

Time and Tides: Messages from a receding Moon

Physicists rely on equations; geoscientists rely on equations and observations in the field. For this reason the conclusions of these two groups can be at odds.

The Moon is receding from the Earth at a rate of 3.8cm yr^{-1} . This recession is caused by the transfer of angular momentum in the Earth Moon system. If this rate is indicative of the past transfer of angular momentum, then some physicists have estimated that the Earth and the Moon would have been one body, or would have been situated very close together, about 1.6 billion years ago.

Paul Dowdall and Bettie Higgs will explain how the physicists and geoscientists have estimated the past position of the Moon over geological time. The field evidence can be used to put constraints on the early history of the Moon's orbit. With a combination of tidal modelling and image analysis they can quantify past cycles in the Earth-Moon system. This work has led to a reinterpretation of the evidence in relation to neap-spring cycles. In particular, this evidence shows that for most of its history the Moon has been far away from the Earth.