

# ESTABLISHING THE CATHEDRAL PEAK RESEARCH CATCHMENTS, SOUTH AFRICA AS A LIVING LABORATORY

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SAEON  
South African Environmental  
Observation Network



# Drakensberg Mountain Range

**Key water source area  
(& biodiversity)**

**Climate**

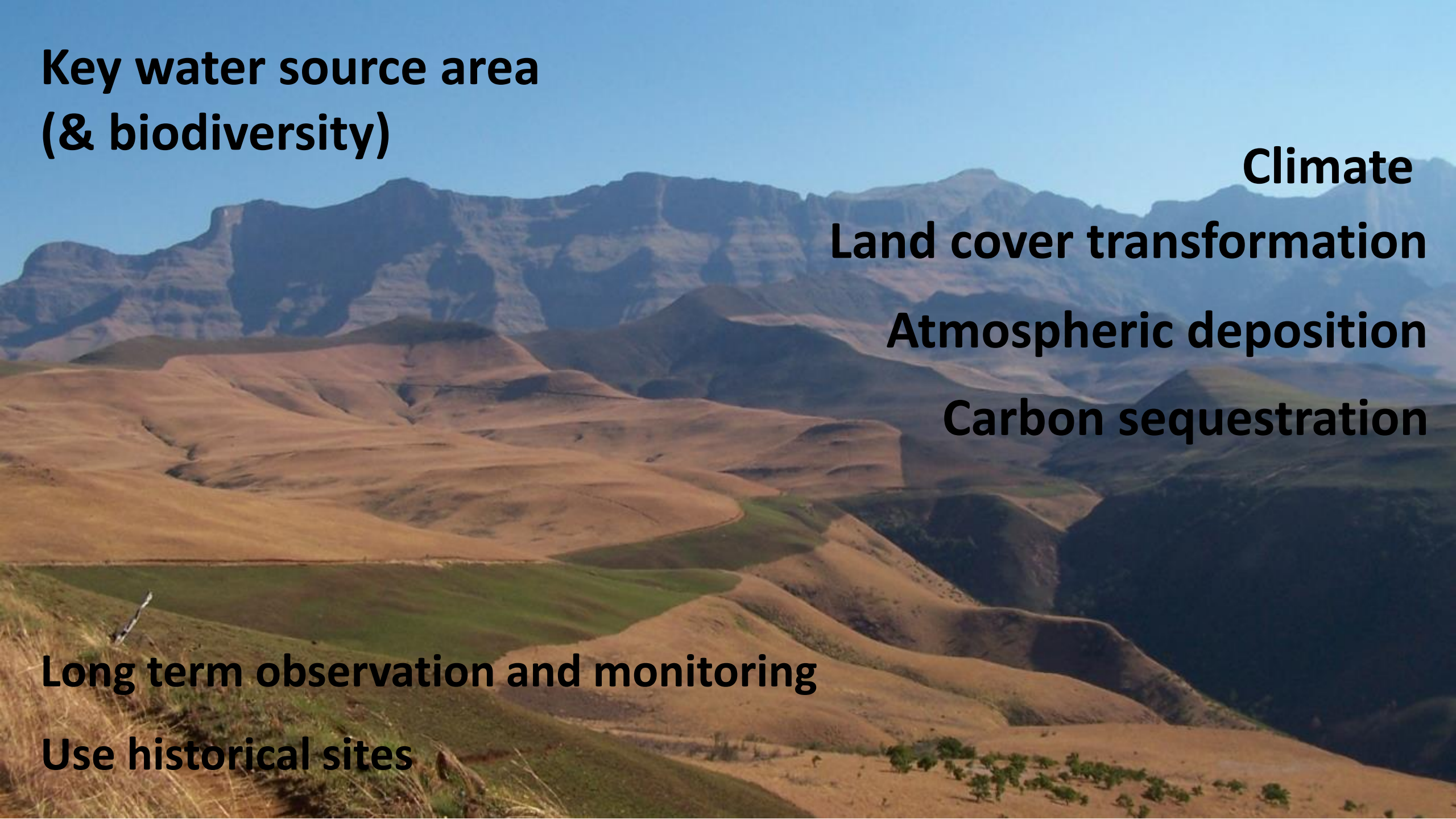
**Land cover transformation**

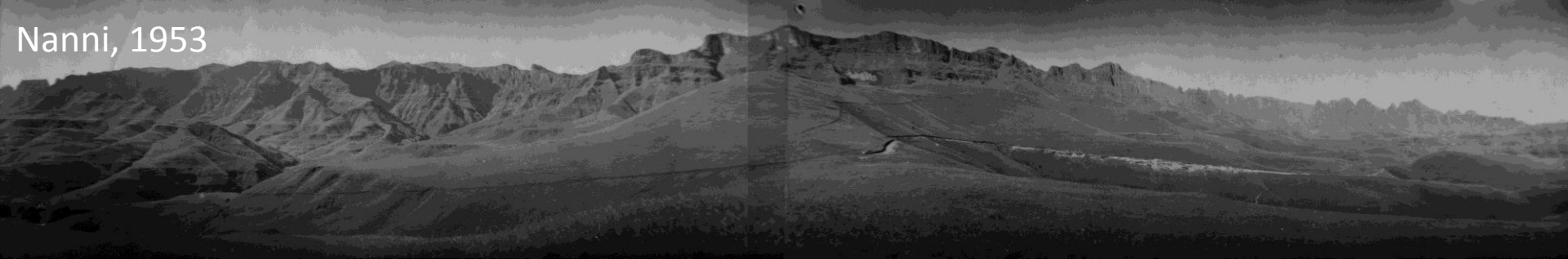
**Atmospheric deposition**

**Carbon sequestration**

**Long term observation and monitoring**

**Use historical sites**





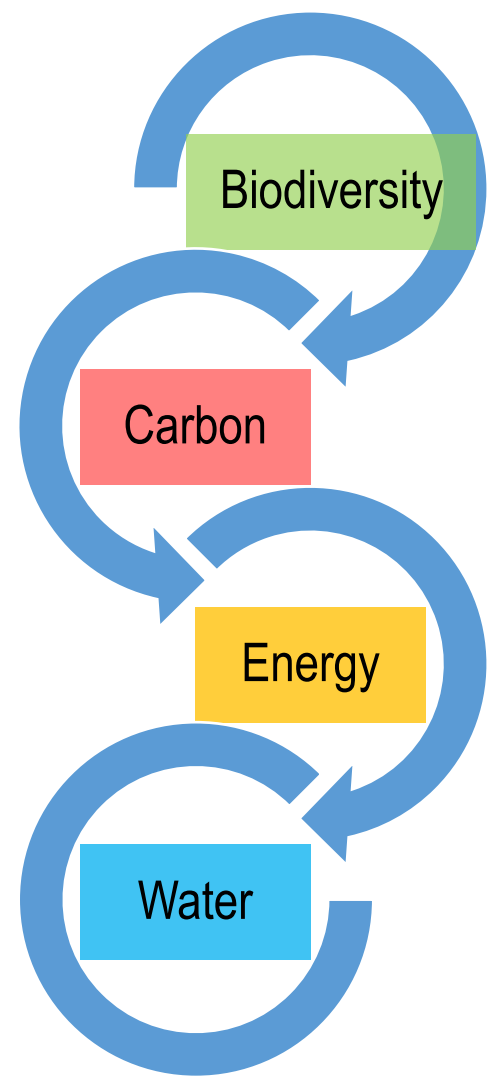
Nanni, 1953

