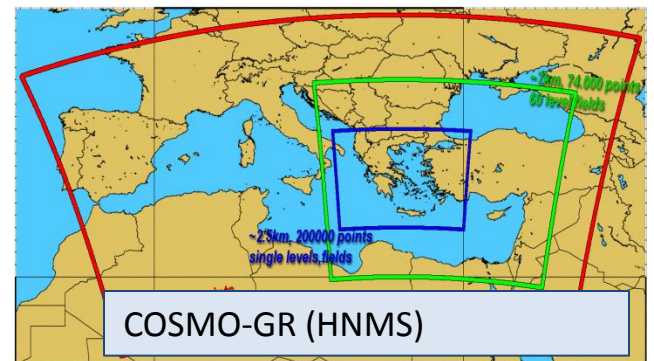
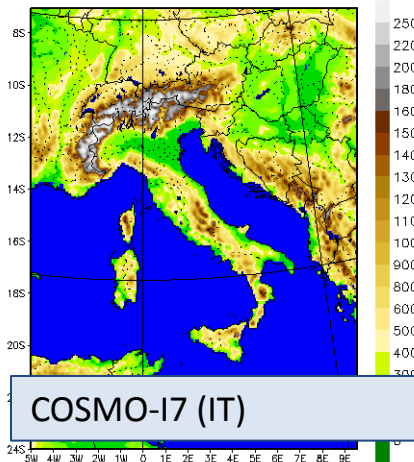
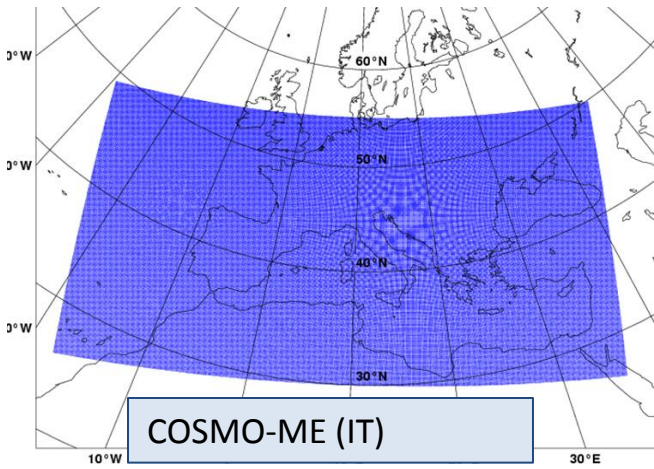
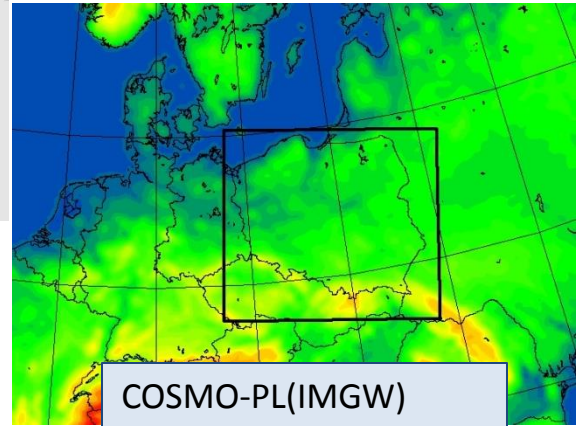
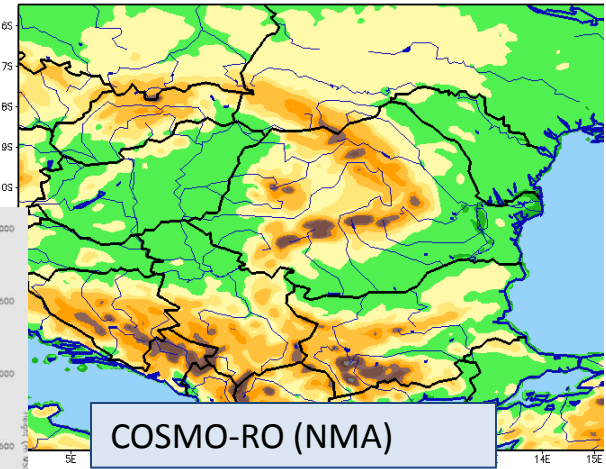
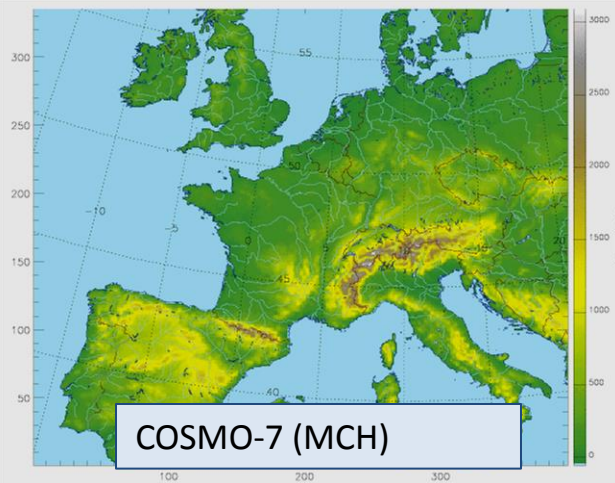
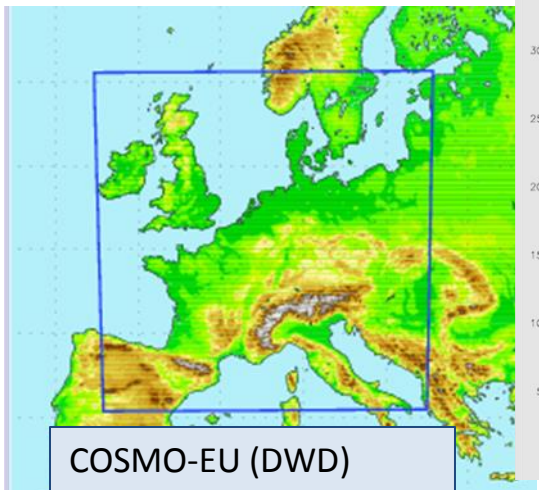


