

Objectives & Rationale

The TerraClim project aims to build a sound temperature and terrain database, using new technologies to standardise and spatialise climate and terrain information to improve our understanding of the climatic and terrain dynamics of the Western Cape. The objective of this study was to build a temperature and terrain resource specific to the EGVV production area at the highest spatial and temporal resolution possible without compromising accuracy. Data is disseminated through a user-friendly interface (www.terraclim.co.za) for users to access climate and terrain information at farm- and field-level to aid long- and short-term decision making, and thereby addressing one of the main obstacles faced in all agriculture sectors: the accessibility to climate and terrain information for mitigating climate change.

Methods

Automated workflows were developed for ingesting multiple weather station datasets for the EGVV area into one standardised climate database, and wall-to-wall climate surfaces were generated (interpolated) for the EGVV area. The climate surfaces were used to produce seasonal summation maps to aid inter- and intra-season decision making. The online GIS platform (www.terraclim.co.za) was developed to disseminate the climate surfaces, terrain derivatives and industry-specific bioclimatic indices at an orchard level.

Key Results

This study has laid the foundation for improving our understanding of the temperature and terrain dynamics within the EGVV production area. New techniques were developed to improve temperature surface interpolations. A range of software tools were developed. The tools are modular in nature and designed to accommodate future database expansions.

Conclusion and Discussion / Recommendation

The TerraClim tool provides climatic data at high spatial and temporal resolutions at regional scales. This data can be used by producers and researchers to better mitigate climate change and to inform decisions at regional, farm and block level. Positive feedback from the technical transfer activities aimed at agricultural users were received and many of the the interface and reporting functionality suggestions were implemented in TerraClim. The integration of terrain with temperature in situ data has provided hourly wall-to-wall temperature maps quantifying variation at field level that weather stations cannot provide. This information is not only critical for the pome fruit industry, but will also be of great

value for other agricultural sectors (e.g. citrus production) and can seamlessly integrate with other spatial interfaces such as Cape Farm Mapper.