Astronomy Talk 15th November 2016
Volcanism in the Solar System

This talk was given by Sheri Karl. We first looked at how volcanism works on Earth, and that 80% of the heat that powers it is radioactive decay, the other 20% being gravitational energy released from heavy elements falling towards the centre. We looked at examples of the many different types of volcano.

We then went on to look at the Moon, which has had a considerable amount of volcanism, and then at the planets. Mercury has signs of volcanism all over it. Venus is 90% covered by lava flows and undergoes resurfacing over a 500 million year period. High atmospheric pressure causes the lavas and the types of volcano to vary depending on altitude. Mars has the largest shield volcano in the solar system, Olympus Mons, and evidence of ancient super-volcanos.

After that we looked some of the moons of the giant planets. Round Jupiter, Io is extremely active because of tidal effects. All the other moons show cryovolcanism, e.g. Europa's bands. Ganymede is 35% craters and 65% cryovolcanic, with grooves and wrinkles showing displacements.

Round Saturn, Titan has volcanos producing methane, with lavas consisting of ammonia and water. Enceladus has "Tiger Stripes" near its south pole, which produce jets of water vapour and ice.

Uranus's moons Ariel and Miranda show volcanic extrusions, while round Neptune Triton has nitrogen geysers and cryovolcanoes that resurface the moon. Internal heat melts the surface to produce the so-called "cantaloupe" terrain. It probably has a liquid nitrogen magma.

Lastly Pluto shows many interesting features, but we're not sure how to explain them. It certainly seems to have some older and some younger surfaces, which is indicative of cryovolcanism.