

Observations System Needs EUMETNET Observations Programme

CIMO/WIGOS Exploratory Workshop:
**Improving Surface-Based Data Quality through Improved
Standardization of Procedures**

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EUMETNET Constitution

- An Economic Interest Grouping registered under Belgian Law
- Members are the National Meteorological Services of European states
- Provides for internal and external cooperation and collaboration
- The primary governing body is the Assembly of Members

31 EUMETNET Members

The National Met Services of:

Austria	Latvia
Belgium	Luxemburg
Croatia	Montenegro
Cyprus	Netherlands
Czech Rep.	Malta
Denmark	Norway
Estonia	Poland
Finland	Portugal
France	Slovakia
Germany	Serbia
Greece	Slovenia
Hungary	Spain
Iceland	Sweden
Ireland	The FYROM
Italy	Switzerland
	United Kingdom



 Member  Cooperating NM(H)S

EUMETNET Mission

To help its Members to develop and share their individual and joint capabilities through cooperation programmes that enable enhanced networking, interoperability, optimisation and integration within Europe; and also to enable collective representation with European bodies in order that these capabilities can be exploited effectively.

From EUMETNET Strategy

Observations Goals

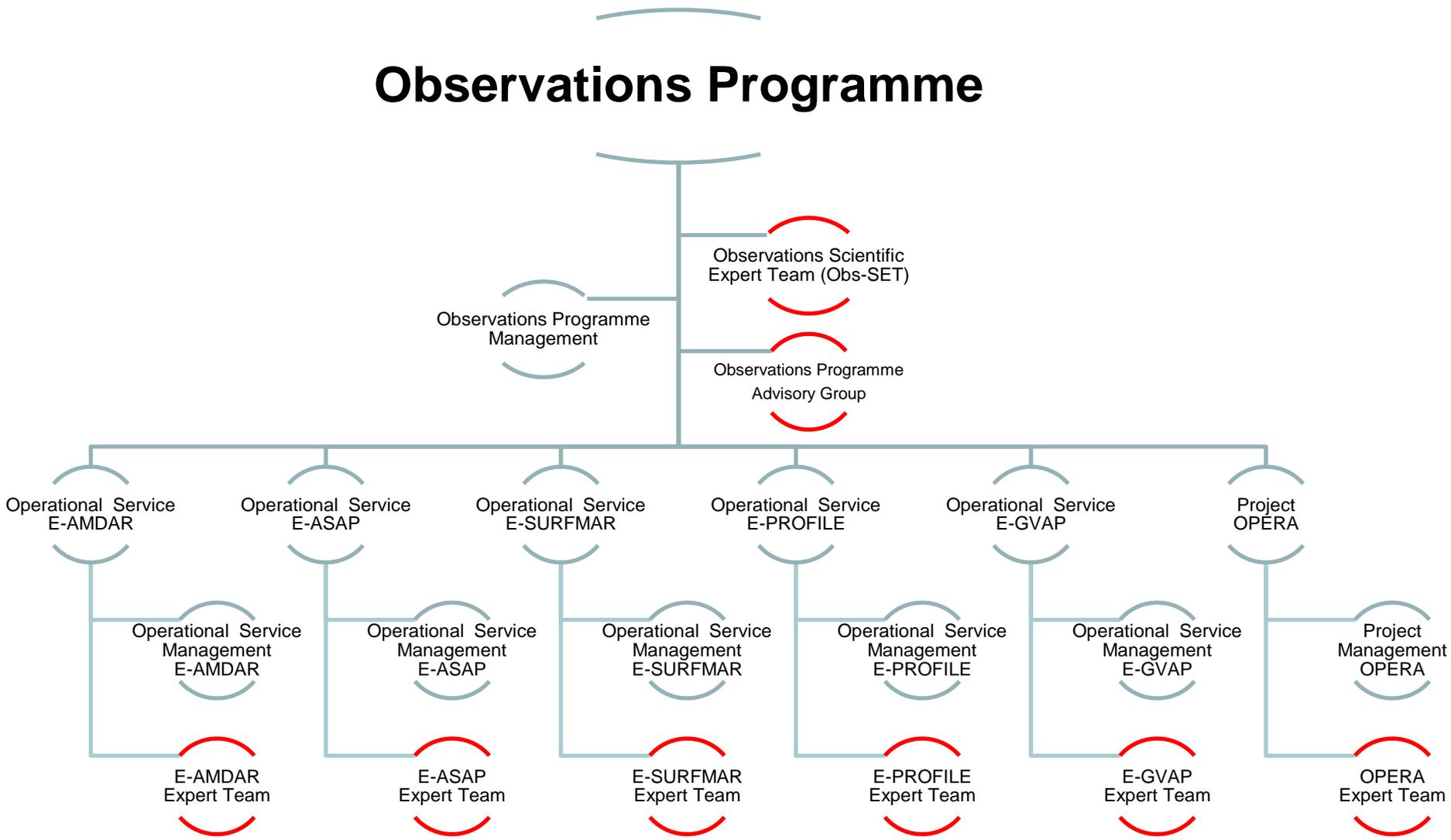
The Observation Roadmap developed in 2011 is expected to help achieving the Observations Goals:

