# Verification of the diurnal cycle for surface weather elements of aLMo-forecasts over Switzerland, LAMI-forecast over Italy and LM-forecasts over Germany

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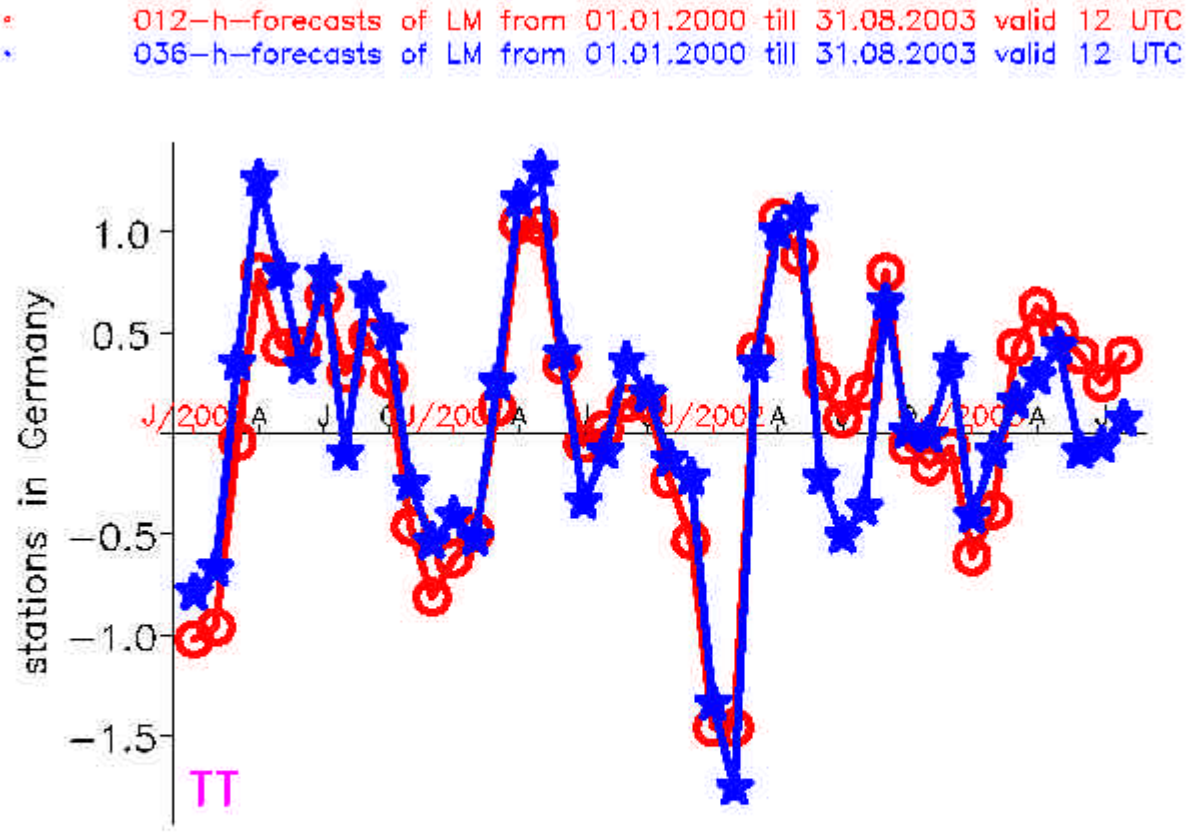
**Francis Schubiger – MeteoSwiss**

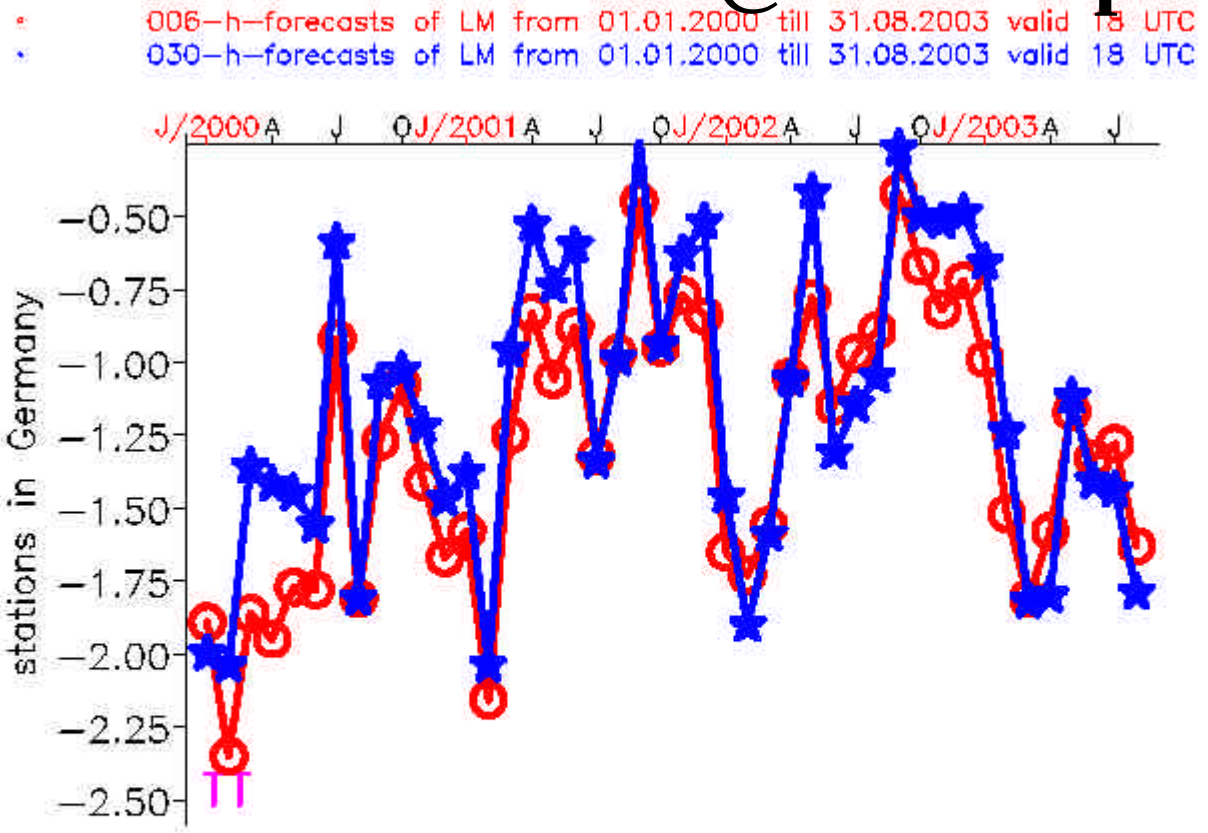
**Patrizio Emiliani - CNMCA**

# Typical result for verification of LM-forecasts @ DWD up to now




Results of verification of forecasts for local weather elements at surface stations
frequency bias for cloud covers (–: 0–2/8, – –: 7–8/8), gusts
and precipitation T–6 till T, mean error for other elements

# Typical result for verification of LM-forecasts @ DWD up to now




Results of verification of forecasts for local weather elements at surface stations
frequency bias for cloud covers (—: 0–2/8, – –: 7–8/8), gusts
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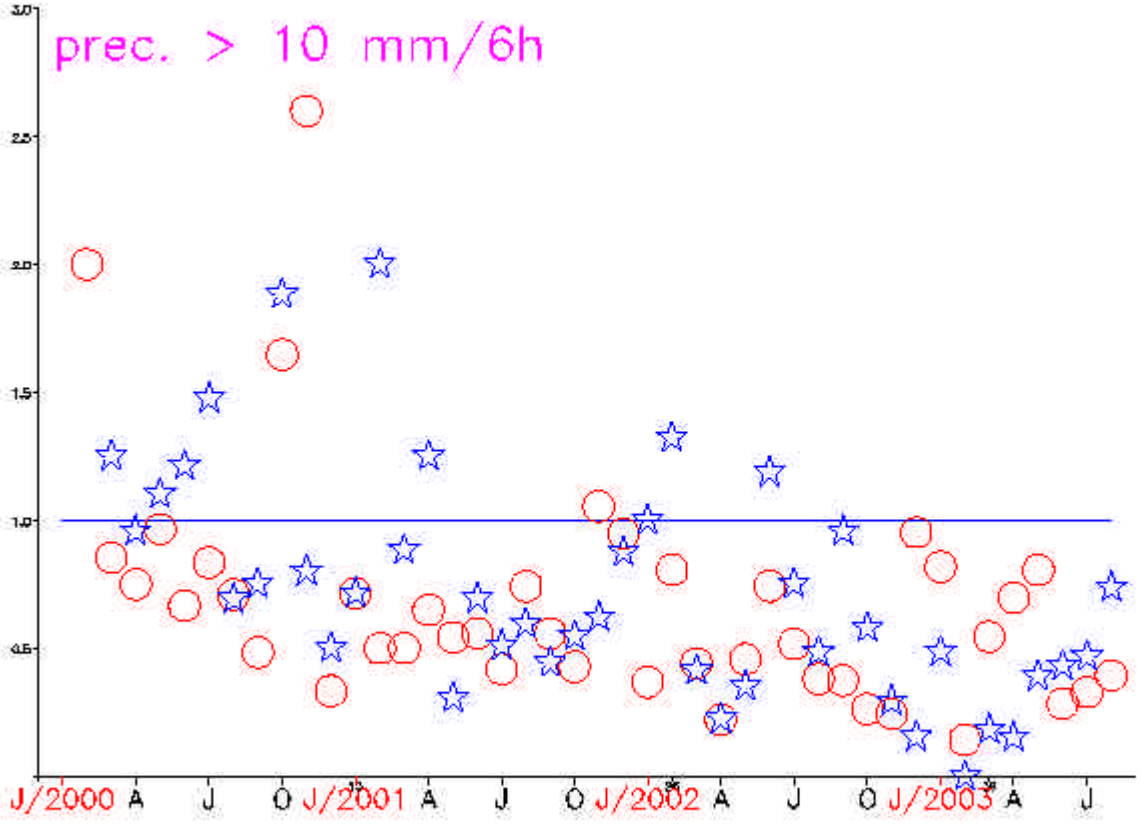
# Typical result for verification of LM-forecasts @ DWD up to now

