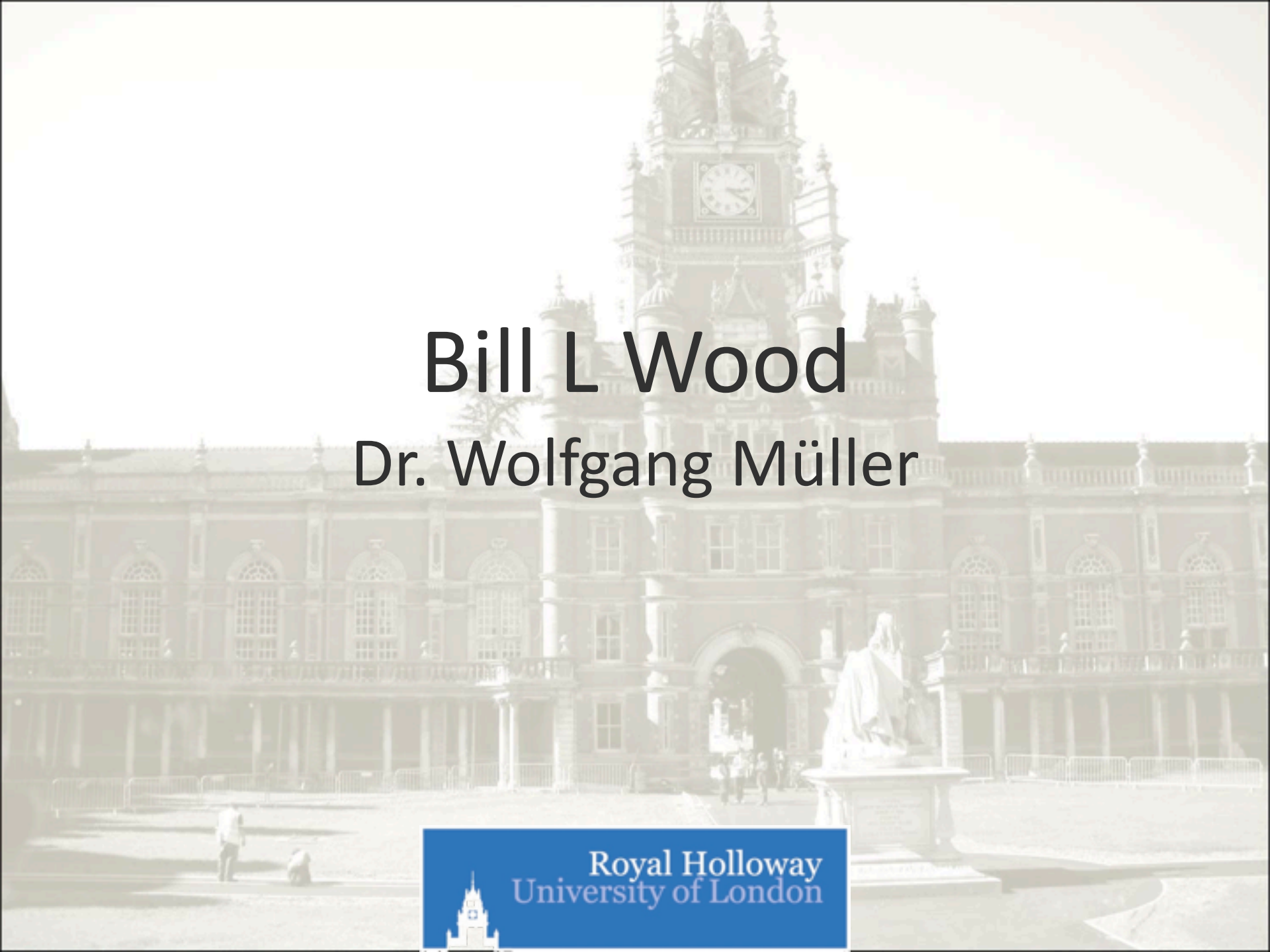


Bill L Wood

Dr. Wolfgang Müller

Royal Holloway
University of London

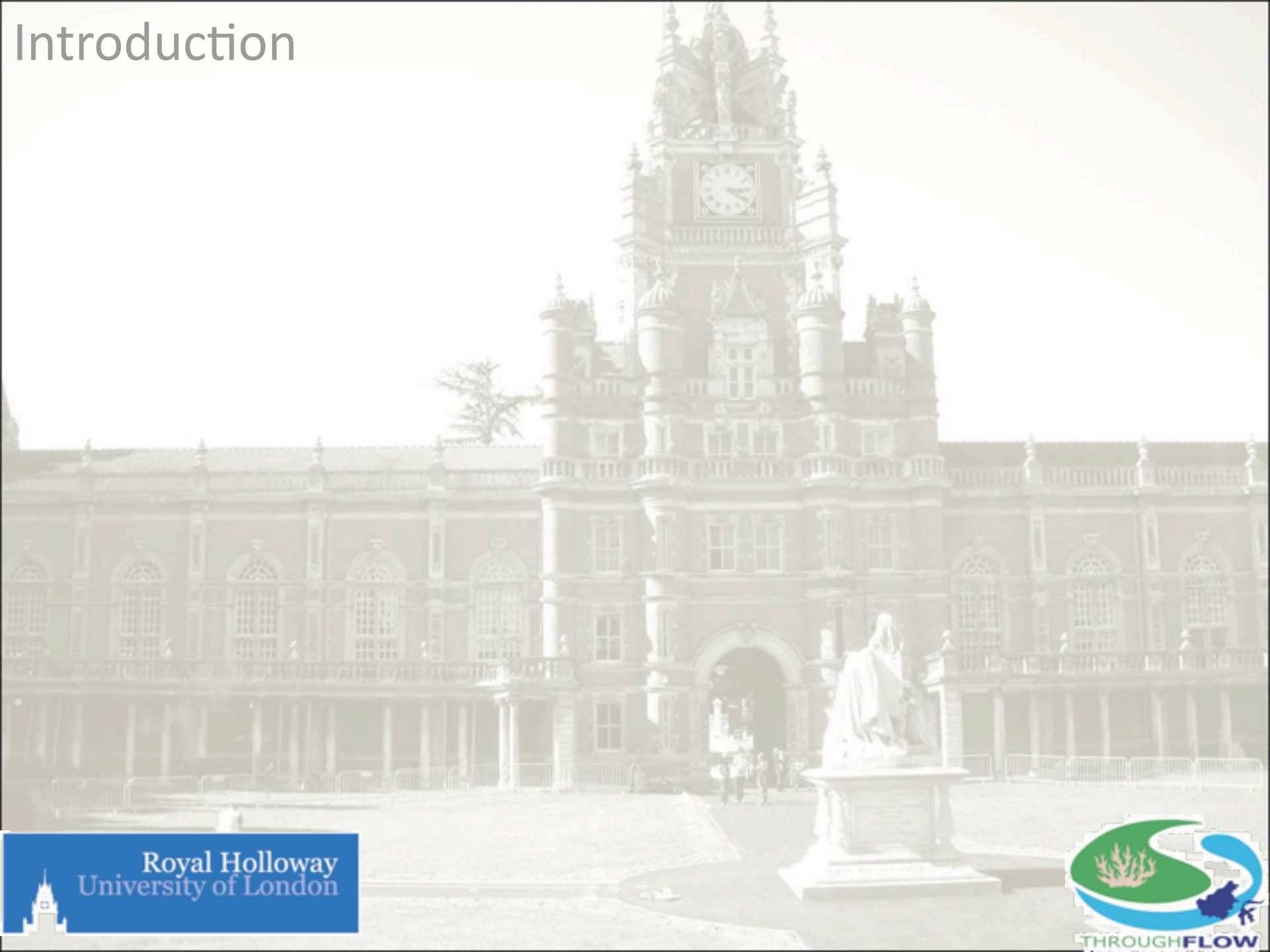
Palaeoclimates in Kalimantan

proxies from Isotope and Trace Element Geochemistry using LA-ICP-MS

Bill L Wood

Dr. Wolfgang Müller

Introduction



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THROUGHFLOW

Introduction

- Tectonically driven closure of Indonesian Throughflow (R. Hall)

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THROUGHFLOW

Introduction

- Tectonically driven closure of Indonesian Throughflow (R. Hall)
