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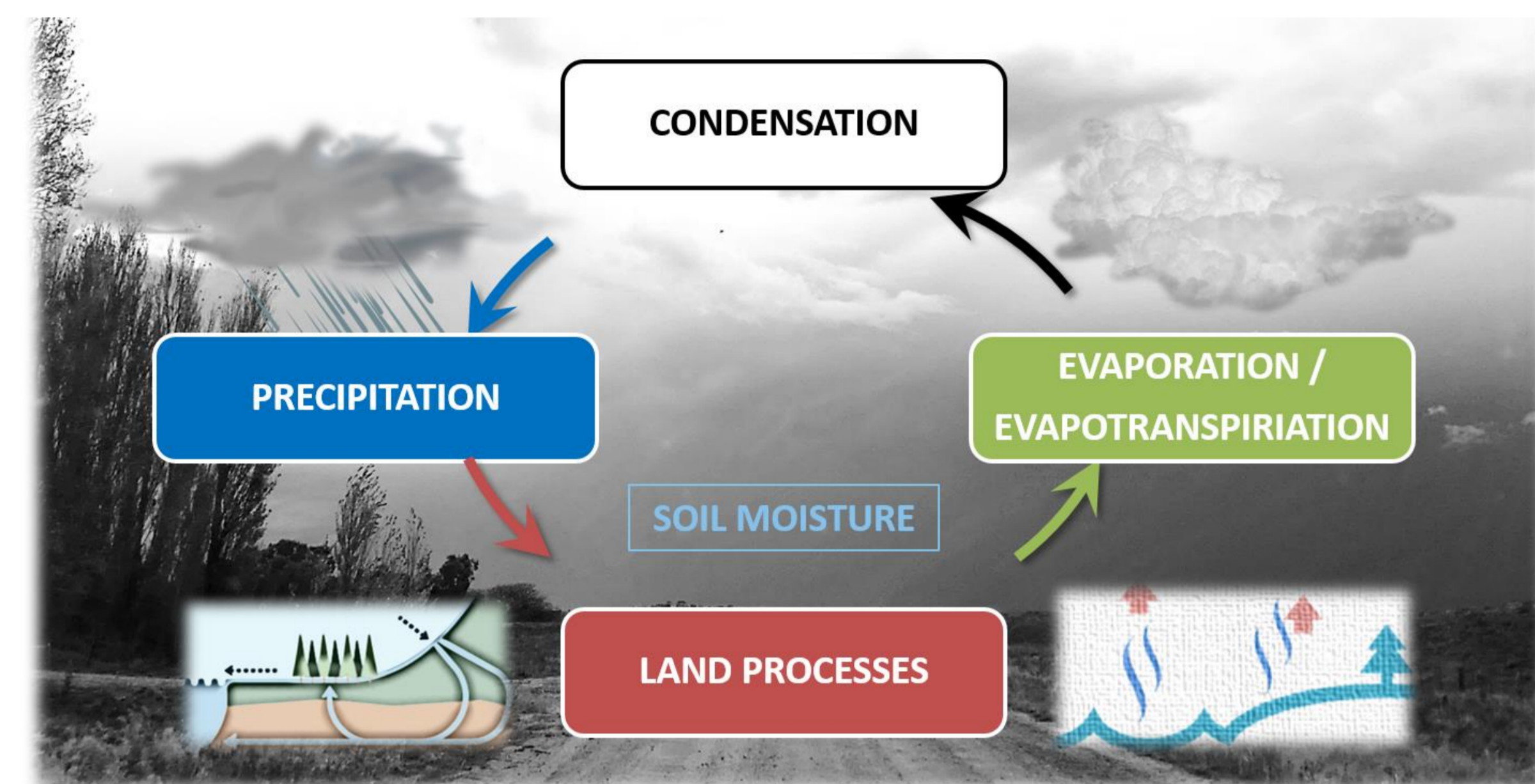
Acknowledgement