## Cathedral Peak Research Catchments

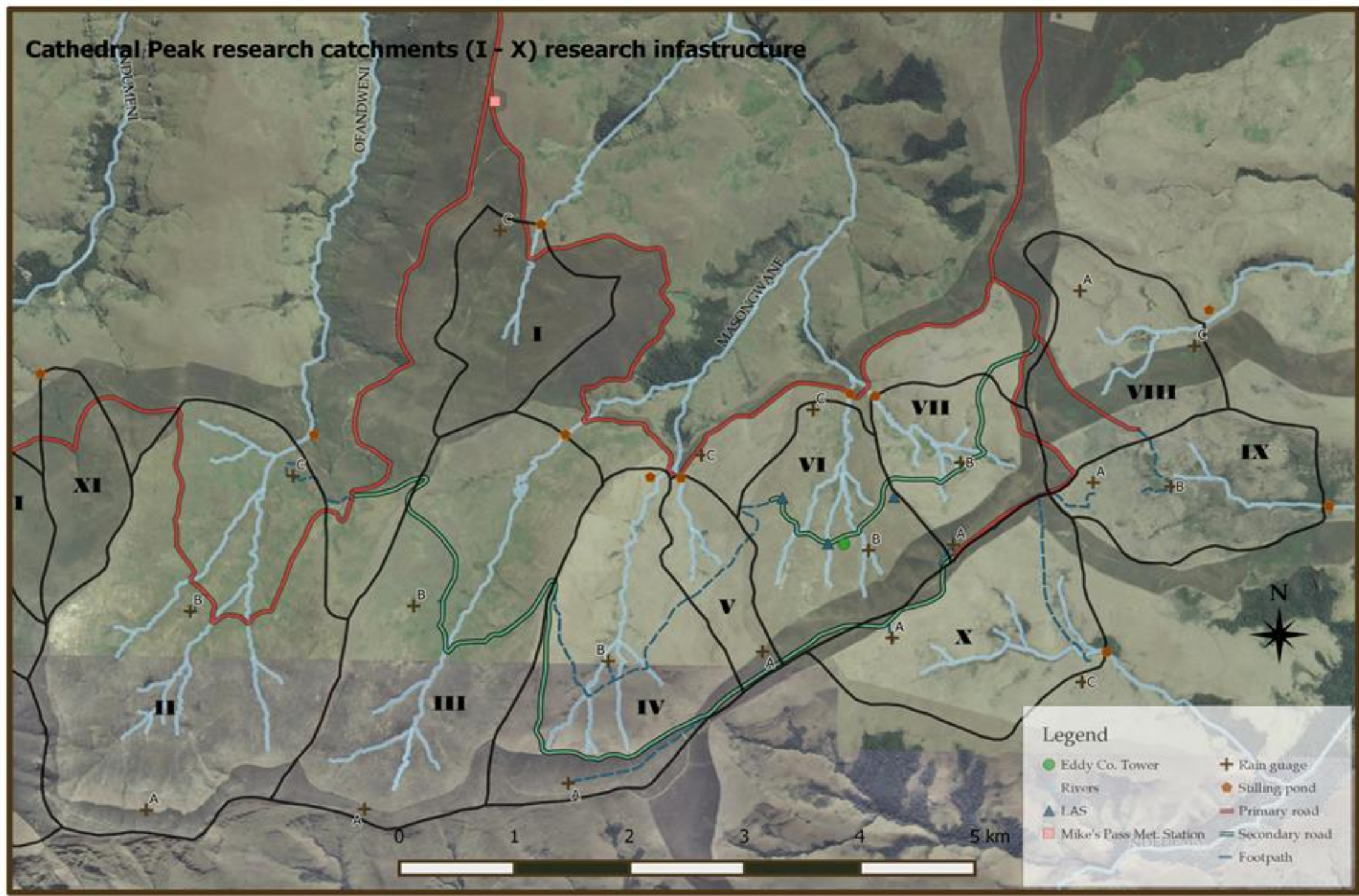
- Historically monitored from 1949 – 1995
- Various land management treatments
- Reestablished in 2012
- Monitoring designed to improve understanding of the interactions and feedbacks between biodiversity – carbon – energy – water in an integrated manner