- Response of biota through time

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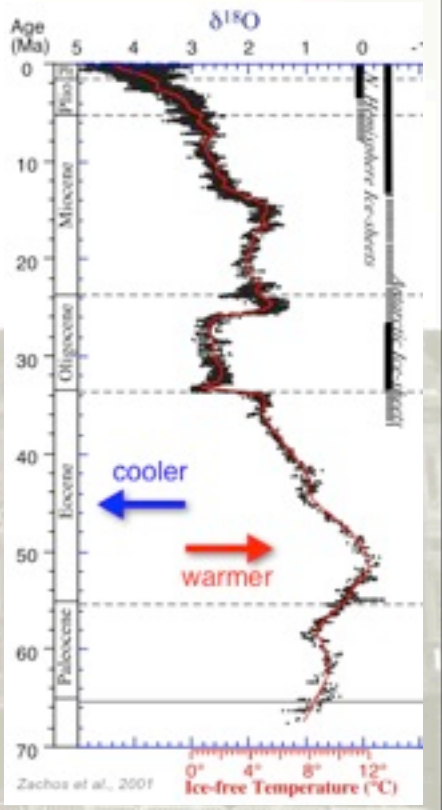
- Long term trends in climate change



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THROUGHFLOW

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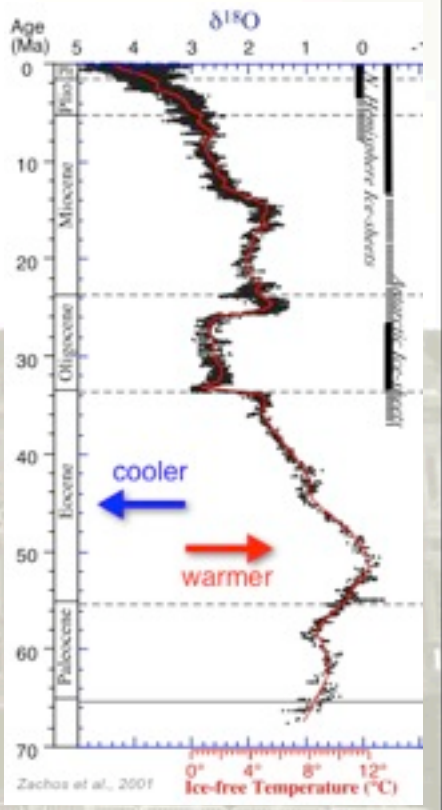
- Tectonically driven closure of Indonesian Throughflow (R. Hall)
- Response of biota through time
- In conjunction with climate change
- High resolution palaeoclimate proxies (Nick and Elena)
- Long term trends in climate change
- Shorter term – Seasonality