WG5

Item 3: Common Plot Reports

MGR

THE MODELS



Main Issues

- Choice of model resolution to be used (is still the 7km resolution the operational one in NMSs? Should we introduce a higher resolution model too in his activity? (national plans, IFS resolution to be decreased further)
- Long Trend of basics errors of parameters over the whole domain or defined experiments on an annual basis
- Only the 00UTC run is verified in all cases
- How we communicate feedback from conditional verification tasks to the modellers

Secondary points

- Use of suspect value limits in ALL registered verifications for both domains.
- Homogeneous selection method of the point(s) to be used for the comparison with observations.
- Suggestion (by Dimitra) to add prevailing weather summary for each season (at least over common area?)
- Effort to eliminate delay in the preparation of the reports due to multi-naming of files (strictly use the naming definition given in the last table), errors in their format, not checked verification results prior to sending, delayed delivery (set dates), define clear procedure in the commenting/revision of reports
- Responsible member for the preparation of annual reports for 2014/2015 – Possibility to attribute FTEs (to be decided at the current STC meeting)



Common Verification Plots

Clear Goal Setting for each experiment on Various
or Common Domain

Common Verification Plots for Various Domains

Standard Verification

- Continuous parameters over stratified stations below and above 500m - T2m (3D method-height optimized), Td (3D method height optimized), Wspeed (3D method height optimized). Scores: ME, RMSE. Forecast Step: every 3 hours
- Continuous parameters over all stations – TCC (30km radius method). Scores: ME, RMSE. Forecast Step: every 3 hours
- Dichotomic parameters over all stations – Precipitation (15 km radius method). Scores: FBI, ETS. Cumulating: 6h and 24h
Thresholds: 0.2, 0.4, 0.6, 0.8, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20 mm/6h and mm/24h

- ✓ The stratification proved to be not adequate as sample size in most countries leading to doubtful results – Keep only the below 500m, keep all stations, new proposition?
- ✓ MSLP was not part of this year selection of parameters, can be added as LT trend?
- ✓ Only 6h and 24h precipitation used. Only PD are shown in reports.
- ✓ Add skill scores (RMSE, ETS) as part of these tests? (U. Damrath analysis for plenary)

Common Verification Plots for Various Domains

Conditional Verification

For 2013-14, some different conditions for the common plots were used over various domains.