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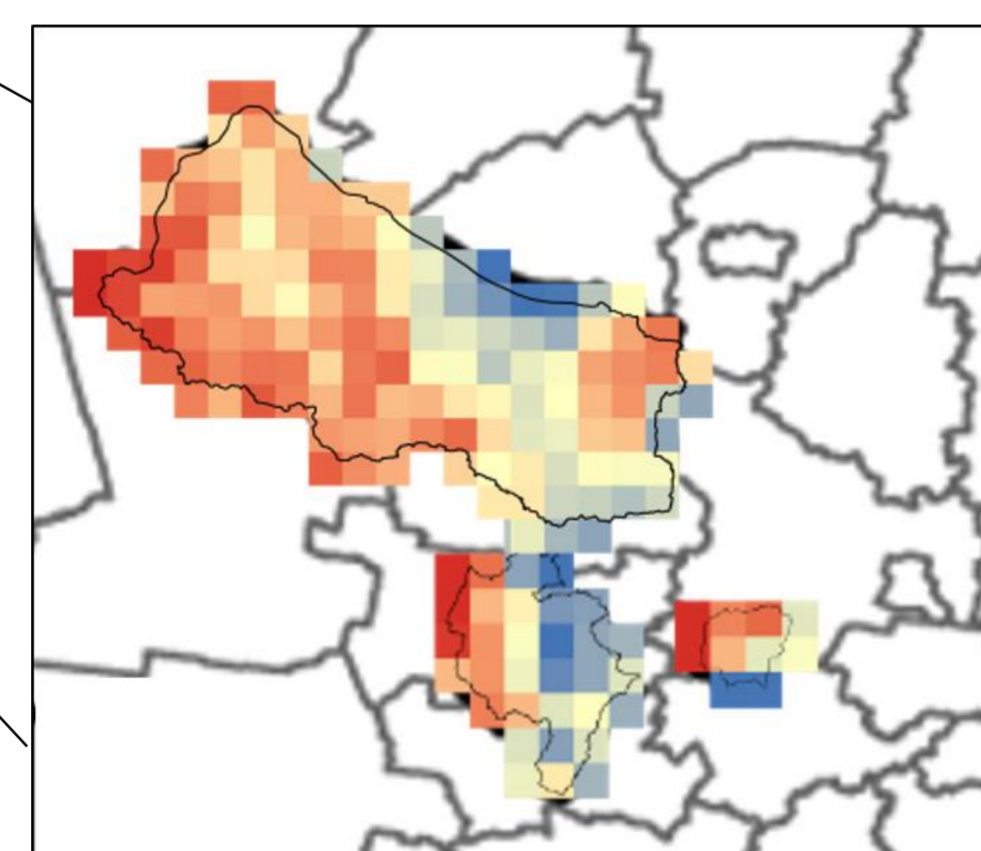
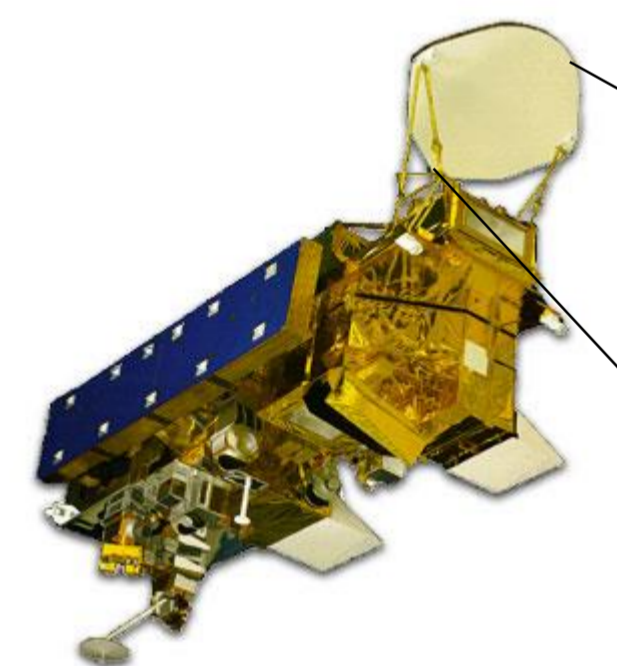
1. Introduction

Soil Moisture (SM)

A key variable in hydrologic and atmospheric processes



Satellite Remote Sensing
Viable alternative to *in situ* measurements of SM



Coarse Spatial Resolution (>100 km²)
Significant limitation for regional applications