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- Response of biota through time
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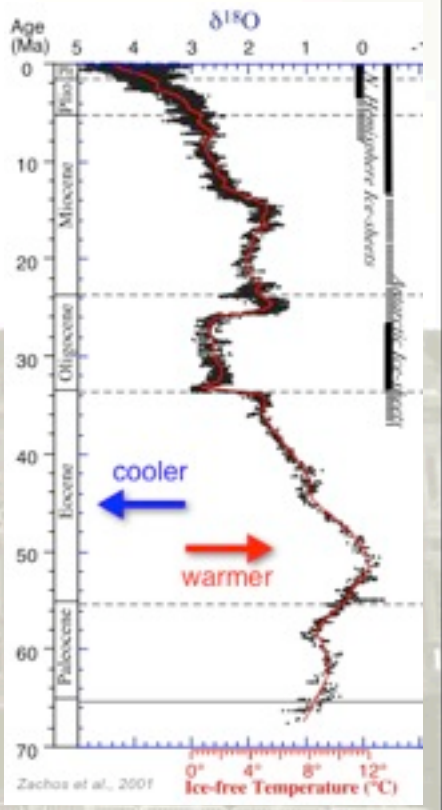
- Long term trends in climate change
- Shorter term – Seasonality
- **Different approach required**



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High resolution palaeoclimatology

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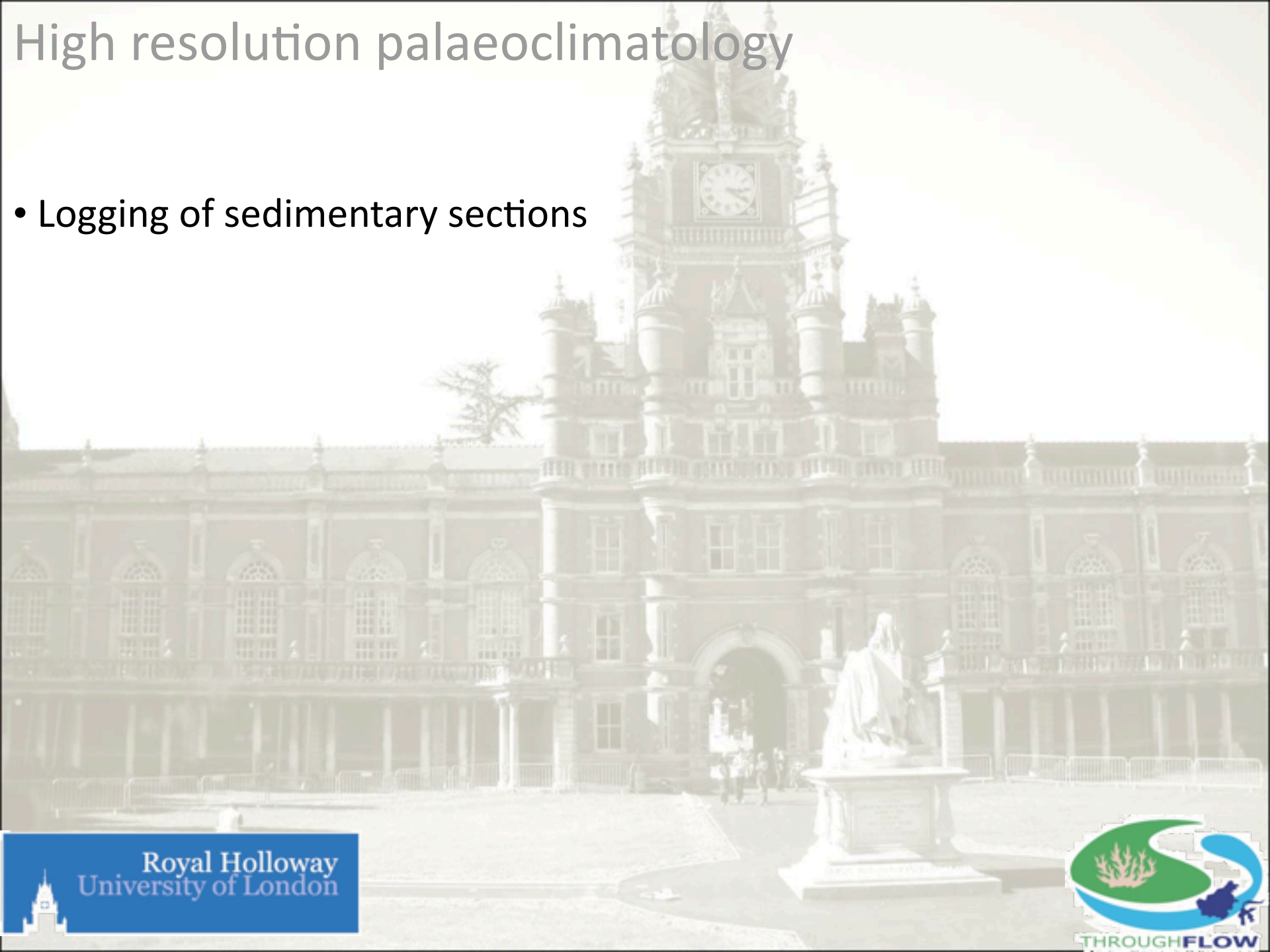
High resolution palaeoclimatology

- Logging of sedimentary sections



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THROUGHFLOW

High resolution palaeoclimatology

- Logging of sedimentary sections
- Selection of very well preserved fossils (original carbonate)

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THROUGHFLOW

High resolution palaeoclimatology

- Logging of sedimentary sections
- Selection of very well preserved fossils (original carbonate)
- Continued development of chronologies

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THROUGHFLOW

High resolution palaeoclimatology

- Logging of sedimentary sections
- Selection of very well preserved fossils (original carbonate)
- Continued development of chronologies
- Sectioning of fossils

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THROUGHFLOW

High resolution palaeoclimatology

- Logging of sedimentary sections
- Selection of very well preserved fossils (original carbonate)
- Continued development of chronologies
- Sectioning of fossils
- X-RAY Diffraction analysis (XRD)