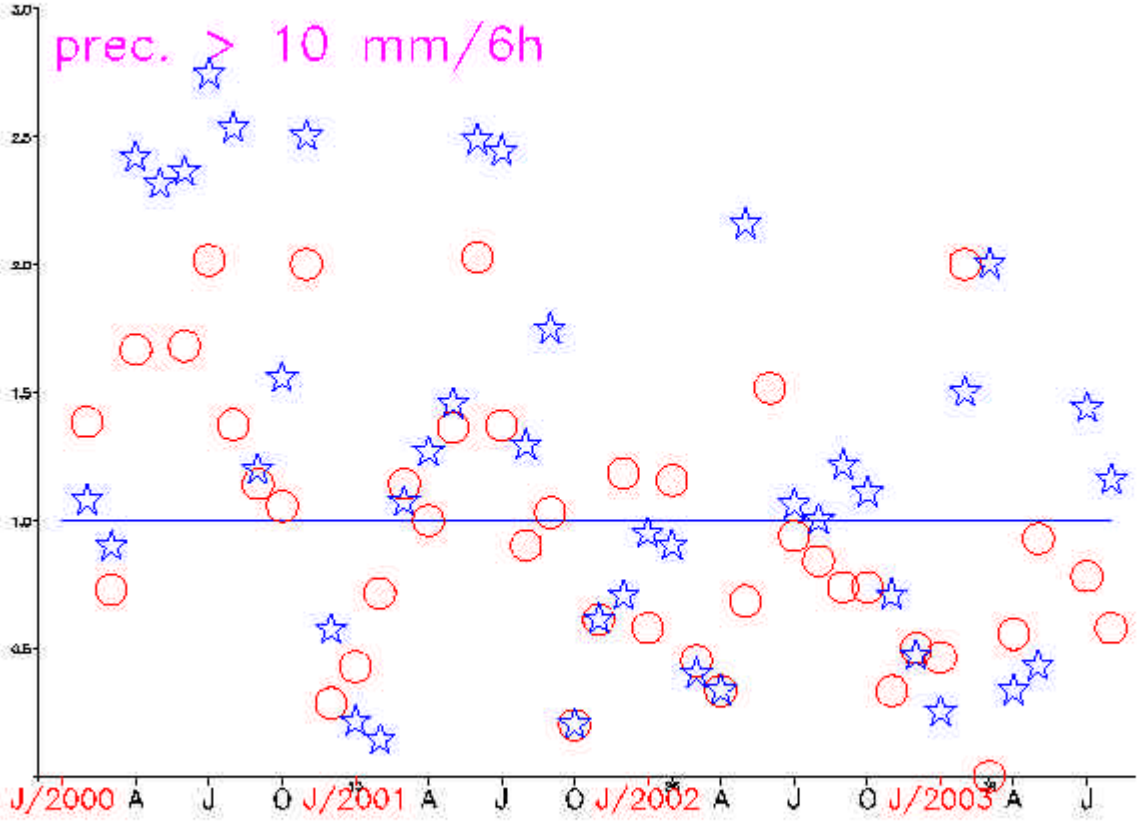
006–h–forecasts of LM from 01.01.2000 till 31.08.2003 valid 18 UTC
030–h–forecasts of LM from 01.01.2000 till 31.08.2003 valid 18 UTC




Results of verification of forecasts for local weather elements at surface stations
frequency bias for cloud cover (–; 0–2/8, – –; 7–8/8),
and precipitation T–6 till T, mean error for other elements

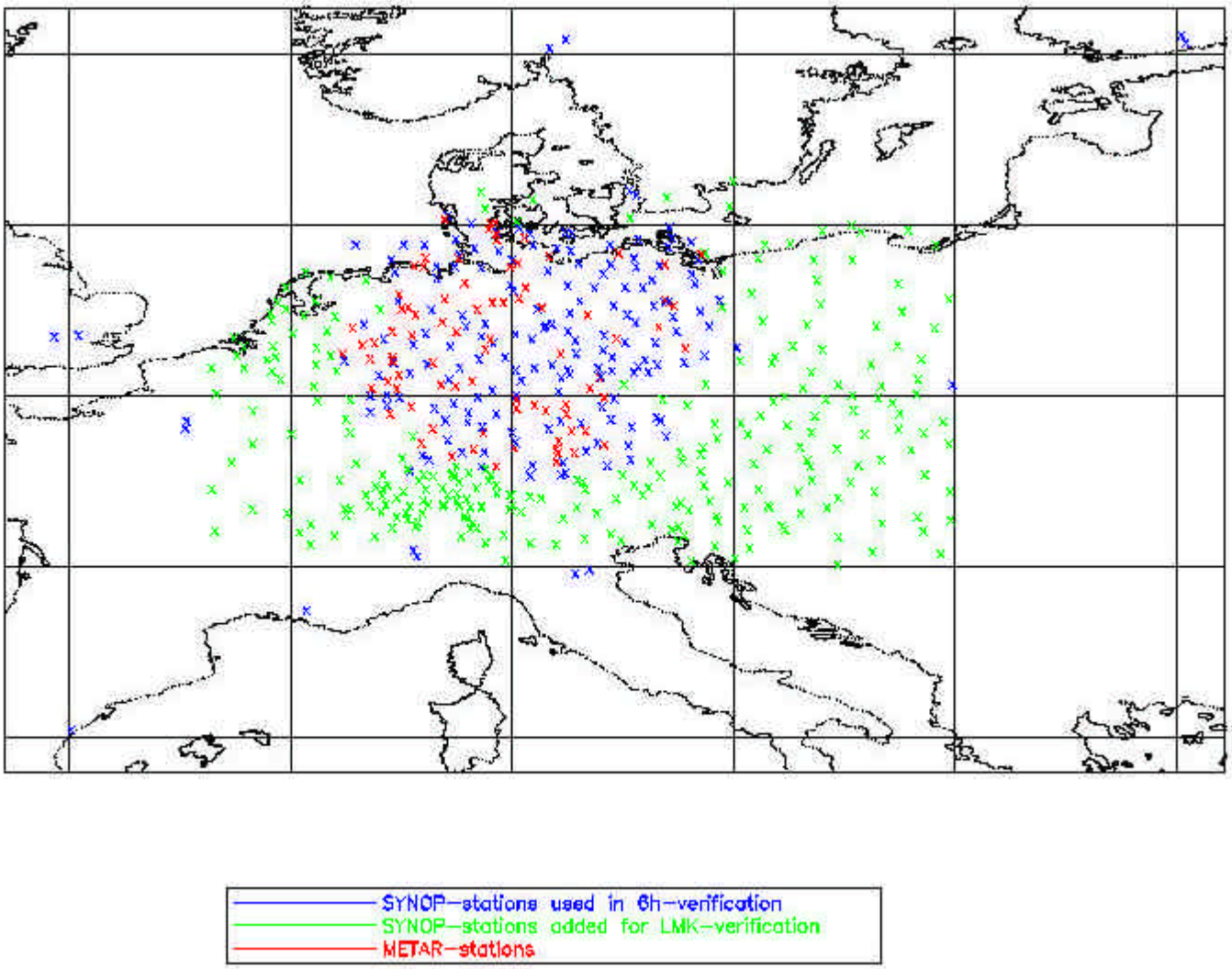
# Typical result for verification of LM-forecasts @ DWD up to now

- 012–h–forecasts of LM from 01.01.2000 till 31.08.2003 valid 12 UTC
- 036–h–forecasts of LM from 01.01.2000 till 31.08.2003 valid 12 UTC