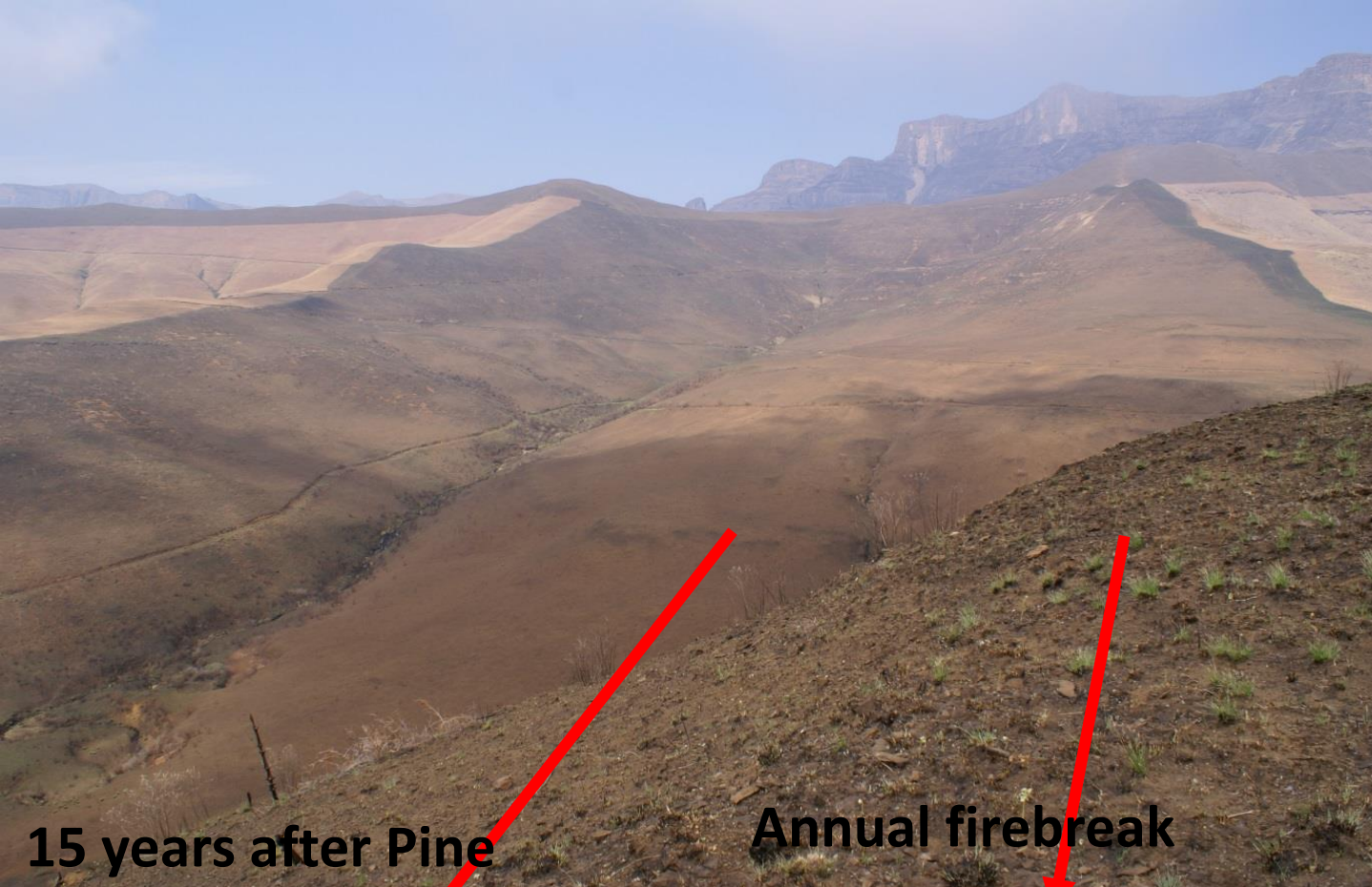


Puttick 2012



# Cathedral Peak research catchments (I - X) research infrastructure





**Pristine grassland  
Catchment**

**15 years after Pine**

**Annual firebreak**



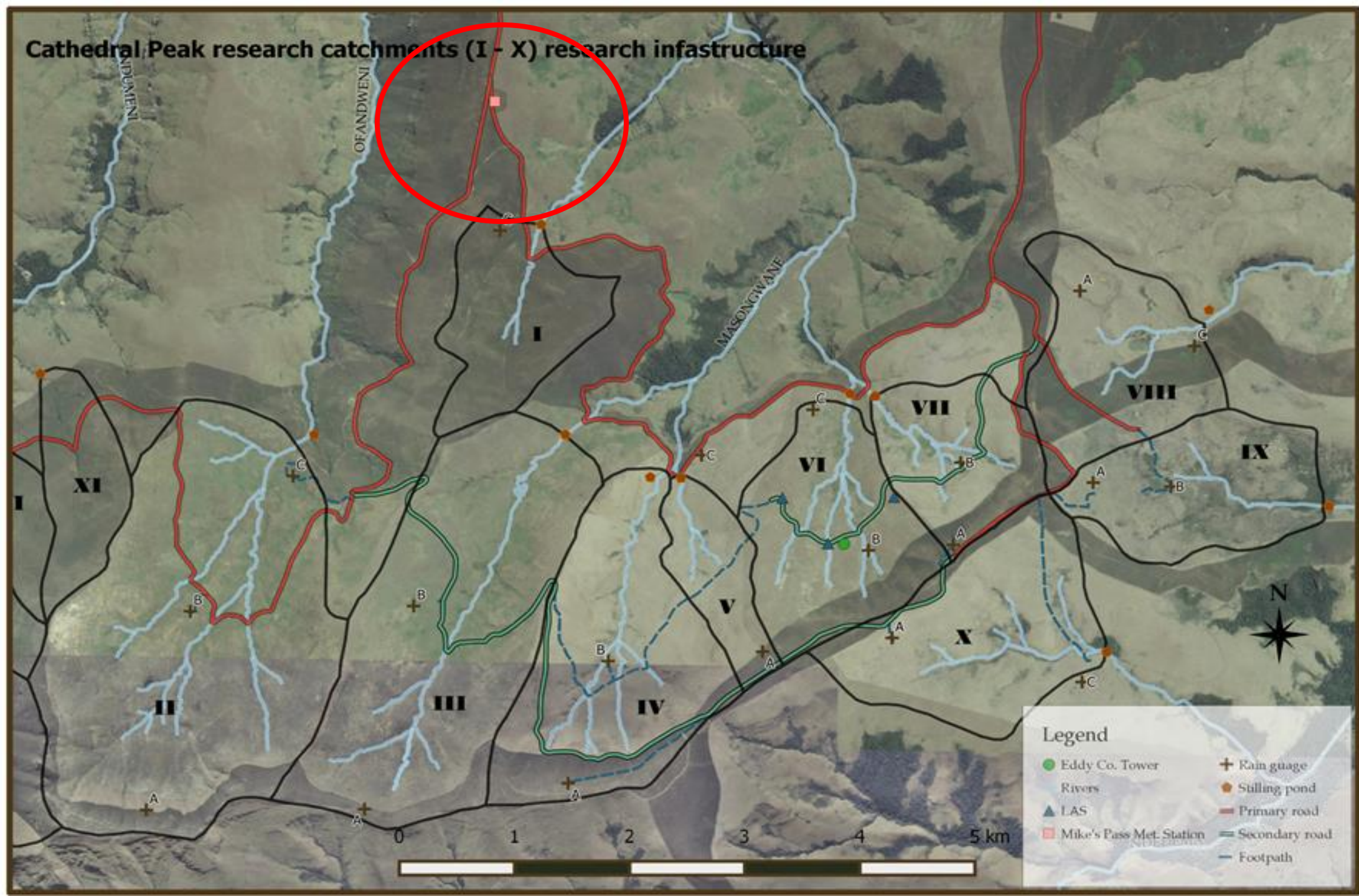
**15 years after Pine**





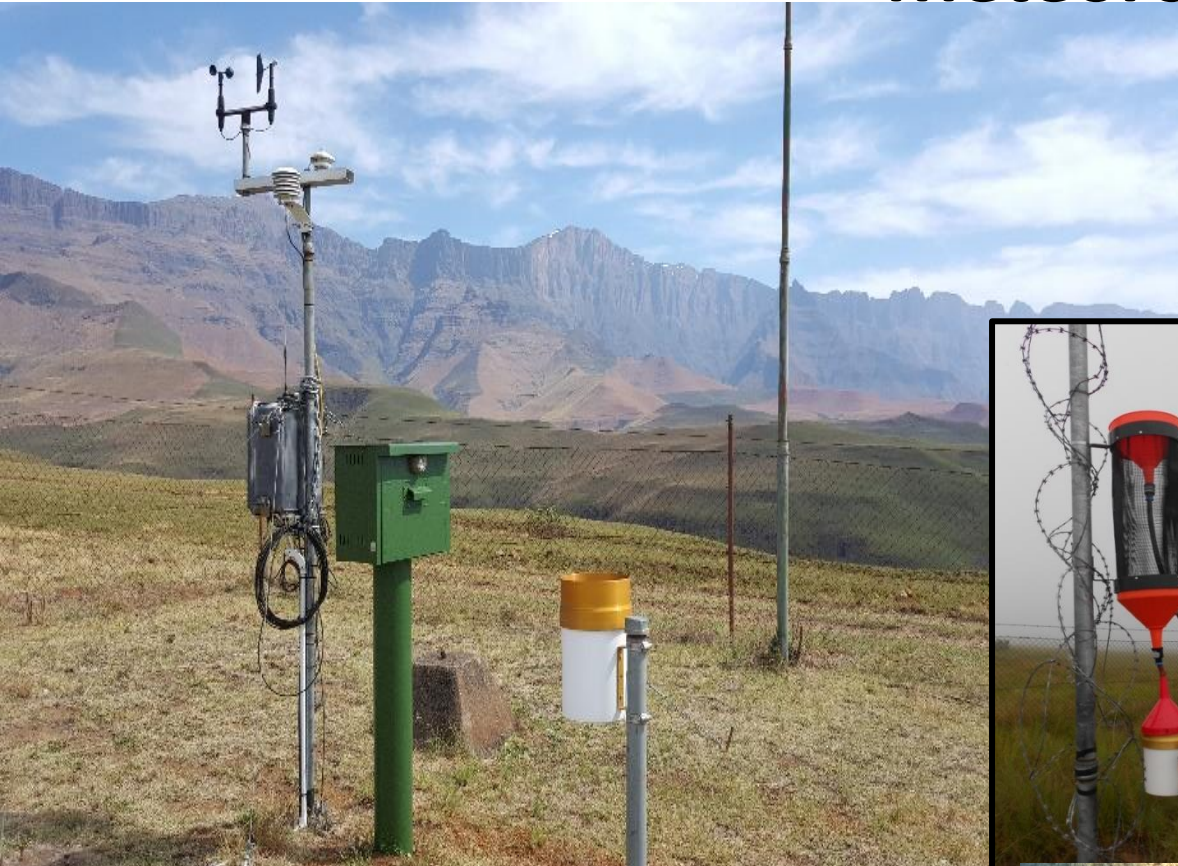


# Cathedral Peak research catchments (I - X) research infrastructure

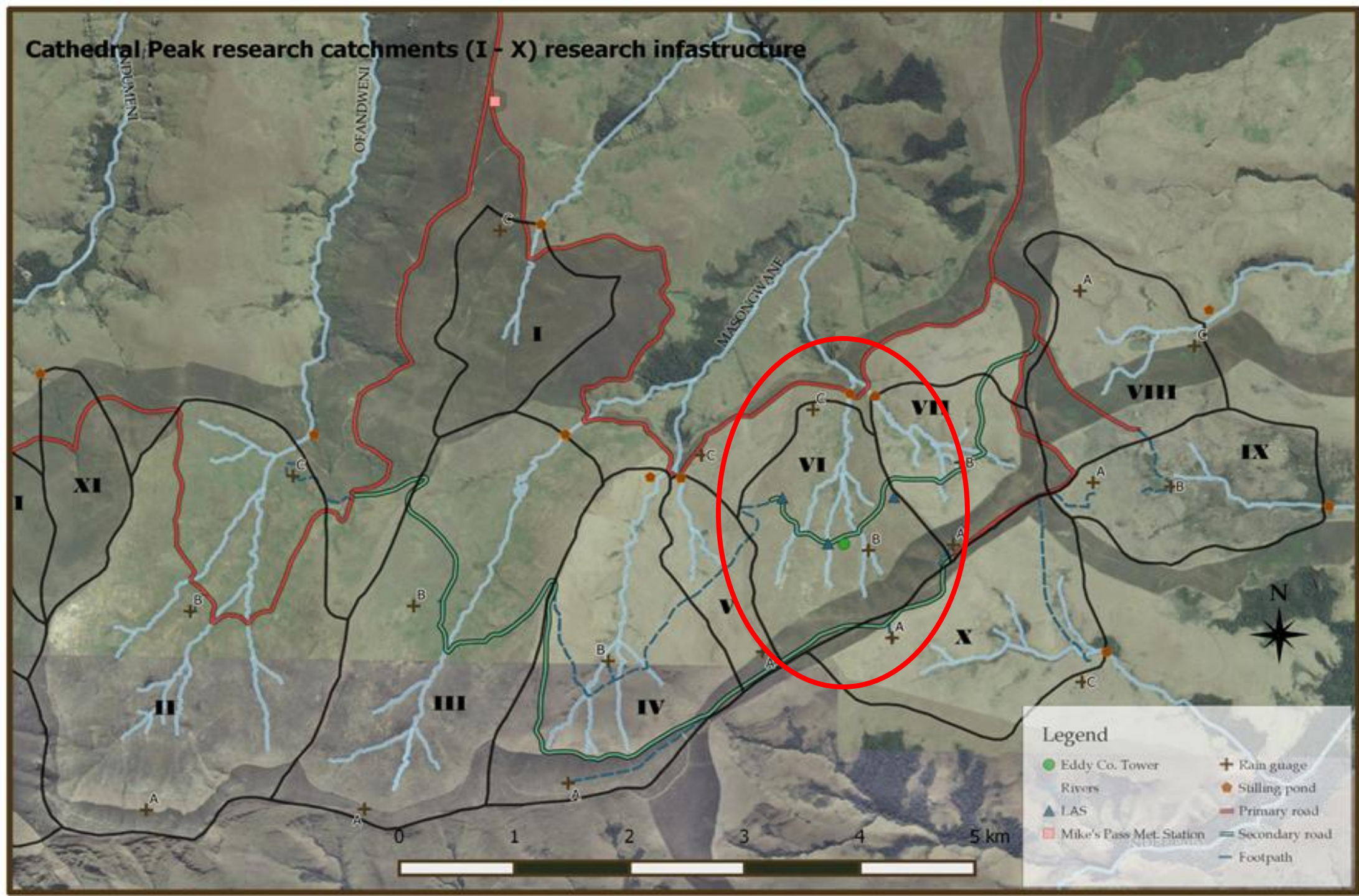




# Mike's Pass (1860 m.a.s.l.) and Vulture's Retreat (3010 m.a.s.l.) Meteorological Station



# Cathedral Peak research catchments (I - X) research infrastructure



Raingauges

V-notch weir and

ISCO water sampler

Full meteorological

Large Aperture

Eddy Covariance

Cosmic Ray Probe

LiCor-8100 Soil

Warming chamber



ducer



# LIVING LABORATORY



environmental affairs  
Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

# LIVING LABORATORIES & CAPACITY BUILDING

- There is a growing need to train hydrologists in southern Africa
  - capable of developing an understanding of the complexities of the whole hydrological system and the individual components
  - able to work in an interdisciplinary framework.
- However, there are a number of constraints facing Universities
  - Preparedness of students & prior knowledge
  - Continually growing numbers, with shrinking resources & facilities
    - Teaching staff
    - Laboratory space & computing resources (Undergrad & Postgrad)
    - Tutors & demonstrators
- Establishing living laboratories has potential to overcome some of these constraints

