

Mobile Apps for Small-scale Farmers in South Africa

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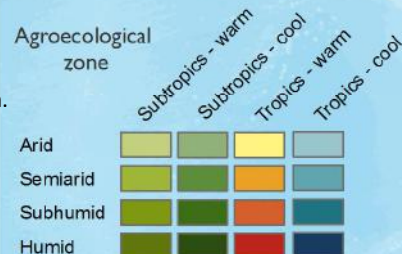
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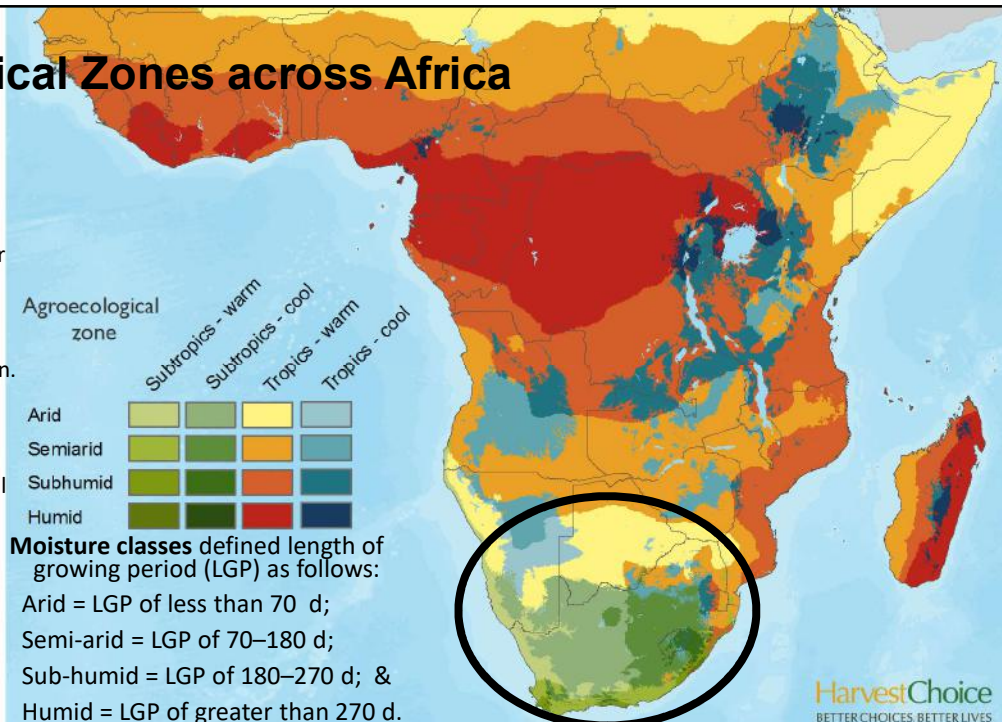
AgroEcological Zones across Africa

- Need to manage resources according to AEZ and water availability.
- Dependent on rainfall for dryland production or stored in dams for irrigation.
- But affected by:
 - High seasonal variability
 - Climate change
 - Therefore need operational systematic updated infor

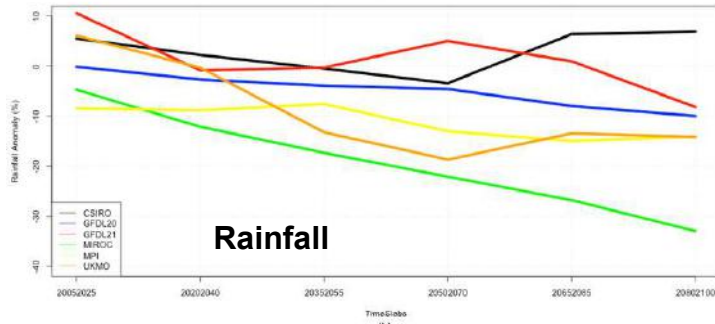


Moisture classes defined length of growing period (LGP) as follows:

- Arid = LGP of less than 70 d;
- Semi-arid = LGP of 70–180 d;
- Sub-humid = LGP of 180–270 d; &
- Humid = LGP of greater than 270 d.