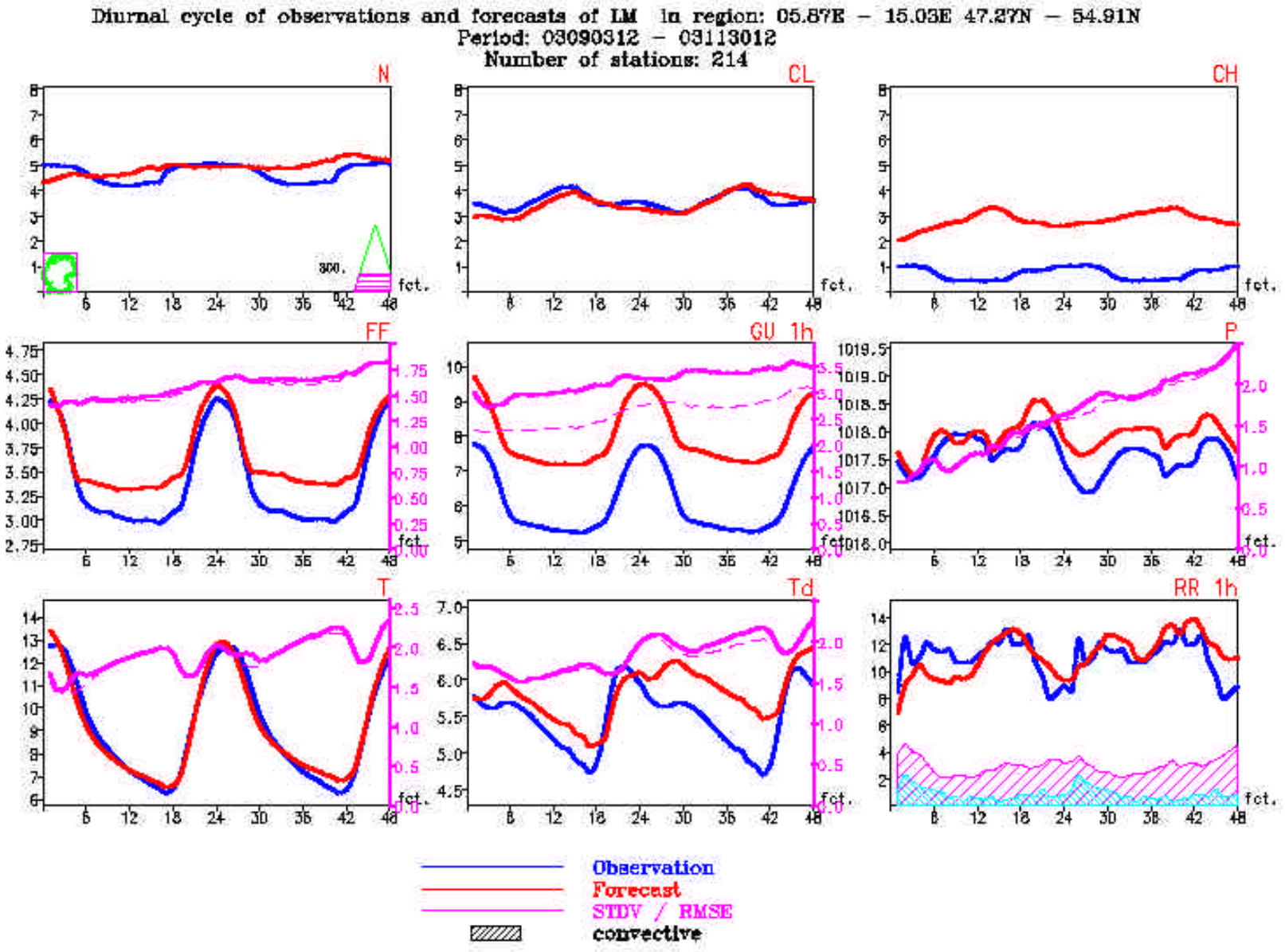

Results of verification of forecasts for local weather elements at surface stations
frequency bias for cloud cover (–; 0–2/8, – –; 7–8/8),
and precipitation T–6 till T, mean error for other elements

# Distribution of stations in SYNOP-network for LM verification

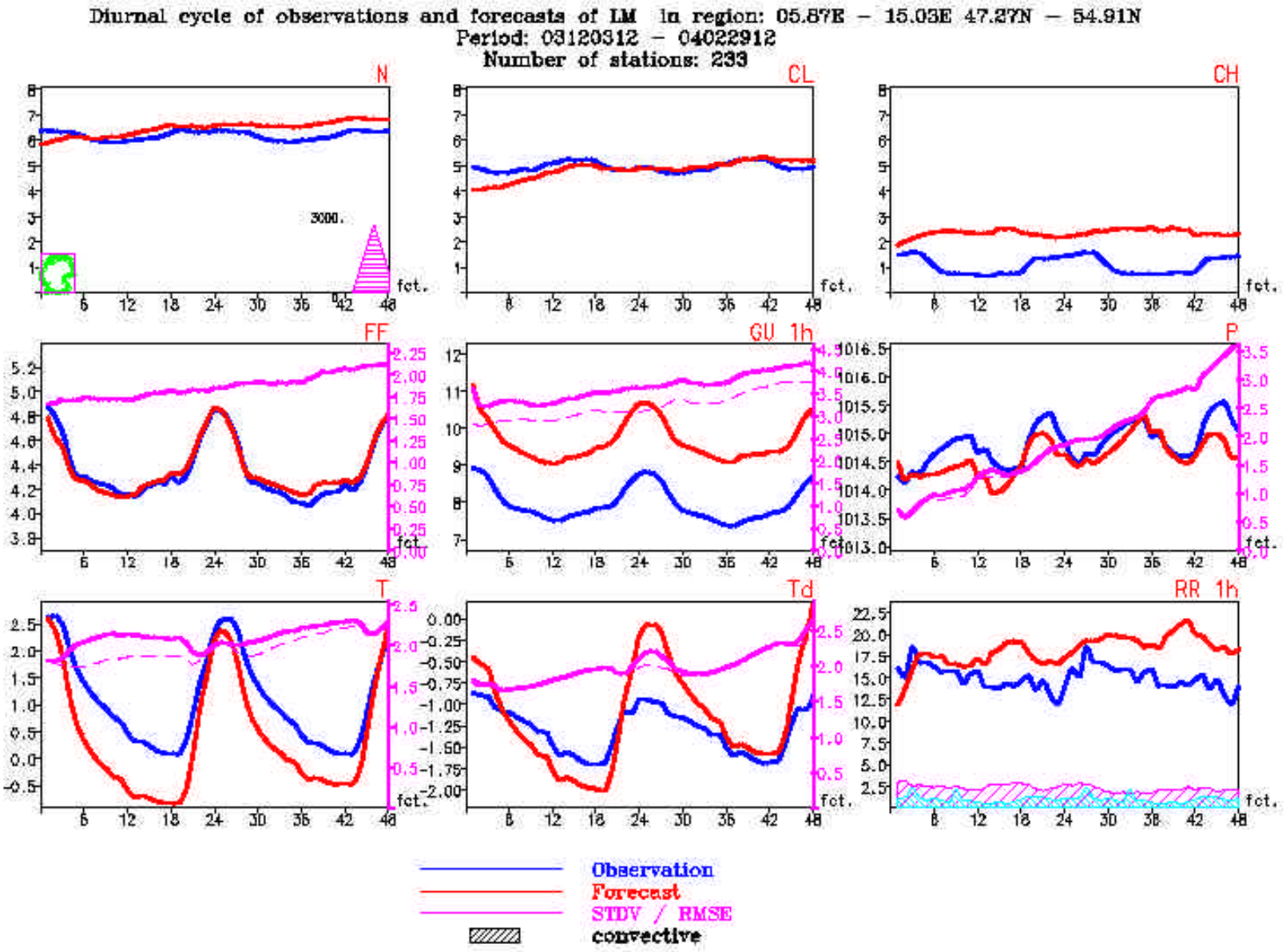



resolution in time 1-3h

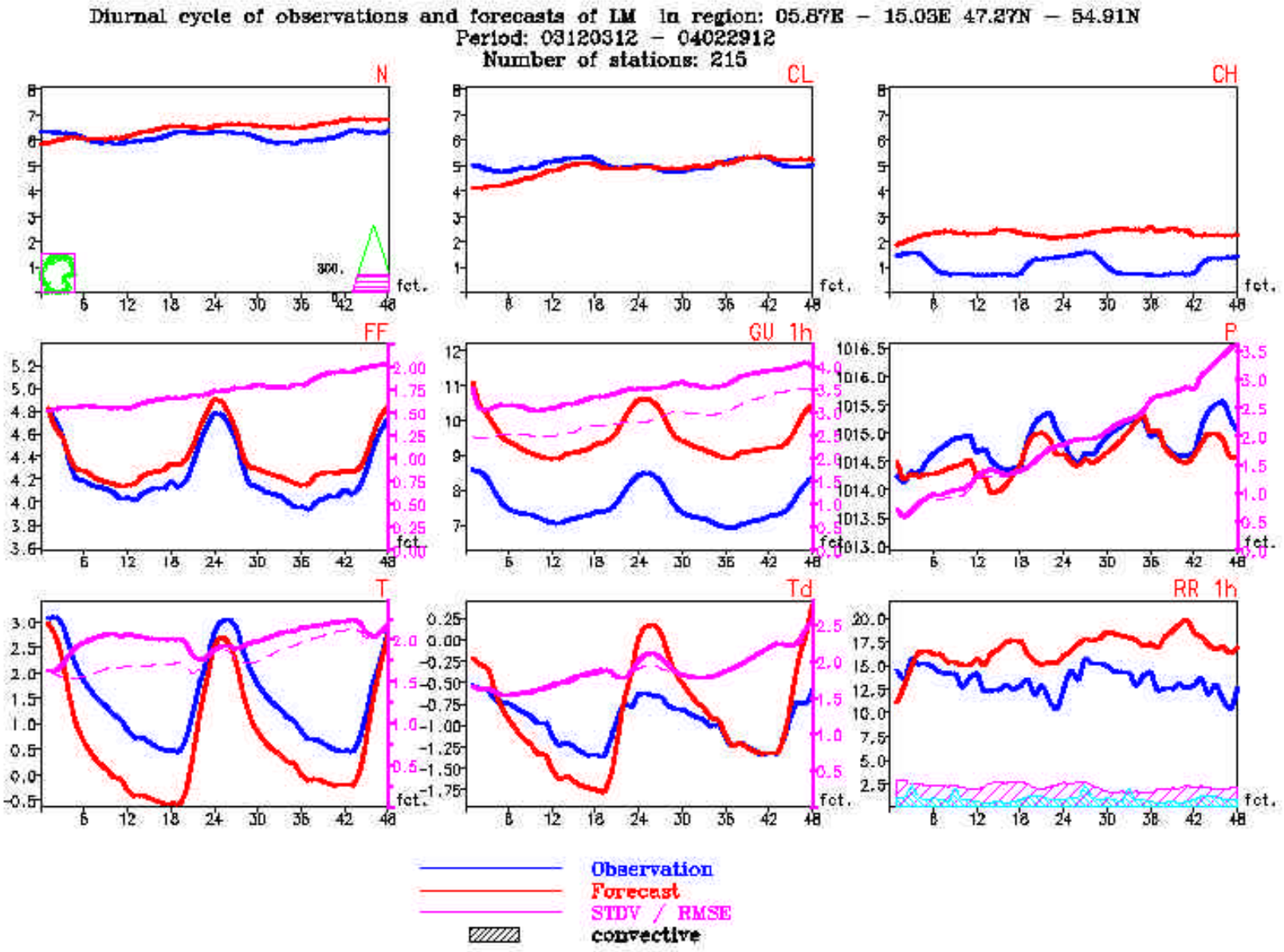
# Autumn 2003, start hour 12 UTC, stations 0. - 800 m