# Supporting research activities of scientists from 6 Universities

## Several disciplines

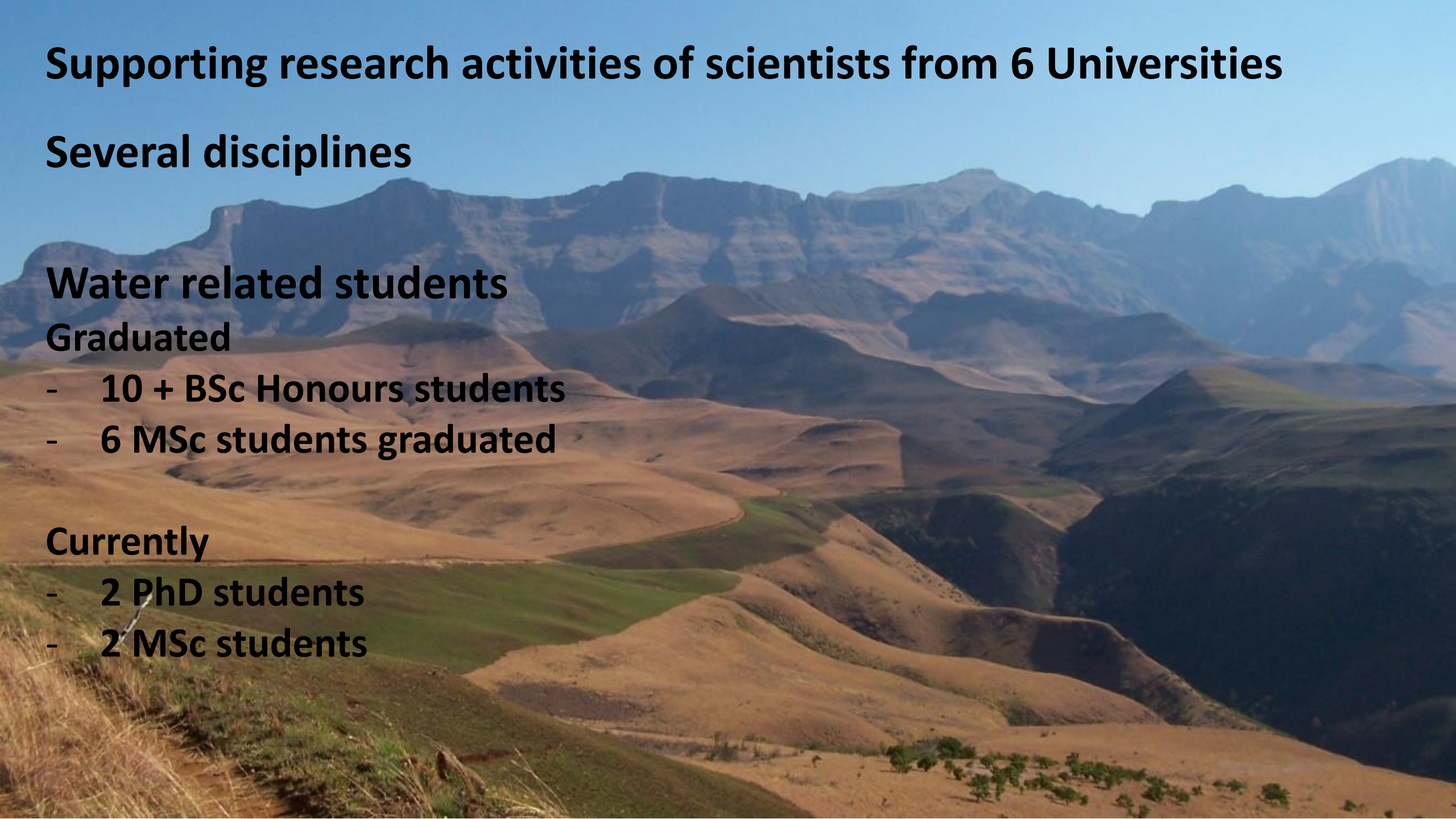
### Water related students

#### Graduated

- 10 + BSc Honours students
- 6 MSc students graduated

#### Currently

- 2 PhD students
- 2 MSc students





# CONCLUDING THOUGHTS

- Funding!!!
- Challenges – Fire, access & security
- Numerous contributors & players – relationships, administration
- Direct link into policy

# ACKNOWLEDGEMENTS



## LINKS

Mike's Pass AWS – [http://lognet.saeon.ac.za:8088/Mikes\\_Pass/index.html](http://lognet.saeon.ac.za:8088/Mikes_Pass/index.html)

Vulture's Retreat AWS – <http://lognet.saeon.ac.za:8088/HiAlt/index.html>

Cathedral Peak CRP – <http://cosmos.hwr.arizona.edu/Probes/StationDat/093/index.php>

SAEON website – <http://www.saeon.ac.za/>

CWRR - <http://cwrr.ukzn.ac.za/homepage>