ERIC
RESOURCE APPLICATIONS

Environmental Research &
Information Consortium Pty Ltd
(ABN) ACN (81) 055 194 771
Ph 02 4842 8182
Ph 02 6161 3716
Fax 02 4842 8183
info@eric.com.au
www.eric.com.au

CLIMATE

Introduction

This addresses ERIC map products on climate and their use in crop site selection. Climate information developed by ERIC includes surfaces (grided data) for rainfall and temperature, and the derivation of variables such as frost risk. Applications include evaluation of the suitability of the climate for different crops using homoclime analysis and physiological responses.

The information is used for enterprise site selection, planning and management. The products reduce risk and identify opportunities for enterprise development.

Climate Surfaces

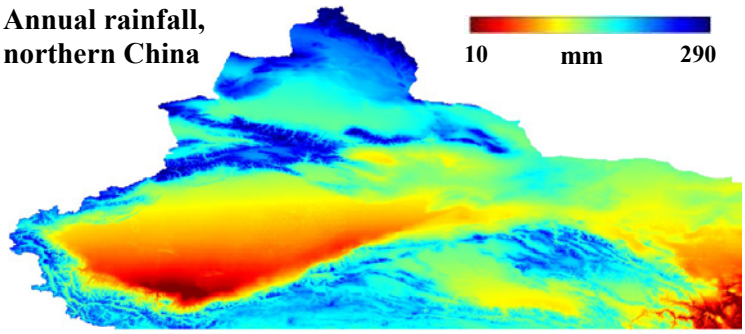
Improvements in spatial detail can be achieved by interpolating between records for meteorological stations taking account of factors that produce variations in climate, such as adiabatic lapse. The basic additional information used in producing climate surfaces is latitude, longitude and elevation.

Surfaces for many climatic variables are available for Australia from the Bureau of Meteorology but detailed application requires knowledge of artefacts arising from their mode of derivation. ERIC has derived surfaces for extensive areas elsewhere, as for China and Turkey.

Frost Risk

Existing climate information can be developed to derive additional information of specific interest, as with using the number

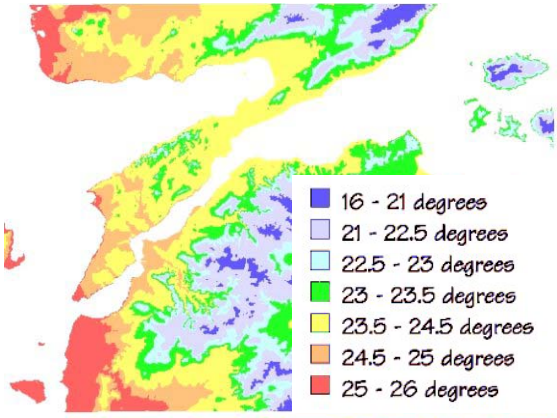
Annual rainfall, northern China



of days below zero and minimum temperatures to map frost risk.

Temperature surfaces derived using DEMs to adjust for adiabatic lapse are regionally sound but locally contain errors, particularly for minimum temperatures. The elevation adjustment makes ridges cooler than the valleys when the reverse occurs due to cold air drainage. This can be corrected by mapping local and regional patterns of cold air drainage from elevation data. Patterns of cold air drainage can also be mapped using night time thermal imagery.

July temperature, southern Turkey



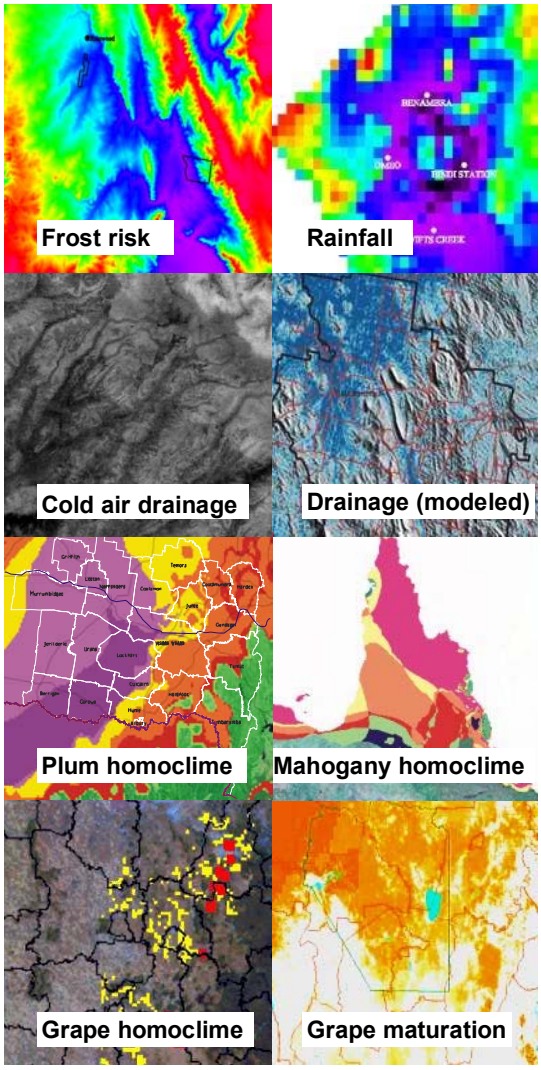
Ancillary Information

Climate related information can be obtained from satellite and airborne imagery. The mapping of surface temperatures is one example, another is flood mapping using satellite radar.

Applications

The climate surfaces are used to map constraints to developments, such as minimum rainfall requirements for forestry and frost risk to viticulture. More detailed information to address enterprise site selection is obtained through homoclime analysis which matches key climatic indices for areas where crops are known to perform well with prospective sites.

The applicability of climate analysis for crop selection is mainly limited by knowledge of the physiological characteristics of plants. Where detailed growth information is known, as for wheat and grapes, a more detailed analysis is conducted based on Heat Degree Days (HDD). This analysis allows selection of grape varieties appropriate to the climate.



Information Integration

ERIC combines climatic information from different sources, presenting it as geo-registered maps. This allows integration with other information, such as costs and market analysis, to produce detailed development and management plans. The information is fundamental for business development in addressing risk and profitability.