

# **SINO-ZAMBIA CO-OPERATION**

## **HELPING GENERATE NEW GEOSCIENCE DATA**

**Presented by:**

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**Zambia Geological Survey Department**



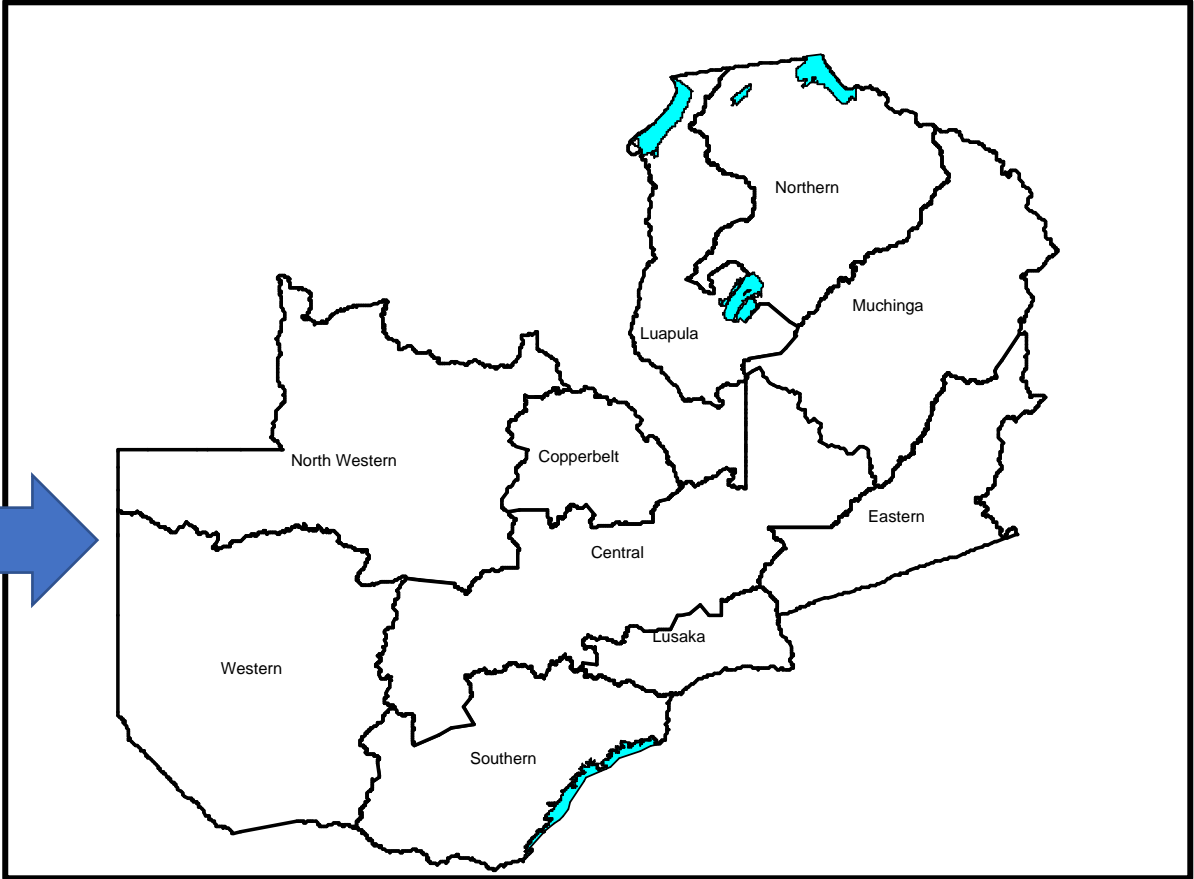
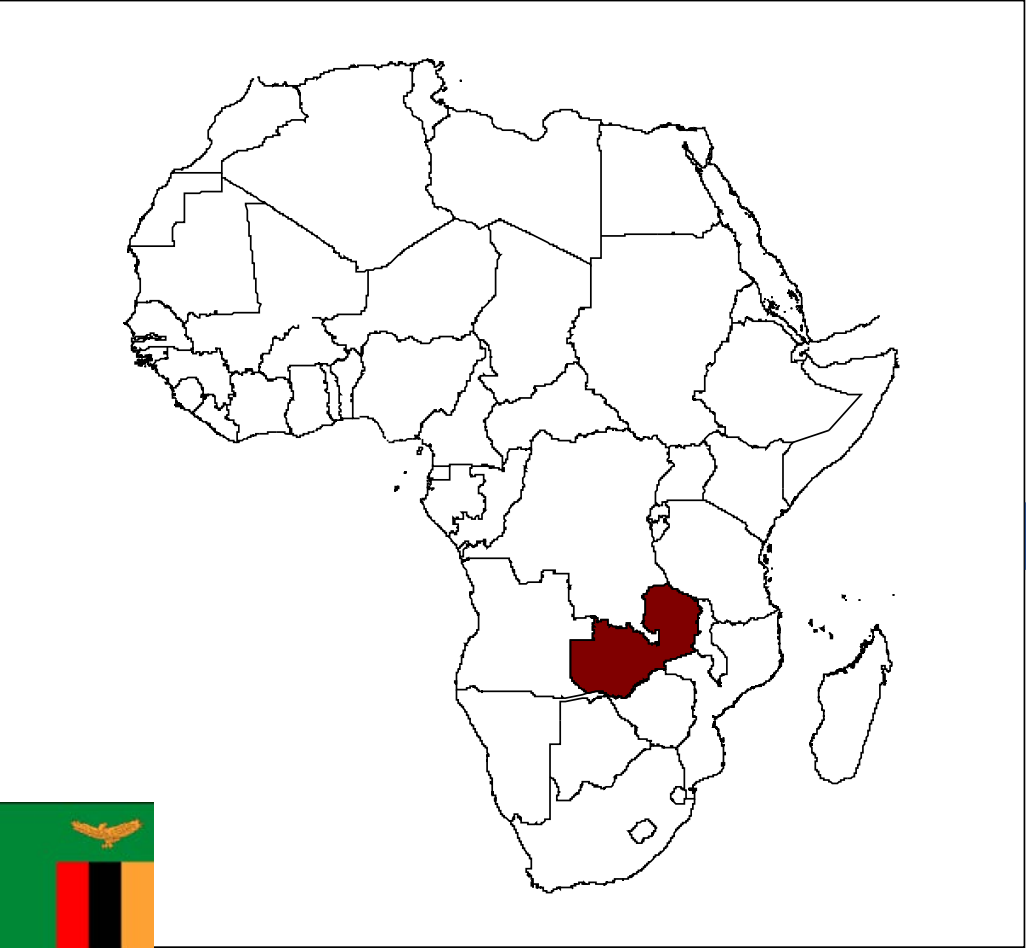
# Contents