O1. EUMETNET will develop an integrated composite observing system for Global, Regional and 1 km Scale Convection Resolving Models and for Climate, building on existing infrastructure.

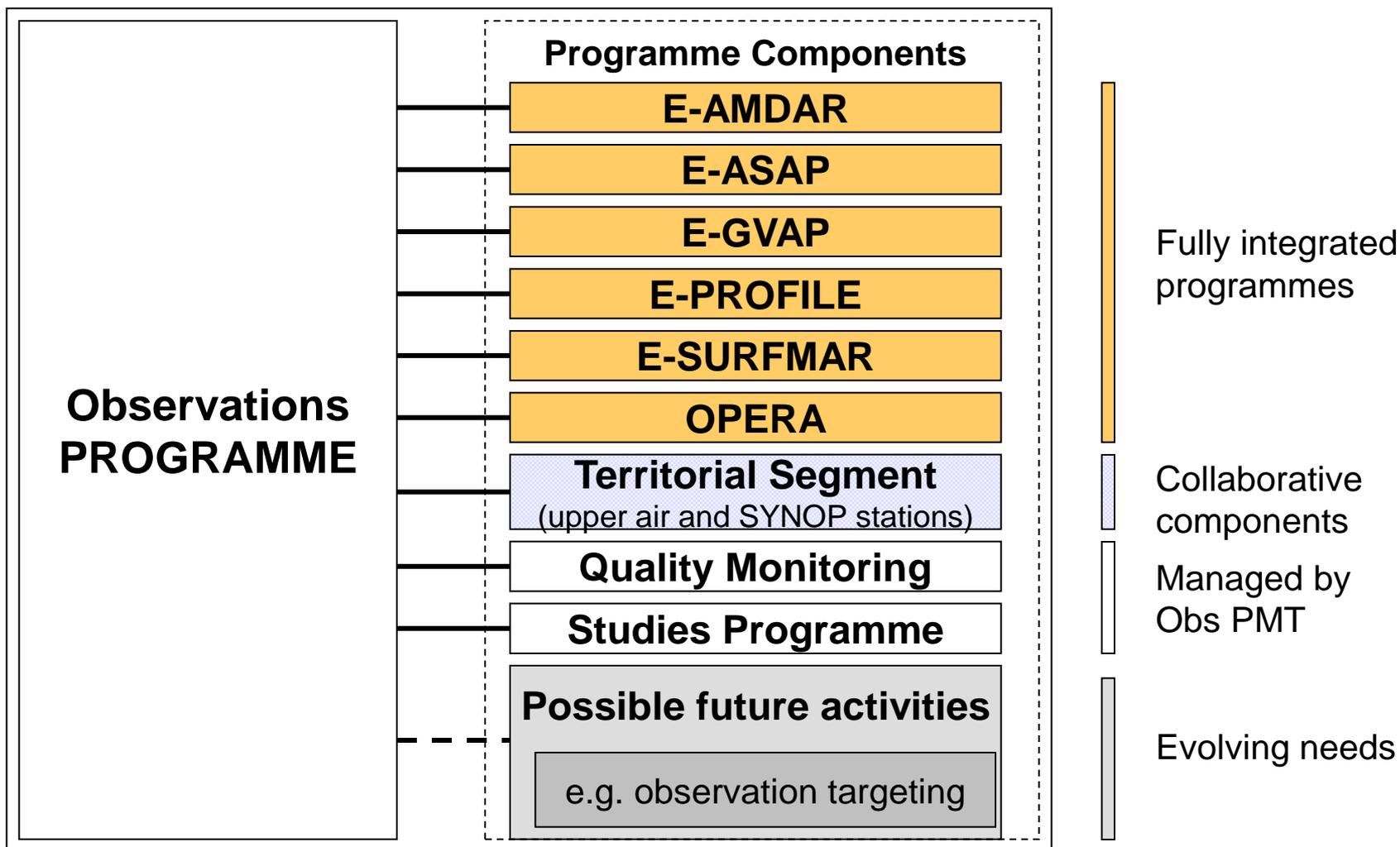
O2. EUMETNET will ensure that observational and climate data gathered by the composite observing system will be of appropriate quality to meet the requirements of NWP and climate by working with Members to share and implement best practice and methodologies within the system.