# Winter 2003-2004, start hour 12 UTC, stations 0. - 3000 m



# Winter 2003-2004, start hour 12 UTC, stations 0. - 800 m

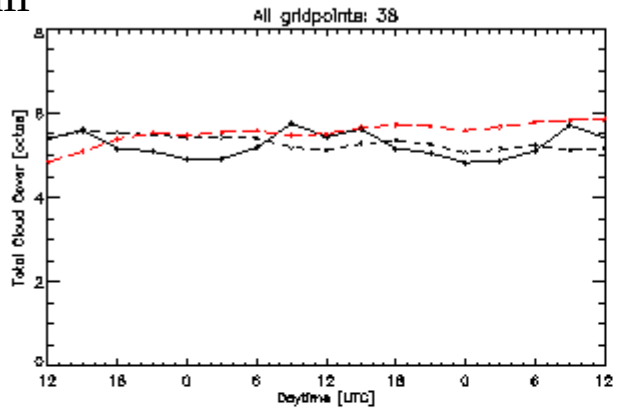


# Winter 2003-2004, start hour 12 UTC, aLMo + LM: N

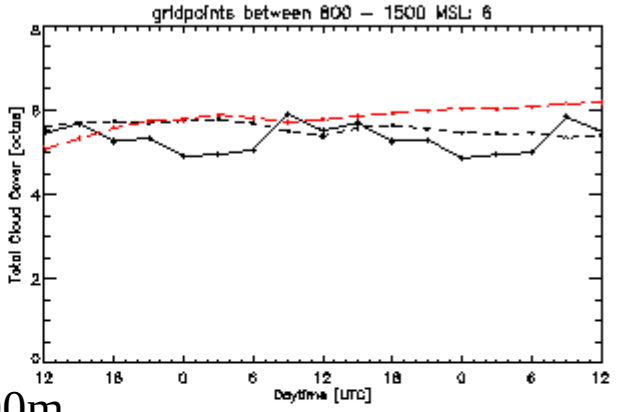
al Cloud Cover 12UTC Winter 2003/2004 missing forecasts: 1

Total Cloud Cover 12UTC Winter 2003/2004 missing forecasts:

all




800 – 1500 m

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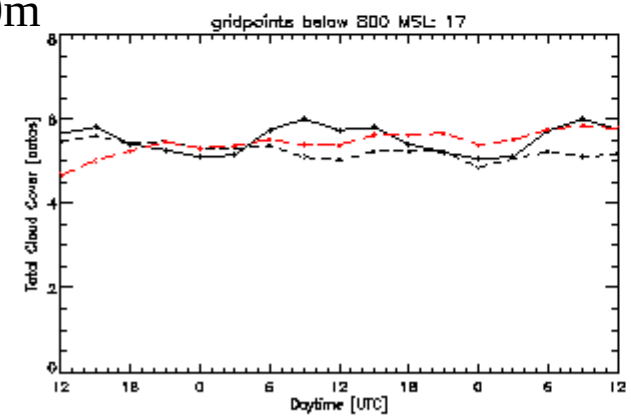
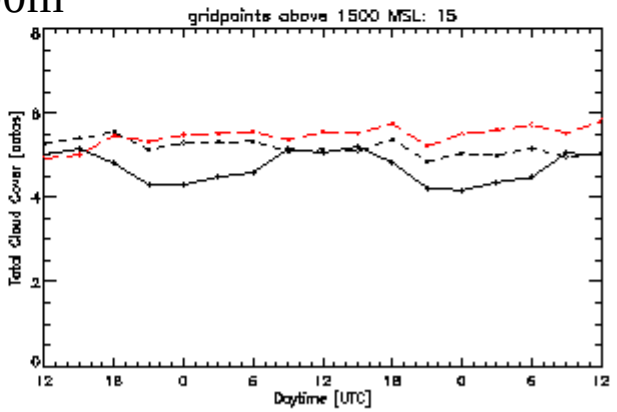