- Introduction: Quick facts about Zambia
- Geoscience data held by Zambia Geological Survey Department
- Collaboration with China Geological Survey
- Lessons from collaboration with CGS



# Zambia: quick facts

## Location



# Zambia: Quick facts

- Area: 752,000 sq. km
- Population: 17million (estimate)
- Official Language: English ( but with multiple African languages)
- Economic Activities: Agriculture, Mining. But mainly dependent on copper exports for foreign earnings
- Climate: - Tropical

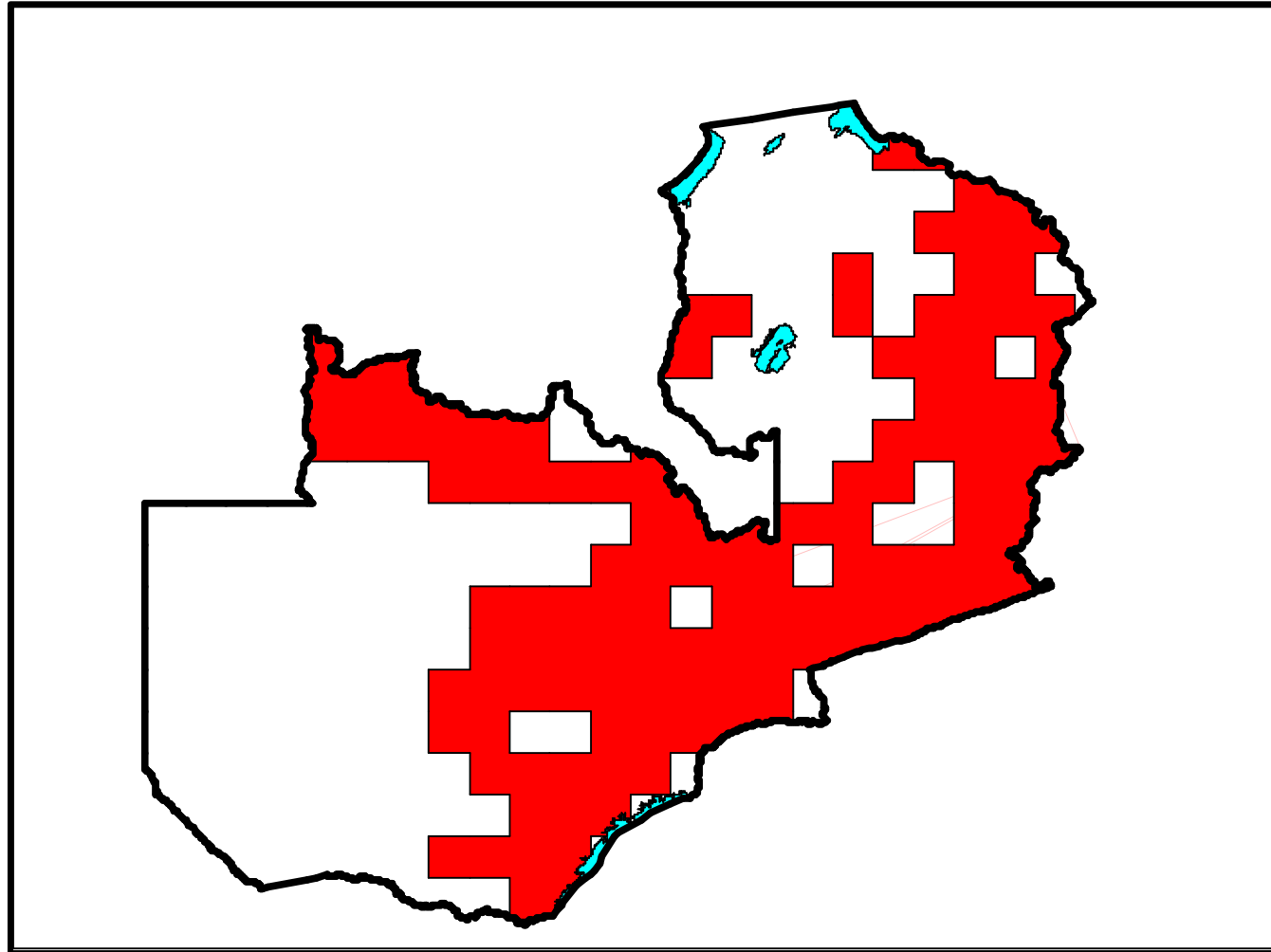


# **GEOSCIENCE DATA ACCUMULATED BY ZAMBIA GEOLOGICAL SURVEY**

- GEOLOGICAL MAPS AND REPORTS
- MINERAL OCCURRENCES
- GEOCHEMICAL DATA
- GEOPHYSICAL DATA
- BIBLIOGRAPHIC DATA
- EXPLORATION REPORTS FROM COMPANIES



