COMPARISONS OF ERA REANALYSES WITH THE STATION UPPER AIR DATA

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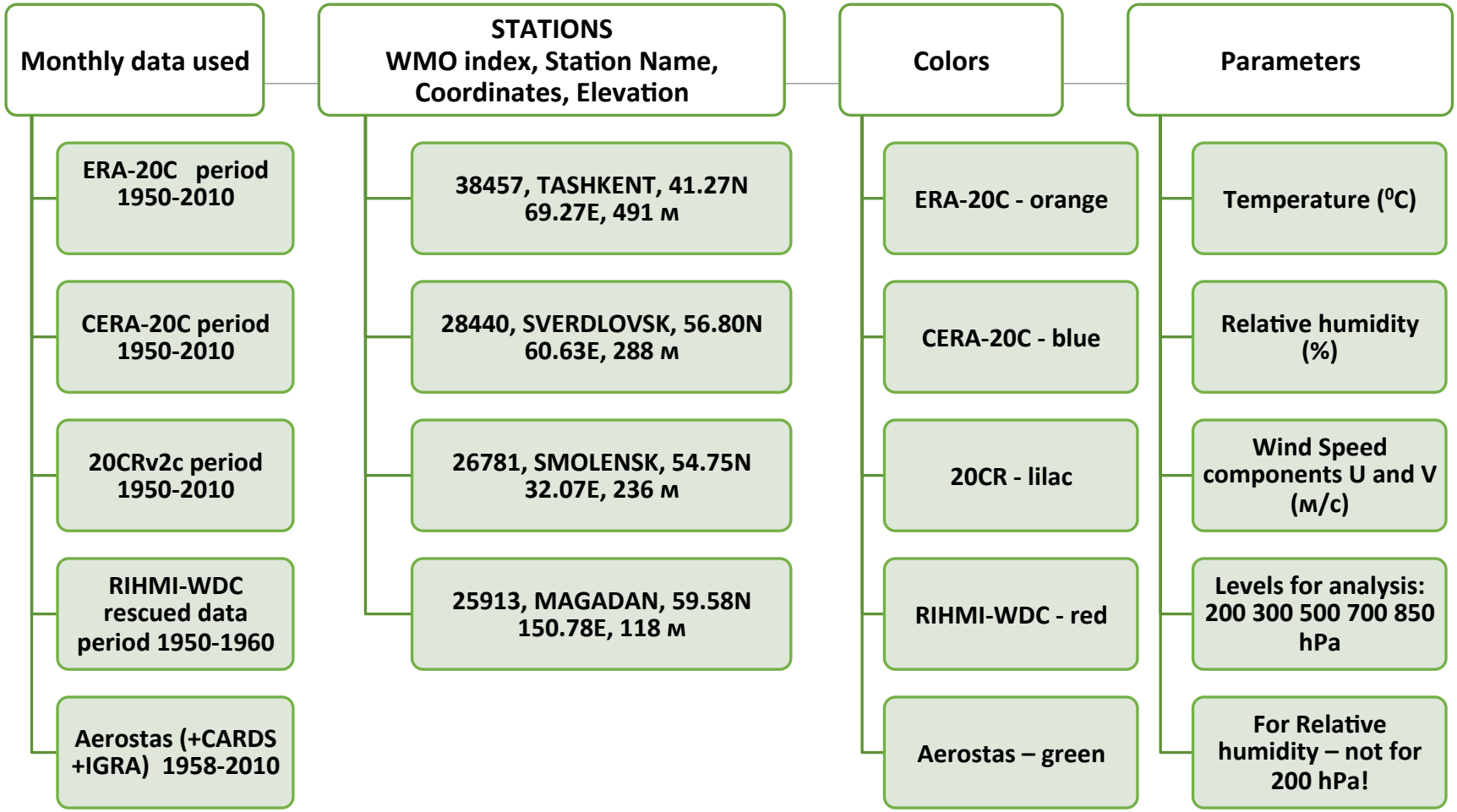
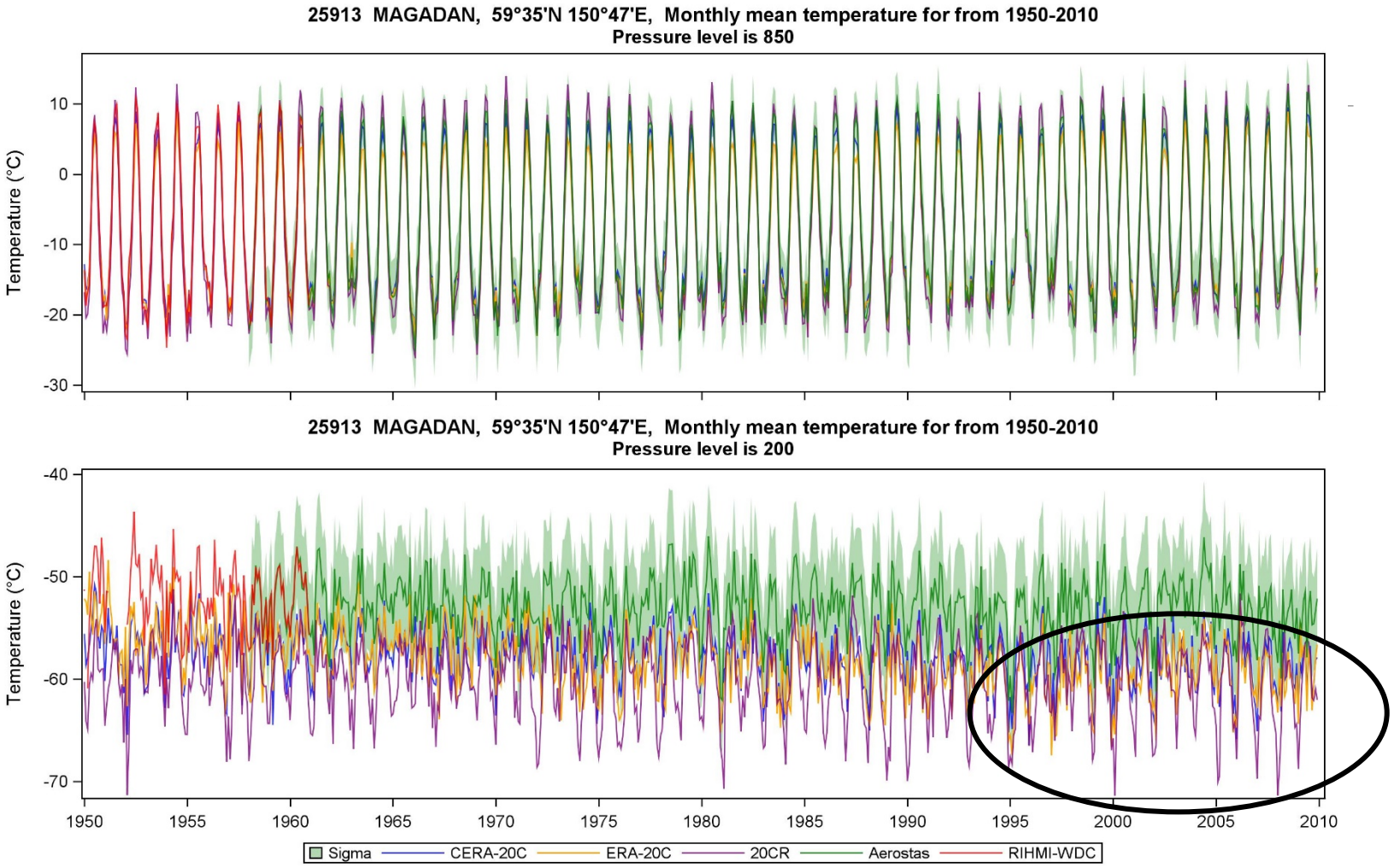
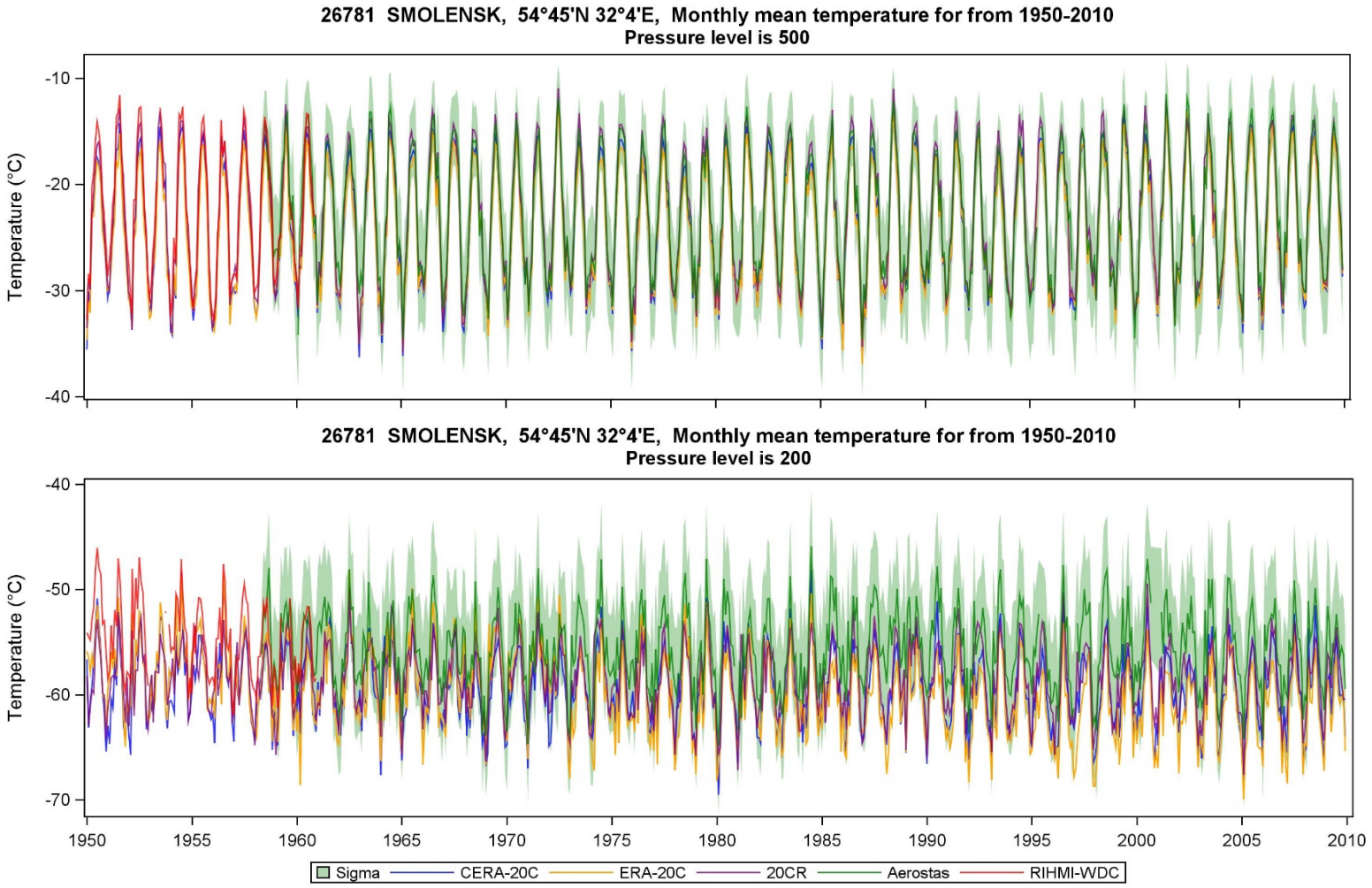
HTTP://WWW.METEO.RU