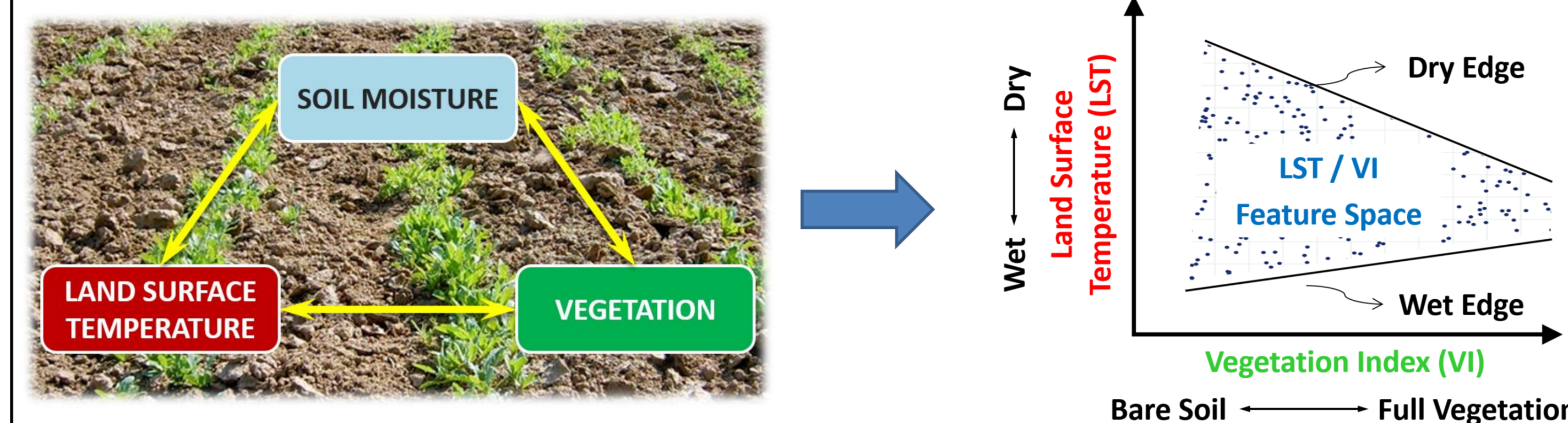
A **memory-based approach** to spatially disaggregate coarse SM based on conditional relationship of vegetation with time-aggregated SM

References

Kim, S., K. Balakrishnan, Y. Y. Liu, F. M. Johnson, and A. Sharma (under review), Spatial Disaggregation of Coarse Soil Moisture Data by Using High Resolution Remotely Sensed Vegetation Products, *Geophysical Research Letters*

Peng, J.; Niesel, J.; Loew, A., Evaluation of soil moisture downscaling using a simple thermal-based proxy-the REMEDHUS network (Spain) example. *Hydrology and Earth System Sciences* **2015**, *19* (12), 4765.

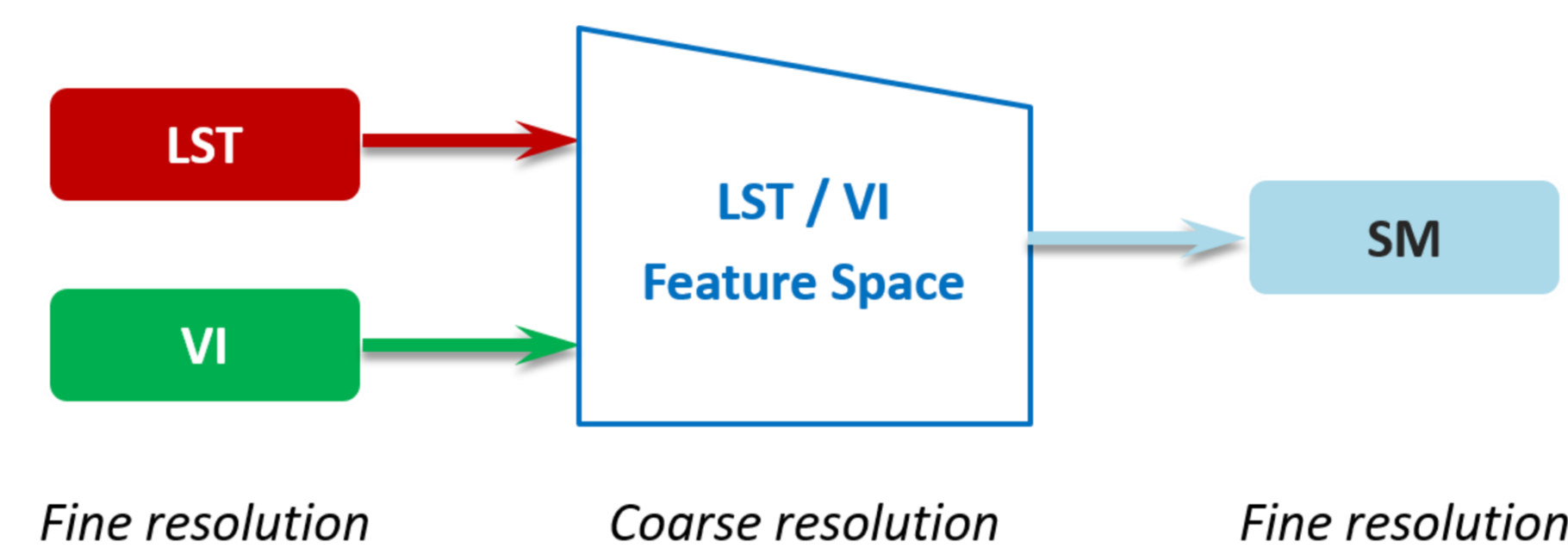
2. Existing LST / VI-based SM Disaggregation