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THROUGHFLOW

High resolution palaeoclimatology

- Logging of sedimentary sections
- Selection of very well preserved fossils (original carbonate)
- Continued development of chronologies
- Sectioning of fossils
- X-RAY Diffraction analysis (XRD)
- Scanning Electron Microscopy (SEM)

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THROUGHFLOW

High resolution palaeoclimatology

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THROUGHFLOW

High resolution palaeoclimatology

- Laser Ablation Inductively Coupled Mass Spectrometry (LA-ICP-MS)

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High resolution palaeoclimatology

- Laser Ablation Inductively Coupled Mass Spectrometry (LA-ICP-MS)
- Assessment of proxy suitability

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High resolution palaeoclimatology

- Laser Ablation Inductively Coupled Mass Spectrometry (LA-ICP-MS)
- Assessment of proxy suitability
- Reconstruction of climate parameters – pH, Salinity, Temperatures...

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High resolution palaeoclimatology

- Laser Ablation Inductively Coupled Mass Spectrometry (LA-ICP-MS)
- Assessment of proxy suitability
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- Reconstruction of seasonality

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THROUGHFLOW

High resolution palaeoclimatology

- Laser Ablation Inductively Coupled Mass Spectrometry (LA-ICP-MS)
- Assessment of proxy suitability
- Reconstruction of climate parameters – pH, Salinity, Temperatures...
- Reconstruction of seasonality
- Analysis of effects on seasonality

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High resolution palaeoclimatology

- Laser Ablation Inductively Coupled Mass Spectrometry (LA-ICP-MS)
- Assessment of proxy suitability
- Reconstruction of climate parameters – pH, Salinity, Temperatures...
- Reconstruction of seasonality
- Analysis of effects on seasonality
- Relate to other palaeoclimate data

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Laser Ablation Inductively Coupled Mass Spectrometry

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Laser Ablation Inductively Coupled Mass Spectrometry

- Laser

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Laser Ablation Inductively Coupled Mass Spectrometry

- Laser
- Gas control panel

Laser Ablation Inductively Coupled Mass Spectrometry

- Laser
- Gas control panel
- Sample Stage

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Laser Ablation Inductively Coupled Mass Spectrometry

- Laser
- Gas control panel
- Sample Stage
- Video Screen

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THROUGHFLOW

Laser Ablation Inductively Coupled Mass Spectrometry

- Laser
- Gas control panel
- Sample Stage
- Video Screen
- Beam Path

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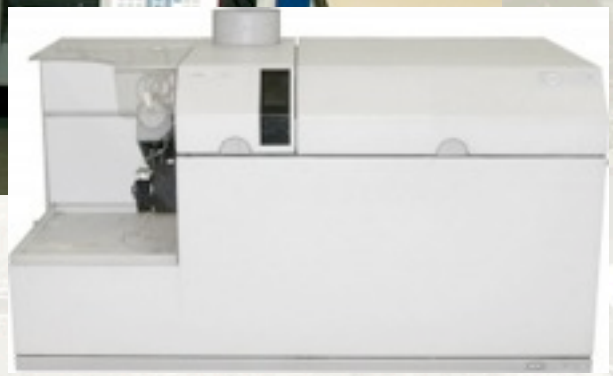
Laser Ablation Inductively Coupled Mass Spectrometry

- Laser
- Gas control panel
- Sample Stage
- Video Screen
- Beam Path
- ICP-MS



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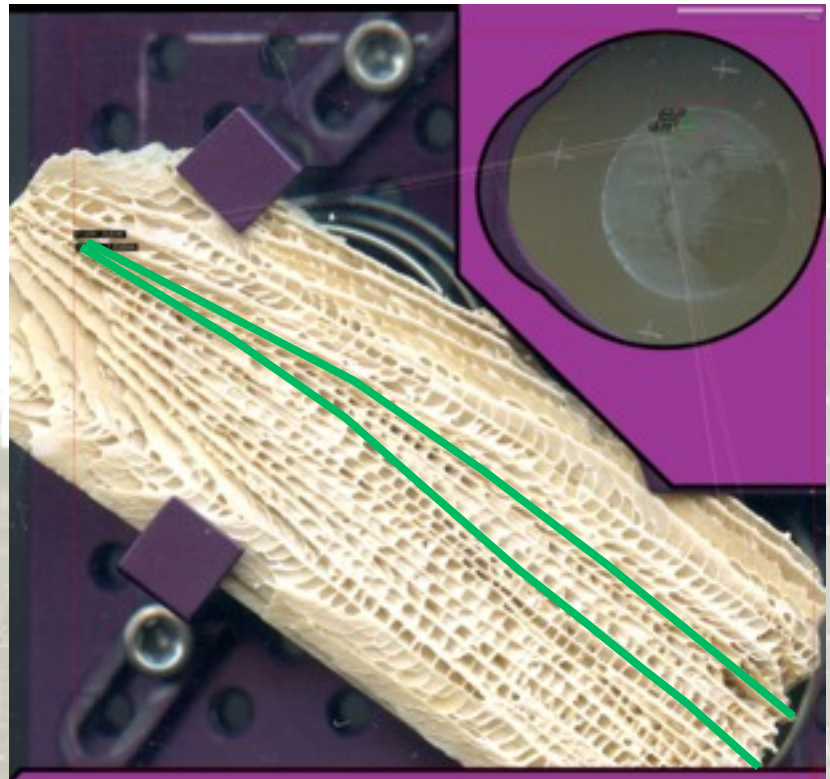
Data sources



