

Improving the Representation of Solar Forcing in IRI



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- **Indices and averaging intervals that provide best correlation with foF2.**
- **Improvements in data-model RMS achieved with these indices.**

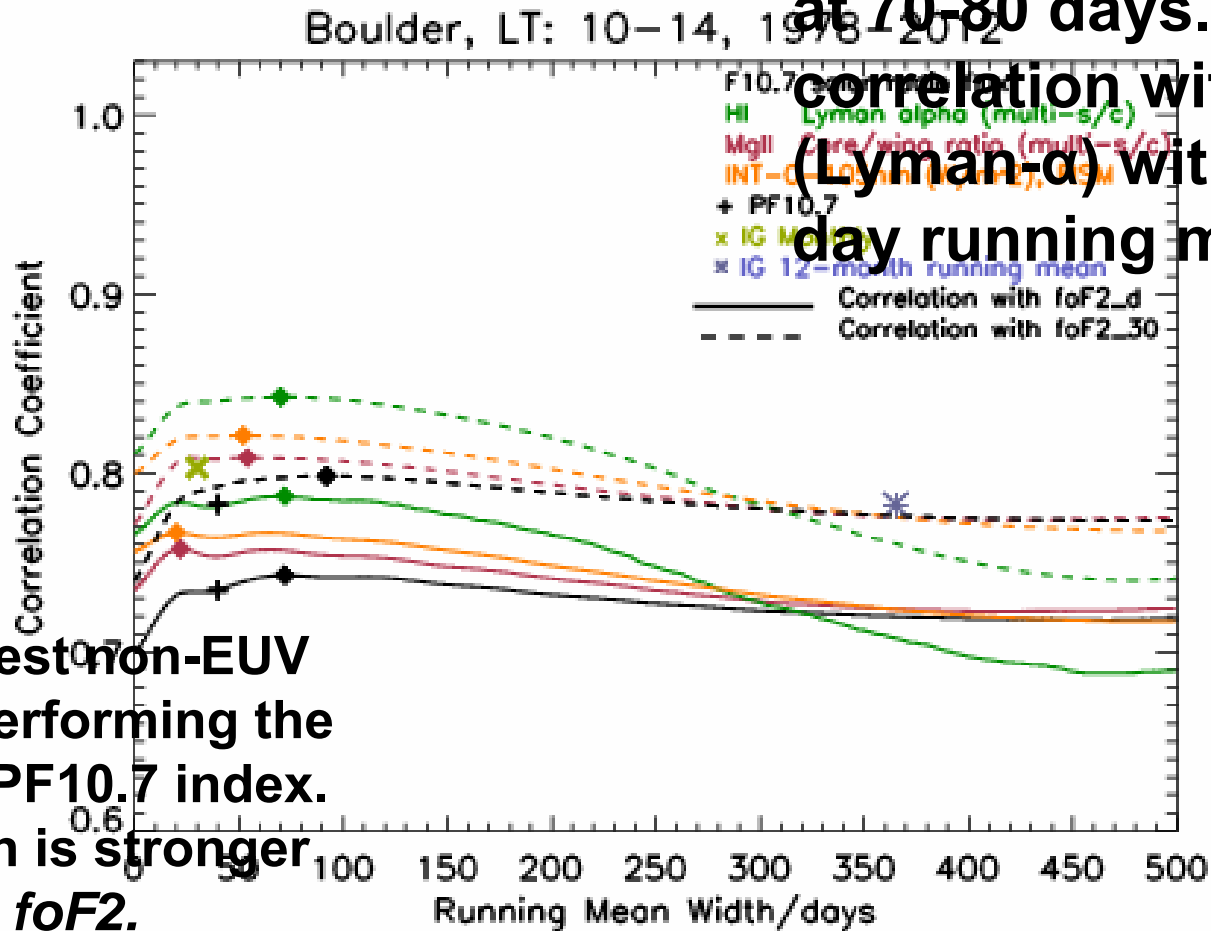


Correlation with daily and monthly foF2

Best index? Best averaging interval?

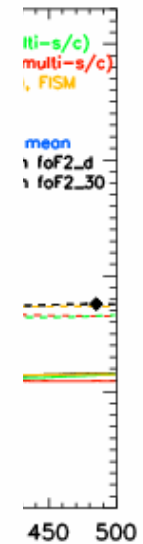
Diurnal and latitudinal differences

Correlation increases to a local maximum at ~ 27 days and then again to a maximum at 70-80 days. Best correlation with HI (Lyman- α) with an 81-day running mean.