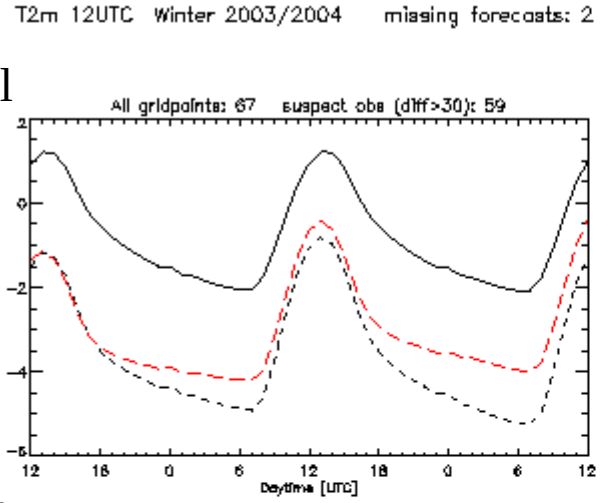

> 1500m



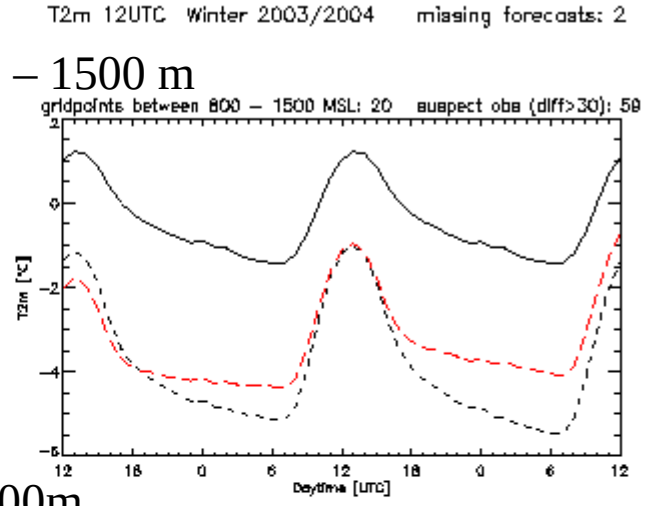

**full line: obs (ANETZ)** ***dashed black: aLMo*** ***dashed red: LM***

# Winter 2003-2004, start hour 12 UTC, aLMo + LM: T2m

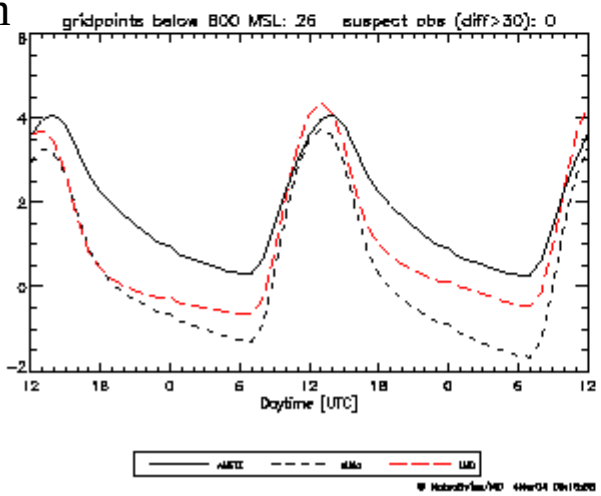
all



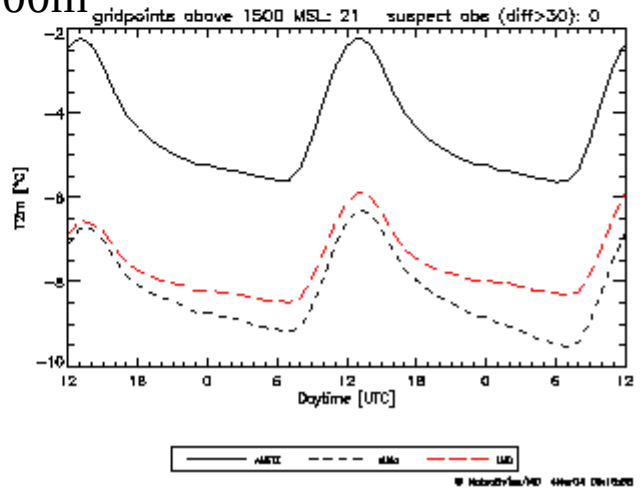

800 – 1500 m




< 800m



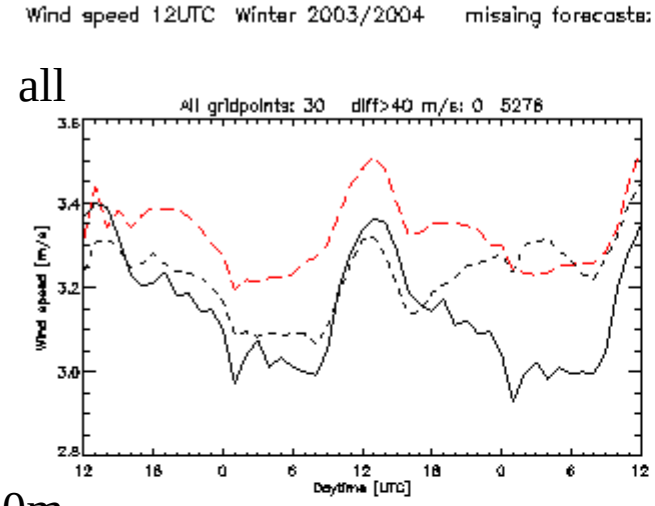

> 1500m



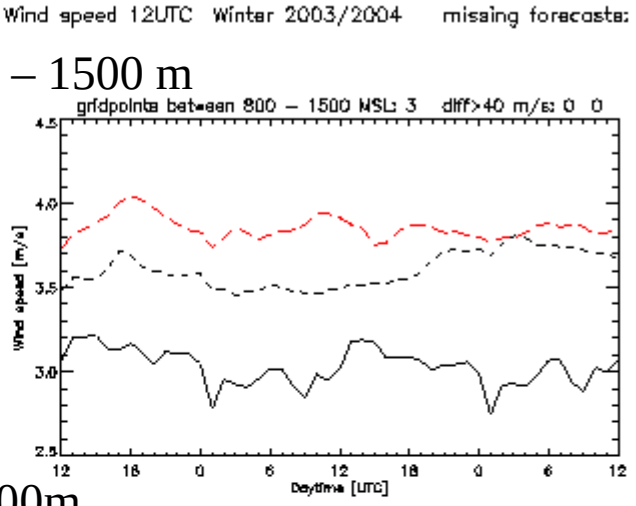

**full line: obs (ANETZ)** ***dashed black: aLMo*** ***dashed red: LM***

# Winter 2003-2004, start hour 12 UTC, aLMo + LM: FF

all




800 – 1500 m

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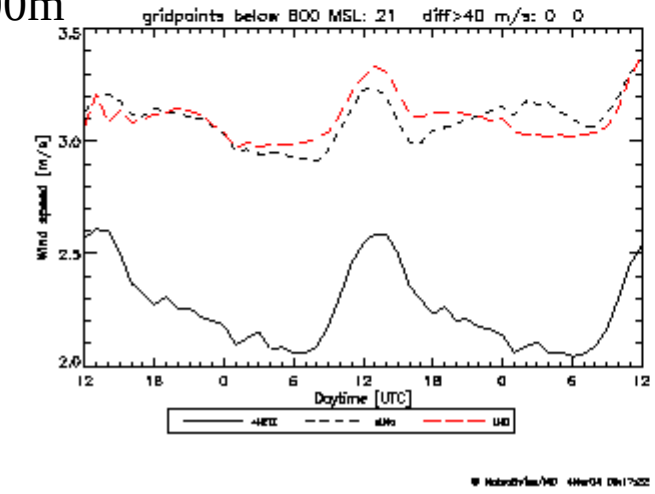
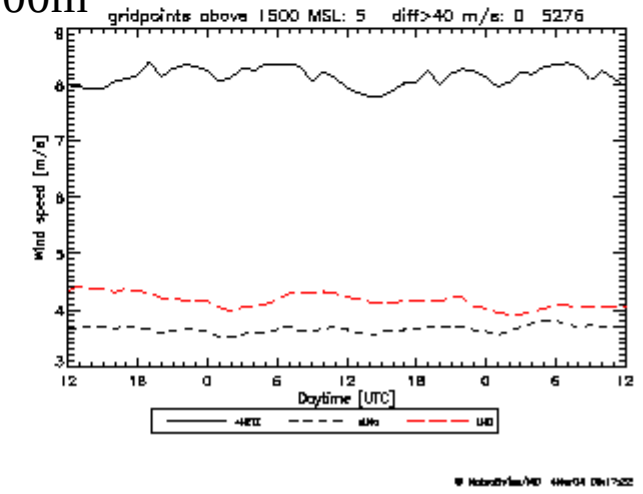
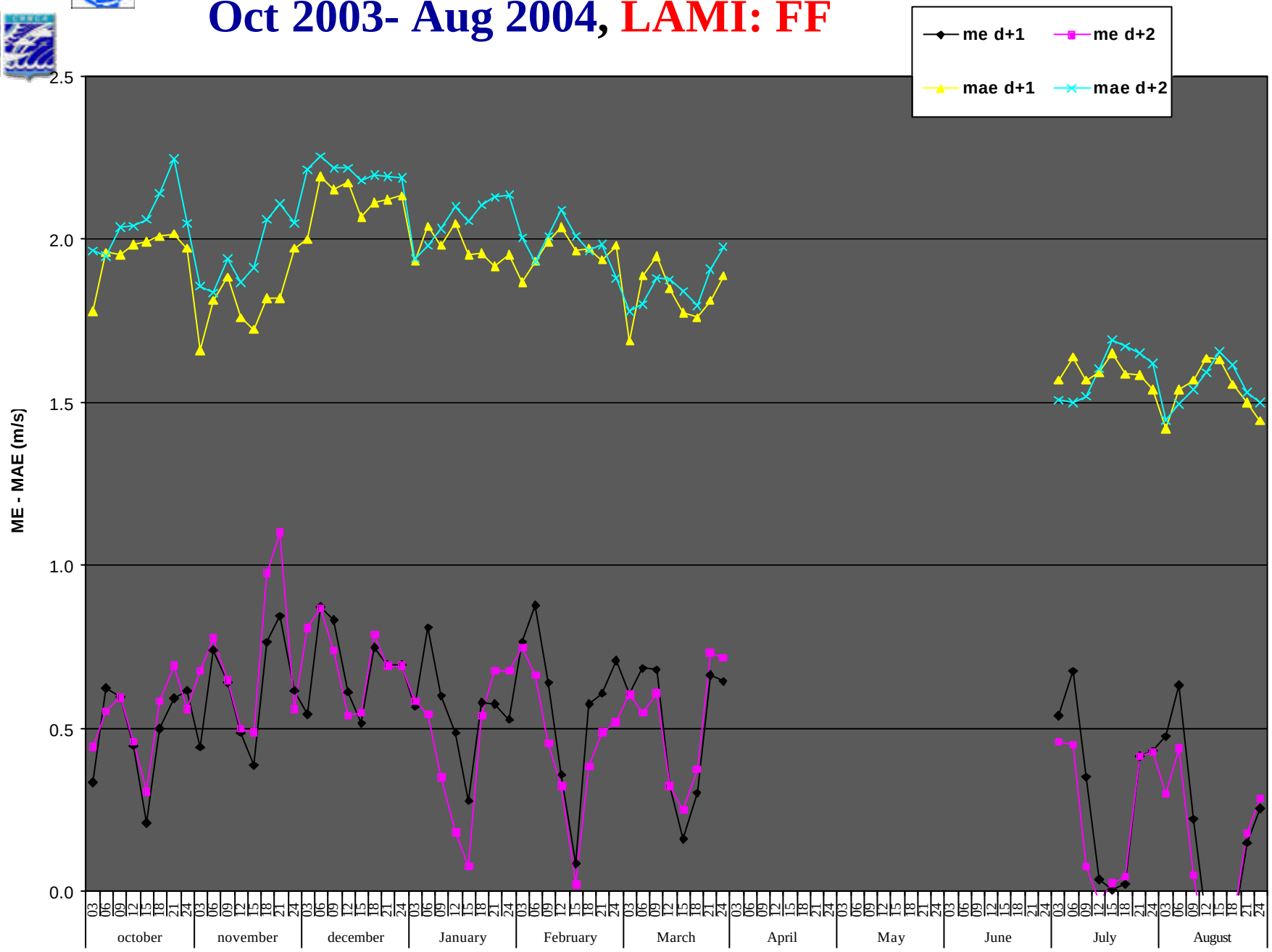



