Common Plots
Conditional Verification

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Conditional Verification on Common Area (All seasons)

- **2mT verification with the following criteria (1 condition):**
  - Soil Water Content $\geq 4$ (moist condition) (condition based on forecasts)
  - Soil Water Content $< 2$ (dry condition) (condition based on forecasts)

- **Wind speed verification with the following criteria (1 condition):**
  - Roughness length $\geq 1$ m (rough cases) (condition based on forecasts)
  - Roughness length $< 0.2$ m (smooth cases) (condition based on forecasts)
Percentage of cases for Soil Moisture condition sometimes too small (0.5-2%) especially TS >4, in winter both conditions

ECMWF wind Z0<0.2 too few cases (1-2%)
Temperatures

Summer 2014 (JJA)

C-I7
C-PL
C-ME
C-7
DRY and MOIST have similar diurnal variation, except for C-7, MOIST models grouped together. Are there any common trends?
MOIST: Slightly bigger negative ME in the day
DRY: Slightly bigger positive ME at night. NOTE C-7 too few MOIST cases
Comparable RMSE
Temperatures

Fall 2014 (SON)

C-I7
C-RU7
C-PL
C-GR
C-ME
C-7
MOIST cases ME diurnal cycle is now smoother than DRY, RMSE Peaks for MOIST.
DRY: Slightly bigger positive ME at night (more C-GR, C-PL, C-ME.) Daytime trend not so clear-smaller differences. Big diurnal cycle for DRY C-GR RMSE for MOIST slightly smaller (except C-GR.)
Temperatures

Winter 2014-15 (DJF)
MOIST cases ME diurnal cycle is again smoother than DRY, RMSE Peaks for MOIST, ME decreases with time
MOIST: ME less negative in the day, less for C-RU
DRY: ME more positive at night for C-ME, C-GR more negative for C-PL (not clear trend).
RMSE smaller for MOIST
Temperatures

Spring 2015 (MAM)
MOIST cases ME diurnal cycle is significantly smoother than DRY and ALL, Comparable RMSE, Questionable C-GR
DRY: ME more positive at night,
MOIST: ME slightly less negative in the day. RMSE smaller for MOIST except for C-GR (errors come from MOIST cases).
Conclusions for Temperatures

• Diurnal cycles comparable for JJA, weaker for MOIST the remaining seasons.

• DRY has bigger positive ME at NIGHT (overestimation increases for all seasons, but DJF trend not so clear)

• MOIST slightly more positive ME in the DAY (less underestimation) but not in JJA

• RMSE smaller for MOIST

• Errors in C-GR may come from MOIST cases.
Wind Speed

Summer 2014 (JJA)
ROUGH is similar to ALL
With tendency to underestimate in the day
ROUGH: ME more negative in the day
SMOOTH: slightly more positive for all times. RMSE smaller for ROUGH.
IFS SMOOTH hysteresis

UNCND
Z0 >1 (ROUGH)
Z0 <0.2 (SMOOTH)
Wind Speed CND ECMWF, JJA 2014, Common area, All stations

IFS

**IFS**

UNCND

Z0 >1 (ROUGH)

Z0 <0.2 (SMOOTH)
Wind Speed

Fall 2014 (SON)

C-17
C-GR
IFS
C-7
C-ME
C-PL
ROUGH ME is similar to ALL, With tendency to underestimate in the day. SMOOTH weaker cycle ROUGH RMSE peaks.

SMOOTH

ROUGH

ALL
ROUGH: ME more negative in the day
SMOOTH: slightly more positive for all times. RMSE smaller for ROUGH.
IFS SMOOTH hysteresis (NOTE same as JJA trends)
C-7

IFS

UNCND

Z0 >1 (ROUGH)

Z0 <0.2 (SMOOTH)
Wind Speed

Winter 2014-15 (DJF)

C-I7
C-GR
IFS
C-7
C-ME
C-PL
ROUGH and SMOOTH ME cycles are now similar to ALL
ROUGH: ME more negative in the day (less than previous seasons) but NOT for C-7, C-GR
SMOOTH: ME slightly more positive for all times. RMSE smaller for ROUGH. IFS almost no difference.
Wind Speed

Spring 2015 (MAM)

C-17
C-GR
IFS
C-7
C-ME
C-PL
SMOOTH

ROUGH ME cycle is sharper.
SMOOTH weaker cycle

ALL
ROUGH: ME more negative in the day
SMOOTH: slightly more positive in the day. RMSE smaller for ROUGH.
IFS SMOOTH hysteresis
C-PL

IFS

UNCND

Z0 > 1 (ROUGH)

Z0 < 0.2 (SMOOTH)
Conclusions for Wind Speed

• ROUGH cases: tendency of underestimation during the day, which is weaker for winter season.

• SMOOTH cases: tendency of slight overestimation, overall distributed equally in the daily cycle

• RMSE reduced for ROUGH and slightly bigger for SMOOTH

• IFS SMOOTH significant overestimation in the day (hysteresis), not found in DJF
THANK YOU FOR YOUR ATTENTION. Any Questions?