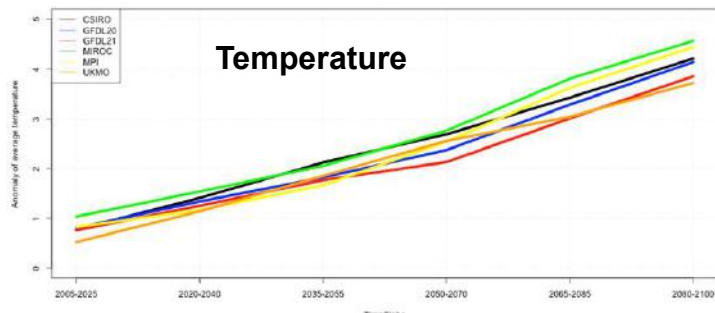


Climate Change projections over South Africa from 6 climate models



Generally, predictions for rainfall are more difficult than prediction for temperatures.

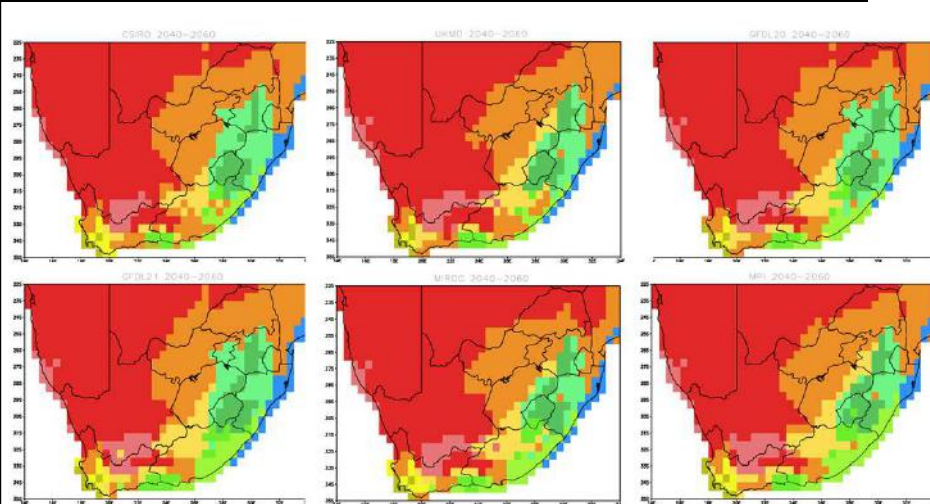
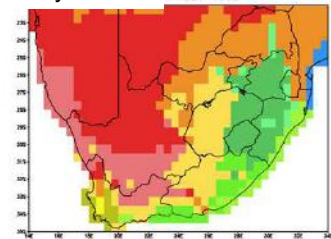
For Rainfall -
as time increases (x-axis),
=> rainfall deviation from normal diverge notably.



For Temperature -
Most models give similar
increases in temperature
with time
by 2050-70: +2 to 2.5°C