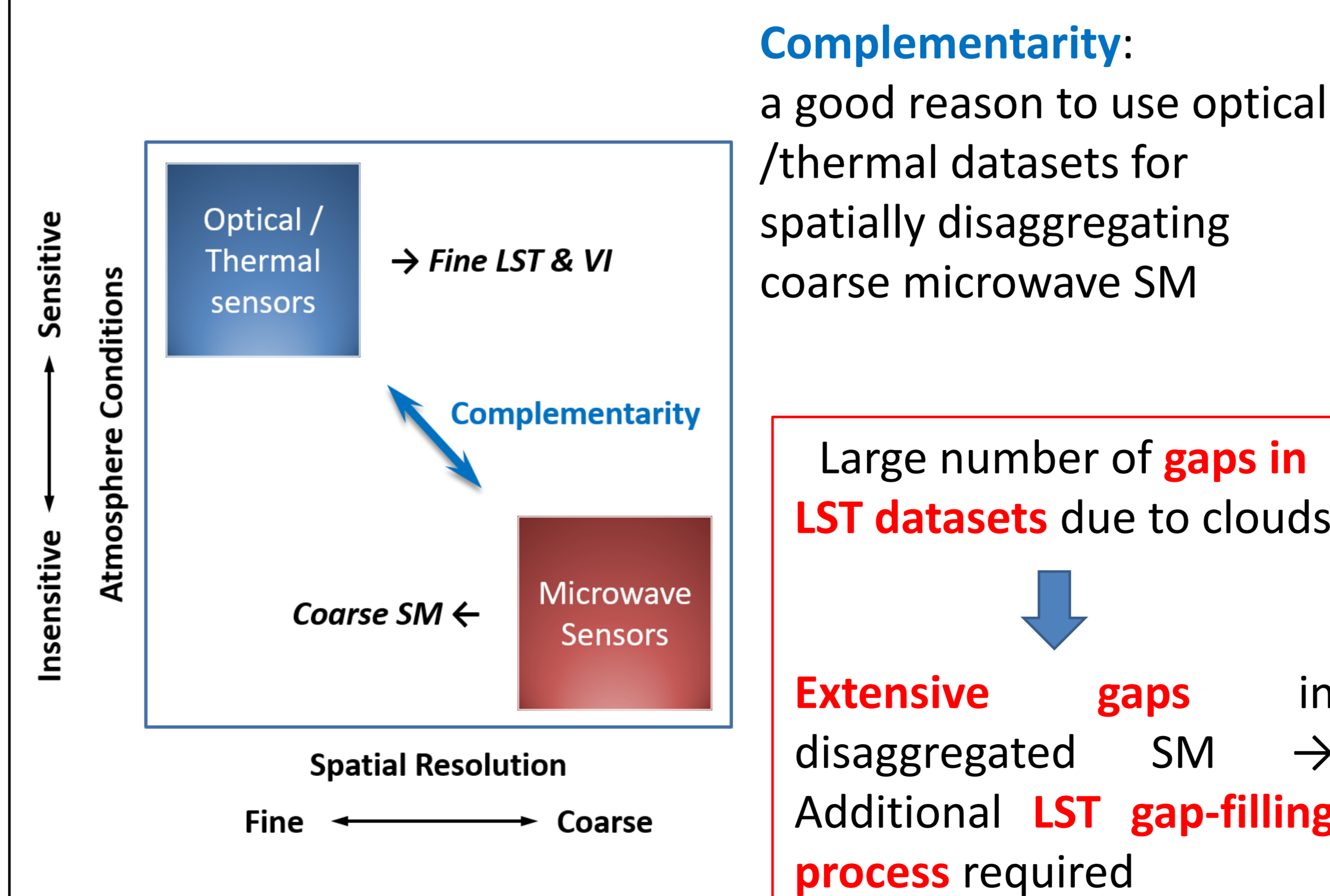
Soil moisture coupling with land surface temperature (LST) and vegetation