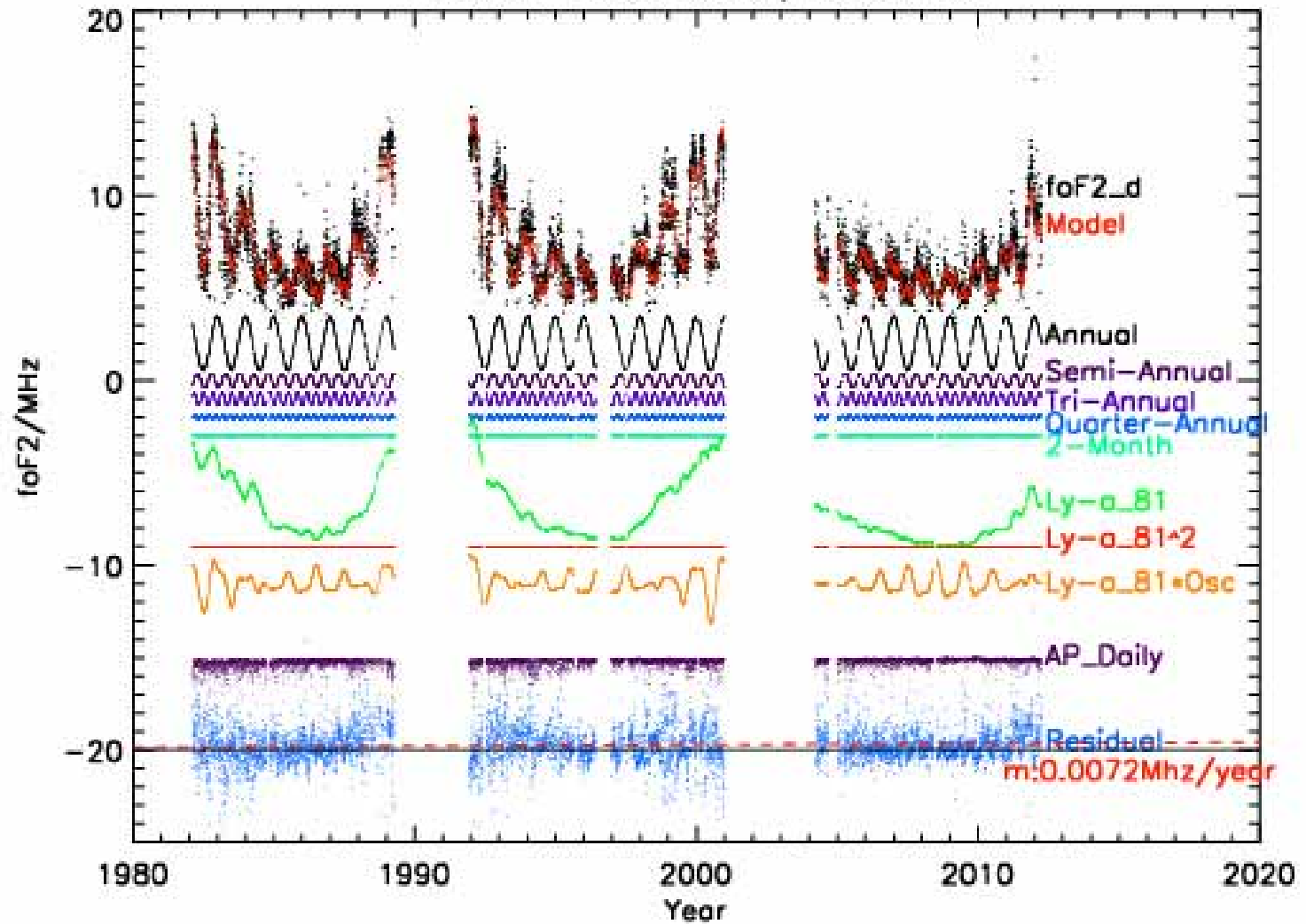


Also ..

