



***Climate Systems Analysis Group***  
*University of Cape Town*

# CSAG - Overview

Group consists of approx. 30 people (Staff, Postdocs, Phd, Msc)

Activities include:

- Statistical downscaling (SOMD)
- Regional Climate Modelling (WRF, Precis, RegCM)
  - Extreme events
  - Aerosol sensitivity
  - Southern African climate sensitivity (land surface feedbacks)
  - Parameter sensitivity studies (IBM Grid, CPDN Regional)
  - Dynamical climate downscaling
- End user communication and climate data provision
  - Seasonal forecasts ([www.gfcsa.net](http://www.gfcsa.net))
  - Climate change projections (Data Portal/CIP)
- Model development (CAM-EULAG)
- GCM based seasonal forecasting (HadAM3P and CAM-EULAG)



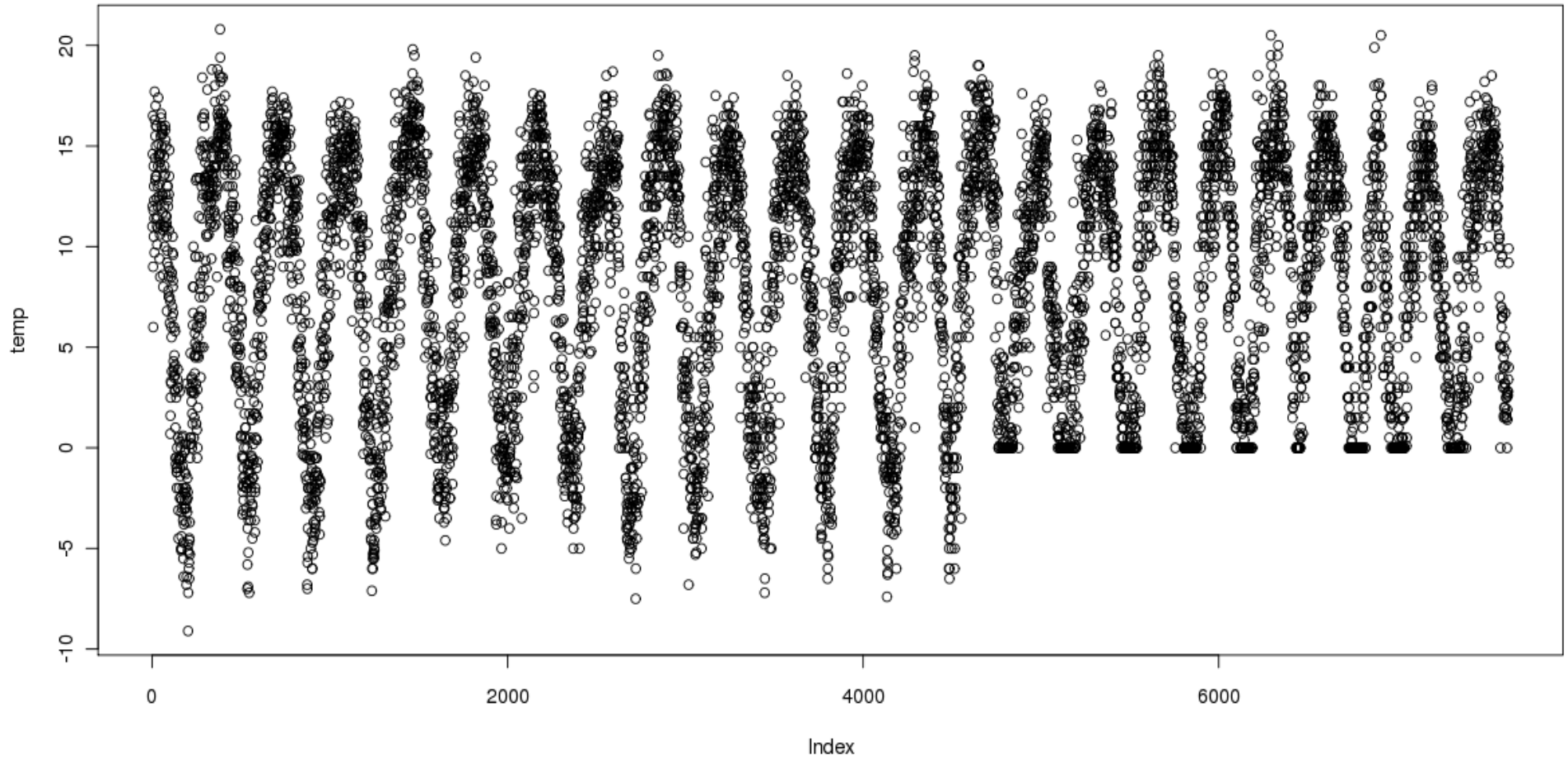
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# Adapting to what?



