EUMETNET OBSERVATIONS ROADMAP

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on behalf of C-SRNWP

BACKGROUND: OBSERVATIONAL STRATEGY AND SRNWP

- Programme Board on Observations (PB-OBS) and the EUMETNET Task Team on observational strategy invited the SRNWP community to present the observation requirements of NWP (for the next 10 years)

- The „answer" was coordinated through the Consortia leaders and the chairpersons of the data assimilation and verification Expert Teams

- Presentations at the PB-OBS meeting (end of March) and a short summary document was prepared afterwards (hereafter the items of this paper will be listed)

NWP OBSERVATION REQUIREMENTS (1)

- The former EUCOS requirements for land surface station's density with **minimum 250 km** grid spacing is now outdated and should be increased to **at least to 100 km** resolution (at the end of the strategic planning period **25 km** resolution might be envisaged).

- The NWP community strongly supports such observation road-map of EUMETNET, where the **km-scale NWP requirements** would be met.

- For the mesoscale numerical weather prediction it is important to have a **precise description of the planetary boundary layer** (not only horizontally, but also vertically).

NWP OBSERVATION REQUIREMENTS (2)

- The **most important variable for mesoscale modelling is humidity**, therefore the emphasis is proposed to be put on the extension and improvement of the humidity observations of the PBL. In a wider sense it means **all the hydrometeor information** including cloudiness and precipitation data. Beside humidity information **wind, temperature and surface pressure** observations are also important. Additionally the reliable description of the **surface and near-surface characteristics** (for instance soil moisture, snow, sea-ice, sea surface temperature, vegetation type and cover, other near-surface characteristics) is also of primary importance.

- **Radar information is more than important**, since it contains the essential additional information on precipitation and humidity (beside wind data). Additionally to the availability of the data, the **quality control** aspects should not be left aside (valid for any other observational type, but it is most crucial for the radar data).

NWP OBSERVATION REQUIREMENTS (3)

- It is foreseen that **humidity profiles from aircraft measurements** will be very important contribution to the proper description of the lower part of the atmosphere. Certainly, any other new types of observations would be welcome.

- Especially precise and detailed forecasts for the vicinity of airports (also in the context of SESAR) are important, which are relying also on the use of **high density observations** (including also “special” ones like fog, turbulence, cloud base height etc.) around the airports.

- For validation purposes the more optimal use (more regular exchange and availability) and **possible extension of the already available super-sites** in Europe would be welcome for the provision of surface and near-surface data for the testing of NWP parameterisation schemes.

NWP OBSERVATION REQUIREMENTS (4)

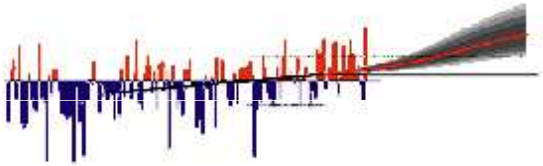
- **Data policy issues** should be clarified since significant amount of observational data exists, which are currently not available through GTS (Note: list of data not available in GTS for verification is to be compiled by the SRNWP-V programme until the end of 2010).

- For the km-scale modelling the issues of "**update frequency**" (at least 3-hourly, but in the optimal case hourly) and "**timeliness**" (less than an hour, optimally 15 minutes) will be of crucial importance (and the requirements will be much stronger than nowadays).

- NWP tools can significantly contribute to the design of the (European) observational network: "climatological" study of the **sensitive areas** in Europe from the point of view of model performance, Observing System Simulation Experiments (**OSSE**), where hypothetical observation's impact can be quantified and Observing System Experiments (**OSE**), where the impact of the denial of an existing set of observation can be quantified.