Monthly data used
ERA-20C period 1950-2010
CERA-20C period 1950-2010
20CRv2c period 1950-2010
RIHMI-WDC rescued data period 1950-1960
Aerostas (+CARDS +IGRA) 1958-2010
STATIONS
WMO index, Station Name, Coordinates, Elevation
38457, TASHKENT, 41.27N 69.27E, 491 м
28440, SVERDLOVSK, 56.80N 60.63E, 288 м
26781, SMOLENSK, 54.75N 32.07E, 236 м
25913, MAGADAN, 59.58N 150.78E, 118 м
Colors
ERA-20C - orange
CERA-20C - blue
20CR - lilac
RIHMI-WDC - red
Aerostas – green
Parameters
Temperature (⁰C)
Relative humidity (%)
Wind Speed components U and V (м/с)
Levels for analysis: 200 300 500 700 850 hPa
For Relative humidity – not for 200 hPa!

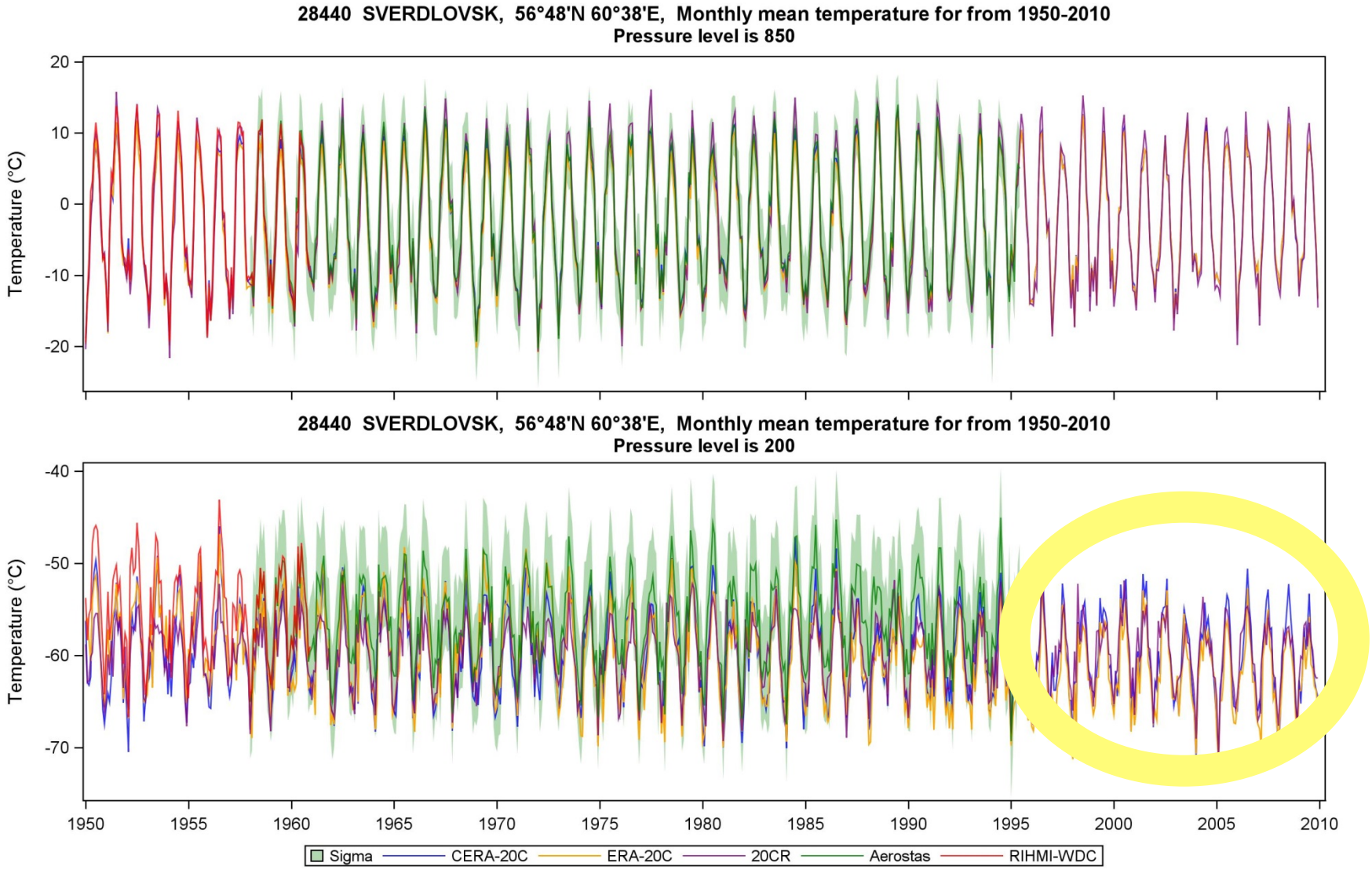
Temperature (T): Magadan station 25913



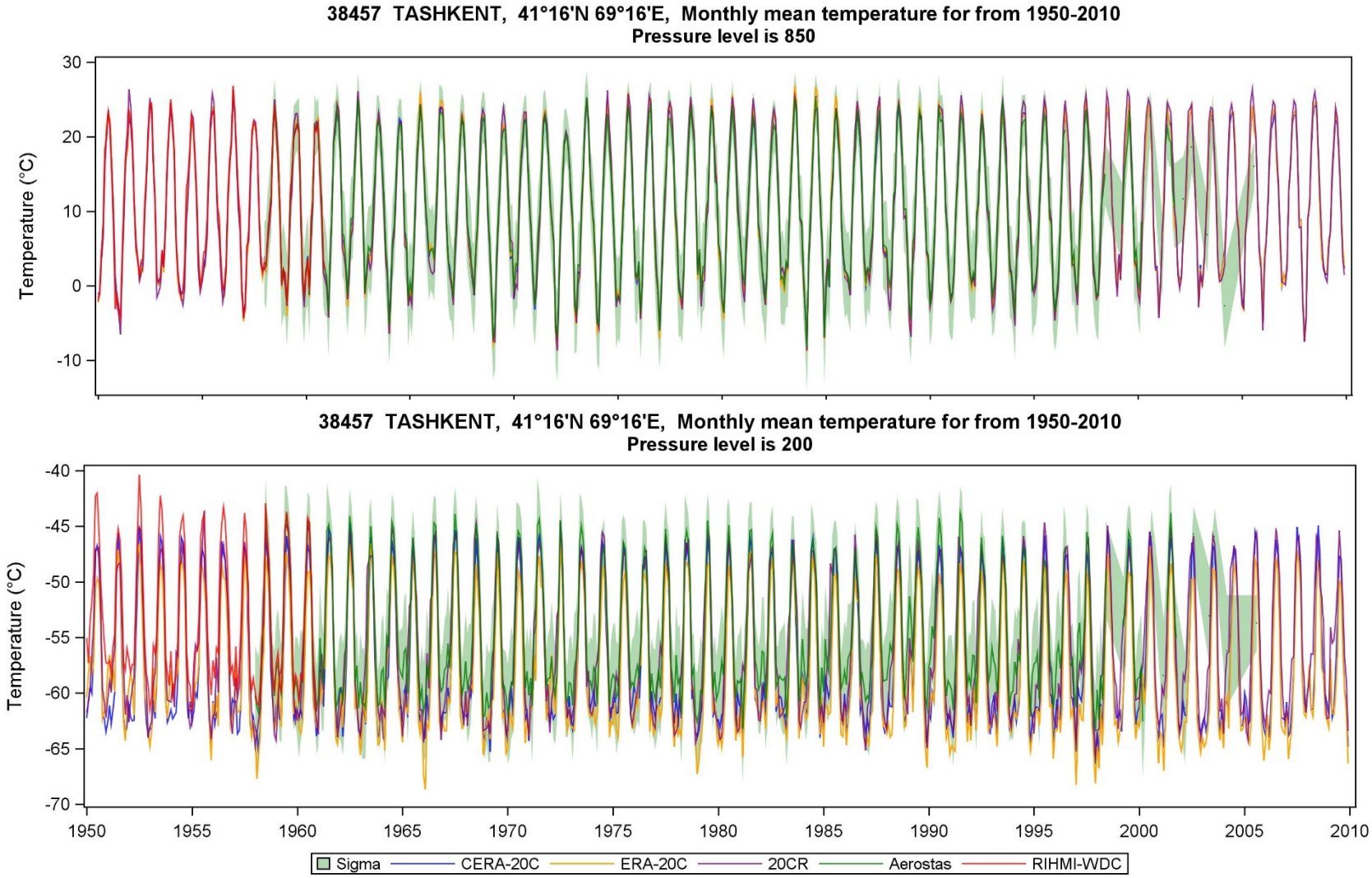
Temperature: Smolensk station 26781



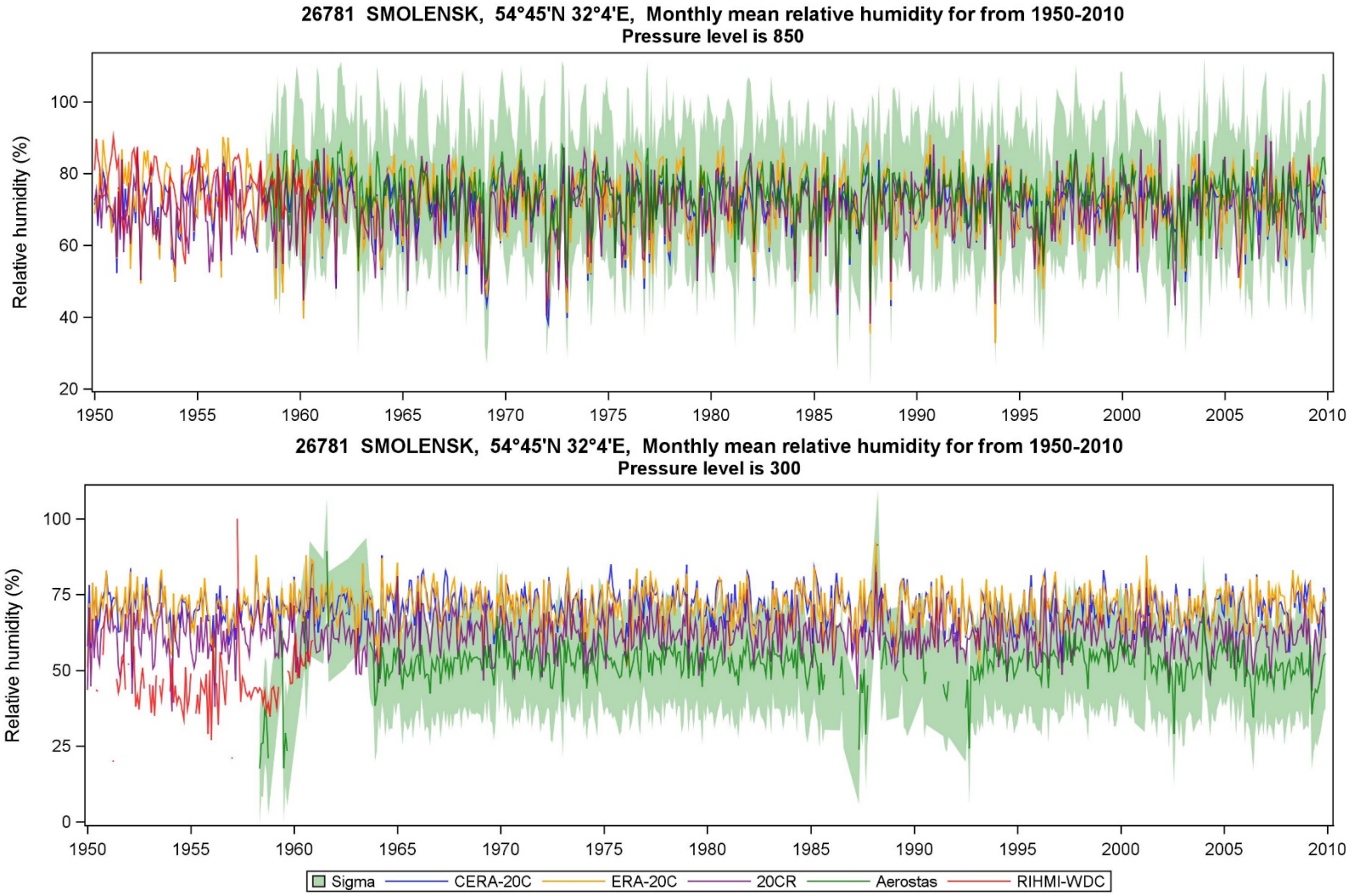
Temperature: Sverdlovsk station 28440



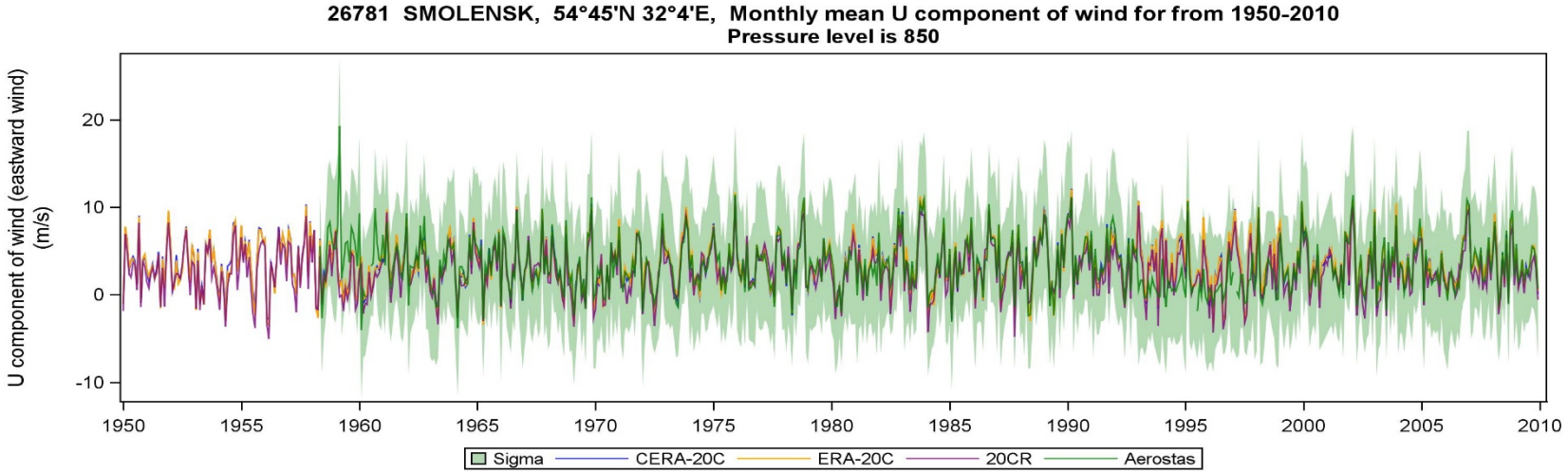
Temperature: Tashkent station 38457

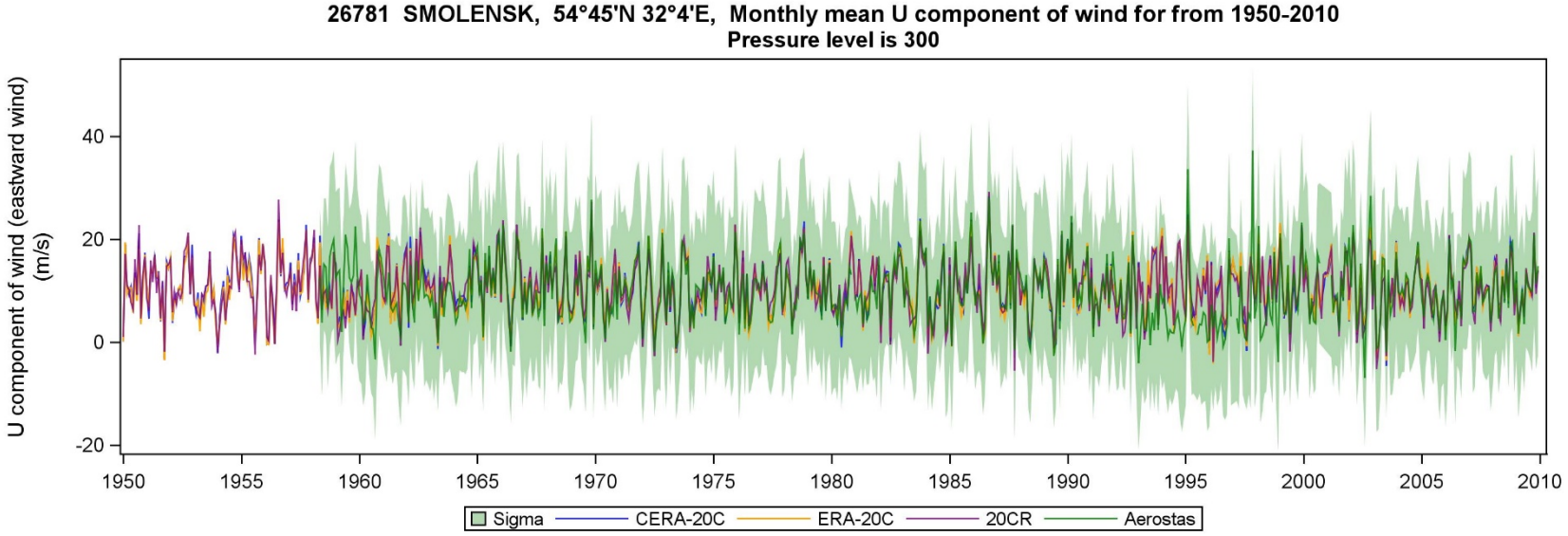


Relative Humidity (RH): Smolensk station 26781

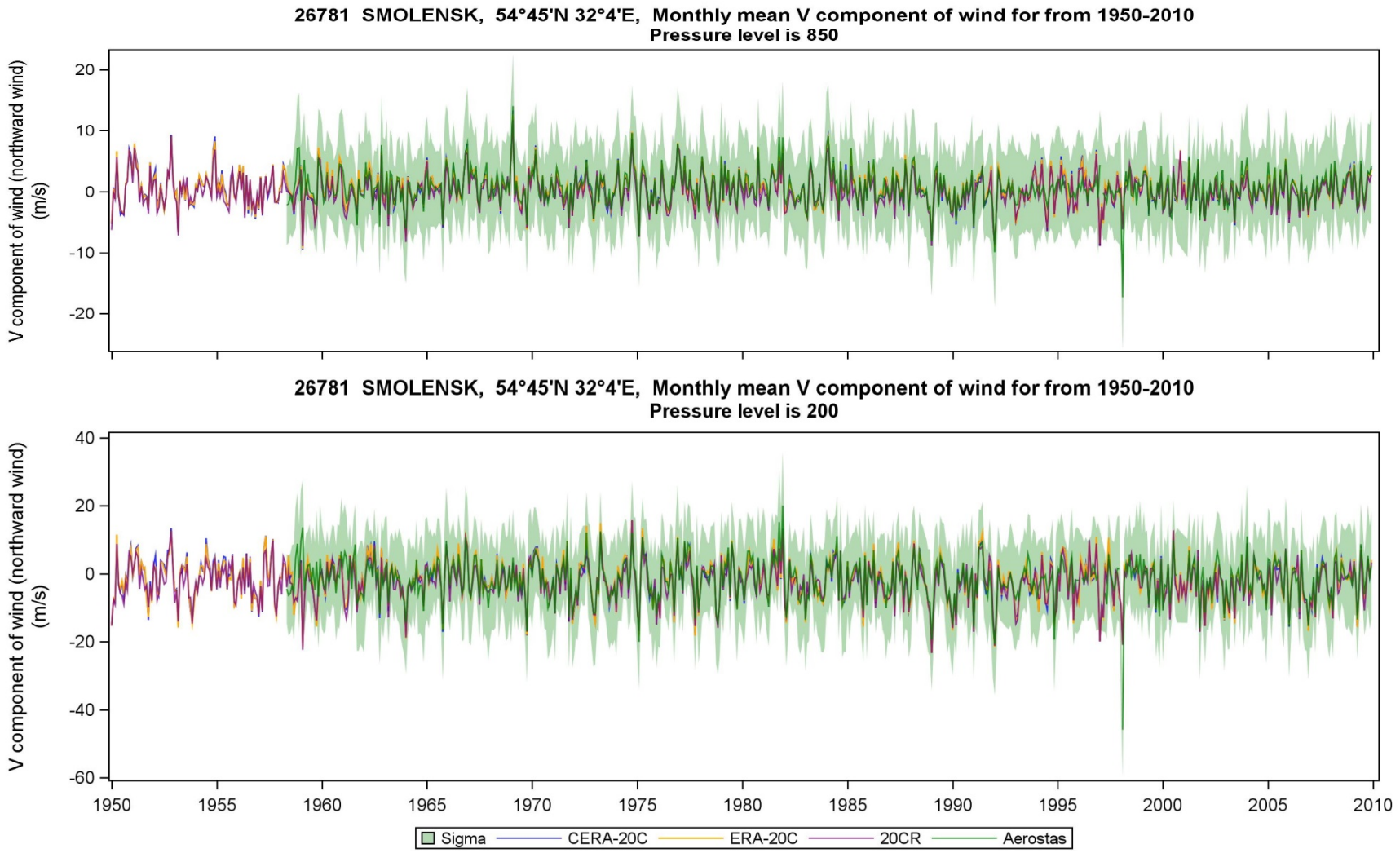