***Coeloria* sp.**

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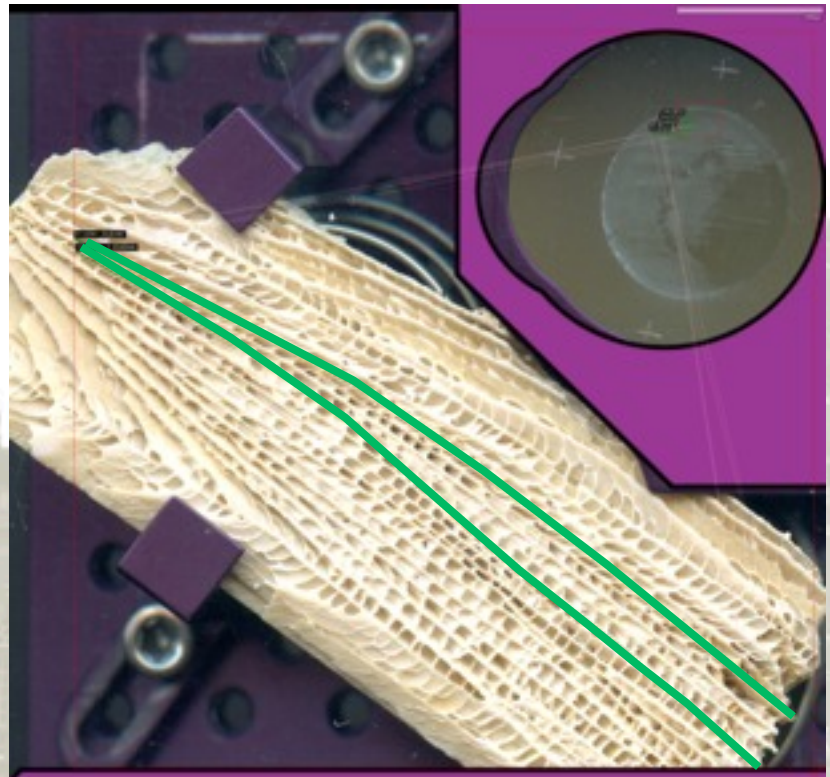
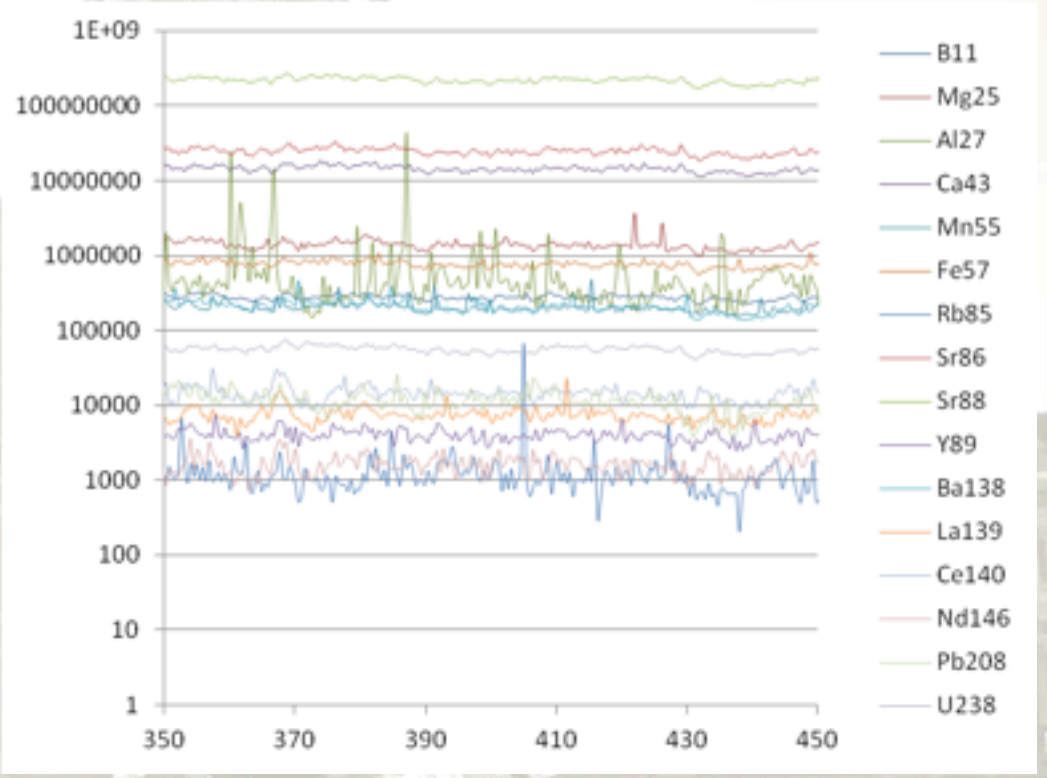
Data sources



Coeloria sp.