Observations Programme structure

Observations Programme



Observations Programme



Observations Programme Management

Tasks:

- Coordinating the evolution of the ground based EUCOS,
- Monitoring the EUCOS performance,
- Supporting Members' observation activities where possible and
- Organising a studies programme.

Observed Standardization Issues - concerning measurement procedures

Territorial segment: SYNOP stations

- Nothing to report.

Territorial segment: Radiosonde stations

- Nothing to report.

Observed Standardization Issues

- concerning measurement procedures

E-AMDAR

- Observed systematic differences in temperature biases (against model forecasts) depending on model of aircraft
- Differing calculation of turbulence parameters on different aircraft

Observed Standardization Issues

- concerning measurement procedures

E-ASAP

- Nothing to report.

E-GVAP

- Nothing to report at the moment.

Observed Standardization Issues

- concerning measurement procedures

E-PROFILE: Wind profiler

- **Heterogeneous hardware** and hardware settings, adapted to local conditions and national needs (vertical and temporal resolution, measurement cycle, ...)
- **Heterogeneous data processing and quality control** (bird and ground clutter, multipeak vs. single peak, ...)

E-PROFILE: Weather Radar Wind Profiles (WRWP)

- **Heterogeneous quality control algorithms** lead to very heterogeneous data quality (de-aliasing!)

Observed Standardization Issues

- concerning measurement procedures

E-PROFILE: ALC

- Large **differences in** cloud detection **algorithms** and the reporting of the backscatter profile, the latter can only be used qualitatively unless calibration is in place (ongoing effort)

Observed Standardization Issues

- concerning measurement procedures

OPERA

- Different clutter cancellation methods and thresholds
- Different metadata stored within data files
- Are measurement parameters defined per sweep or per volume?

Observed Standardization Issues

- concerning measurement procedures

E-SURFMAR

- Differing algorithms for the computation of marine meteorological variables (e.g. dew point temperature or relative humidity)

Observed Standardization Issues

- concerning coding/ formatting observation reports

Territorial segment: SYNOP stations

- Missing meta information in BUFR reports (not all descriptors used; e.g. missing barometer height or station height)
- Nonreporting of ,no-snow‘ (i.e. 0 cm)

Territorial segment: Radiosonde stations

- Horizontal and vertical coordinates of launch site (descriptor: 3 01 114) should serve as station reference. Therefore, values should be fixed and not taken from GNSS measurement of individual launches in order to avoid time-varying values.