Zonal Wind: Smolensk station 26781

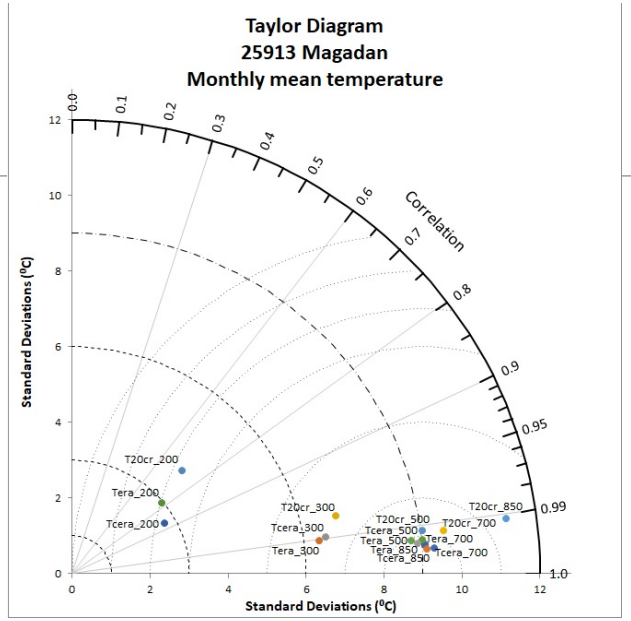


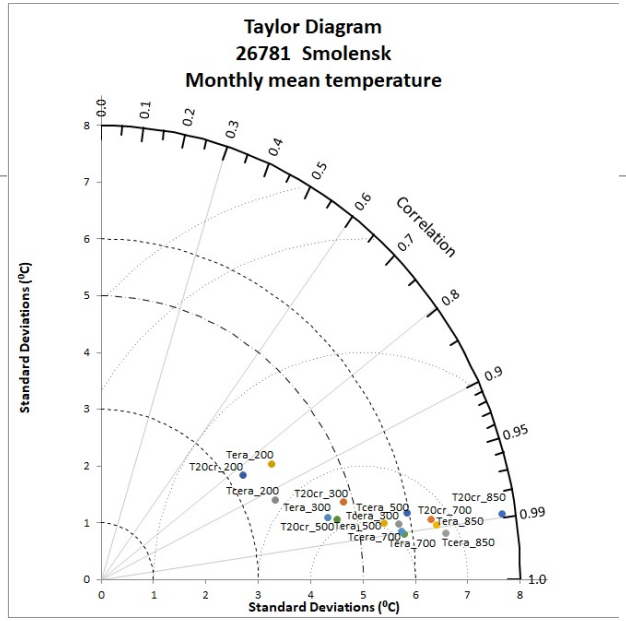


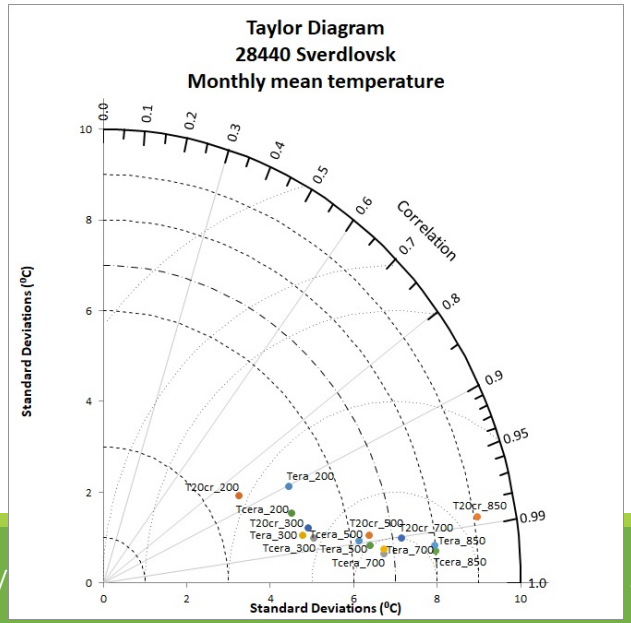
Meridional Wind: Smolensk station 26781

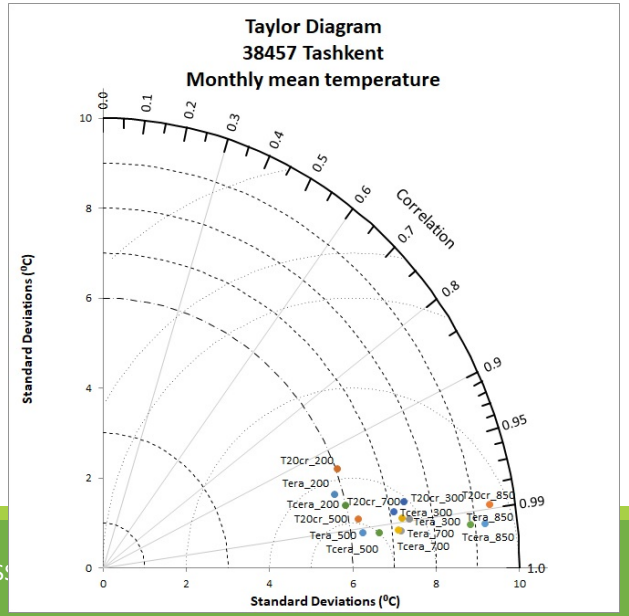


Temperature: Taylor diagrams for 4 stations

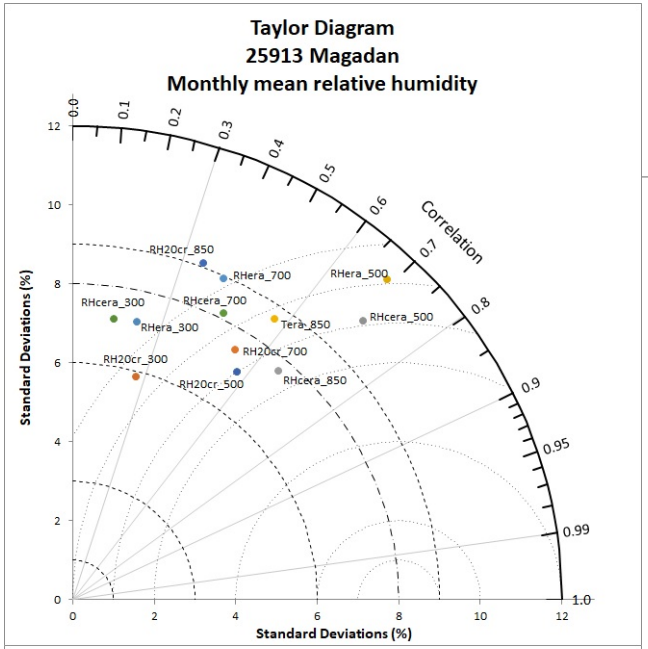


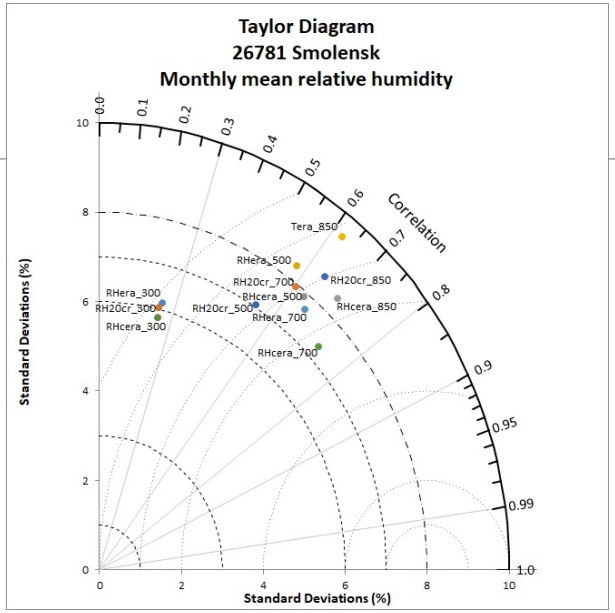


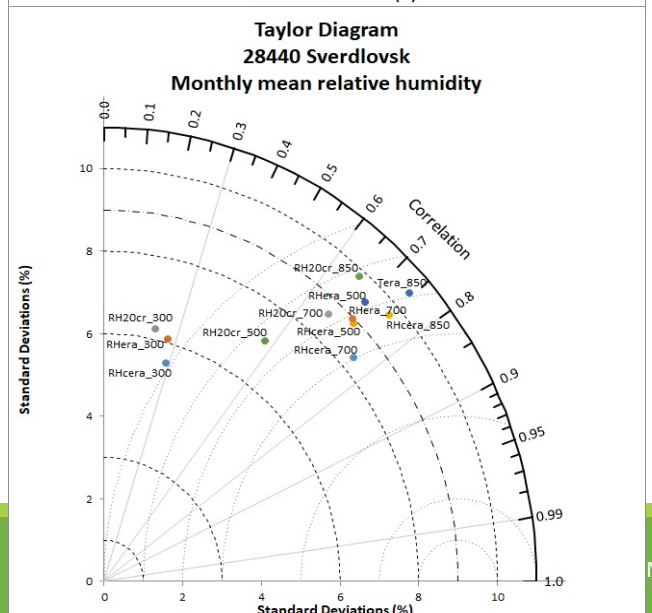


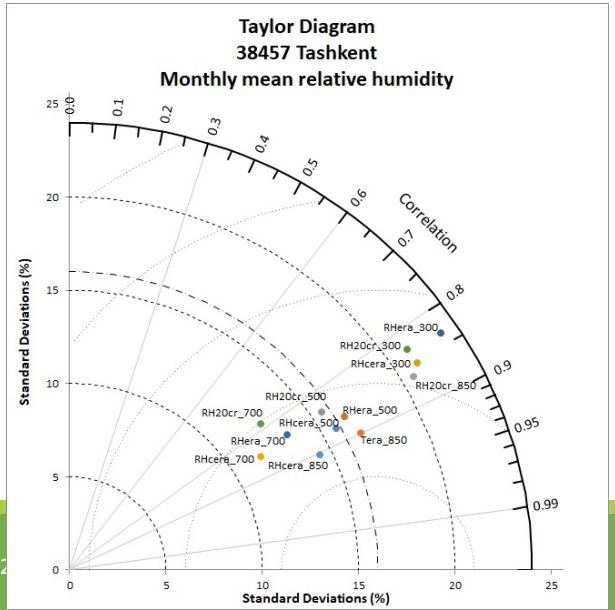


Relative Humidity: Taylor diagrams for 4 stations

