Karlsruhe Institute of Technology

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Does Diurnal LST Measurements from SEVIRI Agree with the INSITU Data in Namibia?

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MOTIVATION

- Land surface temperature (LST) is the major quantity governing the energy exchange between the surface and atmosphere.
- LST can be retrieved from SEVIRI or MODIS.
- Wide range of applications in climate studies.

Objective

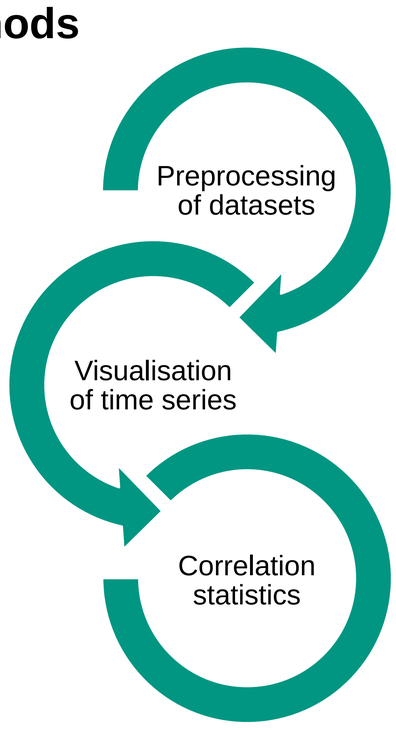
- To analyze the LST measurements for the period of one year in Namibia and observe if it agrees with in situ field measurements.

DATA AND METHODS

Data

i. temporal data from SEVIRI's LST values
ii. temporal in situ values from the validation station in Namibia for the duration of one year(01.01.2020 –31.12.2020).

Methods



RESULTS

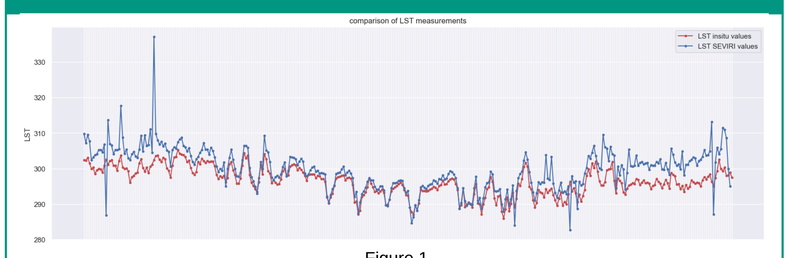


Figure 1

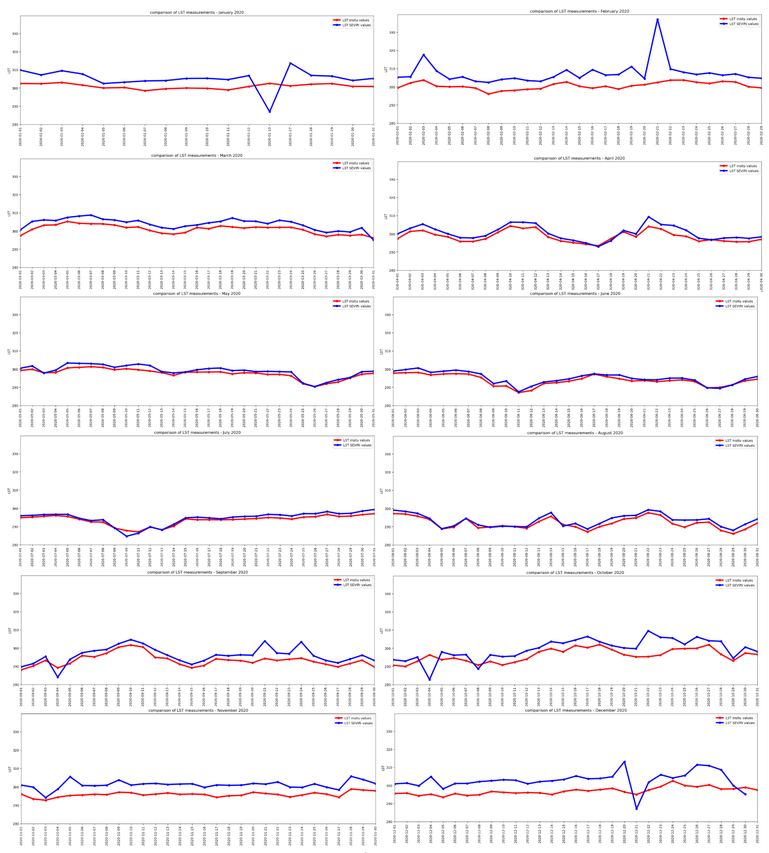


Figure 2

Figure 1 show the LST measurements throughout the year 2020 and Figure 2 shows month wise daily measurements of LST from SEVIRI and insitu measurements.

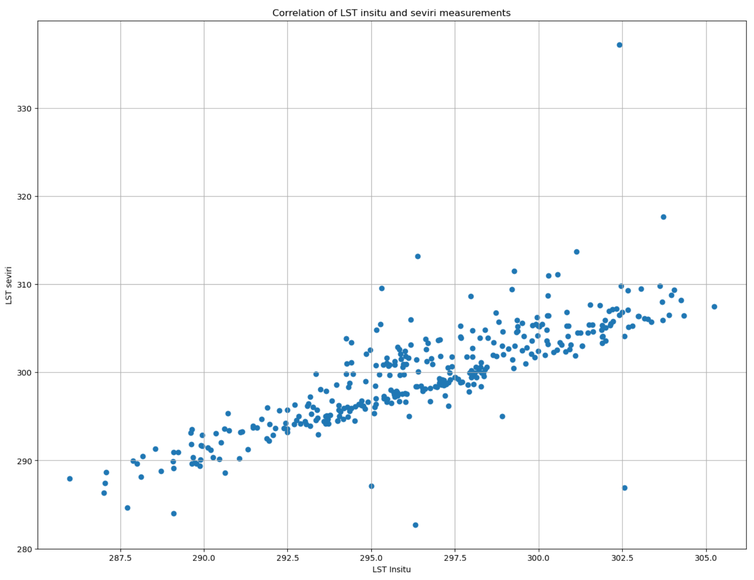


Figure 1 show the LST measurements throughout the year 2020 and figure 2 shows month wise daily measurements of LST from SEVIRI and insitu measurements.

Spearman' correlation coefficient = 0.8691

CONCLUSION

- Figure 1 shows the distribution of LST values for both data from SEVIRI and ground-based validation station. The satellite data is consistent with the in situ ground based data.
- Presence of outliers in measurements from SEVIRI.
- Marginally higher LST values observed in SEVIRI data when compared to that of ground station data.
- The spearman's coefficient for LST measurements gives a good score.

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Outlook:
The ground validation station at Namibia is a reliable data source for in situ measurements for LST, due to its location in desert. This could be useful for climate studies that demand high temporal resolution data for time series analysis.