Observed Standardization Issues

- concerning coding/ formatting observation reports

Territorial segment: Radiosonde stations

•Plausibility checks:

– During transition from TAC to TDCF for radiosondes it seems we stumbled over a differing treatment of dew-point spread limits in the two different reporting procedures – needs further investigations

– Recall: late discovery of Antarctic "ozone hole" because satellite measurements „were initially rejected as unreasonable by data quality control algorithms (they were filtered out as errors since the values were unexpectedly low)”

[Wikipedia article on Ozone depletion, accessed 11-26-2010]

Observed Standardization Issues

- concerning coding/ formatting observation reports

E-AMDAR

- Globally several different BUFR templates are in use for exchanging AMDAR data.
- Differing reporting of descriptor 0 01 006 aircraft flight number depending on the airline (reporting of the descriptor may cause problems when using old BUFR viewers referring to master tables 6 or older due to the change of descriptor definition since master table 7)
- Differing reporting of phase of flight = “UNSTEADY” depending on the airline

Observed Standardization Issues

- concerning coding/ formatting observation reports

E-ASAP

- Possibility for radiosonde operators of **typing in** the current position of ship into the sounding software has lead repeatedly to wrong position information so far. Solution: do not allow manual input – position information to be generated by GNSS

Observed Standardization Issues

- concerning coding/ formatting observation reports

E-GVAP

- Ground-based GNSS community somewhat concerned about rather low precision which is ,allowed'/ possible for parameters reported through BUFR. Particularly for:
 - Position
 - Temperature
 - Pressure
- Ground-based GNSS community expects benefits from using NetCDF or HDF5 instead of BUFR, or at least from introducing it as a WMO supported standard besides BUFR.

Observed Standardization Issues

- concerning coding/ formatting observation reports

E-PROFILE: Wind profilers

- More than 5 different BUFR implementations are used to exchange wind profiler data (proposal for official templates has been submitted under lead of E-PROFILE)
- Parallel existence of ,low mode‘ and ,high mode‘ profiles for the same time -> leads to the problem that users have to merge profiles
- WP and WRWP use different BUFR implementation

Observed Standardization Issues

- concerning coding/ formatting observation reports

E-PROFILE: Weather Radar Wind Profiles (WRWP) from
,weather radars‘

- Differing configuration of NIL-messages:
 - empty BUFR report holding only station meta data,
 - descriptor sequence = 0,
 - all descriptors set to missing value,
 - no NIL-message

E-PROFILE: ALC

- No standard yet for aerosol information from ALC (efforts ongoing withing E-PROFILE and TO-PROF)

Observed Standardization Issues

- concerning coding/ formatting observation reports

OPERA

- In EUMETNET OPERA policy is to accepting both HDF5 and BUFR incoming data. However, HDF5 is becoming a ,de facto standard' of newer systems.

Observed Standardization Issues

- concerning coding/ formatting observation reports

E-SURFMAR

- For surface marine observations BUFR messages are costly because of satellite transmission.

To limit communication costs, compressed data formats invented by E-SURFMAR for drifting buoys, conventional VOS and S-AWS.

E-SURFMAR data formats for drifting buoys are now globally used.

Whilst being the results of discussions within JCOMM task teams, they are not WMO standards. To prevent multiplication of data formats, they should become WMO standards.

Expectations

1. Relevant bodies (e.g. WMO and its different bodies) agreeing on common standards where such regulations are still missing (e.g. for many ground-based remote-sensing systems).

Expectations

2. Defined ,monitoring centres‘

- To monitor and analyse NMHSs‘ compliance to the defined common standards and
- To notify NMHSs about any deviations from standards and
- To ask for resolving any such issues

Question: Do we need ,monitoring centres‘ or other entities which can provide technical (instrument or IT related) advise to those NMHS having problems with their obs systems?

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