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# Baseline climate



# Future Climate Scenarios

- Future climate mean state
- Future variability
- Stake holder time and space scales
- Robust, defensible, **actionable** answers

- Multiple models
- Multiple emission scenarios
- Multiple downscaling methods
- Uncertainty

- More models
- More downscaling methods
- Dynamical analysis
- Accepting uncertainty



# Communicating

- Stake holder relevant
- Accessible
- Interpretable
- Actionable

- Spectrum of stake holders
- Complexity of results
- Uncertainty

- Stakeholder driven
- Guidance and training
- Communicating uncertainty

(Sometimes the answer is that we don't know the answer)



# Past Collaboration

START – Regional Node for Climate Modelling and Downscaling  
RCM modelling  
Climate Scenario Downscaling

SEI-Oxford – Stockholm Environment Institute  
Adaptation (weADAPT)  
Training (CSAG/UNITAR WinterSchool)

Hadley Centre UK  
GCM modelling (HadAM3) (Seasonal Forecasting)  
RCM modelling (Precis) (Climate Downscaling)

Iowa State University  
RCM modelling (MM5/WRF) Climate Downscaling/Sensitivity

PennState University  
Statistical downscaling  
Cross-institutional teaching (remote learning)

Various African partners (START, ACCCA)



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# Present/Fu

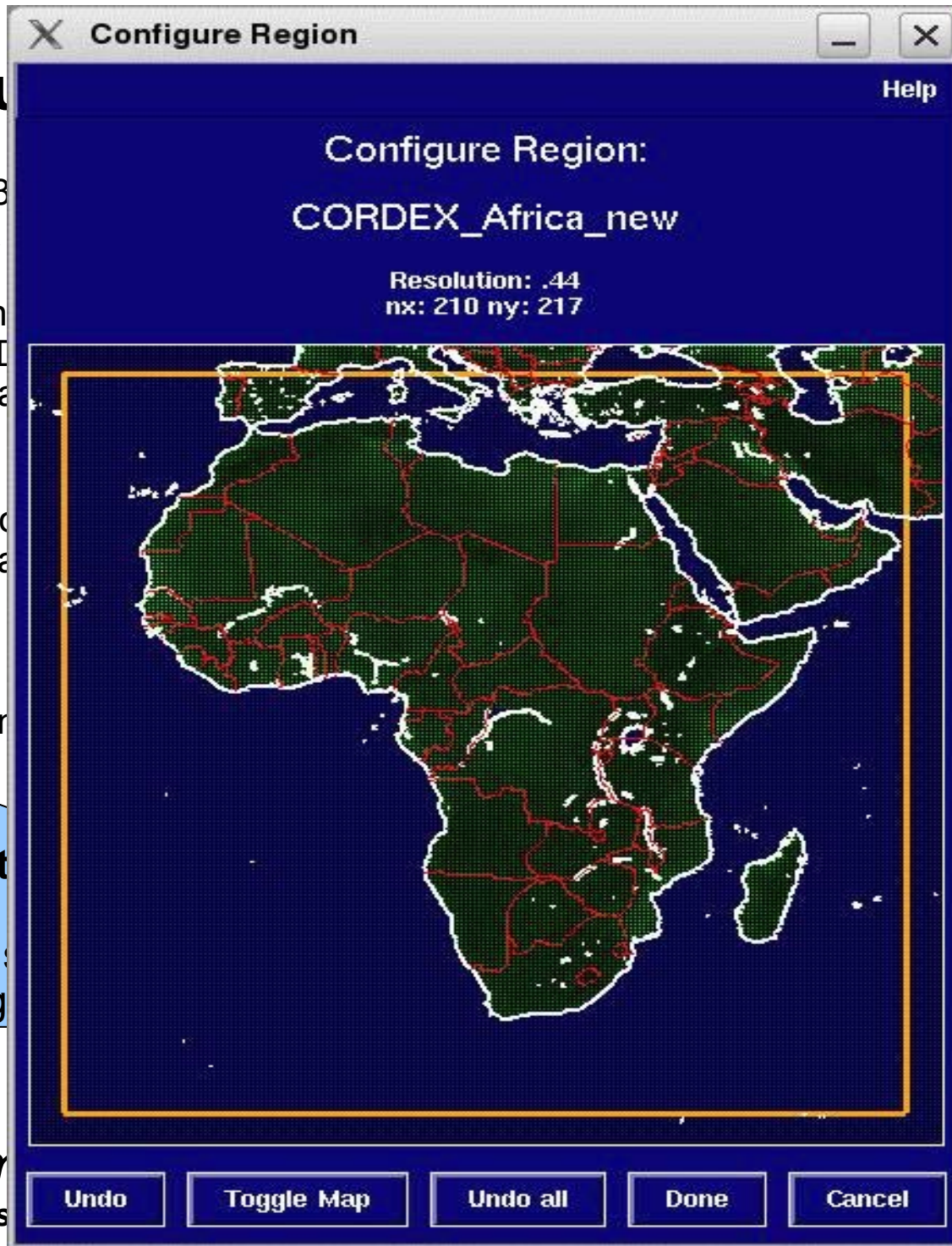
UNITAR EC3  
Data  
CCE  
Train  
weAD  
Clima