# GEOLOGICAL MAPS AND REPORTS



AREAS (IN RED) WITH PUBLISHED MAPS (@1:100K) AND REPORTS

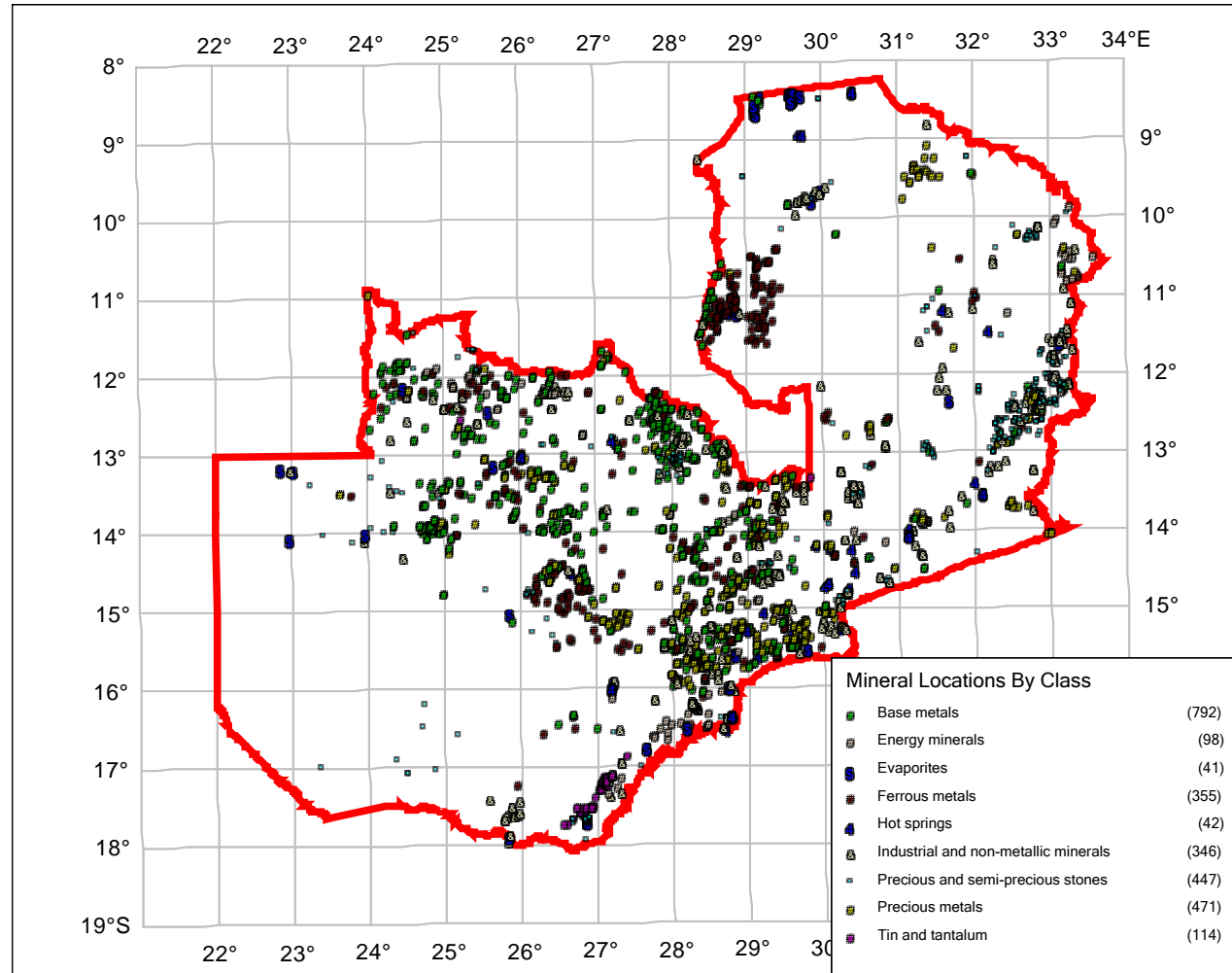


## **GEOLOGICAL MAPS AND REPORTS**

**Due to operational challenges there has not been any publication of new maps and reports since 2000. But mapping of some quarter degree sheets has been completed.**