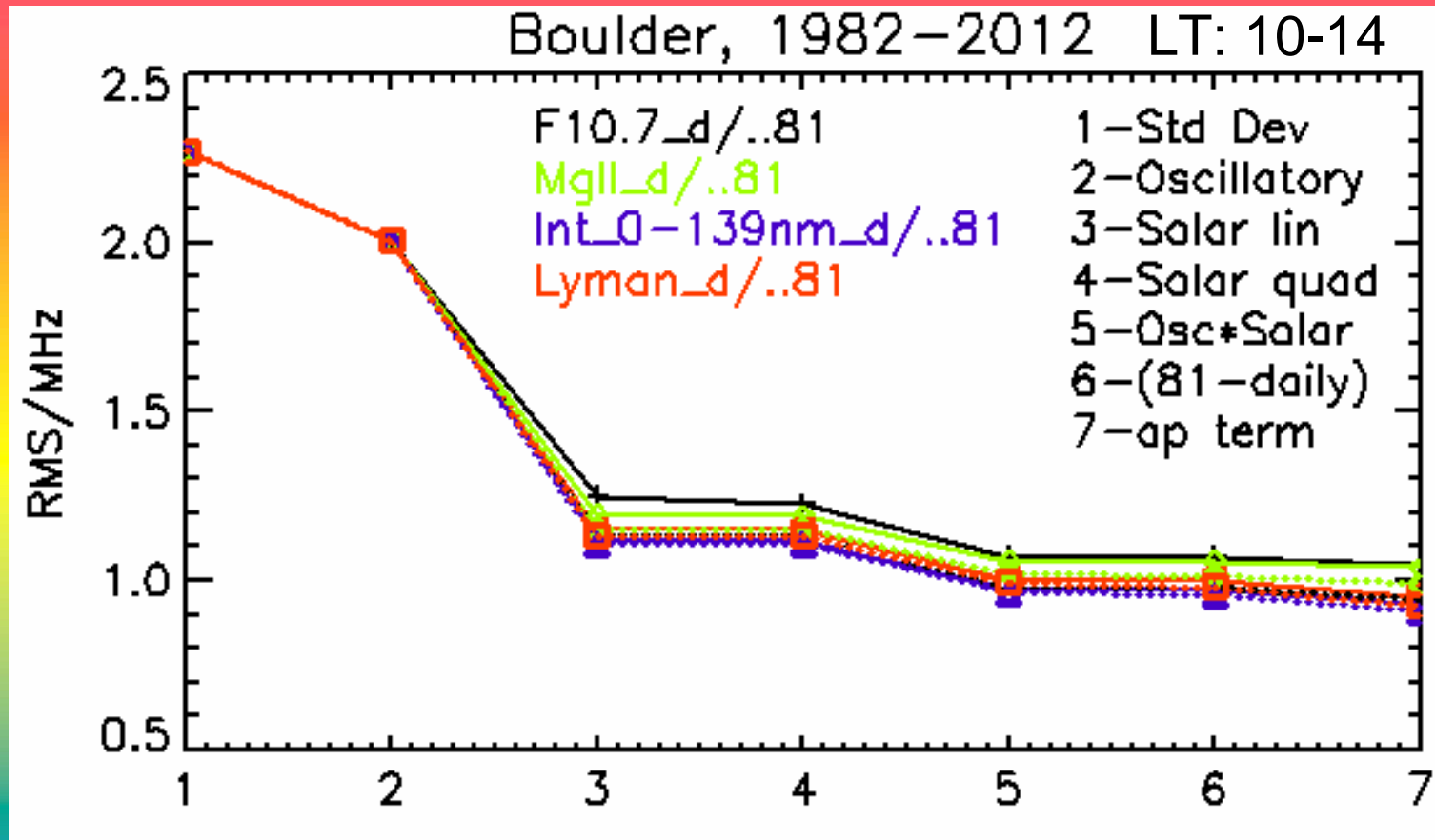
- IG is the best non-EUV index out-performing the often used PF10.7 index.
- Correlation is stronger for monthly foF2.