CORDEX (Co  
Africa

ACDI (African

**African Cent**

Training focus  
Social Engag

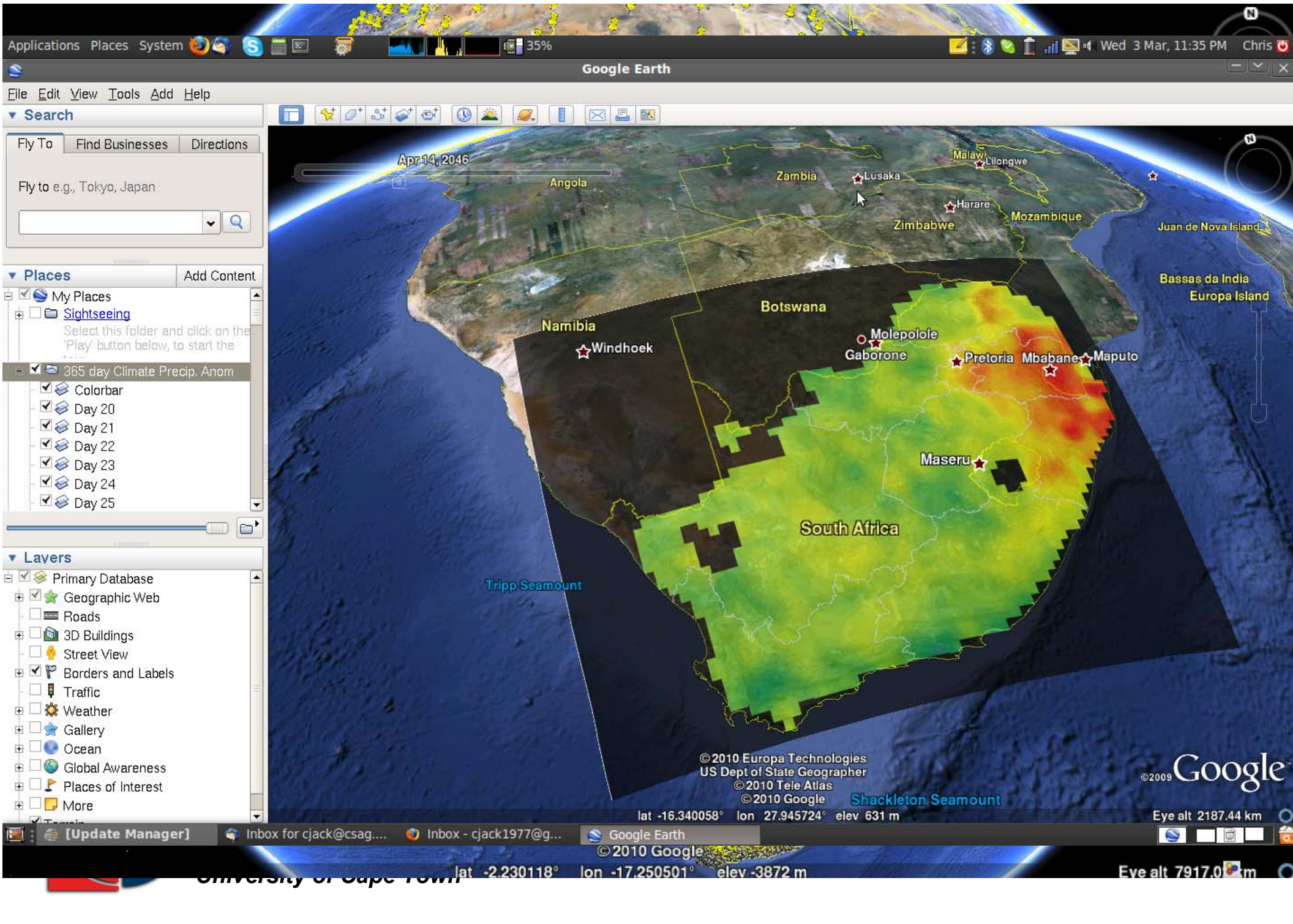


tion -> Action

**CM downscaling**

n (1951 – 2100)  
grations  
)  
ecis, WRF, RegCM3)  
sation schemes  
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n  
rmatting (!)