- 2mT verification with the following criteria (one condition):
 - Soil water content ≥ 4 (condition based on **forecasts**)
 - Soil water content < 2 (condition based on **forecasts**)
- Wind Speed verification with the following criteria (one condition):
 - Roughness length < 0.2 m (condition based on **forecasts**)
 - Roughness length > 1 m (condition based on **forecasts**)

- ✓ **The soil content condition cannot be applied to all countries all seasons due to the limit values (JJA SWC >4 does not lead to significant sample everywhere)**
- ✓ **Need to report the sample size or percentage of cases in each category**
- ✓ **Easier to draw results when difference from unconditioned errors on parameters are plotted**
- ✓ **Are clear trends extracted from these conditions? Should we continue them?**

List of Conditional Verification tests as was proposed by Model Developers

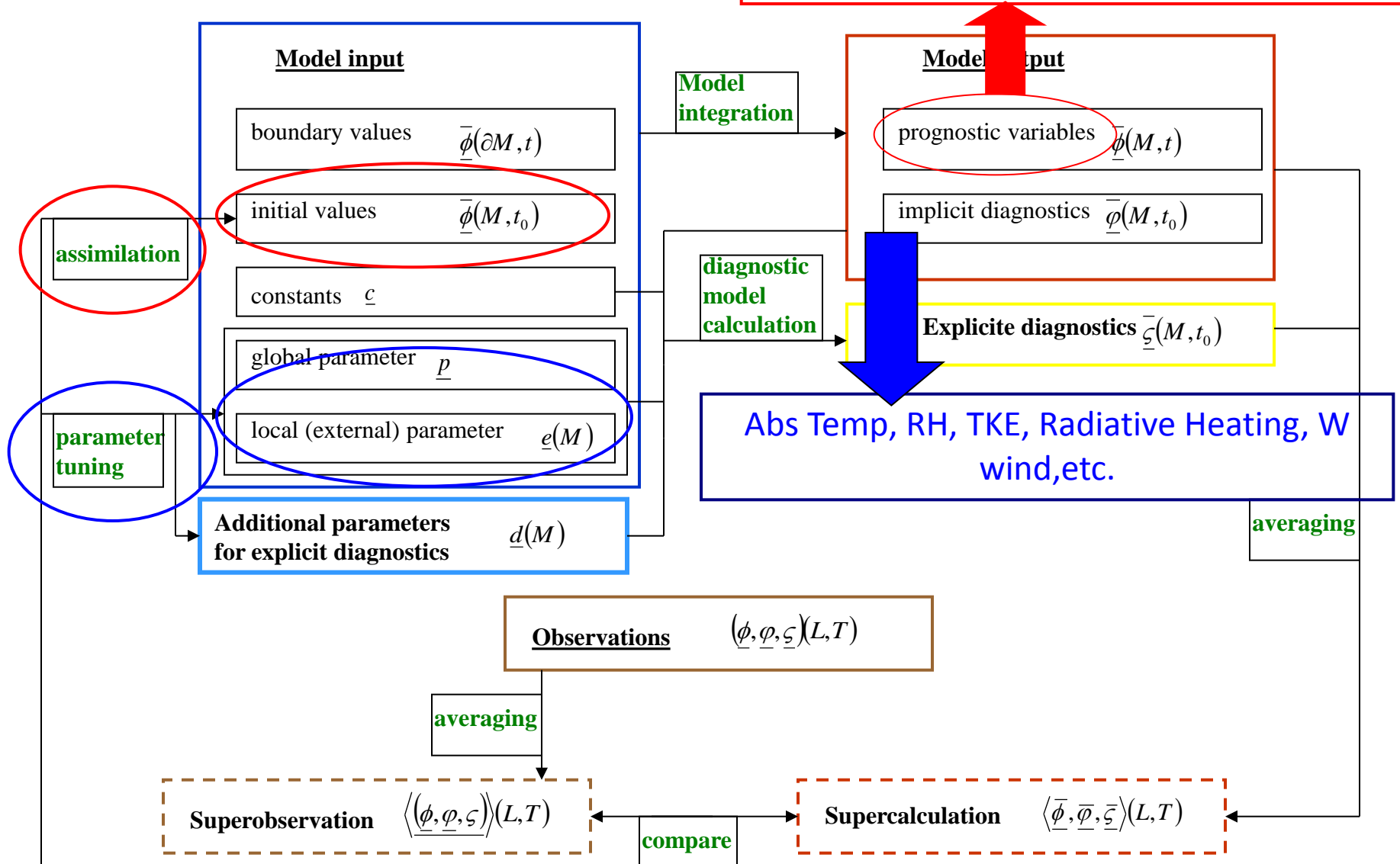
Conditions imposed both in fcst and obs space