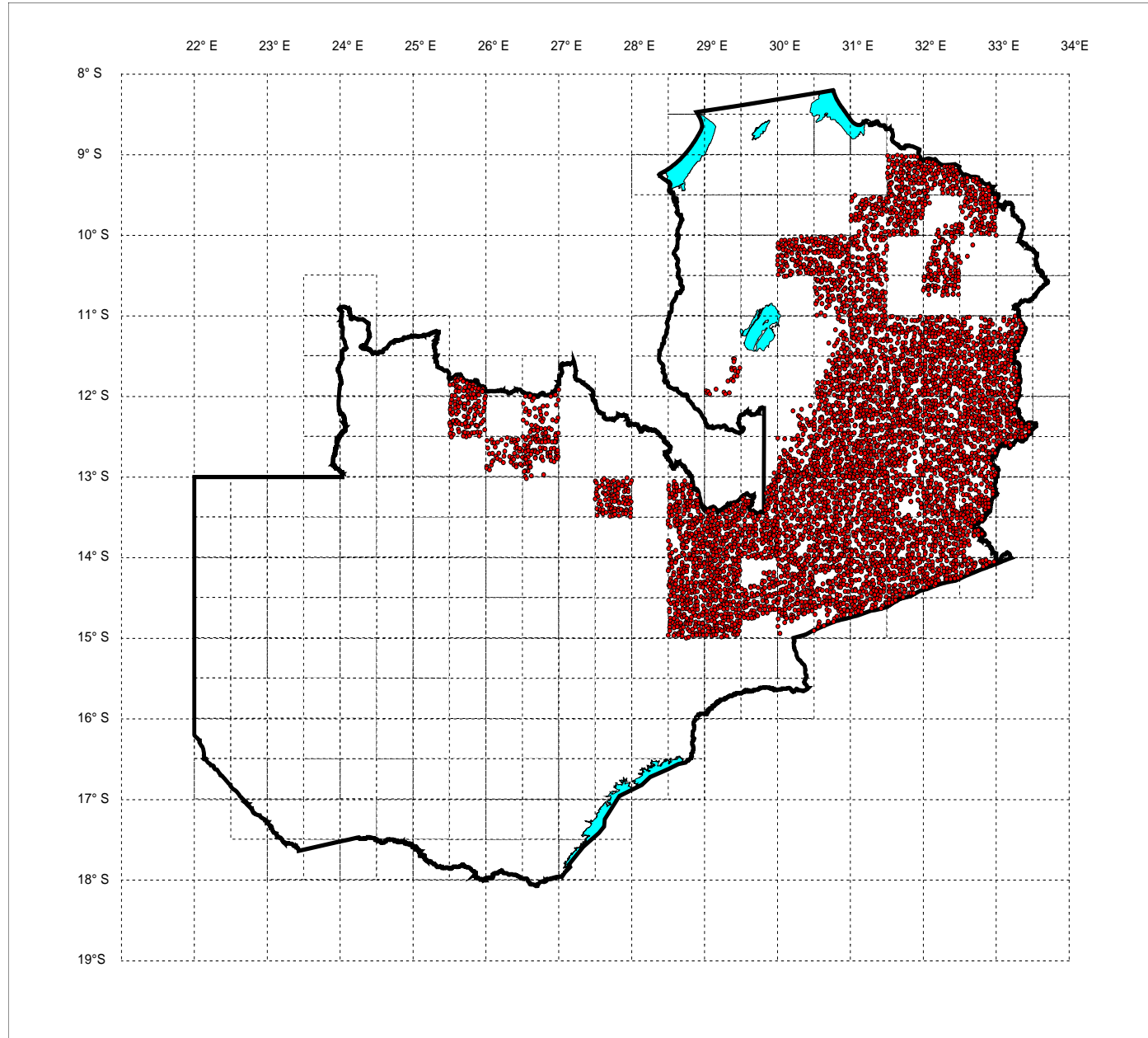


# MINERAL OCCURRENCE DATA





# GEOCHEMICAL MAPPING



**LOW DENSITY**

**ANALYTICAL  
METHOD: AAS**

**SIZE FRACTION: -80**

**ELEMENTS**

**ANALYSED: Cu, Co, Ni,  
Pb, Zn, Mn, Fe, Ni**

**ANALYTICAL LAB:  
GSD**

**THIS GEOCHEMICAL  
SAMPLING PROJECT  
WAS UNDERTAKEN IN  
THE 1970s**

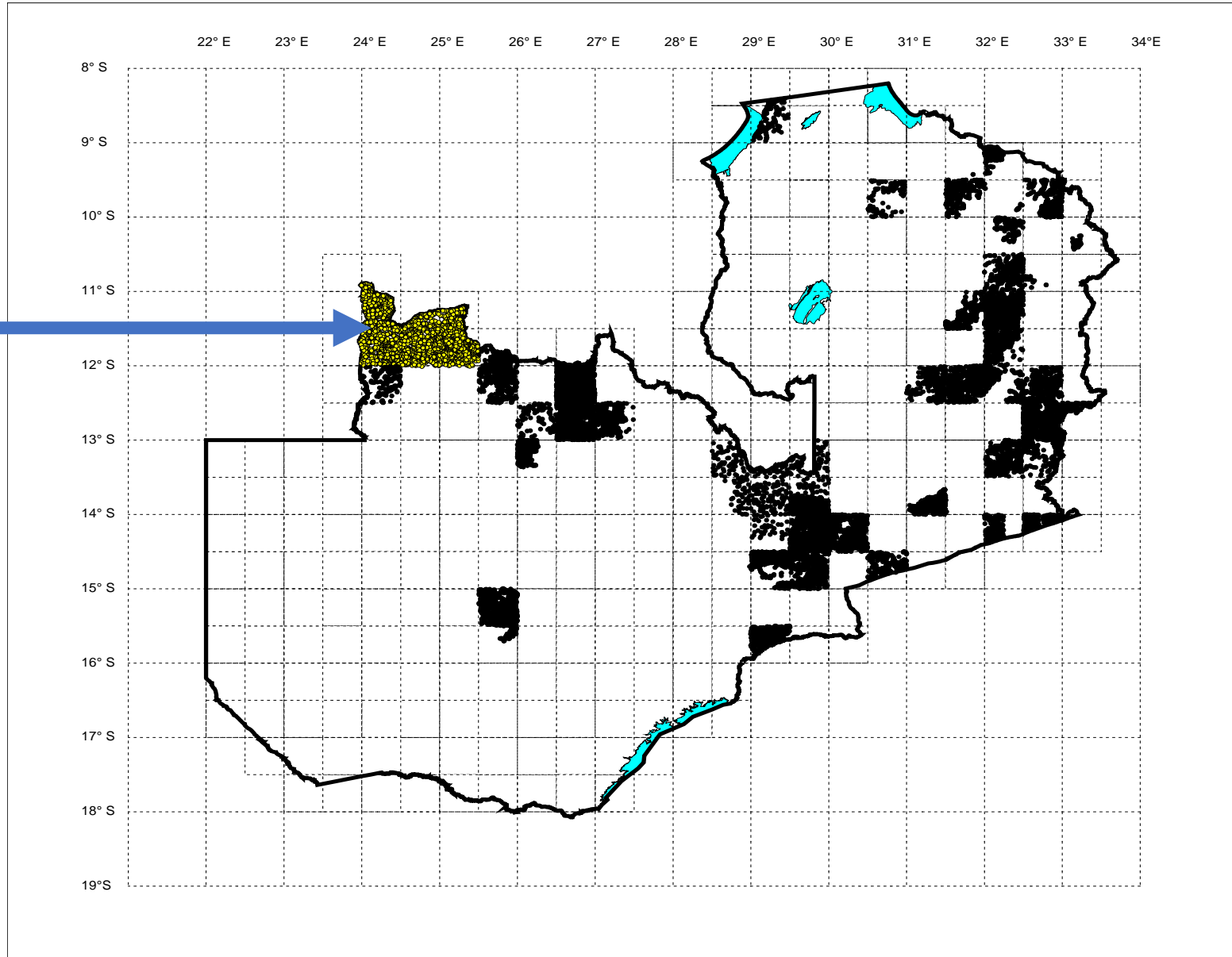


# GEOCHEMICAL MAPPING

42 elements



ANALYSIS BY  
COMMERCIAL  
LAB



**HIGH DENSITY**

**SAMPLING  
UNDERTAKEN  
DURING THE  
COURSE OF  
GEOLOGICAL  
MAPPING**

## **GEOPHYSICAL MAPPING**

- **AIRBORNE MAGNETIC SURVEYS UNDERTAKEN IN MOST PARTS OF THE COUNTRY BY VARIOUS CONTRACTORS**
- **AIRBORNE RADIOMETRIC SURVEYS DONE FOR LIMITED PARTS OF THE COUNTRY**
- **AIRBORNE GEOPHYSICAL SURVEYS LAST DONE IN THE 1970s**
- **VERY LOW DENSITY COUNTRYWIDE GRAVITY SURVEY DONE IN 1970s ALONG SELECTED ROADS**



## **CO-OPERATION WITH CHINA GEOLOGICAL SURVEY**

**WITH PERFORMANCE CHALLENGES  
ALREADY MENTIONED AUDIENCE CAN BE  
SURE THAT ZAMBIA GEOLOGICAL SURVEY  
WAS HAPPY TO HAVE A COLLABORATION  
PROJECT WITH CHINA GEOLOGICAL  
SURVEY**