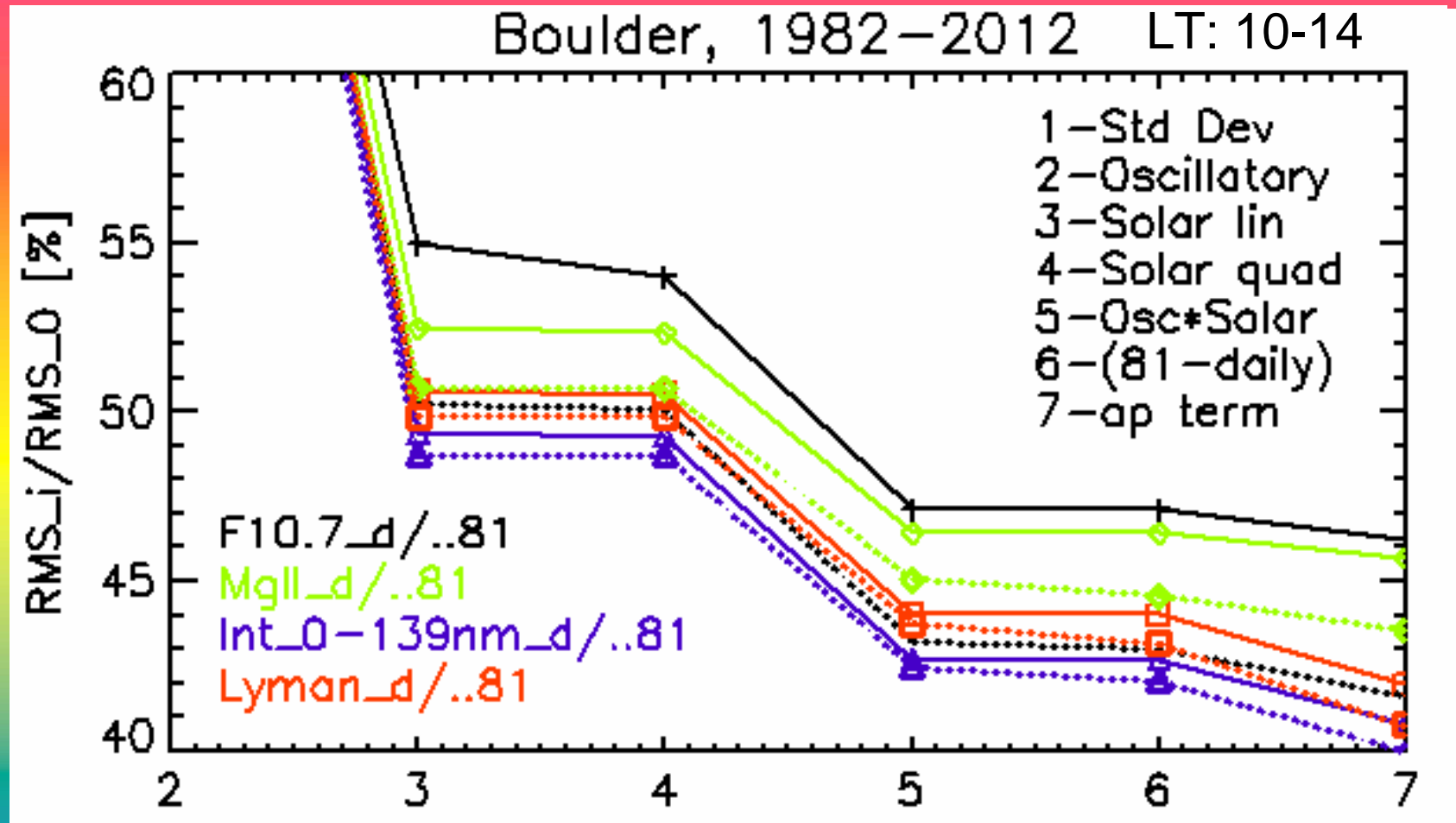
Boulder 1982–2012, LT:10–14



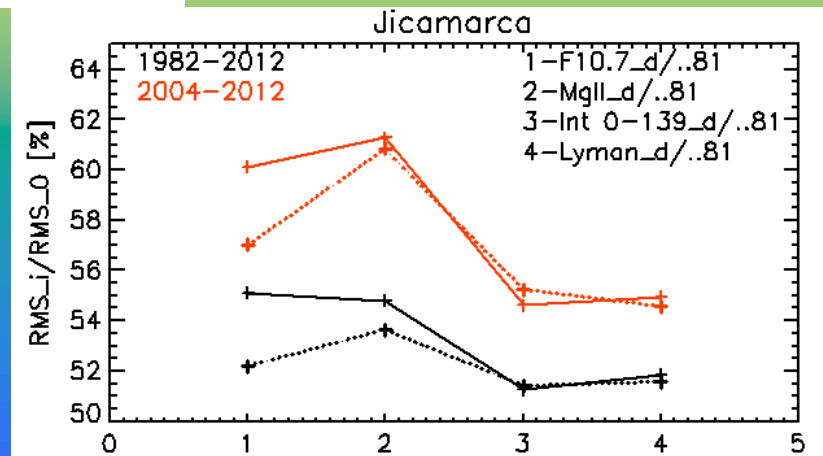