100 Seconds – 211 data points – 16 masses

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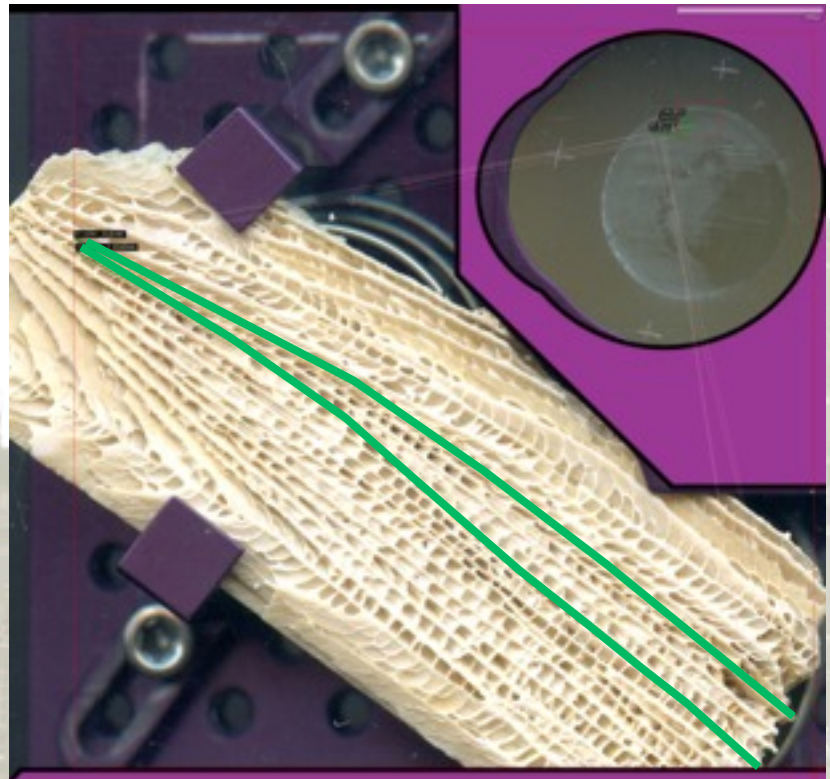
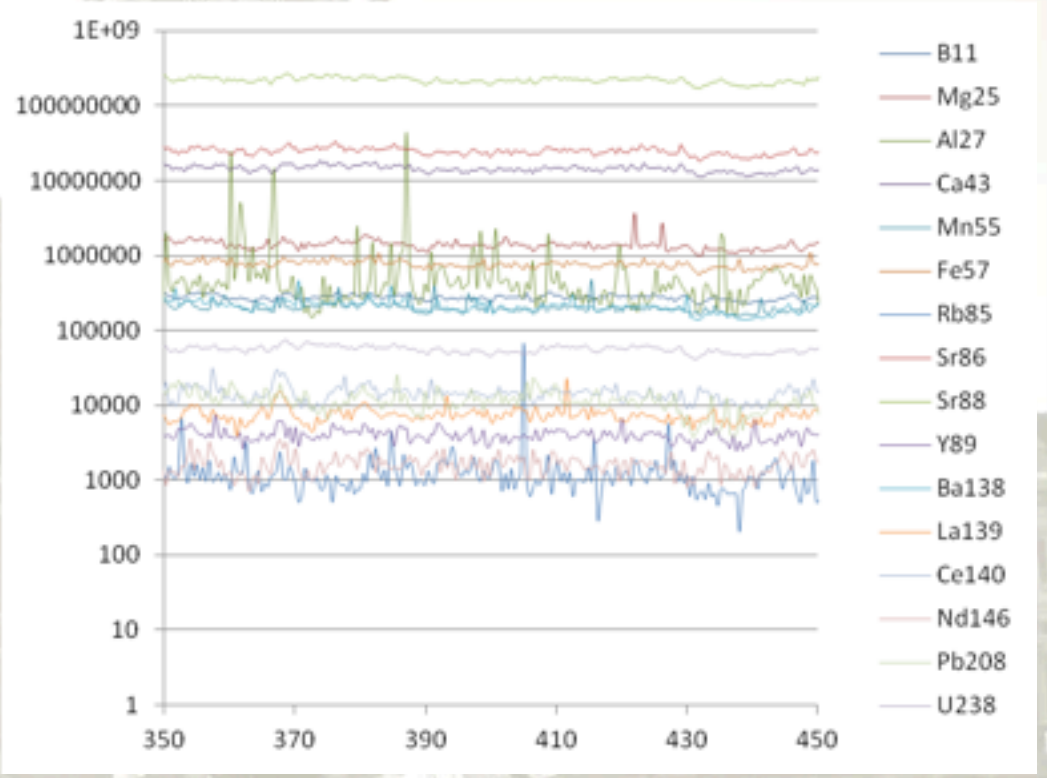
Data sources



Coeloria sp.