## CO-OPERATION WITH CHINA GEOLOGICAL SURVEY

- CO-OPERATION BETWEEN CGS AND ZAMBIA GSD COMMENCED IN 2013

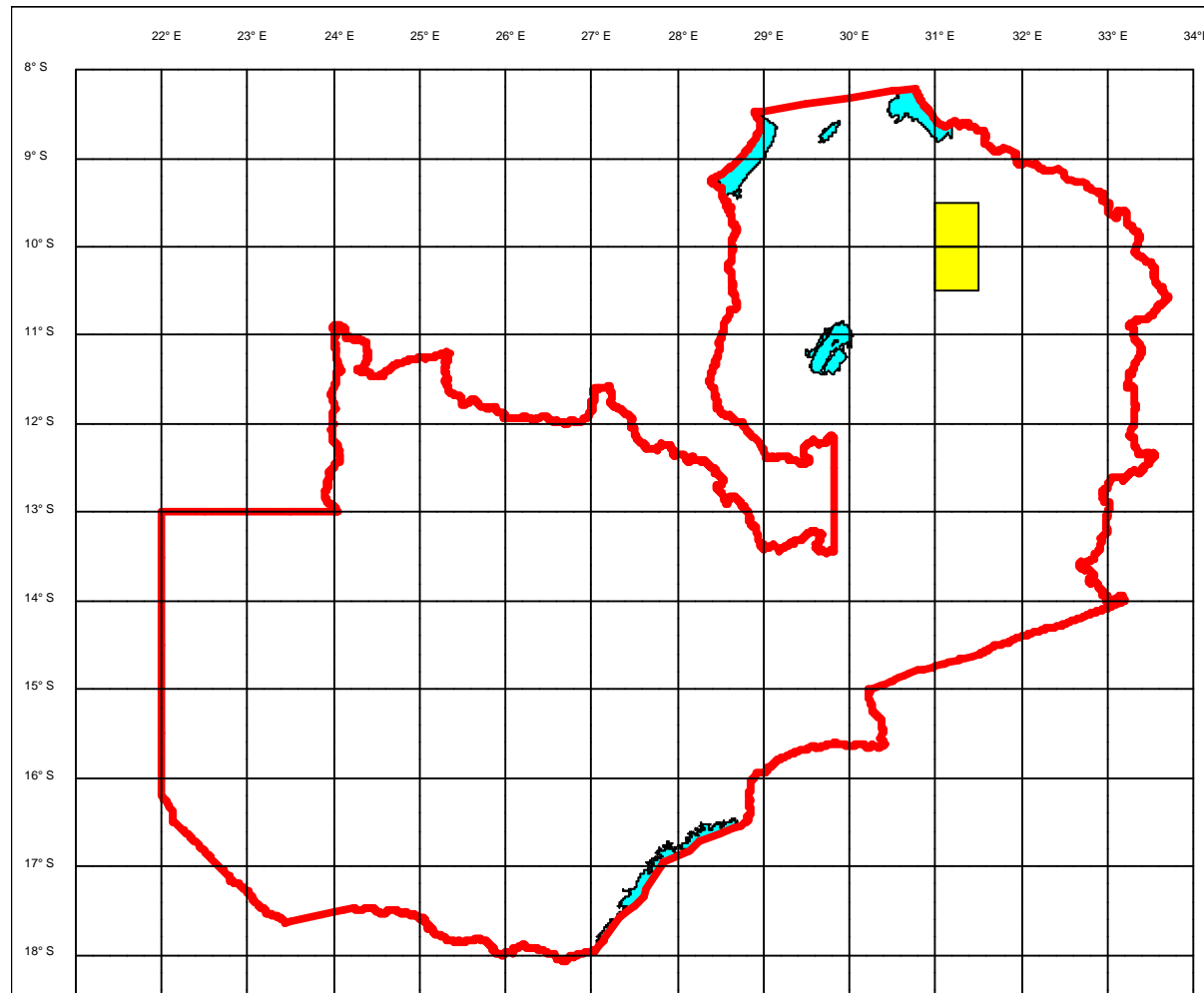
**Activity 1:** Detailed geological mapping and geochemical mapping of two quadrants in northern Zambia