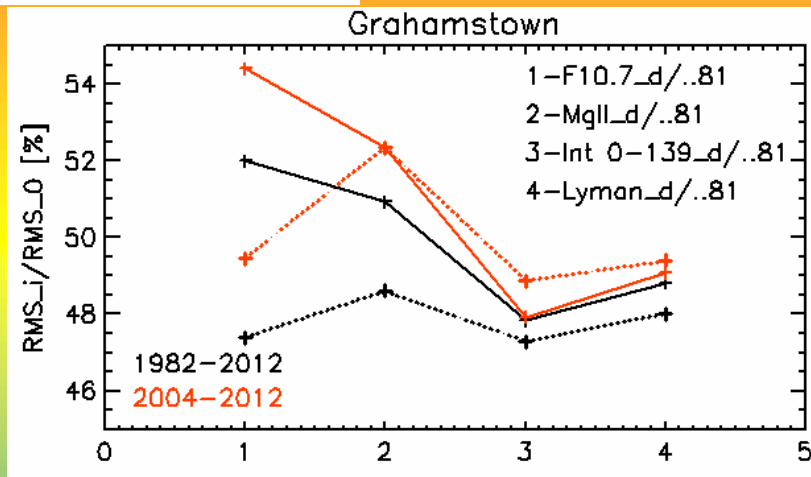
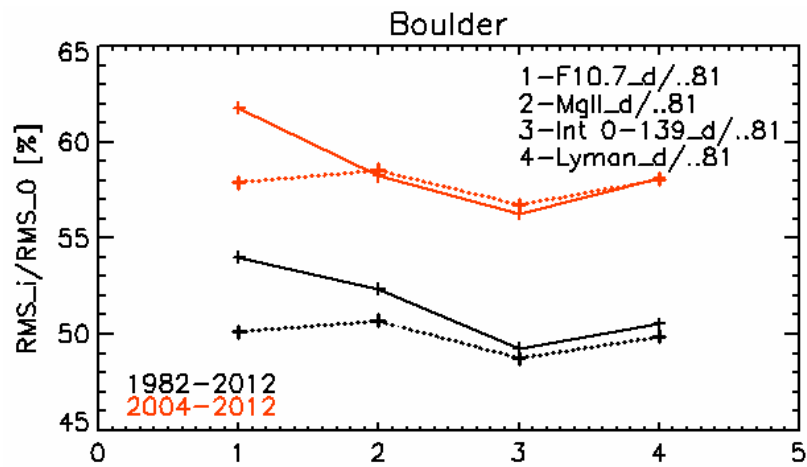
Contributions to Variability in MHz