Google Earth

File Edit View Tools Add Help

Search

Fly To Find Businesses Directions

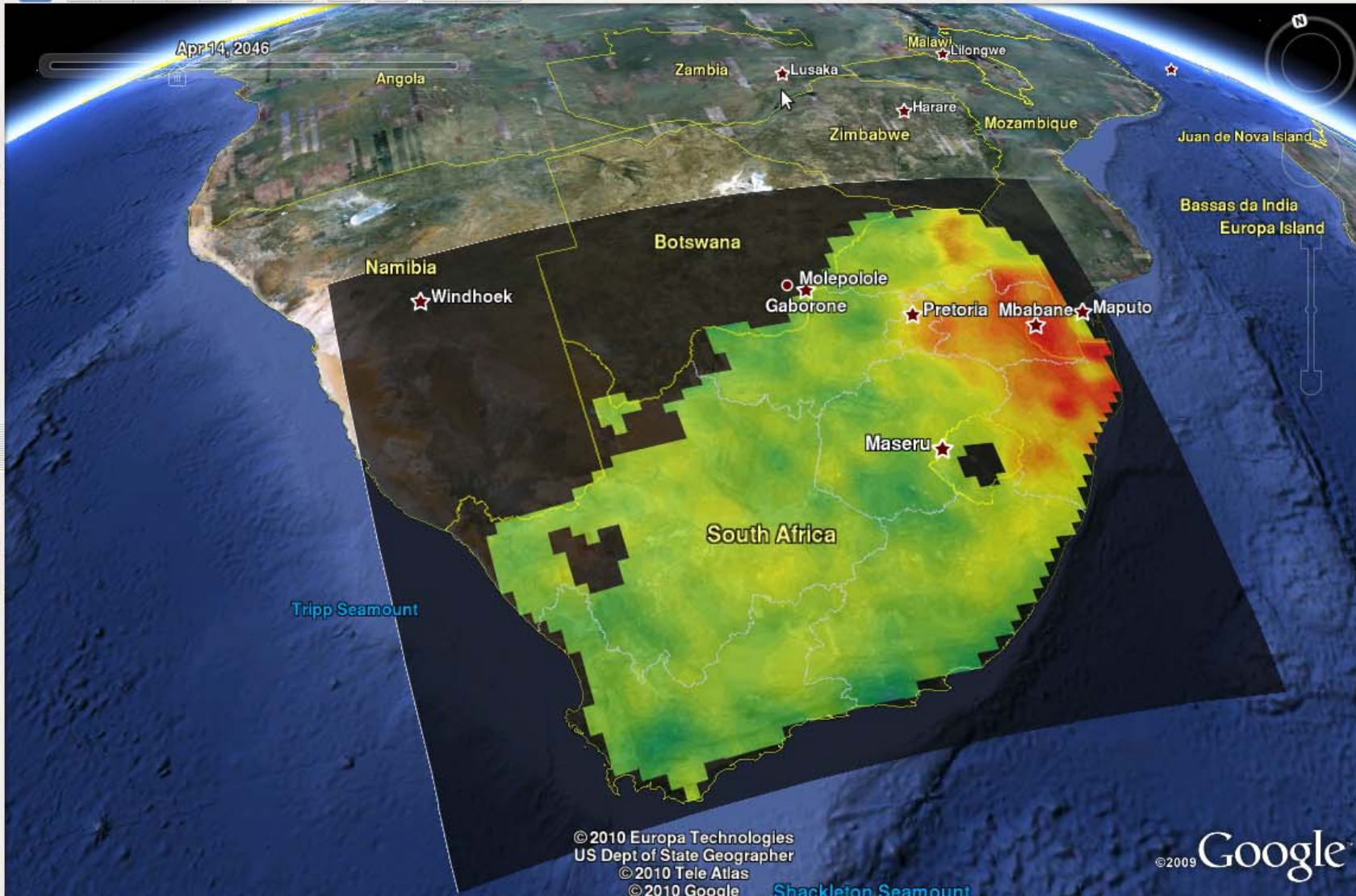
Fly to e.g., Tokyo, Japan

Places

- My Places
- Sightseeing
- 365 day Climate Precip. Anom
  - Colorbar
  - Day 20
  - Day 21
  - Day 22
  - Day 23
  - Day 24
  - Day 25

Layers

- Primary Database
- Geographic Web
- Roads
- 3D Buildings
- Street View
- Borders and Labels
- Traffic
- Weather
- Gallery
- Ocean
- Global Awareness
- Places of Interest
- More



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lat -16.340058° lon 27.945724° elev 631 m

Eye alt 2187.44 km

© 2010 Google

lat -2.230118° lon -17.250501° elev -3872 m

Eye alt 7917.0 m

# Future Opportunities

## Research

Analysis of climate projections in developing nations (Africa/Asia)

Shortage of analysis!

Understanding in the context of regional dynamics

Tendency to accept numbers as information

## CORDEX

Large amount of analysis required but also possibility for dynamical or statistical downscaling collaboration

## Communication and Training in Developing Nations

Climate Information Portal (CIP)

Development of training materials and curricula for stakeholder education

Climate Change Winter School (UNITAR/SEI)

Inter-institutional graduate teaching



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# Institutional Challenges in Africa

## **Sustainability**

Continuity of funding (funding cycles)  
Continuity of knowledge (transient human resources)

## **Critical Mass**

Institutional critical mass is often not present in order to engage with bigger picture

## **Stakeholder Engagement**

Mis-interpretation or mis-representation of data/information (data != information)

## **Mode of engagement between developed and developing nations**

Should be internally driven to build capacity in the long term

## **Training**

Often external and draws people away  
Needs to be internal and African focussed (ACDI)



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# Infrastructural Challenges in Africa

## Bandwidth

Sharing data restricted by bandwidth limitations  
E-Learning opportunities often limited

## Computational Resources

Modelling challenged by computational resources  
Bandwidth limits sharing of resources  
HR support limits use of resources

HOWEVER

Things are improving rapidly!



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