**Activity 2:** Low density geochemical mapping of NE Zambia



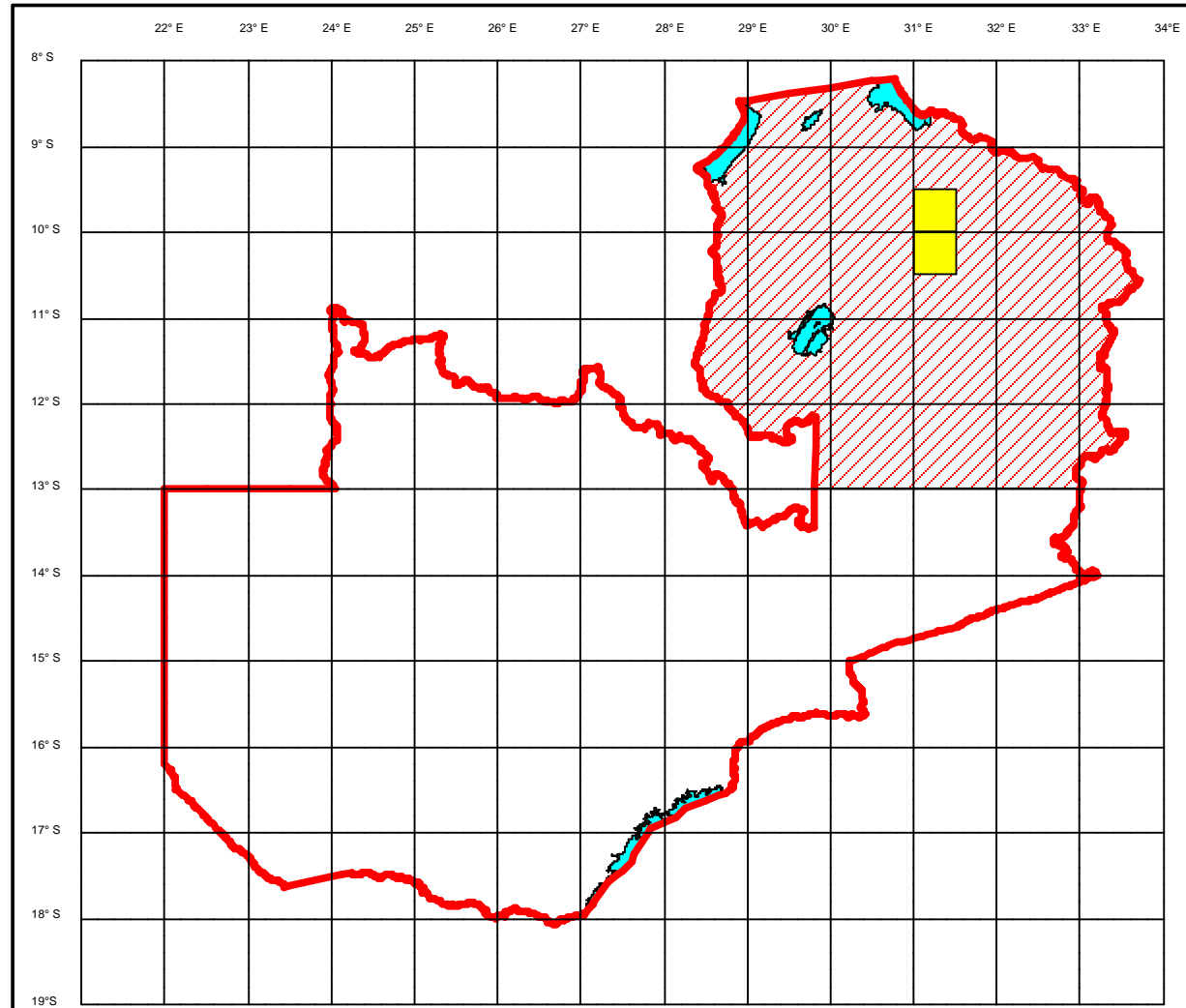
# CO-OPERATION WITH CHINA GEOLOGICAL SURVEY

**Activity 1:** Detailed geological mapping and geochemical mapping of two quadrants in northern Zambia



# CO-OPERATION WITH CHINA GEOLOGICAL SURVEY

## Activity 2: Low density geochemical mapping of Northern and NE Zambia



# RESULTS OF THE COLLABORATION WORK

- **GEOCHEMICAL ANOMALIES DEFINED**
- **GEOLOGICAL MAPS PRODUCED BY CGS HAVE NECESSITATED THAT GEOLOGY OF ADJOINING AREAS BE REVISED DUE TO NON-MATCHING OF LITHOLOGIES ACROSS MAP BOUNDARY.**
- **FIELD CHECKS HAVE REVEALED THAT CGS MAPS ARE THE ONES WITH CORRECT INFO.**





# ON GOING WORK WITH CHINA GEOLOGICAL SURVEY –PHASE 2

**Activity 1:** Geological and geochemical mapping of three quarter degree sheets in northern Zambia

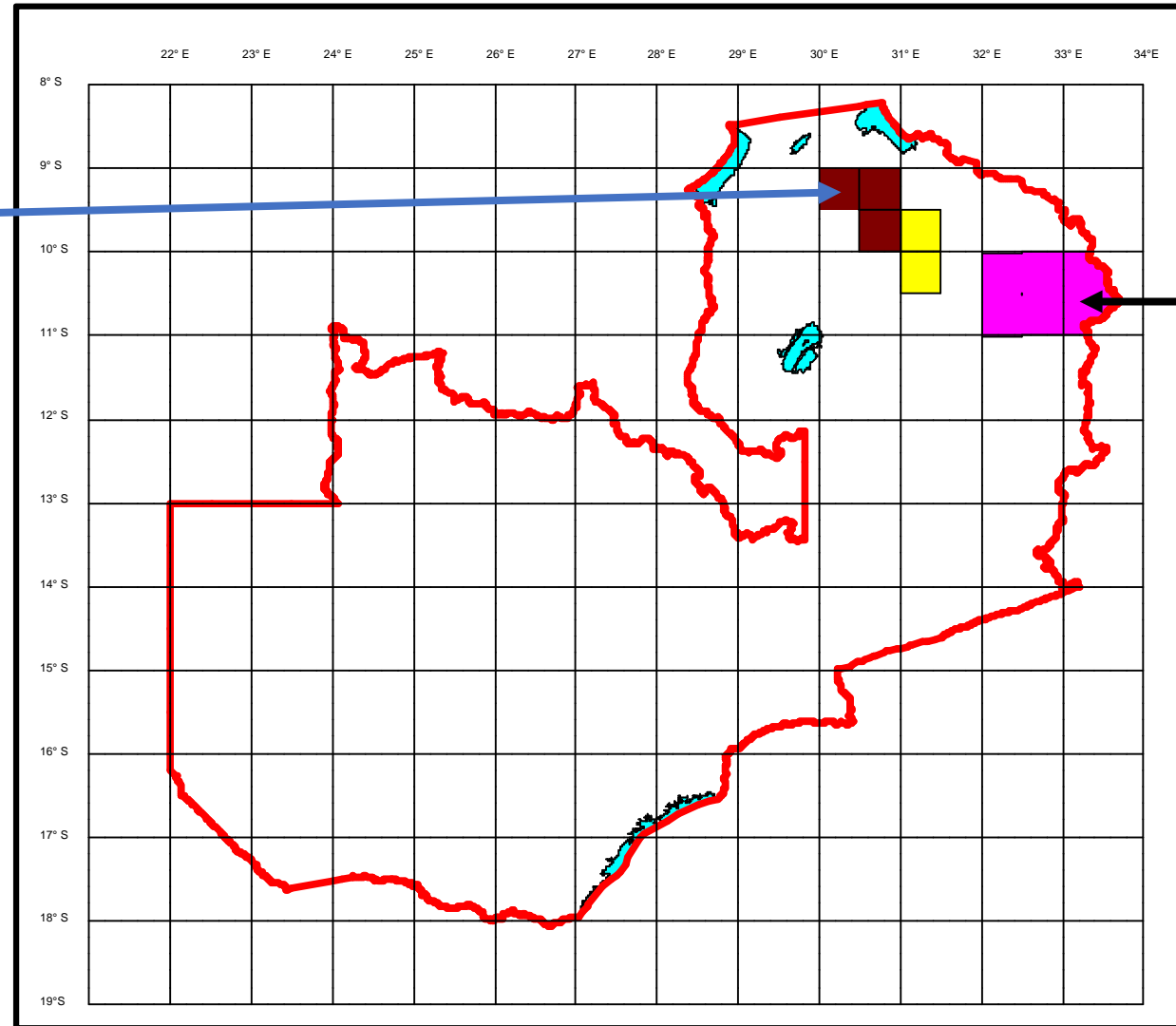
**Activity 2:** Airborne geophysical survey of 80,000 sq. km of northern Zambia