> 1500m



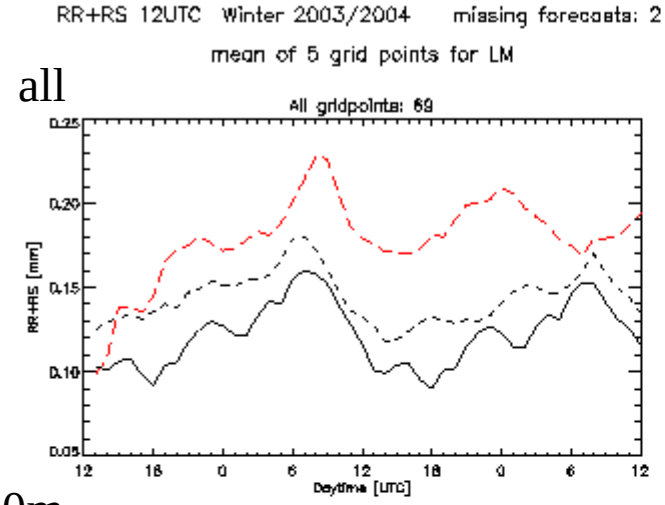

**full line: obs (ANETZ)** ***dashed black: aLMo*** ***dashed red: LM***

# Oct 2003- Aug 2004, LAMI: FF

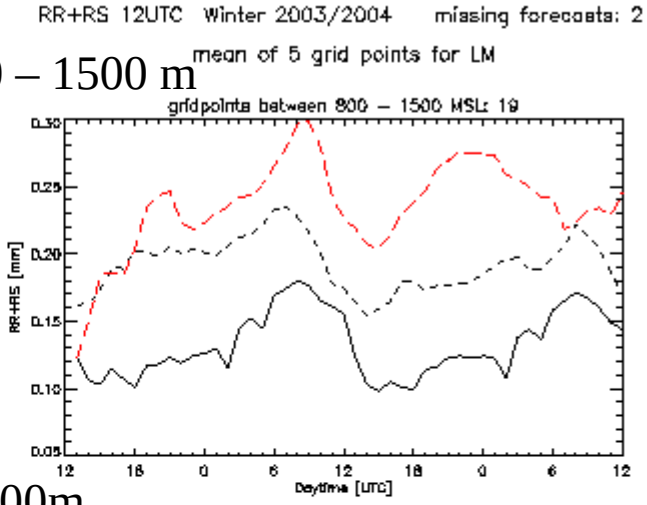


# Winter 2003-2004, start hour 12 UTC, aLMo + LM: RR

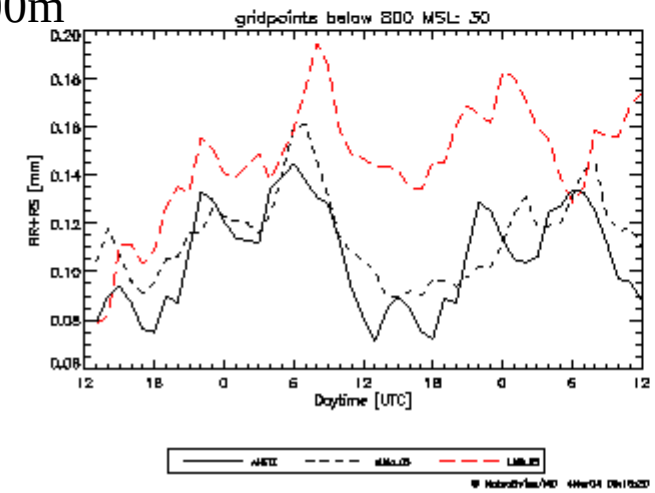
all



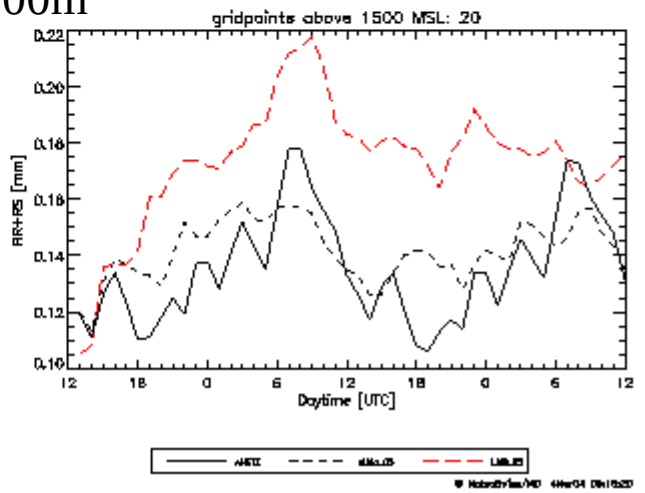

800 – 1500 m




< 800m

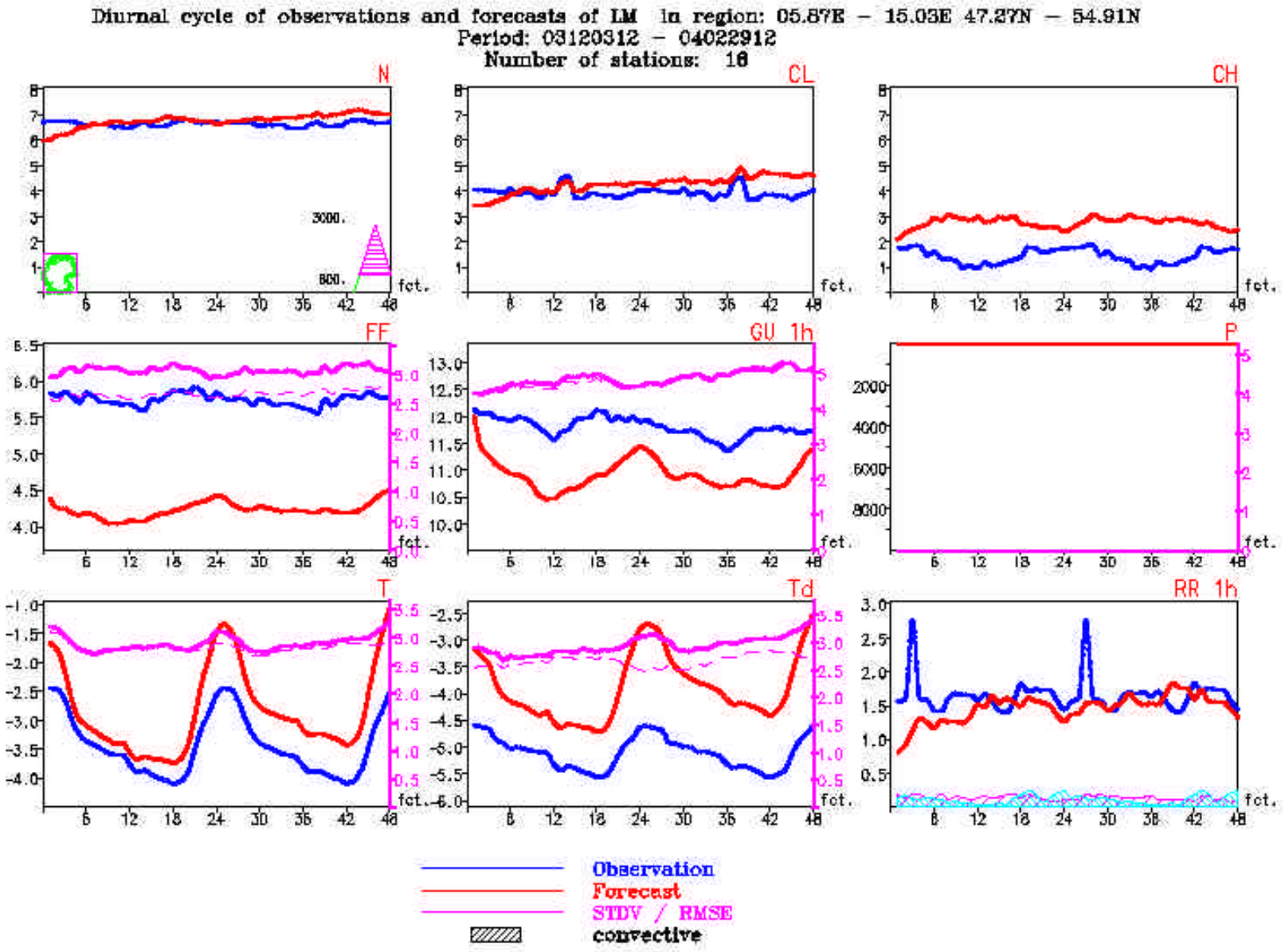



> 1500m

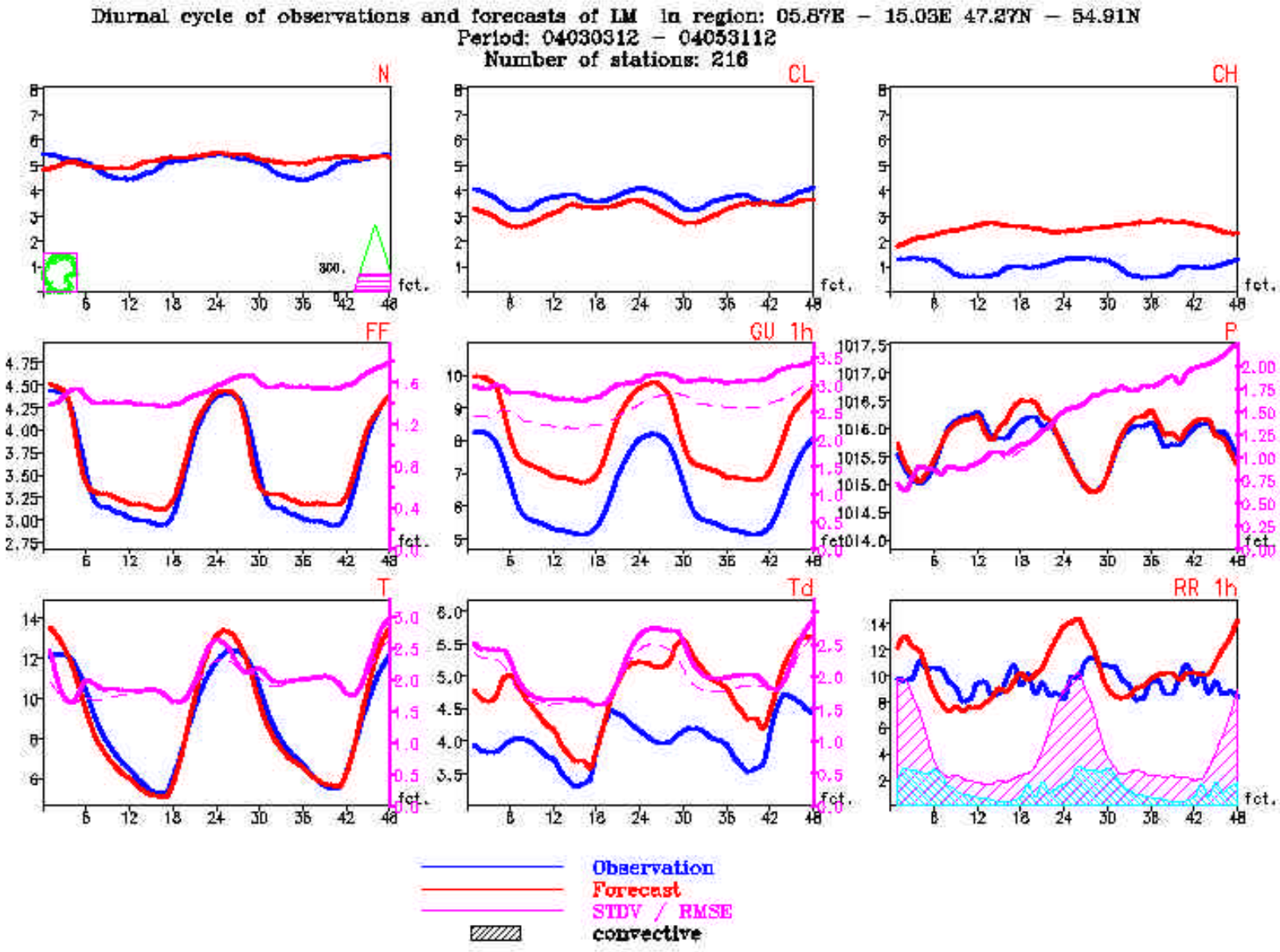



**full line: obs (ANETZ)** ***dashed black: aLMo*** ***dashed red: LM***

# Winter 2003-2004, start hour 12 UTC, stations 800. - 3000 m



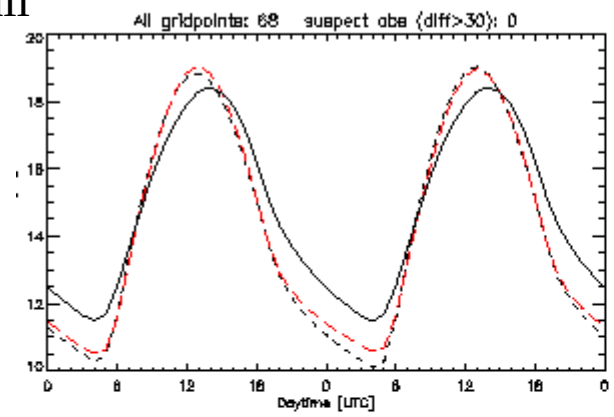
# Spring 2004, start hour 12 UTC, stations 0. - 800 m



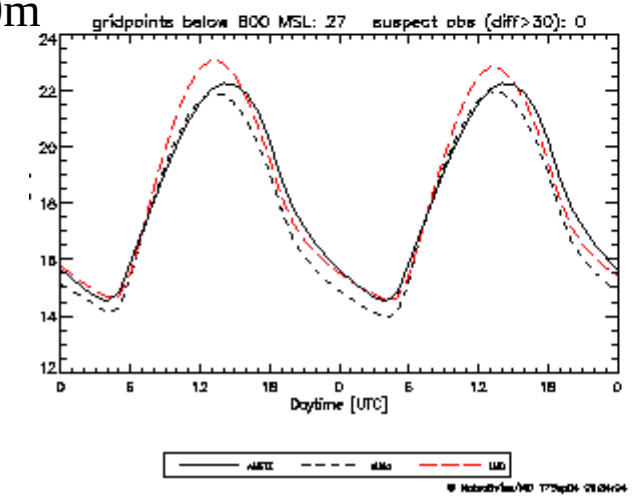
# Summer 2004, start hour 12 UTC, aLMo + LM: T2m

