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.

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
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)
Shift in Maize Suitability Areas under Changing Climate

End Users
Agri-Food

Distribution
Agents

Platform
Provider

Application
Developers

Data
Providers

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

- Provide local info to weather forecasters
• Download from Google App Store
• Search and install:

• “AgriCloud”
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
  ▪ 2=spraying
    1=disease control
    2=weed control
• Wait for sms to receive information for your area

Example of output for info about spraying for weeds

*134*8383#

What info would you like?
1.Planting Advisory
2.Spraying Advisory

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