

# **PERTEMUAN PERSATUAN (Meeting of the Society)**

## **Ceramah Teknik (Technical Talk)**

### **MILANKOVITCH CONTROL OF EUSTATIC SEA LEVELS IN THE GEOLOGICAL RECORD**

**13 April 2006**

**Geology Department**

**University of Malaya**

**(in collaboration with the Dept of Geology, University of Malaya)**

**PROF. DR ANDREW SCOTT GALE**

**University of Greenwich**

**United Kingdom**

#### **Report**

Professor Dr. Andrew Scott Gale from the University of Greenwich, UK who was visiting the Department of Geology, University Malaya as external examiner, presented a talk on "Milankovitch Control of Eustatic Sea levels in the Geological Record". The talk was held at the Geology Lecture Hall, University Malaya on 13 April 2006.

He demonstrated that a clear relationship exists between Milankovitch Cycles brought about by the elliptical orbital motions of the tilted earth as it rotates around the Sun, and sea-level changes. Sea-levels and climate are driven by orbital forcing and form part of an integrated Earth system.

Relative sea-level is composed of the subsidence/ uplift history of the area, global sea level or eustasy controlled by ocean ridge volume and ice volume and geoid deformation. These sea-level changes are detected from  $\delta^{18}\text{O}$  variations recorded in climatic cycles in Indian Ocean cores, Pleistocene Terraces in Huon Peninsula, Papua New Guinea and  $\delta^{13}\text{C}$  variations in Cretaceous chalk and depth sensitive fossil communities preserved in the rocks.

Relationships between 40 and 100 Ka Milankovitch Cycles and sea-level changes are clearly identified in the Quaternary while 400 Ka cycles are evident in the Pre-Quaternary. Spectral analysis of long time series of  $\delta^{13}\text{C}$  data demonstrates the presence of long eccentricity cycles at 400 Kyr and 2.4 Myr. Identification of these cycles provides a template for developing new Cretaceous timescales.

**Prof Dr Lee Chai Peng**

## MILANKOVITCH CONTROL OF EUSTATIC SEA LEVELS IN THE GEOLOGICAL RECORD - PROF DR ANDREW SCOTT GALE



*Prof Andrew Gale presenting his talk*



*Part of the audience at the talk*



*Prof Dr Lee, President of GSM, presenting a memento to Prof Andrew Gale*