100 Seconds – 211 data points – 16 masses

Sr/Ca – Temperature Proxy

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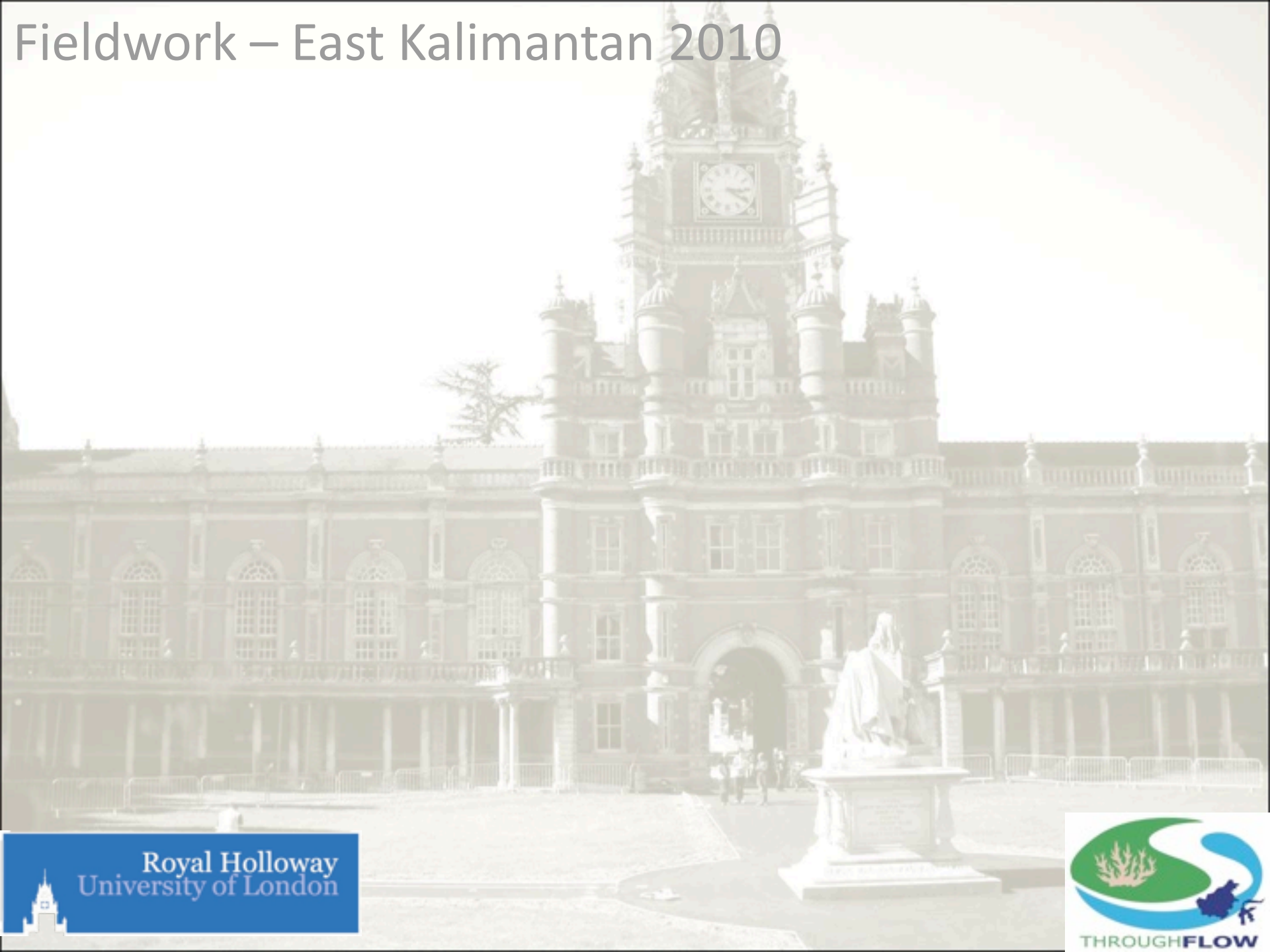
Fieldwork – East Kalimantan 2010



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Fieldwork – East Kalimantan 2010

- Logging of sedimentary sections

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THROUGHFLOW

Fieldwork – East Kalimantan 2010

- Logging of sedimentary sections
- High resolution sampling of well preserved fossils

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THROUGHFLOW

Fieldwork – East Kalimantan 2010

- Logging of sedimentary sections
- High resolution sampling of well preserved fossils
- Full assessment of available palaeoenvironmental information in situ

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Next stages

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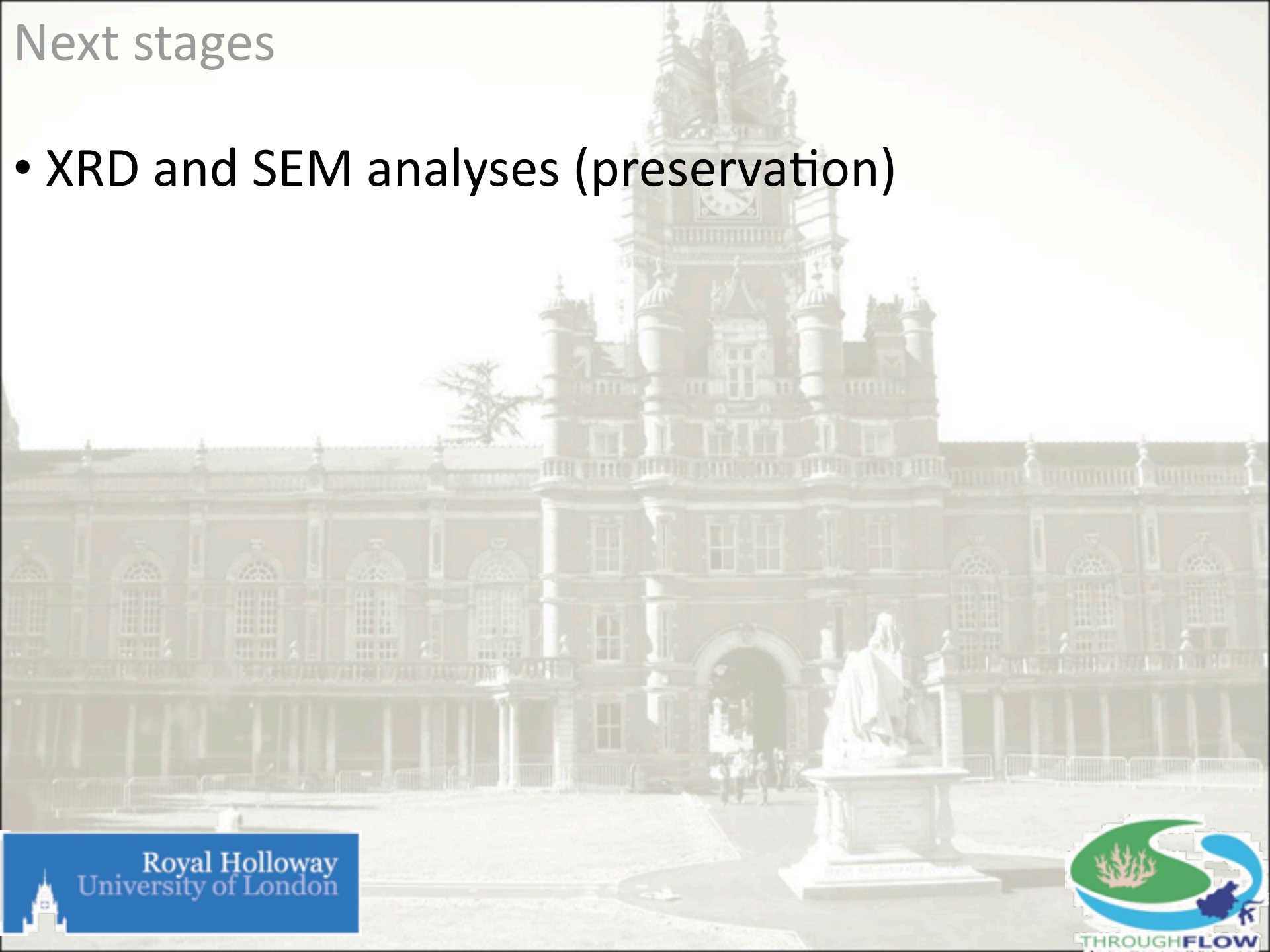
Next stages