**Activity 3:** Follow up geochemical sampling of part of north eastern Zambia



# ON GOING WORK WITH CHINA GEOLOGICAL SURVEY – PHASE 2

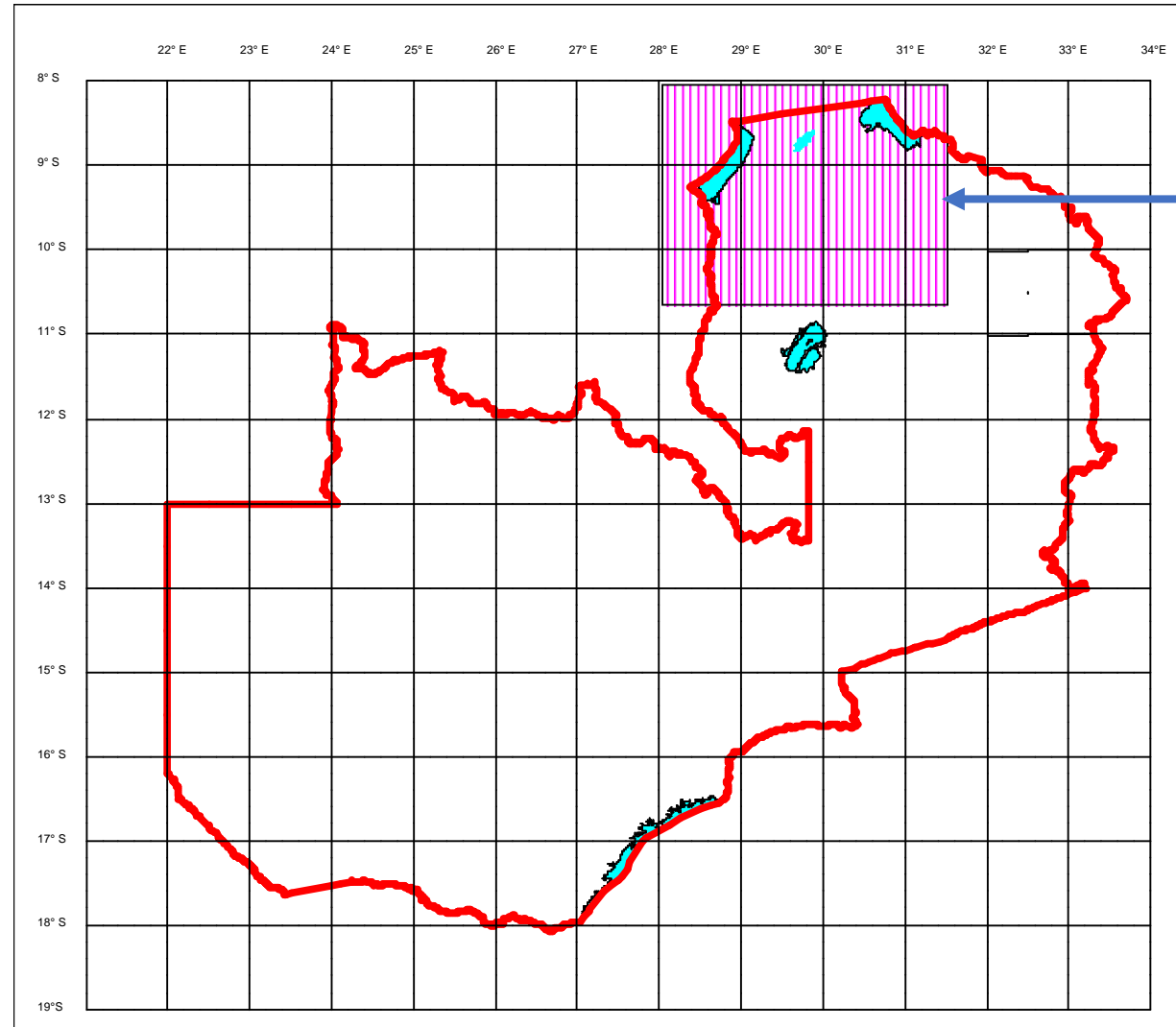
Area of new  
geological  
and  
geochemical  
mapping



Area of follow up  
Geochemistry



# ON GOING WORK WITH CHINA GEOLOGICAL SURVEY – PHASE 2



**Area of  
airborne  
magnetic and  
radiometric  
survey**



# **FUTURE OUTLOOK**

**THE DATA BEING GENERATED BY CHINA  
GEOLOGICAL SURVEY MAY REMAIN  
THE MOST RECENT GEODATA ABOUT  
ZAMBIA FOR THE IMMEDIATE FUTURE**



# CONCLUSION

- **THE GOVERNMENT OF THE PEOPLES REPUBLIC OF CHINA THROUGH THE CHINA GEOLOGICAL SURVEY, TIANJIN CENTRE, HAS GREATLY ASSISTED IN GENERATING NEW GEOSCIENCE ON DATA**
- **MY INSTITUTION REMAINS GRATEFUL FOR THIS TECHNICAL ASSISTANCE BEING RECEIVED FROM THE GOVERNMENT AND PEOPLE OF THE PRC**



**THANK YOU FOR  
YOUR VALUABLE  
ATTENTION**