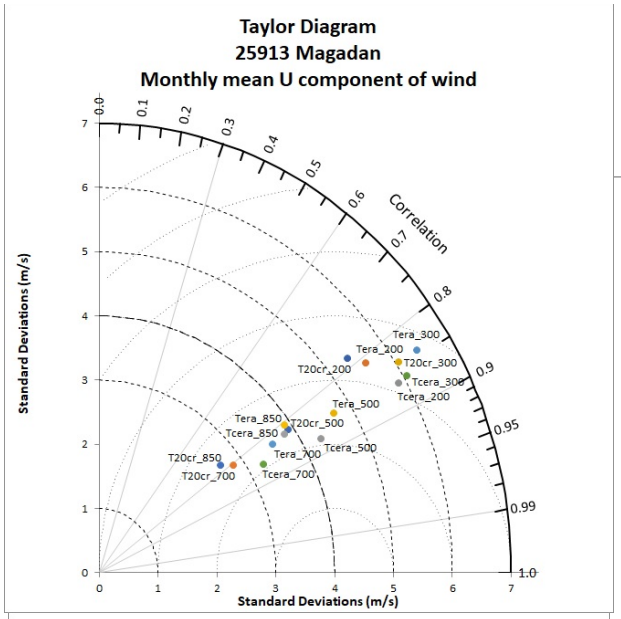


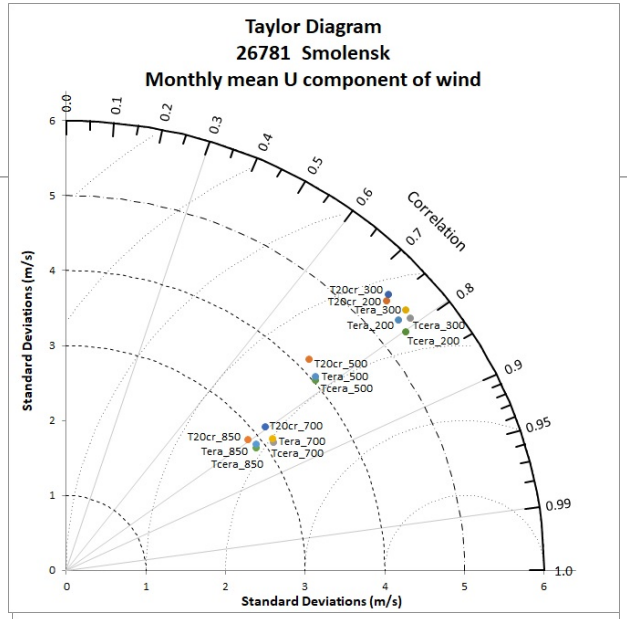


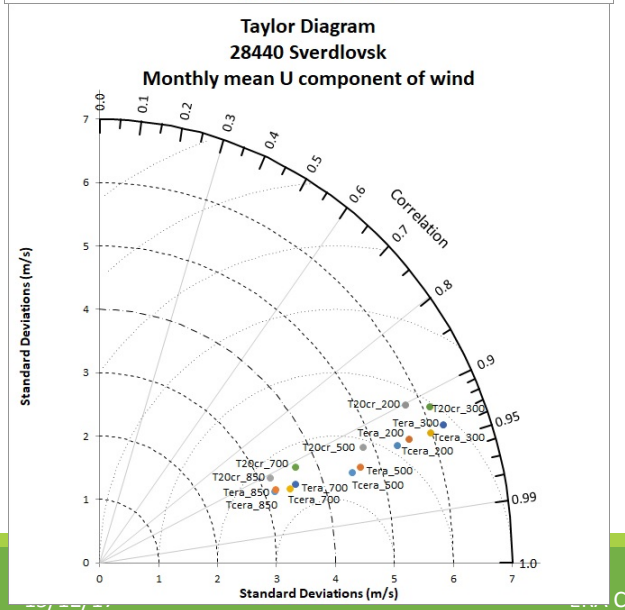


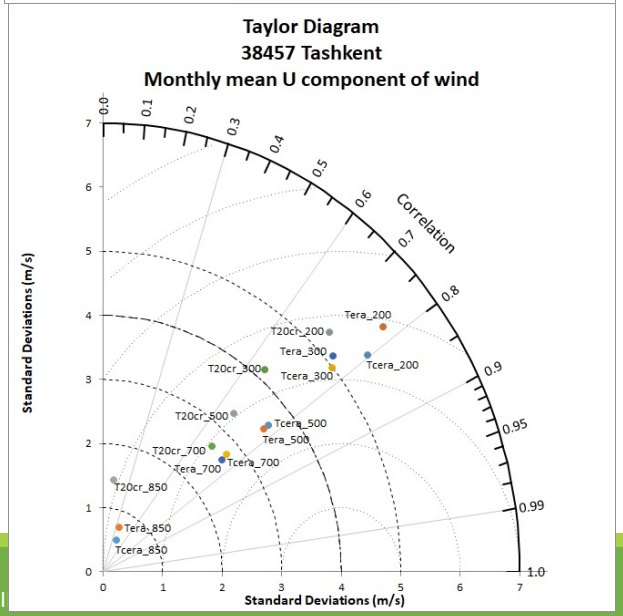


Zonal Wind: Taylor diagrams for 4 stations

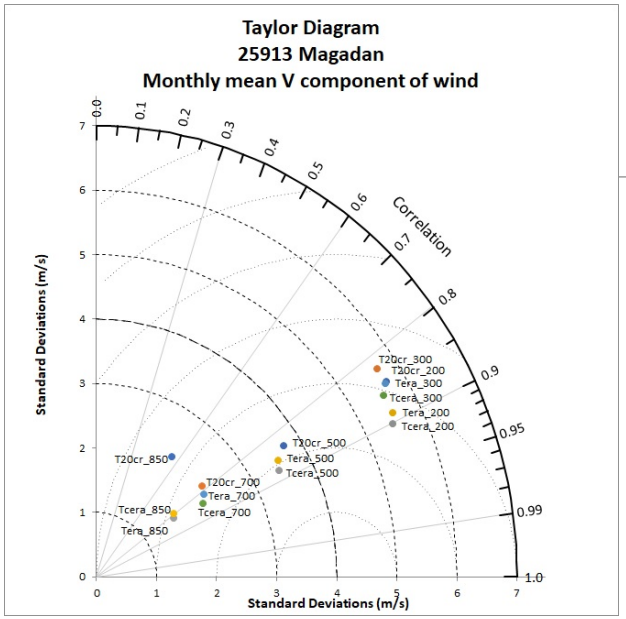


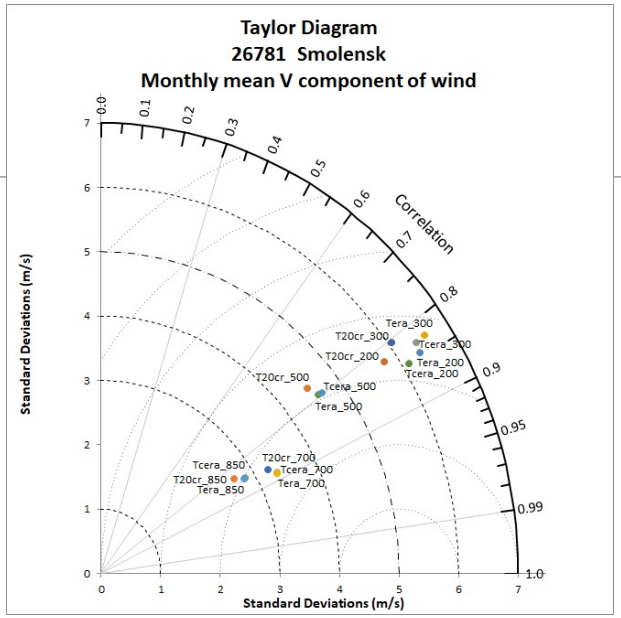


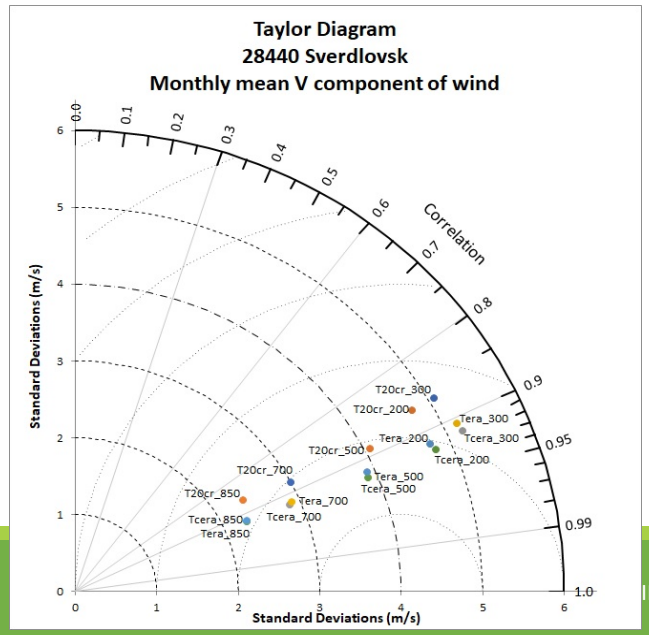


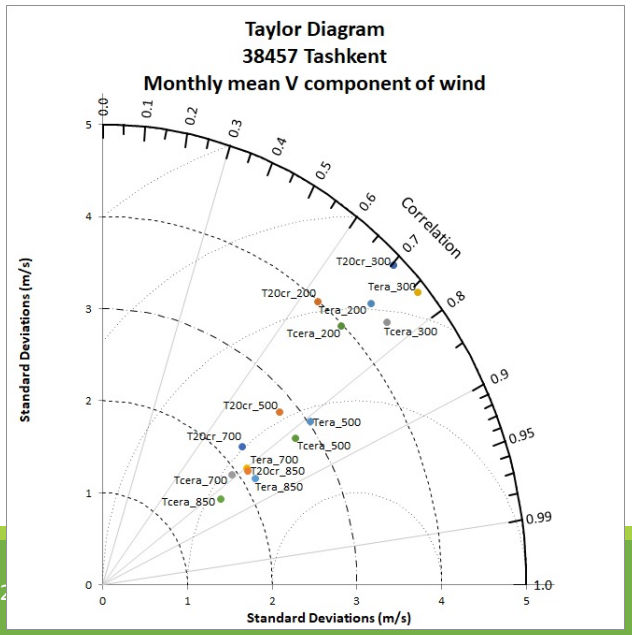


Meridional Wind: Taylor diagrams for 4 stations









What can be noticed based on comparison with data for the 4 stations:

Reanalyses vs Observed data:

