Thesis and chapters outline

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# Chapter 1: Introduction and aims

## 1.1 Geochronology

### Research questions

## 1.2 Environmental change

### Research questions

# Chapter 2: Methods and techniques in tropical lake paleohydrological research (Literature review)

## 2.1 Introduction

### Physiographic features of the tropics

### Importance of the tropics for the global climate system

## 2.2 Trends in the use of proxies and techniques

### Lake level

### Precipitation, seasonality changes and hydroclimate

## 2.3 Analyses assisting palaeohydrological determinations

### Pollen

### Bulk sediment

### Magnetic susceptibility

### Grain size

## 2.4 Challenges and future directions

# Chapter 3: Background and methods

## 3.1 Structure of the thesis (workflow diagram)

## 3.2 General methods

### a. Coring technique

### b. Geochronology

#### Radiocarbon dating (general theory, challenges, assumptions

#### Carbon fractions (description of each one)

#### Pre-treatment (description of each one)

### c. Environmental change and paleohydrology (general description of methods)

#### Hydrology (diatoms, ITRAX, grain size, carbon and nitrogen isotopes of bulk organic matter)

#### Fire (Pyrogenic carbon)

#### Vegetation (Phytoliths, d13C of PyC)

## 3.3 Study site

### Climatic/geology context

### Vegetation

### Lake and catchment characteristics

### Geology

## 3.4 Past climate of tropical northern Australia

### LGM

### Deglacial

### Holocene

# Chapter 4. General results

## Sedimentology (ITRAX, grain size, water content)

# Chapter 5. Development of a radiocarbon chronology for Sanamere Lagoon using multiple organic fractions

# Chapter 6. Hydrology, fire and vegetation in northern Australia over the last 30,000 years (still need to find the actual focus of the chapter)

# Chapter 7. General discussion

# Chapter 8. Conclusions