

Back 'n' forth

Tides are caused by the Moon and the Sun and contain a lot of energy, but where does it all come from?

The power the tides tap is the rotational energy of the Earth, relative to the Moon and Sun. The Moon orbits the Earth once a month, and the Earth spins on its axis once a day. The effect of the tides is like a brake, causing the spin of the Earth to slow while, to conserve angular momentum, accelerating the Moon to a higher orbit.

As a result, the length of day is slowly increasing. This has been measured by examining eclipse records back to 600 BC, because the position at which an eclipse can be observed is a sensitive indicator of how far the Earth has turned between that time and today. Laser ranging to the Moon has also shown that the Moon is moving away at about 4 centimetres per year.