High correlations for T are at all stations and all levels, but…

High latitude stratospheric temperature reanalyses in 20CR and in less degree – in ERA -20C are overcooled already at 300 hPa

CERA -20C better reproduces 300 and 200 hPa temperatures than 20CR and ERA-20C

RH reproducing is the weakest one, compared to T, U and V

Of four stations, RH is slightly better reproduced for Tashkent

For 300 hPa, RH is higher in all reanalyses than observed data

For U and V, all reanalyses demonstrate that are within +/- STD belt around observed data (however, due to high wind variability, STD is very large!)

Between reanalyses:

High Degree of similarity – dots on Taylor diagram are “clustered”

THANK YOU!

Temperature

Temperature

eters, **for the same 41**

!

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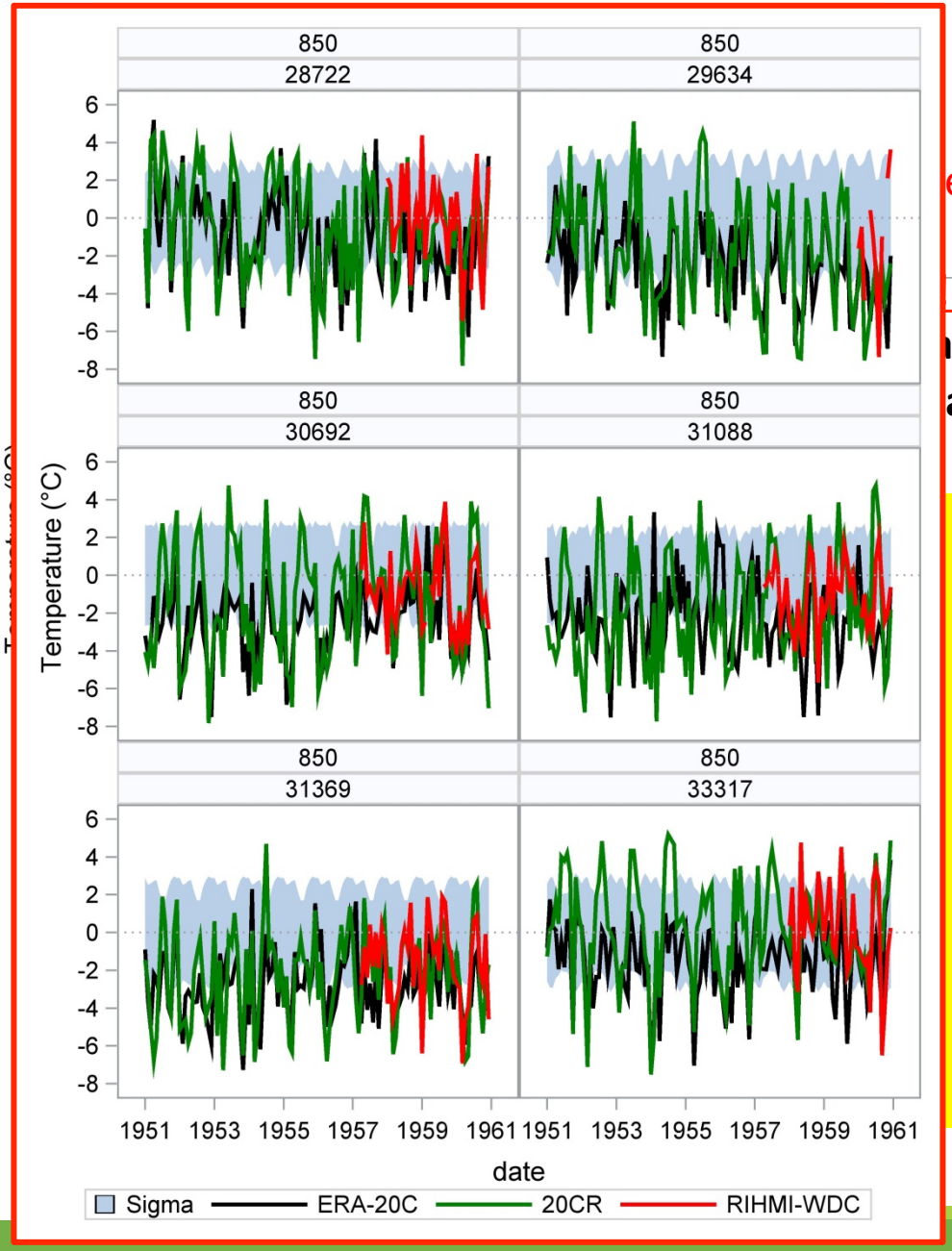
ails – in WP4)



Panel: monthly anomalies for 100hPa Temperature for group of 6 stations for 1951-1960
Grey shaded – monthly climatology sigmas
ERA-20C – black
20CR v2 – green
RIHMI digitized - red
ERA-20c better corresponds to climatology!