Contribution to total variability in %

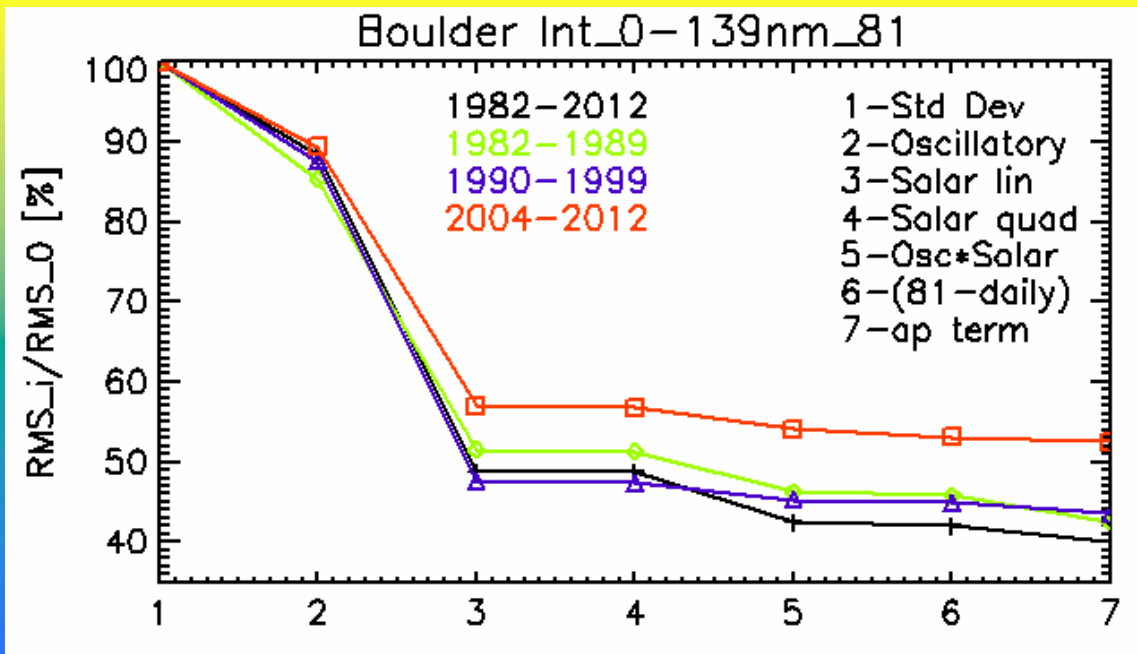
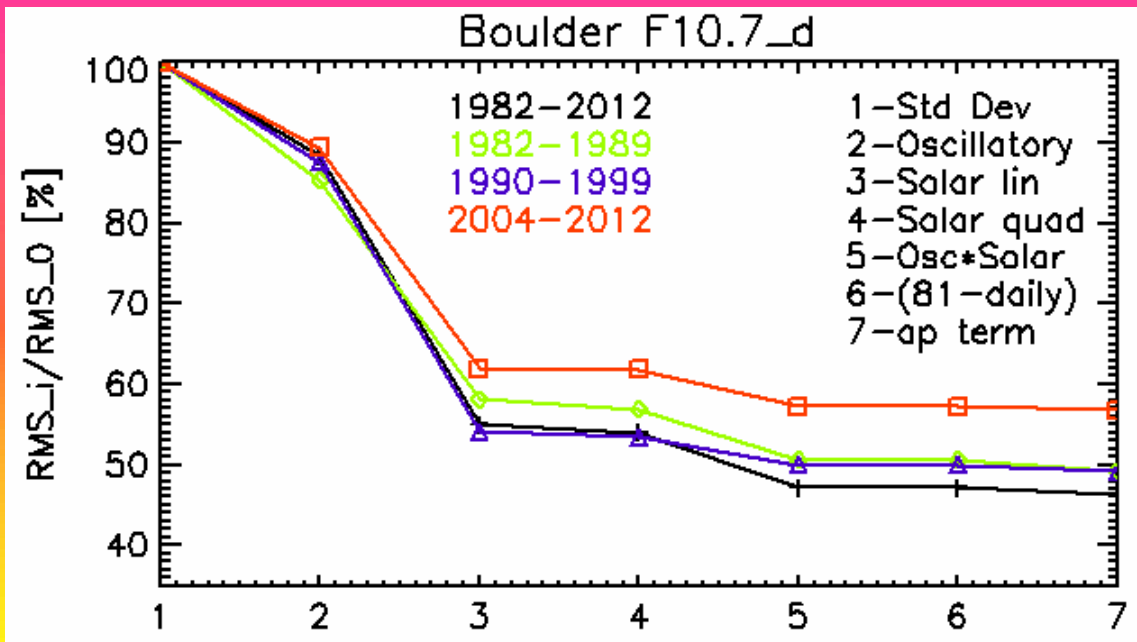


Switching to an EUV-based daily index lowers the data-model RMS by 5-10%. But nearly the same reduction can be obtained using an 81-day running mean index



Different time periods.

50% of variability can be described with the help of oscillatory and solar terms. But during solar minimum time period only 60% can be accounted for.



SUMMARY

- Correlation increases to a local maximum at ~27 days and then again to a maximum at 70-80 days.
- Correlation is stronger for monthly *foF2* than for daily
- Best correlation with HI (Lyman- α) with an 81-day running mean.
- IG is the best non-EUV index out-performing the often used PF10.7 index.
- Switching to an EUV-based daily index lowers the data-model RMS by 5-10%. But nearly the same reduction can be obtained using an 81-day running mean index
- 50% of variability can be described with the help of oscillatory and solar terms. But during solar minimum time period only 60% can be accounted for.