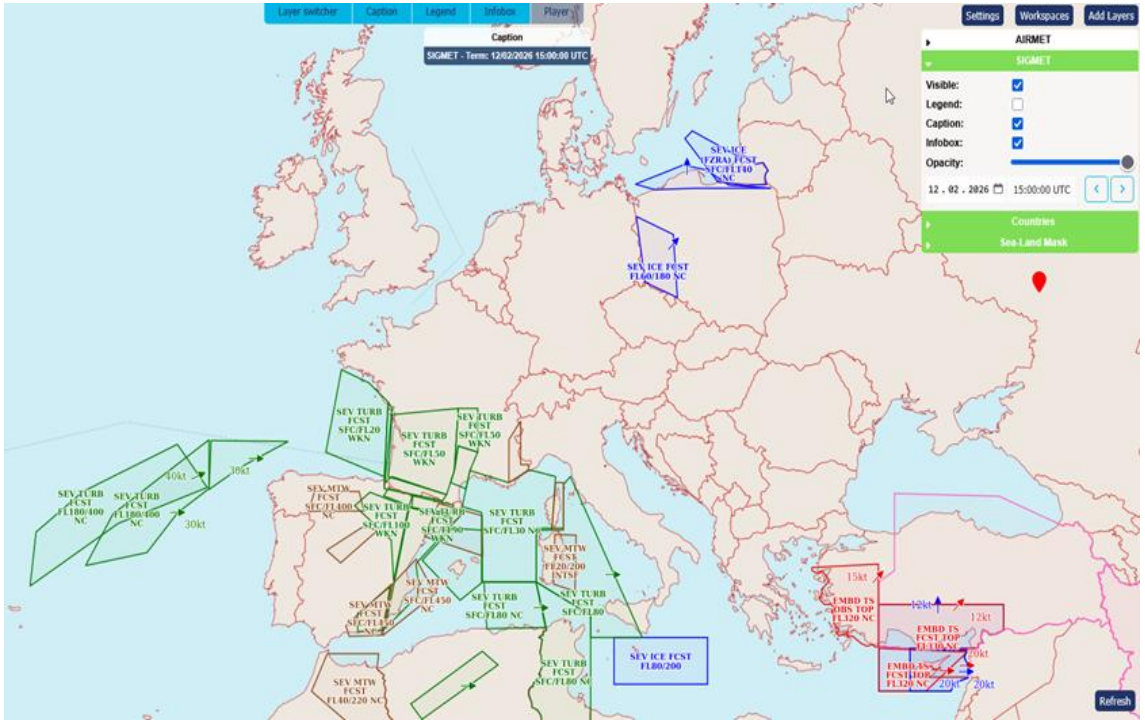
✓ Chapter 5 PANS-MET: En-route meteorological forecast information

✓ Chapter 6 PANS-MET: Meteorological information containing advisories, alerts, warnings, and notices

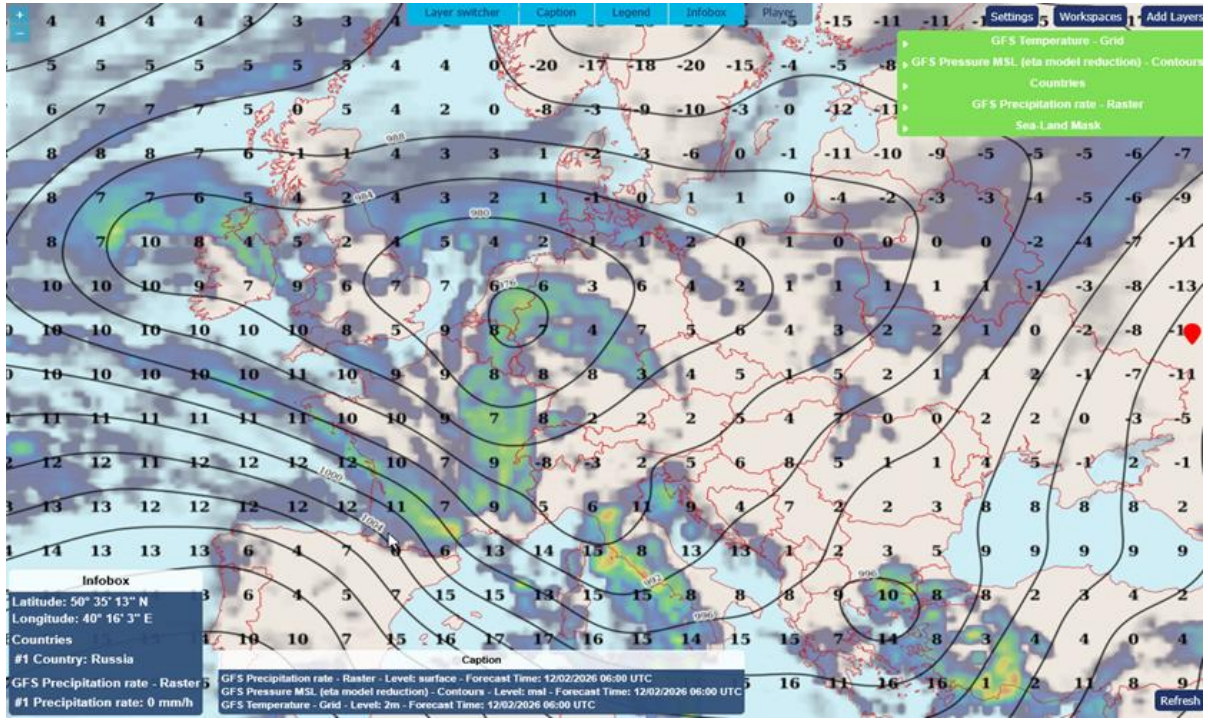
✓ Appendix 4, 6, 7, 8 PANS-MET: Technical specifications related to: TAF, GAMET, SIGMET, AIRMET, AD, and WS Warnings, AIREP