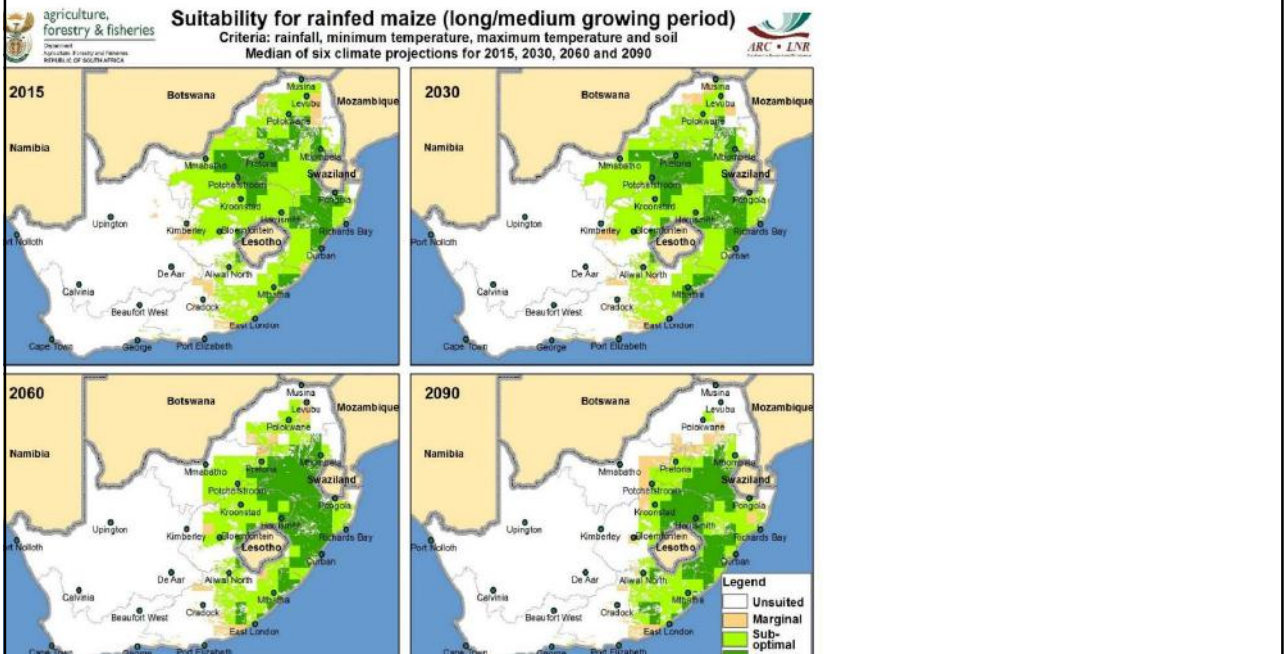
Projected Köppen-Geiger climate zones for 2° C increase in average global temperature 2040-60 (C. Engelbrecht, ARC-SCW)