T2m 00UTC Summer 2004 missing forecasts: 1

all

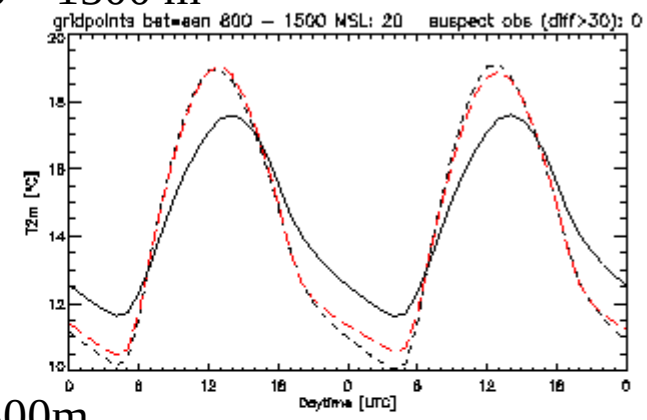



< 800m

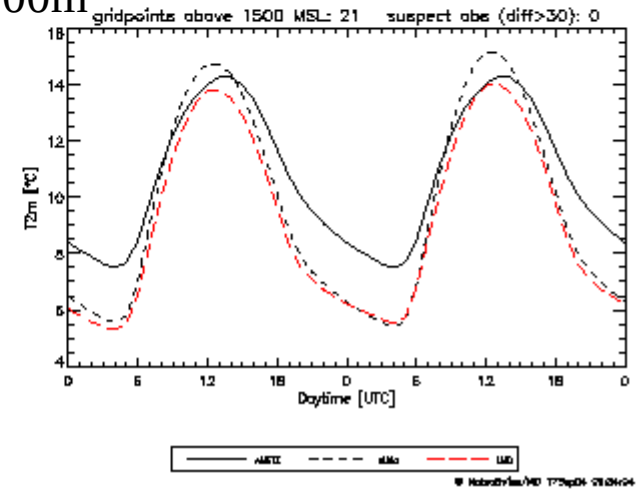



T2m 00UTC Summer 2004 missing forecasts: 1

800 – 1500 m



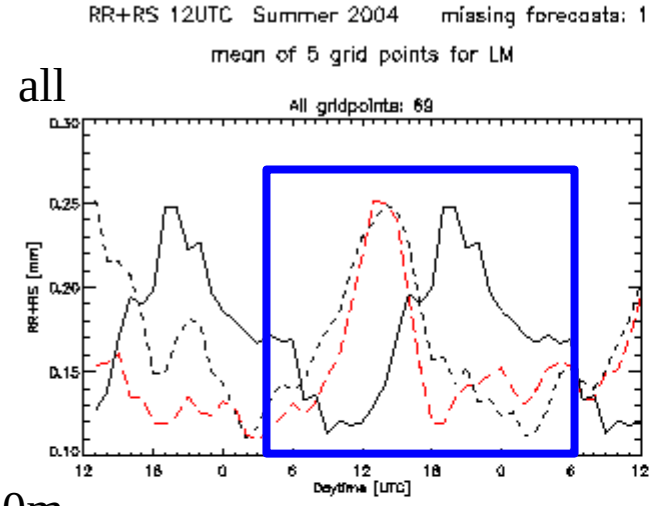

> 1500m



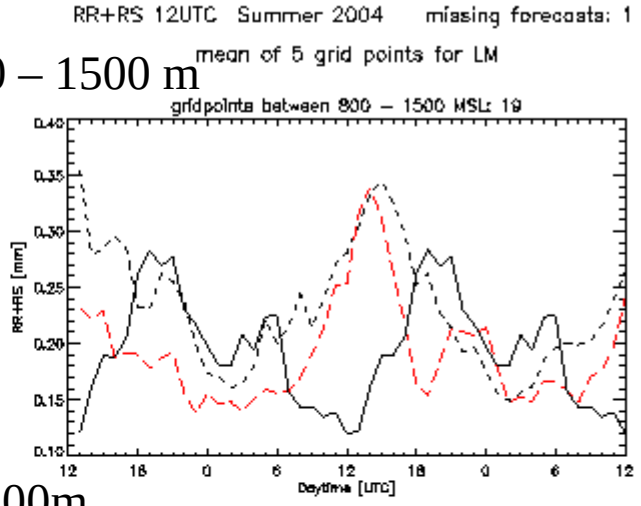

**full line: obs (ANETZ)** ***dashed black: aLMo*** ***dashed red: LM***

# Summer 2004, start hour 12 UTC, aLMo + LM: RR

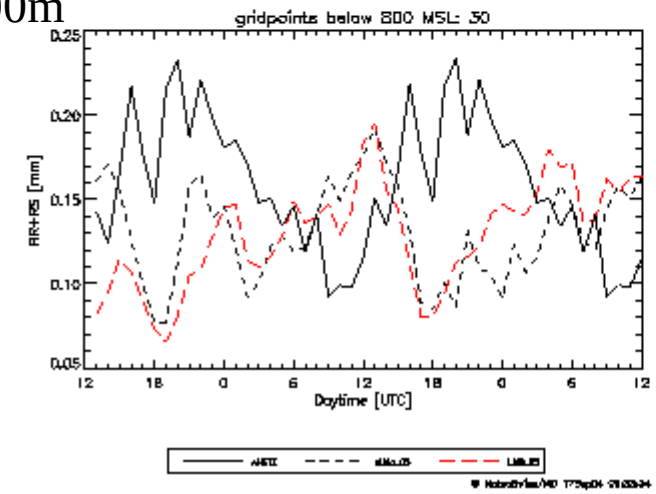
all



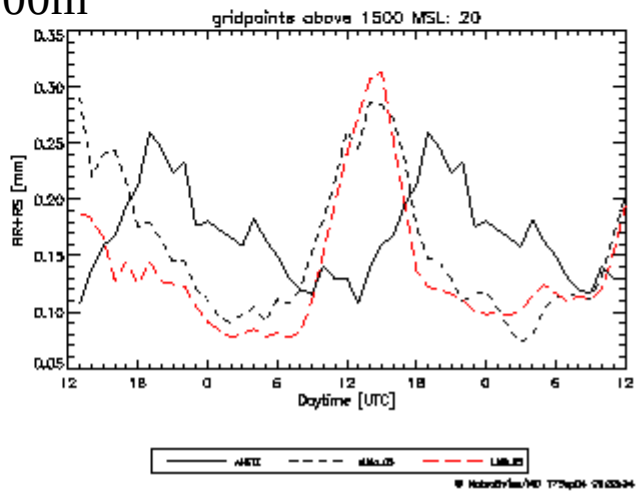

800 – 1500 m




< 800m

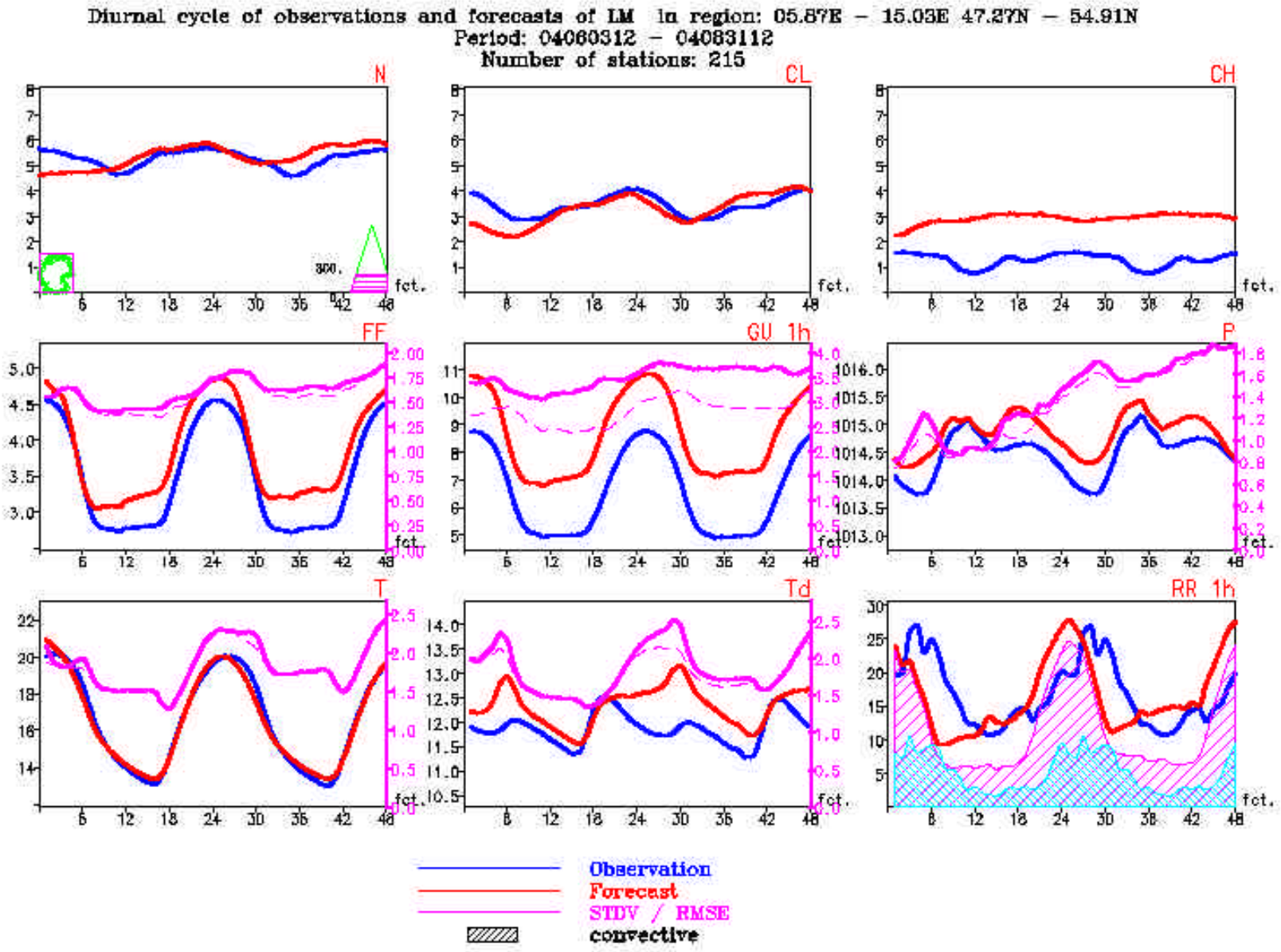



> 1500m

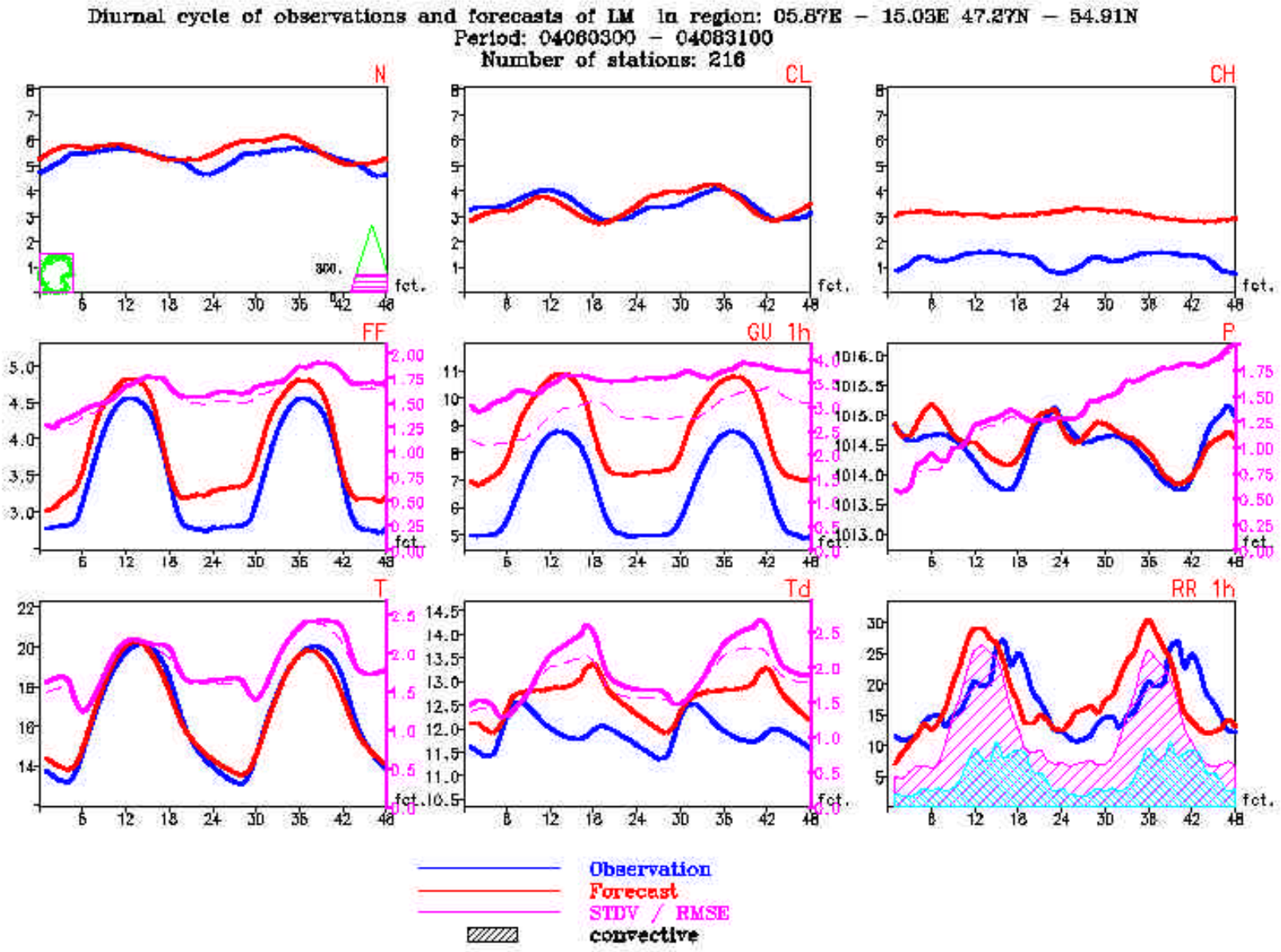



**full line: obs (ANETZ)** ***dashed black: aLMo*** ***dashed red: LM***

# Summer 2004, start hour 12 UTC, stations 0. - 800 m



# Summer 2004, start hour 00 UTC, stations 0. - 800 m



# Summary

- **Cloud cover shows different development with time in aLMo and LM ($dN_{LM}/dt > 0$, $dN_{aLMo}/dt < 0$) during winter!**
- **Generally overestimation of high cloud‘s cover**
- **Similar results in LM aLMo and LAMI concerning wind speed with underestimation for mountains and overestimation for remaining stations**
- **Diurnal wave of dew point modelled relatively good except amplitude**
- **Diurnal cycle of temperature shows too rapid increase during morning, too rapid decrease during afternoon. This (and perhaps other influences) causes**
- **Too early onset of convective precipitation, too rapid increase of convective precipitation during afternoon**
- **Constant overestimation of gusts (20-25%, some users believe 50%)**