MODULES FOR FORECASTERS - IMS WEATHER STUDIO

IMS Aviation Forecasting includes the Weather Studio module that visualizes meteorological information for the forecasts and warning preparations:



SIGMETs

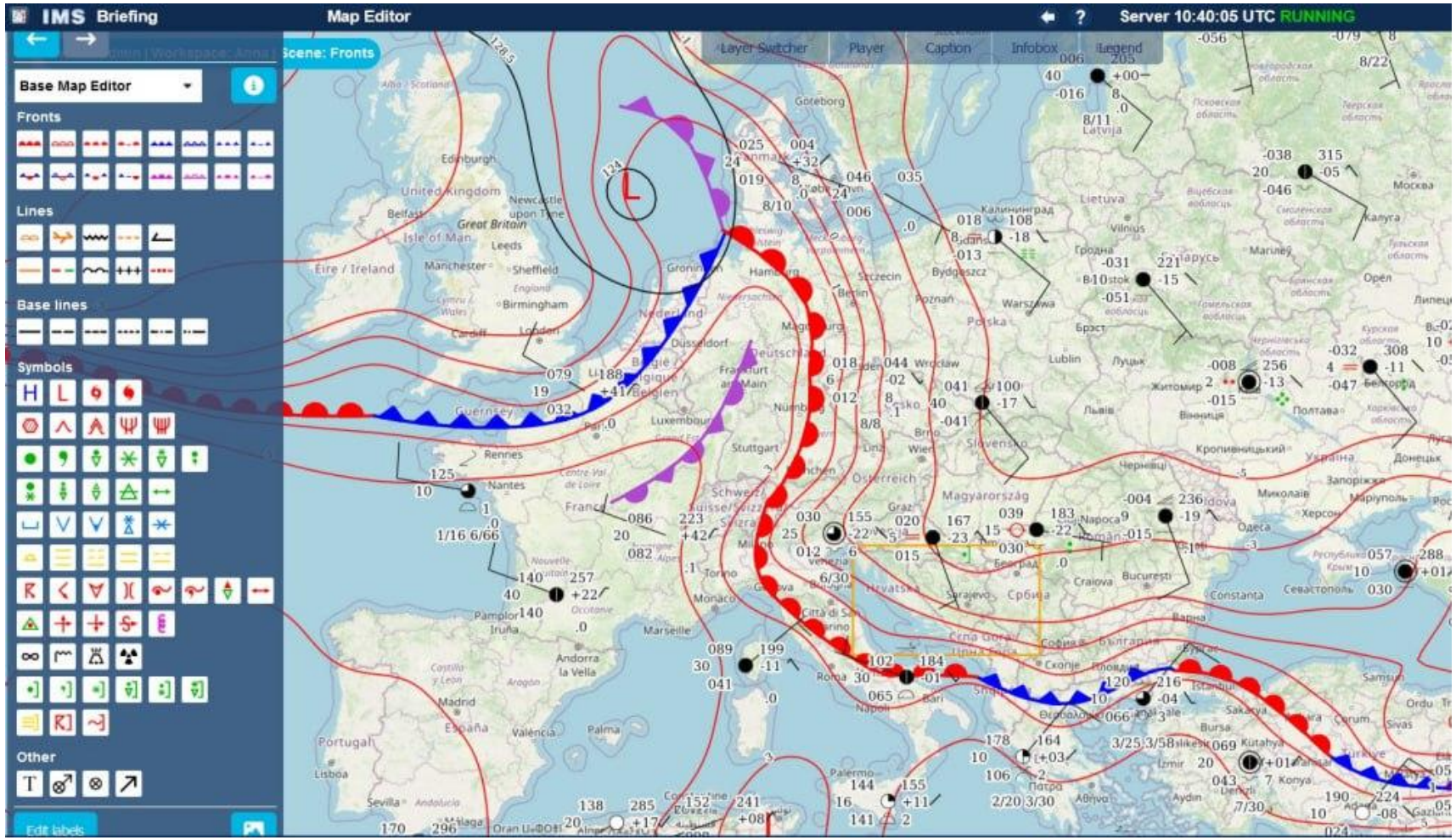


NWP data

MicroStep-MIS

IMS WEATHER STUDIO - MAP EDITOR

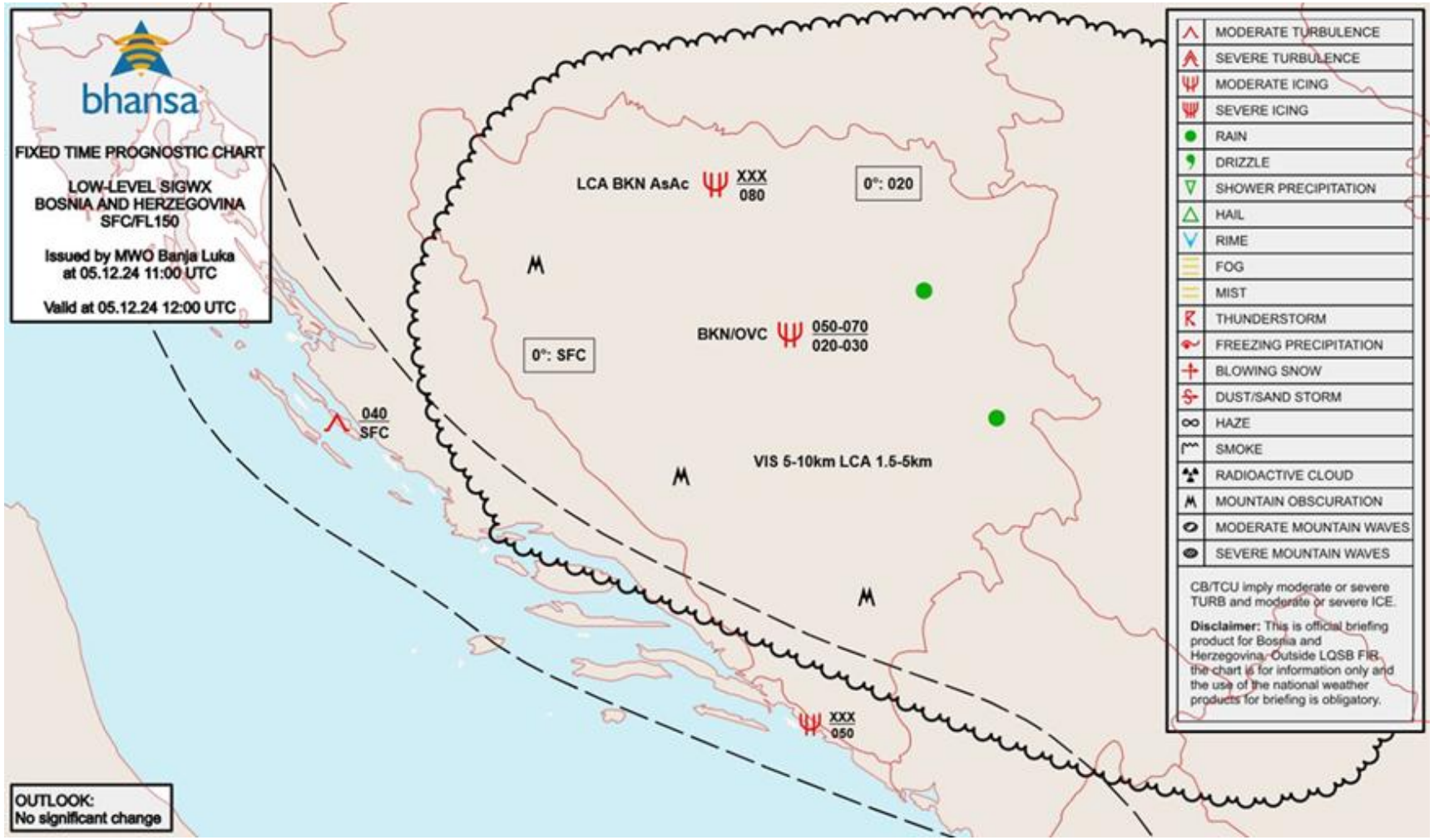
Map Editor is a part of the Weather Studio for drawing the different types of locally produced charts



- Frontal analysis based on any maps
- Wide choice of lines and symbols
- Wide range of possibilities for working with fronts – connecting, changing direction, adjusting, etc.
- Additional options in the form of text notes on the map
- Saving synoptic analysis for use in other sessions

LOW LEVEL SIGWX (MAP EDITOR)

for example, Low Level SIGWX charts:



- Drawing:
  - atmospheric fronts,
  - WMO/ ICAO complaint icons, lines,
  - specialized text
- Supports layers from models, satellites, and radars
- Fixed map area for consistency

PRESENTER

Martin Gažák

- 1999 Software Engineer
- 2005 Head of Software Department
- 2017 Chief Executive Officer

CONTACT US | HEAD OFFICE

info@microstep-mis.com

www.microstep-mis.com

MicroStep-MIS

Čavojského 1

841 04 Bratislava 4

Slovak Republic