

Astronomy Talk 14th March 2023

Tides – How do they really work?

This Zoom hybrid talk was given by the chairman. 84 attended online and 15 in the hall.

The first part covered things that you find on the internet that are wrong, including explanations for the Earth and Moon's rotation round the barycentre and the confusion that exists in understanding centrifugal and centripetal forces.

We then looked at factors affecting tides in principle, including the ellipticity of the Earth and Moon's orbit, as well as various precession effects. This continued into looking at tides in practice, considering the geometry of land masses, the amphidromic points, the Coriolis force, and then looking at several peculiar examples, e.g. rip tides and the Maelstrom.

The English Channel has very complicated behaviour with many resonances and oscillations. These help to explain the Solent's double high water and the young flood stand phenomena.

Lastly we looked at some astronomical effects: the Moon's movement away from the Earth, the slowing down of Earth's rotation, and the stability of the Earth's axial tilt.