Feature space conditioned by LST and vegetation index (VI)

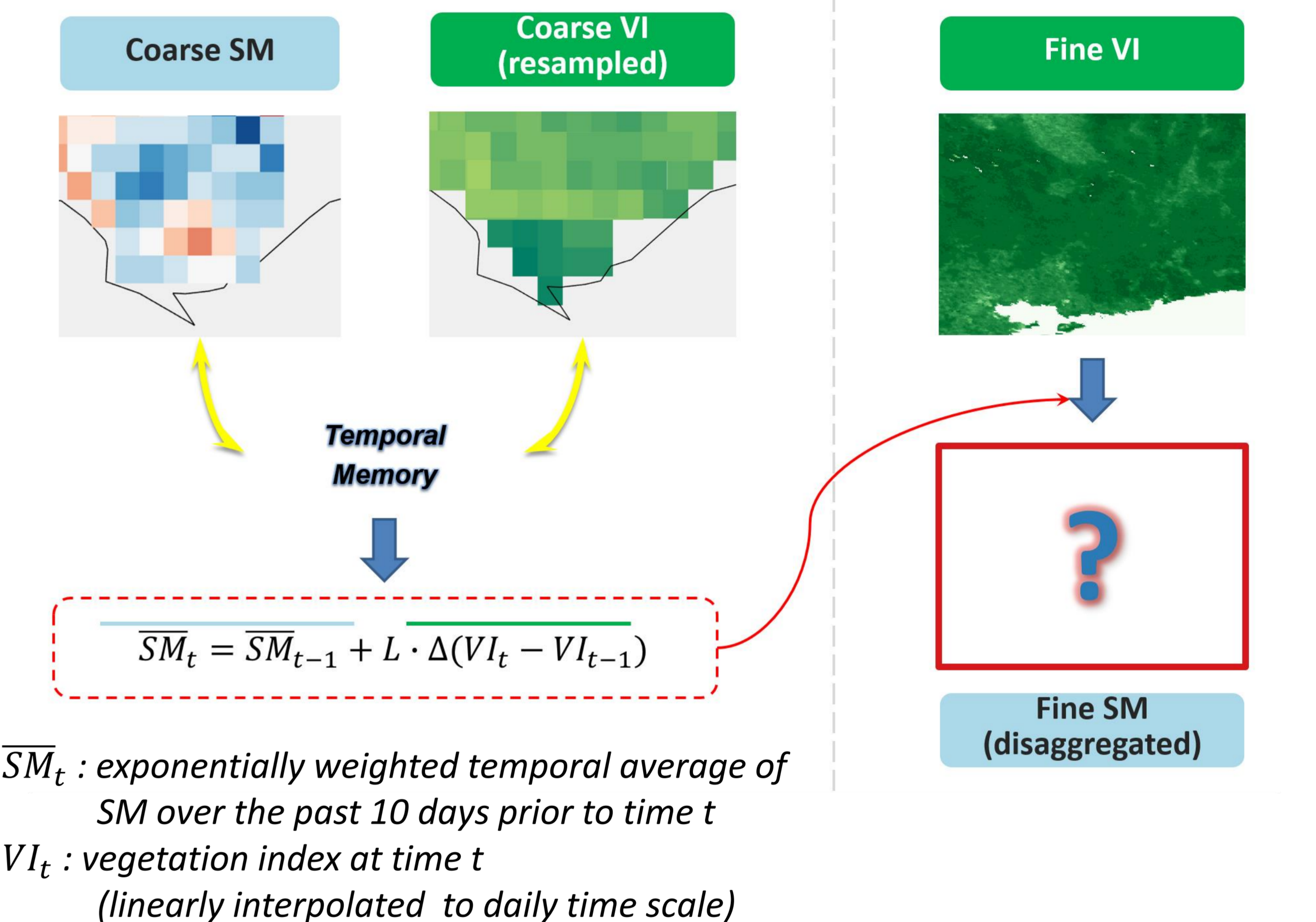
SM disaggregation based on LST-VI



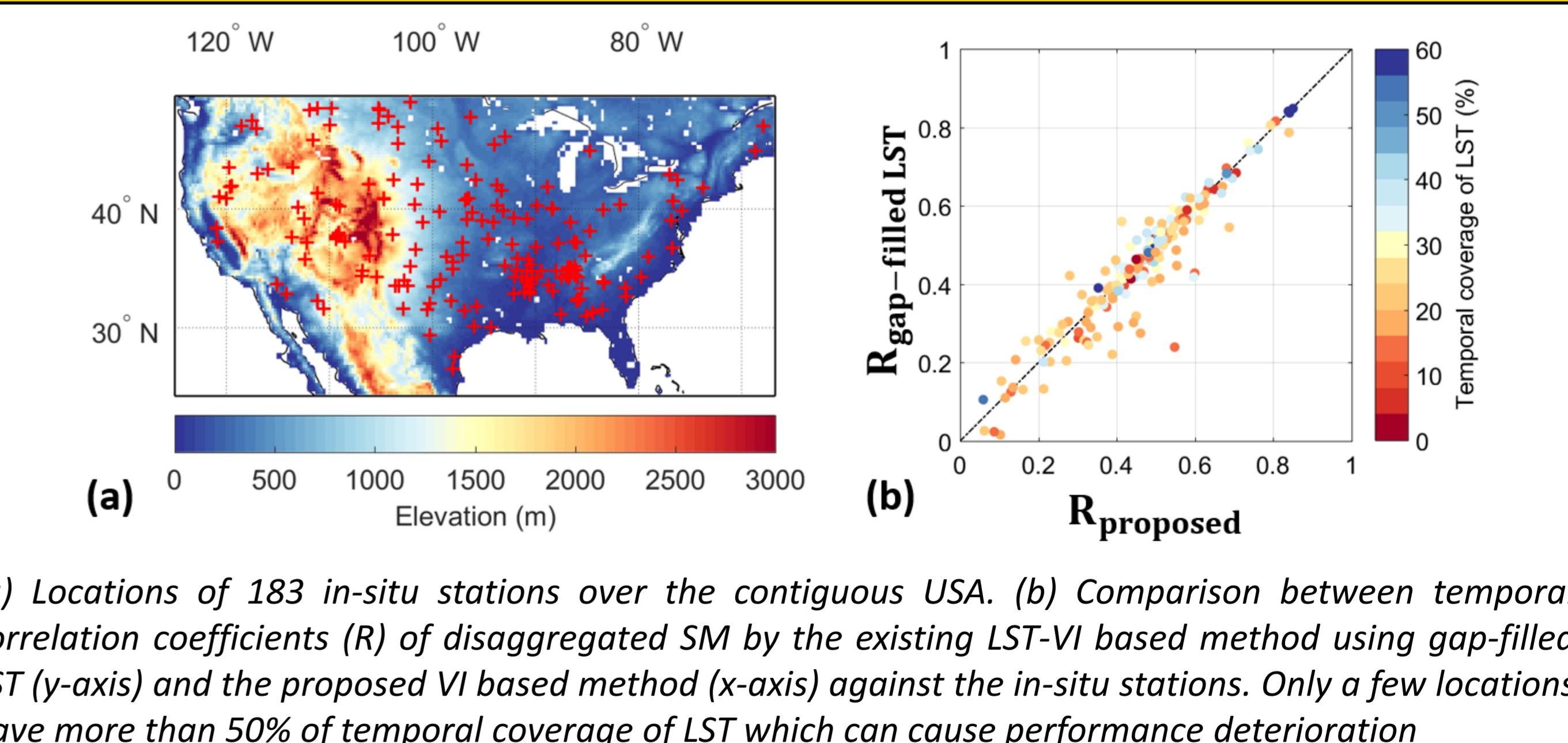
3. Optical vs. Microwave Observations



4. Proposed VI-based Alternative to Using LST



5. Results and Conclusions



- Similar disaggregation performances in R between the existing LST-VI based method using gap-filled LST and the proposed VI based method
- The proposed approach can be a viable alternative to using temperature data for SM disaggregation