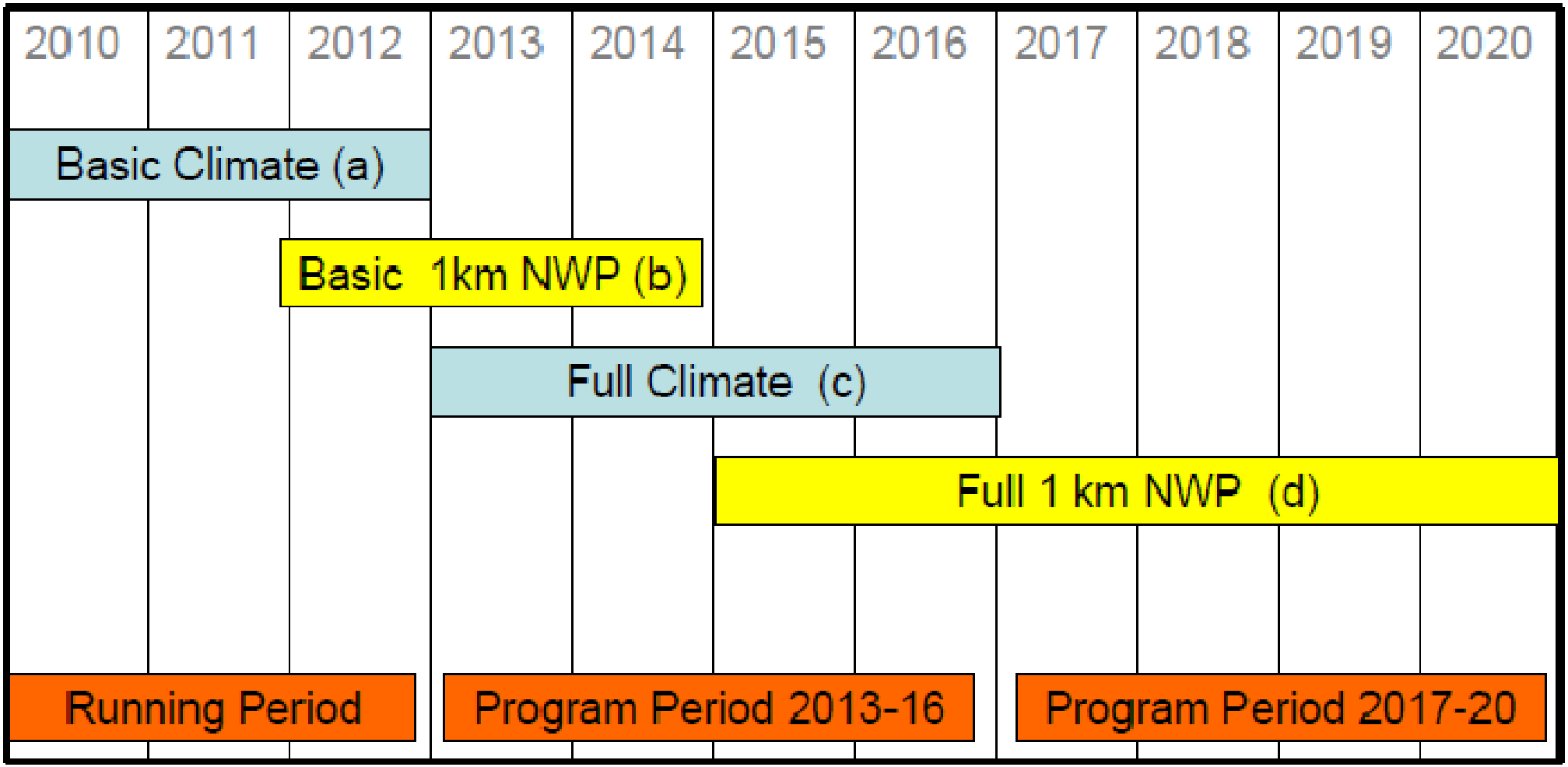
PRESENTATION OF THE USER REQUIREMENTS TO THE EUMETNET ASSEMBLY (BY PB-OBS CHAIR)

User's Observation Requirements



High resolution NWP (1 km scale) → data for a precise description of the PBL • more humidity profiles from aircraft	Climate Services → data for climate impact assessment and adaption to climate change • average station distance: 30-70 km (climat stations) 20-50 km (precipit. stat.)	Aviation → availability, timeliness and internal quality are essential → Methods, scientific and developments are equal for all FABs
• Access to all high-quality radar data • Station distance of 25 km in the long run • Data update frequency 1 hour	• preference for stations with long and homogenous data series • network for entire RAVI • data access partially in real time	•New requirements will emerge from the work being undertaken with SESAR

OBSERVATION ROADMAP (ACCEPTED BY THE EUMETNET ASSEMBLY)



ANTICIPATED NEXT STEPS

- The EUMETNET will develop an integrated (composite) Observing System to meet the requirements for both high resolution NWP and Climate

- The goals below these requirements will be specified until spring, 2011 (through interactions with the NWP community)

- We have to provide the details of our request within few months!