- XRD and SEM analyses (preservation)



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Next stages

- XRD and SEM analyses (preservation)
- LA-ICP-MS analysis

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THROUGHFLOW

Next stages

- XRD and SEM analyses (preservation)
- LA-ICP-MS analysis

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THROUGHFLOW

Next stages

- XRD and SEM analyses (preservation)
- LA-ICP-MS analysis
- Development of palaeoclimate proxies

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THROUGHFLOW

Next stages

- XRD and SEM analyses (preservation)
- LA-ICP-MS analysis
- Development of palaeoclimate proxies
- Reconstruction of seasonality

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THROUGHFLOW

Next stages

- XRD and SEM analyses (preservation)
- LA-ICP-MS analysis
- Development of palaeoclimate proxies
- Reconstruction of seasonality
- Further fieldwork based on results of first trip

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Now... into the heart of Borneo!

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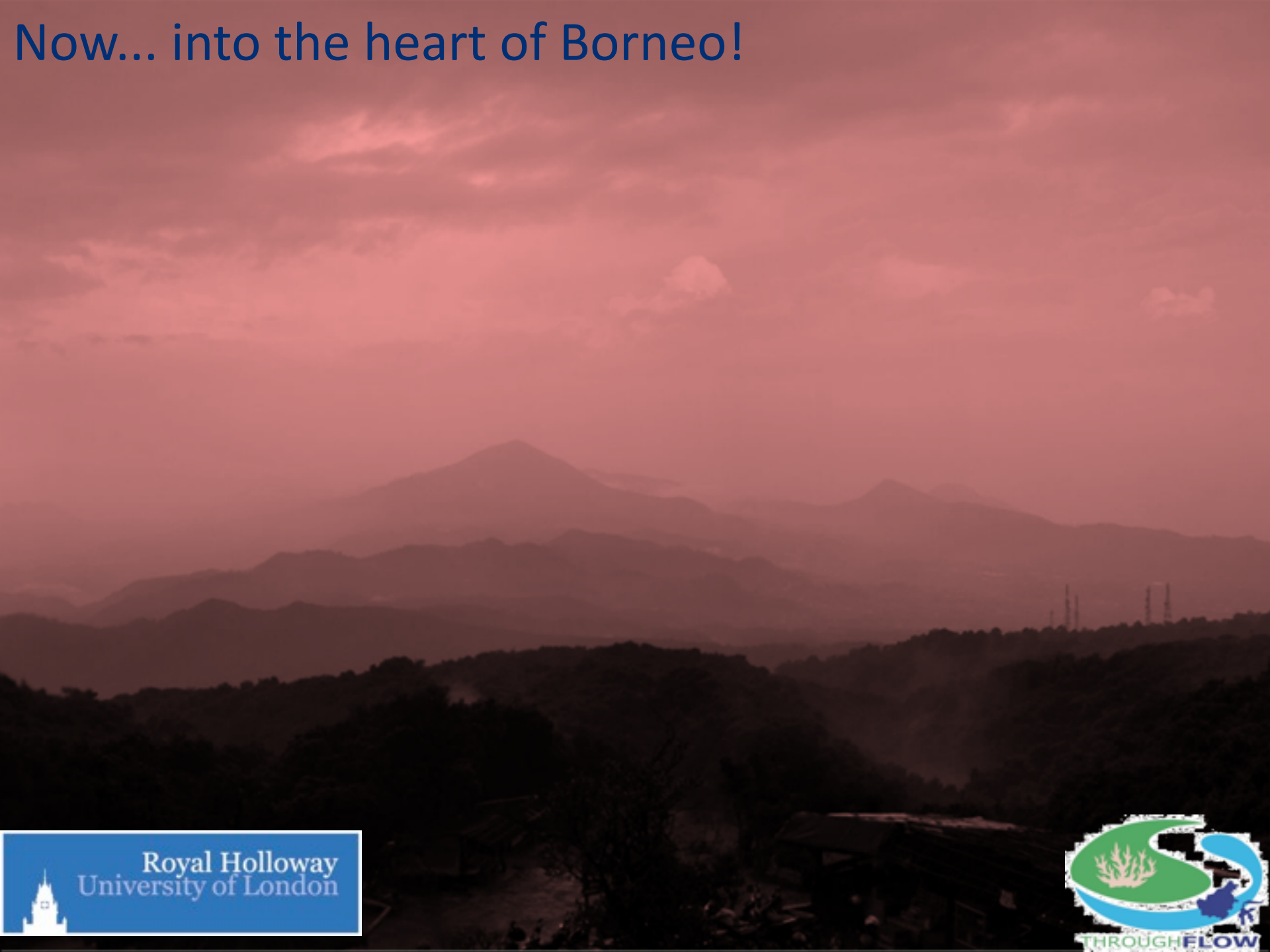
Now... into the heart of Borneo!



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