2m Temperature	
1st condition: 2nd condition:	Total cloud cover $\geq 75\%$ (overcast condition) a. THICK using TQC (Total column cloud water) b. THIN using TQC - Reference value $TQC < 5 \text{ g/m}^2$
1st condition: 2nd condition:	Total cloud cover $\leq 25\%$ (clear sky condition) a. THICK using TQC - Reference value $TQC > 5 \text{ g/m}^2$ b. THIN using TQC - Reference value $TQC < 5 \text{ g/m}^2$
1st condition:	2m Temp for various thresholds 2mT with wind in selected stations 2mT with snow cover 2mT/Td with soil moisture
1st condition: 2nd condition:	Total cloud cover $\leq 25\%$ (overcast condition) Wind speed $\leq 2,5 \text{ m/s}$
Precipitation	
1st condition:	Convective precipitation (unstable atmosphere) Reference value of CAPE 50 J/Kg Precipitation for various weather classes Check pressure tendency availability
1st condition:	Large scale precipitation (LSP) using non convective CAPE values
Cloud cover with stability index	
Wind Speed	
WS with roughness length	
Wind gust	
1st condition:	Convective (unstable atmosphere) Wind gust for convective precipitation cases
1st condition:	non convective atmosphere, using non convective CAPE

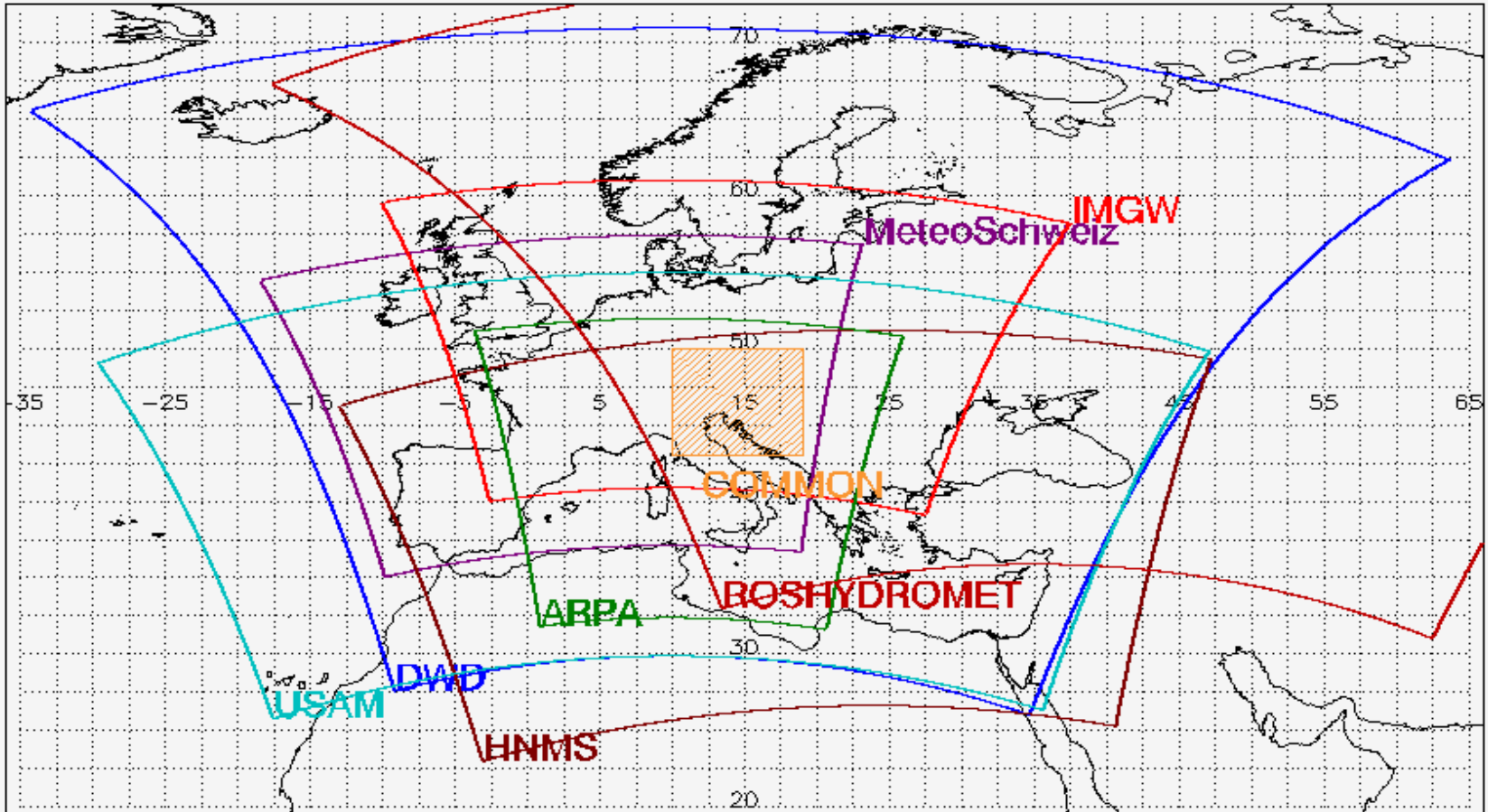
Focus on various parameters and sources of error

Dataflow COSMO

Potential Temp, Cloud Water Content, TKE, Humidity, U-V wind, etc.



Standard Verification on Common Area





Common Verification Plots for Common Domain

Standard Verification:

- Continuous parameters - T2m (3D method-height optimized), Mslp (3D method-height optimized), Td (3D method height optimized) Wspeed (3D method height optimized), TCC (30km radius method). Scores: ME, RMSE
- Dichotomic parameters – Precipitation (15 km radius method). The specifications of the verification are the same as in various domains.

Conditional Verification

- 2mT verification with the following criteria (one condition):
 - Total cloud cover $\geq 75\%$ (overcast condition) (condition based on **BOTH** obs and fcst)
 - Total cloud cover $\leq 25\%$ (clear sky condition) (condition based on **BOTH** obs and fcst)

- ✓ Condition with 2mT and TCC is well explored, even in both obs and fcs space
- ✓ Keep the same conditions in VD and CA?



Common Verification Plots for Common Domain Upper air Verification

Part of 2013-14 guidelines but not implemented as only data from COSMOGR, COSMOME were sent.

Feedback file implementation will be completed by the end of November 2014.
Availability of Feedback files?....

The parameters that will be tested are Temperature, Wind Speed and Relative Humidity and the method for the selection of point is the **nearest point**.

Pressure levels (1000,925,850,700,500,400,300,200,150,100hPa) .