Present day climate

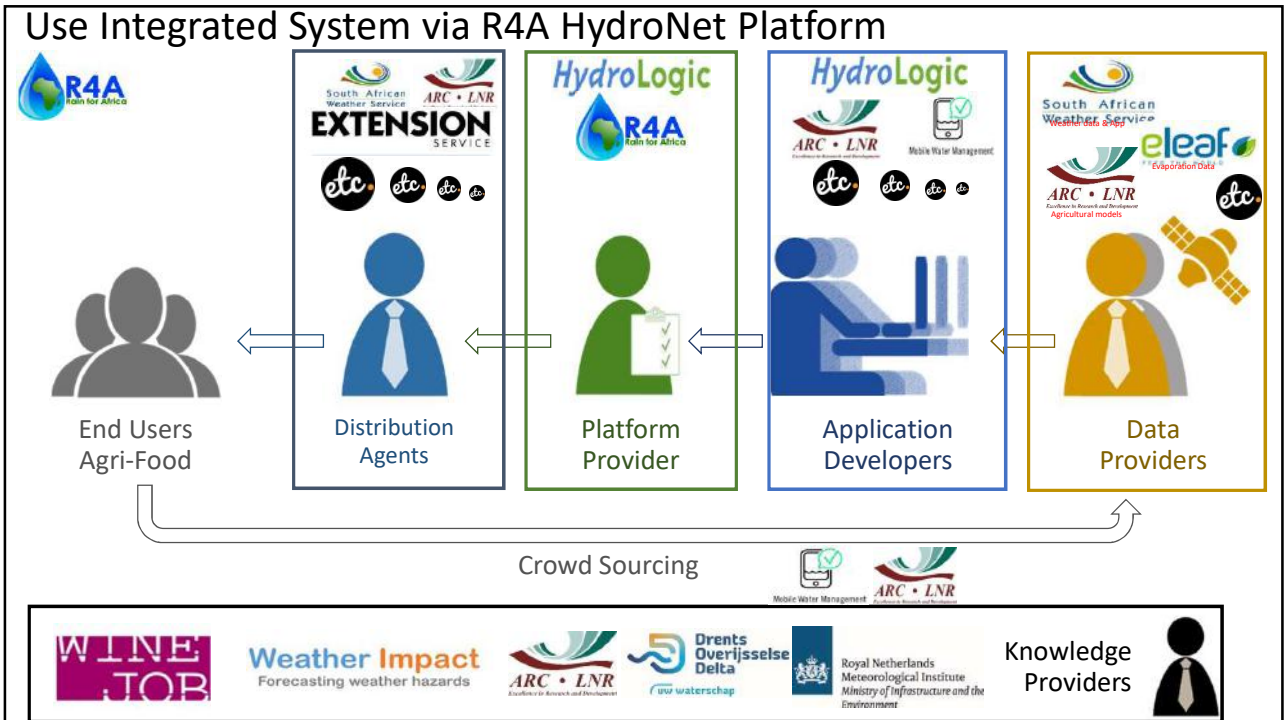


- Af
- Am
- Aw
- BWh
- BWk
- BSh
- BSk
- Csa
- Csb
- Cwa
- Cwb
- Cfa
- Cfb
- Dwc

Shift in Maize Suitability Areas under Changing Climate



Use Integrated System via R4A HydroNet Platform



- Farmers make decisions about when to plant maize every growing season.
- Many factors influence such a decision
 - past experience; current info; climatic conditions; logistics & availability of inputs.
- Farmers only need info for their own farm
 - Register with precise location on map
- Weather conditions change everyday
 - Need update advice according to new forecast

In Rain for Africa (R4A) project,

AgriCloud = a mobile phone 'Planting App'

- Addressing these gaps in info available to small-scale farmers.



Based on Scientific Information



- Climate data grid for maize growing regions from ARC-ISCW & SAWS & NASA & ECMWF.
- Define start of planting window by long-term 'last frost date'.
- Use 25 mm rainfall received within 20 days as criteria for good planting conditions.
 - Previous 10d from measured rainfall
 - Future 10d from ECMWF rainfall forecast
- Indicate good time to start planting maize



Communication methods

- Delivered via cellular telephone:
 - For smart phone – use “app” or website
 - For simple phone – use interactive “USSD”
(Unstructured Supplementary Service Data)
- Targeting both farmers and extension:
 - Free system via feedback credits
 - Individual or Commercial subscription
 - Government bulk subscription
- Available in 9 South African languages
 - English, IsiXhosa, IsiZulu, Sepedi, Sesotho, Setswana, Tshivenda, Xitsonga, Afrikaans



Technical Aspects

- ARC – Develop & provide advisories
 - via API (Application Programming Interface)
 - using REST web services
(Representational State Transfer)
- USSD service provider access web services to supply info in SMS
(Short Message Service = text message of 160 characters) Dial a simple code, & receive localized advisories

Crowdsourcing

- Farmers & extension register for use
- Contact database with:
 - Cell phone number for farmer or extension worker
 - Coordinates = specific location of farm
 - Accumulate credits
- Collect weather info via:
 - Qualitative observation using symbols
 - Manual measured rainfall amounts – in Version 2
- Provide local info to weather forecasters



- Download from Google App Store
- Search and install:
- “AgriCloud”



AgriCloud App (8-2018)

The collage illustrates the app's user interface and features. It shows the process of adding a farmer, the main dashboard with a score of 100, and various advisory services. A calendar highlights specific dates for planting and spraying. A weather forecast is also displayed for a specific location.

AgriCloud USSD to get Planting and Spraying info

Use *134*8383#

- Press call button
- Wait for reply
- Register with Tel# & town
- Follow instructions
- Choose advisory & send
 - 1=planting
 - 1=disease control
 - 2=weed control
 - 2=spraying
- Wait for sms to receive information for your area

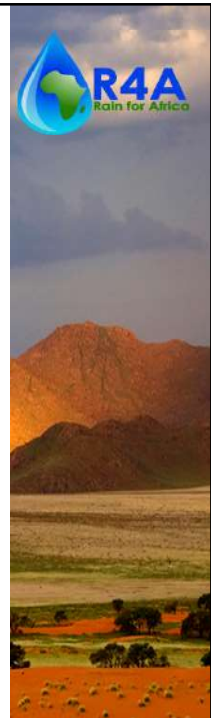


Example of output for info about spraying for weeds



Unique aspects of “AgriCloud” mobile App

- For both Smart and Simple phones
- In South African local languages
- Advice updated everyday
- Crop specific information
- Crowd-sourcing collection of weather observations
- Modular system to easily add new advisories





Thank You Ke a Leboha
Dankie Siyabonga
Terima Kasih
謝謝 Asante شكرا

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