SUMMARY OF EXAMPLE DATA SET FOR EACH SEASON

**Total 24 files
per season for a
complete set!**

Model	Domain	Param	Period	Level	Stratification	Condition	Filename
COSMOEU	Various Domain (e.g.Germany)	T2m	e.g.DJF	Surface	Below 500m	--	TEMP_DJF_COSMOEU_L500_C.txt
COSMOEU	Various Domain (e.g.Germany)	T2m	e.g.DJF	Surface	Above 500m	-	TEMP_DJF_COSMOEU_H500_C.txt
COSMOEU	Various Domain (e.g.Germany)	10m Wind Speed	e.g.DJF	Surface	Below 500m	-	WS_DJF_COSMOEU_L500_C.txt
COSMOEU	Various Domain (e.g.Germany)	T2m	e.g.DJF	Surface	Above 500m	-	WS_DJF_COSMOEU_H500_C.txt
COSMOEU	Various Domain (e.g.Germany)	DewT	e.g.DJF	Surface	Below 500m	--	TD_DJF_COSMOEU_L500_C.txt
COSMOEU	Various Domain (e.g.Germany)	DewT	e.g.DJF	Surface	Above 500m	-	TD_DJF_COSMOEU_H500_C.txt
COSMOEU	Various Domain (e.g.Germany)	TCC	e.g.DJF	Surface	ALL	--	TD_DJF_COSMOEU_ALL_C.txt
COSMOEU	Various Domain (e.g.Germany)	Preci 6h	e.g.DJF	Surface	ALL	--	PREC06_DJF_COSMOEU_ALL_D.txt
COSMOEU	Various Domain (e.g.Germany)	Preci 24h	e.g.DJF	Surface	ALL	--	PREC24_DJF_COSMOEU_ALL_D.txt
COSMOEU	Various Domain (e.g.Germany)	T2m	e.g.DJF	Surface	ALL	Soil water content ≥ 4	TEMPSM4_DJF_COSMOEU_ALL_C.txt
COSMOEU	Various Domain (e.g.Germany)	T2m	e.g.DJF	Surface	ALL	Soil water content < 2	TEMPSM2_DJF_COSMOEU_ALL_C.txt
COSMOEU	Various Domain (e.g.Germany)	10m Wind Speed	e.g.DJF	Surface	ALL	Roughness length < 0.2	WSRLD_DJF_COSMOEU_ALL_C.txt
COSMOEU	Various Domain (e.g.Germany)	10m Wind Speed	e.g.DJF	Surface	ALL	Roughness length > 1	WSRLH_DJF_COSMOEU_ALL_C.txt
COSMOEU	Common Area	T2m	e.g.DJF	Surface	ALL	--	CA_TEMP_DJF_COSMOEU_ALL_C.txt
COSMOEU	Common Area	10m WdSp	e.g.DJF	Surface	ALL	--	CA_WS_DJF_COSMOEU_ALL_C.txt
COSMOEU	Common Area	DewT	e.g.DJF	Surface	ALL	--	CA_TD_DJF_COSMOEU_ALL_C.txt
COSMOEU	Common Area	MSLP	e.g.DJF	Surface	ALL	--	CA_MSLP_DJF_COSMOEU_ALL_C.txt
COSMOEU	Common Area	Preci 06h	e.g.DJF	Surface	ALL	--	CA_PREC06_DJF_COSMOEU_ALL_C.txt
COSMOEU	Common Area	Preci 24h	e.g.DJF	Surface	ALL	--	CA_PREC24_DJF_COSMOEU_ALL_C.txt
COSMOEU	Common Area	T2m	e.g.DJF	Surface	ALL	TCC ≥ 75	CA_TEMPCC75_DJF_COSMOEU_ALL_C.txt
COSMOEU	Common Area	T2m	e.g.DJF	Surface	ALL	TCC ≤ 25	CA_TEMPCC25_DJF_COSMOEU_ALL_C.txt
COSMOEU	Common Area	Temperature	e.g.DJF	UpperAir	ALL	-	CA_UP_TEMP_DJF_COSMOEU_ALL_C.txt
COSMOEU	Common Area	WindSp	e.g.DJF	UpperAir	ALL	-	CA_UP_WS_DJF_COSMOEU_ALL_C.txt
COSMOEU	Common Area	Rel.Humid.	e.g.DJF	UpperAir	ALL	-	CA_UP_RH_DJF_COSMOEU_ALL_C.txt



Future Common Plot Report Additions

EPS verification (LEPS with using ECMWF VERSUS system)
over various countries

Comparisons with driving models (IFS, GME) for same
specifications

Comparisons with other consortia model implementations
(SRNWP intercomparison project)